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NexGen Energy Ltd.

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NexGen Eenergy Ltd

In the matter of

À l'égard de

NexGen Energy Ltd.

NexGen Energy Ltd.

Licence application to prepare a site for and construct its Rook 1 uranium mine and mill project

Demande de permis concernant la préparation de l'emplacement et la construction de son projet de mine et d'usine de concentration d'uranium Rook I

Commission Public Hearing
Part 2

Audience publique de la Commission
Partie 2

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Canada

Volume 2, Part 3: Rook I Project Environmental Impact Statement Baseline Annexes

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- Annex II, Noise and Light Baseline Report
- Annex III, Hydrogeology Baseline Report

Part 2

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Rook I Project

Environmental Impact Statement

Annex V: Aquatic Baseline Road Map

GOLDER
MEMBER OF WSP

AQUATIC BASELINE ROAD MAP FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

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APPENDICES

1 INTRODUCTION

This road map provides an overview of the aquatic environment baseline program undertaken by NexGen Energy Ltd. (NexGen) for the Rook I Project (Project). Section 2, Aquatic Study Area (ASA), describes the location of the proposed Project in relation to key waterbodies and watercourses that comprise the aquatic environment. Section 3, Joint Working Group (JWG) Feedback, provides context on NexGen's approach to engagement and where feedback related to the aquatic baseline from the JWGs can be found. Section 4, Aquatic Baseline Document Map, provides information on the scope of each baseline report and identifies where key topics associated with the aquatic environment baseline program can be found in the reports appended to this road map or in baseline reports for other disciplines (e.g., hydrology).

The characterization of the aquatic environment baseline for the Project was based on desktop analyses, field studies, and feedback from First Nations and Métis Groups (collectively referred to as Indigenous Groups). The various baseline reports, presented as Annexes V.1 through V.3, are part of the comprehensive baseline program that documents different aspects of the aquatic environment in the anticipated area of the Project. These baseline reports present information on lake morphometric conditions, water and sediment quality, fish and fish habitat, and lower trophic level communities (e.g., plankton and benthic invertebrates). Data were collected within the baseline ASA, which was selected to include the watershed that would receive a proposed treated effluent release, professional judgement of the potential extent of effects to be considered in the Environmental Assessment (EA) and long-term monitoring for similar developments, and consideration of potential cumulative effects (Annex V.1).

The following Annexes present the main information used to characterize aquatic environment baseline conditions for the Project:

- Annex V.1: Aquatic Environment Baseline Report
- Annex V.2: Overwintering Fish Habitat Report
- Annex V.3: Naomi Lake Bathymetry Report

The Aquatic Environment Baseline Report (Annex V.1) was based on studies carried out from 2018 to 2020 completed by Canada North Environmental Services (CanNorth). This report characterizes the physical aquatic environment including lake morphometry, water and sediment quality, plus the biological resources including plankton, benthic invertebrates, aquatic macrophytes, fish and fish habitat. The Overwintering Fish Habitat Report (Annex V.2) was completed by Golder Associates Ltd. (Golder) in winter of 2019 and complements the characterization of fish and fish habitat presented in the Aquatic Environmental Baseline Report. Finally, the Naomi Lake Bathymetry Report (Annex V.3) completed by Golder documents the March 2019 bathymetric survey to complete the mapping for the lakes in the area of the Project.

2 AQUATIC ENVIRONMENT STUDY AREA

The proposed Project would be located adjacent to Patterson Lake, within the Patterson Lake watershed near the headwaters of the Clearwater River watershed. The Clearwater River flows from the area near Broach Lake through a series of lakes including Patterson Lake, Forrest Lake, Beet Lake, and Naomi Lake in order from upstream to downstream. The upper Clearwater River, which flows an approximate distance of 40 km from Broach Lake to Naomi Lake, is dominated by glaciolacustrine terrain with a channel that is shallow, flat, and meandering (Annex IV.3). From Naomi Lake, the Clearwater River flows an additional 20 km southeast before reaching the Mirror River confluence. Below the Mirror River confluence, the Clearwater River deepens and receives higher flow volumes from the Mirror River, and the channel form changes to meandering within a well-defined river valley.

Farther downstream, the Clearwater River flows through Lloyd Lake, which is immediately upstream of the Clearwater River Provincial Park; the downstream end of the park is at the Saskatchewan-Alberta border. The Clearwater River flows into the Athabasca River at the city of Fort McMurray, Alberta, which flows north into the west end of Lake Athabasca through the Peace-Athabasca delta. Water from the Clearwater River ultimately flows to the Arctic Ocean through the Slave River, Great Slave Lake, and the Mackenzie River.

The baseline ASA is shown in Figure 1.

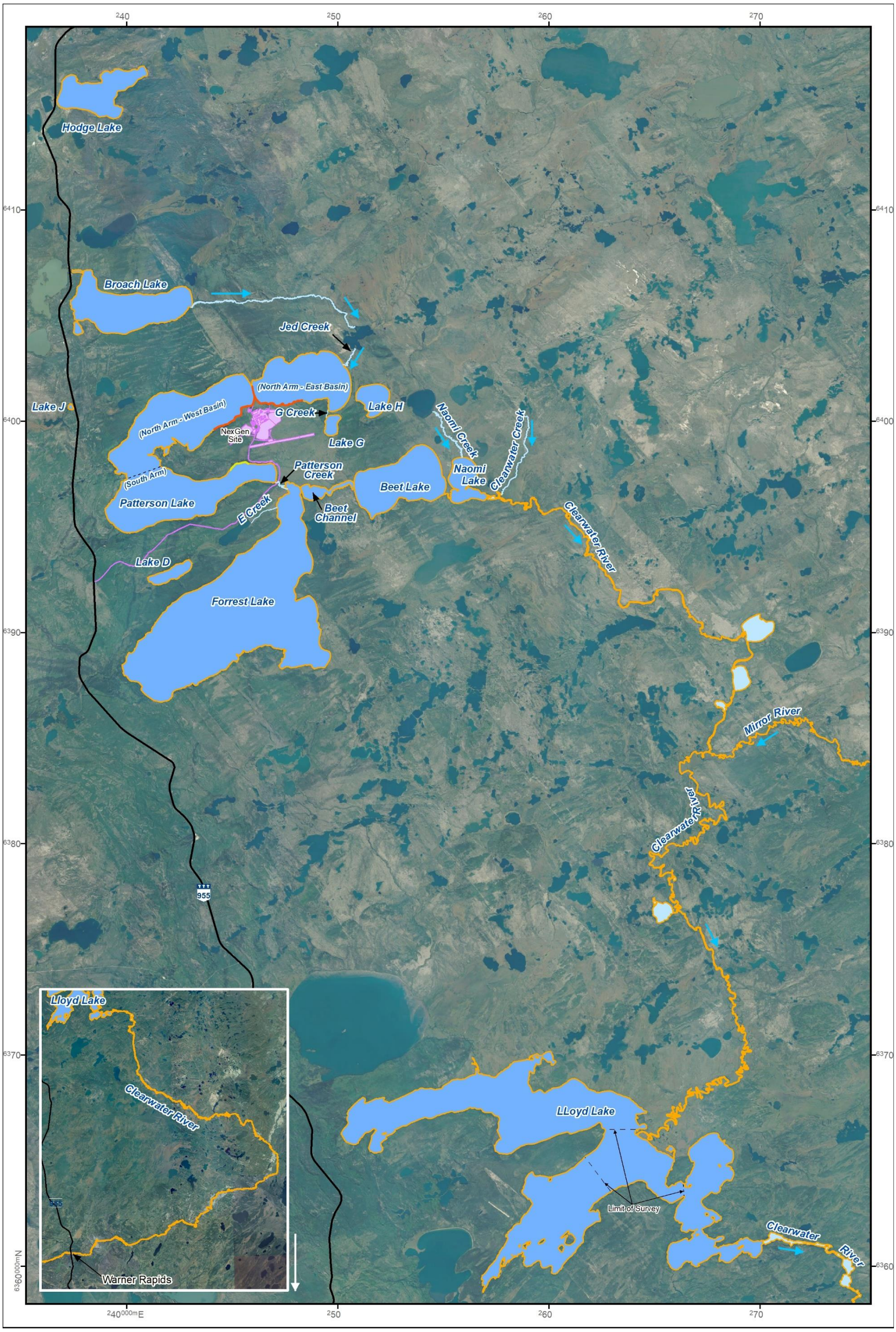

Figure 1. Aquatic Study Area

3 INDIGENOUS GROUP FEEDBACK

Since exploration at the Project site commenced in 2013, NexGen has engaged regularly and established relationships with local Indigenous Groups and northern communities, specifically those closest and with greatest access to the proposed Project.

An important component of engagement to date has been the establishment of JWGs to support the gathering and incorporation of Indigenous and Local Knowledge throughout the EA process. A summary of feedback from JWGs related to the aquatic baseline program is presented in Appendix A of this road map, and includes feedback from the Birch Narrows Dene Nation, Buffalo River Dene Nation, Clearwater River Dene Nation, and Métis Nation – Saskatchewan. Participant questions and comments demonstrated an interest in potential impacts from the proposed Project to water quality and fish and fish habitat, particularly as a food source. Indigenous and Local Knowledge was also included, where appropriate, from Project-specific studies completed by Indigenous Groups, which included Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, Indigenous Rights and Knowledge studies (henceforth referred collectively as Indigenous Knowledge and Traditional Land Use [IKTLU] Studies[1]) (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V: CRDN; TSD VI: YNLR) was also included in the individual baseline reports where appropriate.

4 AQUATIC BASELINE DOCUMENT MAP

Table 1 provides a summary of key topics related to the aquatic baseline program and cross references to where analysis and discussion of key topics are located within the individual aquatic baseline reports. The topics in Table 1 comprise the aquatic environment components sampled as part of the Project's environmental baseline study. Section 4.1 through Section 4.7 provide context and direction to where information related to key aquatic topics can be found.

Key topics from these baseline studies may also overlap with baseline studies for other disciplines (e.g., hydrology); this information is also provided in Table 1 to assist in comprehensive review.

[1] Referred to as TLU Studies in the baseline reports.

Table 1: Aquatic Baseline Key Topic Location Summary

Key Topic	Baseline Report Title	Baseline Report Section Reference	Approach to Topic[1]
Lake morphometry (i.e., shape and dimensions)	Annex IV.4: Patterson Lake Currents Assessment Report	Section 4.0 Methods Section 5.3 Patterson Lake Currents Observations (Results)	Primary and applied data source
	Annex V.1: Aquatic Environment Baseline Report	Section 2.0 Lake Morphometry	Primary data source
	Annex V.3: Naomi Lake Bathymetry Report	All	Primary data source
Water quality	Annex III: Hydrogeology Baseline Report	Section 4.5 Groundwater Quality Sampling Section 5.2.3 Groundwater Chemistry Baseline	Primary data source
	Annex V.1: Aquatic Environment Baseline Report	Section 3.0 Water Quality	Primary data source
Sediment	Annex IV.2: Hydrometric Monitoring Characterization Report	Section 4.6 Sediment (Methods) Section 5.4 Sediment (Results)	Primary data source
	Annex IV.3: Geomorphology Characterization Report	Section 5.2 Patterson Lake (Results)	Primary data source
	Annex V.1: Aquatic Environment Baseline Report	Section 4.0 Sediment Quality	Primary data source
Plankton	Annex V.1: Aquatic Environment Baseline Report	Section 5.0 Phytoplankton Section 6.0 Zooplankton	Primary data source
Benthic invertebrates	Annex V.1: Aquatic Environment Baseline Report	Section 7.0 Benthic Invertebrates	Primary data source
Aquatic macrophytes	Annex V.1: Aquatic Environment Baseline Report	Section 8.0 Aquatic Macrophyte Chemistry	Primary data source
Fish and fish habitat	Annex V.1: Aquatic Environment Baseline Report	Section 9.0 Fish and Fish Habitat	Primary data source
	Annex V.2: Overwintering Fish Habitat Field Program Results Summary Report	All	Primary data source
	Annex VII.2: Vegetation Baseline Report 2 (Inventory, Rare Plants, and Wetlands)	Section 3.0 Vegetation Inventory and Rare Plant Survey	Primary data source

[1]Approach to Topic is noted as either primary data source or applied data source. Primary data source refers to field data collected for the Project. Applied data source refers to modelling, analysis or characterization of conditions informed by primary and second-hand data sources (e.g., government).

4.1 Lake Morphometry

Lake morphometry provides basic physical information on the shape of waterbodies, including shoreline, bathymetry and water level–surface area–volume relationships. Lake morphometry influences physical, chemical, and biological characteristics of waterbodies and provides supporting information for calculating lake water balances and hydrological modelling. The primary sources for lake morphometry information are the Aquatic Environment Baseline Report (Annex V.1) and the Naomi Lake Bathymetry Report (Annex V.3). Most lake bathymetry surveys were conducted during the open-water period in 2018 as part of the Aquatic Environment Baseline Report (Annex V.1). Naomi Lake bathymetry was collected the following winter from 20 March 2019 to 26 March 2019 using ground penetrating radar surveys, and results are provided in Annex V.3. Lake morphometry information was used to support interpretation of the focused studies in Patterson Lake (Annex IV.3 and Annex IV.4) and Forrest Lake (Annex IV.5). Lake bathymetry was observed to influence Patterson Lake currents differently in different locations (Annex IV.4).

4.2 Water Quality

Water quality is a general term that describes the physical and chemical properties of waterbodies and watercourses. The water quality of a waterbody or watercourse can be characterized in terms of color, turbidity, suspended solids concentrations and chemistry. Water quality and its seasonal variation play an important role in defining the characteristics and function of local aquatic ecosystems. Water quality conditions were characterized for 18 waterbodies and watercourses in the baseline ASA (Annex V.1). Groundwater quality was also characterized in the Hydrogeology Baseline Report (Annex III). These measurements provide an understanding of the existing physical and chemical conditions of the waterbodies and watercourses and provide a basis for evaluating changes to surface water quality due to the proposed Project. The water quality baseline characterization also supports the regional and near-field water quality modelling and environmental risk assessment modelling completed for the EA. Water quality samples for the baseline program were collected and analyzed seasonally throughout 2018 to 2020.

4.3 Sediment

Sediment quality refers to the physical and chemical characteristics of the sediments underlying waterbodies (i.e., the lake bed materials). The chemical and physical properties of sediments were characterized for local waterbodies, as these factors play important roles in the aquatic ecosystem and can influence the overall water quality and the benthic invertebrate communities that reside within the aquatic sediments. Sediment composition (i.e., chemistry and particle size) was characterized for eight waterbodies in the baseline ASA (Annex V.1). These measurements provide an understanding of the existing environmental conditions of the waterbodies and provide the basis for evaluating changes to sediment quality as a result of the proposed Project. The sediment quality characterization also provided information to support the environmental risk assessment completed for the EA. Information on sediment transport conditions and particle size distribution was also collected as part of the Project's hydrometric baseline study (Annex IV.2). Lake geomorphology was also evaluated to provide an understanding of currents and mixing patterns (Annex IV.3). Sediment quality samples for the baseline program were collected and analyzed once per summer in 2018 and 2019.

4.4 Plankton

Plankton is a general term referring to microscopic organisms that live suspended in the water. Plankton can be subdivided into two different groups: phytoplankton and zooplankton. Phytoplankton refers to the algal component of the plankton community, ranging between 2 µm and 20 µm in size. Zooplankton refers to microscopic animals that live suspended in the water. In general, phytoplankton provide the food base for zooplankton, which in turn are an important food source of many fish species. The primary information source for plankton is the Aquatic Environment Baseline Report (Annex V.1). The objective of the plankton sampling program was to collect baseline data on community structure, density, richness, diversity, and biomass to characterize phytoplankton and zooplankton communities in the ASA. This information is important for understanding nutrient dynamics in lakes and for characterizing fish habitat. Plankton sampling occurred in a subset of waterbodies sampled during the aquatic environment baseline study in fall 2018.

4.5 Benthic Invertebrates

Benthic invertebrates refer to bottom-dwelling organisms (e.g., worms, snails, clams, crustaceans, insects) living on or within the sediments of waterbodies and watercourses. Benthic invertebrates are an important link in aquatic food webs. Most are herbivores, detritivores (i.e., feeding on dead, organic material), or filter-feeders, deriving much of their energy from algae, aquatic plants, and decaying organic material; however, some benthic invertebrates are predators that feed upon other invertebrates. Many fish species, including early life history stages of piscivorous species, rely upon benthic invertebrates as a food source. The primary information source for benthic invertebrates is the Aquatic Environment Baseline Report (Annex V.1). The objective of the benthic invertebrate sampling program was to collect baseline data on community structure, density, richness, diversity, and biomass to characterize benthic invertebrate communities in the ASA. Understanding the benthic community provides information about fish habitat and sets a baseline against which to compare future results of Environmental Effects Monitoring, should the Project be approved. Benthic invertebrate samples were collected from a subset of waterbodies and watercourses sampled during the aquatic environment baseline study in fall 2018.

4.6 Aquatic Macrophytes

Rooted aquatic macrophytes are plants rooted in lake substrates where the current is low enough to permit fine sediments to accumulate. Substances in sediment may be taken up by the roots and transferred to the shoots of the plant via the plant's vascular system. Since animals may consume aquatic macrophytes, the plants may serve as a vector for contaminant transfer from plant to primary consumers in the ecosystem. The primary information source for aquatic macrophyte chemistry is the Aquatic Environment Baseline Report (Annex V.1). The objective of the aquatic macrophyte chemistry monitoring program was to collect tissue chemistry data used to support the risk assessment modelling completed for the EA. Aquatic macrophyte tissue chemistry samples were collected from a subset of waterbodies and watercourses sampled during the aquatic environment baseline study in summer 2019.

4.7 Fish and Fish Habitat

Fisheries investigations were completed in the ASA to provide information on existing fish habitat conditions, fish communities, and fish health in waterbodies and watercourses potentially affected by the proposed Project. The primary sources of information on fish and fish habitat are the Aquatic Environment Baseline Report (Annex V.1) and Overwintering Fish Habitat Field Program Results Summary Report (Annex V.2). The objectives of the fish habitat assessments were to characterize baseline habitat conditions and to document potentially sensitive habitats that may be present adjacent to or downstream of the Project. The habitat assessments included characterization

of existing spawning, nursery, rearing, feeding, and overwintering habitat conditions. The objectives of the fish community sampling were to determine fish community composition, fish species abundance, morphometry, and health in ASA waterbodies and watercourses. Fish tissue sampling was also completed for selected large-bodied fish species to characterize existing fish tissue chemistry concentrations of metals and radionuclides, and to provide data for the risk assessment modelling completed for the EA. Sampling occurred in 2018 and 2019 during the spring, summer, fall or winter, depending on the waterbody or watercourse sampled, and survey type.

Aquatic vegetation was also surveyed in Vegetation Baseline Report 2 (Annex VII.2), which assisted with the characterization of fish habitat.

APPENDIX A

Joint Working Group Feedback Applicable to Hydrology Baseline

Table A-1 presents the comments and feedback NexGen has received from members of local Indigenous communities through established JWG meetings. Where appropriate, feedback from local Indigenous communities was considered within the baseline and/or EA processes or tracked as issues or concerns for resolution. NexGen continues to engage with communities, and the feedback presented in Table A-1 reflects comments and feedback received through March 2020 that were related to the aquatic baseline or the comprehensive baseline program generally.

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
Birch Narrows Dene Nation (BNDN)	Are you aware of any huge adverse environmental impacts in any of the current mine sites?
	Important topics for the Joint Working Group (JWG) moving forward are Indigenous knowledge, traditional land use, the species discussion, water quality, environmental monitoring, employment, and business opportunities.
	The fish species look like they were chosen because of their value for commercial use.
	What about Lake Trout?
	My concern is the walleye. Over the years I have noticed that almost equal portions of pickerel, jackfish, and whitefish. Now it is 90% pickerel.
	Whitefish are bottom feeders, so good to include them. Also, when we went to just winter fishing and smaller quotas. I think there is a balance of harvesting certain species at certain times of the year. We have a healthy walleye population.
	Someone I know who lives close to Rabbit Lake mine, saw a moose with two heads, but he never said a word until a year ago. He had a commercial fishing camp, saw fish that were deformed.
	Could we ask that you take samples here? That way we can see changes into the future. Even if it isn't affected by the mine. Respectfully, I request that samples are taken here.
	Are the little lakes in between tested?
	Who's responsible for the modeling of the water?
	A lot of those lakes have whitefish, all low-grade.
	Respect the land, the water, the trees. Don't clear-cut the small trees – they take 50 years to grow back. (inaudible) water in one big lake, trout, everything, – just grass there now. They didn't put the water back. Didn't fix it. It used to be a big lake, but now there's nothing there.
Buffalo River Dene Nation (BRDN)	Have you gone to communities to show what you are doing? If so, what was the feedback?
	Elders are concerned that the water quality will be negatively affected by the Project.
	It's important to explain the Project to elders in a way that they can then explain it to other elders in the communities.
	Water is the main thing that people worry about.
	How do you identify fish habitat?
	It'll be important to explain to the community that waterways and rivers are natural filters, and peat moss.
	I've never heard of golden-eye, people eat mallards. We eat more whitefish, and they are more delicate, you see their skin has issues and they get worms, I think they should be looked at instead of northern pike.
	Please explain the natural filter systems – the river filters out lots of stuff- rocks, gravel. The elders think whatever goes into the water will carry all the way done here.
	I fished all over. In Slave Lake the water is contaminated already. I worked at Anzac. We have to watch that lake too. The best lake in Saskatchewan is right here – we don't need to buy water.

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
Buffalo River Dene Nation (BRDN)	Our water in these big lakes is all coming from the muskeg, not the river, that's why it's clear. You can see the bottom, and the fish.
	In 2001 in Dillon, the water was shallow. Since then, it never went down; still going up. This lake is still full here. In Dillon, the water is just about full now. But a lot of things are going to change; there are signs of acid rain from Alberta – changes to trees. Half of the trees are different colours. Every time it rains, the trees look a little but different.
	I would like to report one more thing about a beaver. There is a river coming from Barney Lake through Dillon Lake, and from there to Dillon. Every spring our water, before the water plant came in, the water was like a poison, no one wanted to drink it. Beavers along that river all the way have beaver houses; they pee and whatever there all winter, just like people, and in the springtime, it flows into the lake where we live. Every spring the water isn't any good. I tried to report it to [Ministry of] Environment, but no one seems to listen.
	They break open; lots of logs and everything coming out, running all the stale water that has been sitting.
	I also acknowledge we are in Treaty 10 traditional territory, where we get our food, medicines, water different species some of which grow only in that area which none of you are familiar with, but our elders know that. They fish there. The caribou – we saw 11 recently – haven't been around for a long, long time. They're very sensitive. The migration routes – we haven't seen them for a long time, and it was nice to see them. The comparison: when we go to a farmer's back yard, the farmer wouldn't want you to start drilling in his back yard. It's the same with our traditional territory. Treaty 10 was signed for the whole area, not parts of it. That's recognized on the maps.
	When I was growing up, we used to drink water from the lake. There was no treatment then.
	When you say Patterson Lake it gets peoples' attention. The fishing is good. There is lake trout. Peter Pond Lake doesn't have any lake trout. Also, perch.
	They know where the jumbo whitefish are.
	One of the elders was telling us that there's a little lake on our traditional territory where in spring when it's starting to melt, the water that sits on top of the ice, there's nothing that tastes so good. He goes there just to have that water every year. Fresh melt water. I would think in Dillon I could drink the water on top of the ice, but he said in that little lake it's totally different.
	Some of our traditional territory is in the Air Weapons Range. Back before the range was formed, people from our community used to get jumbo whitefish there before the Easter holidays. It's just like flying lobster from out east. It's a delicacy. They have a group that goes up there.
	Looks like it's kidney shaped. Just jumbo whitefish, we were there for three days. It takes eight hours to get there from Dillon.
	For trout we go to different areas like Patterson Lake, because we don't have trout in our lake. The Elders know exactly where these fish are. Food and shelter are the biggest thing, and survival.
	Our elder is 82 years old, one of the well-respected elders in our community. Right now, he's in the middle of harvesting – fishing as a fishing outfit – he took a couple of days off from sustaining his own livelihood to come here because he feels it is important, and water is really important. His son is running his fishing outfit right now while he attends this meeting. He also has a wild rice lease and a tourist outfit – he does sustainable tourist stuff, only taking in a few clients a year. He is one of our biologists and environmentalists.
Clearwater River Dene Nation (CRDN)	From home we take bottled water up north. It doesn't make sense, but we're doing it because we think there's something wrong with it.
	The perception is there, but it was always common practice after bottled water came into existence. The perception is there. If you got to Hodge Lake, a stream crosses the road, and that water is unbelievably clear and perfect.
	I stop at the Clearwater River to grab fresh river water.
	Water is always the key issue back home.
	Remember we're trying to implement a plain speak document because of visual concepts of understanding. That is what the Chief is talking about.

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
Clearwater River Dene Nation (CRDN)	In terms of baseline studies, are there any opportunities for community involvement with any of your residual baseline work, from fish, terrestrial, etc.?
	And we will eventually throw in our environmental monitors. I don't know if you knew that. We want to train our own people because of lack of trust of government and industry.
	The interim CRDN Rights and Knowledge study will come out of the CRDN-defined initial list of valued components (VC) that we want to talk to you about. As we go through there may be additional ones. We know there's a certain window, but we'll try to be as comprehensive as possible. It may not be as linear as moose; it might be having undisturbed places on waterbodies. They might be more complex.
	And our people? We use that water quite a bit. It goes into the Clearwater and all the way down. [CRDN member] picks up water from the Clearwater.
	Not on the old or existing mines that are sitting there?
	You're doing what you're supposed to do – lessons learned form the mines. You should also learn lessons from the First Nations – have your hunting areas decreased? Can you eat the fish, the moose? (response from CRDN: it has decreased a lot). You guys are learning lessons on structures and that stuff, but the realities I look at in environmental impact is taking a look at learning those lessons. You're taking more area – six new companies coming up that way – nobody takes a look at the real impacts to the Nation and the people. That's what I see as an environmental review. The people are getting less and less land; the fear of eating moose and fish, the fear of having this released back into the lake because you guys say it's safe. You have to get this sold to the elders and the community.
	Golder does the same thing – hires three or four band members to do the interviews, then takes the notes and puts the document together. When you find the stuff it's not always based on the relationship to the stuff. It's based on what the government's qualifications are on the environmental assessment's impacts, and not the actual concerns of it. I'm trying to reach what [CRDN member] is saying between traditional and modern ways.
	When we started looking at the strategy process, there's that interpretation of cumulative effects. Then we define and introduce an interpretation for that. It's not just one side, western science, we're doing the traditional side as well. That's what the Chief's referring to.
	Both traditional and western science are very important.
	All the studies I've ever seen done is more or less where you hunt and trap, and you can come back in 10 or 20 years when we've finished here. I would like to see it based on how much land has been lost already over the last 5-6 mines compared to the fears on fishing etc. – really saying this is what the impacts are, not the traditional knowledge like where they hunted, fished, or gathered or what's sacred to them. In certain areas, communities can't even practice their traditional activities or do their ceremonies on the land within 1 kilometre of a gas well. Nobody takes that into account. So, what if you smell gas, so what if you hear a noise – there's actually impacts. When you're talking about total loss, and continually being squeezed in, this is just another step. That's what I would like to see in Indigenous knowledge. Fear of eating that moose or fish or drinking the water.
	You are a great example, because you use your fishing and hunting skills. Once that's there and you start putting stuff in the lake, will you be eating fish there?
	Right now, I would not want to drink water from Cluff Lake, whoever told me it was safe. We've been hunting there for a long time, but I've never shot a moose from that area. Or eaten the berries. It's all messed up.
	Moving forward, because of where you're located and what you're doing, we need more input and more working together for our people. Jobs are hard in the north; we have a high unemployment rate; we need jobs to get to that next point where we think this isn't so bad. At the same time, we have to keep our land and water safe. I want my kids and grandkids to use the land. We have to work together, make sure everything is on par. It's good that we can work together.
	Will we see the results of those studies?
	You said there was a couple of watersheds – can you talk about that selection process?
	When you're talking about testing the water, are other studies being done on the Alberta side with the Clearwater system? Do they do their own studies?

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
Clearwater River Dene Nation (CRDN)	I've been on that Clearwater River system many times; the water is really clear until you hit the Alberta side, then the quality is completely different.
	How many other projects are in that square box (referring to map)?
	Do other companies have mineral holdings in that box on the map – like for oil and gas?
	What are the rare species?
	Did you take any sediment samples?
	Did you take any samples around the deposit that's underneath the lake? Thinking you should take sediment samples before and after mining activity starts.
	How did you come up with those?
	In these studies, is there any animal tagging involved?
	I think it's really important to compare Cluff Lake to what's happening in the baseline studies. It's a good question.
	Regarding Cluff Lake: were there tests being done then and now, and can you see if the water is changed? Would Cluff's watershed flow into this one?
	You're sampling at Hodge, you said? How is the water?
	It's really good water; people from town drive up there with jugs. There's a little stream that crosses the road. Tons of people go up there just to get water.
	When they check the water, do they ever come across large objects in the lake, like Loch Ness?
	People have said they have seen large things in northern lakes. There is something huge in La Loche lake. I've seen it myself. It's about the length of a boat. There were two other boats on the lake fishing at the same time, and we went further south. On our way back, the guy furthest out hit a deeper spot, so he was reconnecting rope and he hooked onto whatever it was. It surfaced about six feet from his boat. They caught tons of fish in that area. People see it every summer in our lake.
	On La Loche Lake we have one island. On the north side of that island, just near the reserve, we set nets. The next morning, we went back, and the nets were gone. They were dragged way out into the middle of the lake. There were other times when there were huge holes in the nets in that same area.
	They say there's a big fish, some kind of mariah, that's prehistoric and still lives there. I've never seen it yet! Maybe a sturgeon - they grow up to 20 feet long.
	They have pictures at a museum in Drumheller, Alberta. When I saw the picture, I said isn't this what people have been describing in the lake back home? I asked if the water connected to Fort Mac, to see if it might have come from there. Who knows?
	This is something we heard about Cluff Lake, and we don't have a great understanding about it – we don't have our own hydrologist; I heard there's still materials leaching out of that facility through the groundwater, at a glacial rate but there is a slow release of materials; is that what you're talking about? That's what I'm trying to understand in terms of your baseline monitoring – how are you measuring what the baseline groundwater movement is? It's quite difficult in the short timespan you're looking at.
	Community members mentioned every year the water level's going down. If there's lack of oxygen the fish could die off too. Have you come across anything?
	Do fish travel in underground streams? I've heard stories about that.
	When we built the community hall back home, there was an underground stream that was flowing like a river. I figured there could be fish going through there
	What's the purpose of trying to gather all this information?
Métis Nation – Saskatchewan (MN-S)	Also, it would be good to see baseline radiometric data.
	We have to understand all living and non-living things.
	We are seeing lots of effects from the oil sands – water is changing, plants and animals are dying.
Métis Nation – Saskatchewan (MN-S)	Also need to understand the health of fish and the potential effects of the Project on them and their food chain.

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
	Mariah could be considered as a VC.
	Are any community members involved in the establishment of the baseline for environmental monitoring, so can they verify their accuracy?
	Would the results be released and reviewed by the community?
	From a trust point of view, our people will want to know that those numbers are accurate now, not later. Just a comment to think about.
	How would this group know – is there a way for the people involved in the studies to inform the group of what they saw and if they are confident, they are accurate? Once the stuff hits the EIS, how do we know that it's good? If community folks that were involved in that process and they can validate the results, that brings comfort to community members.
	How often are you monitoring?
	How many locals do you have working with you? You guys talk, but we won't hear anything about water sampling in La Loche.
	It's that validation we're looking for. When I had to involve community members in monitoring, I would get them to write a report if they couldn't speak to the broader community in general. If they didn't feel like writing it, they could talk so someone who would transcribe it. That report could give a summary of how things went, what they saw, were the readings accurate; that could come back to this group, if they couldn't present themselves. The point [MN-S member]'s trying to make is, we need some connection to that community resource that's out there doing the monitoring and seeing this stuff. We know who they are, and we're confident in the results. That builds trust.
	We're the experts here. We see the big mess left behind at Cluff Lake. Look at the colour of the water; is it safe to drink?
	Do you have instruments or people taking samples? What does an instrument look like?
	What he's getting at is simply - you can put a box in there, but if you open the box, is there anything in it? It measures, turbidity, flow, pH balance, all the different main chemicals, natural chemicals in there. Then you have a true baseline. If we look at it and say yes, they have a measuring apparatus there, it's nothing. We want to know what it does and how.
	Our questions are also valid for you. If it's something like the pH balance is at 5, are you or someone else responsible for that?
	When I was young, I could walk along the lakeshore and turn rocks up trying to catch the little mariah that lived underneath. Today, I can't even see the rocks, there's so much green slime. It took 50 years to achieve that; 50 years from now, what did you leave behind – maybe we can't see the bottom of the lake, yet when you first came it was clear. At the same time, if McMurray is interfering, we don't want to blame you.
	You have to go back too – I know there was a study just done on a 100-km range around Fort McMurray on water quality. Do you access government information on these things too?
	People do drink water from the Clearwater.
	What about the little lakes on the side?
	These are very important to us. Do I take my children and grandchildren to Cluff Lake – what am I subjecting them to? Nobody will tell me the truth about what is there, but when I look, I know something is not right. My grandmother knew lightning wakes up earth in the spring. She didn't understand the process, but she knew it. Today we see the same things; we see the problems Cluff Lake has created in the animals. If it can do that in the animals, why is it not doing it in us? We just don't want to see that anymore. Not that we have anything against what you do; we need a cleaner environment. Without it we will just destroy ourselves anyway. All we can ask is, be honest with us, be upfront, and if we give you some direction, listen to us.
Métis Nation – Saskatchewan (MN-S)	They're not up in my area. The loon also eats straight fish; he doesn't eat much else. The loon is protected; may be hard to get a permit to get one, but it is the most reliable because the loon lives in all of the lakes. He flies between lakes and eats fish there, so it's not 100%, but it gives you an idea to understand our fish. I know you also catch fish and study them, but something that consumes it constantly will show better, like the jackfish, eats all the fish. So, he's the best one, where a sucker eats off the bottom and will tell you what's on the bottom. The jackfish eats everything.

Table A-1: Joint Working Group Feedback – Aquatic Baseline

Community	Comment
	The studies we did a few years back, these guys don't want to use them. That's what I heard.
	I had feedback on community engagement, and I'm trying to figure out how we can move forward in a responsible way where people have their input without being offended. We're working towards a bigger goal than what is currently perceived. We need a discussion on how we can approach it. I can offer some high-level thinking to help bring my community around.
	[MN-S member] provided a history of commercial fishing and trapping on Patterson Lake.
	[MN-S member] described some of the changes he's seen to vegetation and waterbodies over time.
	We should have more of these meetings with other companies like this. I'd like to get a Métis community member to work side by side with you guys and report the environmental side to the community instead of you guys doing it, so we know where we are and how much damage is being done to the land.
	This is general – the same information will come back to all the JWGs?
	We live in a very clean environment, other than Fort McMurray - we can sometimes smell the oil. The air is very clean; we can drink the water and eat the berries wherever they are. As you come south, those things change. We live in a very clean land; in our culture we call it the "land of the white eagle" because of the snow, and that represents clean.
	About 15 years ago at a workshop in Saskatoon, we knew why there were dying trees along the road – acid rain on the lakes. I said at least where I live, that nice clean water. I was introduced to a political scientist. She said the water looks clean but it's not. But I still drink water out of the lake when I camp, but it's getting there.
	We are the world's water purifying system – the swamps and muskegs break down all kinds of pollutants and turns it back to normal. That's one of the benefits of our north; we are the filter for most of the world's water. Each forest plays a role in everything, like rainforest in B.C.
	When we see the damage Fort McMurray is doing to our area – it's 100+ miles from us, but it's still affecting us. So much sulphur is put into the air and it comes down as acid rain. That changes our lake structures and the pH balance. It gets rid of the aquatic life. That oil industry is vastly affecting our area. Our lakes are turning to blue-green algae from the lower pH from acid rain. They have no concern for me if my fishing industry dies, as long as they get the last gallon of oil. They should be a lot more aware. Our government doesn't care about it as long as they get their percentage. It's about money with everything.
	It's mainly the food, for everything. We put seeds out, all kinds of birds come. Food is the main item of why things move around; water's the second one. Because of the Let it Burn policy, fire destroyed their food habitat. It's gone, and I don't know what I could tell you to change that. Go and find caribou moss is the simplest solution I could tell you. In the NWT, pipelines affect them – they are a big barrier.
	On our lake, we have algae on the surface of the water that never was there; what's promoting that algae to grow like that in our lakes? Those are the answers to solve. One day all the fish leave because we can't take notice and say we have to change, or we will lose it. I don't know what to say on the caribou; that's been going since I was young, and they put caribou in CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). Still today they have no answers on how to protect the caribou, so they don't go extinct. Government has been involved in it all over, but nothing changes; they're still declining. All the things we do to try to protect and enhance mean nothing if we're going backwards. The biggest thing is to find the cause – why is it? Probably the main thing is pollution.
Métis Nation – Saskatchewan (MN-S)	When you talk about using local, that's good. For example, we wanted to re-establish the fish population in our lakes, that had been taken out. Government said no, we'll bring you the eggs. We wanted to use the eggs from our own lakes. They said no. Today we have sauger in the lakes that should never ever be there. That's from taking something from somewhere else and bringing it here. You can't take a lady slipper from up north and plant it in Saskatoon and expect it to grow. The environment is not right. But you can plant it up where I live, and it will grow. Using local is the best opportunity to re-establish the vegetation.

BNDN = Birch Narrows Dene Nation' BRDN = Buffalo River Dene Nation' CITES = Convention on International Trade in Endangered Species; CRDN = Clearwater River Dene Nation; JWG = joint working group; MN-S = Métis Nation – Saskatchewan; VC = valued component.

Rook I Project

Environmental Impact Statement

Annex V.1: Aquatic Environment Baseline Report

AQUATIC ENVIRONMENT BASELINE REPORT FOR THE ROOK I PROJECT

Final Report

Prepared by:

Canada North Environmental Services
Saskatoon, Saskatchewan

Prepared for:

NexGen Energy Ltd.
Saskatoon, Saskatchewan

Project No. 3008

September 2021

EXECUTIVE SUMMARY

The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project is located in northwestern Saskatchewan within the southern Athabasca Basin adjacent to Patterson Lake, along the upper Clearwater River system. The objective of the aquatic environment baseline program was to obtain comprehensive information characterizing the aquatic environment within the anticipated area of the Project. This information was used to help determine predicted effects in the Environmental Assessment (EA), to inform Project planning, and to be considered when developing future monitoring programs.

The Aquatic Study Area (ASA) included waterbodies in close proximity to the Project. Extensive sampling occurred in Patterson Lake and downstream waterbodies since the Project is located adjacent to Patterson Lake and it is the proposed site of treated effluent release and water intake. Studies conducted in the aquatic environment included lake morphometry, water and sediment quality, plankton and benthic invertebrate communities, aquatic macrophyte chemistry, and fish and fish habitat investigations.

Lake morphometry can significantly influence physical, chemical, and biological characteristics, and these data provide important information for planning monitoring programs, various types of modelling, and the EA. Lake morphometry data were collected in 2018 and 2019 from Lake G, Lake H, Broach Lake, Hodge Lake, Beet Lake, and Lloyd Lake Inlet. The bathymetric maps produced from the morphometry data provide site characterization information for the ASA.

The water quality monitoring program collected data on a quarterly basis between May 2018 and September 2020 to provide multi-year, seasonal baseline data in the ASA. Long-term water quality monitoring stations were established in 19 areas throughout the ASA. Water quality results illustrated that lakes in the ASA generally contained adequate dissolved oxygen, near neutral pH, and low levels of nutrients and ions. Baseline concentrations of total and dissolved metals and radionuclides were low and similar between waterbodies, seasons, and years, with most concentrations near or below laboratory reportable detection limits (RDL). Parameter concentrations were below applicable guidelines, with the exception of total and dissolved iron in numerous waterbodies throughout the ASA.

Sediment quality samples were collected in fall 2018 from 13 sampling locations, with follow-up sampling occurring in 2019. In general, metal and radionuclide concentrations in the ASA were low; however, mean concentrations of arsenic, vanadium, and polonium-210 exceeded select guidelines in some areas. Sediment concentrations of several metals and radionuclides in Patterson Lake North Arm – West Basin Area 1 were higher than in the other study areas sampled in the ASA. Conversely, Patterson Lake South Arm Area 2 and Beet Lake Area 2 generally had the lowest parameter concentrations, which can likely be attributed to the high coarse sand content.

Phytoplankton and zooplankton samples were collected concurrently with water quality samples in Patterson Lake North Arm – West Basin, Forrest Lake, Beet Lake, and Naomi Lake, Broach Lake, and Hodge Lake in fall 2018. Phytoplankton communities in all lakes were dominated by Cyanophycota (blue-green algae), and this dominance by a single taxon caused low Simpson's evenness values. Zooplankton communities consisted of mainly Cyclopoida crustaceans and Ploima rotifers, although Cladocera crustaceans were also abundant in some areas.

Benthic invertebrate community sampling stations were co-located with sediment chemistry and characterization stations to provide supporting site characterization data for interpretation of benthic invertebrate results. Benthic invertebrate sampling occurred in 13 areas in the fall of 2018 and 3 areas in the fall of 2019. In 11 of the 16 areas surveyed, the most abundant taxon was Chironomidae (non-biting midge larvae). In the other five study areas, numerical dominance was less clear, with abundance being divided more evenly between a number of taxa. Average Simpson's diversity was moderately high at more than half (56%) of the areas while lower diversity occurred in study areas where the communities were dominated by the family Chironomidae.

Aquatic macrophyte samples for chemical analyses were collected in the summers of 2018 and 2019 from Lloyd Lake Inlet, Broach Lake, Jed Creek, Patterson Creek, Beet Creek, and Clearwater River Nearfield. The aquatic macrophyte samples were from the genera *Carex* sp. (sedge) and included sedge shoots and roots along with associated sediment samples. The purpose of this component was to gather data for later comparison or for use in the EA; therefore, no interpretation is provided here.

Fish investigations were conducted throughout the ASA in spring, summer, and fall of 2018, and in the summer of 2019. During the fish surveys, northern pike (*Esox lucius*) were captured in all waterbodies. Other large-bodied fish that were prevalent and abundant in the ASA included lake whitefish (*Coregonus clupeaformis*), longnose sucker (*Catastomus catastomus*), walleye (*Sander vitreus*), white sucker (*Catastomus commersonii*), and yellow perch (*Perca flavescens*). Lake trout (*Salvelinus namaycush*) were found to reside in six waterbodies in the ASA and lake trout eggs were located in several locations in Patterson Lake, Forrest Lake, and Beet Lake during the fall spawning survey. In addition, eggs from Arctic grayling ([*Thymallus arcticus*] Clearwater River only), lake whitefish, northern pike, slimy sculpin (*Cottus cognatus*), sucker spp., walleye, and yellow perch were located during the spawning surveys conducted in the ASA.

Five northern pike and five lake whitefish samples from each of Broach Lake, Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, Clearwater River Nearfield (northern pike only), Lloyd Lake Inlet, Broach Lake, and Hodge Lake were retained and submitted for chemical analyses. The concentrations of metals, trace elements, and radionuclides in northern pike and lake whitefish flesh and bone samples were low, with many parameters near or below the RDL.

Aquatic habitat mapping was conducted during the fish community surveys. The littoral zone of each study area was divided into a series of habitat sections based on physical characteristics, and each habitat section was rated on suitability for providing spawning habitat for the large-bodied fish species known to occur in the ASA. There was a general lack of highly suitable spawning habitat for northern pike in most lakes in the ASA, while substrate types preferred by walleye, lake whitefish, lake trout, and sucker spp. (i.e., sand, gravel, cobble) were more prevalent throughout the ASA providing abundant spawning as well as nursery and rearing habitat for these species.

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Acronym	Definition Aquatic Baseline Report
ASA	Aquatic Study Area
CanNorth	Canada North Environmental Services
CCME	Canadian Council of Ministers of the Environment
CEQC	Canadian Environmental Quality Guidelines
CPUE	Catch per unit effort
DO	Dissolved oxygen
EA	Environmental Assessment
EARMP	Eastern Athabasca Monitoring Program
EEM	Environmental Effects Monitoring
EIS	Environmental Impact Statement
HS	Habitat section
ISQG	Interim Sediment Quality Guideline
LEL	Lowest effect level
NexGen	NexGen Energy Ltd.
NMDS	Non-metric multidimensional scaling
Project	Rook I Project
RDL	Reportable detection limits
SC	Study components
SEQC	Saskatchewan Environmental Quality Guidelines
SOP	Standard Operating Procedures
SSA	Site Study Area
SRC	Saskatchewan Research Council
TOC	Total organic cabon
QA/QC	Quality assurance/quality control
TLU	Traditional Land Use
VC	Valued component
YOY	Young of the year

Units	Definition
cm	centimetres
g	grams
g/L	grams per litre
km	kilometres
m	metres
m²	square metres
µg/g	micrograms per gram
µL/L	microlitres per litre
%	percent

1.0 INTRODUCTION

The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 kilometres (km) east of the Alberta-Saskatchewan border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1.0-1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 1.0-2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The aquatic baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The aquatic baseline program was undertaken to provide context from which Project environmental aquatic effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nations and Métis Groups (collectively referred to as Indigenous Groups) and northern communities, specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples and the unique relationship Indigenous Peoples have with the environment, and recognizes the importance of full and open discussion with interested or potentially affected Indigenous communities regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous and northern communities who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Métis Knowledge throughout the Environmental Assessment (EA) process, and providing funding for Traditional Land Use (TLU) Studies[1] to understand how the proposed Project may interact with the Indigenous communities' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the aquatic baseline program is presented in Appendix A of the Aquatic Baseline Road Map (Annex V).

Canada North Environmental Services (CanNorth) was retained to complete baseline investigations for select study components (SCs) for the Project. The details of studies conducted between May 2018 and March 2020 to characterize the aquatic environment are presented herein.

[1] Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.

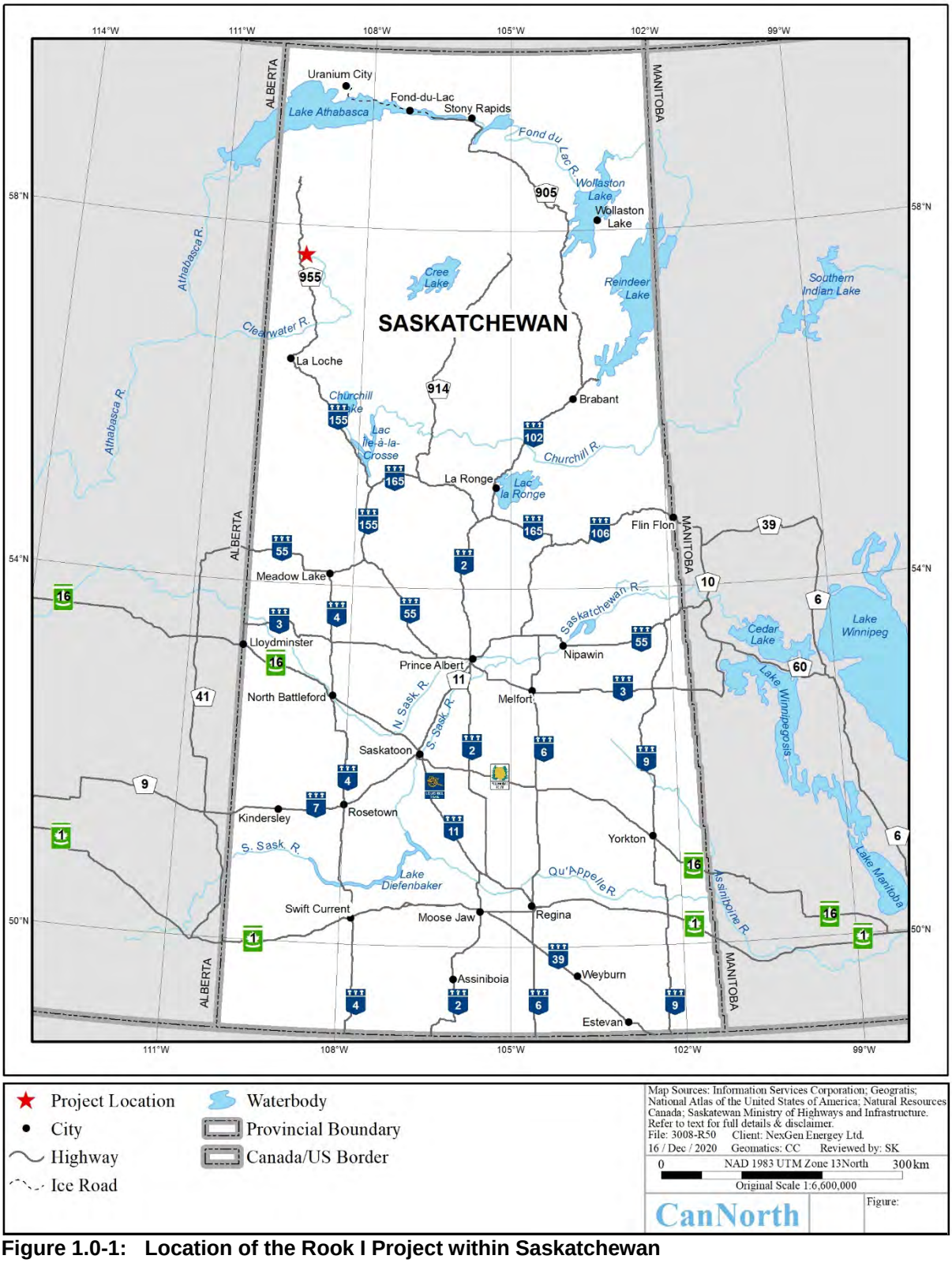


Figure 1.0-1: Location of the Rook I Project within Saskatchewan

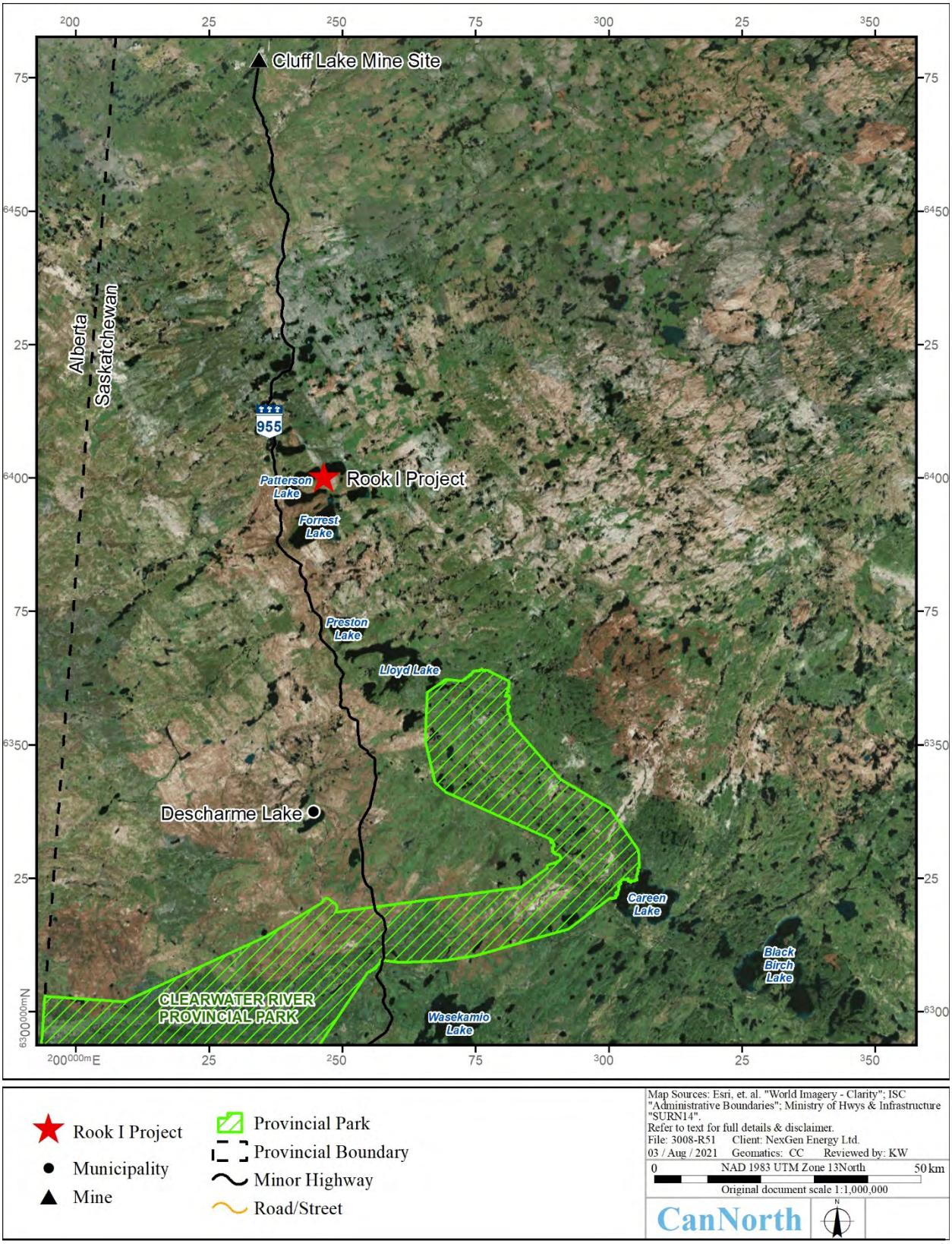


Figure 1.0-2: Location of the Rook I Project within the Region

1.1 Study Objectives

The objective of the aquatic baseline program was to obtain comprehensive information characterizing the aquatic environment within the anticipated area of the Project. All SCs were chosen for their potential to be selected as valued components (VCs) during the EA process, based on best practices for baseline characterization (ENV 2014a; IAAC 2019; CNSC 2020). A VC is an attribute that is scientifically, ecologically, historically, economically, socially, and culturally important to the government, Indigenous Groups, the public, the proponent, and other stakeholders (BC EOA 2013; ENV 2014a).

A lifecycle approach was undertaken for the development and implementation of the Project baseline program that factored in data needs in the short and long term. This information is important for use in the EA and Project planning, and is also integral for consideration in developing future monitoring programs. Baseline data would be essential to compare with data obtained through Project phases should the Project be approved and become operational. Baseline studies completed provide quantitative data collected using accepted standards of good scientific practice and up-to-date sampling procedures and equipment.

To meet regulatory guidance and scientific best practices (ENV 2014a; IAAC 2019; CNSC 2020), numerous field surveys were completed to describe aquatic environmental conditions. Obtaining a plethora of site-specific data was necessary as existing information was not available. The key objectives of the baseline aquatic environment program completed in 2018, 2019, and 2020 by CanNorth were to:

- describe lake morphology;
- characterize water and sediment quality;
- identify and quantify species composition, density, and spatial distribution of phytoplankton, zooplankton, and benthic invertebrate communities;
- characterize baseline aquatic macrophyte and fish chemistry;
- document fish community composition and relative abundance; and
- document critical aquatic habitat with a focus on areas utilized by large-bodied fish species for spawning.

1.1.1 Quality Assurance/Quality Control

All sample collection and handling procedures, including preservation, shipping, and laboratory analyses followed CanNorth Standard Operating Procedures (SOPs) and quality assurance/quality control (QA/QC) protocols. Where applicable, these SOPs are based on methods and procedures described in Environment Canada (2012), procedures developed by standard-setting organizations such as the United States Environmental Protection Agency (U.S. EPA; 2016) and Canadian Standards Association (CSA; 2010), procedures outlined in Environmental Monitoring Guidelines for Mining/Industrial Operations in Saskatchewan (ENV 2014b), and procedures referenced in primary literature. Detailed information on QA/QC procedures and results are provided in Appendix A.

1.2 Study Area

1.2.1 Ecoregion Description

The Project footprint lies in the Boreal Plain Ecozone, with some portions of the Aquatic Study Area (ASA; described below) extending into the Boreal Shield Ecozone. The Project footprint is within the Firebag Hills landscape area of the Mid-boreal Uplands Ecoregion, whereas the larger ASA is encompassed by two

Ecoregions; the Firebag Hills landscape area of the Mid-boreal Uplands Ecoregion and the McTaggart Plain landscape area of the Athabasca Plain Ecoregion.

The Firebag Hills landscape area of the Mid-Boreal Upland Ecoregion is characterized by variable elevational gradients, ranging from 480 m to 580 m above sea level, with both strong and gentle rolling morainic hills (Acton et al. 1998). All water in this landscape area drains westward through the Clearwater River and associated watercourses. Regosolic soils are found predominantly on the eroding slopes of watercourses, whereas Dystric Brunisolic soils are found on more stable slopes and in the upland sections on top of sandy glacial till and glaciofluvial deposits. The vegetation on the northern part of this area is characterized by shrubby jack pine (*Pinus banksiana*) forests that possess lichen understoreys, a consequence of frequent forest fires and the sandy soils that lie beneath (Acton et al. 1998). Conversely, the poorly drained depression areas consist of tamarack (*Larix laricina*) and black spruce (*Picea mariana*) peatlands.

The McTaggart Plain landscape area of the Athabasca Plain Ecoregion has northward sloping hills from the southern point of this area, ranging from 540 metres (m) to 450 m above sea level (Acton et al. 1998). Sandy glaciofluvial deposits and eskers are abundant in the area, where Brunisolic soils can be found on these well-drained slopes and overtop the glacial till plains. Organic soils, Gleysolic soils, and Cryosolic soils dominate the poorly drained depression areas and large flat bogs, with permanently frozen Cryosolic soils occasionally present. Jack pine and black spruce stands dominate the slopes of many eskers, whereas open jack pine forests are exclusive to sandy glaciofluvial areas. The depression/boggy flat areas are covered in dense black spruce forests with stunted trees (Acton et al. 1998).

1.2.2 Aquatic Study Area

The ASA (Figure 1.2-1) was selected based on the watershed designated for proposed treated effluent release, knowledge of information required for an EA and long-term monitoring for similar developments, and consideration of potential cumulative effects. The ASA includes:

- waterbodies and watercourses in close proximity to the Project (Patterson Lake and adjoining creeks, Lake G, and Lake H);
- nearfield waterbodies and watercourses located along the flow path of the proposed treated effluent discharge location (Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, Clearwater River, and adjoining creeks);
- midfield and farfield waterbodies and watercourses located along the flow path of the proposed treated effluent discharge location (Clearwater River near Mirror River, Lloyd Lake, and Warner Rapids on the Clearwater River); these sites are positioned so that predicted effects or lack of effects can be verified in the future;
- waterbodies being assessed to obtain data for aerial dispersion modelling (lakes D and J); and
- waterbodies that could be used as reference areas during the operational phase of the Project (Broach Lake and Hodge Lake).

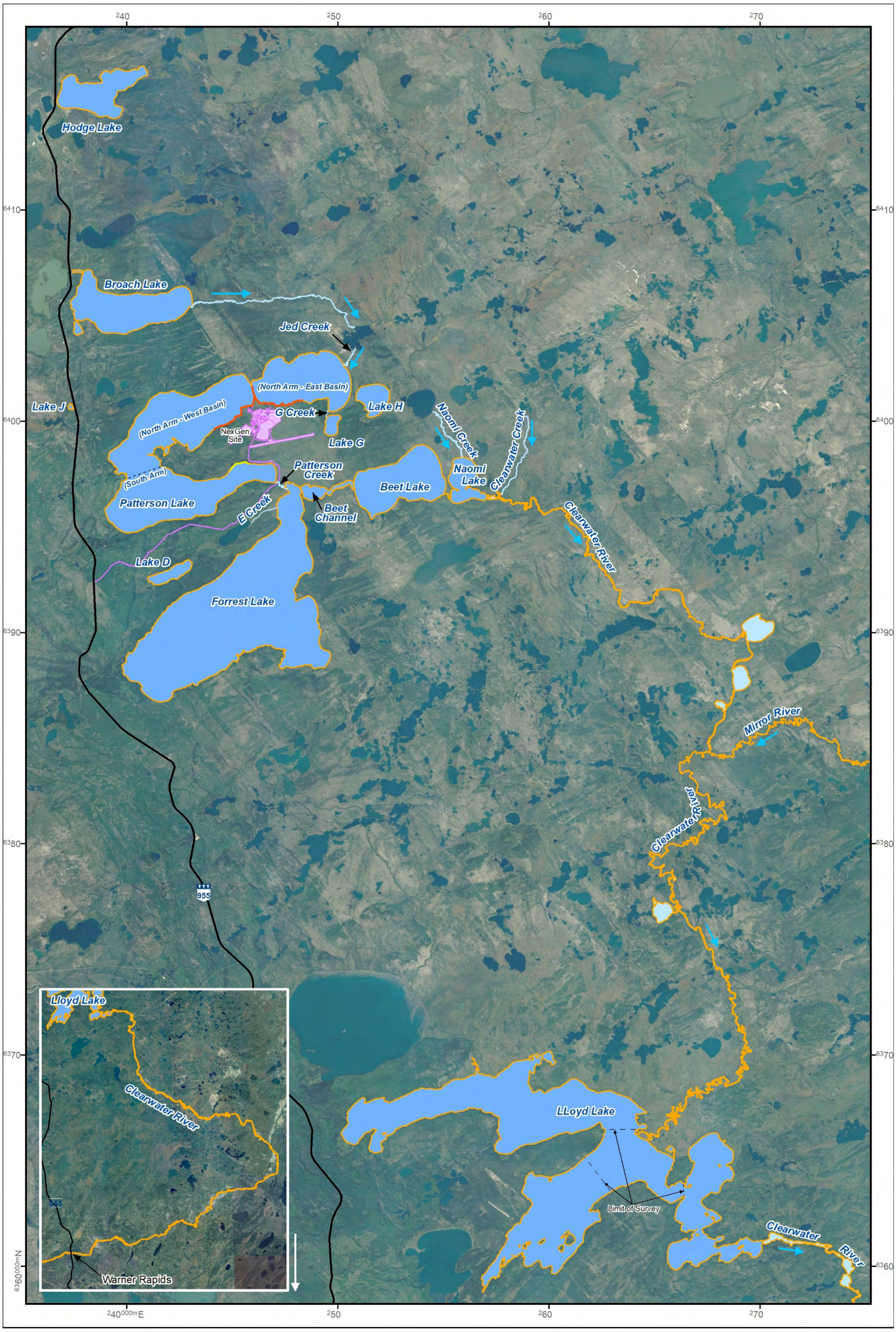


Figure 1.2-1: Overview of Rook I Project Aquatic Study Area, 2018 to 2020

Extensive sampling occurred in Patterson Lake since the Project would be located adjacent to the lake, it is the proposed site of treated effluent release and water intake, and Fission Uranium Corporation's (Fission) Patterson Lake South Property would be located on the west side of Patterson Lake; thus, the potential for local cumulative effects is possible and will be an important component of the EA. Patterson Lake was subdivided into three sections: North Arm – East Basin, which is where the potential fresh water intake would be located; North Arm – West Basin, which is where the potential effluent discharge location would be located; and South Arm, which is downstream of the potential effluent discharge location (refer to Figure 1.2-1). Studies occurred in each of these areas. Focused sampling was completed in select areas of Patterson Lake labeled Camp Study Area (near Project camp) and Mine Site Area (near the proposed mine and proposed locations of treated effluent release and water intake; Figure 1.2-1). The studies that occurred within each area of Patterson Lake are described in the respective SC sections below.

Patterson Lake flows east through a series of lakes connected by the Clearwater River, including Forrest, Beet, and Naomi lakes, before discharging into an extended stretch of the Clearwater River. The headwaters of the Clearwater River are located at the outflow of Broach Lake, and the river extends approximately 300 km. The Clearwater River is located in both Saskatchewan and Alberta, runs through the Clearwater Provincial Park, and has been granted Canadian Heritage River status (CHRS 1997). The Clearwater River is an important component of the ASA given its proximity to potential Project effects. The drainage is highly utilized by Indigenous Groups in the region, and Patterson Lake was identified as a waterbody of value containing numerous important fish species (Firelight Research Inc. 2019a; WD Lewis & Associates Ltd. 2019; Origins Heritage Consulting Inc. 2020). There are no cabins on Patterson Lake; however, there is an outfitter on Forrest and Beet lakes, and a lodge and several cabins on Lloyd Lake.

The Clearwater River flows throughout the ASA and was sampled at numerous locations during the baseline surveys. In order to simplify data collection and reporting, different sections of the Clearwater River were given different names.

Table 1.2-1 shows a brief description of specific sections of the Clearwater River or tributaries of the Clearwater River, and what was referenced in this baseline report.

Table 1.2-1: Description of the Clearwater River and Clearwater River Tributaries Naming in the Report

Waterbody Description		Name in Report
Clearwater River (main stem)	Clearwater River below Broach Lake	-
	Clearwater River above Patterson Lake	Jed Creek
	Clearwater River below Patterson Lake	Patterson Creek
	Clearwater River below Forrest Lake	Beet Channel
	Clearwater River below Beet Lake	Beet Creek
	Clearwater River below Naomi Lake	Clearwater River Nearfield or Clearwater River Area 1
	Clearwater River above the Mirror River Confluence	Clearwater River Midfield 1
	Clearwater River below the Mirror River Confluence	Clearwater River Midfield 2
	Clearwater River at Warner Rapids	Warner Rapids
Clearwater River Tributaries	Tributary inflow to Patterson Lake from Lake G	G Creek
	Tributary inflow to Forrest Lake from Lake E	E Creek
	Tributary inflow to Naomi Lake	Naomi Creek
	Tributary inflow downstream of Naomi Lake	Clearwater Creek
	Mirror River above the Clearwater River Confluence	Mirror River

Due to the targeted study design, some of the sampled waterbodies were surveyed in specific areas rather than the entire lake. This was done on larger waterbodies where potential future effects in certain areas of the waterbody were low. In Lloyd Lake, baseline studies were focused near the inlet area where the Clearwater River enters the waterbody (Figure 1.2-1), and that study area is called Lloyd Lake Inlet.

Baseline studies completed in 2018 focused on acquiring data from areas and SCs of high priority to the Project. In 2019 and 2020, baseline studies continued with the objectives of filling gaps, expanding the study area, completing ongoing monitoring to obtain longer-term data sets for select SCs, and ensuring pertinent SC data were obtained throughout the ASA to inform the EA. Sampling dates, depth, and UTM coordinates of all water, aquatic macrophyte, sediment, and benthic invertebrate sampling stations are provided in Appendix C, Table 1, and information on the studies conducted within each waterbody in the ASA are listed in Table 1.2-2.

Table 1.2-2: Data and Samples Collected in the Aquatic Study Area, 2018, 2019, and 2020

Area	Bathymetry	2018			2019				2020				Plankton	Aquatic Macrophyte Chemistry	Sediment and Benthic Invertebrates	Spring Spawning Survey	Fall Spawning Survey	Fish Community	Fish Chemistry	Habitat Assessment
		Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology	Winter Water Chemistry and Limnology	Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology	Winter Water Chemistry and Limnology	Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology								
Broach Lake	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Hodge Lake	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
Jed Creek		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
Patterson Lake		✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓[a]	✓		✓[a]	✓	✓	✓	✓	✓
Patterson Lake Mine Site Area and Camp Area																✓	✓	✓		✓
Patterson Creek														✓		✓	✓	✓		✓
Forrest Lake	✓	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓[b]	✓		✓[c]	✓	✓	✓	✓	✓
Beet Channel																✓		✓		✓
Beet Lake	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Beet Creek		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓
Naomi Creek																✓		✓		✓
Naomi Lake		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Clearwater Creek																✓		✓		✓
Clearwater River Nearfield		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓[d]	✓
Clearwater River Midfield			✓			✓												✓		✓
Mirror River			✓																	
Lloyd Lake Inlet	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓
Lloyd Lake Outlet		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
Warner Rapids		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
Lake D						✓	✓	✓	✓	✓	✓	✓								
Lake G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓		✓

Area	Bathymetry	2018			2019				2020				Plankton	Aquatic Macrophyte Chemistry	Sediment and Benthic Invertebrates	Spring Spawning Survey	Fall Spawning Survey	Fish Community	Fish Chemistry	Habitat Assessment
		Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology	Winter Water Chemistry and Limnology	Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology	Winter Water Chemistry and Limnology	Spring Water Chemistry and Limnology	Summer Water Chemistry and Limnology	Fall Water Chemistry and Limnology								
Lake H	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓		✓
Lake J						✓	✓	✓	✓	✓	✓	✓								
G Creek																✓				
E Creek																✓				

a) At each of Patterson Lake North Arm – East Basin, North Arm – West Basin, and South Arm.

b) At each of Forrest Lake Area 1 and 2.

c) At each of Forrest Lake Area 1 and Forrest Lake Area 3 or 4.

d) No lake whitefish were captured for chemistry in the Clearwater River.

2.0 LAKE MORPHOMETRY

2.1 Study Objectives

The objectives of the lake morphometry survey were to describe the morphometric characteristics of waterbodies in the ASA and to create bathymetric maps that will continue to be used as site characterization information over the long term. Lake morphometry can significantly influence physical, chemical, and biological characteristics, and these data provide important information for planning monitoring programs, various types of modelling, and the EA.

Lake morphometry data were collected in 2018 from Lake G and Lake H during the summer survey, and from Broach Lake, Hodge Lake, Beet Lake, and Lloyd Lake Inlet during the fall survey. In 2019, lake morphometry data were collected from Forrest Lake during the spring survey. Bathymetric maps for Patterson Lake and Naomi Lake were completed by NexGen or other consultants and are therefore not included herein.

2.2 Methods

Bathymetric mapping data were collected using accepted standards of good scientific practice and up-to-date sampling procedures and equipment. The surveys were conducted in accordance with the CanNorth SOP for Lake Bathymetry, which took into consideration the Standards for Hydrographic Surveys guidelines (CHS 2013). The equipment used for the survey included a Humminbird 999ci HD SI depth sounder mounted on a Zodiac portable boat. Water depth and GPS locations were recorded simultaneously at regular intervals along lake transects. Transects were run for the length and width of each lake in a zig-zag pattern. Bathymetric maps were then produced from this data using AutoCAD® and Surfer software.

Bathymetric mapping of depth contours allows for interpretation of surface area, volume, shoreline length, and shoreline development. Shoreline development is an index relating shoreline length to the circumference of a circle that has the same area as the lake. The smallest possible number is 1.0 for shoreline development, indicating a perfectly circular lake (Cole 1983; Wetzel 1983). As the value increases above 1.0, the shoreline becomes more irregular. Shoreline development is of interest because it reflects the potential for greater development of the littoral (shore) communities, which are usually of higher biological productivity (Wetzel and Likens 1991).

Bathymetric mapping also allows for the calculation of lake volume, which is required for deriving lake flushing rates and volume development. Volume development is a relative expression of the shape of the lake bottom. It compares the shape of the lake to an inverted cone whose height is equal to the maximum depth and whose basal area is equivalent to the lake’s surface area. As the value for volume development approaches 1.0, the shape of the lake bottom approaches the shape of a cone. A waterbody with a smaller volume than a cone would have a value below 1.0, whereas a value greater than 1.0 indicates that the waterbody's basin cross-section is more U-shaped (Wetzel 1983).

2.3 Results

All bathymetric maps are presented in Figure 2.3-1 to Figure 2.3-7. Morphometric results from each waterbody are summarized in Table 2.3-1, while the percent volume by depth is included within each bathymetric map. The shoreline and volume development of the Lloyd Lake Inlet area are not reported as only the study area was surveyed, not the entire lake.

Table 2.3-1: Morphometric Data for Select Lakes in the Aquatic Study Area

Morphometric Characteristic	Beet Lake	Broach Lake	Forrest Lake	Hodge Lake	Lake G	Lake H	Lloyd Lake Inlet
Number of Islands	0	0	0	0	0	0	0
Shore Length (km)	13.27	16.00	39.40	13.02	3.05	5.07	13.02
Mean Depth (m)	10.73	25.90	26.48	17.06	1.38	1.41	3.80
Maximum Depth (m)	33.70	82.50	84.70	45.60	3.40	8.18	21.21
Surface Area (ha)	887.11	933.57	4283.96	545.83	59.33	168.33	637.44
Volume (Mm^3)	95.23	241.82	1134.36	93.13	0.82	2.38	24.21
Shoreline Development	1.26	1.48	1.70	1.57	1.12	1.10	-
Volume Development	0.96	0.94	0.94	1.12	1.22	0.52	-

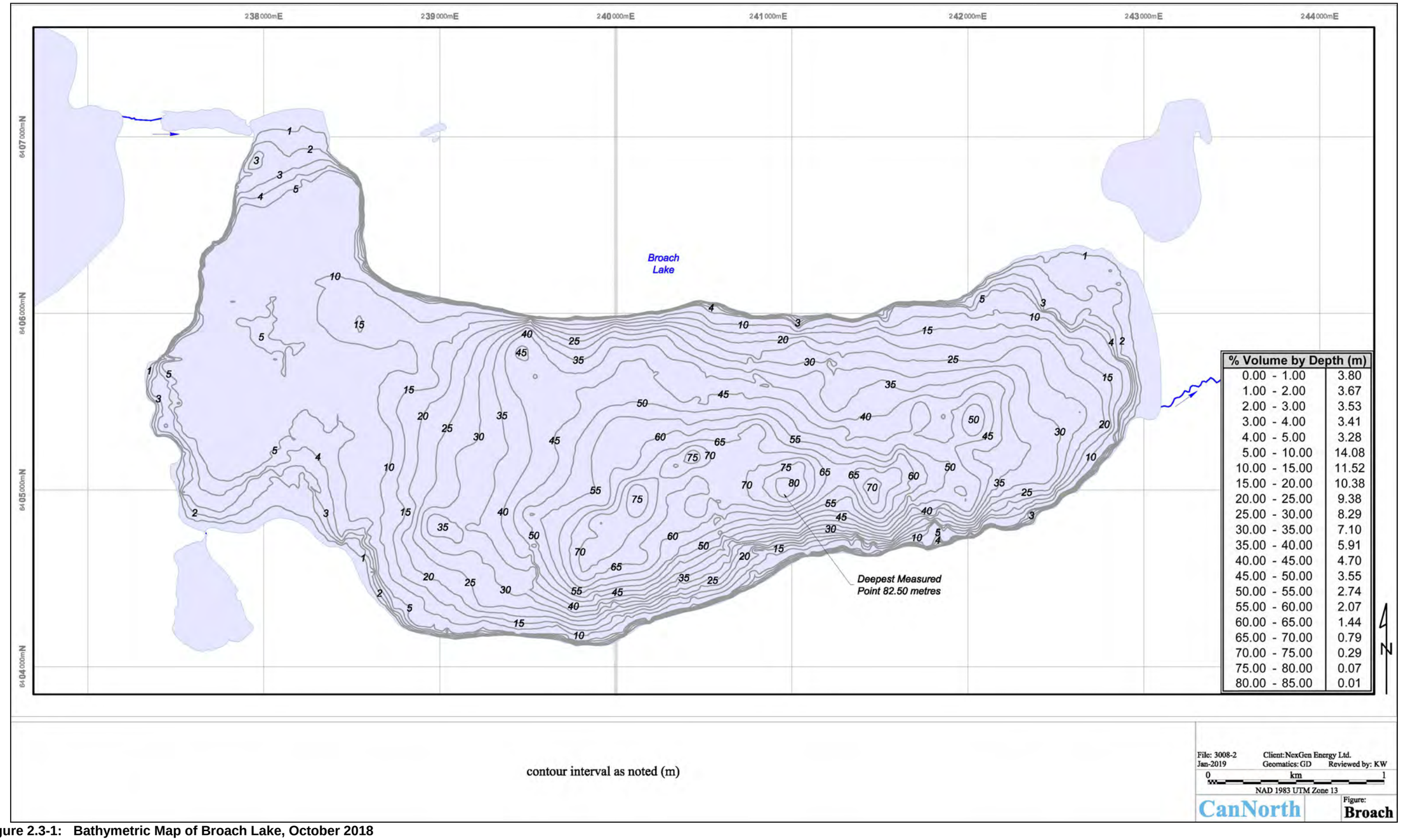


Figure 2.3-1: Bathymetric Map of Broach Lake, October 2018

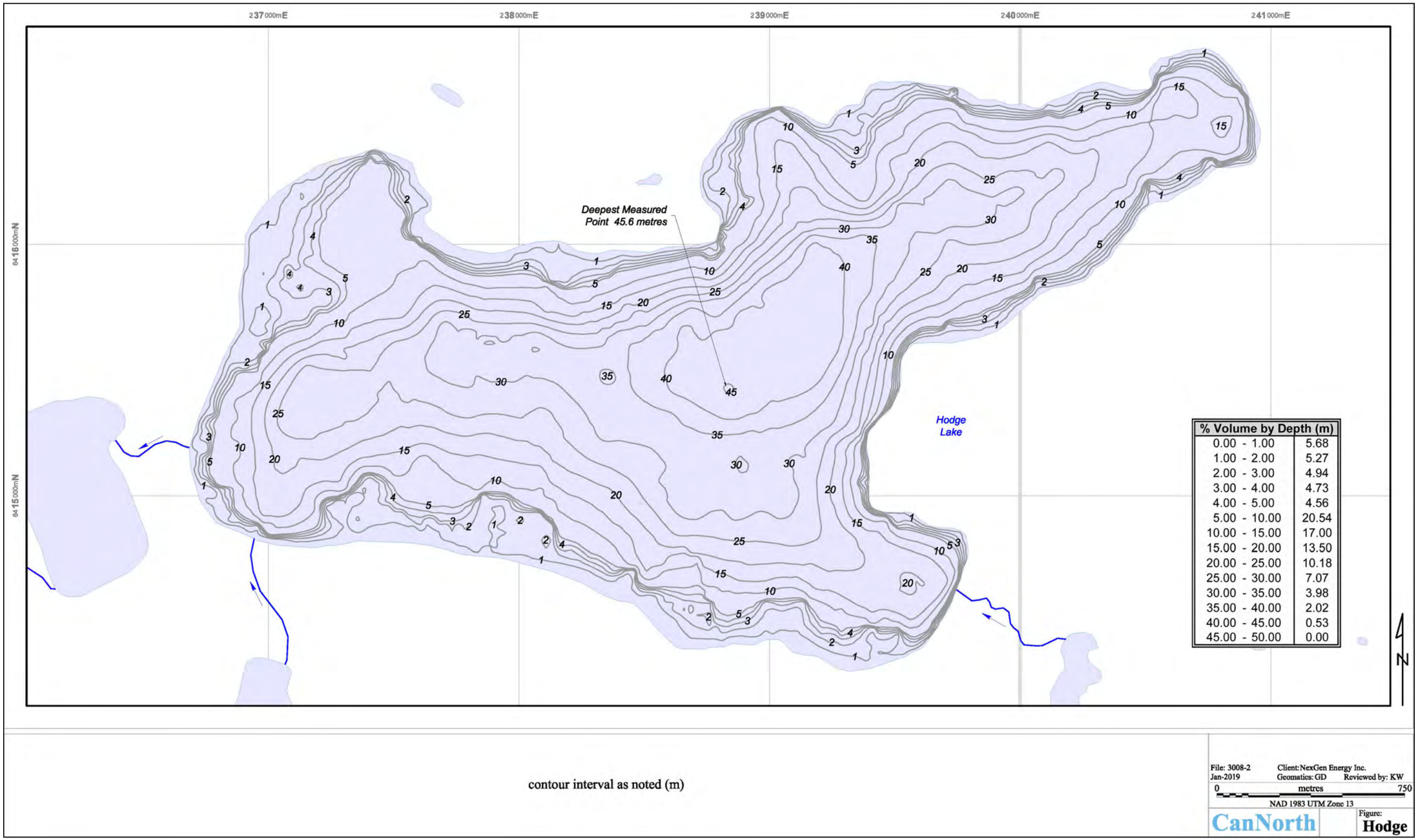


Figure 2.3-2: Bathymetric Map of Hodge Lake, September 2018

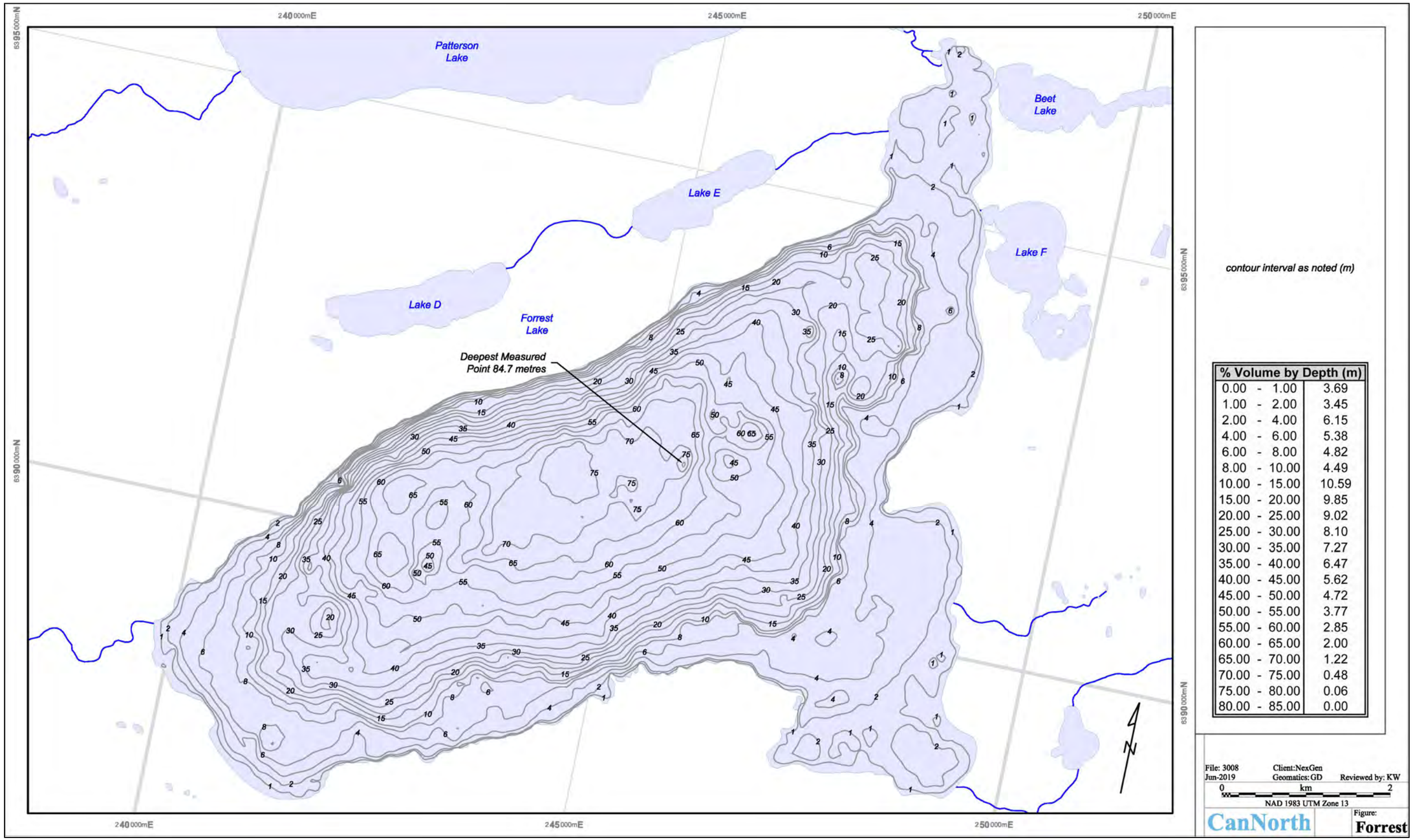


Figure 2.3-3: Bathymetric Map of Forrest Lake, May 2019

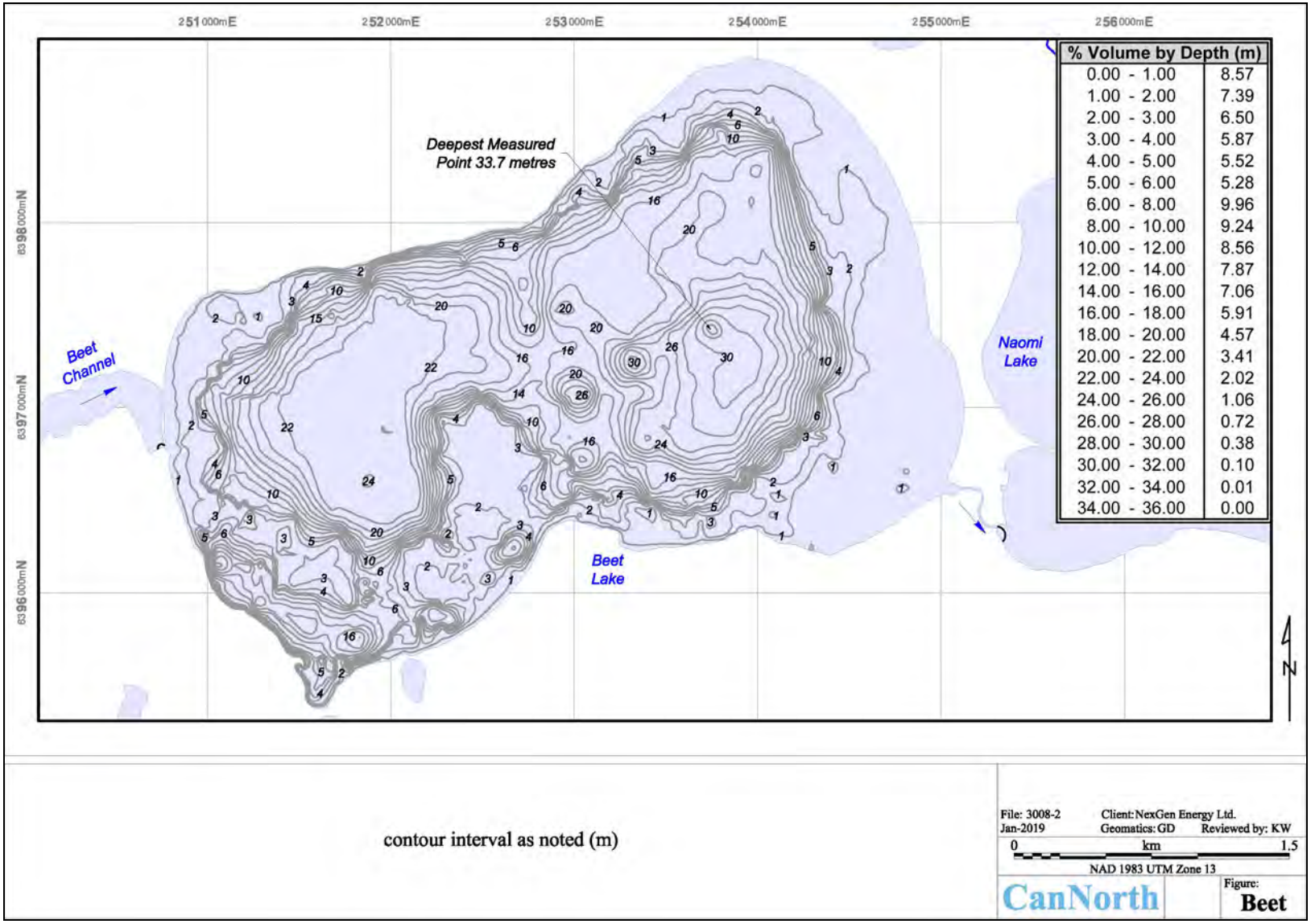


Figure 2.3-4: Bathymetric Map of Beet Lake, October 2018

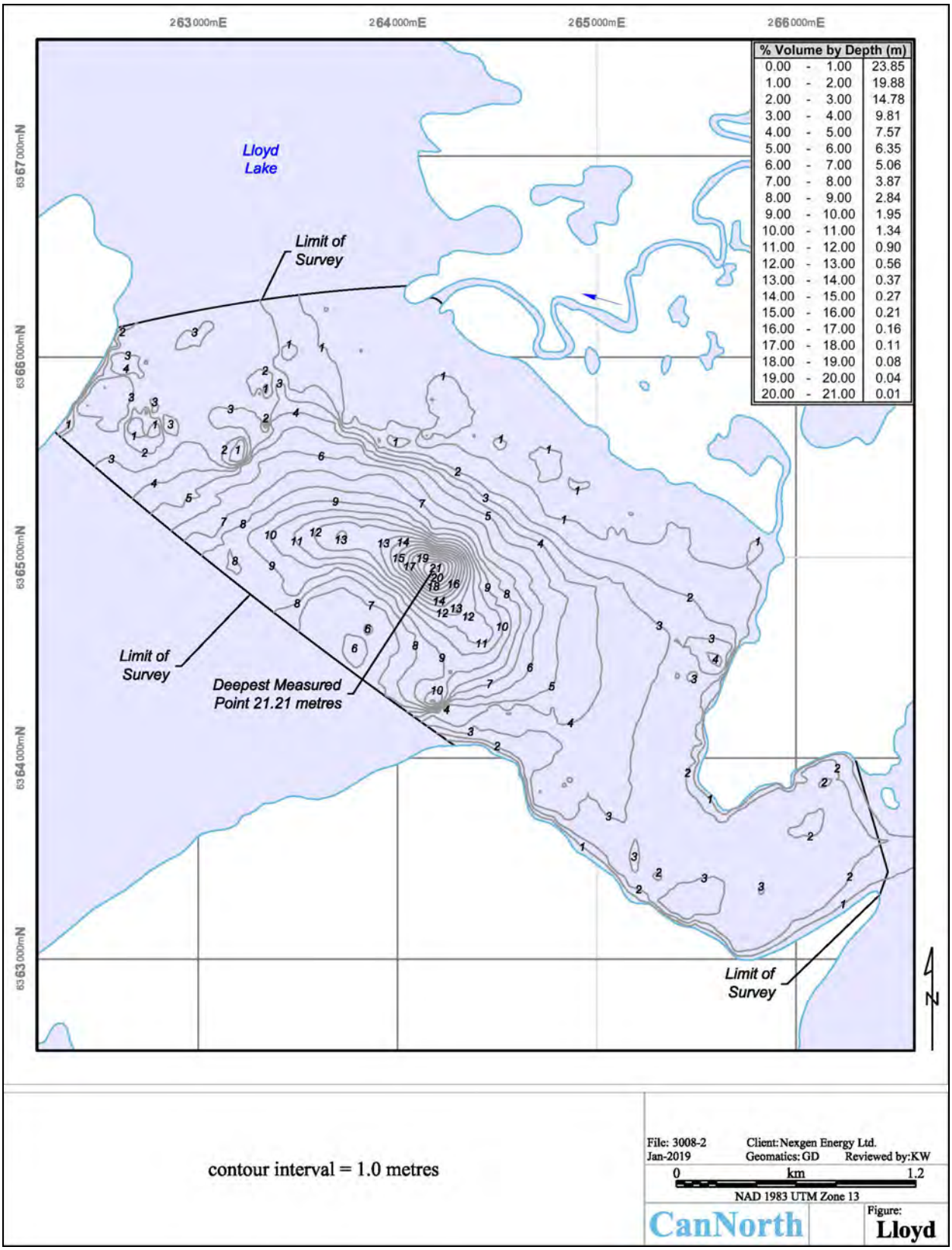


Figure 2.3-5: Bathymetric Map of Lloyd Lake Inlet, September 2018

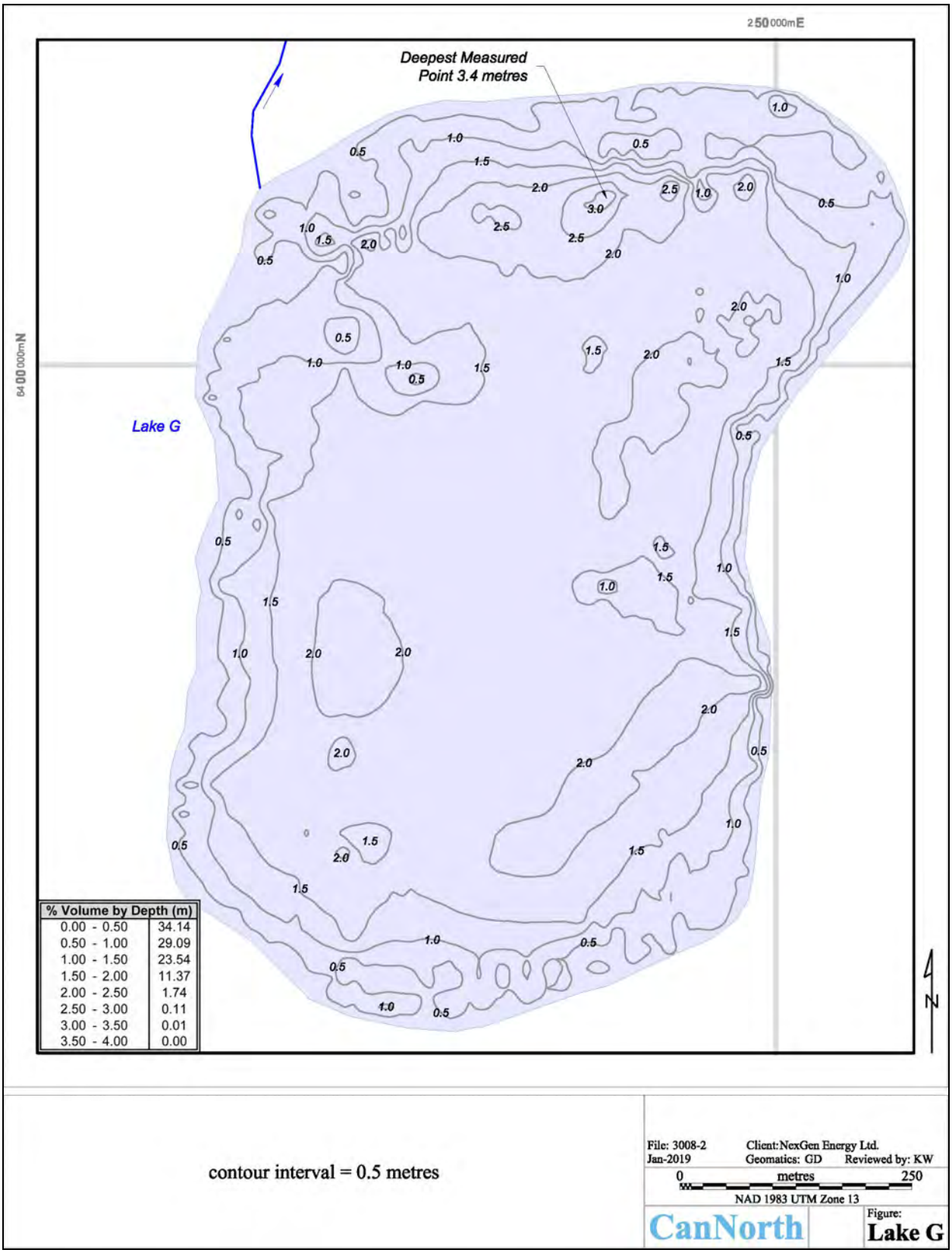


Figure 2.3-6: Bathymetric Map of Lake G, August 2018

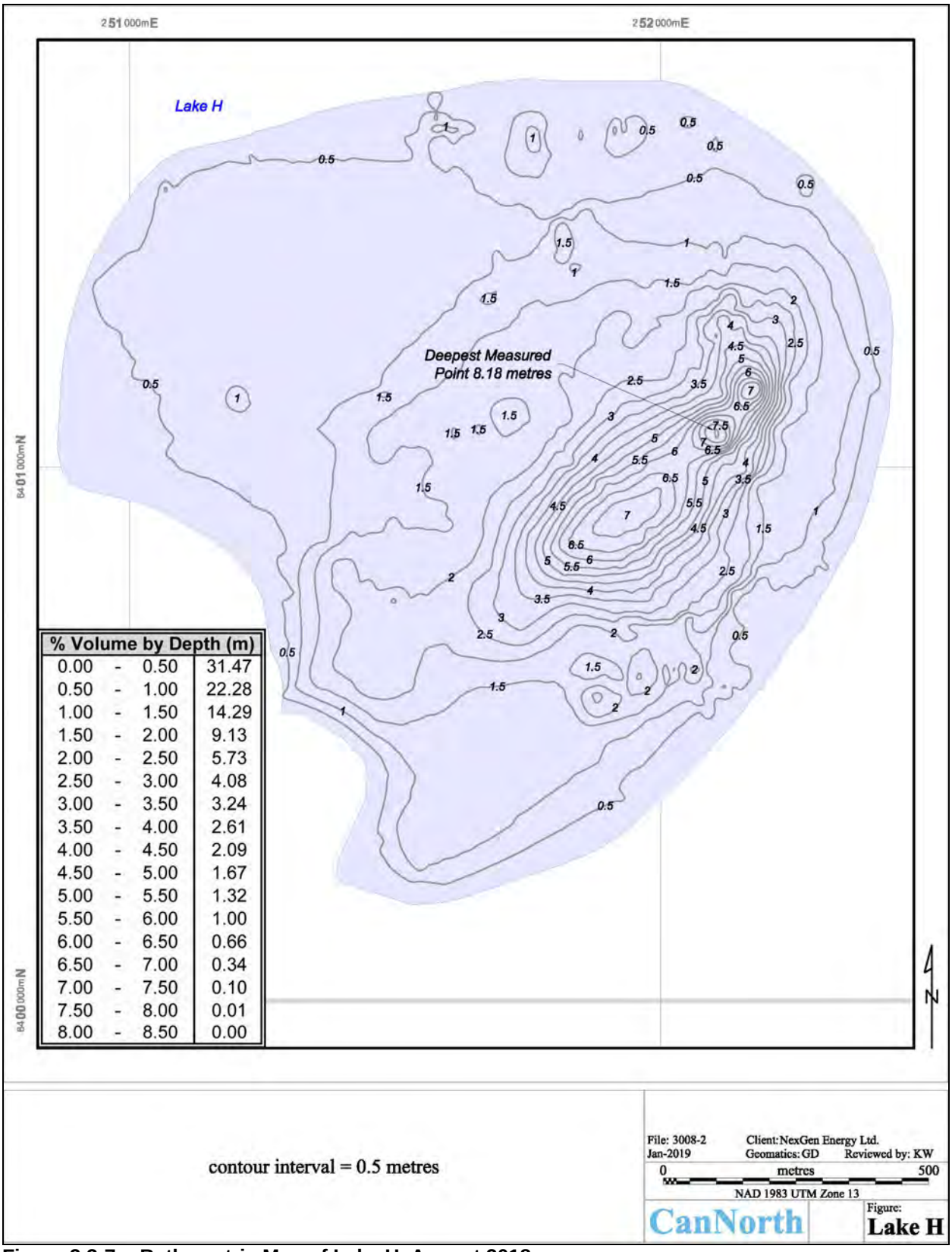


Figure 2.3-7: Bathymetric Map of Lake H, August 2018

3.0 WATER QUALITY

3.1 Study Objectives

The objective of the water quality monitoring program was to provide an understanding of existing baseline conditions in the ASA, and to provide a baseline for which future conditions can be compared. Water quality is important to Indigenous communities in the region (Firelight Research Inc. 2019a,b; WD Lewis & Associates Ltd. 2019; YNLR 2020; Origins Heritage Consulting Inc. 2020; CNSC 2020), and conducting extensive, multi-year studies documenting baseline water quality throughout the ASA provides valuable information for the EA, cumulative effects assessment, and future monitoring.

3.2 Methods

The field surveys were conducted in accordance with the CanNorth SOP for Water Quality surveys, which are based on best practices recommended in numerous guidance documents (Government of Alberta 2006; CCME 2011, EC 2012; BCMOE 2016; Green et al. 2015). The Canadian Council of Ministers of the Environment (CCME) recommends sampling rivers a minimum of four times per year (during periods of both high and low water stage) and sampling lakes a minimum of one time per year during turnover (CCME 2015). Baseline data should illustrate the seasonal and inter-annual variability in baseline surface water quality (IACC 2019). In order to meet these recommendations and objectives, water quality data in all study areas were collected seasonally in the winter, spring, summer, and fall over multiple years (Appendix C, Table 1).

The number of samples required to achieve a certain monitoring precision depends on the variability of the water quality variables measured (CCME 2015). The waterbodies sampled in the ASA showed low variability throughout the different sampling periods, with many parameters having values below reportable detection limits (RDLs); thus, because of the low variability, the samples collected as part of this program (n=1 per station per sampling period) were deemed sufficient.

3.2.1 Sample Location

Figure 3.2-1 to Figure 3.2-3 depict the location of the long-term water quality monitoring areas established in the ASA for the collection of seasonal water quality data (both *in situ* limnological data and water chemistry samples). A summary of the sampling locations is provided in Table 3.2-1, while details including sampling dates, UTM coordinates, and maximum depths for each sampling location are provided in Appendix C, Table 1.

Sampling locations encompassed lentic and lotic environments from less than 1 m in depth to up to 84 m in depth. Water quality monitoring was initiated in the spring of 2018 and collected over multiple years to ensure adequate, seasonal data were available to inform the EA process. As project details were refined and additional baseline data were collected over the 2018 to 2020 period, some modifications were completed to the water quality program to ensure comprehensive baseline water quality data were available to inform future decisions. Modifications from the initial spring 2018 design included:

- The addition of Hodge Lake as a second reference lake after its identification and confirmation as a suitable potential future reference area during the 2018 summer survey.
- The re-location of the water quality monitoring area in Broach Lake to the deepest area in the lake (from Area 1 to Area 2) after the completion of the bathymetric survey in the summer of 2018.

Sampling in the deepest location of the waterbody provides accurate and reliable basin coverage, which includes depth sampling in thermally stratified waterbodies (CCME 2015).

- The addition of Lake D and Lake J to the sampling program in the winter of 2019.
- The sampling of the deep area of Lake G and Lake H, when accessibility allowed[2].
- Additional midfield sampling on the Clearwater River and Mirror River when helicopter access was available.

Table 3.2-1: Summary of Water Quality Monitoring Locations in the Aquatic Study Area

Habitat	Water Quality Monitoring Areas	2018			2019				2020				Sample Depth (m)
		Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	
Lentic	Broach Lake Area 1/Area 2[a]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	5.2/84
	Hodge Lake Area 1	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	38.0
	Patterson Lake North Arm - East Basin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	20.0
	Patterson Lake North Arm - West Basin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	28.1
	Patterson Lake South Arm Area 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	46.0
	Forrest Lake Area 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1.0
	Forrest Lake Area 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	22.2
	Beet Lake Area 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	31.5
	Naomi Lake	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	5.7
	Lloyd Lake Inlet	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	5.5
	Lloyd Lake Outlet	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.5
	Lake D	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	4.0
	Lake G Area 1/Area 2[b]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.4/2.3
	Lake H Area 1/Area 2[b]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.3/8.5
	Lake J	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	2.7
Lotic	Jed Creek	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.5
	Beet Creek	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.5
	Clearwater River Area 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.5
	Clearwater River Midfield 1	-	✓	-	-	-	-	-	-	-	-	-	0.4
	Clearwater River Midfield 2	-	✓	-	-	-	-	-	-	-	-	-	0.6
	Clearwater River Midfield 3	-	-	-	-	✓	-	-	-	-	-	-	0.5
	Mirror River	-	✓	-	-	-	-	-	-	-	-	-	0.7
	Warner Rapids	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.4

a) The water quality sampling location in Broach Lake was moved to the deep area (Area 2, bolded) in the fall of 2018, identified following bathymetric survey.

b) Due to access difficulty, sampled near shore from Area 1 except in winter sampling periods or when helicopter was available (Area 2, bolded).

[2] Lakes G and H were only accessible by foot during the spring, summer, and fall surveys. During these surveys, the lake was sampled from a shoreline location (Area 1), with the exception of the 2018 summer and fall surveys, where a helicopter was available, and the lakes were sampled from the deepest location (Area 2). These lakes were accessible by snowmobile in the winter seasons, thus the 2019 and 2020 winter surveys were also sampled at Area 2.

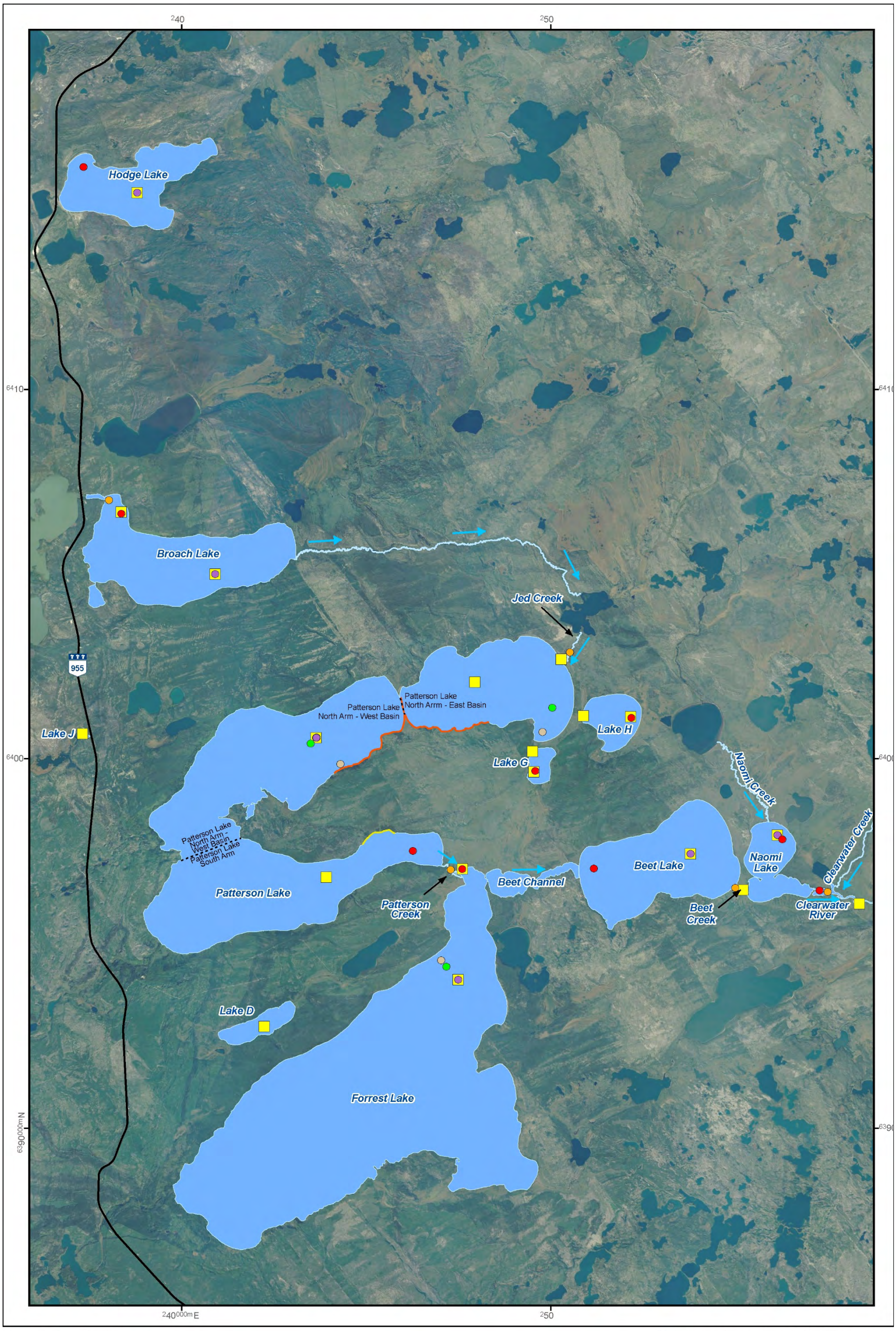


Figure 3.2-1: Plankton, Sediment, Benthic Invertebrate, Macrophyte, and Water Quality Sampling Locations, 2018 to 2020

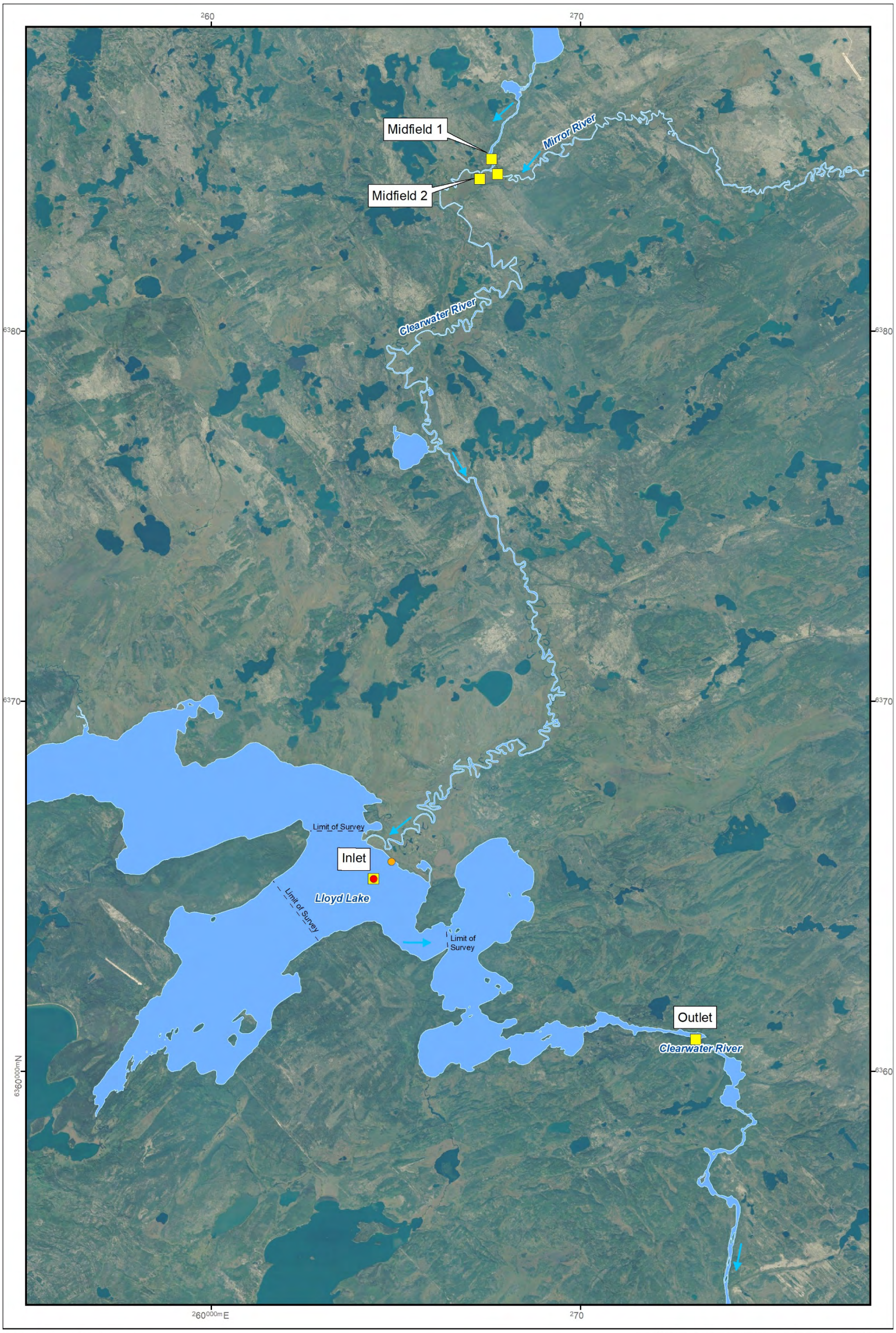


Figure 3.2-2: Aquatic Macrophyte, Sediment, Benthic Invertebrate, and Water Quality Sampling Locations, 2018 to 2020

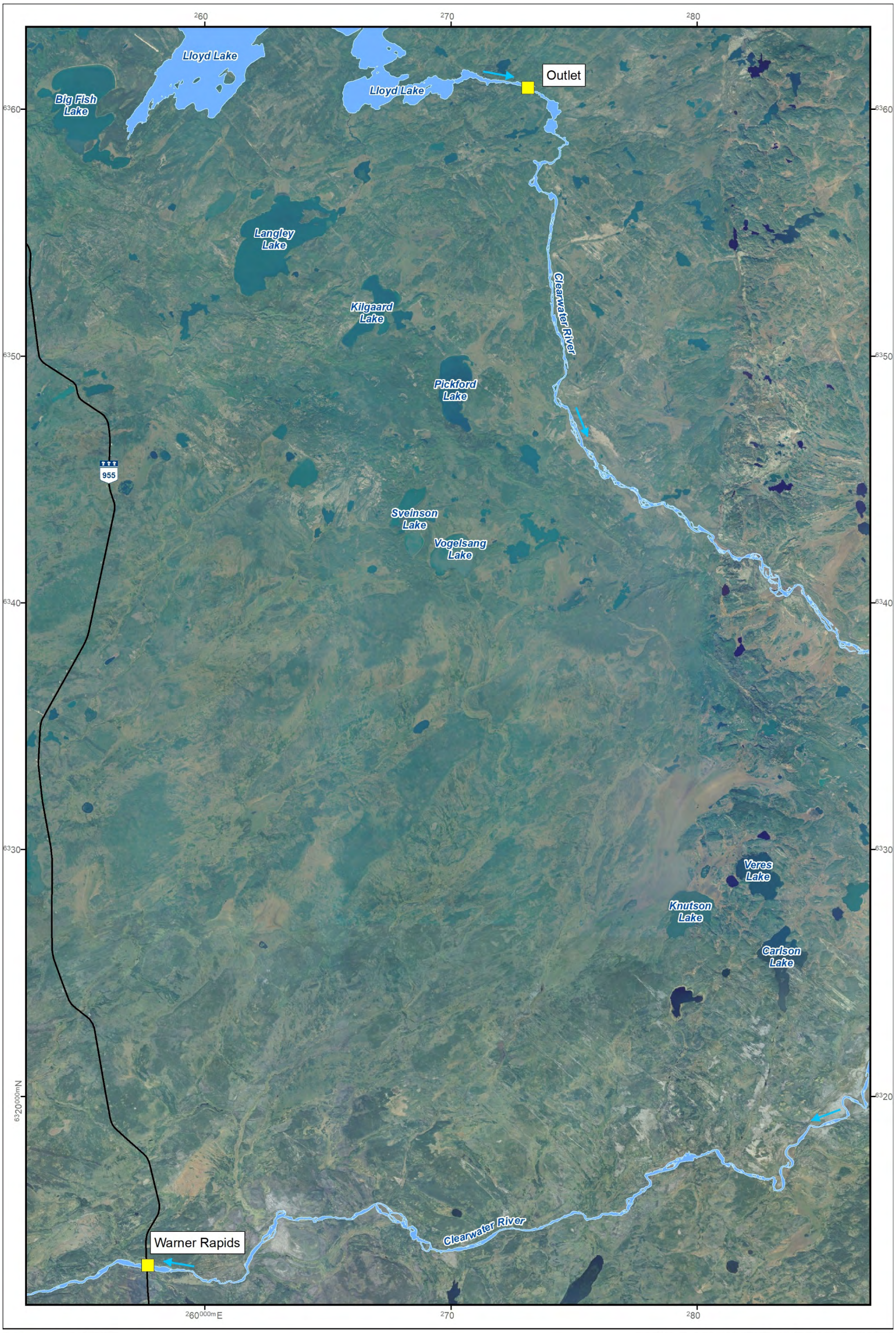


Figure 3.2-3: Water Quality Sampling Locations, 2018 to 2020

3.2.2 Sample Collection

3.2.2.1 Limnology

At each of the water quality monitoring locations, physiochemical parameters were measured *in situ* with YSI multi-probe meters to provide baseline water quality information (IACC 2019). *In situ* measures included temperature, specific conductance, dissolved oxygen (DO), and pH. Additionally, water transparency and ice thickness measurements were collected. Water transparency was measured using a standard black and white Secchi disk (20-cm diameter).

To determine the measurement interval for the vertical profiles, three categories were utilized reflecting total depth: less than 1 m; 1 m to 3 m; and greater than or equal to 3 m. Lotic sampling locations tended to be less than 1 m deep (Table 3.2-1) and consisted of surface measures only. Additionally, surface measurements were collected from Lloyd Lake Outlet, Lake G Area 1, and Lake H Area 1, where sample depths were less than 1 m (Table 3.2-1). Limnology depth profiles from sampling locations 1 m to 3 m deep were recorded at 0.5 m intervals. This included Forrest Lake Area 1, Lake H Area 2, and Lake J (Table 3.2-1). The remaining sampling locations were 3 m in depth or greater (Table 3.2-1), and profile measurements were collected at 1 m depth intervals. It should be noted that during the 2019 summer sampling period, the pH probe on the YSI multi-meter with the 100-m long cable was not functioning properly; thus, measurements of pH could only be taken to a depth of 30 m. Limnology data taken from the complete vertical profiles are available from the summers of 2018 and 2020; therefore, adequate pH data are provided.

3.2.2.2 Chemistry

Water samples were collected concurrently with the limnological measurements. All water samples except those collected from locations less than 1 m in depth were collected for chemical analyses with either a Kemmerer or Van Dorn water sampler. For monitoring locations less than 1 m deep (either lentic or lotic), samples were collected using a surface hand grab. For monitoring locations between 1 m and 2 m deep, samples were collected from mid depth with either a Kemmerer or Van Dorn water sampler. For monitoring locations greater than 2 m in depth, composite water samples consisting of water from top, middle, and bottom of the water column were taken. In 2019 and 2020, in instances where a thermocline was present, discrete samples were collected from both above and below the thermocline. Samples were field filtered and preserved in the field as required, prior to submission to the laboratory for chemical analysis.

A comprehensive QA/QC program was completed for the aquatic baseline program, including collection of trip blank, field blank, and duplicate water samples. The details of this program are provided in Appendix A along with the RDLs and laboratory precision for each parameter.

3.2.3 Laboratory Analyses

Chemical analyses were completed by the Saskatchewan Research Council (SRC) in Saskatoon for the parameters identified in Table 3.2-2. Parameters were chosen based on standard measures of water quality characterization along with parameters specific to uranium mining (CSA 2010). Following a gap analysis and additional refinement of the baseline program, additional water quality parameters were added to the program in 2019. Analyses of the chosen parameters provided baseline surface water quality data for physicochemical parameters (pH, electrical conductivity, turbidity) and relevant chemical constituents (major and minor ions, trace metals, radionuclides, nutrients, and organic compounds) (IACC 2019).

Table 3.2-2: Water Chemistry Parameters

Parameters	
Inorganic Ions and Physical Properties	Alkalinity, Bicarbonate, Calcium, Carbonate, Chloride, **Colour**, Fluoride, Hydroxide, Magnesium, Potassium, pH, Sodium, Specific Conductivity, Sum of Ions, Sulphate, Total Dissolved Solids, Total Hardness, Total Suspended Solids, Turbidity
Nutrients	Ammonia as Nitrogen, **Ammonia as Nitrogen Dissolved**, Nitrate + Nitrite, Total Organic Carbon, Dissolved Organic Carbon, Phosphorus, **Dissolved Phosphorus**, Total Kjeldahl Nitrogen, Nitrate as Nitrogen, **Nitrate as Nitrogen Dissolved**
Metals and Trace Elements	Aluminum, Antimony, Arsenic, Barium, Beryllium, **Bismuth**, Boron, Cadmium, **Cesium**, Chromium, Cobalt, Copper, Iron, Lead, **Lithium**, Manganese, Mercury, Molybdenum, Nickel, **Rubidium**, Selenium, Silver, Strontium, **Tellurium**, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc, **Zirconium**
Dissolved Metals	**Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Cesium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Rubidium, Selenium, Silver, Sodium, Strontium, Tellurium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc, Zirconium**
Radionuclides	Lead-210, Polonium-210, Radium-226, Thorium-230
Isotopes	**Deuterium/Hydrogen, ^{18}Oxygen/^{16}Oxygen, Tritium**

Bolded parameters were new to the program in 2019.
Isotopes were only collected in the 2019 winter and spring, and 2020 summer surveys.

3.2.4 Data Analyses

Seasonal limnology data were summarized with basic descriptive statistics (mean, standard deviation, minimum, and maximum of measurements taken through the water column inclusive of all years) in tabular format to provide an overview. In addition, depth profiles of temperature, DO, specific conductance, and pH were summarized graphically for water sampling locations greater than or equal to 3 m in depth. Field measured DO and pH were compared to the Saskatchewan Environmental Quality Guidelines (SEQG; GS [2020]) for the protection of freshwater aquatic life. The guideline for pH is derived from the Canadian Environmental Quality Guidelines (CEQG; CCME [2019]) and the guideline for DO is derived from the Environmental Quality Guidelines for Alberta Surface Waters (EQGASW; ESRD [2014]).

Seasonal water chemistry data were summarized with basic descriptive statistics (mean, standard deviation, minimum, maximum, and number of samples below the RDLs inclusive of all years) in tabular format to provide a general overview. Water chemistry parameters were compared to the available SEQGs (GS 2020), and if SEQGs were unavailable, then Federal Environmental Quality Guidelines (FEQGs) (GC [2019]) were used. In addition, the updated molybdenum guideline provided in the Saskatchewan Surface Water Quality Objectives (WSA 2018) was used.

3.3 Results

3.3.1 Limnology

Detailed limnological data from the 2018, 2019, and 2020 surveys are presented in Appendix C, Tables 2 to 12. Water quality conditions were described based on water clarity (light penetration), temperature, DO, specific conductance, and pH measurements; discussions for each component are provided below.

3.3.1.1 Overview

Water clarity was high overall in the deeper lakes within the ASA, with average Secchi depths of 5.4 m at lentic water quality monitoring areas with maximum depths over 3 m. Of these lakes, the deeper sampling area in Forrest Lake (Area 2) tended to show the greatest water clarity, with Secchi depths ranging between

7.0 m and 16.0 m. Conversely, of the water quality sampling areas with depths greater than 3 m, Naomi Lake tended to have the lowest clarity with Secchi depths ranging between 1.3 m and 2.5 m. Within Patterson Lake, water clarity was greatest in the North Arm – West Basin as well as in the South Arm, with Secchi depths ranging from 5.0 m up to 9.8 m. Patterson Lake North Arm – East Basin had shallower Secchi depths, ranging from 2.5 m to 5.7 m. Seasonally, water clarity based on Secchi depths was mainly highest in the summer, particularly at the deeper sampling locations. At shallower water quality sampling areas, Secchi depths tended to reach, or nearly reach, the bottom. A summary of the readings is provided in Table 3.3-1[3].

A seasonal summary of water temperatures measured at the water quality monitoring areas within the ASA is provided in Table 3.3-2. Overall, as anticipated water temperatures varied seasonally and based on the monitoring area's sampling depth. The lowest temperatures were recorded during the winter sampling events and the highest temperatures were recorded during the summer sampling events. Additionally, in the winter, overall the deeper sampling areas tended to have warmer water temperatures (e.g., Broach Lake = 2.9 ± 0.7 ºC) and the shallower sampling areas had the coldest water temperatures (e.g., Forrest Lake Area 1 = 0.2 ± 0.1 ºC). Conversely, during the summer, the deepest sampling locations had the coldest overall average water temperatures (e.g., Broach Lake = 7.1 ± 4.4 °C) and the shallower sampling locations had the warmest temperatures (e.g., Forrest Lake Area 1 = 20.3 ± 1.8 °C).

A seasonal summary of DO concentrations measured at the water quality monitoring areas within the ASA is provided in Table 3.3-3. DO concentrations were compared to SEQG, which states DO concentrations should not be lower than 9.5 mg/L for cold-water biota in early life stages and 6.5 mg/L for cold-water biota in other life stages. During the spring and fall sampling periods, DO levels largely remained near to or above the SEQG of 9.5 mg/L. Summer DO levels in the ASA were generally lower than in the spring and fall, which is expected with higher water temperatures increasing the likelihood of thermal stratification and decreased mixing of the water column (discussed in Section 3.3.1.2). Additionally, in the winters of 2019 and 2020, DO concentrations were below the SEQG for the majority of the shallower lentic sampling areas, including lakes D, G, H, and J, where sampling took place under ice cover. As illustrated in Table 3.3-3, DO levels can be naturally below guidelines in all seasons and this does not necessarily imply adverse effects. Natural DO concentrations in lakes can vary due to climatic conditions, watershed characteristics, morphometry, etc. The guidelines should therefore be used as a screening tool to evaluate the monitoring data in lakes (AEP 1997)

Field measurements of specific conductance were fairly consistent in waterbodies across all seasons (Table 3.3-4). Specific conductance ranged from 5.1 µS/cm in Lake J to 121.7 µS/cm in Lake G. Lake J consistently had the lowest average specific conductance during all sampling periods, whereas Forrest Lake Area 2 had the highest average specific conductance in all seasons except winter. Similarly, field measured pH was fairly consistent across sampling areas and near neutral, with measurements averaged through the water column predominantly within the SEQG recommended range of 6.5 to 9.0 (Table 3.3-5).

[3] Secchi depth measurements were not taken during winter sampling periods.

Table 3.3-1: Summary of Secchi Disc Depths from Water Quality Monitoring Areas within the Aquatic Study Area

Habitat	Water Quality Monitoring Area	Station Depth (m)	Spring				Summer				Fall			
			Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Lentic	Broach Lake	84	6.6	1.2	5.3	7.5	7.4	2.1	5.2	9.3	7.6	0.6	7.0	8.2
	Hodge Lake	38	5.5	1.3	4.6	6.4	8.0	1.0	7.0	9.0	6.0	1.6	4.2	7.0
	Patterson Lake North Arm - East Basin	20	3.5	0.9	2.5	4.2	5.2	0.5	4.8	5.7	3.3	0.3	3.1	3.5
	Patterson Lake North Arm - West Basin	28.1	6.2	1.2	5.0	7.3	8.7	0.9	8.0	9.8	6.6	1.1	5.3	7.4
	Patterson Lake South Arm	46	5.9	0.9	5.0	6.8	8.2	0.3	8.0	8.5	6.7	1.0	6.0	7.8
	Forrest Lake Area 1	1	1.2	0.0	1.2	1.2	1.2	0.2	1.0	1.3	1.2	0.2	1.0	1.4
	Forrest Lake Area 2	22.2	9.1	2.1	7.2	11.3	11.8	3.7	9.0	16.0	8.6	2.1	7.0	11.0
	Beet Lake	31.5	4.7	0.3	4.5	5.0	6.2	0.8	5.5	7.1	4.6	0.5	4.0	5.0
	Naomi Lake	5.7	1.7	0.2	1.5	2.0	1.9	0.5	1.5	2.5	1.8	0.4	1.3	2.1
	Lloyd Lake Inlet	5.5	2.3	0.2	2.0	2.4	3.1	1.0	2.2	4.1	2.4	0.6	1.8	3.0
	Lloyd Lake Outlet	0.5	1.1	0.8	0.5	1.7	0.5	0.0	0.5	0.5	0.4	-	0.4	0.4
	Lake D	4.0	3.1	0.2	2.9	3.3	3.0	0.1	2.9	3.0	3.1	0.5	2.8	3.5
	Lake G	0.4/2.3	0.5	-	0.5	0.5	0.8	0.3	0.5	1.1	1.0	0.6	0.5	1.6
	Lake H	0.3/8.5	1.0	1.0	0.3	2.2	1.1	1.1	0.5	2.5	1.2	1.4	0.3	2.75
	Lake J	2.7	1.6	0.4	1.3	1.9	1.8	0.3	1.6	2.0	2.3	0.1	2.3	2.4
Lotic	Jed Creek	0.5	0.5	0.1	0.4	0.5	0.5	0.1	0.4	0.5	0.5	0.1	0.4	0.5
	Beet Creek	0.5	0.7	0.2	0.5	0.9	0.6	0.2	0.5	0.8	0.5	0.1	0.5	0.6
	Clearwater River	0.5	0.8	0.3	0.5	1.0	0.8	0.3	0.5	1.0	0.6	0.2	0.5	0.8
	Clearwater River Mid-field 1	0.4	-	-	-	-	0.4	-	0.4	0.4	-	-	-	-
	Clearwater River Mid-field 2	0.55	-	-	-	-	0.6	-	0.6	0.6	-	-	-	-
	Mirror River	0.7	-	-	-	-	0.7	-	0.7	0.7	-	-	-	-
	Warner Rapids	0.4	0.3	0.1	0.3	0.4	0.4	0.2	0.2	0.5	0.4	0.1	0.3	0.4

Units = m; SD = standard deviation; Min = minimum; Max = maximum.

Table 3.3-2: Summary of Water Temperature at Water Quality Monitoring Areas within the Aquatic Study Area

Habitat	Water Quality Monitoring Areas	Winter				Spring				Summer				Fall			
		Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Lentic	Broach Lake	2.9	0.7	0.1	3.6	4.3	1.1	3.6	11.8	7.1	4.4	4.4	18.9	6.3	2.6	4.4	12.5
	Hodge Lake	2.2	0.6	-0.1	3.0	4.9	0.5	4.2	6.6	9.8	4.9	5.6	19.3	8.4	2.3	5.6	12.5
	Patterson Lake North Arm - East Basin	2.1	0.6	0.0	2.7	7.6	2.8	4.3	14.0	14.7	4.3	8.0	20.6	8.8	1.9	6.1	10.7
	Patterson Lake North Arm - West Basin	1.8	0.6	0.2	2.9	5.2	1.1	4.0	8.6	11.0	5.6	5.4	19.9	8.3	1.9	6.2	10.8
	Patterson Lake South Arm	2.3	0.6	0.2	3.6	5.1	1.2	3.9	8.9	9.6	5.1	5.3	19.8	8.1	1.9	5.6	10.9
	Forrest Lake Area 1	0.2	0.1	0.1	0.3	11.3	3.4	7.2	16.6	20.3	1.8	18.9	22.4	7.3	3.2	2.9	10.4
	Forrest Lake Area 2	1.3	0.4	0.2	2.7	5.1	1.2	4.0	10.6	13.0	4.8	6.1	20.1	8.9	1.8	6.5	10.8
	Beet Lake	1.7	0.5	0.3	2.9	6.4	1.9	4.4	13.5	11.2	5.4	5.5	21.1	8.6	2.1	5.5	10.8
	Naomi Lake	2.2	1.2	0.2	4.1	13.0	1.9	10.0	17.6	19.0	1.6	16.3	23.3	6.7	2.2	5.1	10.2
	Lloyd Lake Inlet	1.4	1.1	-0.1	2.6	11.4	2.6	8.1	16.0	20.2	1.0	18.0	21.7	10.4	2.8	6.9	13.7
	Lloyd Lake Outlet	0.6	0.4	0.1	1.1	13.7	1.3	12.1	16.0	20.3	1.7	18.4	21.5	10.0	3.5	6.4	13.5
	Lake D	2.9	1.1	0.8	4.3	14.7	0.5	13.9	15.1	21.4	2.1	18.3	23.8	10.7	0.7	9.9	11.4
	Lake G	2.0	2.0	0.1	5.1	17.8	2.5	15.3	20.2	21.0	0.8	20.3	22.7	4.1	2.4	2.8	10.1
	Lake H	3.5	1.5	0.3	4.8	15.5	2.2	12.4	20.9	20.1	0.6	19.6	22.5	5.2	1.6	3.9	10.3
	Lake J	2.8	1.4	0.8	4.2	14.3	0.3	14.0	14.6	21.4	1.9	19.4	23.3	10.1	0.8	8.7	10.9
Lotic	Jed Creek	0.1	0.0	0.1	0.1	15.7	1.8	13.6	16.7	21.6	3.6	19.5	25.7	7.8	3.5	3.8	10.0
	Beet Creek	0.2	0.1	0.2	0.3	11.1	4.4	7.0	15.8	20.4	3.4	17.9	24.3	6.4	5.0	1.3	11.2
	Clearwater River	0.3	0.2	0.2	0.5	14.2	4.7	8.5	18.0	20.1	3.6	17.1	24.1	5.5	5.3	1.3	11.4
	Clearwater River Mid-field 1	-	-	-	-	-	-	-	-	20.8	-	20.8	20.8	-	-	-	-
	Clearwater River Mid-field 2	-	-	-	-	-	-	-	-	20.4	-	20.4	20.4	-	-	-	-
	Mirror River	-	-	-	-	-	-	-	-	20.3	-	20.3	20.3	-	-	-	-
	Warner Rapids	0.0	0.0	0.0	0.0	14.4	2.1	12.0	16.1	18.9	1.6	17.5	20.6	6.0	3.6	2.5	9.7

Units = °C; SD = standard deviation; Min = minimum; Max = maximum.

Table 3.3-3: Summary of Dissolved Oxygen at Water Quality Monitoring Areas within the Aquatic Study Area

Habitat	Water Quality Monitoring Areas	Winter				Spring				Summer				Fall			
		Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Lentic	Broach Lake	10.04	1.87	2.29	14.87	11.38	2.04	0.31	12.83	10.28	0.76	7.67	12.44	9.03	0.84	6.87	11.15
	Hodge Lake	10.84	1.57	6.89	14.21	11.79	0.29	11.32	12.15	9.85	0.77	8.68	11.54	8.99	1.31	6.58	10.82
	Patterson Lake North Arm - East Basin	10.25	2.65	0.70	13.73	10.64	1.15	2.26	11.86	6.39	2.74	0.12	9.46	10.34	0.55	8.37	11.10
	Patterson Lake North Arm - West Basin	10.83	1.12	8.64	14.48	11.59	0.29	11.12	12.00	10.08	0.82	8.94	11.75	9.79	0.80	8.11	10.59
	Patterson Lake South Arm	9.61	2.79	0.27	14.56	11.24	0.35	10.03	11.78	9.26	1.09	0.25	11.02	8.87	1.63	4.77	10.48
	Forrest Lake Area 1	12.26	1.72	8.87	13.71	10.59	0.48	9.89	11.17	9.09	0.30	8.72	9.50	10.67	1.62	9.41	12.94
	Forrest Lake Area 2	12.37	0.71	10.04	14.14	11.91	0.20	11.12	12.20	10.41	1.14	9.02	11.91	10.61	0.30	10.18	11.11
	Beet Lake	9.15	3.62	0.49	12.80	11.38	0.42	10.38	12.65	7.85	1.90	2.93	10.56	10.13	0.90	6.96	11.38
	Naomi Lake	7.05	1.42	4.41	9.70	9.56	0.47	8.40	10.08	7.61	0.96	6.41	8.74	10.66	0.95	9.25	11.93
	Lloyd Lake Inlet	6.89	0.81	5.73	8.18	9.88	0.83	8.42	10.96	8.33	0.44	7.68	9.01	9.96	0.99	8.84	11.34
	Lloyd Lake Outlet	6.28	0.72	5.37	7.00	10.00	0.52	8.98	10.29	8.25	0.34	7.89	8.57	10.36	1.08	9.36	11.51
	Lake D	4.16	3.05	0.46	8.43	9.36	0.87	8.66	10.56	8.28	0.72	7.28	9.26	9.80	0.77	8.93	10.55
	Lake G	3.50	3.45	0.20	9.71	9.16	0.36	8.77	9.48	8.69	0.44	7.78	8.96	10.75	2.24	6.97	12.29
	Lake H	2.00	2.16	0.24	6.67	9.34	0.80	7.03	9.90	8.28	0.23	7.75	9.10	11.96	0.48	10.60	12.25
	Lake J	3.76	3.13	0.81	8.55	8.87	0.91	8.08	10.03	8.79	0.35	8.25	9.54	9.60	0.54	8.60	10.10
Lotic	Jed Creek	10.47	0.24	10.30	10.74	9.90	0.56	9.25	10.24	8.36	0.23	8.12	8.58	10.89	0.69	10.20	11.58
	Beet Creek	12.77	0.95	12.09	13.44	11.03	0.33	10.65	11.22	9.57	0.67	8.94	10.27	10.98	0.80	10.36	11.88
	Clearwater River	7.81	2.25	6.22	9.40	9.96	0.70	9.35	10.67	9.27	0.30	8.92	9.45	10.82	0.64	10.08	11.22
	Clearwater River Mid-field 1	-	-	-	-	-	-	-	-	7.78	-	7.78	7.78	-	-	-	-
	Clearwater River Mid-field 2	-	-	-	-	-	-	-	-	7.66	-	7.66	7.66	-	-	-	-
	Mirror River	-	-	-	-	-	-	-	-	7.67	-	7.67	7.67	-	-	-	-
	Warner Rapids	10.66	0.95	9.99	11.33	8.69	0.78	8.15	9.59	7.97	0.88	7.33	8.97	11.52	1.27	10.09	12.53

Units = mg/L; SD = standard deviation; Min = minimum; Max = maximum.

Table 3.3-4: Summary of Specific Conductance at Water Quality Monitoring Areas within the Aquatic Study Area

Habitat	Water Quality Monitoring Areas	Winter				Spring				Summer				Fall			
		Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Lentic	Broach Lake	39.6	1.5	38.7	49.8	40.3	2.4	36.2	61.2	39.2	0.9	37.8	45.8	38.6	0.6	37.5	42.3
	Hodge Lake	28.8	1.0	27.8	33.1	28.2	1.1	26.7	29.9	27.6	0.6	26.1	28.5	27.3	0.8	25.8	28.9
	Patterson Lake North Arm - East Basin	34.3	2.2	33.0	46.1	31.3	0.9	29.5	33.3	31.5	6.8	24.9	70.1	30.5	1.1	28.7	31.4
	Patterson Lake North Arm - West Basin	39.6	1.8	38.5	47.3	38.3	0.5	37.3	39.1	38.3	0.8	37.4	41.1	37.7	0.5	36.9	38.6
	Patterson Lake South Arm	41.0	2.1	40.0	56.7	39.7	1.1	37.7	44.2	39.4	0.7	38.4	44.0	38.9	0.7	36.5	41.7
	Forrest Lake Area 1	46.9	3.7	45.1	54.4	40.7	1.0	39.9	42.9	39.2	0.7	38.5	40.1	40.0	2.4	37.7	43.2
	Forrest Lake Area 2	50.5	1.2	48.7	55.0	48.3	0.9	46.5	49.4	47.9	0.7	47.2	49.0	47.0	0.2	46.7	47.2
	Beet Lake	48.2	5.1	46.1	70.8	44.1	0.6	42.6	45.2	44.5	1.4	42.6	48.9	43.3	0.6	42.2	44.3
	Naomi Lake	29.9	9.4	24.9	59.4	21.6	2.6	17.5	24.3	25.5	4.0	20.0	29.4	22.3	3.3	18.1	27.3
	Lloyd Lake Inlet	37.5	4.3	31.1	46.0	29.2	2.3	25.3	31.9	30.4	2.6	26.8	33.2	27.5	2.9	23.3	29.9
	Lloyd Lake Outlet	34.5	2.0	31.6	36.2	28.2	1.4	25.4	28.9	31.1	3.6	27.0	33.7	28.0	3.5	23.9	30.2
	Lake D	62.3	8.8	54.0	84.0	41.4	0.9	40.8	43.8	41.9	0.3	41.6	42.7	42.2	2.9	39.5	45.4
	Lake G	80.9	35.7	35.0	121.7	34.3	2.1	33.0	36.8	38.2	1.8	34.5	39.2	38.2	0.9	37.6	40.3
	Lake H	56.3	23.7	32.6	117.0	39.7	5.7	35.5	56.5	38.5	0.8	35.7	38.8	38.3	0.5	38.1	39.9
	Lake J	14.7	7.6	10.9	34.9	6.8	0.3	6.4	7.0	5.8	0.8	5.1	6.7	8.8	2.3	6.4	10.9
Lotic	Jed Creek	33.3	0.8	32.4	34.0	22.9	2.8	19.7	25.0	24.5	2.0	22.9	26.8	25.0	1.6	23.2	26.2
	Beet Creek	50.6	0.4	50.3	50.9	41.5	1.5	39.8	42.8	43.1	2.0	40.9	44.9	43.4	1.9	41.7	45.5
	Clearwater River	35.4	10.2	28.2	42.6	36.8	2.1	33.6	38.3	36.9	3.9	32.4	39.2	34.4	2.2	32.3	36.7
	Clearwater River Mid-field 1	-	-	-	-	-	-	-	-	32.4	-	32.4	32.4	-	-	-	-
	Clearwater River Mid-field 2	-	-	-	-	-	-	-	-	29.5	-	29.5	29.5	-	-	-	-
	Mirror River	-	-	-	-	-	-	-	-	27.9	-	27.9	27.9	-	-	-	-
	Warner Rapids	35.2	2.4	33.5	36.9	27.6	3.3	24.0	30.6	31.1	2.6	28.1	32.8	27.6	1.5	26.0	29.0

Units = µS/cm; SD = standard deviation; Min = minimum; Max = maximum.

Table 3.3-5: Summary of pH at Water Quality Monitoring Areas within the Aquatic Study Area

Habitat	Water Quality Monitoring Areas	Winter				Spring				Summer				Fall			
		Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Lentic	Broach Lake	6.56	0.45	5.69	7.18	6.91	0.25	6.01	7.24	7.09	0.41	6.02	8.04	6.89	0.37	6.53	9.42
	Hodge Lake	6.30	0.63	5.14	7.20	6.85	0.07	6.71	7.01	6.67	0.46	6.01	7.59	6.72	0.42	6.11	7.33
	Patterson Lake North Arm - East Basin	6.57	0.24	6.11	7.19	7.11	0.36	6.62	7.87	6.97	0.78	5.64	8.14	7.14	0.16	6.69	7.46
	Patterson Lake North Arm - West Basin	6.99	0.16	6.67	7.17	7.24	0.11	7.02	7.50	7.28	0.53	6.29	8.08	7.13	0.31	6.53	7.58
	Patterson Lake South Arm	6.62	0.45	5.83	7.60	7.08	0.15	6.85	7.44	7.12	0.48	6.45	7.98	6.99	0.41	6.29	7.54
	Forrest Lake Area 1	6.92	0.45	6.38	7.43	7.36	0.08	7.16	7.45	7.61	0.28	7.26	7.90	7.40	0.62	6.88	8.26
	Forrest Lake Area 2	6.82	0.27	6.45	7.67	7.34	0.14	7.09	7.55	7.60	0.29	6.96	7.96	7.49	0.11	7.04	7.77
	Beet Lake	6.60	0.30	6.21	7.33	7.23	0.22	6.77	7.70	7.15	0.66	6.12	8.18	7.26	0.17	6.74	7.67
	Naomi Lake	6.39	0.68	5.55	7.80	7.11	0.30	6.68	7.45	6.93	0.46	6.31	7.63	6.89	0.46	6.22	7.38
	Lloyd Lake Inlet	6.26	0.11	6.07	6.47	6.85	0.19	6.50	7.14	7.23	0.38	6.69	7.83	6.99	0.10	6.79	7.15
	Lloyd Lake Outlet	5.78	0.31	5.35	6.03	7.15	0.31	6.60	7.34	6.84	0.71	6.24	7.63	7.14	0.24	6.94	7.40
	Lake D	6.63	0.34	6.08	7.14	7.92	0.24	7.64	8.28	7.79	0.20	7.40	8.08	7.51	0.04	7.44	7.55
	Lake G	6.46	0.27	6.17	6.74	7.31	0.19	7.14	7.51	8.04	0.46	7.22	8.34	7.28	0.45	6.20	7.61
	Lake H	6.37	0.44	5.59	6.88	7.92	0.44	6.93	8.27	7.71	0.08	7.50	7.78	7.42	0.16	7.12	7.64
	Lake J	6.28	0.83	5.71	7.80	6.57	0.16	6.36	6.81	6.07	0.28	5.76	6.41	6.44	0.21	6.19	6.75
Lotic	Jed Creek	6.70	0.57	6.33	7.36	6.86	0.46	6.53	7.39	7.00	0.34	6.66	7.33	6.94	0.54	6.33	7.35
	Beet Creek	7.21	0.23	7.05	7.37	7.42	0.06	7.35	7.47	7.51	0.64	6.99	8.22	7.22	0.12	7.12	7.35
	Clearwater River	6.04	0.48	5.70	6.38	7.30	0.11	7.16	7.43	7.60	0.66	7.08	8.34	7.15	0.28	6.98	7.47
	Clearwater River Mid-field 1	-	-	-	-	-	-	-	-	7.34	-	7.34	7.34	-	-	-	-
	Clearwater River Mid-field 2	-	-	-	-	-	-	-	-	7.17	-	7.17	7.17	-	-	-	-
	Mirror River	-	-	-	-	-	-	-	-	7.06	-	7.06	7.06	-	-	-	-
	Warner Rapids	6.33	0.80	5.76	6.89	6.70	0.74	5.87	7.30	7.21	0.46	6.69	7.56	7.10	0.29	6.76	7.29

Units = pH; SD = standard deviation; Min = minimum; Max = maximum.

3.3.1.2 Profiles

Figure 3.3-1 to Figure 3.3-4 present the seasonal water temperature profiles from the water quality monitoring areas within the ASA that were greater than or equal to 3 m. Winter temperature profiles had increasing water temperatures with increasing depths in most areas. Thermal stratification was evident at the majority of the profiles during the summer sampling periods, and occurred in fewer areas during the spring and fall sampling events. Summer thermal stratification of the water column was particularly distinct in Broach, Hodge, Patterson, Forrest, and Beet lakes.

Figure 3.3-5 to Figure 3.3-8 display the season DO profiles. During winter, DO levels tended to decrease with depth, often falling below the SEQG of 6.5 mg/L in the bottom portions of the water column (Figure 3.3-5). The summer thermal stratification evident in the deeper sampling locations in turn affected the DO concentrations, which showed an increase in DO levels within the thermocline, followed by a decrease in DO levels with depth below the thermocline (Figure 3.3-7). Less variability in DO with depth was evident in the spring and fall profiles.

Field measurements of specific conductance during all sampling seasons remained relatively consistent throughout the water column with a few higher values occurring near to the water-substrate interface (Figure 3.3-9 to Figure 3.3-12). Seasonal profiles of pH are displayed in Figure 3.3-13 to Figure 3.3-16. As with DO, pH profiles during the summer in the deeper water quality sampling areas of Broach, Hodge, Patterson, Forrest, and Beet lakes tended to stratify with the thermocline, increasing through the thermocline and then decreasing below the thermocline (Figure 3.3-15). Measurements of pH that were below the lower limit of the SEQG varied with the sampling season, were more prevalent during the 2019 and 2020 sampling period, and typically occurred at the bottom of the water column.

3.3.1.3 Ice Cover

During winter sampling events, the ice cover depth of water quality monitoring areas was measured. The average lake ice depth in the ASA was 0.68 m ± 0.11 m. The ice depth measured during each sampling event is summarized in Table 3.3-6.

Table 3.3-6: Ice Cover Depths at Water Quality Monitoring Areas within the Aquatic Study Area

Broach Lake		Hodge Lake		Jed Creek		Patterson Lake Northeast		Patterson Lake North		Patterson Lake East	
24-Feb-19	0.76	23-Feb-19	0.72	21-Feb-19	0.02	20-Feb-19	0.66	20-Feb-19	0.62	21-Feb-19	0.71
19-Mar-20	0.75	17-Mar-20	0.70	23-Mar-20	0.01	23-Mar-20	0.70	20-Mar-20	0.80	20-Mar-20	0.75
Forrest Lake		**Forrest Lake**		**Beet Lake**		**Beet Creek**		**Naomi Lake**		**Clearwater River**	
20-Feb-19	0.60	20-Feb-19	0.72	23-Feb-19	0.65	23-Feb-19	0.07	22-Feb-19	0.70	23-Feb-19	0.70
21-Mar-20	0.65	22-Mar-20	0.70	22-Mar-20	0.75	21-Mar-20	0.01	21-Mar-20	0.85	21-Mar-20	0.02
Lloyd Lake Inlet		**Lloyd Lake Outlet**		**Lake D**		**Lake G**		**Lake H**		**Lake J**	
21-Feb-19	0.65	21-Feb-19	0.35	24-Feb-19	0.6	22-Feb-19	0.61	22-Feb-19	0.62	25-Feb-19	0.50
18-Mar-20	0.90	18-Mar-20	0.55	24-Mar-20	0.9	23-Mar-20	0.70	23-Mar-20	0.70	17-Mar-20	0.55

All values are presented in meters (m).

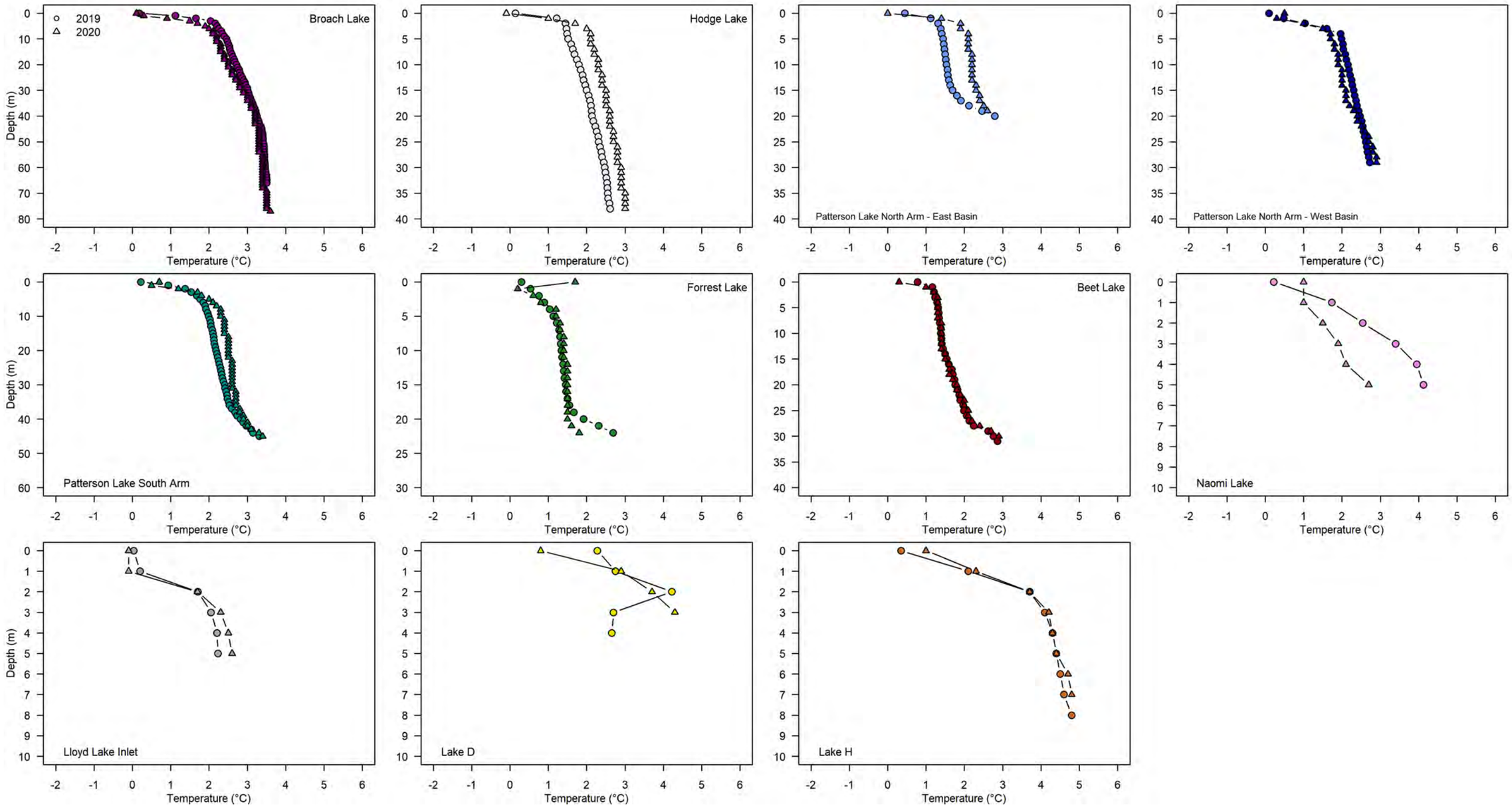


Figure 3.3-1: Winter Temperature Profiles from the Aquatic Study Area, 2019 and 2020

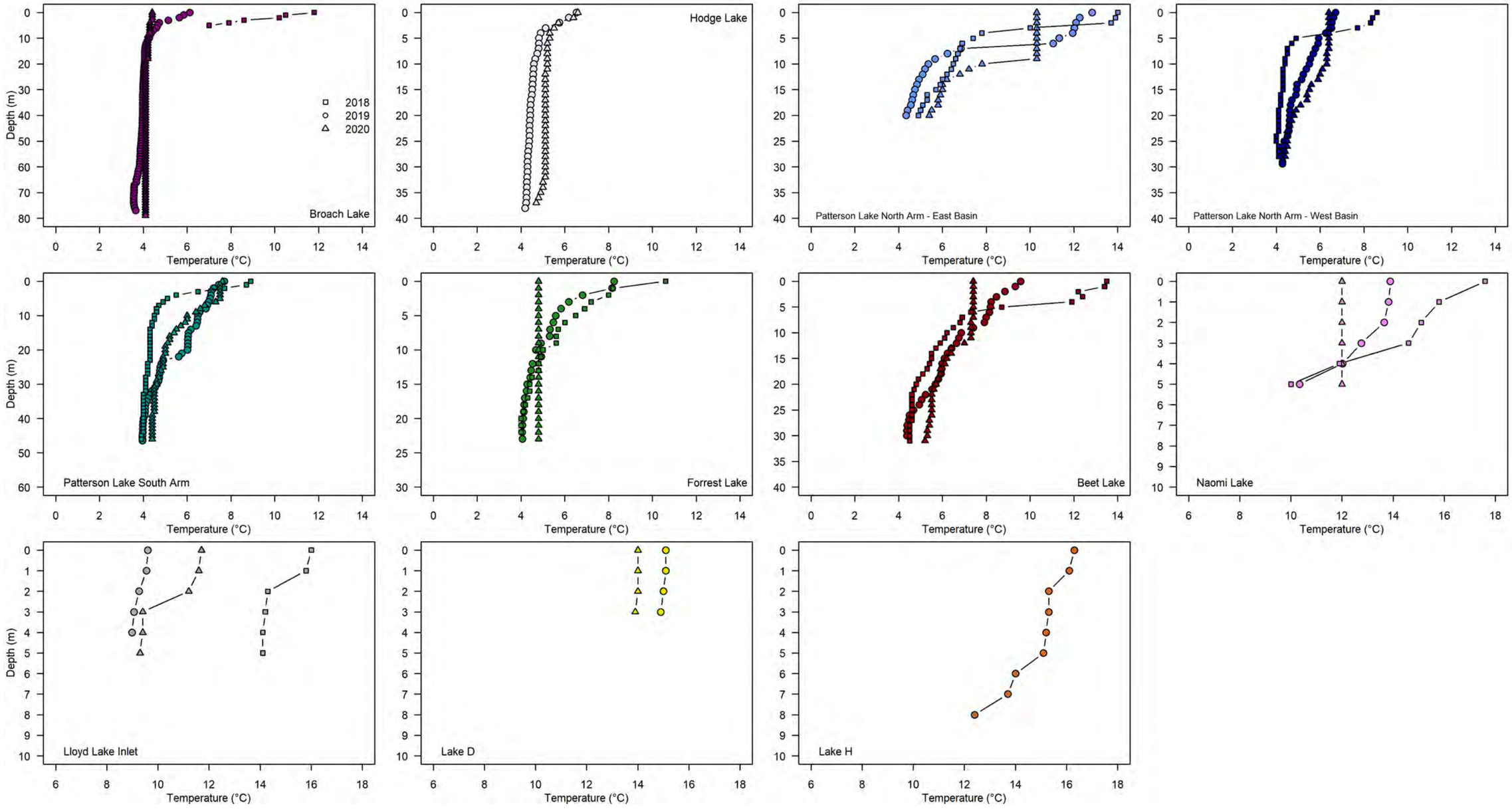


Figure 3.3-2: Spring Temperature Profiles from the Aquatic Study Area, 2018, 2019, and 2020

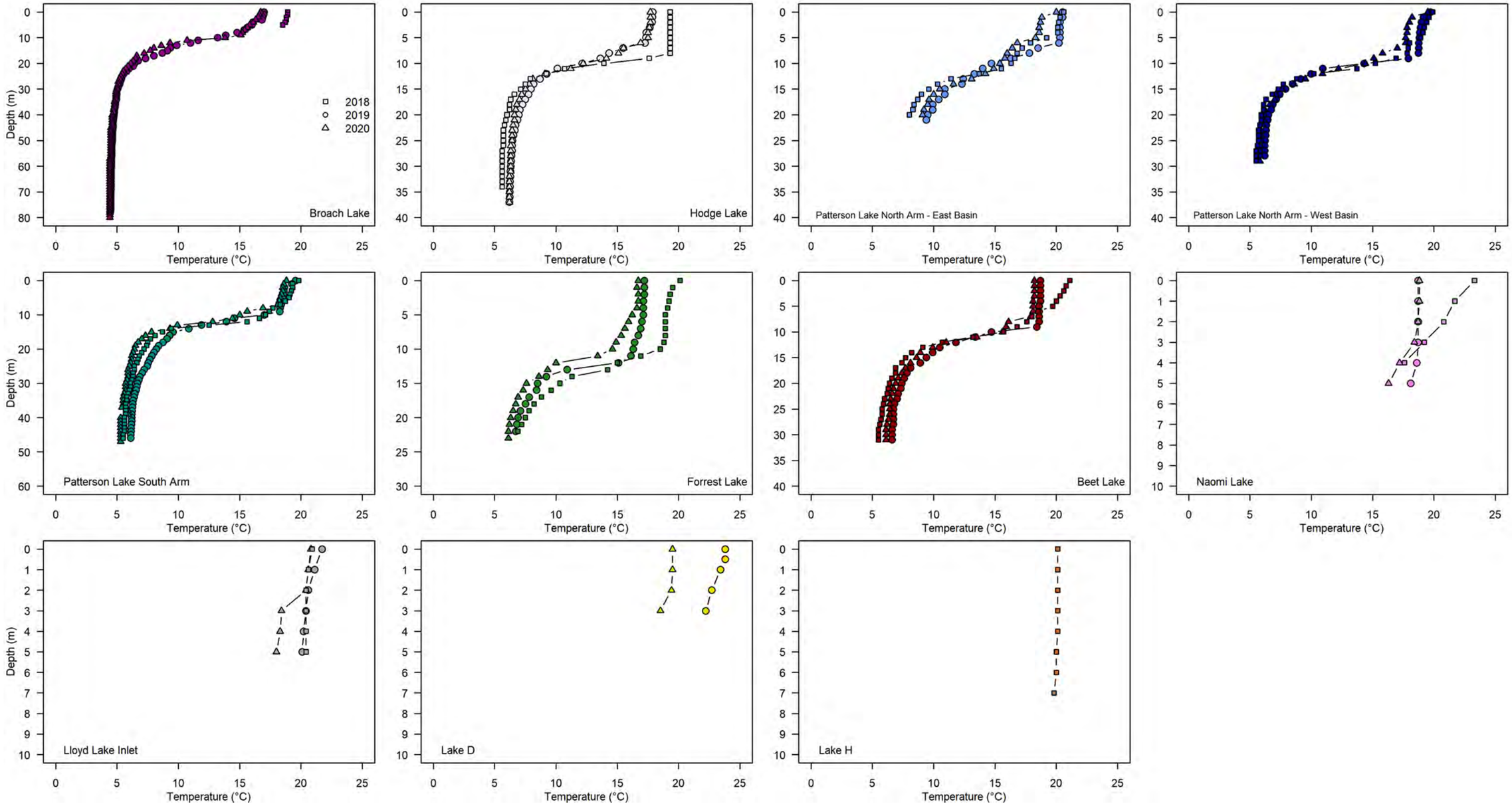


Figure 3.3-3: Summer Temperature Profiles from the Aquatic Study Area, 2018, 2019, and 2020

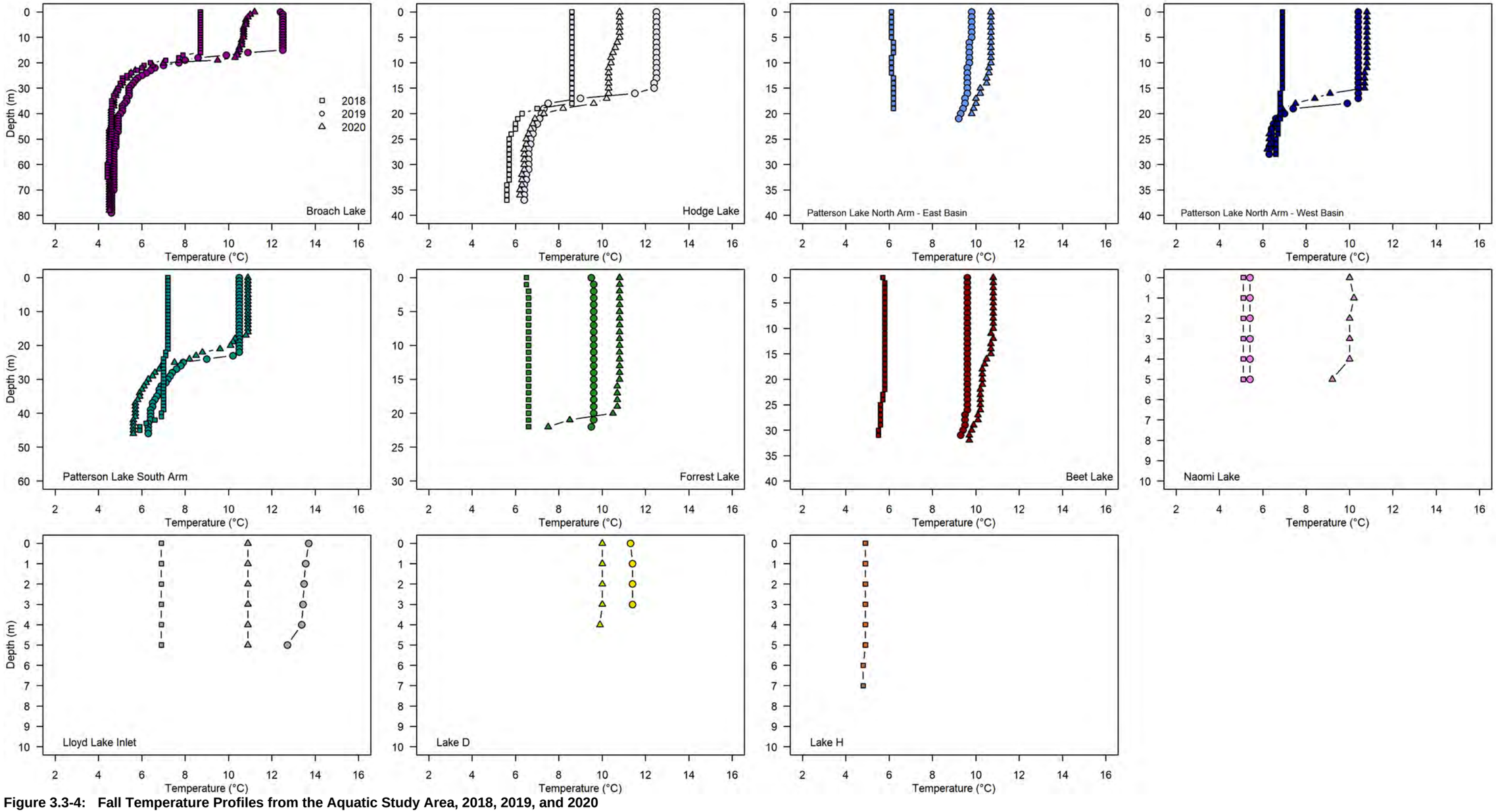


Figure 3.3-4: Fall Temperature Profiles from the Aquatic Study Area, 2018, 2019, and 2020

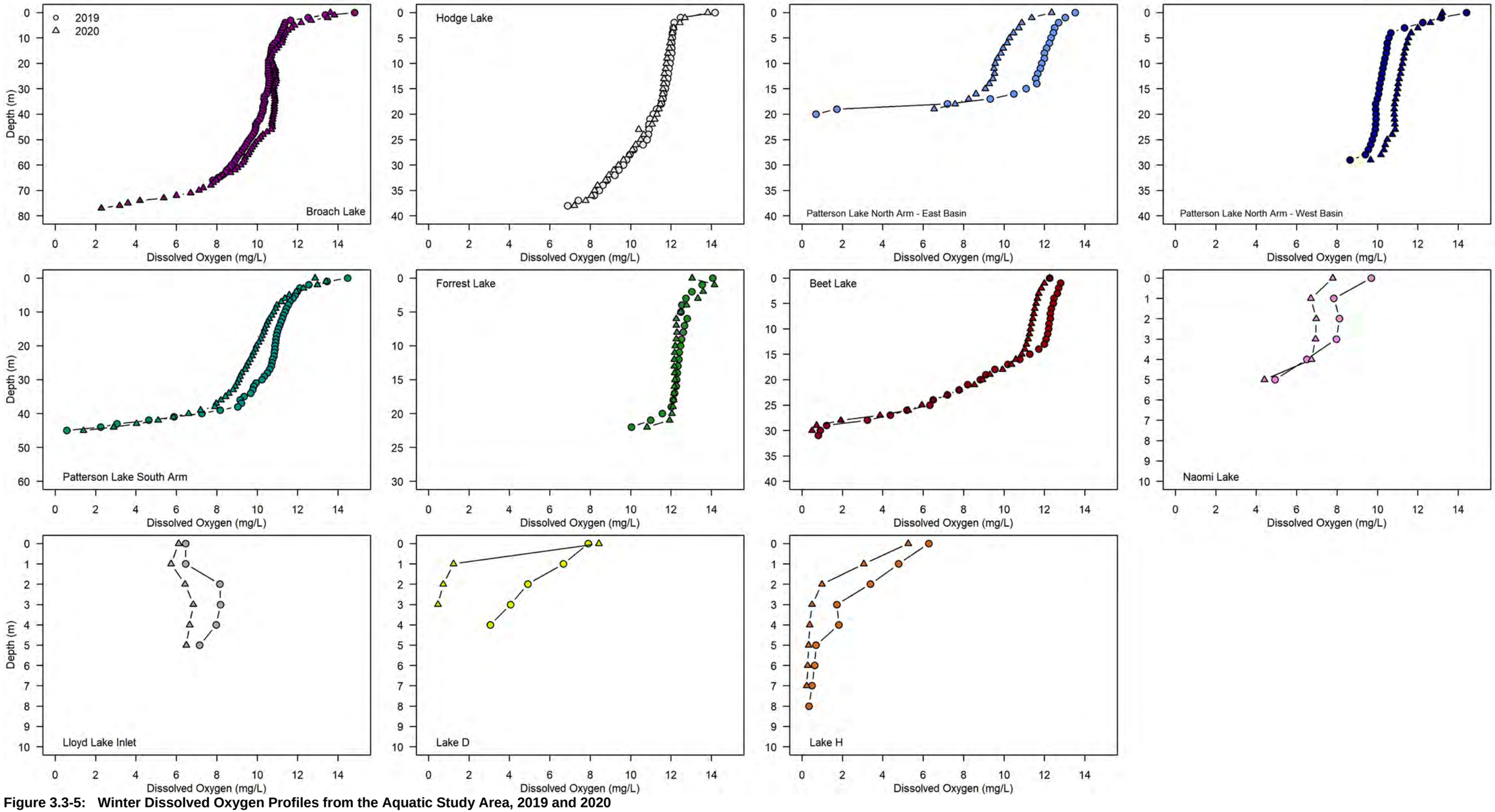


Figure 3.3-5: Winter Dissolved Oxygen Profiles from the Aquatic Study Area, 2019 and 2020

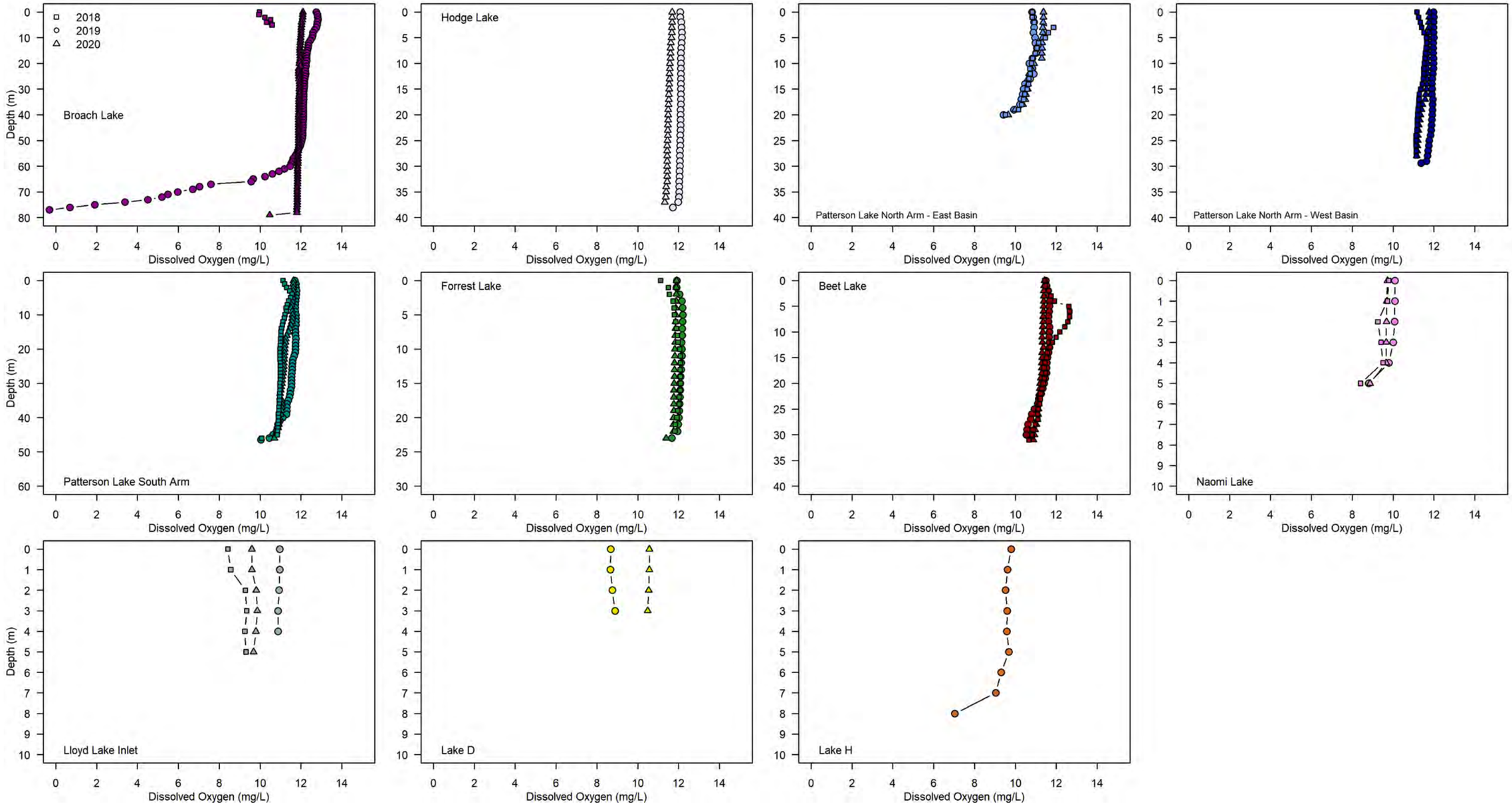


Figure 3.3-6: Spring Dissolved Oxygen Profiles from the Aquatic Study Area, 2018, 2019, and 2020

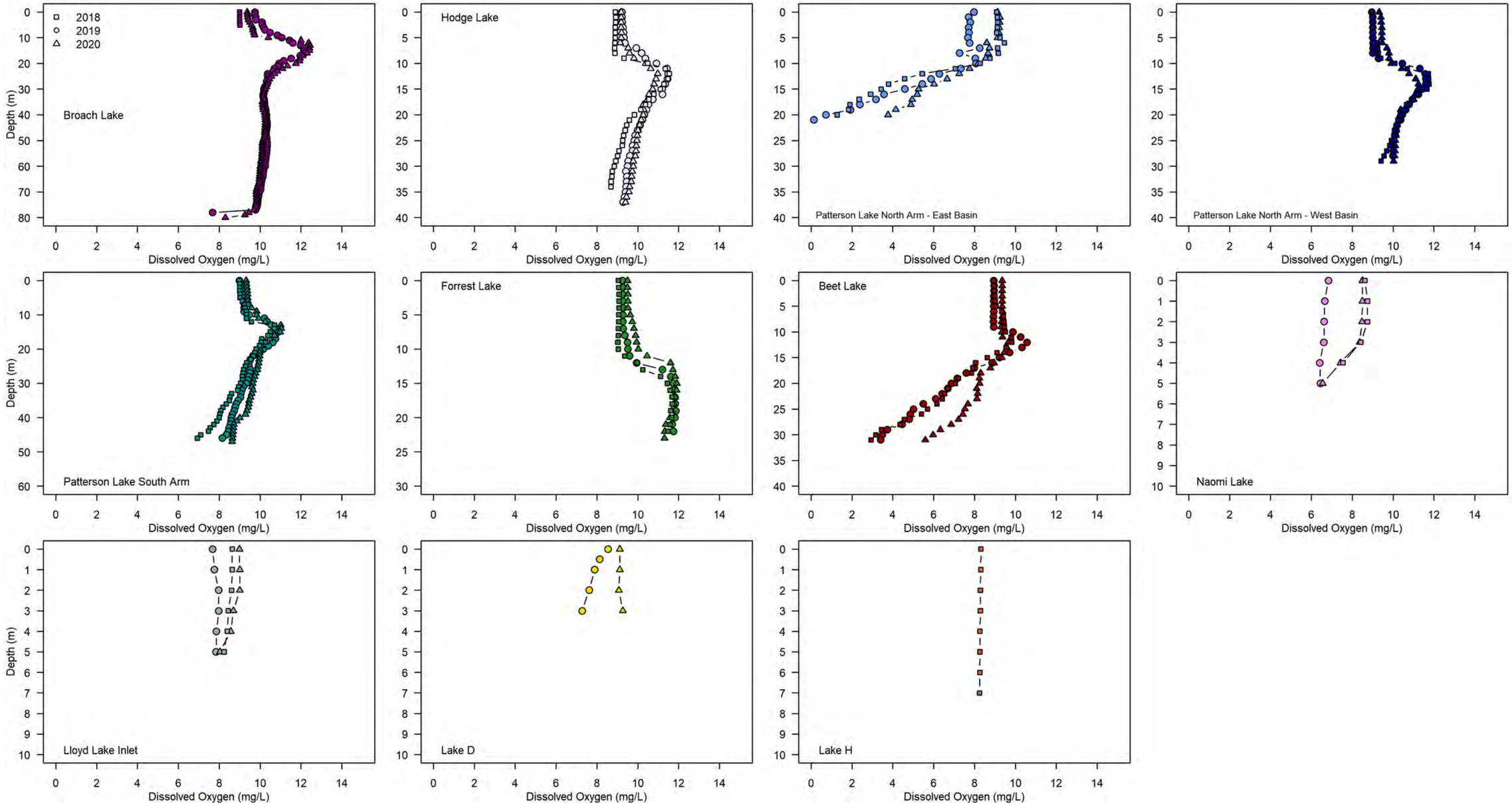


Figure 3.3-7: Summer Dissolved Oxygen Profiles from the Aquatic Study Area, 2018, 2019, and 2020

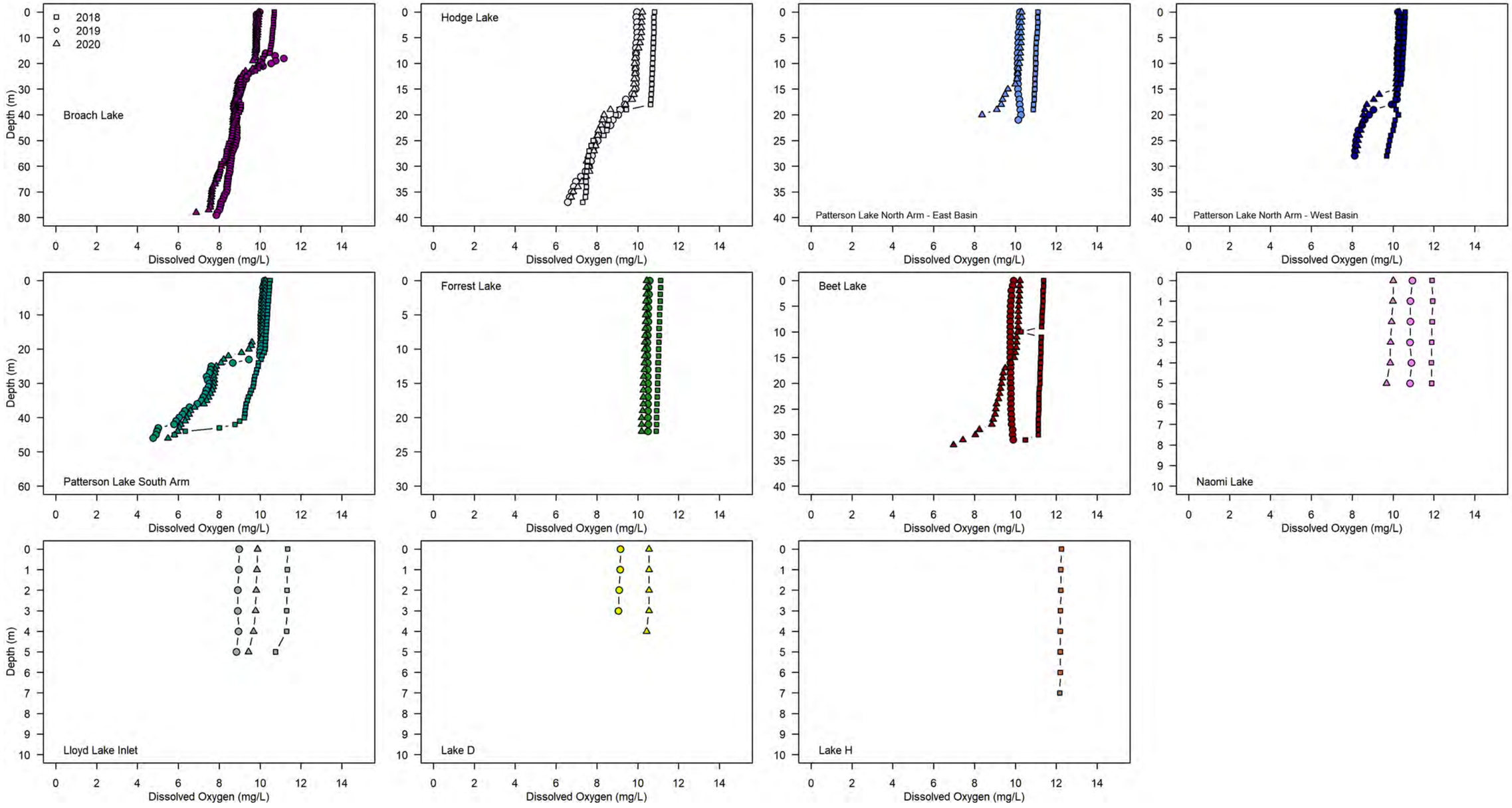


Figure 3.3-8: Fall Dissolved Oxygen Profiles from the Aquatic Study Area, 2018, 2019, and 2020

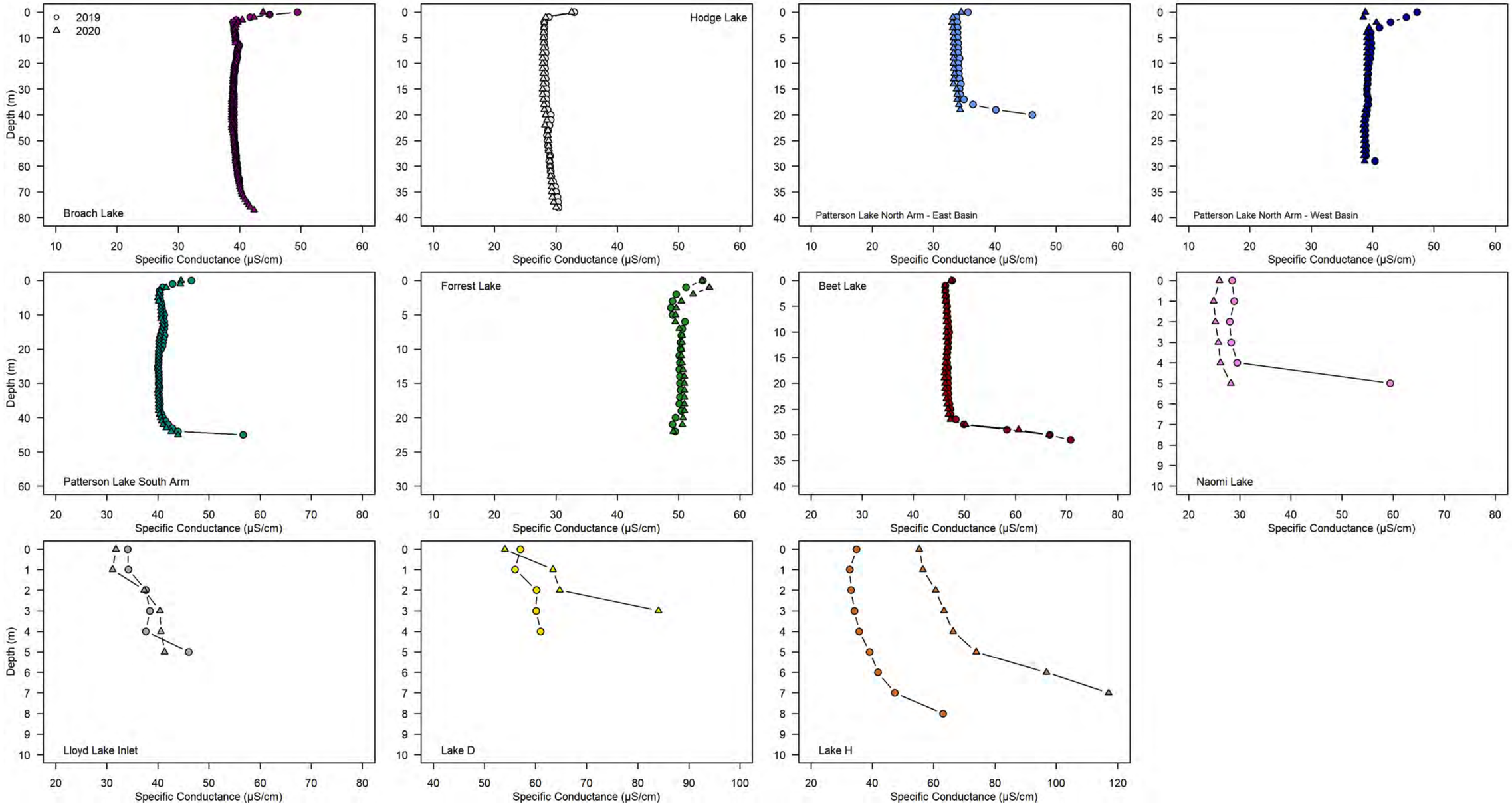


Figure 3.3-9: Winter Specific Conductance Profiles from the Aquatic Study Area, 2019 and 2020

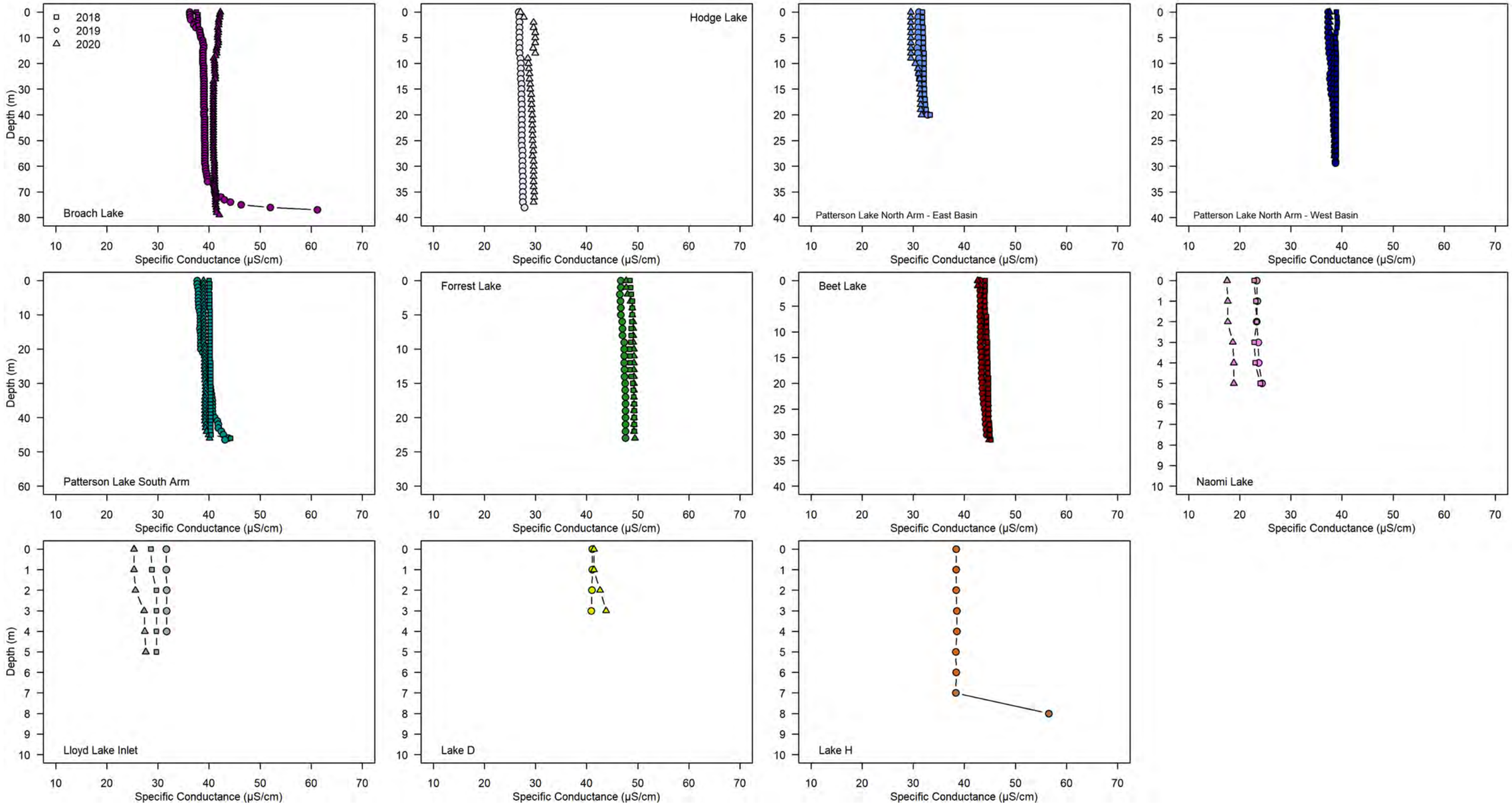


Figure 3.3-10: Spring Specific Conductance Profiles from the Aquatic Study Area, 2018, 2019, and 2020

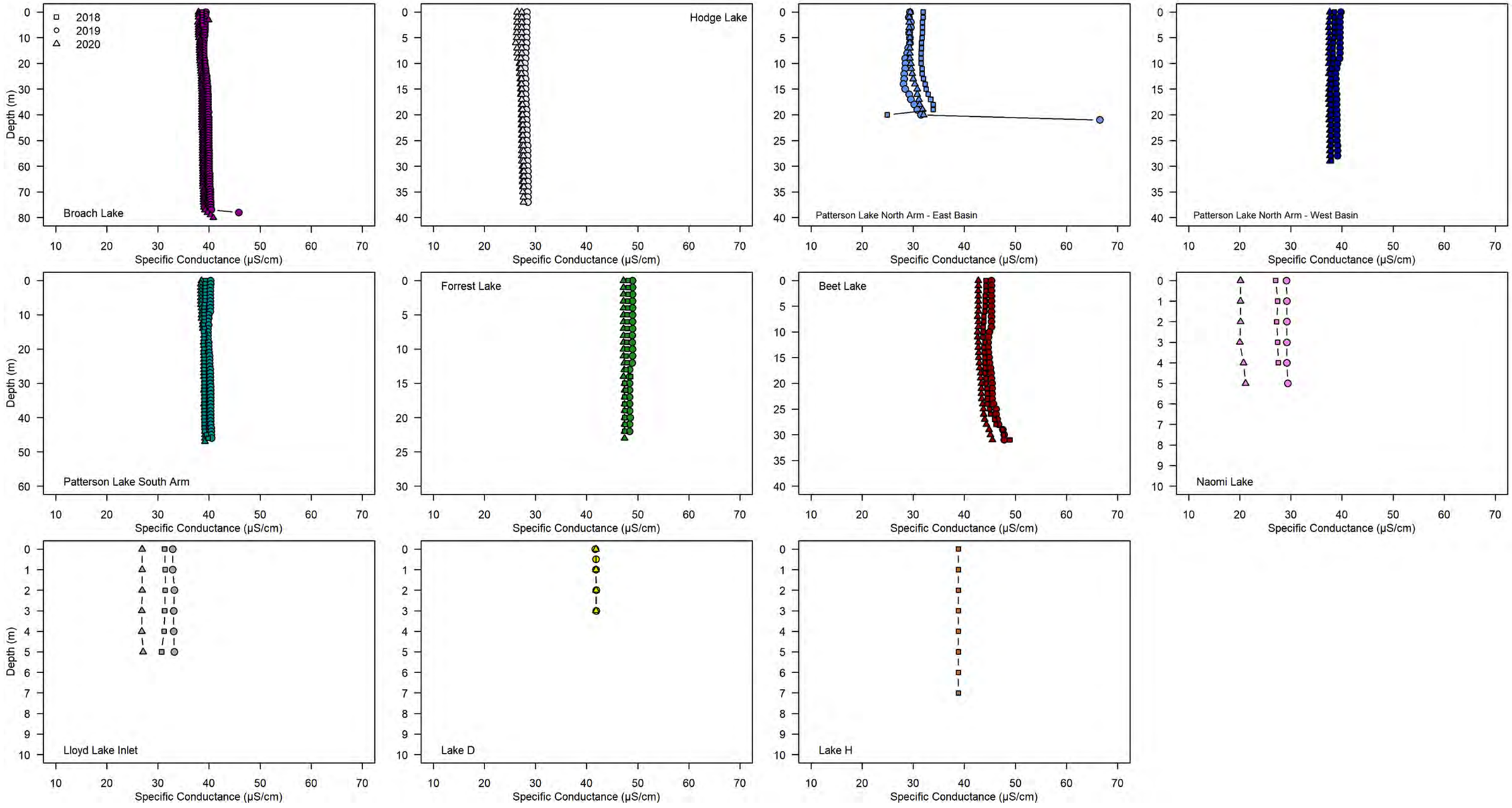


Figure 3.3-11: Summer Specific Conductance Profiles from the Aquatic Study Area, 2018, 2019, and 2020

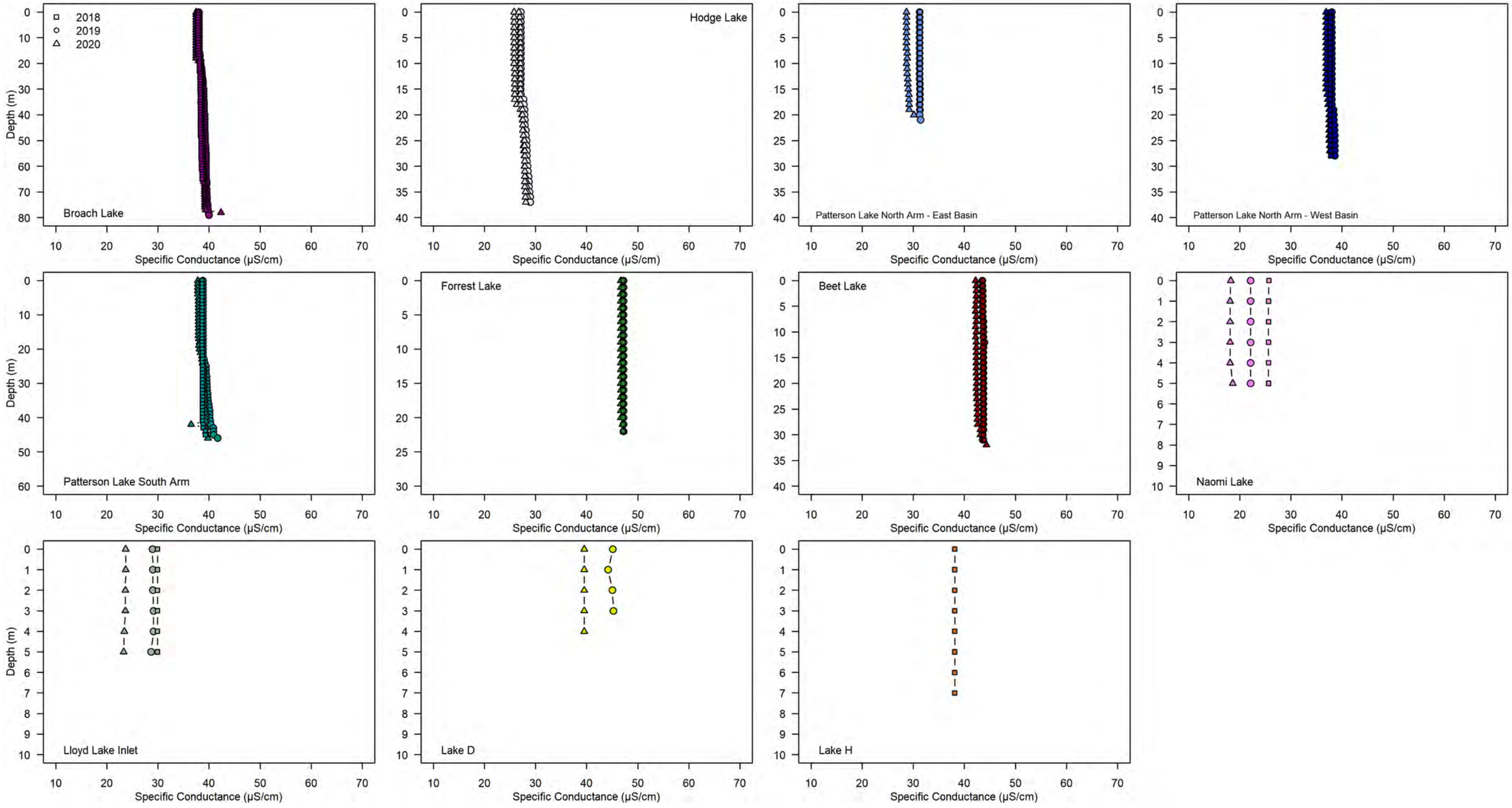


Figure 3.3-12: Fall Specific Conductance Profiles from the Aquatic Study Area, 2018, 2019, and 2020

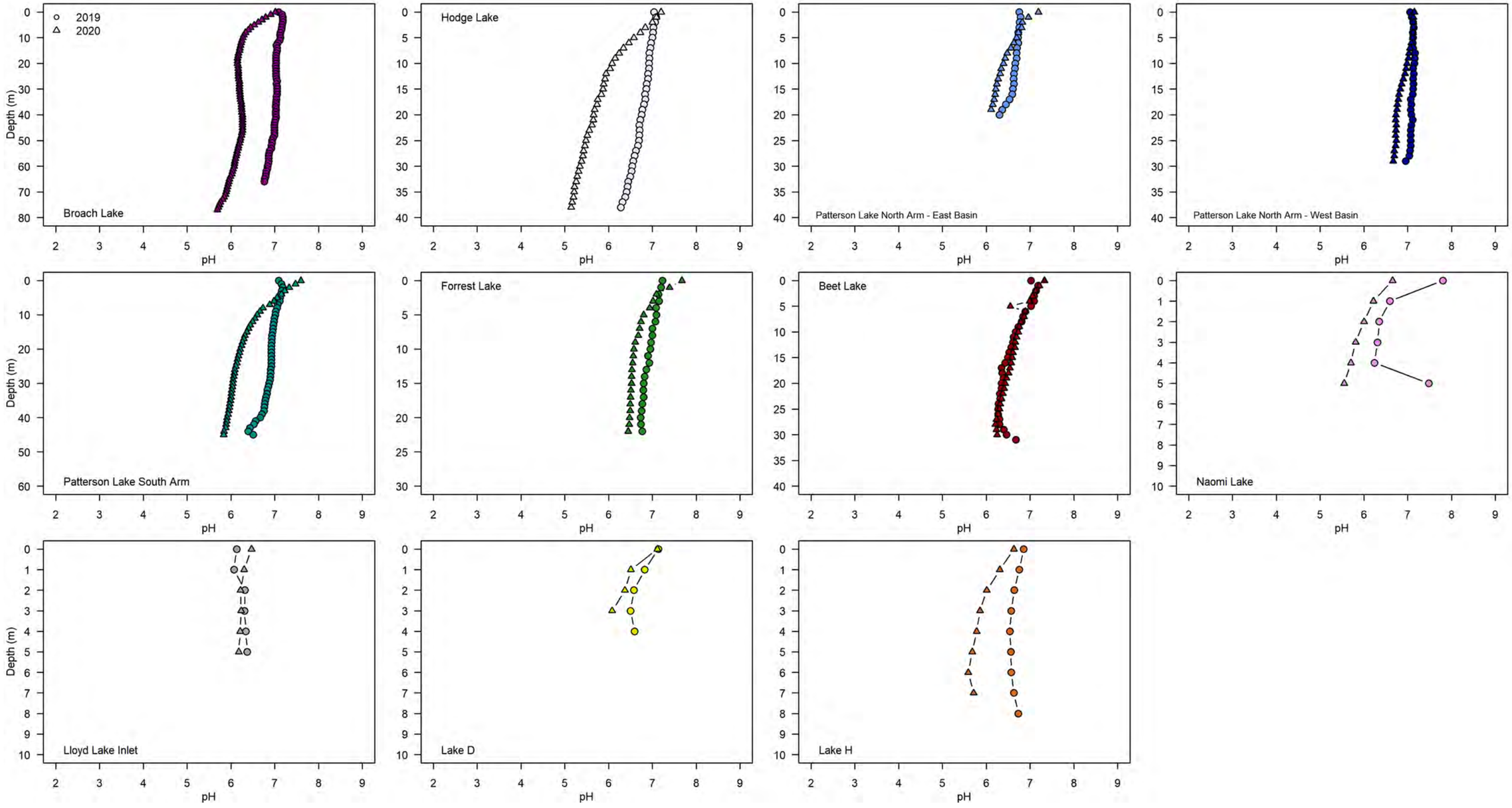


Figure 3.3-13: Winter pH Profiles from the Aquatic Study Area, 2019 and 2020

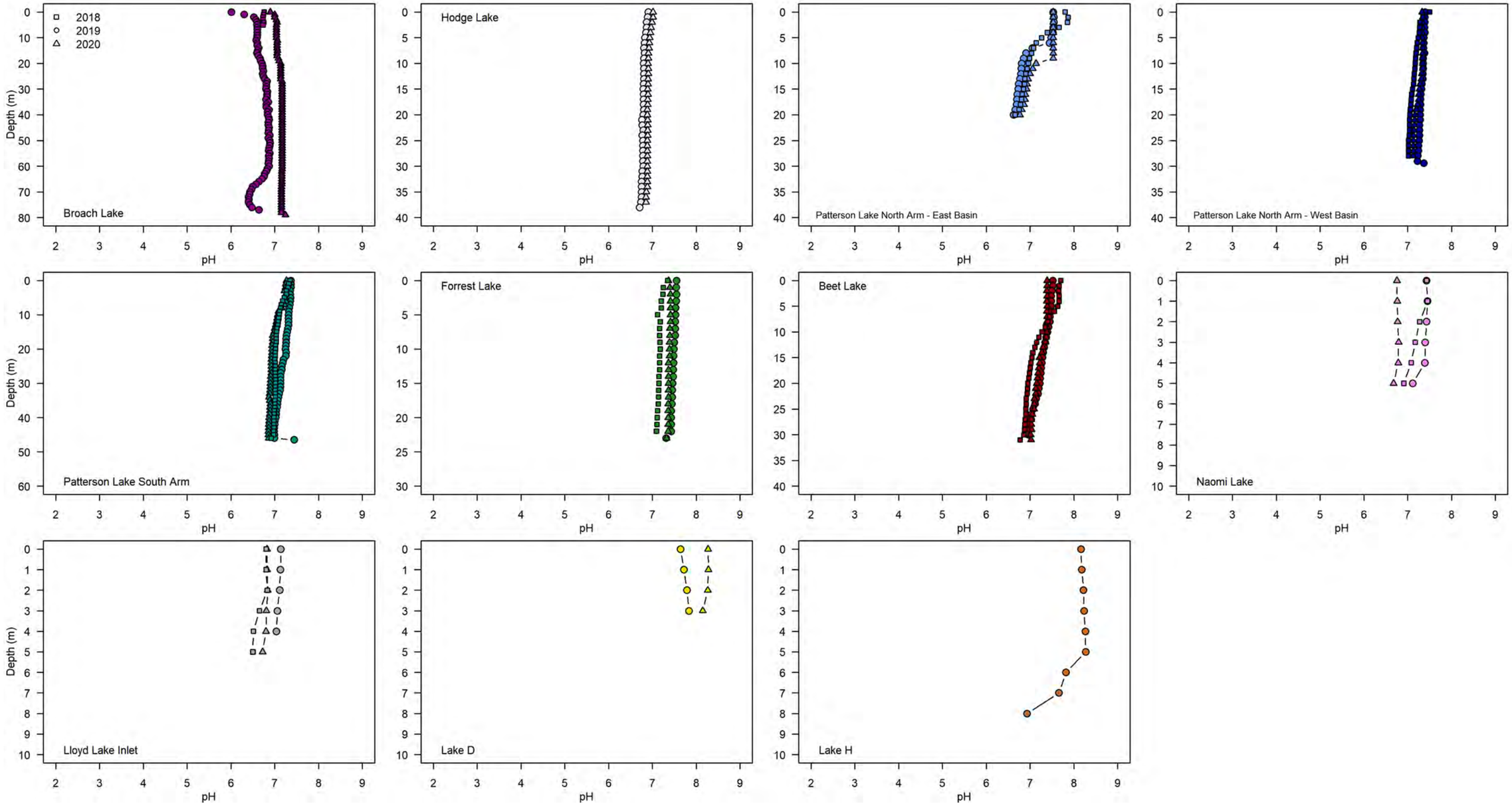


Figure 3.3-14: Spring pH Profiles from the Aquatic Study Area, 2018, 2019, and 2020

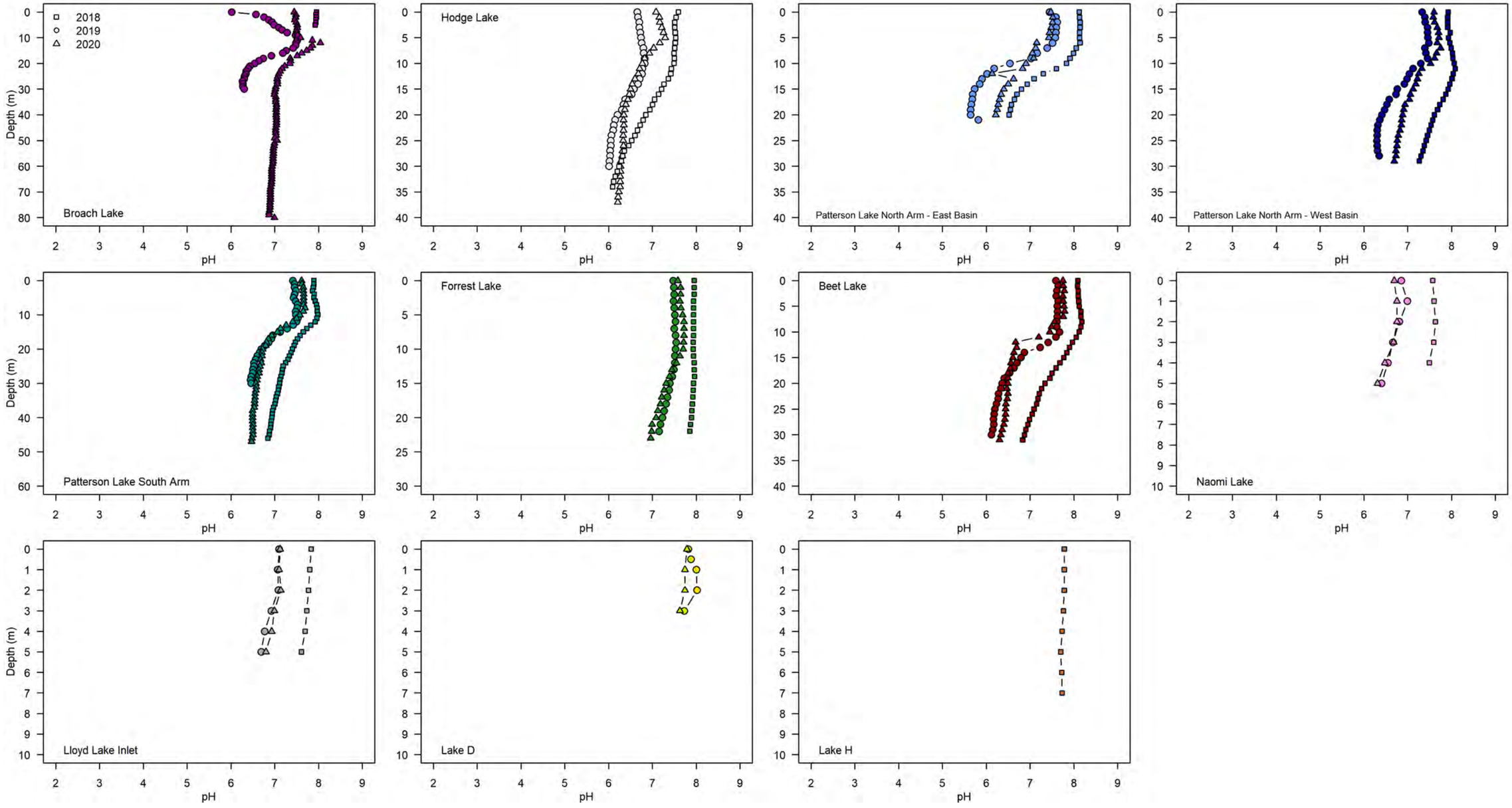


Figure 3.3-15: Summer pH Profiles from the Aquatic Study Area, 2018, 2019, and 2020

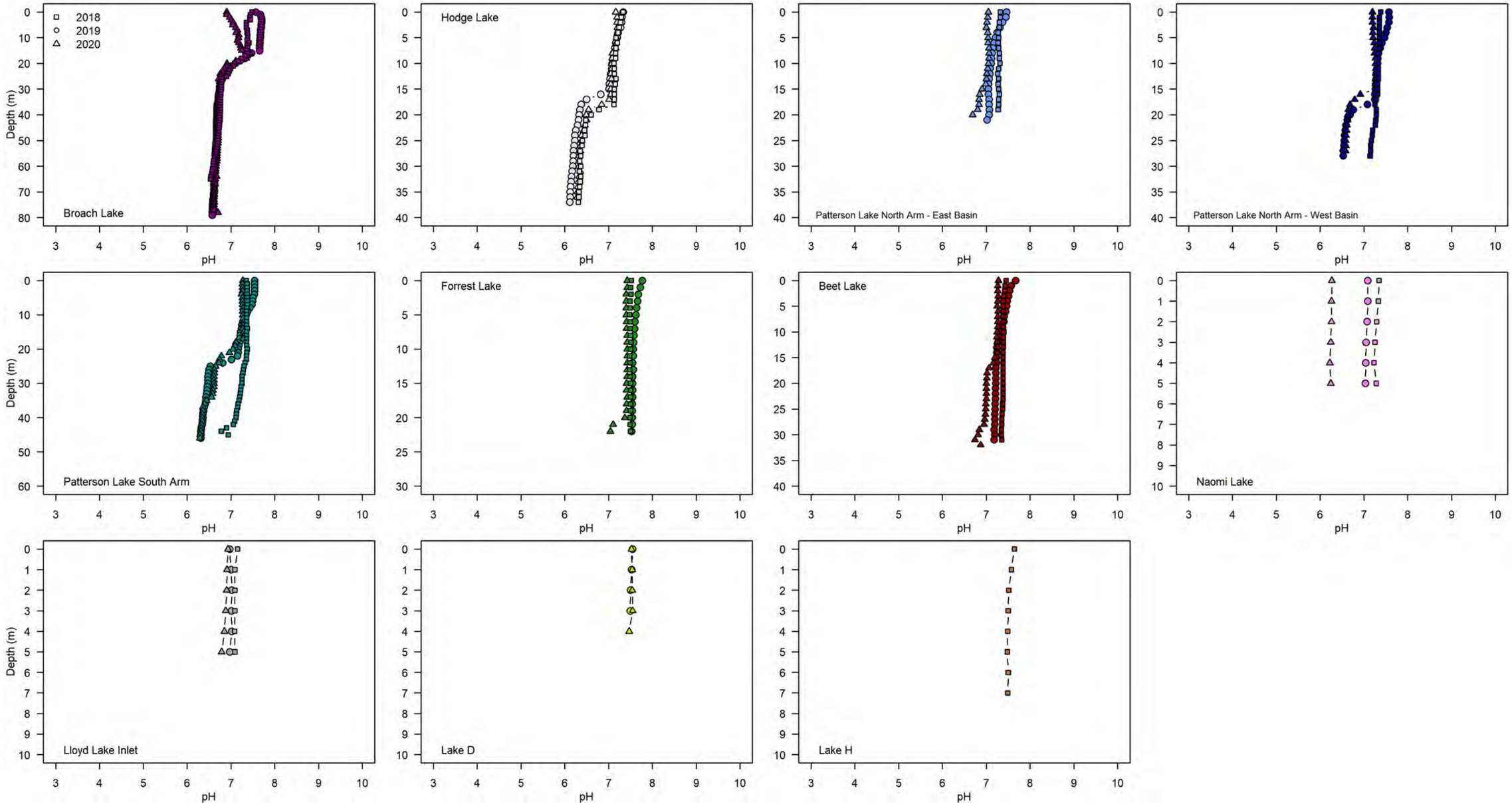


Figure 3.3-16: Fall pH Profiles from the Aquatic Study Area, 2018, 2019, and 2020

3.3.2 Chemistry

The following section focuses on selected key water quality parameters, with detailed results of all measured parameters provided in Appendix C, Tables 13 to 26. Key parameters summarized in Table 3.3-1 were selected based on constituents of potential concern identified in other uranium mining and milling operations in northern Saskatchewan as part of their Environmental Risk Assessments and routinely assessed as part of their Ministry of Environment (ENV) Environmental Monitoring Programs. Raw laboratory results and associated SRC QA/QC reports are provided in Appendix B. Results of QA/QC assessments are presented and discussed in Appendix A.

3.3.2.1 Metals/Dissolved Metals

As shown in Table 3.3-1, baseline concentrations of the selected key total metals and trace elements in the ASA were low, similar between waterbodies, and displayed little variability between sampling events. Concentrations of metal and trace element parameters were below available SEQGs with one exception. Total iron concentrations were measured above the SEQG of 0.3 mg/L at 15 of the 27 different sampling areas within the ASA, indicating iron concentrations are slightly elevated in the region (Appendix C, Table 13 to 15). Dissolved iron concentrations were also above the SEQG of 0.3 mg/L at 11 of the 27 different sampling areas (Appendix C, Table 13 to 15). Water samples collected from 39 different lakes in northern Saskatchewan between 2005 and 2014 were used to create a regional reference range for the Eastern Athabasca Monitoring Program (EARMP; CanNorth 2018). The regional reference range for iron was between 0.003 mg/L and 0.774 mg/L. Most of the areas in the ASA were within the EARMP reference range; however, four of the areas exceeded the range. Since these iron concentrations were measured during the baseline period, they are reflective of natural conditions.

3.3.2.2 Nutrients and Inorganic Ions/Dissolved Nutrients and Dissolved Inorganic Ions

The water chemistry data consistently illustrated that all waterbodies in the ASA contained low nutrient concentrations, which, in combination with the overall water clarity observed with the *in situ* Secchi Disc measurements, indicates the lakes are classified as oligotrophic (Wetzel 2001). Key nutrient parameters including nitrogen and ammonia (as N) remained below SEQGs (Table 3.3-1). The mean concentrations of inorganic ions were also low at sampling areas in the ASA, with key inorganic ions chloride and sulphate measured at levels two magnitudes (or more) below the SEQG of 120 mg/L and 128 mg/L, respectively (Table 3.3-1).

3.3.2.3 Radionuclides

Radionuclide activities were consistently near or below RDLs in all sampling stations and sampling seasons (Table 3.3-1). A SEQG is available only for radium-226, and all radium-226 activity levels in the ASA were generally two magnitudes lower than the SEQG of 0.11 Bq/L.

Table 3.3-1: Summary of Key Parameter Concentrations from Water Quality Monitoring Areas within the Aquatic Study Area

Parameter	Unit	SEQG	Broach Lake (n = 15)					Hodge Lake (n = 14)					Patterson Lake North Arm - East Basin (n = 15)					Patterson Lake North Arm - West Basin (n = 15)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																						
Chloride	mg/L	120	0.4	0.03	0.4	0.5	-	1.9	0.094	1.8	2.1	-	0.4	0.07	0.3	0.6	-	0.6	0.06	0.4	0.6	-
Sulfate	mg/L	128	1.9	0.080	1.8	2.1	-	1	0.05	1	1.1	-	1.2	0.11	1.1	1.6	-	1.5	0.11	1.3	1.7	-
Metals																						
Arsenic	mg/L	.005	0.0001	0.0001	0.0001	0.0005	-	0.0001	0.00003	<0.0001	0.0002	9	0.0001	0.00003	<0.0001	0.0002	3	0.0001	0	<0.0001	0.0001	5
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	14	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Copper	mg/L	0.002	0.0002	-	<0.0002	<0.0002	15	0.0002	-	<0.0002	<0.0002	14	0.0002	-	<0.0002	<0.0002	15	0.0002	-	<0.0002	<0.0002	15
Iron	mg/L	0.3	0.029	0.032	0.0088	0.12	-	0.018	0.010	0.0046	0.039	-	0.23	0.20	0.0085	0.79	-	0.045	0.12	0.0068	0.47	-
Lead	mg/L	0.001	0.0001	-	<0.0001	<0.0001	15	0.0001	0.0001	<0.0001	0.0004	13	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Molybdenum	mg/L	31	0.0001	0.00003	0.0001	0.0002	8	0.0001	-	<0.0001	<0.0001	14	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Nickel	mg/L	0.025	0.0001	-	<0.0001	<0.0001	15	0.0001	0.0001	<0.0001	0.0003	13	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	14	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Uranium	mg/L	.015	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	14	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	15
Zinc	mg/L	0.03	0.001	0.0007	<0.0005	0.0027	9	0.001	0.0008	0.0005	0.0028	5	0.0008	0.0005	<0.0005	0.0018	8	0.0009	0.0006	<0.0005	0.0028	8
Nutrients																						
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.03	0.05	<0.01	0.18	10	0.01	0.006	<0.01	0.03	10	0.03	0.05	<0.01	0.19	4	0.02	0.03	<0.01	0.12	11
Nitrate (as N)	mg/L	3	0.03	0.02	<0.01	0.07	7	0.01	0.009	<0.01	0.04	12	0.02	0.02	<0.01	0.1	10	0.01	0.007	<0.01	0.03	13
Physical Properties																						
Hardness, Total	mg/L	-	15	0.83	13	16	-	10	0.4	9	10	-	12	1.3	11	16	-	14	0.70	13	15	-
Solids, Total dissolved	mg/L	-	39	9.2	20	55	-	29	7.7	14	38	-	35	7.7	17	52	-	39	5.9	29	51	-
Radionuclides																						
Lead-210	Bq/L	-	0.02	-	<0.02	<0.02	15	0.02	-	<0.02	<0.02	14	0.02	0.004	<0.02	0.03	13	0.02	0.003	<0.02	0.03	14
Polonium-210	Bq/L	-	0.005	-	<0.005	<0.005	15	0.005	-	<0.005	<0.006	14	0.005	-	<0.005	<0.005	15	0.005	-	<0.005	<0.005	15
Radium-226	Bq/L	0.11	0.005	0.0004	<0.005	0.006	10	0.006	0.001	<0.005	0.01	10	0.007	0.002	<0.005	0.01	8	0.006	0.001	<0.005	0.008	9
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	15	0.01	-	<0.01	<0.01	14	0.01	-	<0.01	<0.01	15	0.01	-	<0.01	<0.01	15

Parameter	Unit	SEQG	Patterson Lake South Arm (n = 15)					Forrest Lake Area 1 (n = 11)					Forrest Lake Area 2 (n = 15)					Beet Lake (n = 13)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																						
Chloride	mg/L	120	0.6	0.05	0.5	0.6	-	0.6	0.05	0.5	0.7	-	0.8	0.08	0.6	0.9	-	0.6	0.05	0.6	0.7	-
Sulfate	mg/L	128	1.6	0.074	1.4	1.7	-	1.6	0.090	1.4	1.7	-	1.7	0.085	1.6	1.8	-	1.6	0.095	1.4	1.7	-
Metals																						
Arsenic	mg/L	.005	0.0001	0	<0.0001	0.0001	2	0.0001	0.00003	<0.0001	0.0002	1	0.0002	0.00005	0.0001	0.0002	-	0.0001	0.00004	<0.0001	0.0002	3
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	13
Copper	mg/L	0.002	0.0002	-	<0.0002	<0.0002	15	0.0003	0.0004	<0.0002	0.0014	10	0.0002	-	<0.0002	0.0002	14	0.00029	0.00033	<0.0002	0.0014	12
Iron	mg/L	0.3	0.018	0.0052	0.011	0.031	-	0.045	0.017	0.018	0.079	-	0.012	0.0059	0.0007	0.027	-	0.13	0.22	0.011	0.85	-
Lead	mg/L	0.001	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	15	0.00019	0.00033	<0.0001	0.0013	12
Molybdenum	mg/L	31	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	0.0001	8	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	13
Nickel	mg/L	0.025	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	15	0.0001	0	<0.0001	0.0002	12
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	15	0.0001	-	<0.0001	<0.0001	13
Uranium	mg/L	.015	0.0001	0.00003	<0.0001	0.0002	13	0.0001	0	<0.0001	0.0001	8	0.0001	0	<0.0001	0.0001	14	0.0001	-	<0.0001	<0.0001	13
Zinc	mg/L	0.03	0.001	0.0005	<0.0005	0.002	7	0.0009	0.0005	<0.0005	0.0018	4	0.0009	0.0006	<0.0005	0.0026	7	0.001	0.0004	<0.0005	0.0015	8
Nutrients																						
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.01	0.003	<0.01	0.02	13	0.01	0.003	<0.01	0.02	10	0.01	0.003	<0.01	0.02	14	0.04	0.08	<0.01	0.3	9
Nitrate (as N)	mg/L	3	0.02	0.02	<0.01	0.07	12	0.01	0.003	<0.01	0.02	10	0.01	0.003	<0.01	0.02	13	0.01	0.01	<0.01	<0.03	11
Physical Properties																						
Hardness, Total	mg/L	-	15	0.59	14	16	-	15	1.2	14	18	-	18	0.92	15	19	-	17	0.99	15	18	-
Solids, Total dissolved	mg/L	-	37	5.9	30	54	-	38	10	22	57	-	46	10	30	62	-	41	8.9	22	54	-
Radionuclides																						
Lead-210	Bq/L	-	0.02	-	<0.02	<0.02	15	0.02	-	<0.02	<0.02	11	0.02	0	<0.02	0.02	14	0.02	0	<0.02	0.02	11
Polonium-210	Bq/L	-	0.005	-	<0.005	<0.006	15	0.005	0.0003	<0.005	0.006	10	0.005	-	<0.005	<0.005	15	0.005	-	<0.005	<0.005	13
Radium-226	Bq/L	0.11	0.006	0.002	<0.005	0.01	11	0.005	0.0005	<0.005	0.006	8	0.006	0.001	<0.005	0.009	11	0.006	0.001	<0.005	0.01	10
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	15	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	15	0.01	-	<0.01	<0.01	13

Parameter	Unit	SEQG	Naomi Lake (n = 12)					Lloyd Lake Inlet (n = 13)					Lloyd Lake Outlet (n = 11)					Lake D (n = 8)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																						
Chloride	mg/L	120	0.5	0.1	0.3	0.6	-	0.7	0.1	0.5	0.9	-	0.7	0.1	0.5	0.9	-	0.1	0.1	<0.1	0.3	5
Sulfate	mg/L	128	0.6	0.1	0.5	0.8	-	1	0.2	0.7	1.3	-	0.9	0.2	0.7	1.2	-	1	0.1	0.8	1	-
Metals																						
Arsenic	mg/L	.005	0.0002	0.00003	0.0001	0.0002	-	0.0001	0.0001	<0.0001	0.0002	1	0.0001	0.00005	0.0001	0.0002	-	0.0001	0	<0.0001	0.0001	2
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	<0.0001	12	0.0001	-	<0.0001	<0.0001	13	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8
Copper	mg/L	0.002	0.0003	0.0002	<0.0002	0.0008	11	0.0003	0.0002	<0.0002	0.0006	11	0.0002	0.0001	<0.0002	0.0004	10	0.0002	-	<0.0002	0.0002	7
Iron	mg/L	0.3	0.83	0.24	0.35	1.26	-	0.42	0.16	0.10	0.69	-	0.47	0.24	0.17	0.97	-	0.42	0.59	0.04	1.58	-
Lead	mg/L	0.001	0.0001	0.0001	<0.0001	0.0003	11	0.0002	0.0002	<0.0001	0.001	12	0.0002	0.0004	<0.0001	0.0015	10	0.0001	-	<0.0001	<0.0001	8
Molybdenum	mg/L	31	0.0001	-	<0.0001	<0.0001	12	0.0001	-	<0.0001	<0.0001	13	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8
Nickel	mg/L	0.025	0.0001	0	<0.0001	0.0002	7	0.0001	-	<0.0001	0.0001	4	0.0001	0	<0.0001	0.0002	5	0.0001	0.0001	<0.0001	0.0003	7
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	12	0.0001	-	<0.0001	<0.0001	13	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8
Uranium	mg/L	.015	0.0001	-	<0.0001	<0.0001	12	0.0001	-	<0.0001	<0.0001	13	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8
Zinc	mg/L	0.03	0.001	0.0009	<0.0005	0.0037	3	0.0009	0.0007	<0.0005	0.0028	6	0.0009	0.0007	<0.0005	0.0028	7	0.0008	0.0004	<0.0005	0.0016	3
Nutrients																						
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.01	0.01	<0.01	0.04	9	0.02	0.01	<0.01	0.04	5	0.02	0.01	<0.01	0.05	7	0.2	0.3	<0.01	0.84	1
Nitrate (as N)	mg/L	3	0.03	0.04	<0.01	0.11	10	0.02	0.02	<0.01	0.07	11	0.02	0.02	<0.01	0.08	9	0.01	0.005	<0.01	0.02	5
Physical Properties																						
Hardness, Total	mg/L	-	9	2	7	12	-	11	1.4	9	13	-	11	1.3	9	13	-	20	3.1	17	25	-
Solids, Total dissolved	mg/L	-	38	8.9	24	58	-	40	6.7	31	51	-	36	6.4	26	46	-	52	14	32	72	-
Radionuclides																						
Lead-210	Bq/L	-	0.02	0.01	<0.02	0.05	11	0.02	0.003	<0.02	0.03	12	0.02	-	<0.02	<0.02	11	0.02	0.004	<0.02	0.03	7
Polonium-210	Bq/L	-	0.005	0.001	<0.005	0.007	10	0.005	-	<0.005	<0.005	13	0.005	-	<0.005	<0.005	11	0.006	0.001	<0.005	0.007	4
Radium-226	Bq/L	0.11	0.006	0.001	<0.005	0.008	8	0.006	0.002	<0.005	0.01	9	0.005	-	<0.005	<0.005	11	0.005	0	<0.005	0.005	7
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	12	0.01	-	<0.01	<0.01	13	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	8

Parameter	Unit	SEQG	Lake G (n = 11)					Lake H (n = 11)					Lake J (n = 8)					Jed Creek (n = 11)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																						
Chloride	mg/L	120	0.1	0.06	<0.1	0.3	5	0.2	0.04	0.1	0.3	-	0.1	0.04	<0.1	0.2	4	0.3	0.08	0.2	0.4	-
Sulfate	mg/L	128	1	0.6	0.9	3	-	0.3	0.1	0.2	0.4	-	0.7	0.1	0.6	0.9	-	1.2	0.19	1.0	1.6	-
Metals																						
Arsenic	mg/L	.005	0.0001	0.00003	<0.0001	0.0002	8	0.0002	0.0001	<0.0001	0.0002	1	0.0002	0.00005	0.0001	0.0002	-	0.0001	0.00005	<0.0001	0.0002	1
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	0.0001	10	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8	0.0001	-	<0.0001	<0.0001	11
Copper	mg/L	0.002	0.0004	0.0005	<0.0002	0.0019	10	0.0002	-	<0.0002	<0.0002	11	0.0003	0.0001	<0.0002	0.0005	6	0.0002	-	<0.0002	0.0002	10
Iron	mg/L	0.3	0.69	0.72	0.15	2.44	-	0.43	0.67	0.056	2.08	-	0.056	0.048	0.026	0.17	-	0.42	0.13	0.25	0.64	-
Lead	mg/L	0.001	0.0001	-	<0.0001	<0.0001	11	0.0001	0	<0.0001	0.0002	9	0.0002	0.0002	<0.0001	0.0006	7	0.0001	-	<0.0001	<0.0001	11
Molybdenum	mg/L	31	0.0001	-	<0.0001	0.0001	10	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8	0.0001	-	<0.0001	0.0001	8
Nickel	mg/L	0.025	0.0001	-	<0.0001	0.0001	9	0.0001	-	<0.0001	<0.0001	11	0.0001	0.0001	<0.0001	0.0004	7	0.0001	-	<0.0001	0.0001	4
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8	0.0001	-	<0.0001	<0.0001	11
Uranium	mg/L	.015	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	8	0.0001	-	<0.0001	<0.0001	11
Zinc	mg/L	0.03	0.002	0.002	<0.0005	0.0056	3	0.001	0.0005	<0.0005	0.0019	2	0.001	0.0004	0.0006	0.0017	-	0.0008	0.0005	<0.0005	0.002	4
Nutrients																						
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.1	0.2	<0.01	0.65	2	0.1	0.2	<0.01	0.6	6	0.09	0.1	<0.01	0.41	4	0.01	0.01	<0.01	0.03	7
Nitrate (as N)	mg/L	3	0.05	0.08	<0.01	0.23	8	0.01	0.003	<0.01	0.02	10	0.01	0.004	<0.01	0.02	7	0.02	0.02	<0.01	0.07	9
Physical Properties																						
Hardness, Total	mg/L	-	17	6.1	12	33	-	16	3.3	13	22	-	2	1	<1	2	1	9	2	7	12	-
Solids, Total dissolved	mg/L	-	60	26	33	114	-	45	10	28	62	-	16	8.1	<5	29	1	40	9.2	25	54	-
Radionuclides																						
Lead-210	Bq/L	-	0.02	0.003	<0.02	0.03	9	0.02	0.004	<0.02	0.03	10	0.02	0.005	<0.02	0.03	6	0.02	-	<0.02	<0.02	11
Polonium-210	Bq/L	-	0.006	0.002	<0.005	0.009	5	0.006	0.002	<0.005	0.01	6	0.00813	0.002	<0.005	0.01	1	0.005	-	<0.005	<0.005	11
Radium-226	Bq/L	0.11	0.006	0.002	<0.005	0.01	6	0.005	0.001	<0.005	0.009	10	0.005	0.0004	<0.005	0.006	7	0.006	0.002	<0.005	0.01	8
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	8	0.01	-	<0.01	<0.01	11

Parameter	Unit	SEQG	Beet Creek (n = 11)					Clearwater River (n = 11)					Clearwater River Mid-field Area 1 (n = 1)					Clearwater River Mid-field Area 2 (n = 1)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																						
Chloride	mg/L	120	0.6	0.1	0.6	0.8	-	0.6	0.1	0.5	0.7	-	0.4	-	0.4	0.4	-	0.7	-	0.7	0.7	-
Sulfate	mg/L	128	1.6	0.14	1.4	1.8	-	1.2	0.16	0.80	1.4	-	1.1	-	1.1	1.1	-	0.9	-	0.9	0.9	-
Metals																						
Arsenic	mg/L	.005	0.0001	0.00004	<0.0001	0.0002	1	0.0001	0.00005	<0.0001	0.0002	1	0.0002	-	0.0002	0.0002	-	0.0002	-	0.0002	0.0002	-
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1
Copper	mg/L	0.002	0.0002	-	<0.0002	<0.0002	11	0.0002	-	<0.0002	0.0002	10	0.0005	-	0.0005	0.0005	-	0.0002	-	<0.0002	<0.0002	1
Iron	mg/L	0.3	0.093	0.054	0.022	0.19	-	0.43	0.29	0.18	1.2	-	0.31	-	0.31	0.31	-	0.66	-	0.66	0.66	-
Lead	mg/L	0.001	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	0.0001	9	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1
Molybdenum	mg/L	31	0.0001	-	<0.0001	0.0001	10	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1
Nickel	mg/L	0.025	0.0001	0.0001	<0.0001	0.0004	10	0.0001	0.00003	<0.0001	0.0002	9	0.0002	-	0.0002	0.0002	-	0.0001	-	0.0001	0.0001	-
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1
Uranium	mg/L	.015	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	11	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1
Zinc	mg/L	0.03	0.001	0.0007	<0.0005	0.003	4	0.0007	0.0003	<0.0005	0.0013	5	0.0038	-	0.0038	0.0038	-	0.0005	-	<0.0005	<0.0005	1
Nutrients																						
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.02	0.01	<0.01	0.05	8	0.02	0.02	<0.01	0.06	7	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	1
Nitrate (as N)	mg/L	3	0.03	0.06	<0.01	0.22	10	0.02	0.02	<0.01	0.05	9	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	1
Physical Properties																						
Hardness, Total	mg/L	-	17	1.4	15	19	-	13	1.6	10	15	-	12	-	12	12	-	11	-	11	11	-
Solids, Total dissolved	mg/L	-	43	11	21	58	-	43	11	26	58	-	42	-	42	42	-	38	-	38	38	-
Radionuclides																						
Lead-210	Bq/L	-	0.02	0	<0.02	0.02	10	0.02	-	<0.02	<0.02	11	0.02	-	<0.02	<0.02	1	0.02	-	<0.02	<0.02	1
Polonium-210	Bq/L	-	0.005	-	<0.005	<0.005	11	0.005	0.001	<0.005	0.009	10	0.005	-	<0.005	<0.005	1	0.005	-	<0.005	<0.005	1
Radium-226	Bq/L	0.11	0.006	0.002	<0.005	0.01	9	0.005	0.001	<0.005	0.008	9	0.005	-	<0.005	<0.005	1	0.009	-	0.009	0.009	-
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	11	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	1

Parameter	Unit	SEQG	Clearwater River Mid-field Area 3 (n = 1)					Mirror River (n = 1)					Warner Rapids (n = 11)				
			Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL	Mean	SD	Min	Max	#<RDL
Inorganic Ions																	
Chloride	mg/L	120	0.4	-	0.4	0.4	-	0.9	-	0.9	0.9	-	0.5	0.1	0.3	0.7	-
Sulfate	mg/L	128	1.1	-	1.1	1.1	-	0.8	-	0.8	0.8	-	1	0.2	0.8	1.4	-
Metals																	
Arsenic	mg/L	.005	0.0001	-	<0.0001	<0.0001	1	0.0002	-	<0.0002	0.0002	-	0.0001	0.00005	0.0001	0.0002	-
Cobalt	mg/L	0.00078	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	0.0001	1	0.0001	-	<0.0001	0.0001	9
Copper	mg/L	0.002	0.0002	-	<0.0002	<0.0002	1	0.0002	-	<0.0002	0.0002	1	0.0002	0.0001	<0.0002	0.0005	10
Iron	mg/L	0.3	0.26	-	0.26	0.26	-	0.74	-	0.74	0.74	-	0.67	0.23	0.41	1.14	-
Lead	mg/L	0.001	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	0.0001	1	0.0001	-	<0.0001	0.0001	10
Molybdenum	mg/L	31	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	0.0001	1	0.0001	-	<0.0001	<0.0001	11
Nickel	mg/L	0.025	0.0001	-	<0.0001	<0.0001	1	0.0001	-	0.0001	0.0001	-	0.0004	0.0008	0.0001	0.0028	-
Selenium	mg/L	0.001	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	11
Uranium	mg/L	.015	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	1	0.0001	-	<0.0001	<0.0001	11
Zinc	mg/L	0.03	0.0007	-	0.0007	0.0007	-	0.0005	-	<0.0005	<0.0005	1	0.001	0.001	<0.0005	0.0032	4
Nutrients																	
Ammonia (as N)	mg/L	0.291 to 39.5[a]	0.02	-	0.02	0.02	-	0.01	-	<0.01	<0.01	1	0.02	0.02	<0.01	0.09	6
Nitrate (as N)	mg/L	3	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	1	0.02	0.02	<0.01	0.08	9
Physical Properties																	
Hardness, Total	mg/L	-	12	-	12	12	-	10	-	10	10	-	11	1.4	9	13	-
Solids, Total dissolved	mg/L	-	38	-	38	38	-	39	-	39	39	-	45	9.1	30	64	-
Radionuclides																	
Lead-210	Bq/L	-	0.02	-	<0.02	<0.02	1	0.02	-	<0.02	<0.02	1	0.02	0.003	<0.02	0.03	10
Polonium-210	Bq/L	-	0.005	-	<0.005	<0.005	1	0.005	-	<0.005	<0.005	1	0.005	0	<0.005	0.005	10
Radium-226	Bq/L	0.11	0.005	-	<0.005	<0.005	1	0.005	-	<0.005	<0.005	1	0.006	0.001	<0.005	0.009	8
Thorium-230	Bq/L	-	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	1	0.01	-	<0.01	<0.01	11

a) Ammonia guideline based on field measured water temperature and pH.

4.0 SEDIMENT QUALITY

4.1 Study Objectives

The objective of the sediment quality monitoring program was to provide an understanding of existing baseline conditions in the ASA in order to provide a baseline for which future conditions can be compared, and to provide sediment quality data for the EA (CNSC 2020). Sediment quality is an important aspect of aquatic ecosystems, as it can influence the quality of overlying waters and the benthic invertebrate community residing in the sediment. The study design for the sediment quality program targeted depositional areas since these areas can accumulate concentrations of parameters over time (CSA 2010), but also prioritized collecting sediment quality data alongside benthic invertebrate community data to provide supporting site characterization information.

4.2 Methods

4.2.1 Sample Location

In the ASA, sediment quality samples were collected between 22 September 2018 and 2 October 2018 from 13 sampling locations (Figure 4.2-1 to Figure 4.2-12). One sampling area was established in each waterbody, with the exceptions of Patterson Lake and Forrest Lake, which had multiple samples. Three locations were sampled on Patterson Lake, including North Arm – East Basin, North Arm – West Basin, and South Arm. Two areas on Forrest Lake were sampled, including a site located near the outflow of Patterson Creek (which is in the potential effluent flow path), and another site located further away from the creek, which was selected to have comparable sample depths to other waterbodies in the ASA. In each sampling area, five replicate stations were separated by a minimum distance of 20 m and often more in the larger lakes (Figure 4.2-1 to Figure 4.2-12). This minimum sampling distance allowed sufficient physical separation for the samples to be considered as statistical replicates, according to the Metal Mining Environmental Effects Monitoring (EEM) program guidance document (EC 2012). The UTM coordinates and depth of each sampling station are provided in Appendix C, Table 1.

Sediment chemistry and characterization stations were co-located with the benthic invertebrate community stations to provide supporting data for interpretation of benthic invertebrate results. To obtain adequate densities and diversities of benthic invertebrates, station depths were targeted to be less than 8 m in depth. Due to high densities of sand preventing the use of the sediment coring device in shallow areas in two areas of Patterson Lake (Patterson Lake North Arm – East Basin and North Arm – West Basin) and one area of Forrest Lake in the 2018 survey, sediment chemistry and characterization stations were re-located to depositional zones at deeper locations in 2019 for these areas. In the shallow areas mentioned above, where the sediment coring device could not be used, benthic invertebrate sampling still occurred using an Ekman dredge. An Ekman dredge was also used to collect additional sediment samples to conduct sediment characterization.

Laboratory error resulted in the exclusion of inorganic ions, phosphorus, and metals data for one sample in each of Broach Lake, Lake G, and Lake H, and three samples from Naomi Lake. Despite this exclusion, there were sufficient samples to perform statistical analyses for Broach Lake, Lake G, and Lake H. As there was an insufficient data set from the 2018 Naomi Lake samples, samples were re-collected 22 February 2019, and only the 2019 samples are presented herein.

Additionally, in September 2019, the deep stations (>20 m) previously sampled in Patterson Lake North Arm – West Basin and Forrest Lake in 2018 were re-sampled in order to obtain coincident benthic invertebrate samples from these depths and the shallow area in Patterson Lake North Arm – East Basin was resampled.

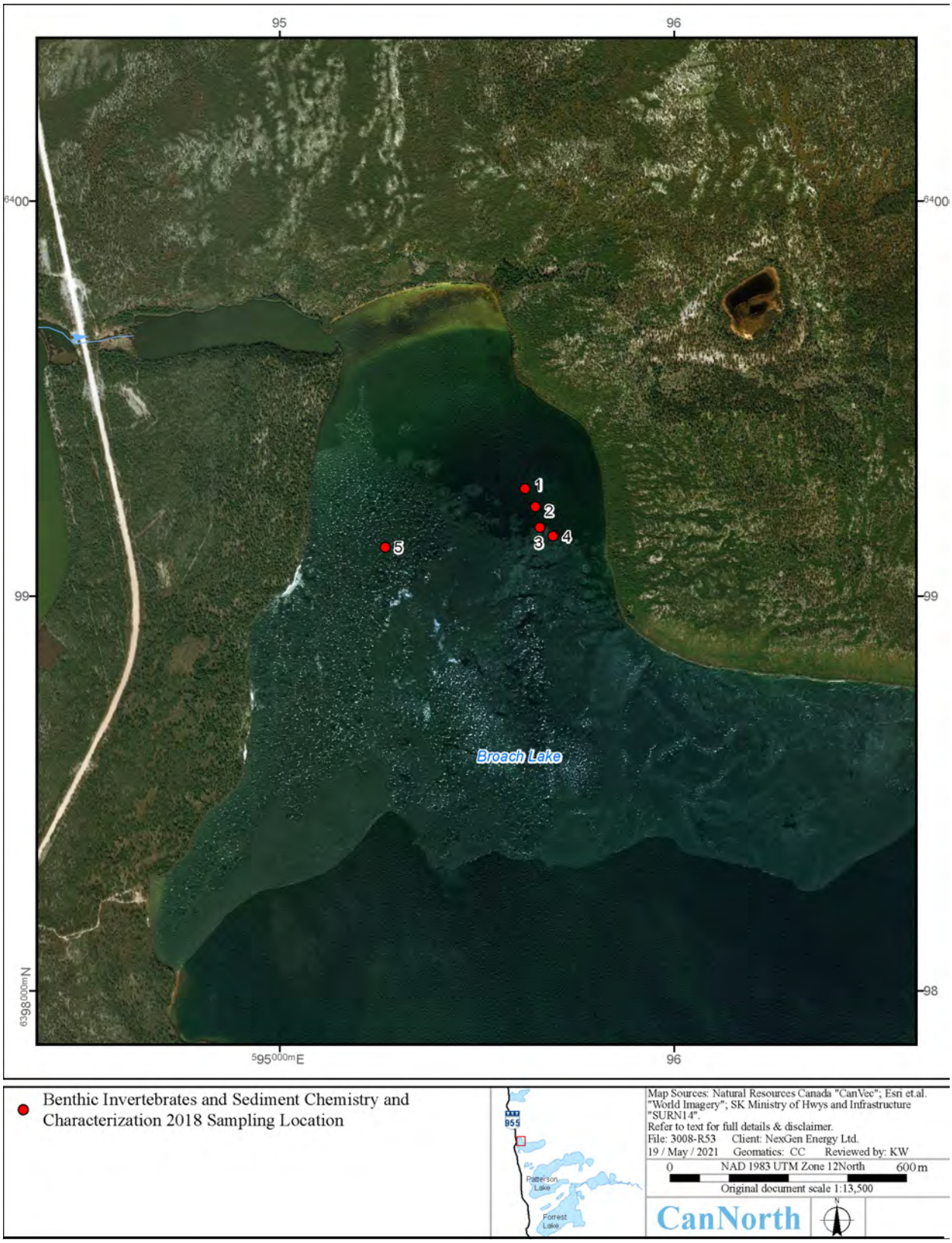


Figure 4.2-1: Benthic Invertebrate and Sediment Sampling Stations in Broach Lake Area 1, 2018

Figure 4.2-2: Benthic Invertebrate and Sediment Sampling Stations in Hodge Lake Area 2, 2018

Figure 4.2-3: Benthic Invertebrate and Sediment Sampling Stations in Patterson Lake North Arm – East Basin Area 2 and Area 3, 2018 and 2019

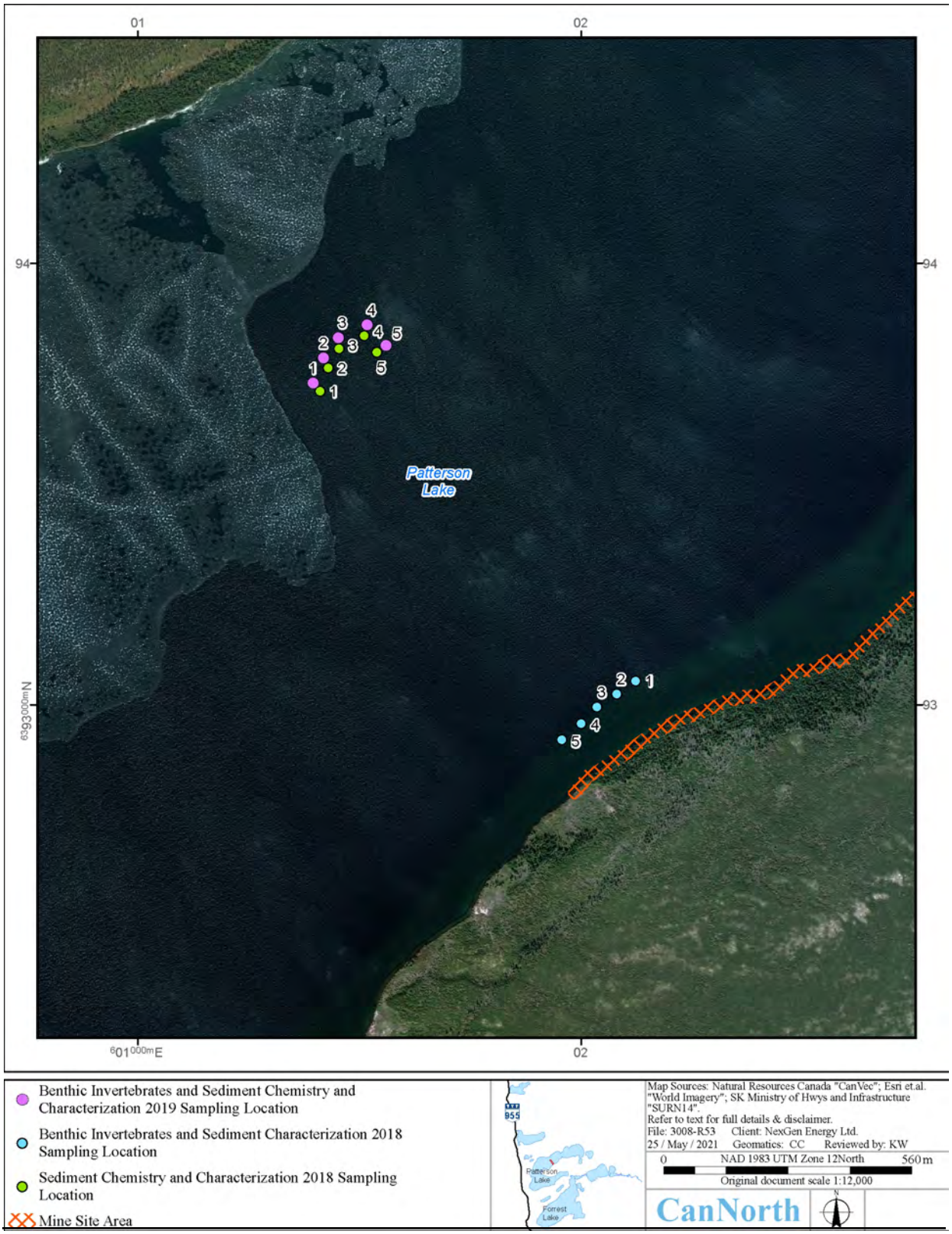


Figure 4.2-4: Benthic Invertebrate and Sediment Sampling Stations in Patterson Lake North Arm – West Basin Area 1 and Area 2, 2018 and 2019

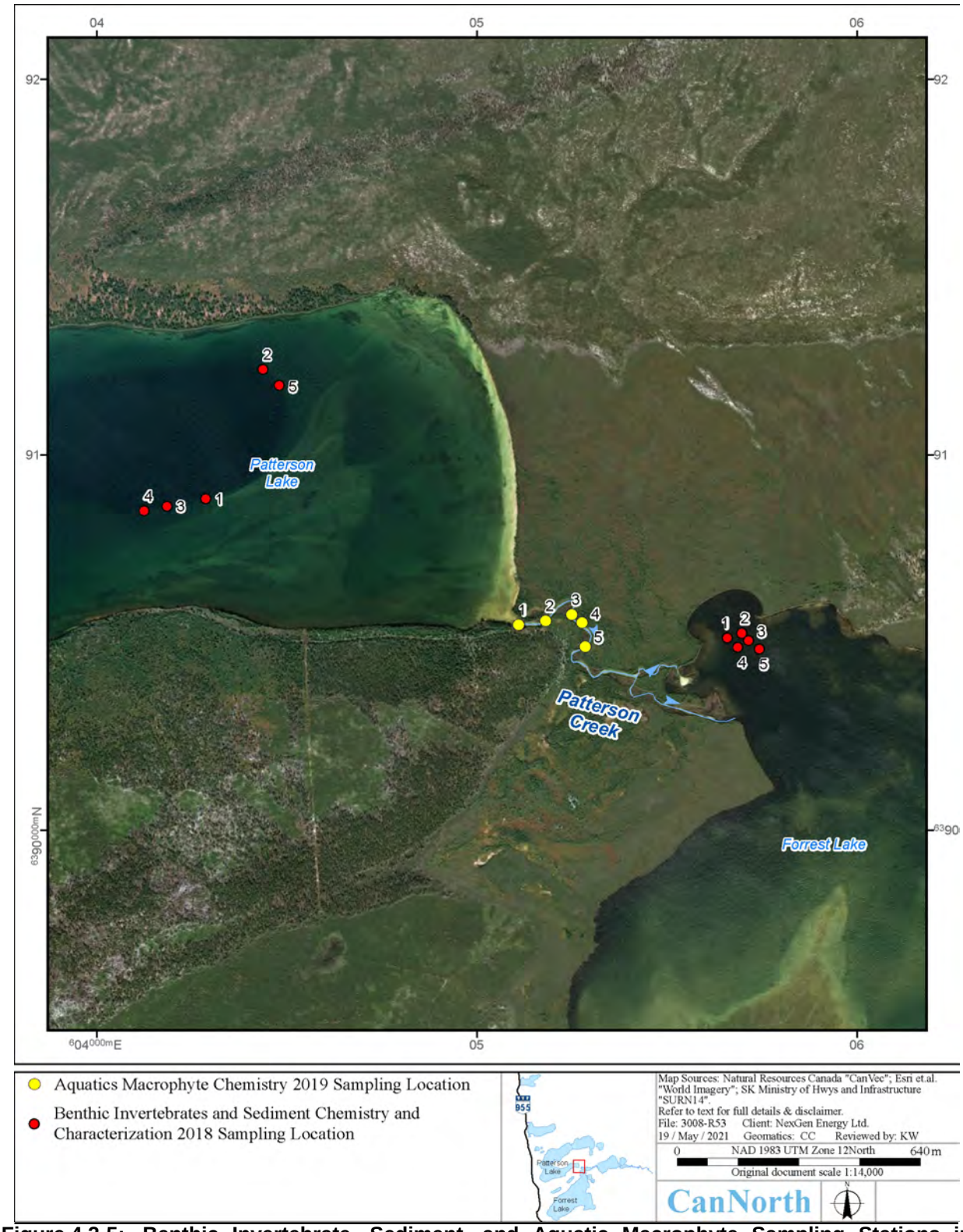


Figure 4.2-5: Benthic Invertebrate, Sediment, and Aquatic Macrophyte Sampling Stations in Patterson Lake South Arm Area 2, Forrest Lake Area 2, and Patterson Creek, 2018 and 2019

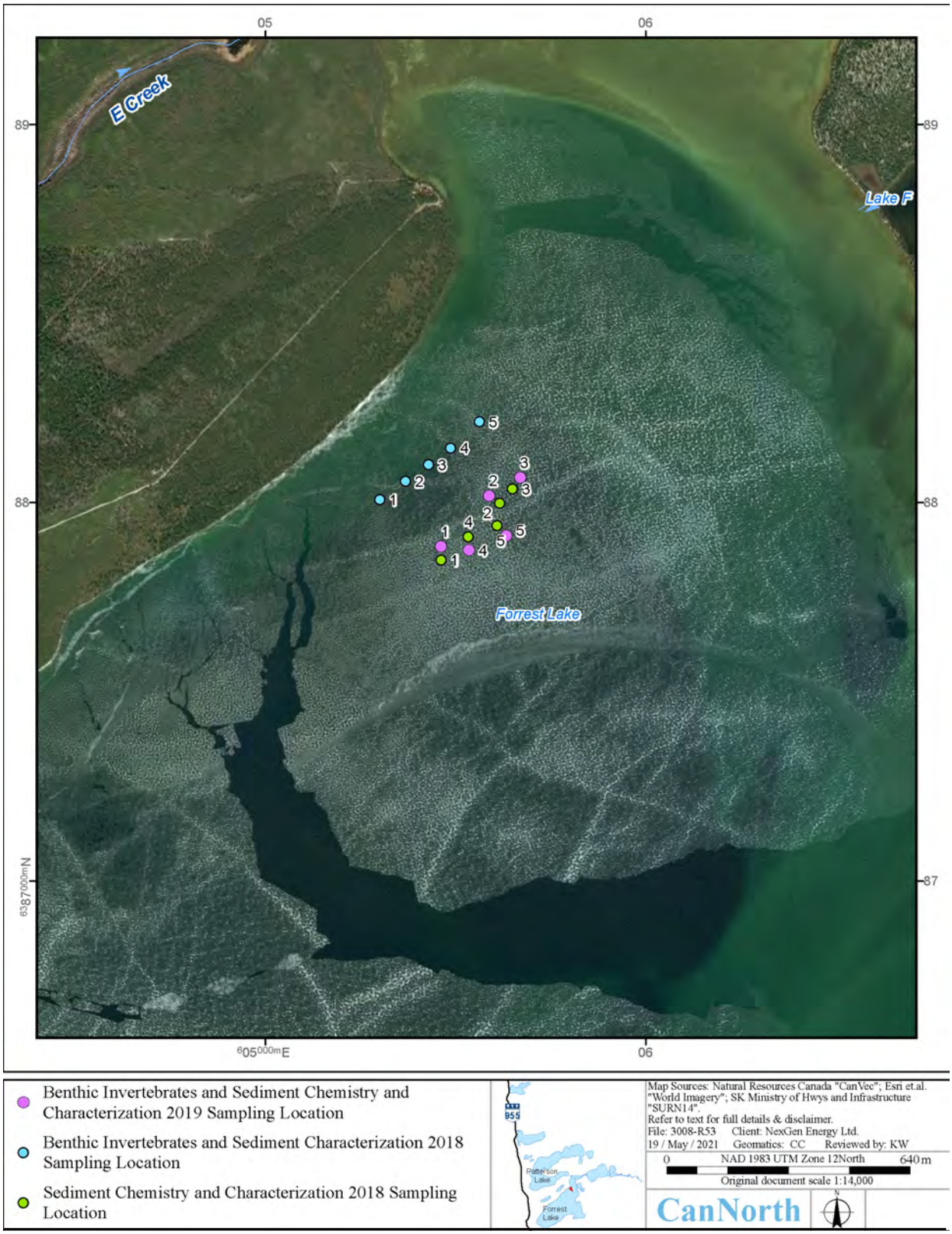


Figure 4.2-6: Benthic Invertebrate and Sediment Sampling Stations in Forrest Lake Area 3 and Forrest Lake Area 4, 2018 and 2019

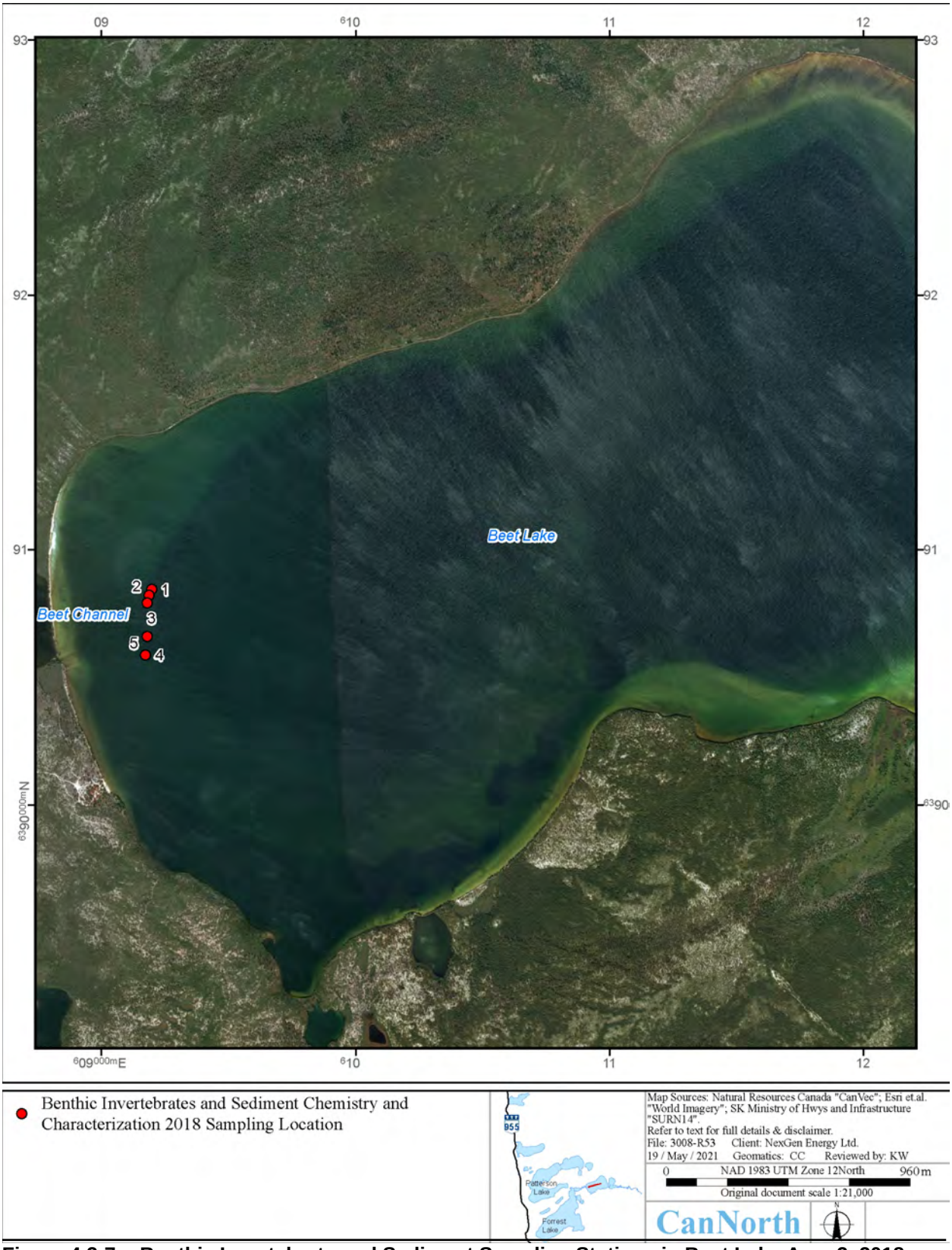


Figure 4.2-7: Benthic Invertebrate and Sediment Sampling Stations in Beet Lake Area 2, 2018

Figure 4.2-8: Benthic Invertebrate and Sediment Sampling Stations in Naomi Lake, 2018

Figure 4.2-9: Benthic Invertebrate, Sediment, and Aquatic Macrophyte Sampling Stations in Clearwater River Nearfield Area 2, 2018 and 2019

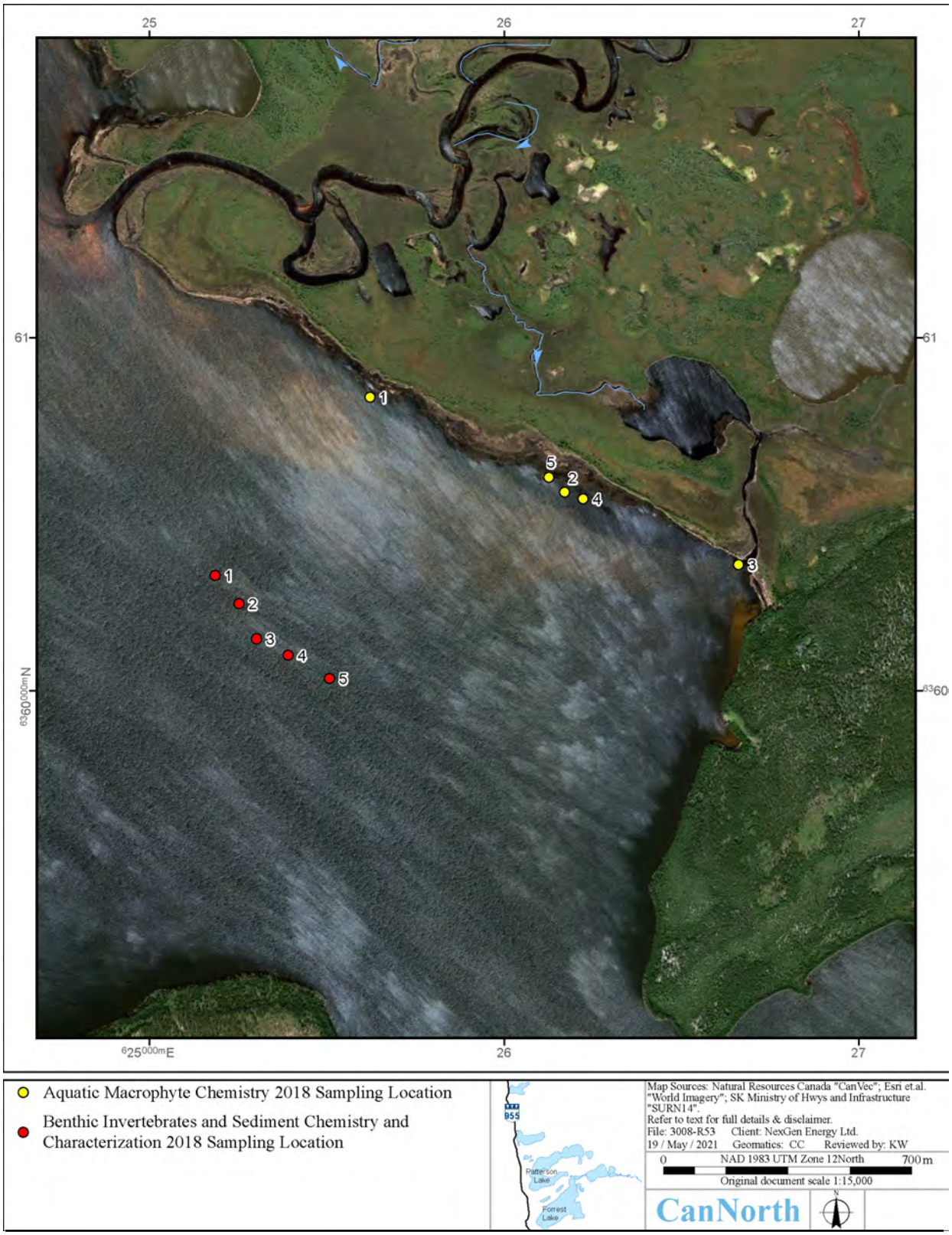


Figure 4.2-10: Benthic Invertebrate, Sediment, and Aquatic Macrophyte Sampling Stations in Lloyd Lake Inlet, 2018

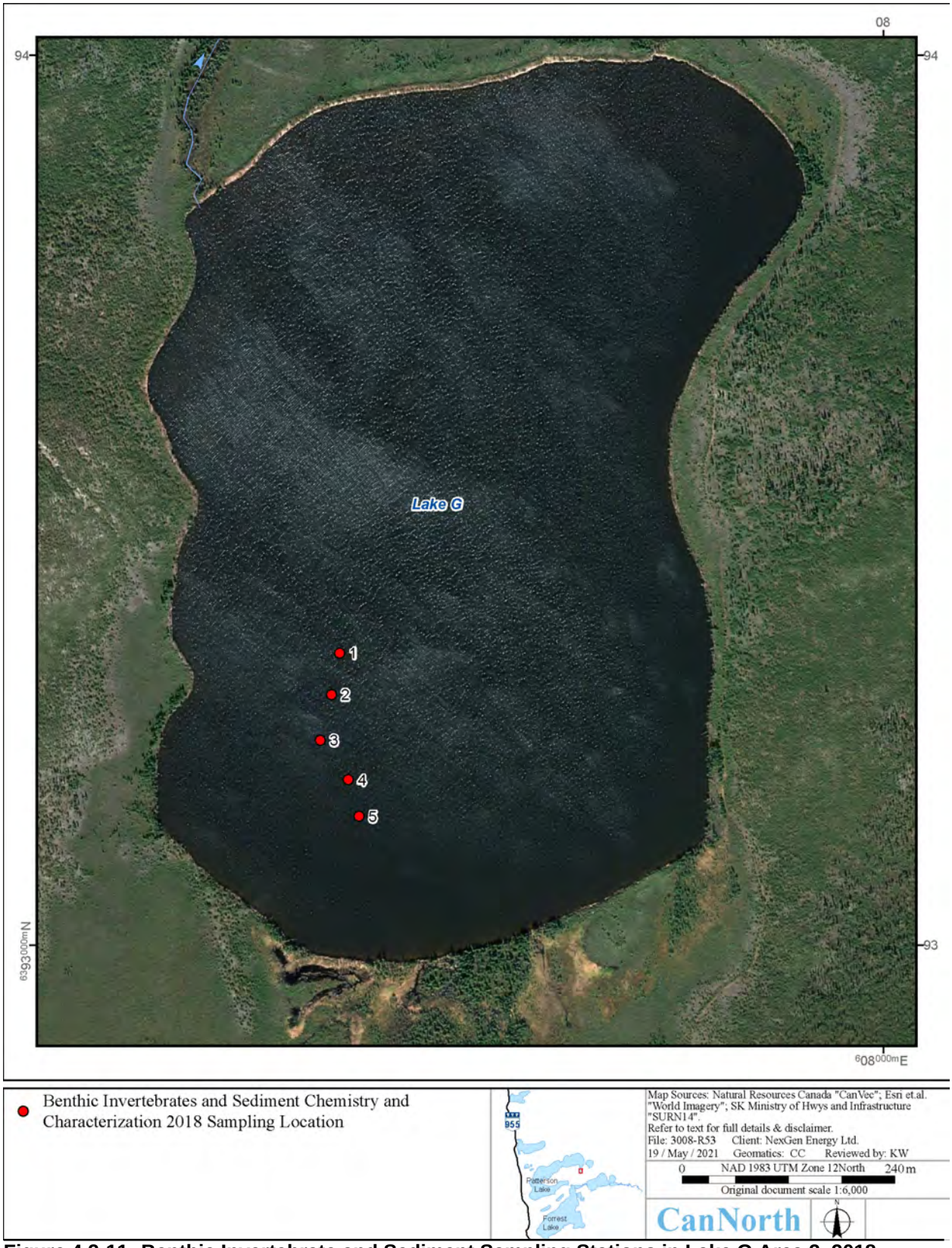


Figure 4.2-11: Benthic Invertebrate and Sediment Sampling Stations in Lake G Area 2, 2018

Figure 4.2-12: Benthic Invertebrate and Sediment Sampling Stations in Lake H Area 2, 2018

4.2.2 Sample Collection

Sediment chemistry (n = 80) and characterization (n = 95) samples were collected using a Tech-Ops extruder corer (10-cm diameter). The Tech-ops extruder corer consists of a 1-m length of Lexan polycarbonate tubing and a head-piece. The tube is attached to the head-piece which contains a valve that creates a vacuum in the tube. The vacuum prevents the sediment core from sliding out of the tube when it is retrieved from the lake bottom. To collect a sample, the corer was lowered into the sediment and then retrieved. Two cores were composited per station, and the 0 centimetres (cm) to 2 cm, 2 cm to 4 cm, and 4 cm to 6 cm sediment horizons were individually retained. At six sampling locations in 2018, duplicate sediment samples of the 0 cm to 2 cm horizon were collected for sediment chemistry QA/QC. One duplicate sample was also taken in February 2019 from Naomi Lake, and two additional duplicate samples were taken in September 2019 from Patterson Lake and Forrest Lake. In addition, a detailed core log was completed for one of the sediment cores at each station to document sediment characteristics such as horizon thickness, colour, and odour (Appendix D). The 0 cm to 2 cm horizons were submitted to SRC laboratory in Saskatoon for chemical, particle size, and total organic carbon (TOC) analysis. The 2 cm to 4 cm and 4 cm to 6 cm sediment horizons were archived in the freezer for possible future analysis.

At the three 2018 benthic invertebrate stations that were not co-located with sediment chemistry stations, an Ekman dredge with a 0.052 square metres (m^2) sampling area was used to collect sediment for sediment characterization. The 0 cm to 5 cm horizon was scooped from the top of one Ekman grab per station and retained for analyses.

The surveys were conducted in accordance with the CanNorth SOP for Sediment Coring from a Boat and Winter Sediment Sampling, which are based on best practices recommended in numerous guidance documents (Government of Alberta 2006; EC 2012; ENV 2014b; CCME 2016).

4.2.3 Laboratory Analyses

Chemical analyses were completed by the SRC laboratories in Saskatoon for the parameters listed in Table 4.2-1. Parameters were chosen based on standard measures of sediment quality characterization along with parameters specific to uranium mining (CSA 2010).

Table 4.2-1: Sediment Chemistry Parameters

Parameters	
Inorganic Ions and Physical Properties	Calcium, Magnesium, Potassium, Sodium, Particle Size (by laser diffraction method), Loss on Ignition, % Moisture
Nutrients	Total Organic Carbon, Total Phosphorus
Metals and Trace Elements	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc
Radionuclides	Lead-210, Polonium-210, Radium-226, Thorium-230

The samples collected in 2018 at the benthic invertebrate stations in two areas of Patterson Lake and one area of Forrest Lake using an Ekman dredge were also submitted to SRC laboratories in Saskatoon for analyses of particle size, TOC, and moisture.

The particle size breakdown followed the Wentworth categorization recommended in the Metal Mining EEM program guidance document (EC 2012) provided in Table 4.2-2.

Table 4.2-2: Particle Size Breakdown

Classification	Particle Size
Gravel	2.00 mm to 16.0 mm
Coarse Sand	0.2 mm to 2.0 mm
Fine Sand	0.062 mm to 0.2 mm
Silt	0.0039 mm to 0.062 mm
Clay	< 0.0039 mm

4.2.4 Data Analyses

Sediment quality data were summarized with basic descriptive statistics (mean, standard deviation, minimum, maximum, and number of samples below the RDLs) to provide a general overview. Where available, parameter concentrations in sediment were compared to the CEQG for the protection of aquatic life (CCME 2019) and to sediment quality guidelines recommended for the uranium mining and milling industry in Canada by Thompson et al. (2005). The CCME interim sediment quality guideline (ISQG) represents the concentration below which there is unlikely to be any adverse biological effects (CCME 2019). The CCME probable effect level (PEL) is the guideline level above which adverse effects are expected to frequently occur (CCME 2019). The lowest effect level (LEL) represents the concentration below which harmful effects on benthic invertebrates are not expected to occur (Thompson et al. 2005). Further, sediment chemistry results were compared to proposed sediment quality values for uranium operations in northern Saskatchewan. Reference (REF) values were derived based solely on sediment metal and trace element concentrations from reference sites, and no-effect (NE2) values incorporate sites where benthic invertebrates were unaffected by effluent (Burnett-Seidel and Liber 2013).

4.3 Results

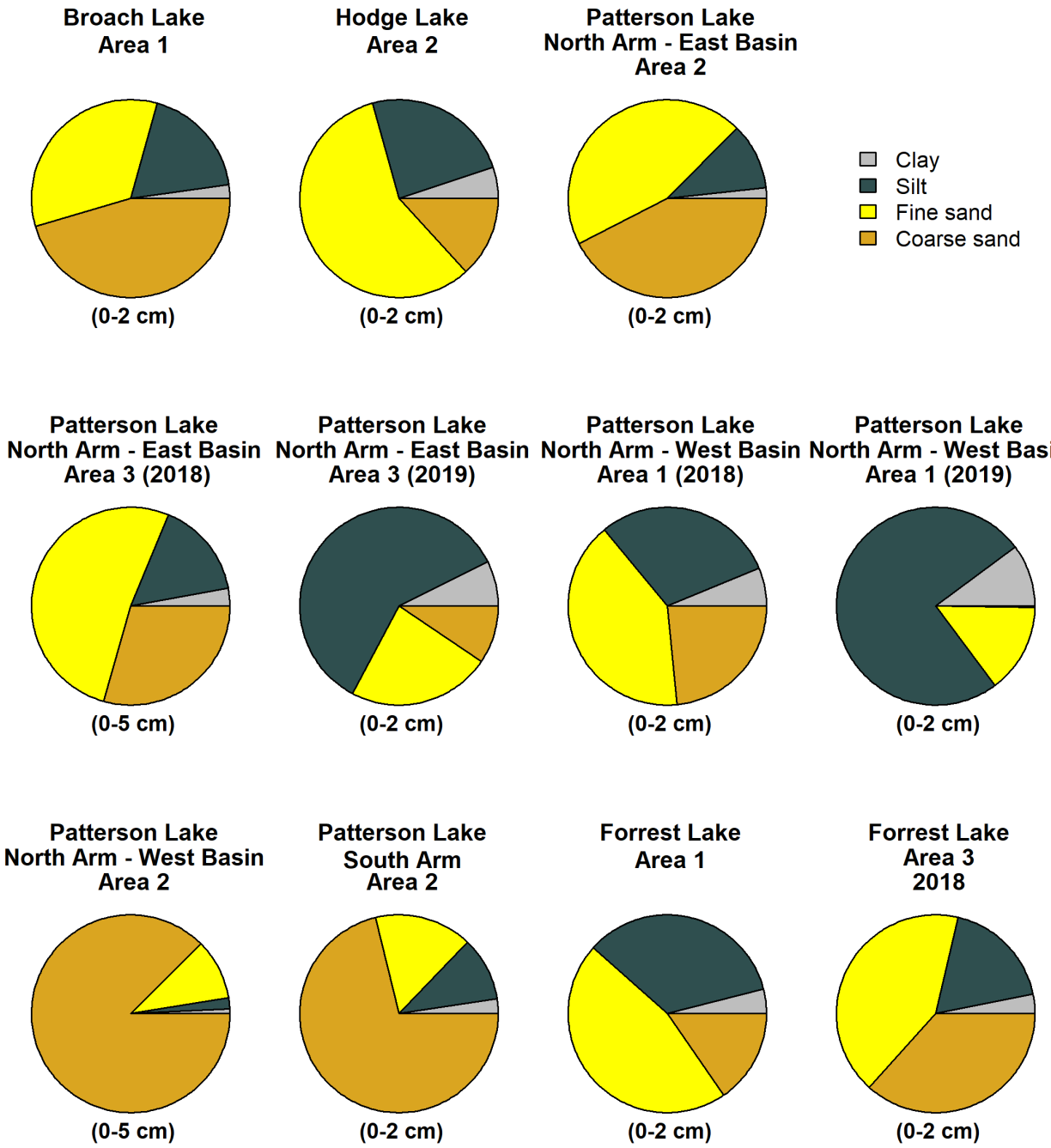
4.3.1 Particle Size

A summary of the particle content in sediment samples (n = 95) collected from the ASA is provided in Figure 4.3-1, and sediment particle size and TOC content is shown in Appendix C, Table 27 and 28. SRC data sheets and the sediment core log sheets are available in Appendix B and Appendix D, respectively.

In 2018, fine sand and coarse sand accounted for the majority (17/19) of the particle size composition in the samples taken from the ASA (Figure 4.3-1). There was also high silt content in some areas, while clay only accounted for a low percentage of the sediment composition. The three study areas sampled in Patterson Lake showed variability within the lake, with Patterson Lake North Area 1 having higher silt concentrations and Patterson Lake East Area 2 have higher coarse sand concentrations. The study areas re-sampled in 2019 in Patterson Lake and Forrest Lake Area 3 consistently illustrated different particle size results to those reported in 2018, which after an investigation with SRC, was identified to be a result of inconsistencies in laboratory methods.

At the benthic invertebrate stations where sediment samples were collected using an Ekman dredge (n = 15), the 0 cm to 5 cm horizons from Patterson Lake North Area 2 and Forrest Lake Area 4 were comprised predominantly of coarse sand (>83%), while Patterson Lake Northeast Area 3 was comprised of fine sand, coarse sand, and silt (Figure 4.3-1; Appendix C, Table 28).

The TOC content of the sediment had high variability between study areas and ranged from 0.24% ± 0.06% at Beet Lake Area 2 to 25.8% ± 0.58% at Naomi Lake.


Broach Lake
Area 1
(0-2 cm)
Hodge Lake
Area 2
(0-2 cm)
Patterson Lake
North Arm - East Basin
Area 2
(0-2 cm)
Clay
Silt
Fine sand
Coarse sand
Patterson Lake
North Arm - East Basin
Area 3 (2018)
(0-5 cm)
Patterson Lake
North Arm - East Basin
Area 3 (2019)
(0-2 cm)
Patterson Lake
North Arm - West Basin
Area 1 (2018)
(0-2 cm)
Patterson Lake
North Arm - West Basin
Area 1 (2019)
(0-2 cm)
Patterson Lake
North Arm - West Basin
Area 2
(0-5 cm)
Patterson Lake
South Arm
Area 2
(0-2 cm)
Forrest Lake
Area 1
(0-2 cm)
Forrest Lake
Area 3
2018
(0-2 cm)

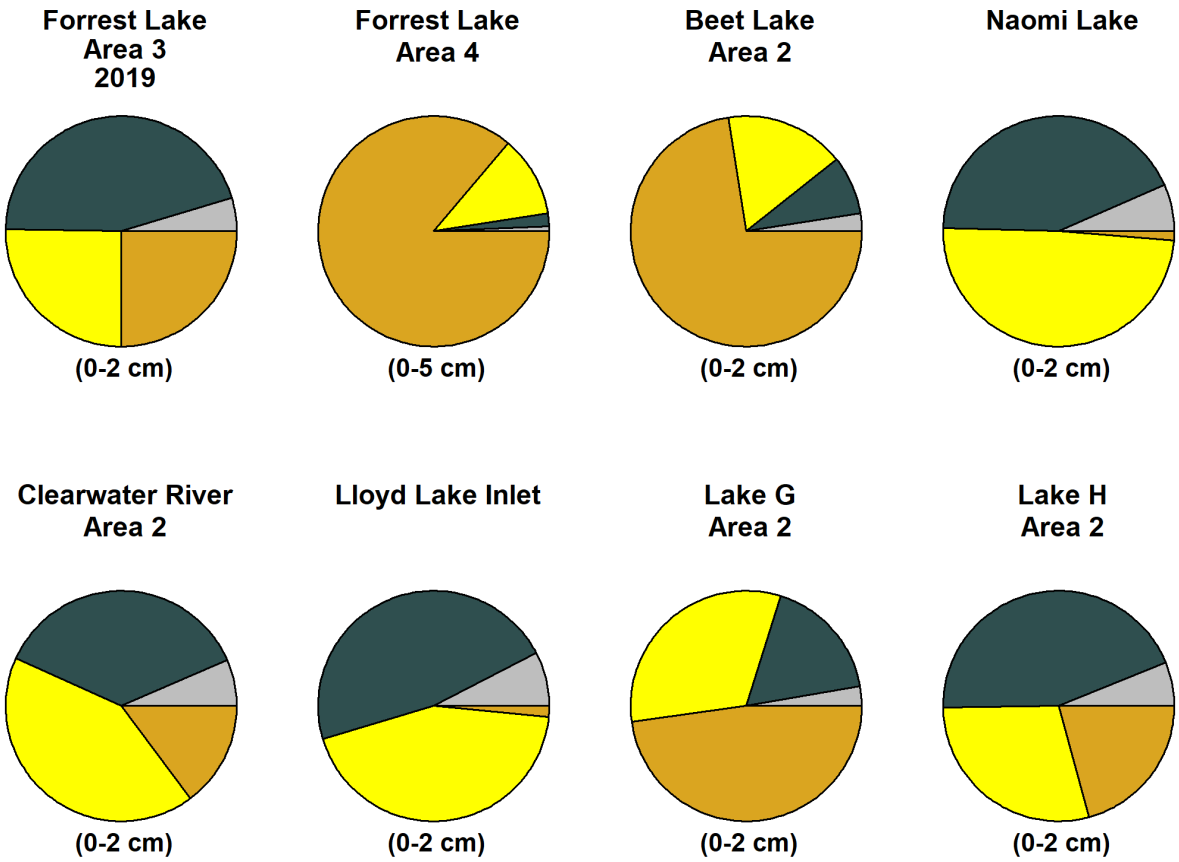


Figure 4.3-1: Particle Size Contents of the Sediment Collected from the Aquatic Study Area, September 2018, October 2018, February 2019, and September 2019

4.3.2 Chemistry

Sediment chemistry data from the ASA in 2018 and 2019 are summarized in Appendix C, Table 27. Detailed sediment chemistry results are presented in Appendix C, Table 29. Raw laboratory results and associated SRC QA/QC reports are provided in Appendix B. Results of the QA/QC assessments are presented and discussed in Appendix A.

In general, parameter concentrations in the ASA were low, with nearly all measured values below guidelines and reference values (Appendix C, Table 27). There were some instances where guidelines or sediment quality values were exceeded at one or more stations. Only a few parameters (arsenic, vanadium, and polonium-210) had mean concentrations that exceeded the available guidelines in some areas (Table 4.3-1). Arsenic levels in many lakes in northern Saskatchewan are higher than ISQG and LEL guidelines and are normal for the region (Burnett-Seidel and Liber 2013). No parameters exceeded the NE2 guideline.

Table 4.3-1: Waterbodies with Mean Values Exceeding Sediment Quality Guidelines and Reference Values

Waterbody	Guidelines and Reference Values					
	Arsenic				Vanadium	Polonium-210
	ISQG	LEL	PEL	REF	PEL	LEL
Naomi Lake	✓	✓			✓	
Clearwater River Nearfield Area 2					✓	
Lloyd Lake Inlet	✓					
Patterson Lake North Arm – West Basin Area 1 (2018)	✓	✓	✓			✓
Patterson Lake North Arm – West Basin Area 1 (2019)	✓	✓	✓	✓		✓
Lake H Area 2						✓

Table 4.3-2 presents the summary data for key parameters (refer to Section 3.3.2), which illustrates there was some variability in parameter concentrations between the study areas. Sediment concentrations of several metals in Patterson Lake North Arm – West Basin Area 1 (both years) were higher than all other areas, including other areas sampled on Patterson Lake; this was particularly evident for arsenic, barium, iron, lead, manganese, and zinc concentrations (Table 4.3-2; Appendix C, Table 27).

Patterson Lake South Arm Area 2 and Beet Lake Area 2 generally had the lowest parameter concentrations, which can likely be attributed to the high coarse sand content. For example, mean iron concentrations in Patterson Lake North Arm – West Basin Area 1 were 126,000 µg/g in 2018 and 122,000 µg/g in 2019, compared to the concentrations of 942 µg/g and 1750 µg/g measured in Patterson Lake South Arm Area 2 and Beet Lake Area 2, respectively in 2018. Similarly, mean lead-210, polonium-210, and radium-226 activity levels were high at Patterson Lake North Arm – West Basin Area 1 (both years) when compared to the other areas sampled in the ASA, with the exception of Lake H Area 2, which also contained elevated lead-210 and polonium-210 levels (Table 4.3-2).

Table 4.3-2: Summary of Key Parameter Concentrations from Sediment Quality Monitoring Areas within the Aquatic Study Area

Parameter	Units	Broach Lake Area 1						Hodge Lake Area 2						Patterson Lake North Arm - East Basin Area 2						Patterson Lake North Arm - East Basin Area 3					
		23, 24-Sep-2018						22-Sep-2018						01, 02-Oct-2018						28-Sep-2019					
		N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max
Metals																									
Arsenic	µg/g	4	-	4.5	0.57	3.8	5.2	5	-	1.2	0.15	1	1.4	5	-	2.6	1.5	0.9	3.8	5	-	3.6	0.9	2.8	4.9
Cobalt	µg/g	4	-	2.3	0.34	2	2.8	5	-	0.96	0.15	0.8	1.2	5	1	1.6	1.4	< 0.2	2.7	5	-	2.8	0.4	2.4	3.2
Copper	µg/g	4	-	7.3	0.59	6.6	7.9	5	-	1.8	0.42	1.5	2.5	5	1	2.9	2.3	< 0.5	4.7	5	-	2.9	0.4	2.4	3.3
Iron	µg/g	4	-	7800	1200	6100	8700	5	-	5960	1110	4320	7200	5	-	37300	28800	4530	61000	5	-	66100	11780	55100	82700
Lead	µg/g	4	-	4.6	3.5	1.9	9.5	5	-	2.6	0.38	2.3	3.2	5	-	3.9	2.1	1.6	5.8	5	-	3.7	0.5	3.1	4.5
Molybdenum	µg/g	4	-	2.5	0.41	1.9	2.8	5	-	0.2	0.1	0.1	0.4	5	-	0.82	0.48	0.2	1.2	5	-	1.2	0.2	0.9	1.4
Nickel	µg/g	4	-	9.2	0.58	8.7	10	5	-	2.7	0.51	2.2	3.5	5	-	3.5	2.6	0.6	5.8	5	-	4.4	1.0	3.2	5.8
Selenium	µg/g	4	-	0.7	0.2	0.5	0.8	5	-	0.1	0.05	0.1	0.2	5	2	0.3	0.2	< 0.1	0.5	5	-	0.3	0.04	0.3	0.4
Uranium	µg/g	4	-	0.3	0	0.3	0.3	5	-	0.2	0.05	0.2	0.3	5	-	0.5	0.3	0.2	0.7	5	-	0.5	0.1	0.4	0.6
Zinc	µg/g	4	-	31	3.4	26	34	5	-	14	8	9.3	28	5	-	20	13	4.7	31	5	-	27	2	25	30
Nutrients																									
Carbon, Total Organic	%	5	-	22.5	1.09	20.8	23.7	5	-	3.09	0.449	2.71	3.85	5	-	8.26	5.13	2.47	12.2	5	-	7.66	1.58	5.61	9.74
Radionuclides																									
Lead-210	Bq/g	5	2	0.19	0.16	< 0.04	0.35	5	-	0.18	0.037	0.13	0.22	5	-	0.21	0.2	0.04	0.46	5	-	0.28	0.09	0.16	0.38
Polonium-210	Bq/g	5	-	0.16	0.13	0.03	0.36	5	-	0.18	0.034	0.15	0.23	5	-	0.23	0.16	0.06	0.42	5	-	0.27	0.06	0.17	0.34
Radium-226	Bq/g	5	1	0.03	0.02	< 0.01	0.06	5	1	0.02	0.01	< 0.01	0.03	5	2	0.02	0.02	< 0.01	0.04	5	-	0.05	0.01	0.04	0.07
Thorium-230	Bq/g	5	2	0.03	0.02	< 0.02	0.06	5	5	0.01	-	< 0.02	< 0.02	5	5	0.01	-	< 0.02	< 0.02	5	5	0.01	0	< 0.02	< 0.02

Parameter	Units	Patterson Lake North Arm - West Basin Area 1						Patterson Lake North Arm - West Basin Area 1						Patterson Lake South Arm Area 2						Forrest Lake Area 1					
		22-Sep-2018						26-Sep-2019						23-Sep-2018						26, 29-Sep-2018					
		N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max
Metals																									
Arsenic	µg/g	5	-	20	15	11	46	5	-	23.3	10.1	9.3	36	5	-	0.5	0.07	0.4	0.6	5	-	2.3	0.71	1.4	3.2
Cobalt	µg/g	5	-	5	0.4	4.4	5.4	5	-	4.9	0.7	3.7	5.5	5	5	0.1	-	< 0.2	< 0.2	5	-	1.1	0.23	0.8	1.3
Copper	µg/g	5	-	9	1.4	7.7	11	5	-	9.3	1.3	7.7	11	5	5	0.3	-	< 0.5	< 0.5	5	-	2.2	0.37	1.8	2.7
Iron	µg/g	5	-	126000	32500	99200	182000	5	-	122000	15811	102000	144000	5	-	942	102	820	1080	5	-	11400	3660	6600	15300
Lead	µg/g	5	-	12	2.2	9	15	5	-	13	2	11	16	5	-	1.2	0.089	1.1	1.3	5	-	2.3	0.34	1.8	2.7
Molybdenum	µg/g	5	-	4.5	2.8	2.5	9.4	5	-	5.0	2.2	2.5	7.7	5	4	0.06	0.02	< 0.1	0.1	5	-	0.5	0.2	0.2	0.8
Nickel	µg/g	5	-	13	1.6	11	15	5	-	14	2	13	16	5	4	0.06	0.02	< 0.1	0.1	5	-	2.6	0.55	2	3.2
Selenium	µg/g	5	-	1.3	0.15	1.1	1.5	5	-	1.4	0.1	1.3	1.5	5	5	0.05	-	< 0.1	< 0.1	5	-	0.3	0.08	0.2	0.4
Uranium	µg/g	5	-	2	0.49	1.7	2.9	5	-	2.4	0.6	1.7	3	5	-	0.3	0	0.3	0.3	5	-	2.3	1.1	1.5	4.2
Zinc	µg/g	5	-	68	9.4	53	78	5	-	64	8	57	76	5	-	1.2	0.25	1	1.6	5	-	12	3.4	7.5	16
Nutrients																									
Carbon, Total Organic	%	5	-	13.8	1.2	12	15	5	-	15.0	1.0	13.9	16.4	5	-	0.5	0.049	0.45	0.58	5	-	14.7	3.18	12.1	18.9
Radionuclides																									
Lead-210	Bq/g	5	-	0.69	0.15	0.52	0.92	5	-	0.9	0.2	0.6	1.1	5	4	0.03	0.01	< 0.04	0.05	5	-	0.25	0.073	0.17	0.36
Polonium-210	Bq/g	5	-	0.89	0.18	0.74	1.2	5	-	0.81	0.13	0.61	0.95	5	-	0.01	0.006	0.01	0.02	5	-	0.27	0.069	0.16	0.34
Radium-226	Bq/g	5	-	0.15	0.031	0.1	0.18	5	-	0.16	0.05	0.1	0.24	5	4	0.008	0.007	< 0.01	0.02	5	-	0.02	0.01	0.01	0.04
Thorium-230	Bq/g	5	4	0.01	0.005	< 0.02	0.02	5	5	0.01	0	< 0.02	< 0.02	5	5	0.01	-	< 0.02	< 0.02	5	3	0.02	0.01	< 0.02	0.03

Parameter	Units	Forrest Lake Area 3						Forrest Lake Area 3						Beet Lake Area 2						Naomi Lake					
		29, 30-Sep-2018						29-Sep-2019						30-Sep-2018, 01 Oct-2018						22-Feb-2019					
		N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max
Metals																									
Arsenic	µg/g	5	-	3.3	2.5	1.1	6.3	5	-	2.3	1.2	0.8	3.9	5	-	0.7	0.1	0.6	0.8	5	-	10	0.61	9.7	11
Cobalt	µg/g	5	-	1.1	0.69	0.5	2	5	-	1.1	0.6	0.3	1.9	5	4	0.1	0.04	< 0.2	0.2	5	-	6.2	0.55	5.6	7.0
Copper	µg/g	5	1	1.6	1.7	< 0.5	4.3	5	1	1.37	1.02	<0.5	3	5	5	0.3	-	< 0.5	< 0.5	5	-	4.9	0.38	4.5	5.3
Iron	µg/g	5	-	8060	7610	2230	21100	5	-	5700	3319	1980	10700	5	-	1750	102	1620	1870	5	-	98740	5781	93200	105000
Lead	µg/g	5	-	2.9	1.5	1.6	5.3	5	-	2.6	1.3	1.2	4.7	5	-	1.3	0.11	1.1	1.4	5	-	5.8	0.85	5.0	6.9
Molybdenum	µg/g	5	3	0.2	0.3	< 0.1	0.8	5	1	0.37	0.28	< 0.1	0.8	5	5	0.05	-	< 0.1	< 0.1	5	-	2.4	0.24	2.2	2.8
Nickel	µg/g	5	-	2.4	1.6	0.9	4.6	5	-	2.5	1.8	0.5	5.5	5	-	0.3	0.07	0.2	0.4	5	-	8.9	0.73	8.1	9.6
Selenium	µg/g	5	1	0.2	0.2	< 0.1	0.4	5	1	0.17	0.14	< 0.1	0.4	5	5	0.05	-	< 0.1	< 0.1	5	-	0.7	0.07	0.6	0.8
Uranium	µg/g	5	-	0.2	0.05	0.2	0.3	5	1	0.19	0.11	<0.1	0.3	5	-	0.2	0	0.2	0.2	5	-	1.4	0.10	1.3	1.5
Zinc	µg/g	5	-	8.9	6.1	2.7	18	5	-	9.6	6.9	2.2	21	5	-	1.4	0	1.4	1.4	5	-	62	3.3	58	66
Nutrients																									
Carbon, Total Organic	%	5	-	4.05	3.54	0.75	9.78	5	-	3.78	3.03	0.76	8.84	5	-	0.24	0.056	0.18	0.3	5	-	25.8	0.576	25.1	26.5
Radionuclides																									
Lead-210	Bq/g	5	1	0.19	0.14	< 0.04	0.39	5	-	0.14	0.09	0.07	0.29	5	5	0.02	-	< 0.04	< 0.04	5	-	0.60	0.089	0.52	0.73
Polonium-210	Bq/g	5	-	0.19	0.14	0.04	0.41	5	-	0.15	0.09	0.05	0.28	5	1	0.01	0.006	< 0.01	0.02	5	-	0.57	0.082	0.47	0.64
Radium-226	Bq/g	5	5	0.005	-	< 0.01	< 0.01	5	2	0.016	0.015	< 0.01	0.04	5	2	0.01	0.008	< 0.01	0.02	5	-	0.07	0.008	0.06	0.08
Thorium-230	Bq/g	5	5	0.01	-	< 0.02	< 0.02	5	5	0.01	0	< 0.02	< 0.02	5	5	0.01	-	< 0.02	< 0.02	5	2	0.02	0.01	< 0.02	0.03

Parameter	Units	Clearwater River Area 2						Lloyd Lake Inlet						Lake G Area 2						Lake H Area 2					
		24-Sep-2018						25-Sep-2018						28-Sep-2018						27-Sep-2018					
		N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max
Metals																									
Arsenic	µg/g	5	-	5.1	2.4	1.4	7.9	5	-	6.1	0.94	4.7	7.2	4	-	4.4	0.75	3.5	5.2	3	-	1.7	0.47	1.3	2.2
Cobalt	µg/g	5	-	1.2	0.51	0.3	1.6	5	-	3	0.79	2.5	4.4	4	-	2.1	0.24	1.8	2.3	3	-	1.2	0.55	0.8	1.8
Copper	µg/g	5	1	1.8	0.93	< 0.5	2.5	5	-	3.7	0.4	3	4	4	-	4	0.38	3.4	4.2	3	-	4.1	1.5	2.4	5
Iron	µg/g	5	-	50200	31700	7300	94100	5	-	65300	11400	47600	75600	4	-	20800	3840	15400	24500	3	-	4100	2380	2310	6800
Lead	µg/g	5	-	2	0.48	1.3	2.5	5	-	3.4	0.23	3.2	3.8	4	-	3.9	1.6	2.1	5.6	3	-	4	0.96	3.1	5
Molybdenum	µg/g	5	1	0.83	0.49	< 0.1	1.4	5	-	0.5	0.2	0.2	0.8	4	-	0.8	0.1	0.6	0.9	3	2	0.2	0.2	< 0.1	0.4
Nickel	µg/g	5	-	2.9	1.4	0.4	3.9	5	-	7.4	0.67	6.7	8.5	4	-	5.2	0.29	4.9	5.5	3	-	2.9	1.2	2.2	4.3
Selenium	µg/g	5	1	0.2	0.1	< 0.1	0.3	5	-	0.5	0.05	0.4	0.5	4	-	0.6	0.05	0.5	0.6	3	-	0.3	0.2	0.2	0.5
Uranium	µg/g	5	-	0.7	0.3	0.2	0.9	5	-	0.7	0.05	0.7	0.8	4	-	0.3	0	0.3	0.3	3	-	0.3	0.06	0.3	0.4
Zinc	µg/g	5	-	15	5.4	6	20	5	-	24	1.7	22	26	4	-	32	1.5	30	33	3	-	17	7.6	9.8	25
Nutrients																									
Carbon, Total Organic	%	5	-	13.7	7.42	1.06	18.6	5	-	12.4	0.378	11.7	12.6	5	-	23.4	0.802	22.6	24.6	5	-	25.5	11.4	11.4	36.4
Radionuclides																									
Lead-210	Bq/g	5	1	0.22	0.12	< 0.04	0.33	5	-	0.30	0.039	0.24	0.33	5	-	0.28	0.042	0.24	0.35	5	-	0.78	0.37	0.33	1.1
Polonium-210	Bq/g	5	-	0.16	0.1	0.01	0.28	5	-	0.29	0.05	0.22	0.33	5	-	0.26	0.14	0.15	0.5	5	-	0.87	0.41	0.35	1.2
Radium-226	Bq/g	5	1	0.02	0.007	< 0.01	0.02	5	-	0.03	0.007	0.02	0.04	5	-	0.03	0.01	0.02	0.05	5	3	0.02	0.02	< 0.01	0.06
Thorium-230	Bq/g	5	4	0.01	0.005	< 0.02	0.02	5	4	0.01	0.005	< 0.02	0.02	5	5	0.01	-	< 0.02	< 0.02	5	5	0.01	-	< 0.02	< 0.02

5.0 PHYTOPLANKTON

5.1 Study Objectives

The objective of the phytoplankton sampling program is was to collect baseline data on community structure, density, richness, diversity, and biomass to characterize phytoplankton communities in the ASA. Phytoplankton composition and biomass (primary production) provides an assessment of water-quality conditions and an indication of eutrophication (nutrient enrichment). These phytoplankton data will provide site characterization information for the EA and future monitoring programs.

5.2 Methods

5.2.1 Sample Collection

Phytoplankton samples (n = 6) were collected concurrently with water quality samples in a subset of the water sampling areas between 21 September 2018 and 2 October 2018. These areas were Broach Lake Area 2, Hodge Lake Area 1, Patterson Lake North Arm – West Basin Area 1, Forrest Lake Area 2, Beet Lake Area 1, and Naomi Lake. The sampling locations are shown in Figure 3.2-1, and the UTM coordinates are provided in Appendix C, Table 1.

Phytoplankton sampling was conducted in accordance with the CanNorth SOP for Quantitative Phytoplankton Sampling from a Boat survey, which are based on best practices recommended in numerous guidance documents (Government of Alberta 2006; CCME 2011; ENV 2014b). Samples were collected using Tygon tubing (12.7-mm internal diameter). Each sample consisted of a composite of two hauls extended from the surface to twice the measured Secchi depth (Section 3.3.1 Appendix C, Table 4). Thus, samples covered the entire depth of the photic zone (where photosynthetic organisms can photosynthesize). Samples were placed in one litre non-transparent sample jars and preserved in 1% Lugol's solution for shipment to a qualified taxonomist (Biologica Environmental Services [Biologica] in Victoria, British Columbia) for enumeration, taxonomic identification, and biomass estimation.

5.2.2 Laboratory Analyses

In the laboratory, phytoplankton density was estimated following the SOPs described in Appendix E. Depending on algal density, samples were settled between 24 and 48 hours before counting phytoplankton. A minimum of 300 biological units (cells, colonies, or filaments) were counted from each sample. Phytoplankton samples were counted using an inverted microscope (minimum 630× magnification). Biomass estimations (presented as biovolumes) were taken from a minimum of 10 specimens and were conducted using the six most dominant taxa.

5.2.3 Data Analyses

For each station, phytoplankton density (cells/L) and percent taxonomic composition were reported. Additional community metrics calculated included taxon richness, Simpson's diversity index, and Simpson's evenness. The biotic indices were calculated at the family level of taxonomy following EC recommendations for benthic invertebrates (EC 2012). Brief descriptions of these indices are provided below.

Simpson's diversity index is a measure of diversity which considers both the number of family-level taxa (richness) and the evenness of distribution of individuals among taxa in a sample (EC 2012). For each family-level taxon, this index was calculated by determining the proportion of individuals that contribute to

the community total in the sample. The value of the Simpson's diversity index ranges between zero and one where the greater the value, the greater the community diversity.

Simpson's evenness is a measure of the equitability of distribution of individuals among taxa within the community. Evenness was calculated by determining the relative diversity over the total number of taxa in each sample, where relative diversity is the sum of the proportions of each taxon in the sample (EC 2012). A community in which each taxon presence is equally abundant has high evenness, while a community numerically dominated by one or few taxa has low evenness (EC 2012). As with the Simpson's diversity index, evenness ranges between zero and one.

5.3 Results

Detailed phytoplankton enumeration results are provided in Appendix C, Table 30 and community indices are shown in Table 5.3-1 and Table 5.3-2. Community composition is depicted in Figure 5.3-1.

Table 5.3-1: Phytoplankton Community Indices for Samples Collected in the Aquatic Study Area, September/October 2018

Waterbody	Density (Cells/L)	Biovolume[a] (µL/L)	Taxon Richness[b]	Simpson's Diversity[b]	Simpson's Evenness[b]
Broach Lake Area 2	9,904,790	0.21	22	0.69	0.15
Hodge Lake Area 1	11,395,849	0.12	26	0.76	0.16
Patterson Lake North Arm – West Basin Area 1	12,244,628	0.61	18	0.64	0.15
Forrest Lake Area 2	4,297,915	0.09	27	0.63	0.10
Beet Lake Area 1	10,666,491	1.07	21	0.67	0.14
Naomi Lake	11,836,802	1.83	23	0.79	0.21

a) These measurements represent the six dominant taxa.
b) Computed at the Family-level, except for unidentified Flagellated algal cell (< 10 µm in length) and unidentified Cyanophycota colonies that were included as separate groups though the exact taxonomy was uncertain. See Table 5.3-2 for taxon richness, diversity, and evenness results when these two groups were excluded.

Table 5.3-2: Phytoplankton Community Indices when Unidentified Flagellates and Unidentified Cyanophycota Were Not Included, September/October 2018

Waterbody	Taxon Richness[a]	Simpson's Diversity[a]	Simpson's Evenness[a]
Broach Lake Area 2	20	0.60	0.12
Hodge Lake Area 1	24	0.68	0.13
Patterson Lake North Area 1	16	0.49	0.12
Forrest Lake Area 2	25	0.52	0.08
Beet Lake Area 1	19	0.57	0.12
Naomi Lake	21	0.78	0.21

a) Computed at the Family-level, and unidentified Flagellated algal cell (< 10 µm in length) and unidentified Cyanophycota colonies were excluded because the taxonomy was uncertain. See Table 5.3-1 for taxon richness, diversity, and evenness results when these two groups were included.

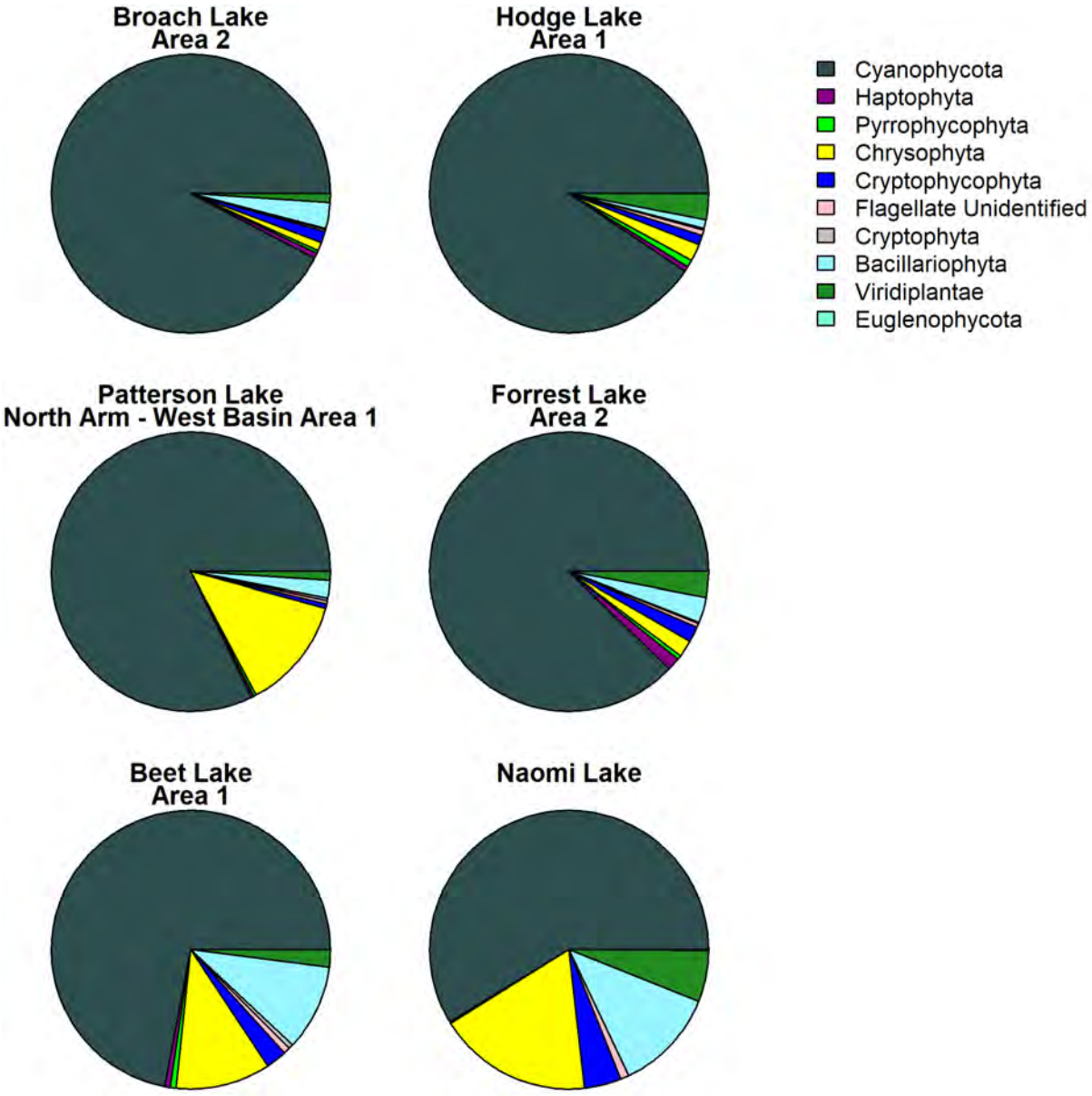


Figure 5.3-1: Phytoplankton Percent Composition in the Aquatic Study Area, September/October 2018

5.3.1 Community Composition

Phytoplankton community samples (n = 6) collected in the fall of 2018 were dominated by Cyanophycota (blue-green algae; Figure 5.3-1). Blue-green algae were especially prevalent in Broach Lake Area 2, Hodge Lake Area 1, and Forrest Lake Area 2, accounting for 89.0% to 92.2% of the community composition (Appendix C, Table 30). In all samples, the dominant family was Synechococcaceae (blue-green algae), accounting for 37.3% to 56.8% of the sample communities. The family Chroococcaeae (blue-green algae) as well as unidentified Cyanophycota colonies also contributed to the community composition in most study areas (1.3% to 27.4% and 2.9% to 23.4%, respectively). Chrysophyta accounted for a noticeable portion of the community in Patterson Lake North Arm – West Basin Area 1, Beet Lake Area 1, and Naomi Lake (10.9% to 18.0% of the community; Figure 5.3-1). Bacillariophyta (diatoms) were also important in Beet Lake and Naomi Lake accounting for up to 12.0% of the community (Appendix C, Table 30; Figure 5.3-1).

5.3.2 Biovolume

Biovolume can serve as an appropriate proxy for biomass. Of the six areas where phytoplankton was analyzed, Forrest Lake Area 2 and Hodge Lake Area 1 had the lowest phytoplankton biovolumes, with 0.09 µL/L and 0.12 µL/L for each of these two areas, respectively (Table 5.3-1). The samples from Naomi Lake and Beet Lake Area 1 had the highest biovolumes with values of 1.83 µL/L and 1.07 µL/L, respectively. Broach Lake Area 2 and Patterson Lake North Arm – West Basin Area 1 had intermediate values that were 0.21 µL/L and 0.61 µL/L, respectively.

5.3.3 Community Metrics

Phytoplankton density ranged from 4.3 million cells/L (Forrest Lake Area 2) to 12.2 million cells/L (Patterson Lake North Arm – West Basin Area 1), while taxon richness assessed at the family level ranged from 18 (Patterson Lake North Arm – West Basin Area 1) to 27 (Forrest Lake Area 2). Simpson's diversity was moderate (between 0.63 and 0.69) in Broach Lake Area 2, Patterson Lake North Arm – West Basin Area 1, Forrest Lake Area 2, and Beet Lake Area 1 and moderately high (0.76 and 0.79) in Hodge Lake Area 1 and Naomi Lake. Simpson's evenness was low in the phytoplankton samples from all study areas ranging between 0.10 (Forrest Lake Area 2) and 0.21 (Naomi Lake). The low evenness is related to the dominance of a few blue-green algae families in each community (Figure 5.3-1). Excluding two taxa with a low taxonomic resolution rendered diversity and evenness somewhat lower in all areas except Naomi Lake (Table 5.3-2).

6.0 ZOOPLANKTON

6.1 Study Objectives

The objective of the zooplankton sampling program was to collect baseline data on community structure, density, richness, diversity, and biomass to characterize zooplankton communities in the ASA. Zooplankton composition and biomass (secondary production) supports both the water-quality and ecological assessment by providing insight to the quality of the food chain and the energy flow through the system (Green et al. 2015). These zooplankton data will provide site characterization information for the EA and future monitoring programs.

6.2 Methods

6.2.1 Sample Collection

Zooplankton samples (n = 6) were collected concurrent with phytoplankton samples between 21 September and 2 October 2018. The sampling locations are shown in Figure 3.2-1 and the UTM coordinates are provided in Appendix C, Table 1. Zooplankton samples were collected with a Wisconsin plankton net (20-cm mouth diameter, 100-cm length, and 80-µm mesh size). The net was drawn vertically from 0.5 m off the lake bottom to the surface to circumvent any non-random zooplankton distribution within the water column. The net was retrieved at a constant speed of approximately 1 m/sec. Each sample was a composite of two hauls. Samples were preserved in 5% buffered formalin, and submitted to Biologica in Victoria, British Columbia for enumeration, taxonomic identification, and biomass estimation.

The surveys were conducted in accordance with the CanNorth SOP for Quantitative Zooplankton Sampling from Boat surveys, which is based on best practices recommended in numerous guidance documents (Paterson 2007; CCME 2011; ENV 2014b).

6.2.2 Laboratory Analyses

In the laboratory, zooplankton density was estimated following the methods described in Appendix E. Between 200 and 400 individuals were identified to the lowest practical level feasible from each of the six total samples. Biomass estimations were taken from a minimum of 10 specimens and were conducted using the six most dominant taxa.

6.2.3 Data Analyses

For each of the six stations, zooplankton density (organisms/L) and percent taxonomic composition were reported. Additional community metrics reported for zooplankton included richness, Simpson's diversity index, and Simpson's evenness (refer to Section 5.2.3 for descriptions of indices).

6.3 Results

Detailed zooplankton enumeration results are provided in Appendix C, Table 31 and community indices are shown in Table 6.3-1. Community composition is depicted in Figure 6.3-1.

Table 6.3-1: Zooplankton Community Indices for Samples Collected in the Aquatic Study Area, September/October 2018

Waterbody	Density (Org/L)	Biomass[a] (mg/L)	Taxon Richness[b]	Simpson's Diversity[b]	Simpson's Evenness[b]
Broach Lake Area 2	35	0.19	10	0.40	0.17
Hodge Lake Area 1	33	0.27	8	0.45	0.23
Patterson Lake North Area 1	53	0.06	13	0.84	0.49
Forrest Lake Area 2	46	0.21	7	0.58	0.34
Beet Lake Area 1	144	0.30	12	0.68	0.26
Naomi Lake	65	0.09	11	0.80	0.45

a) These measurements represent the six dominant taxa.

b) Calanoida unidentified and Cyclopoida unidentified occurred in greater numbers than congeners identified at the Family level. Therefore, Calanoida and Cyclopoida were clumped at the Order level to compute these indices.

6.3.1 Community Composition

Zooplankton communities in the six samples collected in the fall of 2018 consisted of mainly Cyclopoida crustaceans and Ploima rotifers, though Cladocera crustaceans were also prevalent in some areas (Figure 6.3-1). Broach Lake Area 2, Hodge Lake Area 1, and Forrest Lake Area 2 samples were comprised of 55% to 76% Cyclopoida and 17% to 34% Ploima, with the four remaining taxa accounting together for only 11% or less of the community composition. The samples from Patterson Lake North Arm – West Basin Area 1, Beet Lake Area 1, and Naomi Lake were comprised of proportionately fewer Cyclopoida (11% to 51%), moderate proportions of Ploima (18% to 32%), and higher proportions of Cladocera (19% to 26%) compared to the previously noted three areas. Other taxa, including Calanoida crustaceans, Collothecaceae rotifers, and Flosculariaceae rotifers accounted for usually less than 1% to 10% of the zooplankton communities.

6.3.2 Biomass

Zooplankton biomass was lower in the samples from Patterson Lake North Arm – West Basin Area 1 (0.06 g/L) and Naomi Lake (0.09 mg/L) than at the other stations where biomass ranged between 0.19 mg/L and 0.30 mg/L (Table 6.3-1).

6.3.3 Community Metrics

Zooplankton density in the samples from most of the study areas ranged between 33 organisms/L and 65 organisms/L (Table 6.3-1), though in Beet Lake Area 1, zooplankton density was higher (144 organisms/L). Taxon richness was lower in Forrest Lake Area 2 and Hodge Lake Area 1 (8 and 7 taxa per sample) than in Broach Lake Area 2, Patterson Lake North Arm – West Basin Area 1, Beet Lake Area 1, and Naomi Lake, where richness ranged between 10 and 13 taxa per sample. Diversity was moderately low in Broach Lake Area 2 and Hodge Lake Area 1 (0.40 and 0.45), moderate in Forrest Lake Area 2 and Beet Lake Area 1 (0.58 and 0.68), and moderately high in Patterson Lake North Arm – West Basin Area 1 and Naomi Lake (0.84 and 0.80) (Table 6.3-1). Evenness was moderately low or low in all areas, ranging between 0.17 and 0.49 (Table 6.3-1).

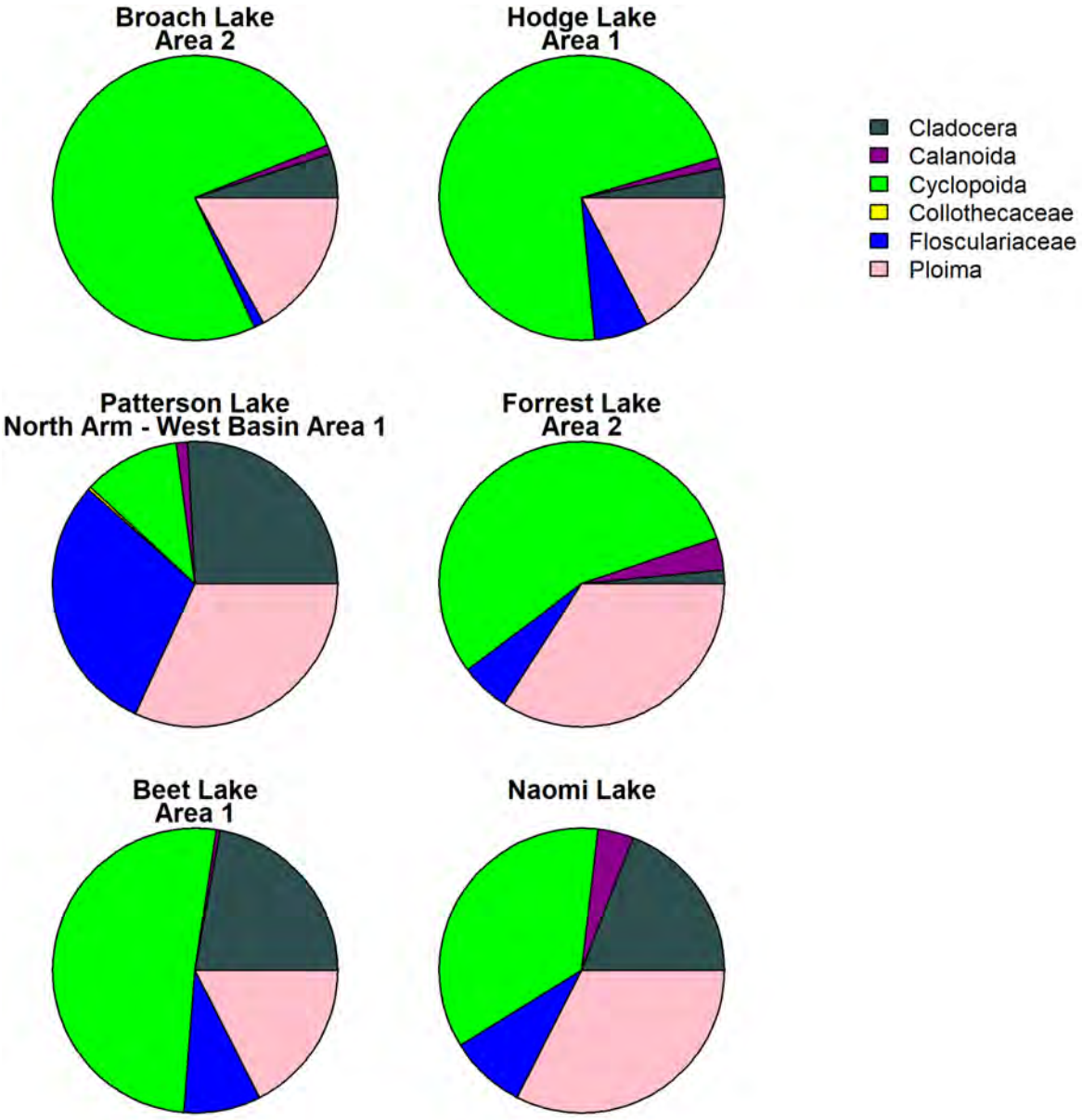


Figure 6.3-1: Zooplankton Percent Composition in the Aquatic Study Area, September/October 2018

7.0 BENTHIC INVERTEBRATES

7.1 Study Objectives

The objective of the benthic invertebrate sampling program was to collect baseline data on community structure, density, richness, diversity, and biomass to characterize benthic invertebrate communities in the ASA. Benthic invertebrate data provides valuable information on aquatic ecosystem structure and food chains, which will inform the EA and future monitoring programs. It is important to document the extent of natural variability in benthic invertebrate community composition in the ASA during the baseline period since benthic invertebrates are used in biological effects monitoring programs once mines are operational (CSA 2010; EC 2012).

7.2 Methods

7.2.1 Sample Location

Benthic invertebrate sampling was undertaken in depositional habitat at each of the 13 areas between 22 September 2018 and 2 October 2018 (Figure 3.2-1 and Figure 3.2-2; Appendix C, Table 1), and five replicate stations were established in each area, for a total of 65 samples (Figure 4.2-1 to Figure 4.2-12).

To avoid low benthic invertebrate community density and diversity associated with deep, low-oxygenated habitats, sampling in 2018 was restricted to areas less than 8 m deep. Benthic invertebrate samples were collected concurrently with sediment chemistry and characterization samples whenever feasible (Section 4.0). When sediment hardness prevented the collection of sediment using a TechOps core extruder, sediment stations were established in areas deeper than 8 m with softer sediment, separate from the benthic invertebrate sampling stations established in shallower areas. At these shallower stations, a sediment sample of the 0 cm to 5 cm horizon was collected using an Ekman dredge to determine the physical properties of the sediment where the benthic invertebrates were collected (refer to Section 4.0).

In 2019, benthic invertebrate sampling was conducted in the deep areas of Patterson Lake North Arm – West Basin Area 1 and Forrest Lake Area 3; sediments were resampled at this time (Section 4.0). In addition, Patterson Lake North Arm – East Basin Area 3 (where benthic invertebrates were sampled in 2018), was resampled in 2019 for both benthic invertebrates and sediment chemistry. A total of 15 benthic invertebrate samples were collected in 2019.

Concerted effort was made to match depth and substrate composition between sampling locations in order to make benthic invertebrate data comparable among sampling areas, which is particularly important for future monitoring. Ten of the 13 areas were sampled at depths of approximately 5.0 m to 8.0 m (Broach Lake Area 1, Hodge Lake Area 2, Patterson Lake North Arm – East Basin Area 3, Patterson Lake North Arm – West Basin Area 2, Patterson Lake South Arm Area 2, Forrest Lake Area 2, Beet Lake Area 2, Naomi Lake, Lloyd Lake Inlet, and Lake H Area 2). Forrest Lake Area 1, Clearwater River Nearfield Area 2, and Lake G Area 2 were shallow, and samples were collected at depths that ranged between 0.44 m to 2.0 m in 2018. The deep areas sampled in 2019 included Patterson Lake North Arm – West Basin Area 1, which was approximately 30 m deep and Forrest Lake Area 3, which was approximately 20 m deep.

7.2.2 Sample Collection

Benthic invertebrate samples were collected using an Ekman dredge with a 0.052 m^2 sampling area, and each sample was a composite of five grabs. All samples were field sieved through a 500-µm Nitex mesh

bag and the material retained in the bag was preserved in 10% buffered formalin (i.e., a colourless solution intended for the preservation of biological specimens). The surveys were conducted in accordance with the CanNorth SOP for Benthic Invertebrate Sampling surveys, which are based on best practices recommended in numerous guidance documents (ENV 2014b; Government of Alberta 2006; CCME 2011; EC 2012).

7.2.3 Laboratory Analyses

Preserved samples (n = 80) were shipped to and analyzed by Dr. Jack Zloty in Summerland, British Columbia. In the laboratory, samples were washed free of formalin in a 500-µm sieve and strained prior to sorting. Under a dissecting microscope, invertebrates were separated from other material, enumerated, and identified to the lowest taxonomic level feasible (typically to genus or species). A reference collection was retained by the taxonomist for all taxa identified from the site. Biomass of major invertebrate groups was measured on a wet weight basis with an analytical balance to a precision of 0.1 mg. Additional details on benthic invertebrate laboratory methods and taxonomic keys employed are described in Appendix F.

7.2.4 Data Analyses

For each of the 80 replicate stations, the number of organisms, percent taxonomic composition, and biomass were reported. Prior to calculation of community metrics, taxa deemed non-benthic (families Daphniidae and Holopediidae within Cladocera crustaceans and order Calanoida within Copepoda crustaceans) and Oligochaeta cocoons were removed from the data (refer to Appendix C, Table 32 for a complete list of taxa removed). Raw sample count was converted to density (i.e., number of organisms per m^2). Additional community metrics calculated at the family level of taxonomy included taxon richness, Simpson's diversity index, and Simpson's evenness. Further explanation of the diversity and evenness metrics is provided in Section 5.2.3. Non-metric multidimensional scaling (NMDS) was used to depict general community dissimilarities between samples and areas.

7.3 Results

Detailed benthic invertebrate community metrics and biomass results are provided in Appendix C, Table 35 and are summarized in Table 7.3-1. Percent abundance of major taxa in terms of density and biomass in each study area are depicted in Figure 7.3-1 and Figure 7.3-2, respectively. The community dissimilarities between samples are shown using NMDS in Figure 7.3-3. Appendix C, Tables 32, 33, and 34 present the results of the taxonomic enumeration of the invertebrates deemed non-benthic, the benthic invertebrate taxonomic enumeration, and the benthic invertebrate raw biomass results, respectively.

Appendix A provides detailed information on the QA/QC measures and results. There was no indication of problems with sorting efficiency and sorting effort exerted was considered adequate.

Table 7.3-1: Average Benthic Invertebrate Community Indices for Samples Collected in the Aquatic Study Area, September/October 2018 and September 2019

Area	Density (Organisms/m^2)	Taxon Richness[a]	Biomass (g/m^2)	Simpson's Diversity[a]	Simpson's Evenness[a]
Broach Lake Area 1 (2018)	1329	8	2.33	0.69	0.44
Hodge Lake Area 2 (2018)	33655	9.6	35.4	0.24	0.15
Patterson Lake North Arm – East Basin Area 3 (2018)	13448	11	11.8	0.49	0.19
Patterson Lake North Arm – East Basin Area 3 (2019)	6142	11.6	5.2	0.69	0.29
Patterson Lake North Arm – West Basin Area 2 (2018)	2097	13.6	2.7	0.76	0.31
Patterson Lake North Arm – West Basin Area 1 (2019)	354	5	1.5	0.31	0.31
Patterson Lake South Arm Area 2 (2018)	3003	15.8	2.1	0.71	0.23
Forrest Lake Area 1 (2018)	20527	20.6	66.2	0.68	0.16
Forrest Lake Area 4 (2018)	5312	15.4	5.5	0.77	0.29
Forrest Lake Area 3 (2019)	852	6.6	1.6	0.57	0.36
Beet Lake Area 2 (2018)	2445	14.2	3.2	0.61	0.18
Naomi Lake (2018)	2428	5.4	5.2	0.68	0.60
Clearwater River Area 2 (2018)	41168	14.6	47.0	0.49	0.14
Lloyd Lake Inlet (2018)	2865	11	7.6	0.67	0.29
Lake G Area 2 (2018)	23581	14.8	52.3	0.50	0.15
Lake H Area 2 (2018)	297	3.8	1.8	0.47	0.58

All data are the average of five stations presented on a 1 m^2 basis.

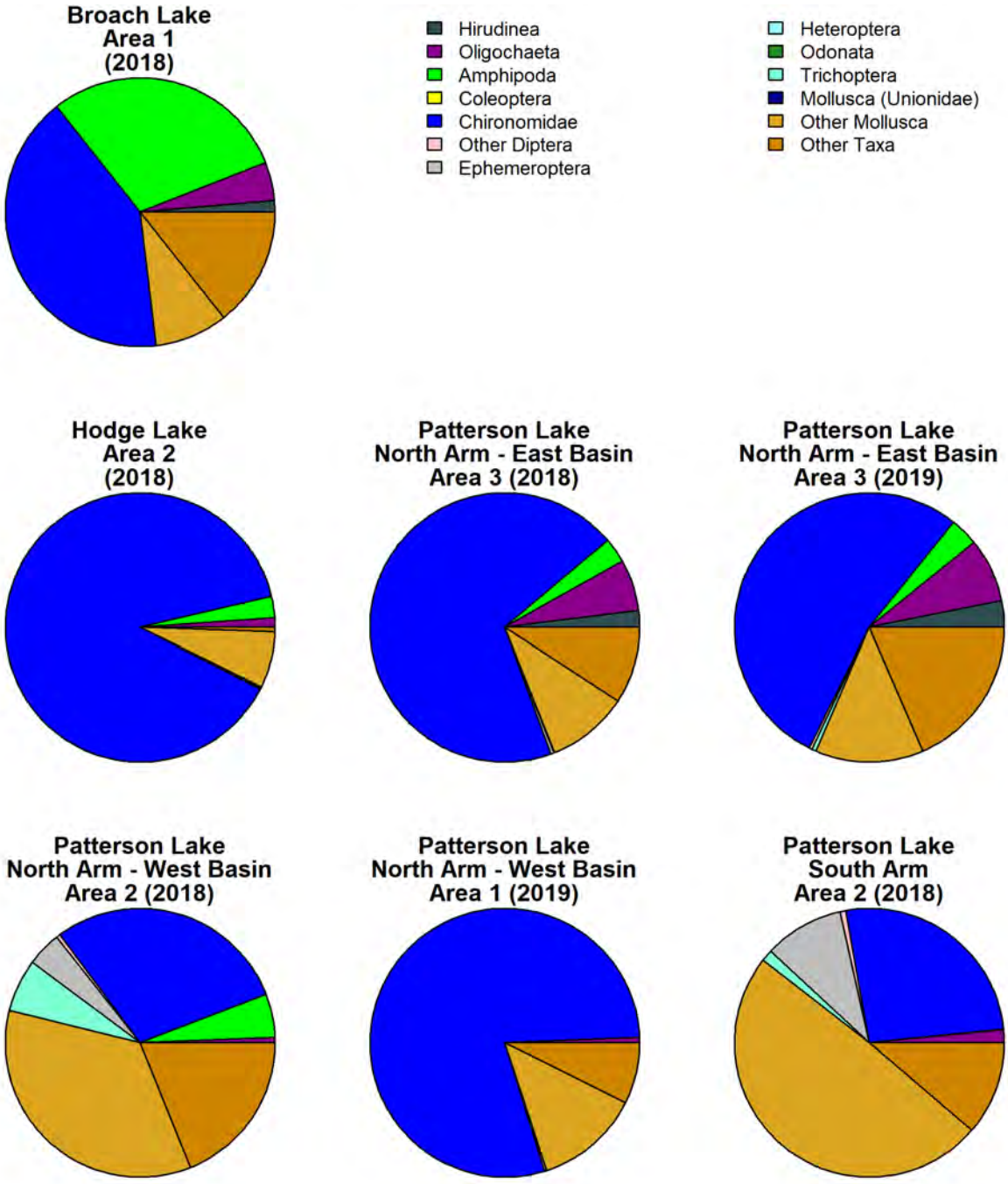
Crustacean families Holopedidae and Daphniidae and Calanoida (Copepods) were deemed non-benthic and were excluded from all analyses.

[a]Computed at the Family level, except for Cyclopoida, Ostracoda, and Nematoda that were identified at higher taxonomic levels.

It is acknowledged that observed differences in community composition (Section 7.3.1), biomass (Section 7.3.2), and metrics (Section 7.3.3) discussed below could be attributed to differences in depth, sediment particle size characteristics, algal content, and aquatic macrophyte cover since these factors can all significantly alter benthic invertebrate community composition.

7.3.1 Community Composition

The most abundant taxon among the areas surveyed was Chironomidae (non-biting midge larvae). This family accounted for 47% to 89% of community composition in Hodge Lake Area 2, Patterson Lake North Arm – East Basin Area 3 (both 2018 and 2019), Patterson Lake North Arm – West Basin Area 1, Forrest Lake Area 3, Beet Lake Area 2, Naomi Lake, Clearwater River Nearfield Area 2, Lloyd Lake Inlet, Lake G Area 2, and Lake H Area 2 (Figure 7.3-1). Secondary dominant taxa varied between Amphipoda (*Gammarus* and *Hyalella*, also called scuds and freshwater shrimp), Oligochaeta (aquatic earthworms and sludge worms), and Mollusca (other than Unionidae [river mussels]).


Broach Lake
Area 1
(2018)
Hirudinea
Oligochaeta
Amphipoda
Coleoptera
Chironomidae
Other Diptera
Ephemeroptera
Heteroptera
Odonata
Trichoptera
Mollusca (Unionidae)
Other Mollusca
Other Taxa
Hodge Lake
Area 2
(2018)
Patterson Lake
North Arm - East Basin
Area 3 (2018)
Patterson Lake
North Arm - East Basin
Area 3 (2019)
Patterson Lake
North Arm - West Basin
Area 2 (2018)
Patterson Lake
North Arm - West Basin
Area 1 (2019)
Patterson Lake
South Arm
Area 2 (2018)

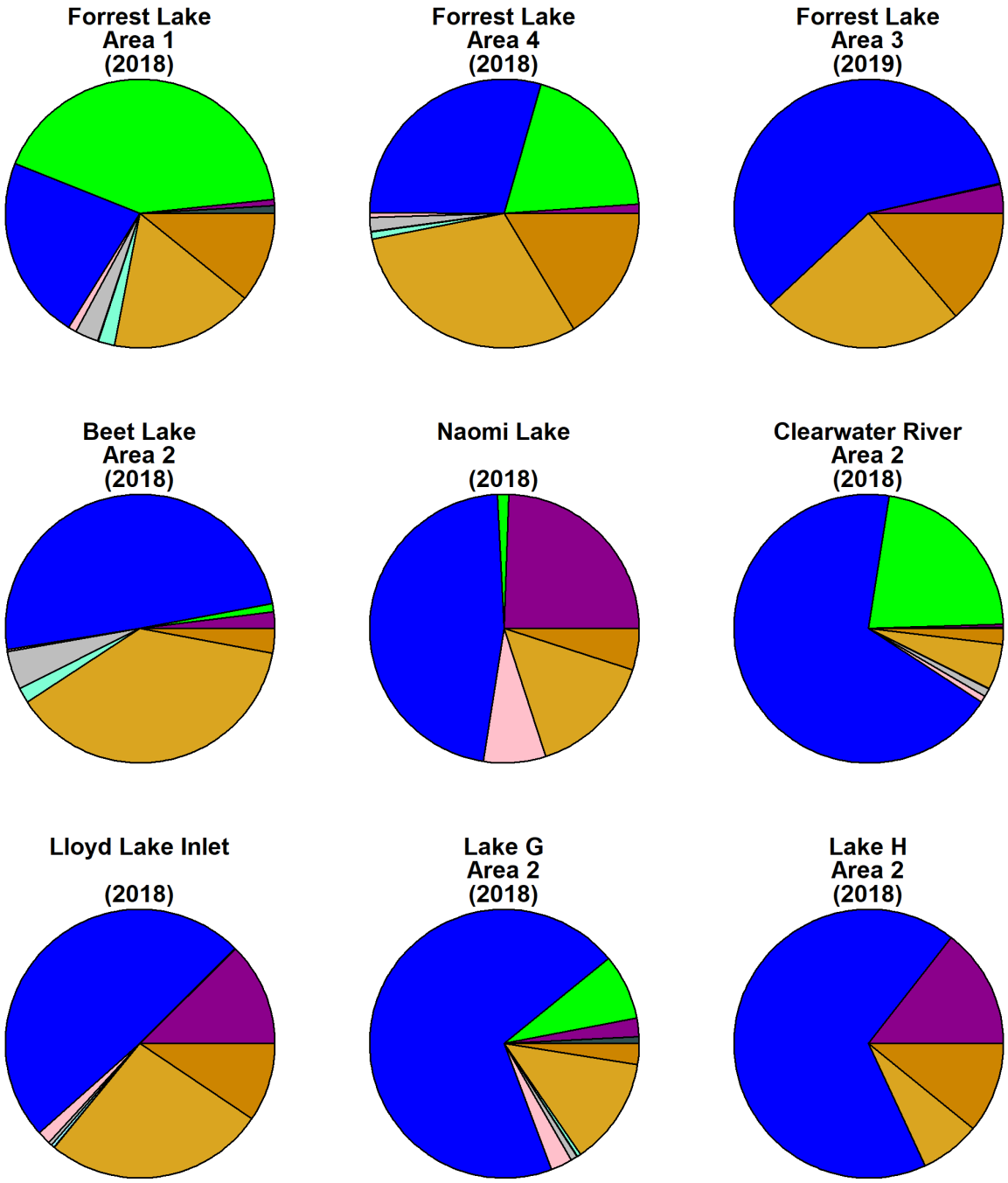
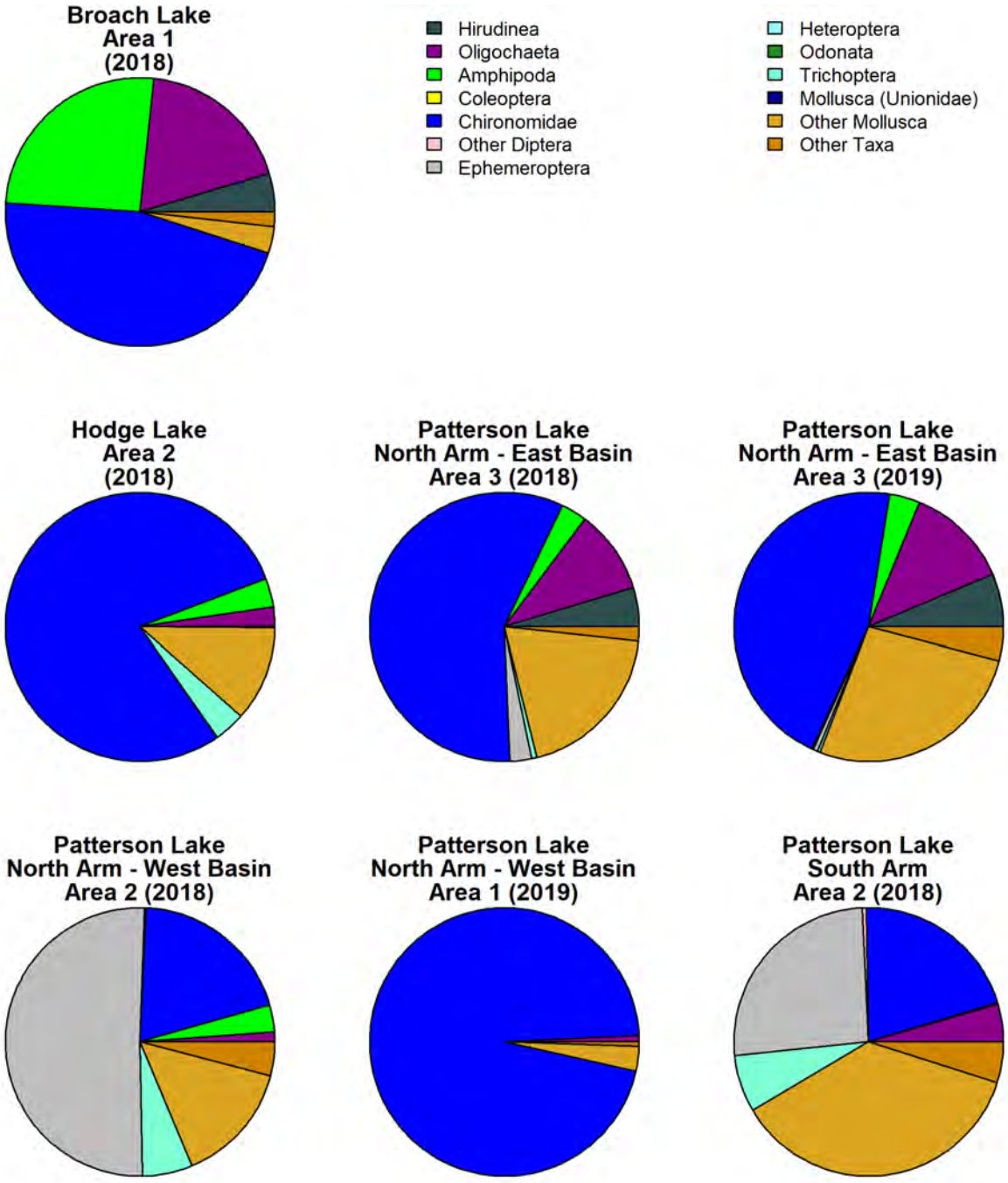


Figure 7.3-1: Benthic Invertebrate Density Percent Composition in the Aquatic Study Area, September/October 2018 and September 2019


Broach Lake
Area 1
(2018)
Hirudinea
Oligochaeta
Amphipoda
Coleoptera
Chironomidae
Other Diptera
Ephemeroptera
Heteroptera
Odonata
Trichoptera
Mollusca (Unionidae)
Other Mollusca
Other Taxa
Hodge Lake
Area 2
(2018)
Patterson Lake
North Arm - East Basin
Area 3 (2018)
Patterson Lake
North Arm - East Basin
Area 3 (2019)
Patterson Lake
North Arm - West Basin
Area 2 (2018)
Patterson Lake
North Arm - West Basin
Area 1 (2019)
Patterson Lake
South Arm
Area 2 (2018)

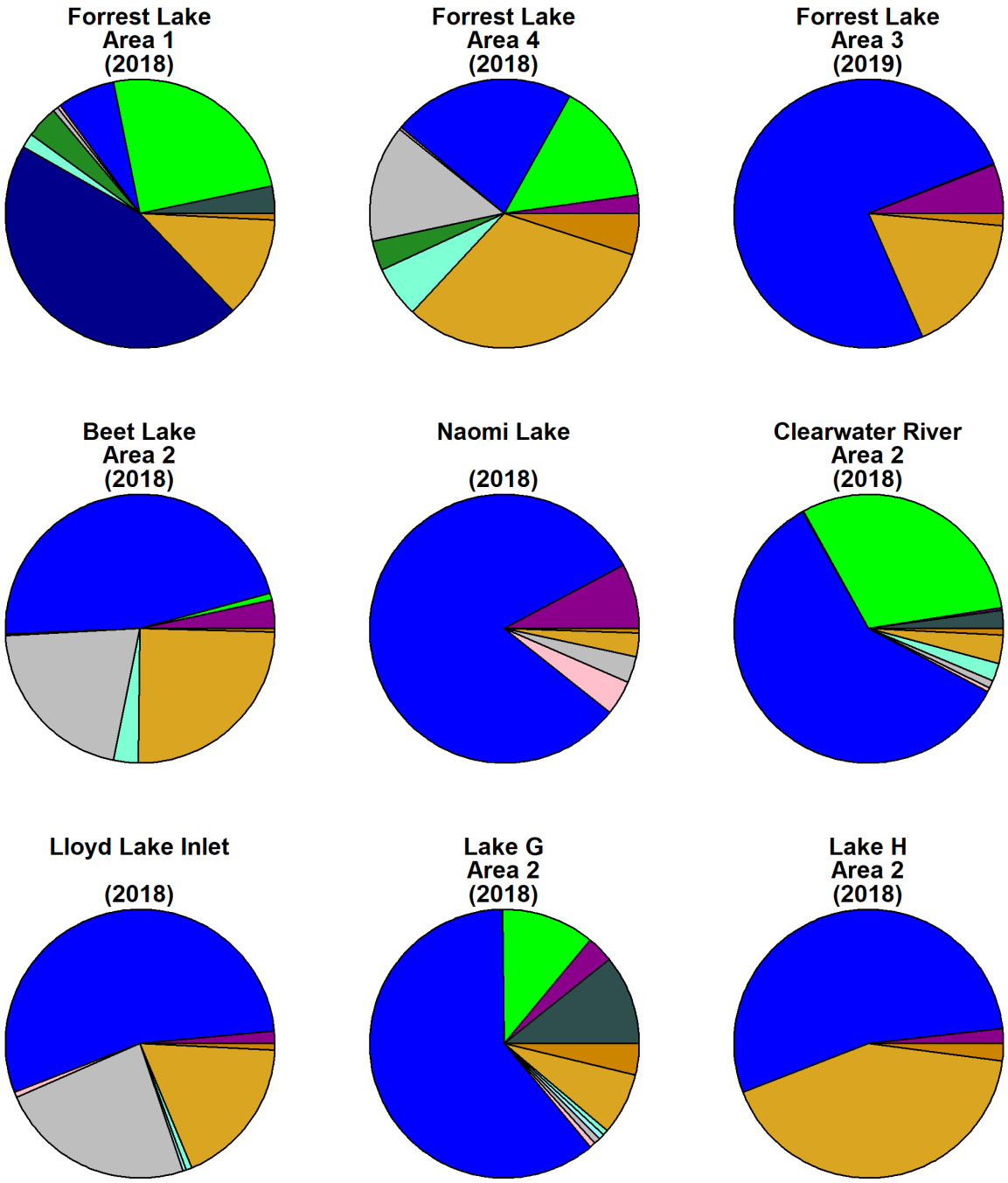


Figure 7.3-2: Benthic Invertebrate Biomass Percent Composition in the Aquatic Study Area, September/October 2018 and September 2019

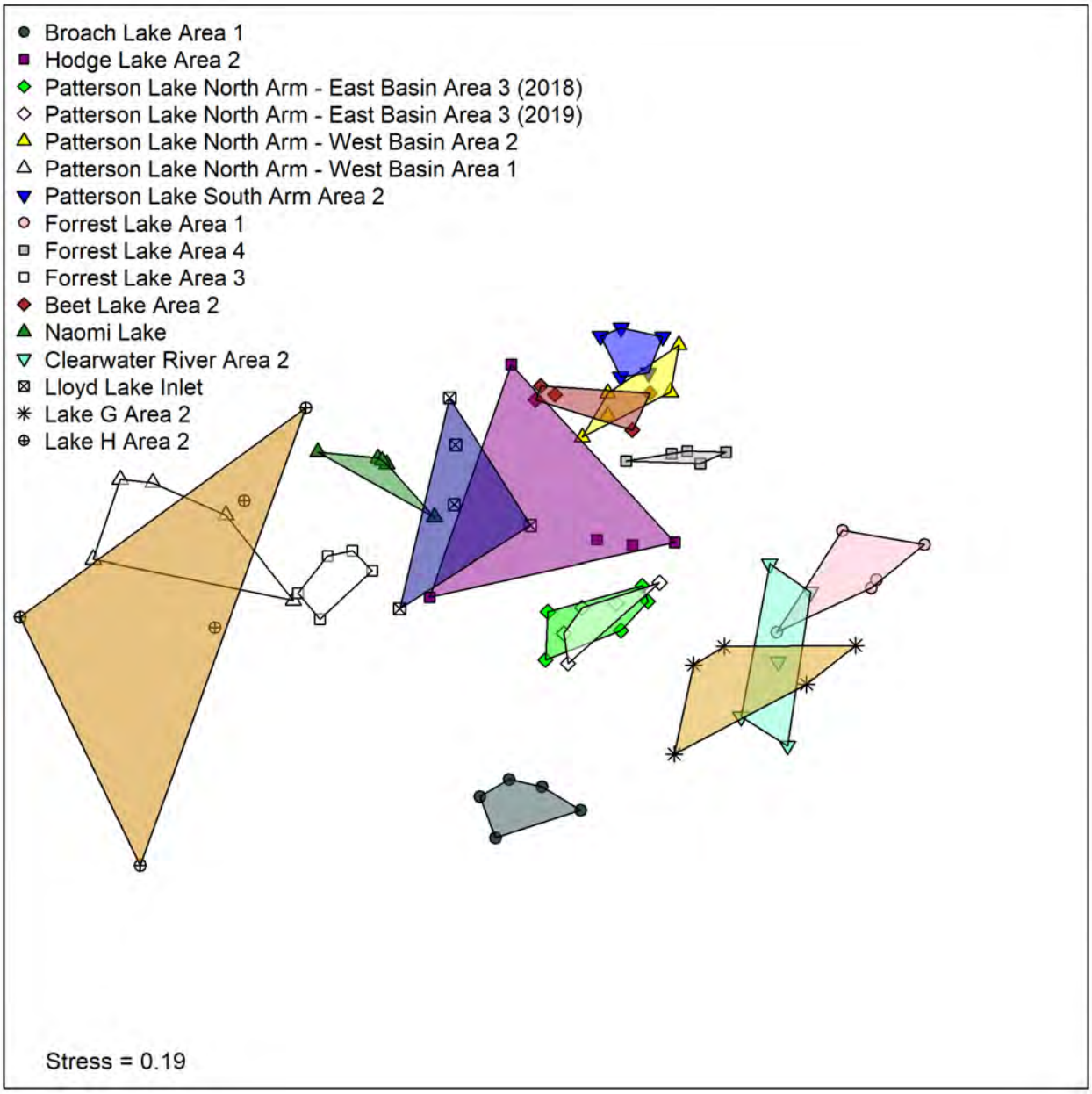


Figure 7.3-3: Benthic Invertebrate Community Composition Nonmetric Multidimensional Scaling of the Samples from the Aquatic Study Area, September/October 2018 and September 2019

In the remaining study areas, numerical dominance was less clear, with abundance being divided more evenly between a number of taxa (Figure 7.3-1). Chironomidae, Mollusca (other than river mussels), Amphipoda, and other taxa generally accounted for 10% to 40% of the community, and rarely accounted for more.

The benthic invertebrate community NMDS (Figure 7.3-3) displays how dissimilar samples are from one another, with samples distant from one another having the least amount of community similarity, while samples close to each other being the most similar. With the exception of Lake H Area 2, samples within areas were spread over relatively small surfaces on the graph, which dictates that within-area community dissimilarity was usually small.

Three loosely clustered groups occurred when comparing benthic invertebrate community similarity between study areas. The study areas where shallower station depths were sampled (between 0.4 m and 2.0 m), including Lake G Area 2, Clearwater River Nearfield Area 2, and Forrest Lake Area 1, clustered closely together on the right side of the plot, illustrating community similarities. As these areas were shallow and likely warmer and better oxygenated than deep areas, they were characterized by notably high densities and high taxon richness. Conversely, on the left side of the plot, Lake H and the two deep areas of Patterson Lake North Arm-West Basin Area 1 and Forrest Lake Area 3 were characterized by low taxon richness and low densities.

The third cluster, relatively centered compared to the other two clusters, included the remaining areas, which had a mixture of intermediate to high taxon richness or intermediate to high densities (without both being high).

Community dissimilarities between the two future reference areas (Broach Lake and Hodge Lake) were equally as high as community dissimilarities between these areas and several of the future exposure areas illustrating natural variability in the ASA.

Results from Patterson Lake North Arm – East Basin Area 3, which was sampled in both 2018 and 2019, produced samples that largely overlapped between the two years. This indicates the community changed little from 2018 to 2019, and the results were quite similar.

7.3.2 Biomass

Overall, biomass composition was similar to abundance composition. Chironomidae tended to be the dominant taxon, generally followed by either Amphipoda. Oligochaeta, or Mollusca (other than Unionidae; Figure 7.3-2). In many areas, including Patterson Lake North Arm – West Basin Area 2, Patterson Lake South Arm Area 2, Forrest Lake North Area 4, Beet Lake Area 2, and Lloyd Lake Inlet, Ephemeroptera (mayfly nymphs) represented a relatively large fraction of the biomass (Figure 7.3-2). Unionidae (river mussels) were important in sample 4 from Forrest Lake Area 1, accounting for 150 g/m^2 (Appendix C, Table 34).

7.3.3 Community Metrics

The majority of the study areas had average benthic invertebrate densities that ranged between approximately 1,000 organisms/m^2 and 5,000 organisms/m^2 (Table 7.3-1). Substantially higher densities in the range of approximately 13,000 organisms/m^2 to 41,000 organisms/m^2 occurred in the shallow study

areas (Lake G Area 2, Clearwater River Nearfield Area 2, and Forrest Lake Area 1), as well as in Hodge Lake Area 2 and Patterson Lake North Arm – East Basin Area 3 (2018). Conversely, average densities lower than 1,000 organisms/m^2 occurred at Lake H Area 2 and the two deep areas sampled in 2019 (Patterson Lake North Arm – West Basin Area 1 and Forrest Lake Area 3). It is noted that the two deep areas had substantially lower average densities (354 organisms/m^2 and 852 organisms/m^2) than the nearby shallow areas (Patterson Lake North Arm – West Basin Area 2 and Forrest Lake Area 4) sampled in 2018, where average densities were 2,097 organisms/m^2 and 5,312 organisms/m^2, respectively. Average density at Patterson Lake North Arm – East Basin Area 3 was higher in 2018 (13,448 organisms/m^2) than in 2019 (6,142 organisms/m^2), illustrating temporal differences within the study area.

Average taxon richness ranged between 8 taxa/sample and 16 taxa/sample in most areas (Table 7.3-1). Areas with lower richness included Lake H Area 2, Patterson Lake North Arm – West Basin Area 1, Forrest Lake Area 3, and Naomi Lake, where average richness ranged between 3.8 taxa/sample and 6.6 taxa/sample. Forrest Lake Area 1, conversely, had a higher mean richness of 20.6 taxa/sample. The two deep areas sampled in 2019 (Patterson Lake North Arm – West Basin Area 1 and Forrest Lake Area 3) had a lower average taxon richness (5.0 taxa/sample and 6.6 taxa/sample) than the stations sampled in 2018 in shallower waters nearby (Patterson Lake North Arm – West Basin Area 2 and Forrest Lake Area 4, where taxon richness averaged 13.6 taxa/sample and 15.4 taxa/sample). Unlike density, taxon richness at Patterson Lake North Arm – East Basin Area 3 was similar between 2018 and 2019 (Appendix C, Table 35).

In 56% of the areas, average Simpson's diversity was moderately high ranging between 0.61 and 0.77 (Table 7.3-1). Lower diversity occurred in study areas where the communities were dominated (58% and higher) by the Family Chironomidae; these areas included Hodge Lake Area 2, Patterson Lake North Arm – East Basin Area 3 (2018), Patterson Lake North Arm – West Basin Area 1, Forrest Lake Area 3, Clearwater River Nearfield Area 2, Lake G Area 2, and Lake H Area 2.

Average Simpson's evenness was lower than 0.35 in 69% of the study areas (Table 7.3-1). Evenness was greater in Naomi Lake (0.60) and Lake H Area 2 (0.58) where fewer taxa were represented.

8.0 AQUATIC MACROPHYTE CHEMISTRY

8.1 Study Objectives

The objective of the aquatic macrophyte chemistry monitoring program was to provide data for risk assessment modelling and a baseline for which future conditions can be compared. Rooted macrophytes are plants rooted in lake substrates where current is low enough to permit fine sediments to accumulate. Substances in sediment may be taken up by the roots and transferred to the shoots of the plant via the plant's vascular system. Since animals may consume aquatic macrophytes, the plants may serve as a vector for contaminant transfer from plant to primary consumers in the ecosystem, and these data can be used in the EA and risk assessment modelling.

8.2 Methods

8.2.1 Sample Location

Aquatic macrophyte samples (n = 30) for chemical analyses were collected from five stations in the littoral zone of the Lloyd Lake Inlet study area from 9 August 2018 to 11 August 2018 (Figure 4.2-10), and from Broach Lake (Figure 8.2-1), Jed Creek (Figure 8.2-2), Patterson Creek (Figure 4.2-5), Beet Creek (Figure 8.2-3), and the Clearwater River Nearfield (Figure 4.2-9) from 21 July 2019 and 30 July 2019.

The aquatic macrophyte samples collected were from the genera *Carex* sp. (sedge). Sedge shoot, root, and sediment (0 cm to 5 cm) samples were collected from five stations in each area (n=6) that were spaced at a minimum distance of 20 m. At each sampling station, UTM coordinates and a water depth were recorded (Appendix C, Table 1).

8.2.2 Sample Collection

Sedge and sediment samples were collected using a clean shovel; care was taken to clean the sampling equipment between sample collections. The plant samples were cleaned (i.e., the sediment washed off the roots) and separated into shoot and root samples using Teflon coated scissors. A minimum of 500 g of each medium type was collected and the samples were frozen following collection.

The surveys were conducted in accordance with the CanNorth SOP for Aquatic Macrophyte Sampling surveys, which are based on best practices recommended in numerous guidance documents (AE 2006; CCME 2011; MWLAP 2013; ENV 2014b).

Figure 8.2-1: Aquatic Macrophyte Sampling Stations in Broach Lake, 2019

Figure 8.2-2: Aquatic Macrophyte Sampling Stations in Jed Creek, 2019

Figure 8.2-3: Aquatic Macrophyte Sampling Stations in Beet Creek, 2019

8.2.3 Laboratory Analyses

Chemical analyses were completed by the SRC laboratories in Saskatoon for the parameters listed in Table 8.2-1 and Table 8.2-2. Parameters were chosen based on standard measures of macrophyte characterization along with parameters specific to uranium mining (CSA 2010).

Table 8.2-1: Aquatic Macrophyte Root and Shoot Chemistry Parameters

Parameters	
Metals	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc
Physical Properties	Ash, Moisture
Radionuclides	Lead-210, Polonium-210, Radium-226, Thorium-230

Table 8.2-2: Aquatic Macrophyte Sediment Chemistry Parameters

Parameters	
Inorganic Ions	Calcium, Magnesium, Potassium, Sodium
Metals	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc
Nutrients	Total Organic Carbon, Total Phosphorus
Physical Properties	Moisture
Radionuclides	Lead-210, Polonium-210, Radium-226, Thorium-230

8.2.4 Data Analyses

The macrophyte sediment, root, and shoot chemistry data were visually inspected for accuracy, tabulated, and means and standard deviations were computed. No environmental quality guidelines currently exist for sedge chemistry; therefore, the data are simply presented herein. Moving forward, these data will be used as baseline benchmarks for future studies in the ASA and in assessments for the EA.

8.3 Results

The sedge sediment, root, and shoot chemistry summary results are presented in Appendix C, Table 36, while detailed results are presented in Appendix C, Table 37 and Table 38. The purpose of this component was to gather data for later comparison or for use in the EA and therefore no interpretation is provided here.

9.0 FISH AND FISH HABITAT

9.1 Study Objectives

Fish and fish habitat investigations were conducted in the ASA in spring, summer, and fall of 2018, and in the summer of 2019 to meet the following objectives:

- locate areas that are utilized for fish spawning;
- determine fish community composition;
- collect information on fish species abundance, morphometry, and health;
- collect baseline fish chemistry data; and
- map aquatic habitat types and document areas of critical habitat.

Fish of various trophic levels were identified as potential VCs for the EA during the joint working group meetings held between NexGen and local community members and are; therefore, essential SCs for the aquatic baseline program. The suite of fish studies conducted in the ASA aligns with items identified as important to Indigenous Groups in the region through TLU studies and joint working group meetings (Firelight Research Inc. 2019a,b; WD Lewis & Associates Ltd. 2019; YNLR 2020; Origins Heritage Consulting Inc. 2020).

9.2 Methods

Table 9.2-1 summarizes the fish investigations conducted in each waterbody during the 2018 and 2019 baseline studies. Patterson Lake as a whole was surveyed for all components, but more detail was given in areas near the Project labeled as the Mine Site Area and Camp Area (Figure 1.2-1). Detailed methods are described in the sections below.

Table 9.2-1: **Fish Investigations Conducted in the Aquatic Study Area, 2018 and 2019**

Waterbodies	Fish Chemistry Survey	Fish Community Survey/Habitat Survey	Spring Spawning Survey	Fall Spawning Survey
Broach Lake	x	x		
Hodge Lake	x	x		
Jed Creek		x	x	x
Patterson Lake	x	x	x	x
Patterson Lake Mine Site Area		x	x	x
Patterson Creek		x	x	x
Forrest Lake	x	x	x	x
Beet Channel		x	x	
Beet Lake	x	x	x	x
Beet Creek		x	x	
Naomi Creek		x	x	
Naomi Lake	x	x	x	x
Clearwater Creek		x	x	
Clearwater River Nearfield	x	x	x	
Clearwater River Midfield		x		
Lloyd Lake Inlet	x	x		
Lake G		x	x	
Lake H		x		
E Creek			x	
G Creek			x	

All fish surveys were conducted in accordance with the CanNorth SOP for Fish Field Sampling and Fish Egg Search Surveys, which are based on best practices recommended in numerous guidance documents (Bonar et al. 2009; EC 2012; ENV 2014b; Green et al. 2015; BCMOE 2016; CCME 2016). All fish and eggs were collected under the authority of a *Special Collection Permit* issued by the ENV.

9.2.1 Fish Surveys

9.2.1.1 Spawning Surveys

Spring and fall spawning surveys were conducted in order to document specific locations in the ASA that were used for spawning by large-bodied fish. The spring survey completed from 18 May 2018 to 30 May 2018, specifically targeted large-bodied spring spawning species known to occur in the ASA including northern pike (*Esox lucius*), walleye (*Sander vitreus*), white sucker (*Catostomus commersoni*), yellow perch (*Perca flavescens*), Arctic grayling (*Thymallus arcticus*), and longnose sucker (*Catostumus catostumus*). Lake trout (*Salvelinus namaycush*) and lake whitefish (*Coregonus clupeaformis*) were targeted during the fall spawning survey, which took place from 30 September 2018 to 14 October 2018.

Spring spawning surveys were completed in lakes and creeks in the ASA that were in close vicinity to the Project extending between Patterson Lake to Clearwater River Nearfield (Figure 1.2-1; Table 1.2-2). Information from the fish community, habitat, and spawning surveys completed during the spring and summer of 2018, along with information on lake depth and morphology, were used to determine which waterbodies required fall spawning surveys. Patterson Lake, Forrest Lake, and Beet Lake were identified as potential lakes to contain lake trout; thus, lake trout spawning surveys were completed in September 2018 and October 2018. Lake whitefish spawning surveys were conducted in these lakes in addition to Jed Creek, Patterson Creek, and Naomi Lake. During the spawning surveys, all of Patterson Lake was investigated with extra effort expended in the Mine Site Area and Camp Area. Spawning survey efforts on Forrest Lake were focused in the northern section of the waterbody since this is the area most influenced by the flow path of water from Patterson Lake.

During the spawning surveys, three different fish capture methods were utilized, including hoop nets, short-length gill nets, and angling. The purpose of the fish capture was to determine the spawning condition of the fish to verify that survey timing is correct, and to locate areas where fish in ripe spawning condition were most abundant and likely to spawn. In conjunction with the fishing efforts, surveyors searched for fish eggs and noted the presence/absence and abundance of eggs in order to confirm the potential spawning habitat. Details on the dates and times of fishing efforts are provided in Appendix C, Tables 39 and 40. The locations of the short-length gill net sets, hoop net sets, and egg searches areas are shown in Appendix G, Figures 9.2-1 to 9.2-23.

Short-length Gill Nets

Short-length gill nets were utilized to capture spawning fish near appropriate habitat types. Short-length gill nets are size-specific and, depending on the location and time of set, the species caught will vary. The short-length gill nets used were comprised of a single panel (10.0 m long and 1.8 m deep) with mesh sizes of 5.1 cm and 7.6 cm (stretch measure). Frequently, multiple panels of nets were attached together to increase effort and improve fish capture success.

Hoop Nets

Hoop nets were a non-selective live capture method used to collect a wide range of fish sizes. Hoop nets were set in creeks during the spawning surveys with the net openings facing downstream (in most cases) to capture pre-spawning fish migrations. Hoop nets measured 6 m long, and the frame consisted of 7 hoops (0.91 m diameter), one D-shaped frame (1.09 m wide by 0.91 m high), and a rectangular front frame (1.22 m wide by 0.91 m high). The nets were covered with 4.5 cm (stretch measure) heavy nylon netting. Effort was recorded as time of net deployment to time of net retrieval.

Angling

Angling is the process of fishing with a hook and line. It is an active method which involves an angler, fishing rod, and terminal tackle. There are many different strategies to angling and often the ones chosen are determined by which species are being targeted. In this sense, angling can be selective, especially towards large-bodied predatory species. Two distinct styles of angling were employed for the purposes of the spawning surveys. First, fly casting was used to target Arctic grayling. Second, lure casting and trolling were used to target lake trout. Despite the selective intentions of each method used, each method was effective at catching a number of species.

Egg Searches

Egg searches were conducted by sampling an area by one of three methods during the spawning surveys. Generally, the area searched was 1 m^2. The area searched was recorded for each transect. The three different methods used include:

- vegetation sweeps (primarily for capture of northern pike and yellow perch eggs);
- egg suctioning (primarily for capture of lake trout, lake whitefish, walleye, Arctic grayling, and sucker spp. eggs in gravel/cobble substrate); and
- kick netting (primarily for capture of lake whitefish, walleye, Arctic grayling, and sucker spp. eggs in wadeable gravel/cobble substrate).

Vegetation sweeps were conducted by sweeping a 30-cm wide D-frame net within a search area. Vegetation sweeps were used during the spring spawning survey for collection of northern pike and yellow perch eggs because of these species' spawning preference for shoreline vegetation or debris (TAEM 1989a; Scott and Crossman 1998).

Egg suctioning was completed using a hand-operated diaphragm pump to lift the eggs out of the rocky substrate. The hand pump was modified from a design described by Newbury and Gaboury (1993). The hose attached to the intake of the pump was approximately 5 m in length with a 2.5-cm diameter. While the pump was being operated, the hose was moved around the substrate at a constant rate within a search area. The tip of the hose reached into the interstitial spaces of the substrate. The water was pumped through the hose into a mesh strainer, and the contents of the strainer were thoroughly searched for eggs. The amount of time the pump was operated was recorded. Suctioning methods were used in both the fall and spring spawning surveys.

The third technique used for egg searches was kick netting. This technique was used in the spring and fall spawning surveys. When kick netting, substrate was disturbed with a persons' foot while a 30 cm wide D net was placed in the water sweeping up any loose debris or eggs that had been kicked up.

All eggs found were counted and the species were identified and returned back into the environment. The exception of unidentified species, where a sub-sample was collected and preserved for later identification. Supporting information recorded at egg search locations included the date, water depth, water temperature, substrate type, dominant vegetation type, UTM coordinate, and an area photograph (Appendix C, Tables 41 and 42).

9.2.1.2 Community Survey

The 2018 fish community surveys targeted specific study areas within the ASA, including Broach and Hodge lakes as future reference lakes, lakes G and H located near to the Project, Lloyd Lake Inlet as a farfield study area, the midfield area of the Clearwater River, and targeted areas of Patterson Lake that were of most relevance to the Project (Mine Site Area and Camp Area). Fish community surveys were conducted in the spring (18 May 2018 to 29 May 2018), summer (2 August 2018 to 12 August 2018), and fall (27 September 27 2018). A fish community survey was also completed in the summer of 2019 (17 July 2019 to 1 August 2019) on the remaining waterbodies in the study area including Broach Lake, Jed Creek, Patterson Lake, Patterson Creek, Forrest Lake, Beet Channel, Beet Lake, Beet Creek, Naomi Lake, Naomi Creek, Clearwater Creek, and Clearwater Nearfield.

A variety of methods were used during the fish community survey including angling, boat and backpack electrofishing, minnow traps, half-standard gang gill nets, short-length gill nets, and dip nets. Details on the dates and times of each method used for fish capture are provided in Appendix C, Tables 39 and 40. The locations of all fishing efforts in each waterbody are shown in Appendix G, Figures 9.2-1 to 9.2-45.

Electrofishing

The primary fishing method used during the fish community survey was electrofishing. The use of an electrofisher allowed for selective sampling of target fish species and minimized fish mortality. In the study lakes, a boat electrofisher was used, while in the streams a backpack electrofisher was used. The backpack electrofisher model was a Haltech HT-2000. The boat consisted of a modified Zodiac Grand Raid MK II (4.2 m) equipped with a Smith-Root 2.5 GPP Portable Generator Pulsator Electrofisher. Effort was recorded in seconds for the length of time the electrofisher was activated during each transect.

Minnow Traps

Minnow traps were used to capture small-bodied and juvenile fish during the fish community survey. These were commercially available Gee minnow traps with an opening diameter of 2 cm to 3 cm and a mesh size of 6.4 mm. Traps were placed in shallow areas along the shoreline adjacent to cover such as weeds, overhanging vegetation, wood debris, or rocks. Bait was placed in each minnow trap to attract fish and the traps were set overnight. Effort was recorded from time of trap set to time of trap retrieval.

Half Standard Gang Gill Nets

Half standard gang gill nets were utilized for fish capture during the fish community survey. A half standard gang of gill nets consisted of six panels, each 22.85 m long and 1.8 m deep, of the following mesh sizes (stretch measure): 3.8 cm (1.5"), 5.1 cm (2"), 7.6 cm (3"), 10.2 cm (4"), 12.7 cm (5"), and 14.0 cm (5.5"). In most cases, half standard gang gill nets were checked every few hours to reduce fish mortality. Effort was recorded as time of net deployment to time of net retrieval.

Dip Nets

In some instances, a 30-cm wide D-frame net was used to capture fish. Target fish were spotted in the waterbody and scooped up with the net.

9.2.1.3 Chemistry Survey

Large-bodied fish flesh and bone samples were retained from Broach Lake, Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, Clearwater River Nearfield, and Lloyd Lake Inlet for chemical analysis during the fish spawning and/or community surveys. Five northern pike and five lake whitefish were targeted in each waterbody; however, no lake whitefish were captured in the Clearwater River Nearfield location. A total of 40 northern pike and 35 lake whitefish flesh and bone samples were submitted for analyses. Aging structures were collected and submitted for aging analysis from fish submitted for chemical analyses.

Laboratory Analyses

Northern pike and lake whitefish samples were frozen prior to submission to SRC laboratories for chemical analyses of the parameters listed in Table 9.2-2. In some instances when minimum weight requirements were not met, two fish were composited together. SRC laboratories conducted separation of flesh and bone samples and the compositing of fish. Parameters were chosen based on standard measures of fish chemistry characterization along with parameters specific to uranium mining (CSA 2010).

Table 9.2-2: Fish Tissue Chemistry Parameters

Parameters	
Metals and Trace Elements	Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Manganese, Molybdenum, Nickel, Rubidium, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc
Physical Properties	Moisture (Freeze dried)
Radionuclides	Lead-210, Polonium-210, Radium-226, Thorium-230

Additionally, lake chub (*Couesius plumbeus*), trout perch (*Percopsis omiscomaycus*), and yellow perch samples were collected from the Patterson Lake Mine Site Area, yellow perch samples were collected from Broach Lake, and trout perch samples were collected from Hodge Lake. These samples have been frozen and retained, for potential chemical analyses in the future.

Ageing structures collected from northern pike (i.e., cleithra and scales) and lake whitefish (i.e., otoliths and scales) were submitted to North Shore Environmental Services in Thunder Bay, Ontario for age determination. QA/QC procedures for age determination are detailed in Appendix A.

9.2.1.4 Fish Processing

All fish captured during the fish surveys were identified to species and a visual external health assessment was completed. Any abnormalities noticed during the external health assessment were documented and photographed. All fish were measured to the nearest millimetre (fork length, or total length where applicable). Larger fish (>15 cm) were weighed using spring-type scales to the nearest 1 g, 5 g, or 20 g. Fish measured for the small-bodied chemistry survey were weighed using an Acculab digital scale (accuracy of ± 0.01 g). Sex, maturity, and spawning stage were also recorded. Every effort was made during fish collections to minimize fish mortality, with the exception of fish retained for fish chemistry.

A more detailed assessment was conducted on the northern pike and lake whitefish retained for chemical analyses. For each fish, stomach contents were recorded, and an internal health assessment was conducted. Any abnormalities noticed during the internal health assessment were documented. Ageing structures were retained from fish kept for chemical analyses.

9.2.2 Fish Habitat Survey

Detailed baseline habitat surveys were completed in 2018 and 2019 on 16 waterbodies and watercourses in the ASA, including Broach Lake, Hodge Lake, Jed Creek, Patterson Lake (extra detail was given to the Patterson Lake Mine Site Area and Camp Area), Patterson Creek, Forrest Lake, Beet Channel, Beet Lake, Beet Creek, Naomi Creek, Naomi Lake, Clearwater Creek, Clearwater River (Nearfield and Midfield), Lloyd Lake Inlet, Lake G, and Lake H (Figure 1.2-1). Mapping the quality and quantity of critical fish habitat in the study area focused on spawning habitat; however, summary sections are provided that discuss nursery, rearing, feeding, and overwintering habitat. The documentation of potential critical fish habitat was modified after the Habitat Evaluation Procedure (HEP) developed by the U.S. Fish and Wildlife Service (Cowardin et al. 1979; Busch and Sly 1992) and guidance documents (i.e., DFO and BC Ministry of Environment and Parks 1987; Orth 1989; Ontario MNR 1989; Plafkin et al. 1989; Langhorne et al. 2001). These are recommended in the “Habitat Mapping and Classification” section of the metal mining EEM guidance document (EC 2012). All habitat surveys were conducted in accordance with the CanNorth SOP for Aquatic Habitat Assessment. The habitat surveys were conducted as described in the following subsections.

9.2.2.1 Habitat Sections

Each waterbody was divided into a series of habitat sections (HS) based on physical characteristics. The physical characteristic categories are detailed in the legend provided in Appendix C, Table 57. The upland, riparian, and littoral zones of each HS were described and photographs were taken. In the littoral zone, the percent composition of each substrate type (silt/clay, sand, gravel, cobble, boulder, or organic materials), the density of emergent, floating leafed, or submergent aquatic vegetation, the amount and type of fish cover, and the bottom gradient were described.

9.2.2.2 Spawning Habitat Suitability Index

Spawning habitat surveys were conducted on the following large-bodied fish species: northern pike, walleye, lake whitefish, lake trout, yellow perch, Arctic grayling (in rivers and streams only), white sucker, and longnose sucker. Each habitat section was rated for its suitability as spawning habitat for each of the species investigated. Suitability was based on known spawning habitat characteristics that have been described in literature (provided below under each species description) and includes the appropriate habitat suitability models, where available, that have been developed for the species. The information provided in the habitat suitability models has been supplemented with additional data that have been collected from investigations in the region. Index ratings range from not suitable (0) to most or highly suitable (3). The spawning habitat criteria for each fish species is described under the headings below.

Northern Pike[4]

Not Suitable (0): an area that does not support aquatic plant growth and predominantly consists of a rock or sand substrate.

Marginal (1): an area supporting a sparse growth of aquatic plants, usually *Carex* sp.

Moderate (2): an area that supports moderate to dense aquatic plant growth.

Most Suitable (3): an area similar to (2) but where substrate is found in water <0.5 m in depth with little or no current and is covered with aquatic plant material, particularly feather moss but also senesced aquatic plants.

Walleye[5]

Not Suitable (0): an area with an organic or silt substrate, particularly with aquatic plant debris.

Marginal (1): an area with a sand and/or silt substrate but free of aquatic plant debris.

Moderate (2): an area with a clean gravel, cobble, and boulder substrate, in <1.5 m of water, particularly with spaces or crevices between the rock.

Most Suitable (3): an area similar to (2) but found in a shoal or reef area of a lake or riffle of a stream with good water circulation or movement from wave action or current.

Lake Whitefish[6]

Not Suitable (0): an area with an organic or silt substrate, particularly with aquatic plant debris.

Marginal (1): an area with sand and/or silt substrate but free of aquatic plant debris.

Moderate (2): an area with a clean cobble and boulder substrate, in <3 m of water, particularly with spaces or crevices between the rock.

Most Suitable (3): an area similar to (2) but found in a shoal, reef, or stream, particularly if the area has the potential for some water movement during the over-winter incubation of spawned eggs.

Lake Trout[7]

Not Suitable (0): an area with organic or silt substrate and/or aquatic plant debris.

[4] Sources: Krochak and Crosby 1975; Inskip 1982; TAEM 1990a, 1990b; Casselman and Lewis 1996; Minns et al. 1996; Scott and Crossman 1998.
[5] Sources: Johnson 1961; Busch et al. 1975; Chevalier 1977; Chen 1980; TAEM 1990a, 1990b; Scott and Crossman 1998.
[6] Sources: Qadri 1955, 1968; IES 1985, 1986a, 1986b; TAEM 1989a, 1989b, 1993; Scott and Crossman 1998.
[7] Sources: Martin 1956, Loftus 1957; Rawson 1961; Carlander 1969; McPhail and Lindsey 1970; Johnson 1975; Chen 1979; Marcus et al. 1984; TAEM 1989b, 1991a, 1991b; Scott and Crossman 1998.

Marginal (1): an area with sand and/or rock substrate but with an absence of crevices between the rock.

Moderate (2): an area with a clean cobble and boulder substrate, in <3 m of water, with spaces or crevices between the rock.

Most Suitable (3): an area similar to (2) but found in a shoal or reef area, particularly if the habitat has the potential for some water movement during the over-winter incubation of spawned eggs.

Yellow Perch[8]

Not Suitable (0): an area that does not support aquatic plant growth and consists of a cobble or boulder substrate, especially with a moderate or strong current.

Marginal (1): a relatively shallow area that does not support aquatic plant growth and consists of a sand or gravel substrate with little or no current.

Moderate (2): an inshore area that supports sparse rooted aquatic plant growth, particularly with some submerged brush and/or fallen trees and little or no current.

Most Suitable (3): an inshore area that supports moderate to dense rooted aquatic plant growth, particularly with significant amounts of submerged brush and/or fallen trees, and little or no current.

Arctic Grayling[9]

Not Suitable (0): an area with an organic or silt substrate, particularly with aquatic plant debris, or other substrate with little or no current.

Marginal (1): an area with some current with a sand, cobble, boulder, and/or bedrock substrate and free of aquatic plant debris.

Moderate (2): an area with a clean, predominantly gravel substrate, in <3 m of water with some current.

Most Suitable (3): an area similar to (2) but found in stream sections with a moderate to strong current.

White Sucker and Longnose Sucker[10]

Not Suitable (0): an area with an organic, silt, or sand substrate, particularly with aquatic plant debris.

Marginal (1): an area with a predominantly sand and/or silt substrate with some gravel and/or cobble but free of aquatic plant debris.
Moderate (2): an area with a clean gravel and/or cobble substrate, in <0.5 m of water with some current.

[8] Sources: Atton and Merkowsy 1983; Kreiger et al. 1983; Miles and Sawchyn 1988; TAEM 1990b; Scott and Crossman 1998.

[9] Source: Brown 1938; Rawson 1950; Nelson 1954; Wojcik 1954; Reed 1964; Bishop 1971; Sawchyn 1973; Kratt and Smith 1977; Hubert et al. 1985; Merkowsky 1989; Scott and Crossman 1998.

[10] Sources: Harris 1962; Green et al. 1966; Edwards 1983; Twomey et al. 1984; Scott and Crossman 1998.

Most Suitable (3): an area, particularly in a stream, with a clean gravel substrate, in <0.3 m of water with good water movement due to currents.

9.3 Results

9.3.1 Spawning Surveys

9.3.1.1 Spring

During the spring spawning survey, a total of 1,213 fish were captured, 76 of which were not spring spawning species (Appendix C, Table 39). More than half of the spring spawning species (67%) were in active spawning condition (i.e., ripe, or ripe and running), indicating that the survey was correctly timed for the ASA (Appendix C, Table 43). Furthermore, water temperatures throughout the study areas ranged from 10°C to 19ºC during the spring spawning survey. This temperature range overlaps and exceeds the range at which large-bodied spring-spawning fish species occurring in the ASA (sucker spp., walleye, and northern pike) would typically begin spawning (~ 4°C to 11°C; Scott and Crossman 1998).

The following sections outline fish capture and egg search results for each of the waterbodies surveyed. The locations of the net sets and egg searches are shown in Appendix G, Figures 9.2-1 to 9.2-13 and a summary of the species caught and the associated spawning condition is presented in Appendix C, Table 43. Detailed fish capture results are provided in Appendix C, Table 39 and detailed results of the egg searches are provided in Appendix C, Table 41. Additionally, egg search results are summarized in Table 9.3-1. Photographs of different substrates and habitats where egg searches occurred are shown in Appendix H, Photos 1 to 4, and of fish eggs from spring spawning species are shown in Appendix H, Photos 5 to 8.

Jed Creek

In Jed Creek a total of 430 fish were caught, 428 of which were spring spawning species. More than half of the spring spawning species (67%) were in active spawning condition (i.e., ripe, or ripe and running) and the rest were identified as green, spent, or unknown. The most abundant spawning species caught in Jed Creek was walleye with 27 green individuals, 47 ripe individuals, 154 ripe running individuals, 66 spent individuals, and 17 unknown individuals. Egg searches (i.e., kick netting and vegetation sweeps) were conducted and found walleye (n = 117), northern pike (n = 5), and sucker spp. (n = 1) eggs. Northern pike eggs were found in areas that contained 50% vegetation cover (i.e., *Carex* sp.). A total of 104 walleye eggs were specifically found in substrate containing 60% sand and 40% gravel.

Patterson Lake

In Patterson Lake, a total of 63 fish were caught; however, the most abundant species was lake whitefish (n = 24), which is a fall spawning species. The remaining fish included longnose sucker (n = 3), northern pike (n = 11), white sucker (n = 17), and yellow perch (n = 8). Of these spring spawning fish species, 92% were in active spawning condition (i.e., ripe, or ripe and running) with the rest either spent or unknown. Vegetation sweeps and kick nets yielded 656 eggs (northern pike = 23, slimy sculpin (*Cottus cognatus*) = 54, sucker spp. = 128, walleye = 451). Vegetation cover was typically only associated with northern pike eggs, and ranged from 0% to 40% in the egg search locations. Eggs for all four spring spawning fish species were typically found in largely cobble/gravel substrates. Northern pike, sucker spp., and walleye eggs were all found in the Patterson Lake Mine Site Area (Appendix G, Figures 9.2-1 and 9.2-2). Sucker spp. and walleye eggs were also found in the Patterson Lake Camp Area (Appendix G, Figure 9.2-5).

Table 9.3-1: Egg Search Results from the Spring and Fall Spawning Surveys in the Aquatic Study Area, 2018

Waterbody	Arctic Grayling[a]	Lake Trout[b]	Lake Whitefish[b]	Northern Pike[a]	Slimy Sculpin[a]	Sucker Spp.[a,c]	Walleye[a]	Yellow Perch[a]	Grand Total
Jed Creek	-	-	-	5	-	1	117	-	123
Patterson Lake	-	434	4940	23	54	128	451	-	6030
Patterson Creek	-	-	75	133	-	23	1	-	232
Forrest Lake	-	231	449	48	981	4	17	-	1730
Beet Channel	-	-	-	-	-	-	-	-	-
Beet Lake	-	301	128	-	-	17	52	-	498
Beet Creek	-	-	-	33	-	6	11	100	150
Naomi Creek	-	-	-	25	-	-	201	-	226
Naomi Lake	-	-	-	2	250	12	1	-	265
Clearwater Creek[d]	-	-	-	18	-	28	-	-	46
Clearwater River Nearfield[d]	3	-	-	8	-	181	-	-	192
Total	**3**	**966**	**5592**	**295**	**1285**	**404**	**851**	**100**	**9496**

a) Spring spawning species.

b) Fall spawning species.

c) Eggs could be either white sucker, longnose sucker, or both.

d) No fall fish spawning survey took place in this waterbody.

Patterson Creek

In Patterson Creek, 99 fish were caught, 76 of which were spring spawning species. The remaining 23 fish consisted of lake whitefish. More than half of the spring spawning species (71%) were in active spawning condition (i.e., ripe, or ripe and running) and the rest were identified as green, spent, or unknown. Longnose sucker, northern pike, and white sucker were the species caught in active spawning condition. One spent walleye was also caught. Egg searches were conducted using vegetation sweeps and kick netting. Northern pike (n = 133), sucker spp. (n = 23), and walleye (n = 1) eggs were found in the creek. Vegetation cover was between 15% and 75% (i.e., *Carex* sp.) in each of the quadrats where northern pike eggs were found, and the typical substrate consisted of silt/clay and organic matter. In comparison, sucker spp. eggs were located where substrates consisted mainly of silt/clay, sand, cobble, and organic matter.

Forrest Lake

In Forrest Lake, a total of 23 fish (5 lake trout, 1 lake whitefish, 5 longnose sucker, 11 northern pike, and 1 white sucker) were caught. Of the spring spawning species, four fish (3 longnose sucker and 1 white sucker; 17%) were in active spawning condition (i.e., ripe). All northern pike captured were spent and two longnose sucker were green. Egg searches were conducted using vegetation sweeps, egg suctioning, and kick netting. Northern pike (n = 48), slimy sculpin (n = 981), suckers spp. (n = 4), and walleye (n = 17) eggs were found in the study area. Northern pike eggs were mainly found in areas that contained 50% to 90% vegetation cover (i.e., *Carex* sp.) and substrates mostly consisted of organic matter with a little bit of cobble. Remaining spring spawning species eggs were found in substrates dominated mainly by cobble with gravel and boulder present.

Beet Channel

Fishing efforts in Beet Channel caught one lake whitefish and five northern pike. Most northern pike were spent (n = 4) with only one (20%) ripe individual (Appendix C, Table 43). All three egg search sampling methods (i.e., vegetation sweeps, egg suctioning, and kick-netting) were used in Beet Channel and no eggs were captured. The substrates searched consisted mostly of sand and silt/clay and contained low vegetation cover that was between 0% and 30%.

Beet Lake

A total of 30 fish, 28 of which were spring spawners, were caught in Beet Lake. Of the spring spawning species, 13 (46%) were in active spawning condition (i.e., ripe) including 4 longnose sucker, 2 northern pike, and 7 white sucker. The remaining individuals were green (longnose sucker = 1 and walleye = 1) or spent (northern pike = 12 and white sucker = 1). Egg suctioning and kick netting were used to search for eggs and yielded sucker spp. (n = 17) and walleye (n = 52) eggs. The eggs were found in areas with 0% vegetation cover and with a mostly cobble substrate and small percentages of gravel, sand, and boulders.

Beet Creek

Fishing efforts in Beet Creek caught a total of 183 fish, 168 of which were spring spawning species. Most of the spring spawning species (71%) were in active spawning condition (i.e., ripe, or ripe and running) and the remainder were identified as green or spent. The most abundant species in active spawning condition were longnose sucker (n = 111). Egg searches included vegetation sweeps and kick netting methods. Northern pike (n = 33) eggs were found in areas with 70% to 100% vegetation cover. Yellow perch (n =

100) eggs were all found in one quadrat. The quadrat contained an organic matter substrate and 50% vegetation cover (i.e., *Myrica gale* and *Chamaedaphne calyculata*). Sucker spp. (n = 6) eggs were typically found in areas with mostly sand and smaller percentages of organic matter, whereas walleye (n = 11) eggs were found in areas dominated by sand substrate.

Naomi Creek

Nine fish including two northern pike, five walleye, and two lake whitefish were caught in Naomi Creek. These hoop net sets sustained heavy damage from bears allowing fish to escape prior to checking and because of bears interfering, the hoop net was removed after two overnight sets conducted at the beginning of the spawning survey. Six fish (i.e., one northern pike and five walleye) (67%) were captured in active spawning condition (i.e., ripe, or ripe and running) and one northern pike was spent. Although fishing efforts were limited, extensive egg search efforts were made (including kick netting and vegetation sweeps) and found northern pike (n = 25) and walleye (n = 201) eggs. All northern pike eggs were found in vegetated (i.e., *Carex* sp.) areas with 50% to 100% vegetation cover and organic matter substrates. Walleye eggs were typically found in areas with sand/organic matter substrates with no vegetation.

Naomi Lake

Fishing efforts in Naomi Lake caught 1 lake whitefish and 6 northern pike in unknown spawning condition. A total of 265 eggs were found in Naomi Lake using vegetation sweeps, kick netting, and egg suctioning. In particular, 250 slimy sculpin eggs were found in two quadrats that contained 0% vegetation cover with a mostly cobble substrate. Additionally, sucker spp. (n = 12), northern pike (n = 2), and walleye (n = 1) eggs were found. The sucker spp. eggs were found in areas with 100% vegetation cover (*Carex* sp. or *Sphagnum* sp.), while the northern pike eggs were found in areas with 0% and 50% vegetation cover (dead *Picea* sp.). The single walleye egg was found in an area with no vegetation and substrate that was dominated by sand.

Clearwater Creek

In Clearwater Creek, a total of 230 fish (11 northern pike and 219 white sucker) were caught. Of the fish caught, 81% were in active spawning condition (i.e., ripe, and ripe running), while 8 northern pike were spent, 2 white sucker were green, and 1 white sucker was spent. Egg searches were conducted using vegetation sweeps and found 50 eggs (sucker spp. = 28 and northern pike = 18). Eggs were found in areas with 90% to 100% vegetation cover (i.e., *Carex* sp.) and organic matter substrates.

Clearwater River Nearfield

Fishing efforts in Clearwater River Nearfield caught a total of 128 fish (northern pike, longnose sucker, white sucker, and walleye), all of which were spring spawning species. A total of 57% of the individuals were in active spawning condition (i.e., ripe, or ripe and running) and the rest (43%) were identified as green, spent, or unknown. Egg searches (i.e., kick netting and vegetation sweeps) found Arctic grayling (n = 3), northern pike (n = 8), and sucker spp. (n = 181) eggs. Arctic grayling eggs were found in an unvegetated area with a substrate composed of sand, gravel, and cobble whereas northern pike eggs were located in areas with 90% to 100% vegetation cover (i.e., *Carex* sp.) with substrates composed of organic matter. Sucker spp. eggs were found in typically unvegetated areas with a variety of substrate components (i.e., sand, gravel, cobble, boulder, and organic matter).

Lake G

On 24 May 2018, a portion of Lake G was searched for eggs using kick netting and vegetation sweeps, but no eggs were found (Appendix G, Figure 9.2-13). Only a portion of the waterbody was searched because access to the waterbody was poor, and the lake had to be searched without the use of a boat for transportation. Without the use of a boat, there were no fishing efforts made during the spawning survey. The substrates searched were largely composed of silt/clay and organic matter. Additionally, most quadrats contained vegetation cover (i.e., *Carex* sp.).

E and G Creeks

During the spring spawning survey, hoop nets set in E and G creeks resulted in the capture of northern pike. In E Creek, one northern pike was caught that was in ripe spawning condition. In G Creek, four northern pike were captured; one (25%) was a non-spawning juvenile, one was ripe running, and the remaining two were in unknown spawning condition. Additionally, kick netting and vegetation sweeps were conducted in G Creek, but no eggs were found. Areas searched consisted of 20% vegetation (i.e., *Carex* sp.) cover with substrates mostly composed of silt/clay, sand, and organic matter.

9.3.1.2 Fall

During the fall spawning survey, a total of 515 fish were captured, 29 of which were not fall spawning species (Appendix C, Table 39). More than three quarters of the fall spawning species (83%) were in active spawning condition (i.e., ripe, or ripe and running), indicating that the timing of the survey was correct for the ASA (Appendix C, Table 43). Furthermore, water temperatures at all egg search locations in the ASA for the fall spawning survey were at or below 5°C. Preferred Saskatchewan lake trout spawning temperature is 8.9°C, and lake whitefish spawning is generally delayed until water temperatures reach 7.8°C, but the spawning peak generally occurs at lower temperatures (Scott and Crossman 1998). Cold temperatures and heavy ice build-up made accessibility difficult, limiting the amount of fishing and egg searching efforts performed at certain locations particularly near shore.

The locations of the net sets and angling locations are shown in Appendix G, Figures 9.2-14 to 9.2-23. A summary of the species caught and spawning conditions is presented in Appendix C, Table 43 and detailed fish capture results are provided in Appendix C, Table 39. Egg searches (i.e., egg suctioning and kick netting) were conducted at locations shown in Appendix G, Figures 9.2-14 to 9.2-22. The results are summarized in Table 9.3-1. Detailed egg search results are provided in Appendix C, Table 42. Photographs of different substrates and habitats where egg searches occurred are shown in Appendix H, Photos 1 to 4, and of fish eggs from fall spawning species are shown in Appendix H, Photos 9 and 10.

Lake Trout

Lake trout (n=7) were only caught in Forrest Lake and contained the following spawning conditions: 1 ripe (14%) and 6 spent (86%). Kick netting found 434 lake trout eggs in Patterson Lake, 231 in Forrest Lake, and 301 in Beet Lake (Appendix G, Figures 9.2-14 to 9.2-22; Table 9.2-3). Lake trout eggs were found in both the Patterson Lake Mine Site Area and Camp Area (Appendix G, Figures 9.2-14, 9.2-15, and 9.2-18). No vegetation was present in any of the quadrats where eggs were found and substrates for Forrest and Beet lakes were composed mostly of gravel and cobble; whereas, Patterson Lake substrates contained gravel, cobble, and boulders.

Lake Whitefish

A total of 479 lake whitefish were captured during the survey between 29 September 2018 and 14 October 2018. Detailed results are provided below based on the individual waterbodies.

Jed Creek

Fishing efforts in Jed Creek caught 168 lake whitefish and the majority of individuals (94%) were in active spawning condition (i.e., ripe, or ripe and running) with the rest were identified as green or spent.

Patterson Lake

In Patterson Lake, a total of 43 lake whitefish were caught and the spawning conditions of these individuals included 1 green, 32 ripe (74%), 7 spent and, 3 unknown. Egg searches found 4,940 lake whitefish eggs with the highest egg densities located in transects with no vegetation cover and substrates composed of gravel, cobble, and boulder (Appendix G, Figures 9.2-14 to 9.2-18; Table 9.3-1). Lake whitefish eggs were found in both the Patterson Lake Mine Site Area and Camp Area (Appendix G, Figures 9.2-14, 9.2-15, and 9.2-18).

Patterson Creek

Fishing efforts in Patterson Creek resulted in 184 lake whitefish being captured. The majority of the individuals (93%) were in active spawning condition (i.e., ripe, or ripe and running) and the rest were identified as green, spent, or unknown. Egg searches found 75 lake whitefish eggs in areas with little to no vegetation cover (0% to 10%) and substrates composed of sand and organic matter (Appendix G, Figure 9.2-18; Table 9.3-1).

Forrest Lake

A total of 27 lake whitefish were caught in the northern section of Forrest Lake. Nineteen (70%) of these fish were in active spawning condition and the remaining eight were in an unknown spawning condition. A total of 449 lake whitefish eggs were found in this waterbody during egg searches (Appendix G, Figures 9.2-19 to 9.2-21; Table 9.3-1). The eggs were mostly found in cobble substrates with no vegetation cover.

Beet Lake

Fishing efforts in Beet Lake resulted in 13 lake whitefish being captured. Most of the individuals (85%) were in active spawning condition (i.e., ripe, or ripe and running) and the rest were identified as green. Egg searches found 128 lake whitefish eggs in areas with no vegetation cover and substrates composed of gravel and cobble (Appendix G, Figure 9.2-22; Table 9.3-1).

Naomi Lake

In Naomi Lake, 44 lake whitefish were captured with most of the individuals (84%) found to be in active spawning condition (i.e., ripe, or ripe and running) and the rest identified as green or unknown. No egg searches were conducted in this waterbody due to near shore ice buildup.

9.3.2 Community and Chemistry Survey

A comprehensive list of fish species captured in each waterbody assessed in the ASA during all fish surveys is provided in Table 9.3-2, and a summary of the abundance and richness is presented in Appendix C, Table 44. Summary information on fish morphometry and percent capture is provided in Appendix C, Table 45. A summary of electrofishing catch per unit effort (CPUE) can be found in Appendix C, Table 46. A summary of fish abnormalities can be found in Appendix C, Table 47. Detailed information is provided in Appendix C, Tables 39 and 40. Locations of all fishing efforts are shown in Appendix G, Figures 9.2-1 to 9.2-45.

The following sections describe fish community composition in each waterbody assessed during the fish community and chemistry surveys, and to ensure the information provided is complete and comprehensive, fish capture results from the spawning surveys discussed above are included. The relative frequency of external abnormalities is also discussed. Internal abnormalities are also noted in Appendix C, Table 27; however, given significantly fewer fish had complete internal assessments, the focus of the discussion is on external abnormalities.

9.3.2.1 Community

A total of 6,045 fish representing 16 species were captured in 19 waterbodies in the ASA during all fish studies conducted in 2018 and 2019. Species richness (the total number of different species present) for large-bodied fish and small-bodied fish was 10 and 6, respectively.

Broach Lake

Broach Lake had a total of 515 fish captured during the community and chemistry surveys. Eleven different species were captured (n = 8 and n = 3 for large and small-bodied species, respectively) with longnose sucker (n = 200) and white sucker (n = 136) being the most common. Broach Lake had an electrofishing CPUE of 4.05 fish/minute. Broach Lake was the only waterbody in the ASA where cisco (*Coregonus artedi*) was captured. The cisco captured were all small with an average length of 7.3 cm (Appendix C, Table 45). External abnormalities were noted in 14 of the fish captured, representing a relative percent frequency of external abnormalities of 2.7%. Fin abnormalities (lightly frayed fins) were the most prevalent abnormality observed in Broach Lake (Appendix C, Table 47).

Hodge Lake

Hodge Lake had a total of 217 fish captured during the community and chemistry surveys. Eleven different species were captured (n = 6 and n = 5 for large and small-bodied species, respectively) with yellow perch (n = 122) and burbot (*Lota lota*; n = 32) being the most common. Hodge Lake had an electrofishing CPUE of 1.96 fish/minute. Hodge Lake was the only waterbody in the ASA where johnny darter (*Etheostoma nigrum*) was captured. Overall, few external abnormalities on fish were noted in Hodge Lake, with a relative frequency of external abnormalities of 0.9%.

Table 9.3-2: Summary of Fish Species Captured in the Aquatic Study Area, 2018 and 2019

Waterbody	Arctic Grayling	Burbot	Cisco	Johnny Darter	Lake Chub	Lake Trout	Lake Whitefish	Longnose Sucker	Ninespine Stickleback	Northern Pike	Slimy Sculpin	Spottail Shiner	Trout Perch	Walleye	White Sucker	Yellow Perch
Broach Lake[a,b]		✓	✓			✓	✓	✓	✓	✓	✓	✓			✓	✓
Hodge Lake[a,b]		✓		✓		✓	✓		✓	✓	✓	✓	✓		✓	✓
Jed Creek[a,c]		✓					✓	✓		✓		✓	✓	✓	✓	
Patterson Lake[a,b,c]		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patterson Creek[a,c]		✓			✓		✓	✓		✓	✓	✓	✓	✓	✓	
Forrest Lake[a,b,c]		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Beet Channel[a,c]							✓		✓	✓		✓			✓	✓
Beet Lake[a,b,c]		✓			✓	✓[d]	✓	✓		✓	✓	✓	✓	✓	✓	✓
Beet Creek[a,c]							✓	✓		✓	✓			✓	✓	✓
Naomi Creek[a,c]		✓					✓	✓		✓				✓		
Naomi Lake[a,b,c]		✓					✓			✓	✓[d]	✓	✓	✓	✓	✓
Clearwater Creek[a,c]		✓								✓					✓	
Clearwater River Nearfield[a,b,c]	✓	✓						✓	✓	✓		✓		✓	✓	✓
Clearwater River Midfield[a]		✓							✓	✓	✓					
Lloyd Lake Inlet[a,b]		✓				✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Lake G[a,c]		✓								✓						
Lake H[a]		✓								✓		✓				✓
E Creek[c]										✓						
G Creek[c]		✓								✓						

a) Community surveys conducted in this waterbody.

b) Chemistry surveys conducted in this waterbody.

c) Spawning surveys conducted in this waterbody.

d) No fish were caught, but eggs were found.

Jed Creek

Jed Creek had a total of 687 fish captured during the community and spawning surveys. The majority (85%) of these fish were captured in hoop nets during the spawning surveys. Eight different species were captured (n = 6 and n = 2 for large and small-bodied species, respectively) with walleye (n = 311) and lake whitefish (n = 170) being the most common. Jed Creek had an electrofishing CPUE of 22.11 fish/minute, which was higher than all other waterbodies in the ASA. Trout perch (n = 59) and spottail shiner (*Notropis hudsonius*; n = 37) were the most common species captured using electrofishing as a method. External abnormalities were noted in 9 of the fish captured representing a relative percent frequency of 1.3%. No single type of abnormality was more prevalent than another (Appendix C, Table 47).

Patterson Lake (Overall)

Patterson Lake had a total of 1697 fish captured during the community, chemistry, and spawning surveys. Thirteen different species were captured (n = 8 and n = 5 for large and small-bodied species, respectively) with trout perch (n = 984) being the most common. Alongside Forrest Lake, Patterson Lake had the highest species richness in the study area. Patterson Lake had an electrofishing CPUE of 4.06 fish/minute. Other common species included spottail shiner (n = 183), lake whitefish (n = 109), and white sucker (n = 105). Few external abnormalities were noted in the fish captured from Patterson Lake, with a relative frequency of external abnormalities of 0.6%.

Patterson Lake (Mine Site Area and Camp Area only)

The 2018 fish community survey on Patterson Lake focused solely on the Mine Site Area and Camp Area. During this survey, a total of 514 fish were captured using minnow traps and boat electrofishing methods and nine different species were captured (n = 4 and n = 5 for large and small-bodied species, respectively). The most abundant species in the Mine Site Area and Camp Area were trout perch, (n = 202), spottail shiner (118), and yellow perch (n = 34). No northern pike or lake whitefish were captured during the 2018 community survey; however, these species were caught in short-length gill nets in both the Mine Site Area and Camp Area during the spring and fall spawning surveys. No lake trout or walleye were captured in the Patterson Lake Mine Site Area or Camp Area; however, eggs of both species were found in these areas (Appendix G, Figures 9.2-1, 9.2-2, 9.2-5, 9.2-14, 9.2-15, and 9.2-18). Electrofishing CPUE in the Mine Site Area and Camp Area combined was 3.43 fish/minute.

Patterson Creek

Patterson Creek had a total of 320 fish captured during the community and spawning surveys. The majority (90%) of these fish were captured in hoop nets during the spawning surveys. Ten different species were captured (n = 6 and n = 4 for large and small-bodied species, respectively) with lake whitefish (n = 208) and northern pike (n = 69) being the most common. Patterson Creek had an electrofishing CPUE of 2.59 fish/minute and spottail shiner (n = 14) were the most common species captured using this method. The frequency of external abnormalities was higher in Patterson Creek (5.6%) as compared to Patterson Lake (0.6%) as a result of a higher incidence of skin and fin abnormalities (Appendix C, Table 47).

Forrest Lake

Forrest Lake had a total of 674 fish captured during the community, chemistry, and spawning surveys. Thirteen different species were captured (n = 8 and n = 5 for large and small-bodied species, respectively)

with trout perch (n = 375) being the most common small-bodied species and lake whitefish (n = 44) as the most common large-bodied species. Forrest Lake had an electrofishing CPUE of 3.61 fish/minute. The frequency of external abnormalities was 1.6%.

Beet Channel

Beet Channel had a total of 295 fish captured during the community and spawning surveys. Seven different species were captured (n = 5 and n = 2 for large and small-bodied species, respectively) with spottail shiner (n = 217) and yellow perch (n = 43) being the most common. Beet Channel had an electrofishing CPUE of 5.83 fish/minute. In comparison to the other waterbodies within the ASA, Beet Channel had a relatively high relative frequency of external abnormalities (17.3%). This was the result of an overall higher incidence of fish observed with skin abnormalities, in particular black spots (Appendix C, Table 47).

Beet Lake

Beet Lake had a total of 404 fish captured during the community, chemistry, and spawning surveys. Twelve different species were captured (n = 8 and n = 4 for large and small-bodied species, respectively) with spottail shiner (n = 183) and trout perch (n = 91) being the most common. Although no lake trout were captured in Beet Lake, eggs from this species were found during the fall spawning survey, confirming their presence in the waterbody. Yellow perch (n = 40) was the most common large-bodied fish present. Beet Lake had an electrofishing CPUE that was 4.84 fish/minute. Although skin abnormalities were also noted in Beet Lake, the overall relative frequency of external abnormalities was only 2.0%.

Beet Creek

Beet Creek had a total of 192 fish captured during the community and spawning surveys. The majority (95%) of these fish were captured in hoop nets during the spawning surveys. Seven different species were captured (n = 6 and n = 1 for large and small-bodied species, respectively) with longnose sucker (n = 145) being the most common. Beet Creek had an electrofishing CPUE of 1.34 fish/minute and northern pike (n = 6) were the most common species captured using this method. The relative frequency of external abnormalities was 5.2% in fish captured from Beet Creek. Similar to Beet Lake and Beet Channel, skin abnormalities (black spots) were the most prevalent abnormalities noted on fish captured in Beet Creek (Appendix C, Table 47).

Naomi Creek

Naomi Creek had a total of 22 fish captured during the community and spawning surveys. Bear activity significantly reduced the number of fish caught during the spawning survey. Five different species were captured (n = 5 and n = 0 for large and small-bodied species, respectively) with longnose sucker (n = 9), northern pike (n = 5), and walleye (n = 5) being the most common. Naomi Creek had an electrofishing CPUE of 2.59 fish/minute. No external abnormalities were noted on fish captured from Naomi Creek (Appendix C, Table 47).

Naomi Lake

Patterson Lake had a total of 1697 fish captured during the community, chemistry, and spawning surveys. Eight different species were captured (n = 6 and n = 2 for large and small-bodied species, respectively) with spottail shiner (n = 75) and yellow perch (n = 67) being the most common. Although no slimy sculpin

were captured in Naomi Lake, eggs were found during the spring spawning survey. Large amounts of lake whitefish (n = 48), northern pike (n = 42), and white sucker (n = 40) were also captured. Naomi Lake had an electrofishing CPUE of 3.41. The relative frequency of external abnormalities was 1.7%, with skin abnormalities (black spots) being the most prevalent (Appendix C, Table 47).

Clearwater Creek

Clearwater Creek had a total of 205 fish captured during the community and spawning surveys. The majority (91%) of these fish were captured in hoop nets during the spawning surveys. Three different species were captured (n = 3 and n = 0 for large and small-bodied species, respectively) with white sucker (n = 187) being the most common. Patterson Creek had an electrofishing CPUE of 1.41 fish/minute and northern pike (n = 5) and burbot (n = 1) were the only fish captured. The relative frequency of external abnormalities was 13.7% in fish captured from Clearwater Creek, with skin abnormalities (growths) being the most prevalent (Appendix C, Table 47).

Clearwater River Nearfield

Clearwater River Nearfield had a total of 203 fish captured during the community, chemistry, and spawning surveys. The majority (90%) of these fish were captured in hoop nets during the spawning surveys. Ten different species were captured (n = 8 and n = 2 for large and small-bodied species, respectively) with white sucker (n = 83) and northern pike (n = 66) being the most common. Clearwater River Nearfield had an electrofishing CPUE of 1.47 fish/minute and northern pike (n = 17), sucker spp. (n = 16), and spottail shiner (n = 14) were the most common species captured using this method. Skin abnormalities including black spots and growths were the most prevalent fish abnormality observed in the Clearwater River Nearfield study area (Appendix C, Table 47).

Clearwater River Midfield

Clearwater River Midfield had a total of 12 fish captured during the community survey. Four different species were captured (n = 2 and n = 2 for large and small-bodied species, respectively). Clearwater River Midfield had an electrofishing CPUE of 0.65 fish/minute. Due to limited access to this waterbody, backpack electrofishing was used over the preferred method of boat electrofishing, which could explain the lower CPUE compared to other waterbodies. Fish captured using electrofishing included burbot (n = 2), northern pike (n = 4), ninespine stickleback (n = 1), and slimy sculpin (n =5). Skin abnormalities including black spots and growths were the most prevalent fish abnormality observed in the Clearwater River Midfield study area (Appendix C, Table 47).

Lloyd Lake Inlet

Lloyd Lake Inlet had a total of 125 fish captured during the community and chemistry surveys. Eleven different species were captured (n = 7 and n = 4 for large and small-bodied species, respectively) with ninespine stickleback (n = 55) being the most common. Walleye (n = 18), lake whitefish (n = 16), yellow perch (n = 12), and northern pike (n = 11) were the most abundant large-bodied species. Lloyd Lake Inlet had an electrofishing CPUE of 2.42 fish/minute. The relative frequency of external abnormalities in fish captured from Lloyd Lake Inlet was 6.4%, with all abnormalities observed being growths (Appendix C, Table 47).

Lake G

Lake G had a total of 22 fish captured during the community survey. Two different species were captured (n = 2 and n = 0 for large and small-bodied species, respectively) with northern pike (n = 21) being the most common, followed by burbot (n = 1). Lake G had the lowest electrofishing CPUE in the ASA, with a CPUE of 0.56 fish/minute. No external abnormalities were observed on the fish captured from Lake G.

Lake H

Lake H had a total of 147 fish captured during the community survey. Four different species were captured (n = 3 and n = 1 for large and small-bodied species, respectively) spottail shiner (n = 90) being the most common. Other species captured during the survey included burbot (n = 3), northern pike (n = 7), and yellow perch (n = 47). Lake H had the highest electrofishing CPUE in the ASA, with a CPUE of 12.62 fish/minute. The relative frequency of external abnormalities was 2.0% in the fish captured from Lake H (Appendix C, Table 47).

9.3.2.2 Chemistry

Length, weight, and ageing results for the northern pike and lake whitefish submitted for chemical analyses from Broach Lake, Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, Clearwater River Nearfield, and Lloyd Lake is provided in Appendix C, Table 48. Summary chemistry results are presented in Appendix C, Table 49 to 52 and detailed chemistry results are presented in Appendix C, Tables 53 to 56.

Currently, few guidelines exist for parameter concentrations in fish. Selenium levels measured in the flesh samples were compared to the U.S. EPA selenium criterion for fish muscle (flesh) of 11.3 µg/g dry weight (U.S. EPA 2016). Similarly, mercury levels were compared to the Health Canada (GS 2015) recommended value of 0.5 ppm (0.5 µg/g) for safe consumption since provincial guidelines are specific to a waterbody and fish size. Results of the remaining parameters are not discussed in detail since there are no guidelines; however, numerous parameters will be considered as part of the EA.

Northern Pike

The concentrations of metals, trace elements, and radionuclides in northern pike flesh and bone samples from the ASA were low, with most parameters near or below the RDL. In most cases, parameter concentrations were similar between lakes (Appendix C, Table 49 and 50). Mean concentrations of mercury in northern pike flesh and bone samples from Naomi Lake, Clearwater River Nearfield, Lloyd Lake Inlet, and Hodge Lake were higher than other waterbodies within the ASA. Mean mercury concentrations in northern pike from these samples were above the 0.5 µg/g recommended level by Health Canada for safe consumption (GS 2015). Although mean mercury concentrations in northern pike flesh from Patterson Lake was below 0.5 µg/g, two of the samples were above this Health Canada recommendation. All northern pike flesh samples collected during the survey had selenium concentrations below the 11.3 µg/g guideline (U.S. EPA 2016).

Lake Whitefish

The concentrations of metals, trace elements, and radionuclides in lake whitefish flesh and bone samples from the ASA were low, with most parameters near or below the RDL. In most cases, parameter concentrations were similar between lakes (Appendix C, Table 51 and 52). All lake whitefish flesh samples

collected during the survey had selenium concentrations below the 11.3 µg/g guideline (U.S. EPA 2016). Mercury concentrations in fish flesh samples from all sampling areas were below the 0.5 µg/g Health Canada recommended safe consumption level (GS 2015).

9.3.3 Fish Habitat Surveys

A legend and detailed descriptions of each habitat section identified in the study areas are provided in Appendix C, Table 57 to 59. Appendix G, Figures 9.2-46 to 9.2-61 illustrate the locations of the habitat sections in each waterbody. Photos of selected habitat sections are provided in Appendix H, Photos 11 to 77. These photos were selected to provide a subsample of the overall habitat of each waterbody and to provide context to the results.

9.3.3.1 Habitat Descriptions and Spawning Suitability Ratings

Broach Lake

A total of 31 habitat sections were delineated on Broach Lake in July 2019. The upland landscape mainly consisted of a mature mixed forest stand, though a few burnt or regeneration stands also occurred (Appendix G, Figure 9.2-46; Appendix C, Table 58). The upland slope was mainly moderate to steep. The riparian zone slope was also moderate to steep in most areas and was occupied by forest stands, with the vegetation being comprised of trees and shrubs, and with grasses and sedges in most areas. The littoral zone in 51% of habitat sections was composed of cobble and/or boulder substrates (Appendix H, Photo 11), and 41% of habitat sections was composed of mainly sand (Appendix H, Photo 12). Water depths at 5 m from shore ranged between 0.18 m to 2.9 m (Appendix C, Table 58).

The main types of cover for fish in Broach Lake were rock and overhanging vegetation (sweet gale [*Myrica gale*]), which occurred in more than three-quarters of the habitat sections on this waterbody. Conversely, aquatic vegetation cover was sparse to non-existent in 94% of all habitat sections, and large woody debris was sparse in 68% of all habitat sections. The main aquatic plant species included sedges, water lobelia (*Lobelia dortmanna*), bur reed (*Sparganium* spp.), and horsetail (*Equisetum* spp.).

Areas predominantly consisted of clean rocky substrates that were absent or sparse with aquatic vegetation. These areas provided large amounts of good spawning habitat for species that prefer to spawn on rocky substrates (Appendix H, Photo 11). Overall, 17 of the 31 (55%) habitat sections had moderately suitable to highly suitable spawning habitats for walleye, lake whitefish, lake trout, longnose sucker, and white sucker. Sparse aquatic vegetation rendered most habitat sections unsuitable for northern pike spawning. Only one habitat section (HS 13) had moderate amounts of emergent vegetation (including *Carex* sp.*)* that was highly suitable for northern pike spawning (Appendix H, Photo 13). Several habitat sections (29%) with moderate to dense large woody debris and/or submergent shrubs provided moderately to highly suitable spawning habitat for yellow perch (Appendix H, Photo 14).

Hodge Lake

A total of 25 distinct habitat sections were delineated in Hodge Lake during the habitat survey conducted in August 2018 (Appendix G, Figure 9.2-47; Appendix C, Table 58). The landscape surrounding Hodge Lake had gentle slopes with a mixture of recently burnt forest, mature coniferous forest, and paper birch (*Betula papyrifera)*. The burnt upland areas were usually associated with riparian areas with a gentle and stable bank slope, while the unburnt mature coniferous stands were associated with riparian areas with

moderate slopes that ranged from stable to slightly unstable. Riparian vegetation consisted of a mixture of trees, shrubs, and grasses and sedges. The littoral zone of 56% of the habitat sections was comprised mainly of sand (Appendix H, Photo 15) or a mixture of sand and gravel (20%) (HS 21; Appendix H, Photo 16); among the remaining habitat sections, four (16%) were comprised mainly of cobble and boulder (HS 5, 6, 7, and 19; Appendix H, Photo 17; Appendix G, Figure 9.2-47). The remaining two habitat sections (8%) contained a mixture of finer substrates, with some gravel and cobble. Water depths were between 0.3 m and 2.0 m at approximately 5 m from shore (Appendix C, Table 58).

Cover for fish included sparse amounts of large woody debris (found in 84% of habitat sections) and sparse to moderate amounts of overhanging vegetation (found in 77% of habitat sections), such as sweet gale, willow (S*alix spp.*), and alder (*Alnus spp.*). Aquatic vegetation and undercut banks were absent or sparse (96%) in most habitat sections. Dense rock cover occurred in three habitat sections (12%) (Appendix H, Photo 17), but was otherwise sparse or absent. Aquatic macrophyte species observed in Hodge Lake included bur reed, sedges, and pondweed (*Potamogeton* spp.).

Approximately half of the habitat sections were rated as unsuitable or marginally suitable for spawning by the fish species known to occur in the ASA. Two habitat sections (8%) (HS 2 and HS 16) containing moderate amounts of sedge growth were rated as moderately suitable for northern pike (Appendix H, Photo 18). Two habitat sections (8%) were rated as moderately suitable for yellow perch spawning due to moderate amounts of large woody debris (HS 1 and HS 21; Appendix H, Photo 19). Eight habitat sections (32%) were rated as moderately to most suitable for walleye, lake whitefish, lake trout, longnose sucker, and white sucker (Appendix H, Photo 17) due to the availability of clean rocky substrates.

Jed Creek

Jed Creek flows over a reach of approximately 1.5 km to 2.0 km from Jed Lake to Patterson Lake. The 100-m section of Jed Creek immediately upstream of Patterson Lake was assessed in July 2019 and three habitat sections were described (Appendix G, Figure 9.2-48; Appendix C, Table 59). Mature or burnt coniferous stands occurred in the upland zone, while wetlands comprised primarily of shrubs, grasses, and sedges occurred in the riparian zone. Sediment consisted mainly of sand (~53%), with small amounts silt/clay (~18%), organic matter (~17%), and gravel (~12%). Mean channel wetted width was 8 m to 18 m, and mean center depth was shallow, ranging between 0.3 m and 0.4 m. Most of the stream was comprised of glides (~92%). HS 2 also contained a sandbar, which occupied most of the habitat section.

Fish cover in Jed Creek included dense overhanging vegetation (sweet gale) with moderate amounts of undercut banks in all three habitat sections (Appendix C, Table 59). Sparse to moderate amounts of large woody debris and aquatic vegetation also occurred. No rock cover was present in Jed Creek. The main aquatic plant species were sedges, pondweed, and bladderwort (*Utricularia* sp.).

The moderate amounts of large woody debris, dense submerged shrubs, and shallow slow-moving waters provided highly suitable spawning habitat for yellow perch in all three habitat sections (Appendix C, Table 59; Appendix H, Photo 20). Occasional areas with dense *Carex* sp. beds in HS 1 provided highly suitable spawning habitat for northern pike (Appendix H, Photo 21). The very limited amounts of rocky substrates rendered the habitat sections on this creek not suitable or only marginally suitable for walleye, lake whitefish, lake trout, Arctic grayling, longnose sucker, and white sucker.

Patterson Lake (Overall)

Seventy-nine habitat sections were delineated on Patterson Lake in July 2019 (Appendix G, Figures 9.2-48 to 9.2-50; Appendix C, Table 58). The upland was mainly comprised of a mature coniferous forest with gentle slopes, though some areas contained burnt, regenerating, mixed, or deciduous stands and steeper upland slopes (Appendix C, Table 58). Cobble and boulder were the predominant sediment type in 45 of the habitat sections (57%) (Appendix H, Photo 22). Sand or a sand/gravel mixture were predominant in 26 habitat sections (33%) (Appendix H, Photo 23), including a large, shallow, underwater sandbar located between the north and northeast basin in HS 33. One habitat section (1%) was dominated by organic matter (Appendix H, Photo 24) and one habitat section (1%) was dominated by gravel (Appendix H, Photo 25). The remaining six habitat sections (8%) were comprised of relatively even proportions of sand and rock with organic material mixed in.

Dense rock cover and dense overhanging vegetation (sweet gale) were the main types of fish cover present in Patterson Lake. Aquatic vegetation cover was sparse or absent in almost all habitat sections.

In 28 habitat sections (35%) with predominantly clean rocky substrate, moderate to highly suitable fish spawning ratings were given for walleye, lake whitefish, lake trout, and sucker spp. (Appendix C, Table 58; Appendix H, Photo 22). A rock shoal with clean substrate and good water circulation was present on a point located on the southeast side of the north basin in HS 13, making this area highly suitable for these species (Appendix H, Photo 26). Only two habitat sections (3%) (HS 18 and HS 47) had dense emergent vegetation (*Carex* sp.), which was rated as highly suitable for northern pike spawning (Appendix H, Photo 27). In most areas, sparse large woody debris, sparse aquatic vegetation, and sparse submerged shrubs caused habitat sections to be rated unsuitable or only marginally suitable for yellow perch on Patterson Lake; however, there were some habitat sections with dense large woody debris, where the habitat was rated as moderately suitable for yellow perch spawning (Appendix C, Table 58).

Patterson Lake Mine Site Area

Prior to all of Patterson Lake being assessed in 2019, a detailed habitat survey was conducted in the Mine Site Area surrounding the NexGen site in May 2018. Thirty-nine habitat sections were delineated within the Patterson Lake Mine Site Area during the spring survey (Appendix G, Figure 9.2-51). The surrounding upland consisted mainly of mature mixed forest with paper birch, black spruce, and jack pine (*Pinus banksiana*); however, small areas of deciduous and coniferous forest also occurred. A number of upland areas were occupied by regenerating forest stands (Appendix C, Table 58). The upland slope was nearly always gentle or moderate.

The riparian zone was comprised of shrubs and trees over stable, gentle to moderate slopes. The dominant substrate in the littoral zone consisted of sand in approximately half (48%) of the habitat sections (Appendix H, Photo 28); other habitat sections featured a combination of rocky substrates (gravel, cobble, and boulder; Appendix H, Photo 29), or a mixture of sand and gravel, cobble, and boulder (Appendix H, Photo 30). It should be noted that rocky substrates were generally covered in a thin layer of silt.

Cover for fish in the Patterson Lake Mine Site Area was generally present in sparse quantities (Appendix C, Table 58). Sparse amounts of large woody debris were found in HS 17 and HS 21, while moderate to dense amounts of rock cover and sparse overhanging vegetation occurred in approximately half of the habitat sections. The littoral zone generally featured gentle slopes, though seven of the habitat sections

had a moderate slope and one had a steep slope. Most (53%) littoral areas were between 0.2 m and 0.5 m deep at approximately 5 m from the shoreline.

Similar to the rest of Patterson Lake, high quality northern pike spawning habitat was lacking in the Mine Site Area. Sand and rocky substrate and sparse amounts of emergent vegetation provided marginal spawning habitat in only a few habitat sections in this area (Appendix H, Photo 31). Five habitat sections (13%) were deemed moderately to highly suitable for spawning by yellow perch, with another four habitat sections (10%) rated as marginally suitable. Approximately half of the habitat sections were rated as moderately to highly suitable spawning habitat for walleye, lake whitefish, lake trout, and the two sucker species (Appendix H, Photo 29) due to a combination of rocky substrates.

Patterson Lake Camp Area

Five distinct habitat sections were delineated within the Patterson Lake Camp Area in August 2018 (Appendix G, Figure 9.2-52; Appendix C, Table 58). The upland consisted of intact, mature mixed or coniferous forest with gentle to moderate slopes. The dominant tree species were black spruce, jack pine, and paper birch. The riparian zone had stable banks with variable slopes and was vegetated with trees and shrubs (Appendix C, Table 58). Substrate types in the littoral zone ranged from mostly sand (20%) (i.e., HS 1; Appendix H, Photo 32) to rocky substrates consisting of gravel and cobble/boulder (60%) (HS 2, 3, and 5; Appendix H, Photo 33). The main types of cover for fish included sparse amounts of large woody debris and overhanging vegetation (willows, sweet gale, and alder), with moderate amounts of rock cover in habitat sections where rocky substrates occurred. Cover provided by aquatic vegetation and undercut banks was generally absent or sparse, though isolated patches of bur reed and pondweed occurred in a few habitat sections. The bottom slope of the littoral zone ranged between gentle to steep, with depths of 0.4 m to 1.3 m at approximately 5 m from the shoreline.

Three of the five habitat sections (60%) provided moderately suitable to highly suitable spawning habitat for walleye, lake whitefish, lake trout, and both species of sucker due to the presence of rocky substrates (Appendix H, Photo 33). There were no habitat types rated as suitable spawning habitat for northern pike due to a lack of sedges; however, all five habitat sections were rated as marginally suitable for spawning by yellow perch due to the presence of sparse amounts of large woody debris.

Patterson Creek

Patterson Creek connects Patterson Lake to Forrest Lake and extends approximately 1 km. Patterson Creek branches out into a “Y” by separating into two channels near its entry into Forrest Lake. Eight habitat sections were delineated on Patterson Creek in July 2019 (Appendix G, Figure 9.2-53; Appendix C, Table 59). Mature coniferous or mixed stands occurred in the upland zone and in the riparian zone, except for where Patterson Creek flows into Forrest Lake, where a wetland was present. Sand was the dominant substrate in most of the habitat sections (88%); however, in two habitat sections (25%), relatively fast flowing waters with more rocky substrates occurred (Appendix H, Photo 34). Mean channel wetted width was between 3 m to 15 m, except for the two channels that branch off entering Forrest Lake where the gentle slopes of the riparian zone extended the wetted width to 25 m (Appendix H, Photo 35). Mean center depth was shallow ranging between 0.4 m and 1.2 m. Most of the creek was comprised of runs, though riffles, glides, and pools also occurred. The riffles occurred at the start of the creek near the Patterson Lake outflow, while the glides and the pools occurred furthest downstream near the Forrest Lake inflow.

Cover for fish included dense overhanging vegetation (sweet gale) and undercut banks throughout all habitat sections, with some sections also including various amounts of large woody debris, aquatic vegetation, or rock (Appendix C, Table 59). Pondweed, bur reed, cattail (*Typha* sp.), sedges, rushes (*Juncus* sp.), and horsetail were the main species to occur along this creek.

The relatively fast flowing waters near the start of the creek, and rocky substrates with sparse or absent aquatic vegetation rendered these habitat sections most suitable for walleye, lake whitefish, longnose sucker, and white sucker (Appendix H, Photo 34). These habitat sections were also rated as providing moderately suitable spawning habitat for Arctic grayling.

The slow moving glides and the pools with dense *Carex* sp. beds provided highly suitable spawning habitat for northern pike (Appendix H, Photo 35). Additionally, the dense overhanging and submerged vegetation and moderate amounts of large woody debris in some habitat sections provided moderately and highly suitable habitat for yellow perch spawning (Appendix C, Table 59).

Forrest Lake

A total of 53 habitat sections were delineated on Forrest Lake in July 2019 (Appendix G, Figure 9.2-53; Appendix C, Table 58). The majority of the upland zone surrounding Forrest Lake was comprised of a mature coniferous forest with gentle slopes. Three of the habitat sections (6%) contained wetlands and there was one rock island with no upland zone and no vegetation. The riparian zone slope was mainly steep. The northwest portion of the lake near Patterson Creek had a riparian zone that was comprised of a gentle slope. The riparian vegetation was comprised mainly of trees, shrubs, grasses, and sedges, and the banks were usually stable or only slightly unstable, and were comprised of cobble and boulder. The northeast part of the waterbody included a sand esker that formed a highly unstable bank in many areas.

The majority of the substrate was comprised of mainly cobble and/or boulder (43%; Appendix H, Photo 36), while the remaining habitat sections were mainly sand (30%; Appendix H, Photo 37), organic matter (11%; Appendix H, Photo 38), gravel/cobble (8%; Appendix H, Photo 39), or an even mixture of sand and rock substrates (8%). Nearly half of the habitat sections with rocky substrates had clean rock. The main cover types for fish were overhanging vegetation and rock. Aquatic vegetation cover was mainly absent and large woody debris was sparse. The main aquatic species included bur reed, pondweed, yellow cowlily (*Nuphar variegata*), and sedges. Vegetation mainly occurred in the northern region of the lake and in the bay on the east side. The bottom slope of the littoral zone was usually gentle to moderately steep. Majority of depths (96%) at approximately 5 m from the shoreline were mainly between 0.3 m and 0.8 m.

The northwestern area of Forrest Lake contained dense emergent *Carex* sp. beds that were rated moderately to highly suitable for northern pike spawning (Appendix H, Photo 40). Clean cobble and/or boulder provided many habitat sections with moderately or highly suitable spawning habitat for walleye, lake whitefish, lake trout, longnose sucker, and white sucker (Appendix H, Photos 36 and 39). Sparse emergent and submergent vegetation and sparse large woody debris provided habitat that was mainly not suitable for yellow perch, though a few areas occurred that were moderately or highly suitable for spawning (Appendix H, Photo 38).

Beet Channel

A total of 24 habitat sections were assessed in Beet Channel in July 2019. In HS 1 and HS 2, there was a sandbar located at the entry into Beet Channel from Forrest Lake (Appendix H, Photo 41). Most of the

upland landscape in Beet Channel was occupied by coniferous forest stands, including recently burnt stands and mature stands, though a few regeneration stands also occurred (Appendix G, Figure 9.2-54; Appendix C, Table 58). The upland terrain was gently- to moderately-sloped and the riparian zone was moderately- to steeply-sloped. The vegetation of the riparian zone was comprised of trees and shrubs with grasses and sedges often present. The littoral zone was composed of sand or organic matter for most of the habitat sections (92%), with cobble and/or boulder substrates occurring in a few areas (8%). Water depths at approximately 5 m from shore were usually between 0.2 m and 0.5 m (79%), though three habitat sections had depths over 1 m (13%; Appendix C, Table 58). The main cover types for fish were overhanging vegetation (sweet gale) and undercut banks. Large woody debris was usually in moderate to dense amounts, while rock cover was often absent. Aquatic plant cover was usually sparse or moderate and the main aquatic plant species were yellow cowlily, bur reed, pondweed, water lobelia, and sedges.

The near absence of clean rocky substrates and the recurrent occurrence of sparse to dense aquatic vegetation rendered the spawning habitat unsuitable, or at best marginally suitable, for the species that spawn in rocky substrates; namely, walleye, lake whitefish, lake trout, Arctic grayling, and suckers (Appendix C, Table 58). Dense *Carex* sp. beds occurred in five habitat sections (Appendix G, Figure 9.2-54; Appendix H, Photo 42) on Beet Channel rendering these habitat sections most suitable for northern pike spawning. Three habitat sections were moderately suitable for yellow perch spawning because of the occurrence of dense or moderately dense large woody debris, aquatic vegetation, and submerged shrubs (Appendix H, Photo 43).

Beet Lake

Eighteen habitat sections were delineated on Beet Lake in July 2019. The upland was mainly occupied by recently burnt forest stands, though a few regeneration and mature stands also occurred (Appendix G, Figure 9.2-55; Appendix C, Table 58). The upland terrain was gently-sloped in 8 of the 18 habitat sections, with the remainder being mostly steep-sloped. The slope of the riparian zone was usually steep and slightly unstable. The substrate in the littoral zone was composed of mostly sand (56%), with mixtures of gravel, cobble, and/or boulder substrates dominating the rest of the habitat sections. Water depths at 5 m from shore were most often very shallow, ranging between 0.1 m and 0.5 m in 89% of the habitat sections.

The main cover types for fish were overhanging vegetation (sweet gale) and rock that were in dense abundance in many habitat sections (Appendix C, Table 58). Large woody debris and undercuts were in moderate to dense amounts in some of the habitat sections. Aquatic vegetation was at maximum sparse, or altogether absent in a third of the habitat sections. The main aquatic plants were bur reed, pondweed, and water lobelia.

The habitat survey illustrated a lack of spawning habitat on Beet Lake for northern pike due to the absence of emergent vegetation, especially dense *Carex* sp. beds. The habitat sections with mostly sand sediment were considered marginally suitable for species like walleye and lake whitefish (e.g., HS 1; Appendix H, Photo 44). Some of the rocky habitat sections had clean or only slightly dirty rock substrate, and these four habitat sections were moderately suitable for species like walleye, lake whitefish, lake trout, and suckers (Appendix H, Photo 45). The overall sparse large woody debris with usually absent or sparse aquatic vegetation made that the habitat sections on this lake were unsuitable or only marginally suitable for yellow perch spawning.

Beet Creek

Beet Creek flows from Beet Lake to Naomi Lake over a stretch of approximately 0.5 km. Four habitat sections were delineated on Beet Creek (Appendix G, Figure 9.2-55; Appendix C, Table 59). Mature coniferous stands occurred in the upland zone. The riparian zone was forested, with the vegetation comprised of trees, shrubs, grasses, and sedges. Sediment throughout Beet Creek was comprised of organic matter, silt/clay, and sand. Mean channel wetted width was 13 m to 20 m, and mean center depth was near 1.0 m for the majority of the creek. Most of the creek was comprised of slow-moving glides.

Cover for fish included dense amounts of large woody debris and undercut banks, with moderate amounts of aquatic vegetation, such as pondweed, yellow cowlily, and sedges, and overhanging vegetation such as sweet gale (Appendix C, Table 59).

The moderate to dense amounts of emergent vegetation, with slow-moving waters throughout Beet Creek, provided highly suitable spawning conditions for northern pike (Appendix G, Figure 9.2-54; Appendix C, Table 59; Appendix H, Photo 46). Additionally, dense amounts of large woody debris in HS 1 provided moderately suitable spawning habitat for yellow perch (Appendix H, Photo 47). The absence of rocky substrates rendered the habitat sections on this creek as marginally suitable for walleye, lake whitefish, and sucker spp., and not suitable for lake trout and Arctic grayling.

Naomi Creek

Naomi Creek flows south into the northern area of Naomi Lake (Appendix G, Figure 9.2-56; Appendix C, Table 59). The last approximately 150 m before entering Naomi Lake was assessed for suitability for fish spawning. Only one habitat section occurred along this stream reach. The upland area bordering this stream reach was a mature mixed forest stand with a forested riparian vegetation comprised of trees, shrubs, grasses, and sedges.

Sediment was mainly organic with small amounts silt/clay and sand. Mean channel wetted width was 15 m, and mean center depth was shallow (0.4 m). There was beaver activity that had occurred on this creek; however, fish passage was still possible. Most of this stream reach surveyed was comprised of pool habitat with a small (10%) proportion of glides. Dense aquatic vegetation, dense overhanging vegetation (sweet gale), and moderate amounts of undercuts provided cover for fish (Appendix C, Table 59). There were sparse amounts of large woody debris and no rock cover occurred. The main aquatic plant species were yellow cowlily, bur reed, sedges, bladderwort, and pondweed.

Dense *Carex* sp. beds with slow-moving waters provided most suitable spawning habitat for northern pike (Appendix H, Photo 48). The dense overhanging vegetation with submerged shrubs like sweet gale with shallow slow-moving waters and the presence of large woody debris also provided moderately suitable spawning habitat for yellow perch (Appendix H, Photo 49). The absence of rocky substrates rendered the habitat sections on this creek as marginally suitable for walleye, lake whitefish and sucker spp., and not suitable for lake trout and Arctic grayling.

Naomi Lake

Thirty-two habitat sections were delineated on Naomi Lake in July 2019. The upland slope was gentle around the lake, upon which mature or burnt coniferous forest stands occurred (Appendix G, Figure 9.2-56; Appendix C, Table 58). The riparian zone was also gently-sloped and was occupied by forest stands,

with trees, shrubs, grasses, and sedges. The substrate of the littoral zone was a mixture of nearly entirely sand and organic matter (94%) in all but two (6%) habitat sections (i.e., HS 2; Appendix H, Photo 50). The remaining two habitat sections (HS 4 and 5) were the only areas with mostly cobble and boulder substrate (Appendix H, Photo 51). Water depths at 5 m from shore were very shallow, with the majority of habitat sections shallower than 0.5 m.

Overhanging vegetation such as sweet gale was the most abundant type of cover for fish, and was in dense or moderately dense amounts in 20 of the 32 of the habitat sections (Appendix C, Table 58). Aquatic vegetation was also a moderately abundant cover type for fish around this lake. Aquatic plant species included yellow cowlily, sedges, bur reed, pondweed, and water lobelia. Large woody debris and undercut cover were overall sparse, while rock cover was usually absent.

All habitat sections were rated as either not suitable or marginally suitable for spawning by species like walleye, lake whitefish, lake trout, and suckers due to the lack of clean rocky substrate. The organic and sandy substrate with sometimes abundant or moderately abundant vegetation and large woody debris was more appropriate for northern pike and yellow perch spawning. Ten habitat sections had dense or moderately dense emergent *Carex* sp. vegetation, which was rated as moderately or highly suitable spawning habitat for northern pike (Appendix H, Photo 52). Similarly, submerged shrubs, large woody debris, and aquatic vegetation occurred in seven habitat sections and these were suitable for yellow perch spawning (Appendix H, Photo 53).

Clearwater Creek

Clearwater Creek flows south into the Clearwater River. The approximately 150 m closest to the Clearwater River was assessed for fish spawning suitability, and two habitat sections occurred along this stream reach (Appendix G, Figure 9.2-57; Appendix C, Table 59). The upland area was mature coniferous forest stands. The riparian zone was forested, with a vegetation comprised of trees, shrubs, grasses, and sedges.

Sediment was a mixture of sand and organic matter. Mean channel wetted width ranged between 5 m and 22 m, and mean center depth was shallow (0.5 m to 0.6 m). The stream reach surveyed on this creek was comprised of slow-moving pools and glides. Dense aquatic vegetation and moderate amounts of overhanging vegetation were the predominant types of cover for fish (Appendix C, Table 59). The main aquatic plant species were bur reed, yellow cowlily, sedges, and bladderwort.

The *Carex* sp. beds in both habitat sections in combination with slow-moving waters provided moderately suitable spawning habitat for northern pike (Appendix H, Photo 54). Moderately dense overhanging vegetation and submerged shrubs and sparse amounts of large woody debris provided moderately suitable spawning habitat for yellow perch in HS 1 (Appendix H, Photo 55). The absence of rocky substrates rendered both of these habitat sections unsuitable or at best marginally suitable for walleye, lake whitefish, lake trout, Arctic grayling, longnose sucker, and white sucker.

Clearwater River Nearfield

Fifty-one habitat sections were assessed in the Clearwater Nearfield area in July 2019. The habitat was assessed from the outlet of Naomi Lake to approximately 4 km downstream on the Clearwater River. The upland had gentle slopes with mature coniferous forest stands throughout this area (Appendix G, Figure 9.2-57; Appendix C, Table 58). The riparian zone was also gently sloped and contained forest to bank that included trees, shrubs, grasses, and sedges. Sediment was mostly sand (69% of habitat sections) with

smaller amounts of silt/clay and organic matter (24%; Appendix H, Photo 56). Four habitat sections (8%) were dominated by gravel, cobble, and boulder (Appendix G, Figure 9.2-57; Appendix C, Table 58; Appendix H, Photo 57). Water depths at 5 m from the shoreline were moderately shallow, ranging between 0.3 m to 1.4 m. With the exception of two habitat sections that were at the downstream end of the assessed Clearwater Nearfield area where water flowed relatively fast (riffles; Appendix C, Table 58), water flow was generally moderate, with most areas being glides.

The main cover types for fish in this area were overhanging vegetation, such as sweet gale, and aquatic vegetation, such as pondweed, water lobelia, yellow cowlily, bur reed, and sedges.

Dense *Carex* sp. beds occurred often along this reach of the Clearwater River, which provided highly suitable spawning habitat for northern pike (Appendix H, Photo 58). The habitat sections along this reach were usually not suitable or marginally suitable for yellow perch due to the moderate current and sparse densities of woody debris. The general lack of clean rock made that most habitat sections were rated as unsuitable or marginally suitable for the species requiring rock, such as, walleye, lake whitefish, Arctic grayling, longnose sucker, and white sucker (Appendix H, Photo 59). The two habitat sections located the furthest downstream had fast-flowing riffles and clean rock substrates, and were rated as highly suitable spawning habitat for each of these five species (Appendix H, Photo 60).

Clearwater River Midfield

A total of 16 habitat sections were delineated in the Clearwater River Midfield location in August 2018. The study area was broken up into two sections located upstream (HSs 1 to 10) and downstream (HSs 11 to 16) of the Mirror River confluence. Upstream of the Mirror River (Appendix G, Figure 9.2-58), the Clearwater River was wide and shallow with dense amounts of submergent macrophytes including various pondweeds (Appendix C, Table 58). The section of river downstream of the Mirror River was narrower, deeper, and had less aquatic vegetation. The upland surrounding the upstream section consisted of mature coniferous forest with moderate or steep slopes, whereas the downstream section was characterized by relatively low-lying, gentle terrain vegetated with grasses, shrubs, and deciduous trees.

The littoral zone of the Clearwater River downstream of the Mirror River was steeply sloped with substrates consisting mostly of sand in 100% of habitat sections. Emergent aquatic macrophytes were limited to areas close to the shoreline where depths were shallower (Appendix H, Photo 61); thus, two habitat sections (33%) were rated marginally suitable for northern pike spawning. The other four habitat sections (67%) were generally not considered suitable for spawning by the remaining fish species due to a lack of rocky substrates (Appendix H, Photo 62).

The section upstream of the Mirror River was more diverse in terms of substrates and habitat features. Five habitat sections (50%) were deemed moderately to mostly suitable for northern pike spawning due to the presence of dense beds of sedge and shallow water depths (Appendix H, Photo 63). Among these habitat sections, HS 5 also featured submerged shrubs and small amounts of large woody debris, which made the area moderately suitable for yellow perch spawning habitat (Appendix H, Photo 64). The downstream section of the Clearwater River was generally not suitable for spawning by species that prefer rocky substrates free of vegetation; however, HS 7, located at the far upstream extent of the study area (Appendix G, Figure 9.2-38), was rated as moderately suitable spawning habitat for species such as walleye, lake whitefish, lake trout, Arctic grayling, longnose sucker, and white sucker due to the presence of sand, gravel, and cobble and sparse amounts of vegetation (Appendix H, Photo 65).

Lloyd Lake Inlet

A total of 13 habitat sections were delineated in the Lloyd Lake Inlet study area in August 2018 (Appendix G, Figure 9.2-59; Appendix C, Table 58). The southern shoreline of the study area had been recently burnt. The northern shoreline where the Clearwater River enters the lake was comprised of gently-sloped wetland habitat. The rest of Lloyd Lake Inlet mainly consisted of a mixed forest with gentle or steep slopes. The riparian zone in the south east areas had steep, rocky stable slopes vegetated with shrubs and trees. The riparian zone located in the north had gentle or moderate slopes, comprised of wetlands with paper birch, willows, grasses, sedges, and water horsetail.

The littoral zone of the south east portion of Lloyd Lake Inlet (HSs 9 to 13) was dominated by cobble and boulder substrates, whereas 88% of substrates in the north shore (HSs 1 to 8) mainly consisted of fine substrates like organic material or sand. Large woody debris was found in sparse amounts, with the exception of one area on the east side where it was present in dense amounts due to recent fires (Appendix H, Photo 66). Aquatic vegetation cover was often dense in the north shore where finer substrates were present. Aquatic vegetation was very extensive in the northern area, where a bed consisting of horsetail, pondweeds, and bur reed extended approximately 1 km from the shoreline into the lake (Appendix H, Photo 67). Dense amounts of sedges were also found near the Clearwater River inlet.

Clean rocky substrates with ample water circulation from wave action on the south and east shores (HSs 9, 10, 12, and 13) made these areas moderately suitable to highly suitable for spawning by walleye, lake whitefish, lake trout, and both sucker species (Appendix H, Photo 68). One habitat section (HS 12) containing a large amount of large woody debris was rated as highly suitable for yellow perch spawning (Appendix H, Photo 27). The most suitable spawning areas for northern pike occurred in habitat sections where dense sedges occurred over organic matter sediment (HSs 2, 3, and 8; Appendix H, Photo 69). Areas with moderate to dense amounts of horsetail did not provide suitable habitat for any of the species known to occur in the ASA (Appendix H, Photo 70).

Lake G

A total of seven HSs were delineated in Lake G in August 2018 (Appendix G, Figure 9.2-60). The upland was comprised of mature, mixed, or coniferous forest stands, and gentle slopes (Appendix C, Table 58). The riparian zone was vegetated with trees, shrubs, and grasses extending to the shoreline; banks were usually steep and sharply cut, and slightly or moderately unstable. The dominant substrate found in the littoral zone was almost always sand, though in some habitat sections, small amounts of gravel, cobble, or organic matter were mixed with the sand. Cover for fish was abundant throughout Lake G, with dense amounts of large woody debris, undercut banks, and overhanging vegetation (sweet gale, tree branches extending over the shoreline), and sparse to dense amount of aquatic vegetation, mainly emergent types such as sedges, marsh cinquefoil (*Potentilla palustris*), and water horsetail. A large pondweed bed was also observed in an area away from the shoreline near HS 7 (Appendix G, Figure 9.2-40). The bottom was usually nearly flat with water depths ranging from 0.6 m to 0.9 m at approximately 5 m from the shoreline.

Dense amounts of sedge were present along the shoreline in the north and south areas of the lake, making these areas highly suitable for northern pike spawning (Appendix H, Photo 71). The east side of the lake featured substrates comprised of sand, combined with small amounts of gravel or cobble, and were rated as marginally suitable for walleye, lake whitefish, lake trout, and the two sucker species (Appendix H, Photo 72). Dense amounts of submerged shrubs and large woody debris occurred in combination or separately

in all habitat sections, making these areas moderately to most suitable for yellow perch spawning (Appendix H, Photo 73).

Lake H

Seventeen habitat sections were delineated in Lake H in August 2018 (Appendix G, Figure 9.2-61). Nearly the entire upland zone, which originally consisted of coniferous stands, was burned during recent forest fires in the area (Appendix C, Table 58). Riparian areas with gentle slopes were often occupied by wet sandy beaches, many of which were colonized by dense grasses and sedges; whereas riparian areas with steeper slopes were usually occupied by a band of rock with burnt trees and regenerating shrubs growing a meter or two back from the shoreline. The dominant substrate type in the littoral zone of Lake H was sand (71%), which was usually mixed with small amounts of organic matter (Appendix H, Photo 74). Most of these areas were shallow and gently sloped, with average depths of 0.2 m at approximately 5 m from the shoreline. Variable amounts of emergent aquatic vegetation were common in these habitat sections, though floating species sometimes also occurred. The littoral zone of the southwest portion of the lake was comprised mostly of rocky substrates (24%), which were covered in a layer of silt and algae. Cover for fish consisted of moderate to dense amounts of aquatic vegetation and undercut banks, sparse amounts of overhanging vegetation, and sparse amounts of large woody debris (Appendix H, Photo 75). One area located in the southern-most corner of the lake (HS 12) had distinctively coarse, black forest fire ash covering a portion of the beach and the littoral zone (Appendix H, Photo 76).

Spawning habitat for walleye, lake whitefish, lake trout, and the two sucker species was mostly absent from Lake H due to a lack of clean, rocky substrates and the presence of aquatic macrophytes and organic matter. The main exceptions were sandy areas on the east and west side, where organic matter and aquatic vegetation were absent (Appendix H, Photo 77), and an area on the south east side, which featured cobble and boulder substrates with a fine layer of silt and sparse amounts of aquatic vegetation (Appendix H, Photo 78). Two habitat sections were rated as moderately to most suitable for spawning by northern pike and marginally to moderately suitable for spawning by yellow perch due to the presence of moderate to dense amounts of sedge and sparse to moderate amounts of large woody debris.

9.3.3.2 Nursery, Rearing, Feeding, and Overwintering Habitat

The survey of nursery, early life-stage rearing, feeding, and overwintering habitat was based on known life history strategies of the large-bodied fish species that occur within the ASA. For each of the large-bodied fish species included in the habitat survey, the quality and quantity of suitable spawning habitat within the study areas is indicative of the nursery habitat available, as the habitat utilized for these two lifecycle stages is very similar. For early life stage rearing, as the preferred diet shifts for each species, the young of the year (YOY) and juvenile fish may move to waters with more suitable feeding habitat. The suitability of overwintering habitat is typically based on characteristics such as water depth and dissolved oxygen (DO) concentrations, though flow velocities also contribute to overwintering suitability in lotic (i.e., rapidly moving fresh water) environments. High quality overwintering habitat is generally found in areas with sufficient depths to avoid freezing and adequate DO concentrations. Detailed information on species-specific nursery, early life-stage rearing, feeding, and overwintering habitat requirements is provided in the following subsections.

Nursery and Early Life-Stage Rearing Habitat

Northern Pike

Nursery and early stage rearing habitat for northern pike is generally the same as that of spawning habitat, as larvae tend to remain immobile for 6 to 10 days post-hatch by attaching to vegetation via an adhesive gland on their head and feeding via egg yolk absorption. The YOY are also reported to utilize the same type of habitat sought for spawning, as the YOY prefer silt or organic substrate, emergent macrophytes or flooded vegetation, and woody debris at depths of less than 1 m (Inskip 1982; Scott and Crossman 1998). There was a general lack of highly suitable spawning habitat for northern pike in most lakes in the ASA; however, each of these lakes (with the exception of Beet Lake) contained one or more habitat sections that were deemed at least marginally suitable for spawning. All creeks in the study area were found to contain moderately to highly suitable spawning habitat for northern pike. These areas identified that nursery and early stage rearing habitat for northern pike was available within the study area. Habitat availability was also evident by the widespread distribution of northern pike within the ASA.

Walleye

Nursery and early stage rearing habitat for walleye is similar to that of spawning habitat, as the larvae do not disperse until the yolk sac is absorbed. Egg yolk absorption takes approximately 10 days to 15 days, after which the young disperse into the upper strata of open water. By late summer, the YOY move into deeper waters, and can be found at depths ranging from 6 m to 9 m (Scott and Crossman 1998). Walleye were captured in select waterbodies within the ASA during baseline surveys and eggs were widespread. Spawning habitat in the waterbodies in which walleye are known to occur, as well as deeper waters to which the YOY can migrate, was readily available, indicating that nursery and early stage rearing habitat was present within the ASA.

Lake Whitefish

Newly hatched lake whitefish form aggregations along steep shorelines characterized by the presence of boulders, rocks, and gravel in a 2 m to 20 m band with sand stretching out into the deeper waters. Lake whitefish generally leave shallow inshore waters to move into deeper open waters by early summer, to depths of 5 m to 10 m over substrates of boulder, cobble, gravel, and sand (Lane et al. 1996). The abovementioned habitat types were present throughout most waterbodies in the ASA, providing suitable spawning, nursery, and early stage rearing habitat for lake whitefish. This species was abundant and widely distributed throughout the ASA, indicating that habitat was not limiting.

Lake Trout

Nursery and early stage rearing habitat for lake trout is similar to that of spawning habitat, as the larvae do not disperse until the yolk sac is absorbed approximately one month after hatching. Young lake trout will usually head for deeper waters, but in some far northern lakes, where water temperatures remain low throughout the year, they may remain inshore for months to years (Martin 1956; Scott and Crossman 1998). Lake trout were captured in select study areas during the baseline surveys and are known to inhabit deeper lakes. Spawning habitat in these waterbodies was readily available, as was deeper water to which the young eventually migrate, indicating that nursery and early stage rearing habitat was available within the ASA.

Yellow Perch

Nursery and early stage rearing habitat for yellow perch is similar to spawning habitat. The larvae remain inactive and do not disperse until five days post-hatching, while yolk sac absorption is being completed. Juvenile yellow perch transition to the bottom of littoral areas and begin to feed on invertebrates. During the first year of development, the young assimilate into large, compact schools, which occupy a variety of habitats from large lakes and ponds to quiet creeks. However, the preferred habitat is fresh, clear waters with moderate vegetation and substrates ranging from silt/clay to gravel (Kreiger et al. 1983; Scott and Crossman 1998). Yellow perch were captured throughout the ASA during the baseline surveys, and each of these study areas contained one or more habitat sections that were deemed at least marginally suitable for spawning, indicating that nursery and early stage rearing habitat was available for yellow perch in the ASA.

Arctic Grayling

Arctic grayling generally inhabit clear waters of large, cold rivers, rocky creeks, and lakes (Scott and Crossman 1998). Nursery and early stage rearing habitat for this species is similar to that of spawning habitat, as the larvae do not disperse until eight days post-hatch once the yolk sac absorption is completed; however, they can ingest food in as little as three days after hatching. Arctic grayling were exclusively captured in the Clearwater River during the baseline surveys, which featured suitable spawning habitat for this species in selected habitat sections, indicating the presence of nursery and early stage rearing habitat within the ASA.

White Sucker and Longnose Sucker

Nursery and early stage rearing habitat preferences for white and longnose sucker are generally the same as those for spawning. The larvae are known to remain in the substrate for a period of one to two weeks until they reach approximately 12 mm in length; at this stage they start to migrate into lakes to feed at the surface (Scott and Crossman 1998). For late stage rearing and feeding, sucker species generally prefer quiet backwater (i.e., isolated or stagnant) areas. The slower flows and calm waters that these species prefer at these life stages was present throughout the ASA. Similar to the other species common to the ASA, the widespread distribution of sucker throughout the study area suggests that spawning, nursery, and rearing are not limiting for these species.

Feeding Habitat

A summary of the food preferences along with a discussion of the availability of potential food sources (and thus feeding habitat) for each of the fish species examined during the aquatic habitat survey conducted in the ASA is provided in the following section.

Numerous food sources were present for each of the fish species assessed. Documenting specific areas of a lake that provide feeding habitat is not feasible since fish and fish food are usually mobile and large-bodied fish frequently move to deeper waters to feed. As a result, the presence of small-bodied fish, juvenile large-bodied fish, and invertebrates in each waterbody were used as indicators of feeding habitat. The presence of numerous small-bodied fish within the study area (including juvenile yellow perch and white sucker), as well as minnow species (such as spottail shiner, ninespine stickleback, slimy sculpin, perch, and trout), provide food for large-bodied predatory fish species. Furthermore, the presence of small-bodied and forage fish also indicates that various macroinvertebrate food sources are plentiful within the study

areas. Additionally, many of the invertebrate and plankton food items preferred by the fish species assessed during one or more of their life stages were represented in samples collected from the different study areas.

Northern Pike

Northern pike larvae feed via egg yolk absorption for 6 days to 10 days post-hatch. After egg yolk absorption, they feed on larger zooplankton and invertebrates for 7 to 10 days. After about 10 days when the young reach 50 mm, fish are the dominant food source (Scott and Crossman 1998). Adult northern pike can be classified best as omnivorous carnivores and will eat virtually any living vertebrate available within the size range they can ingest including fish, frogs, crayfish, mice, muskrats, and ducklings (Scott and Crossman 1998). Examinations of the stomach contents of northern pike retained for chemical analyses from several the study waterbodies revealed that fish, invertebrates, and even small birds or waterfowl are part of their diet, indicating good feeding habitat for northern pike within the study areas. There were no waterbodies where northern pike were the only species present; thus in all cases, other fish species were available for predation.

Walleye

As the young walleye shift in size, the diet shifts very quickly from invertebrates to fish. During the first six weeks of development, the walleye diet consists primarily of copepods, cladocerans, invertebrates, and small-bodied fish. Cannibalism has also been observed in the absence of small yellow perch or other forage fishes as prey. Adult walleye tend to feed on any species of fish and invertebrates that are readily available; however, some populations of walleye, even as adults, feed almost exclusively on emerging larval or adult mayflies or chironomids for part of the year (Scott and Crossman 1998). Small-bodied fish species like lake chub, ninespine stickleback, slimy sculpin, spottail shiner, and trout perch, which all comprise a typical walleye diet, were found throughout the ASA. The abundance of small-bodied fish and invertebrates provided suitable and abundant prey for walleye in all life stages within the ASA.

Lake Whitefish

Copepods and cladocerans are a major part of the young lake whitefish diet and by early July, bottom dwelling organisms begin to enter their diet. As the young move into deeper waters, their diet closely resembles that of adult whitefish, but the planktonic crustaceans still remain part of the diet. Adult whitefish primarily consume invertebrates, molluscs, and amphipods (Faber 1970; Scott and Crossman 1998), which were all identified within the ASA. Additionally, examinations of the stomach contents of lake whitefish retained for chemical analyses revealed the presence of unidentified, digested invertebrates as well as what appeared to be fish eggs, indicating good feeding habitat for lake whitefish within the ASA.

Lake Trout

Lake trout are predacious and feed upon crustaceans, aquatic and terrestrial invertebrates, and many species of fish. The type of food consumed is dependent upon season and availability. Young trout feed primarily upon crustaceans and fresh water fungi. Adult lake trout have a preferred diet of cisco, which were found in conjunction with lake trout exclusively in Broach Lake; however, other fish species such as lake whitefish, yellow perch, stickleback, trout perch, and longnose sucker are frequently consumed in the absence of cisco. Occasionally, lake trout will become cannibalistic in the absence of prey fish and consume smaller lake trout and their own eggs (Scott and Crossman 1998). A variety of small-bodied prey species

were captured during baseline surveys, indicating that suitable feeding habitat exists within waterbodies where lake trout occur.

Yellow Perch

The diet of the yellow perch changes with size and season, but consists largely of immature insects, larger invertebrates, and fish taken in open water or off the bottom of the waterbody (Scott and Crossman 1998). Once egg yolk absorption is completed by yellow perch larvae, feeding upon zooplankton occurs in the upper strata of the littoral zone. Juveniles transition to the bottom of the littoral areas and begin to feed on invertebrates. Young yellow perch typically feed on cladocerans, seed shrimp (ostracods), and chironomid larvae, all of which were present in the majority of waterbodies within the ASA. By the end of the first year, diet usually shifts towards dragon fly nymphs (Odonata), mayflies, molluscs, ostracods, chironomid larvae, and even small-bodied fish. Adult perch feed on small-bodied fish, dragon fly nymphs, and fish eggs (Kreiger et al. 1983; Scott and Crossman 1998). The presence of benthic invertebrates and small-bodied fish in waterbodies inhabited by yellow perch indicate that food sources for this species are readily available.

Arctic Grayling

Arctic grayling larvae can ingest food in as little as three days after hatching. The diet of young grayling largely consists of zooplankton with a switch to immature insects as the grayling ages. Both of these food sources were readily available throughout the ASA. Adult grayling consume a large variety of invertebrates as the main part of their diet but may also consume small fish, fish eggs, lemmings (*Synaptomys borealis*), and planktonic crustaceans (Scott and Crossman 1998). Small-bodied fish and invertebrates were found to be widespread throughout the ASA, providing suitable feeding habitat for Arctic grayling.

White Sucker and Longnose Sucker

When white sucker and longnose sucker larvae reach approximately 12 mm in length, they migrate into lakes and feed on plankton and other small invertebrates at the surface. Once the larvae reach a length of 16 mm to 18 mm, the mouth moves from a terminal to a ventral position and a shift to bottom feeding occurs (Scott and Crossman 1998). Food is obtained by sucking up bottom material and straining it for a variety of invertebrates including chironomid larvae and pupae, molluscs, and cladocerans. The type of invertebrates consumed by suckers is known to change with increasing fish size and season (Scott and Crossman 1998). The diverse benthic invertebrate community assemblage and the widespread distribution of sucker in the ASA illustrates that feeding habitat is plentiful.

Overwintering Habitat

The suitability of overwintering habitat is typically based on characteristics such as water depth and DO concentrations, though flow velocities also contribute to overwintering suitability in lotic environments. High quality overwintering habitat is generally found in areas with sufficient depths to avoid freezing to the lake bottom (i.e., deeper than 1.0 m) and adequate DO concentrations. As all of the waterbodies in the ASA are sufficiently deep to avoid freezing solid, DO concentrations are likely to be the main factor influencing overwintering habitat suitability. Water quality data collected in of the winters of 2019 and 2020 indicated that the waterbodies sampled are generally well-oxygenated (refer to Section 3.3.1); thus high quality overwintering habitat is present throughout the ASA, particularly in the deeper lakes.

10.0 SUMMARY

The overall objective of the aquatic baseline program was to obtain multi-year, comprehensive information characterizing the aquatic environment near the Project. The aquatic baseline program included an extensive ASA, which was determined based on the Project location, watershed proposed for treated effluent release, knowledge of information required for an EA and long-term monitoring for similar developments, and consideration of potential cumulative effects.

The study components (SCs) were chosen for their potential to be selected as VCs during the EA process, based on best practices for baseline characterization (ENV 2014a; IAAC 2019; CNSC 2020). The key objectives of the baseline aquatic environment program completed between May 2018 and September 2020 were to:

- describe lake morphology;
- characterize water and sediment quality;
- identify and quantify species composition, density, and spatial distribution of phytoplankton, zooplankton, and benthic invertebrate communities;
- characterize baseline aquatic macrophyte and fish chemistry;
- document fish community composition and relative abundance; and
- document critical aquatic habitat with a focus on areas utilized by large-bodied fish species for spawning.

Lake morphometry data were collected in 2018 and 2019 from Lake G, Lake H, Broach Lake, Hodge Lake, Beet Lake, and Lloyd Lake Inlet and bathymetric maps produced from the morphometry data provide site characterization information for the ASA.

The water quality monitoring program collected data between May 2018 and September 2020 on a quarterly basis to collect multi-year, seasonal baseline data in the ASA. Long-term water quality monitoring stations were established in Patterson Lake (n = 3), Forrest Lake (n = 2), Beet Lake, Beet Creek, Naomi Lake, Clearwater River Nearfield, Lakes D, G, H, and J, Jed Creek, Lloyd Lake Inlet and Outlet, Warner Rapids, Broach Lake, and Hodge Lake. Two additional stations were sampled intermittently in the Clearwater River and in the Mirror River to obtain midfield information from areas not easily accessible without the use of a helicopter. Water quality results illustrated that lakes in the ASA generally contained adequate dissolved oxygen (DO), near neutral pH, and low levels of nutrients, ions, metals, and radionuclides. Nutrient concentrations classified the study lakes as oligotrophic (Wetzel 2001), and specific conductance levels were low and comparable to regional data collected for other lakes in northern Saskatchewan (CanNorth 2018). Baseline concentrations of total and dissolved metals and radionuclides were low and similar between waterbodies, seasons, and years, with most concentrations near or below laboratory reportable detection limits (RDLs). Parameter concentrations were below the Saskatchewan Environmental Quality Guideline (SEQG) or other applicable guidelines in numerous waterbodies throughout the ASA, with the exception of iron and dissolved iron.

Sediment quality samples were collected in fall 2018 from 13 sampling locations, with some follow-up sampling occurring in 2019. One sampling area was established in each waterbody, with the exception of Patterson Lake and Forrest Lake, where three areas and two areas were sampled, respectively. In each sampling area, five replicate stations were sampled that were separated by a minimum distance of 20 m

(often more in the larger lakes). In general, metal and radionuclide concentrations in the ASA were low, though mean concentrations of arsenic, vanadium, and polonium-210 exceeded select guidelines in some areas. Concentrations of several metals and radionuclides in Patterson Lake North Arm – West Basin Area 1 were higher than in the other study areas sampled in the ASA. Conversely, Patterson Lake South Arm Area 2 and Beet Lake Area 2 generally had the lowest parameter concentrations, which can likely be attributed to their high coarse sand content.

Phytoplankton and zooplankton samples were collected concurrently in the fall of 2018 with water quality samples in Patterson Lake North Arm – West Basin, Forrest Lake, Beet Lake, and Naomi Lake, Broach Lake, and Hodge Lake. Phytoplankton communities in all lakes were dominated by Cyanophycota (blue-green algae), and this dominance by a single taxon caused low Simpson's evenness values. Zooplankton communities consisted of mainly Cyclopoida crustaceans and Ploima rotifers, though Cladocera crustaceans were also abundant in certain areas.

Benthic invertebrate community sampling stations were co-located with sediment chemistry and characterization stations to provide supporting site characterization data for interpretation of benthic invertebrate results. Benthic invertebrate sampling occurred in 13 areas in the fall of 2018 and 3 areas in the fall of 2019. In 11 of the 16 areas surveyed, the most abundant taxon was Chironomidae (non-biting midge larvae). In the other five study areas, numerical dominance was less clear, with abundance being divided more evenly between a number of taxa. Average Simpson's diversity was moderately high at more than half (56%) of the areas, while lower diversity occurred in study areas where the communities were dominated by the Family Chironomidae.

Aquatic macrophyte samples for chemical analyses were collected from five stations in the littoral zone of the Lloyd Lake Inlet study area in the summer of 2018, and from Broach Lake, Jed Creek, Patterson Creek, Beet Creek, and the Clearwater River Nearfield in the summer of 2019. The aquatic macrophyte samples were from the genera *Carex* sp. (sedge) and included sedge shoots and roots along with associated sediment samples. The purpose of this component was to gather data for later comparison or for use in the EA and; therefore, no interpretation is provided here.

Fish and fish habitat investigations were conducted in the ASA in the spring, summer, and fall of 2018, and in the summer of 2019 to meet the following objectives:

- locate areas that are utilized for fish spawning;
- determine fish community composition;
- collect information on fish species abundance, morphometry, and health;
- collect baseline fish chemistry data; and,
- map aquatic habitat types and document areas of critical habitat.

During the fish surveys, northern pike were captured in all waterbodies. Other large-bodied fish that were prevalent and abundant in the ASA included lake whitefish, longnose sucker, walleye, white sucker, and yellow perch. Lake trout were found to reside in six waterbodies in the ASA and lake trout eggs were located in several locations in Patterson Lake, Forrest Lake, and Beet Lake during the fall spawning survey. In addition, eggs from Arctic grayling (Clearwater River only), lake whitefish, northern pike, slimy sculpin, sucker spp., walleye, and yellow perch were located during the spawning surveys conducted in the ASA.

Five northern pike and five lake whitefish samples from each of Broach Lake, Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, Clearwater River Nearfield (northern pike only), Lloyd Lake Inlet, Broach Lake, and Hodge Lake were retained and submitted for chemical analyses of flesh and bone samples. The concentrations of metals, trace elements, and radionuclides were low, with many parameters near or below the RDLs. Mean mercury concentrations in northern pike from Naomi Lake, Clearwater River Nearfield, Lloyd Lake Inlet, and Hodge Lake were above the 0.5 µg/g recommended level by Health Canada for safe consumption (GS 2015). All northern pike and lake whitefish flesh samples collected during the survey had selenium concentrations below the 11.3 µg/g guideline (U.S. EPA 2016).

Aquatic habitat mapping was conducted during the fish community surveys. The littoral zone of each study area was divided into a series of habitat sections based on physical characteristics (i.e., substrate type, flow, water depth, macrophyte type and abundance, fish cover), and each habitat section was rated on suitability for providing spawning habitat for the large-bodied fish species known to occur in the ASA. There was a general lack of highly suitable spawning habitat for northern pike in most lakes in the ASA; however, each of these lakes (with the exception of Beet Lake) contained one or more habitat sections that were deemed at least marginally suitable for spawning. Substrate types preferred by walleye, lake whitefish, lake trout, and sucker spp. (i.e., sand, gravel, cobble) were more prevalent throughout the ASA providing abundant spawning as well as nursery and rearing habitat for these species.

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QA/QC METHODS AND RESULTS

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APPENDIX A: QA/QC METHODS AND RESULTS

INTRODUCTION

All sample collection and handling procedures, including preservation, shipping, and laboratory analyses followed CanNorth Standard Operating Procedures (SOPs) and quality assurance/quality control (QA/QC) protocols. Where applicable, these SOPs are based on methods and procedures described in EC (2012), procedures developed by standard-setting organizations such as the United States Environmental Protection Agency (USEPA) and CSA (2010), procedures outlined in Environmental Monitoring Guidelines for Mining/Industrial Operations in Saskatchewan (ENV 2014), as well as procedures referenced in the primary literature. CanNorth's SOPs are compiled into field manuals, which are carried by the field staff on each survey. All SOPs and field data sheets are reviewed annually to ensure that they contain up-to-date information and that they meet the requirements of our ISO 9001 certification.

All chemistry samples were analyzed by the Saskatchewan Research Council (SRC) Analytical Laboratories in Saskatoon. SRC is certified and accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). As such, the SRC laboratories adhere to strict QA/QC standards and protocols. With each set of samples run, SRC tests reference materials, duplicates, and spiked samples.

METHODS

Water and Sediment Quality

Sampling

Some of the specific QA/QC methods employed during the water quality sampling program included:

- determining the accuracy of limnology measurements – the YSI meters underwent calibration by the manufacturer (annually), before every field trip, and as needed while in the field (see below);
- verifying YSI pH measurements by collecting back-up surface pH measurements using a Hach kit;
- calibrating the YSI regularly while in the field, which included:
    - verifying pH every day using pH 7 and pH 4 calibration standards. If the YSI was not within 0.2 pH units then the YSI was calibrated.
    - calibrating specific conductance weekly, at a minimum, while in the field.
    - calibrating dissolved oxygen at each sampling area according to the barometric pressure.
- performing sampling remedial actions – samples were discarded if the sampling quality control measures were not met (e.g., discarding water samples if sediment was disturbed);
- conducting contamination control – the sampling equipment was acid washed prior to the start of sampling and was rinsed on completion of sample collection at each sampling station;

- sample shipping – chain-of-custody forms were used in the transportation of samples so the samples could be tracked from the field to the laboratory; and
- using blank and field duplicate samples:
    - A field blank was used to check contamination from all potential sources of contamination in the field (EC 2012). A field blank sample was collected by bringing deionized water in the field that was supplied by the laboratory. The field blank sample underwent the same sample collection, handling, and processing steps as the test samples.
    - A trip blank sample was used to check contamination from sample bottles, caps, and preservatives during transport, storage, and analyses (EC 2012). The sample bottle was filled with deionized water in the laboratory, and it was preserved in the same manner as the test samples. The trip blank sample was transported to and from the field without modification and was opened at the time of analyses.
    - A field duplicate sample was taken to ensure that sampling and laboratory analyses produced repeatable results (EC 2012). At least one duplicate water sample was collected per sampling season with a minimum frequency of 10% of the water quality sampling stations.

Some of the specific QA/QC methods employed during the sediment sampling program included:

- performing sampling remedial actions – samples were discarded if the sampling quality control measures were not met (e.g., sediment was overflowing out of the top of the core tube);
- conducting contamination control – the sampling equipment was cleaned prior to the start of sampling (all core tubes were acid washed by SRC) and a new core tube was used at each waterbody;
- sample shipping – chain-of-custody forms were used in the transportation of samples so the samples could be tracked from the field to the laboratory; and
- collecting field duplicate samples at a frequency of approximately 10% of the samples collected to ensure that sampling and laboratory analyses produced repeatable results (EC 2012).

QA/QC Data Analyses

As part of the QA/QC analyses of water and sediment samples, the Relative Percent Difference (RPD) was calculated between the samples and their associated duplicates. The Data Quality Objective (DQO) for the RPDs was set at 20% for water quality and 40% for sediment quality. The intent of applying this DQO was to provide a benchmark for the initial data screening process, which determined whether the results were acceptable or required further investigation and/or re-analyses. It is estimated that at concentrations near the reporting detection limits (RDL), measurement uncertainty is very high, often approaching 100% at concentrations within five times the RDL (J. Zimmer, SRC, pers. comm. 2013). Thus, RPDs greater than 20% or 40% were only considered a potential issue if the sample and duplicate results were greater than five times the RDL, outside the range of laboratory precision, and outside of instrument accuracy.

Similarly, parameter concentrations in the field and trip blank samples should be at or below the RDL, as they are composed of deionized water. Thus, if parameter concentrations were greater than five times the RDL in the field blank and trip blank samples they were further investigated. It is also important to note that deionized water used to prepare the blank samples can absorb carbon dioxide (CO_2) in the air, resulting in low pH in the blank samples (J. Zimmer, SRC, pers. comm., 2011). Therefore, discrepancies between pH values measured in the blank samples and the RDLs are not considered as errant.

Further investigations involved contacting SRC to re-check values and a review of SRCs internal QA/QC results for potential issues with a specific batch of samples. The QA/QC chemistry tables present the RDLs, sample precision, calculated RPDs, identify whether parameter concentrations are higher than five times the RDL, and flag parameters that exceed the above mentioned criteria.

Benthic Invertebrate Community

Sampling

Specific QA/QC methods employed during the benthic invertebrate community sampling program are as follows:

- samples were discarded if the sampling quality control measures were not met (e.g., sediment was overflowing out of the top of the Ekman dredge);
- sampling equipment was cleaned prior to the start of the sampling;
- the Nitex net was thoroughly rinsed and inspected after each sample to ensure all organisms were collected; and
- chain-of-custody forms were used in the transportation of samples so the samples could be tracked from the field to the laboratory.

QA/QC Data Analyses

Benthic invertebrate taxonomic identification and enumeration was completed by Dr. Jack Zloty, Professor Emeritus from the University of Calgary based in Summerland, British Columbia. The QA/QC program for the collection of benthic invertebrate community data included a verification of sorting efficiency in approximately 10% of the randomly selected samples as recommended by Glozier et al. (2002) and EC (2002; 2012). This involved a re-examination of the sample residue (here referred to as a “re-sort”) for the selected samples under a dissecting microscope to recover any organisms that may have been missed in the initial sorting. The criteria for an acceptable sort are that more than 90% of the total number of organisms is picked during the initial sort (Glozier et al. 2002; EC 2002, 2012). If more than 10% of organisms are found during the re-sort, then all the samples within that particular batch of samples requires re-sorting. Another criterion which requires a re-sort is if the entire taxonomic group of invertebrates was overlooked during the initial sort, even if the number of missed organisms constituted less than 10% of the total number of organisms in a sample. If the sorting efficiency was acceptable (>90%), then the re-sorted organisms were left out of any further analysis because they are not part of the complete sorting process.

The effects of sub-sampling on abundance estimates were examined on approximately 10% of benthic invertebrate samples that underwent sub-sampling. Each randomly selected sample was subdivided into five equal portions, which were each sorted in their entirety. The five estimates were then compared to the total count and the accuracy of the five estimates was calculated as recommended by EC (2012). Sub-sampling precision was calculated as recommended by EC (2002) to ensure that the variability in the counts between sub-samples was acceptable. The DQO for both sub-sampling accuracy and precision was set at less than 20% as recommended by Glozier et al. (2002) and EC (2002, 2012).

Fish

Sampling

In order to prevent cross contamination between samples, fish dissections for chemical analyses were carried out using powder-free nitrile gloves and conducted on clean cutting boards. Between each fish dissection, gloves were changed, and the cutting board and all tools were cleaned.

SRC requires a minimum of 800 g of sample for fish flesh and bone analysis; therefore, in some instances, multiple fish were composited into a single sample to meet the weight requirements. In these instances, fish flesh and bone samples were placed in the same sample bags. All samples were double bagged prior to being frozen.

Fish Chemistry

Matrix heterogeneity of biological tissues causes a high degree of variability; therefore, duplicate samples were not collected for QA/QC of the fish chemistry sampling program. Rather, data were examined for usual patterns and trends within and/or between samples. Data was analyzed for outliers and/or suspicious data using boxplots generated with R statistical software. Extreme outliers (i.e., values greater than three times the data range). Anomalous values were reported to SRC for confirmation and/or re-analyses.

Fish Ageing

Fish ageing was completed by North Shore Environmental Services (North Shore) in Thunder Bay, Ontario. The QA/QC measures completed by North Shore included:

- reading ageing structures a minimum of two times, and, if consistency was not met, between the first two readings, a third reading was taken;
- assigning each ageing structure a CONF number, which represents the level of confidence in the age reading on a scale of 1 to 10 (e.g., a CONF of 7 indicates confidence with the age assessed, 6 means that something was observed that raised some concern, and 5 gives a fairly low confidence in the age reading);
- reviewing a sub-sample of ages that were determined from secondary ageing structures (i.e., scales), usually where the assigned CONF number indicated low confidence; and
- conducting all readings as ‘blind’ (i.e., independent from each other).

RESULTS

Water Quality

Water chemistry QA/QC results from the spring, summer, and fall 2018 sampling periods are presented in Appendix A, Table 1. In the spring and summer, differences in parameter concentrations between the test and duplicate samples were below the data quality control limits. In the fall, the magnitude of difference in three parameters (aluminum, iron, and manganese) between the test and duplicate samples exceeded the data quality control limits (RPD>20%, outside sample precision, and both samples >5*RDL). These parameters were rechecked by the lab and original results were deemed acceptable within measurement uncertainty. Analytical results for the field blank and trip blank samples were low or non-detectable and considered acceptable for the majority of the parameters. An exception was aluminum from the spring sample, which was above the RDL and greater than five times RDL in the field blank. SRC concluded that all their internal QC results were within their specified limits and were considered acceptable.

Water chemistry QA/QC results from the 2019 winter, spring, summer, and fall sampling periods are presented in Appendix A, Table 2. In the spring sample, the magnitude of difference between the test and duplicate samples for aluminum and in the fall sample, the magnitude of difference between the test and duplicate samples for two parameters (dissolved iron and dissolved manganese) exceeded the data quality control limits (RPD>20%, outside sample precision, and both samples >5*RDL). These parameters were rechecked by the lab and original results were deemed acceptable within measurement uncertainty. Analytical results for the field blank and trip blank samples were low or non-detectable and considered acceptable for the majority of the parameters. Exceptions were found for aluminum, iron, dissolved iron, tin, dissolved tin, zinc, and dissolved zinc which were greater than five times RDL in the field blank for some sampling periods. SRC reanalyzed the field blank sample and concluded that the internal QC results were within their specified limits and were considered acceptable.

Water chemistry QA/QC results from the 2020 winter, spring, summer, and fall sampling periods are presented in Appendix A, Table 3. The magnitude of difference between the test and duplicate samples for 16 parameters in the winter sample (barium, dissolved barium, iron, dissolved iron, manganese, dissolved manganese, ammonia as N, dissolved ammonia as N, Nitrate (as N), dissolved Nitrate (as N), Nitrate (NO3), dissolved Nitrate (NO3), calculated Nitrate+Nitrite (as N), dissolved Nitrite+Nitrate-nitrogen, apparent color, and turbidity), 2 parameters in the spring sample (dissolved calcium and iron), 1 parameter in the summer sample (total alkalinity), and 0 parameters in the fall sample exceeded the data quality control limits (RPD>20%, outside sample precision, and both samples >5*RDL). These parameters were rechecked by the lab and original results were deemed acceptable within measurement uncertainty. Lab results couldn't explain the differences and caution should be taken when interpreting Lake D results as test and duplicate samples illustrated variability. Analytical results for the field blank and trip blank samples were low or non-detectable for the majority of the parameters and the data is considered acceptable.

Sediment Quality

Sediment chemistry QA/QC results from the five duplicate samples collected in 2018 sampling period and the two duplicate samples collected in 2019 are presented in Appendix A, Table 4. There were some instances where the RPDs exceeded the DQO of 40%, and the concentrations in the test and duplicate samples were both greater than five times higher than the RDL. In these cases, the RPDs were usually near to the DQO and/or occurred in the particle size, loss on ignition, or total organic carbon content data, which are expected to be more variable than the chemistry data. The exceptions were cadmium in Broach Lake Area 1 Station 3, arsenic and molybdenum in Patterson Lake North – West Basin Area 1 Station 3, barium, manganese, and total phosphorus in Patterson Lake North – East Basin Area 3 Sample 3, potassium in Clearwater River Area 2 Station 3, and manganese in Clearwater River Area 2 Station 5. For the 2018 data, re-checks were not requested and SRC concluded that all their internal QC results were within their specified limits and were considered acceptable. The 2019 manganese concentration in Patterson Lake Northeast Area 3 Station 3 was re-checked and the reanalysis confirmed that the original result was within the expected measurement uncertainty. SRC concluded that all their internal QC results from 2019 were also within their specified limits and were considered acceptable

Benthic Invertebrate Community

Of the 80 benthic invertebrate samples processed from the Rook I Project ASA, 7 samples were randomly selected for the re-sort. Results of the re-sort are detailed in Appendix A, Table 5. Sorting efficiencies ranged between 95.2% and 100% (or 98.1%, on average) which met the DQO of 90%. Thus, these results satisfied the DQO objective of less than 10% of organisms missed in the initial sorting. Subsampling accuracy and precision met the DQO of <20% (Glozier et al. 2002; EC 2002, 2012), with accuracy ranging between 1.6% and 4.8% (absolute values) and precision ranging between 1.7% to 8.4% (average = 5.0%) for the sample subjected to the subsampling QA/QC assessment (Appendix A, Table 6).

Fish

Fish Chemistry

The fish chemistry data screening identified a few potential outliers and SRC was asked to reanalyze these parameters. Appendix A, Table 7 shows which parameters were reanalyzed for which samples, and whether or not original values were deemed acceptable, or if a revised report was issued.

Fish Ageing

Results of the fish ageing QA/QC are presented in Appendix A, Table 8. The confidence ratings for the ages were all above 5, which indicates that confidence in the ages presented is not low. In three northern pike samples, ages were determined using both the cleithra and scales and the ages in two of the fish were identical and in the third fish only differed by one year.

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Appendix A, Table 1

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2018

Parameter	Clearwater River Area 1											
	RDL	Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC				
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		21-May-18	21-May-18			Sample	Duplicate	21-May-18		21-May-18	
Inorganic Ions											
Bicarbonate (as HCO3)	1	22	27	20.41%	Yes	3	4	1	No	4	No
Calcium	0.1	3.4	3.1	9.23%	Yes	0.5	0.5	<0.1	N/A	<0.1	N/A
Carbonate (as CO3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.7	0.7	0.00%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	<0.1	N/A	<0.1	N/A
Potassium	0.1	0.6	0.6	0.00%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Sodium	0.1	1.5	1.5	0.00%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Sulphate	0.2	1.3	1.4	7.41%	Yes	0.3	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.014	0.013	7.41%	Yes	0.002	0.002	**0.010**	Yes	0.0008	No
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Arsenic (µg/L)	0.1	0.1	0.1	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Barium	0.0005	0.0082	0.0080	2.47%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Cadmium	0.00001	0.00001	<0.00001	0.00%	No	0.00001	-	<0.00001	N/A	<0.00001	N/A
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Copper	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Fluoride	0.01	0.06	0.06	0.00%	Yes	0.02	0.02	0.02	No	0.01	No
Iron	0.0005	0.25	0.24	4.08%	Yes	0.02	0.02	<0.0005	N/A	<0.0005	N/A
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Manganese	0.0005	0.016	0.015	6.45%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Mercury (ng/L)	1	1	<1	0.00%	No	1	-	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Strontium	0.0005	0.028	0.028	0.00%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Titanium	0.0002	0.0003	<0.0002	40.00%	No	0.0002	-	<0.0002	N/A	<0.0002	N/A
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Vanadium	0.0001	0.0001	0.0002	66.67%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Zinc	0.0005	< 0.0005	0.0011	75.00%	No	-	0.0008	<0.0005	N/A	<0.0005	N/A
Nutrients											
Ammonia (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Carbon, Organic dissolved	0.2	3.2	3.0	6.45%	Yes	0.8	0.8	0.4	No	-	-
Carbon, Total Organic	0.2	2.8	2.8	0.00%	Yes	0.7	0.7	<0.2	N/A	<0.2	N/A
Nitrate (NO3)	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrogen, Total Kjeldahl	0.05	0.29	0.32	9.84%	Yes	0.1	0.2	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Physical Properties											
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.52	7.47	0.67%	Yes	0.8	0.7	5.62	Yes	5.61	Yes
Specific Conductivity (µS/cn	1	31	31	0.00%	Yes	5	5	<1	N/A	<1	N/A
Sum of ions	1	31	36	14.93%	Yes	5	5	1	No	4	No
Alkalinity, Total (as CaCO3)	1	18	22	20.00%	Yes	4	3	1	No	3	No
Solids, Total dissolved	5	45	34	27.85%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	13	13	0.00%	Yes	3	3	<1	N/A	<1	N/A
Solids, Total suspended	1	2	2	0.00%	No	1	1	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.1	1.1	0.00%	Yes	0.3	0.3	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 1

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2018

Parameter	Jed Creek						
	RDL	Sample	Duplicate	RPD	>5*RDL?[a]	Precision	
		03-Aug-18	03-Aug-18			Sample	Duplicate
Inorganic Ions							
Bicarbonate (as HCO3)	1	13	12	8.00%	Yes	3	3
Calcium	0.1	2.6	2.6	0.00%	Yes	0.4	0.4
Carbonate (as CO3)	1	< 1	<1	0.00%	N/A	-	-
Chloride	0.1	0.3	0.3	0.00%	No	0.1	0.1
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-
Magnesium	0.1	0.7	0.8	13.33%	Yes	0.1	0.1
Potassium	0.1	0.4	0.4	0.00%	No	0.2	0.2
Sodium	0.1	1.2	1.1	8.70%	Yes	0.3	0.3
Sulphate	0.2	1.2	1.1	8.70%	Yes	0.3	0.3
Metals							
Aluminum	0.0005	0.016	0.015	6.45%	Yes	0.002	0.002
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-
Arsenic (µg/L)	0.1	0.2	0.2	0.00%	No	0.1	0.1
Barium	0.0005	0.0098	0.0095	3.11%	Yes	0.002	0.002
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Cadmium	0.00001	0.00001	<0.00001	0.00%	No	0.00001	-
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-
Copper	0.0002	0.0002	<0.0002	0.00%	No	0.0002	-
Fluoride	0.01	0.04	0.04	0.00%	No	0.02	0.02
Iron	0.0005	0.25	0.25	0.00%	Yes	0.02	0.02
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-
Manganese	0.0005	0.0060	0.0057	5.13%	Yes	0.002	0.001
Mercury (ng/L)	1	1	<1	0.00%	No	1	-
Molybdenum	0.0001	0.0001	<0.0001	0.00%	No	0.0001	-
Nickel	0.0001	0.0001	0.0001	0.00%	No	0.0001	0.0001
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-
Strontium	0.0005	0.028	0.027	3.64%	Yes	0.004	0.004
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-
Titanium	0.0002	0.0003	<0.0002	40.00%	No	0.0002	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-
Vanadium	0.0001	0.0002	0.0002	0.00%	No	0.0001	0.0001
Zinc	0.0005	0.0014	<0.0005	94.74%	No	0.001	-
Nutrients							
Ammonia (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Carbon, Organic dissolved	0.2	5.0	4.9	2.02%	Yes	0.8	0.7
Carbon, Total Organic	0.2	4.8	4.6	4.26%	Yes	0.7	0.7
Nitrate (NO3)	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Nitrate+Nitrite (as N) calc.	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl	0.05	0.25	0.21	17.39%	No	0.1	0.1
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Physical Properties							
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-
pH (pH units)	0.07	7.08	7.08	0.00%	Yes	0.7	0.7
Specific Conductivity (µS/cm)	1	20	19	5.13%	Yes	3	5
Sum of ions	1	19	18	5.41%	Yes	5	4
Alkalinity, Total (as CaCO3)	1	11	10	9.52%	Yes	3	2
Solids, Total dissolved	5	39	35	10.81%	Yes	10	10
Hardness, Total	1	9	10	10.53%	Yes	3	2
Solids, Total suspended	1	< 1	2	66.67%	No	-	1
Turbidity (NTU)	0.1	0.3	0.3	0.00%	No	0.1	0.1
Radionuclides							
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-
Radium-226 (Bq/L)	0.005	0.01	0.01	0.00%	No	0.006	0.006
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-

Appendix A, Table 1

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2018

Parameter	Clearwater River Area 1										
	RDL	Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		29-Sep-18	29-Sep-18			Sample	Duplicate	02-Oct-18		02-Oct-18	
Inorganic Ions											
Bicarbonate (as HCO3)	1	30	30	0.00%	Yes	4	4	<1	N/A	1	No
Calcium	0.1	3.4	3.5	2.90%	Yes	0.5	0.5	<0.1	N/A	<0.1	N/A
Carbonate (as CO3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.6	0.6	0.00%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	<0.1	N/A	<0.1	N/A
Potassium	0.1	0.6	0.6	0.00%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Sodium	0.1	1.5	1.5	0.00%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Sulphate	0.2	1.3	1.3	0.00%	Yes	0.3	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.026	0.018	**36.36%**	Yes	0.004	0.003	0.0007	No	0.0006	No
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Arsenic (µg/L)	0.1	0.2	0.2	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Barium	0.0005	0.0081	0.0077	5.06%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Beryllium	0.0001	< 0.0001	``	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Cadmium	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Copper	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Fluoride	0.01	0.06	0.06	0.00%	Yes	0.02	0.02	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.42	0.30	**33.33%**	Yes	0.04	0.03	0.0010	No	<0.0005	N/A
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Manganese	0.0005	0.020	0.013	**42.42%**	Yes	0.003	0.002	<0.0005	N/A	<0.0005	N/A
Mercury (ng/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	0.0002	66.67%	No	-	0.0001	<0.0001	N/A	<0.0001	N/A
Nickel	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Strontium	0.0005	0.027	0.026	3.77%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Titanium	0.0002	0.0007	0.0004	54.55%	No	0.0003	0.0002	<0.0002	N/A	<0.0002	N/A
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Vanadium	0.0001	0.0002	0.0001	66.67%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Zinc	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	0.0005	No	<0.0005	N/A
Nutrients											
Ammonia (as N)	0.01	0.01	0.01	0.00%	No	0.01	0.01	<0.01	N/A	<0.01	N/A
Carbon, Organic dissolved	0.2	3.5	3.7	5.56%	Yes	0.9	0.9	-	-	-	-
Carbon, Total Organic	0.2	3.5	3.6	2.82%	Yes	0.9	0.9	<0.2	N/A	<0.2	N/A
Nitrate (NO3)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate+Nitrite (as N) calc.	-	-	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl	0.05	0.35	0.27	25.81%	Yes	0.2	0.1	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Physical Properties											
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.34	7.40	0.81%	Yes	0.7	0.7	5.85	Yes	5.82	Yes
Specific Conductivity (µS/cr	1	28	30	6.90%	Yes	4	4	<1	N/A	<1	N/A
Sum of ions	1	39	39	0.00%	Yes	6	6	<1	N/A	1	No
Alkalinity, Total (as CaCO3)	1	25	25	0.00%	Yes	4	4	<1	N/A	1	No
Solids, Total dissolved	5	47	48	2.11%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	13	14	7.41%	Yes	3	4	<1	N/A	<1	N/A
Solids, Total suspended	1	4	4	0.00%	No	2	2	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.7	1.4	19.35%	Yes	0.4	0.4	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	0.009	0.01	10.53%	No	0.006	0.007	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	0.006	No
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A

RDL = Reported Detection Limit; N/A = Not Applicable; dash = no data.
Relative Percent Difference (RPD) = | ((Duplicate - Sample)/((Duplicate + Sample)/2))*100 |.
For calculation of RPDs, values <RDL were set equal to the RDL.
a) Ranking of a "yes" used only if either value is >5*RDL.
Bolded values for the sample or duplicate indicate exceedances of data quality control limits (RPD > 20%, outside sample precision, and both samples >5*RDL).
Bolded values for the field blank or trip blank indicate exceedances of data quality control limits (>5*RDL).

Appendix A, Table 2

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2019

Parameters	RDL	Jed Creek									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		21-Feb-19	21-Feb-19			Sample	Duplicate	21-Feb-19		21-Feb-19	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	20	18	10.53%	Yes	3	4	2	No	1	No
Calcium	0.1	3.3	3.4	2.99%	Yes	0.5	0.5	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	3.6	3.5	2.82%	Yes	0.5	0.5	0.2	No	-	-
Carbonate (as CO_3)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.4	0.4	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.0	1.0	0%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	1.1	1.0	9.52%	Yes	0.3	0.2	<0.1	N/A	-	-
Potassium	0.1	0.6	0.5	18.18%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.6	0.6	0%	Yes	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Sodium, dissolved	0.1	1.5	1.4	6.90%	Yes	0.4	0.4	0.1	No	-	-
Sulphate	0.2	1.6	1.5	6.45%	Yes	0.4	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.020	0.022	9.52%	Yes	0.003	0.003	**0.012**	Yes	<0.0005	N/A
Aluminum, dissolved	0.0005	0.018	0.016	11.76%	Yes	0.003	0.002	0.0010	No	-	-
Antimony	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.1	0.1	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	<0.1	0%	No	0.1	-	<0.1	N/A	-	-
Barium	0.0005	0.012	0.012	0%	Yes	0.002	0.002	0.0014	No	<0.0005	N/A
Barium, dissolved	0.0005	0.013	0.012	8.00%	Yes	0.002	0.002	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	0.00001	0.00001	0%	No	0.00001	0.00001	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	0.0008	No	<0.0002	N/A
Copper, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Fluoride	0.01	0.04	0.04	0%	No	0.02	0.02	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.36	0.35	2.82%	Yes	0.04	0.04	**0.011**	Yes	<0.0005	N/A
Iron, dissolved	0.0005	0.24	0.17	34.15%	Yes	0.02	0.02	0.0008	No	-	-
Lead	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0003	No	<0.0001	N/A
Lead, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	2.2	2.1	4.65%	Yes	0.3	0.3	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	2.2	2.2	0%	Yes	0.3	0.3	<0.1	N/A	-	-
Manganese	0.0005	0.0094	0.0097	3.14%	Yes	0.002	0.002	0.0007	No	<0.0005	N/A
Manganese, dissolved	0.0005	0.0090	0.0088	2.25%	Yes	0.002	0.002	<0.0005	N/A	-	-
Mercury (ng/L)	1	2	2	0%	No	1	1	2	No	1	No
Molybdenum	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0003	No	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Nickel	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0002	No	<0.0001	N/A
Nickel, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0003	No	-	-
Rubidium (µg/L)	0.05	0.62	0.68	9.23%	Yes	0.2	0.2	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.66	0.61	7.87%	Yes	0.2	0.2	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.031	0.031	0%	Yes	0.005	0.005	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.033	0.032	3.08%	Yes	0.005	0.005	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0001	No	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	0.0004	0.0004	0%	No	0.0002	0.0002	0.0007	No	<0.0002	N/A
Titanium, dissolved	0.0002	0.0003	0.0003	0%	No	0.0002	0.0002	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	0.0002	0.0002	0%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	0.0001	0.0001	0%	No	0.0001	0.0001	<0.0001	N/A	-	-
Zinc	0.0005	0.0005	0.0007	33.33%	No	0.0005	0.0006	**0.0031**	Yes	<0.0005	N/A
Zinc, dissolved	0.0005	0.0012	0.0006	66.67%	No	0.0008	0.0006	0.0025	No	-	-
Zirconium	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	0.02	0.02	0%	No	0.02	0.02	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	0.02	<0.01	66.67%	No	0.01	-	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	3.5	3.4	2.90%	Yes	0.9	0.8	0.3	No	-	-
Carbon, Total Organic	0.2	3.2	3.1	3.17%	Yes	0.8	0.8	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	0.07	0.05	33.33%	Yes	0.02	0.02	0.03	No	0.02	No
Nitrate (as N), dissolved	0.01	0.07	0.07	0%	Yes	0.02	0.02	0.02	No	-	-
Nitrate (NO_3)	0.04	0.31	0.22	33.96%	Yes	-	-	0.13	No	0.09	No
Nitrate (NO_3), dissolved	0.04	0.31	0.31	0%	Yes	-	-	0.09	No	-	-
Nitrate+Nitrite (as N) calc.	0.01	0.07	0.05	33.33%	Yes	0.03	0.02	0.03	No	0.02	No
Nitrite+Nitrate-nitrogen, dissolv	0.01	0.07	0.07	0%	Yes	0.02	0.02	0.02	No	-	-
Nitrogen, Total Kjeldahl	0.05	0.18	0.18	0%	No	0.1	0.1	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	-	-	-	-
Physical Properties											
Apparent color (CU)	1	21	21	0%	Yes	3	3	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	6.72	6.65	1.05%	Yes	1	1	5.30	Yes	5.38	Yes
Specific Conductivity (µS/cm)	1	27	26	3.77%	Yes	4	4	<1	N/A	<1	N/A
Sum of ions	1	29	26	10.91%	Yes	4	4	2	No	1	No
Alkalinity, Total (as $CaCO_3$)	1	16	15	6.45%	Yes	4	4	2	No	1	No
Solids, Total dissolved	5	54	47	13.86%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	12	12	0%	Yes	3	3	<1	N/A	<1	N/A
Solids, Total suspended	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	0.6	0.6	0%	Yes	0.1	0.1	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 2

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2019

Parameters	RDL	Clearwater River Area 1									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL ?[a]	Trip Blank	>5*RDL?[a]
		26-May-19	26-May-19			Sample	Duplicate	26-May-19		26-May-19	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	32	29	9.84%	Yes	5	4	1	No	1	No
Calcium	0.1	3.8	3.9	2.60%	Yes	0.6	0.6	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	3.9	3.9	0%	Yes	0.6	0.6	-	-	-	-
Carbonate (as CO_3)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.6	0.6	0%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	1.4	1.4	0%	Yes	0.4	0.4	-	-	-	-
Potassium	0.1	0.6	0.7	15.38%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.7	0.6	15.38%	Yes	0.2	0.2	-	-	-	-
Sodium	0.1	1.6	1.6	0%	Yes	0.4	0.4	0.2	No	0.1	No
Sodium, dissolved	0.1	1.6	1.6	0%	Yes	0.4	0.4	-	-	-	-
Sulphate	0.2	1.4	1.4	0%	Yes	0.3	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.014	0.0099	**34.31%**	Yes	0.002	0.002	0.0005	No	<0.0005	N/A
Aluminum, dissolved	0.0005	0.0079	0.0077	2.56%	Yes	0.002	0.002	-	-	-	-
Antimony	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	-	-	-	-
Arsenic (µg/L)	0.1	0.1	0.1	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0%	No	0.1	0.1	-	-	-	-
Barium	0.0005	0.0078	0.0074	5.26%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0070	0.0073	4.20%	Yes	0.002	0.002	-	-	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	-	-	-	-
Boron	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	-	-	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	-	-	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.0005	< 0.1	<0.1	0%	N/A	-	-	-	-	-	-
Chromium	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0001	< 0.0005	<0.0005	0%	N/A	-	-	-	-	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0002	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Copper	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.01	< 0.0002	<0.0002	0%	N/A	-	-	-	-	-	-
Fluoride	0.0005	0.05	0.05	0%	No	0.02	0.02	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.20	0.18	10.53%	Yes	0.02	0.02	<0.0005	N/A	<0.0005	N/A
Iron, dissolved	0.0001	0.11	0.12	8.70%	Yes	0.01	0.01	-	-	-	-
Lead	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Lead, dissolved	0.1	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Lithium (µg/L)	0.1	2.9	2.6	10.91%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.0005	2.8	2.7	3.64%	Yes	0.4	0.4	-	-	-	-
Manganese	0.0005	0.010	0.010	0%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	1	0.0041	0.0043	4.76%	Yes	0.001	0.001	-	-	-	-
Mercury (ng/L)	0.0001	2	2	0%	No	1	1	<1	N/A	2	No
Molybdenum	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Nickel	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.05	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Rubidium (µg/L)	0.05	0.56	0.55	1.80%	Yes	0.1	0.1	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.0001	0.55	0.56	1.80%	Yes	0.1	0.1	-	-	-	-
Selenium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.00005	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Silver	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.0005	< 0.00005	<0.00005	0%	N/A	-	-	-	-	-	-
Strontium	0.0005	0.029	0.026	10.91%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	1	0.028	0.028	0%	Yes	0.004	0.004	-	-	-	-
Tellurium (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	0.0002	< 1	<1	0%	N/A	-	-	-	-	-	-
Thallium	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0001	< 0.0002	<0.0002	0%	N/A	-	-	-	-	-	-
Tin	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0002	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Titanium	0.0002	0.0003	0.0002	40.00%	No	0.0002	0.0002	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.1	< 0.0002	<0.0002	0%	N/A	-	-	-	-	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.0001	< 0.1	<0.1	0%	N/A	-	-	-	-	-	-
Vanadium	0.0001	0.0001	0.0001	0%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0005	< 0.0001	<0.0001	0%	N/A	-	-	-	-	-	-
Zinc	0.0005	0.0013	0.0013	0%	No	0.0009	0.0009	0.0033	Yes	<0.0005	N/A
Zinc, dissolved	0.001	0.0011	0.0011	0%	No	0.0007	0.0007	-	-	-	-
Zirconium	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.1	< 0.001	<0.001	0%	N/A	-	-	-	-	-	-
Nutrients											
Ammonia (as N)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	2.8	2.6	7.41%	Yes	0.7	0.6	<0.2	N/A	-	-
Carbon, Total Organic	0.2	2.6	2.6	0%	Yes	0.6	0.6	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	0.25	0.26	3.92%	Yes	0.1	0.1	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0%	N/A	-	-	0.02	No	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	-	-	-	-
Physical Properties											
Apparent color (CU)	1	8	7	13.33%	Yes	3	2	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.39	7.37	0.27%	Yes	0.7	0.7	6.35	Yes	5.50	Yes
Specific Conductivity (µS/cm)	1	33	33	0%	Yes	5	5	<1	N/A	<1	N/A
Sum of ions	1	41	39	5.00%	Yes	6	6	1	No	1	No
Alkalinity, Total (as $CaCO_3$)	1	26	24	8.00%	Yes	4	4	1	No	1	No
Solids, Total dissolved	5	58	46	23.08%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	15	15	0%	Yes	4	4	<1	N/A	<1	N/A
Solids, Total suspended	1	3	<1	100%	No	1	-	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.3	1.3	0%	Yes	0.3	0.3	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 2

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2019

Parameters	RDL	Jed Creek									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		23-Jul-19	23-Jul-19			Sample	Duplicate	23-Jul-19		23-Jul-19	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	8	11	31.58%	Yes	3	3	2	No	4	No
Calcium	0.1	2.8	2.7	3.64%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	2.6	2.7	3.77%	Yes	0.4	0.4	<0.1	N/A	-	-
Carbonate (as CO_3)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.3	0.3	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	0.8	0.8	0%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	0.8	0.8	0%	Yes	0.1	0.1	<0.1	N/A	-	-
Potassium	0.1	0.4	0.4	0%	No	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.5	0.4	22.22%	No	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.2	1.2	0%	Yes	0.3	0.3	0.1	No	0.1	No
Sodium, dissolved	0.1	1.2	1.2	0%	Yes	0.3	0.3	<0.1	N/A	-	-
Sulphate	0.2	1.2	1.3	8.00%	Yes	0.3	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.015	0.015	0%	Yes	0.002	0.002	0.0013	No	0.0013	No
Aluminum, dissolved	0.0005	0.011	0.011	0%	Yes	0.002	0.002	<0.0005	N/A	-	-
Antimony	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.2	0.2	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.2	0.1	66.67%	No	0.1	0.1	<0.1	N/A	-	-
Barium	0.0005	0.0084	0.0082	2.41%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0079	0.0078	1.27%	Yes	0.002	0.002	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	0.00001	0%	No	-	0.00001	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.0002	0.0007	<0.0002	111.11%	No	0.0004	-	<0.0002	N/A	-	-
Fluoride	0.01	0.06	0.06	0%	Yes	0.02	0.02	0.02	No	0.02	No
Iron	0.0005	0.27	0.26	3.77%	Yes	0.03	0.03	<0.0005	N/A	<0.0005	N/A
Iron, dissolved	0.0005	0.16	0.17	6.06%	Yes	0.02	0.02	<0.0005	N/A	-	-
Lead	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	0.0001	No	<0.0001	N/A
Lead, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	1.7	1.8	5.71%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	1.8	1.8	0%	Yes	0.4	0.4	<0.1	N/A	-	-
Manganese	0.0005	0.0088	0.0086	2.30%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	0.0005	0.0048	0.0047	2.11%	Yes	0.001	0.001	<0.0005	N/A	-	-
Mercury (ng/L)	1	2	2	0%	No	1	1	4	No	1	No
Molybdenum	0.0001	0.0001	<0.0001	0%	No	0.0001	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	0.0001	<0.0001	0%	No	0.0001	-	<0.0001	N/A	-	-
Nickel	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.0001	0.0001	<0.0001	0%	No	0.0001	-	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.61	0.59	3.33%	Yes	0.2	0.1	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.56	0.56	0%	Yes	0.1	0.1	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.026	0.026	0%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.026	0.026	0%	Yes	0.004	0.004	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	**0.0019**	Yes	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	**0.0072**	Yes	-	-
Titanium	0.0002	0.0003	0.0002	40.00%	No	0.0002	0.0002	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.0002	0.0002	<0.0002	0%	No	0.0002	-	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	0.0002	0.0002	0%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	0.0002	0.0002	0%	No	0.0001	0.0001	<0.0001	N/A	-	-
Zinc	0.0005	0.0008	0.0019	81.48%	No	0.0007	0.001	**0.0029**	Yes	<0.0005	N/A
Zinc, dissolved	0.0005	0.0018	0.0007	88.00%	No	0.0009	0.0006	**0.0028**	Yes	-	-
Zirconium	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	4.2	3.8	10.00%	Yes	0.6	1	0.6	No	-	-
Carbon, Total Organic	0.2	3.8	3.7	2.67%	Yes	1	0.9	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	0.22	0.20	9.52%	No	0.1	0.1	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	-	-	-	-
Physical Properties											
Apparent color (CU)	1	17	16	6.06%	Yes	4	4	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.16	7.11	0.70%	Yes	0.3	0.3	5.69	Yes	5.62	Yes
Specific Conductivity (µS/cm)	1	19	20	5.13%	Yes	5	3	<1	N/A	<1	N/A
Sum of ions	1	15	18	18.18%	Yes	4	4	2	No	4	No
Alkalinity, Total (as $CaCO_3$)	1	7	9	25.00%	Yes	1	1	2	No	3	No
Solids, Total dissolved	5	35	37	5.56%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	10	10	0%	Yes	2	2	<1	N/A	<1	N/A
Solids, Total suspended	1	1	1	0%	No	1	1	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	0.9	0.9	0%	Yes	0.1	0.1	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	0.01	No
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 2

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2019

Parameters	RDL	Lake D									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		25-Sep-2019	25-Sep-2019			Sample	Duplicate	25-Sep-2019		25-Sep-2019	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	34	37	8.45%	Yes	5	6	<1	N/A	<1	N/A
Calcium	0.1	5.4	5.5	1.83%	Yes	0.8	0.8	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	5.4	5.5	1.83%	Yes	0.8	0.8	<0.1	N/A	-	-
Carbonate (as CO_3)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	-	-
Potassium	0.1	0.4	0.4	0%	No	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.4	0.4	0%	No	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	0.1	No
Sodium, dissolved	0.1	1.4	1.4	0%	Yes	0.4	0.4	<0.1	N/A	-	-
Sulphate	0.2	1.0	1.0	0%	No	0.2	0.2	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.0064	0.0057	11.57%	Yes	0.002	0.001	**0.0026**	Yes	<0.0005	N/A
Aluminum, dissolved	0.0005	0.0049	0.0032	41.98%	Yes	0.001	0.001	0.0017	No	-	-
Antimony	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.1	0.1	0%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0%	No	0.1	0.1	<0.1	N/A	-	-
Barium	0.0005	0.0063	0.0061	3.23%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0061	0.0059	3.33%	Yes	0.002	0.001	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0%	N/A	-	-	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.0005	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0001	< 0.0005	<0.0005	0%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0002	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.01	< 0.0002	0.0006	100%	No	-	0.0003	0.0004	No	-	-
Fluoride	0.0005	0.03	0.03	0%	No	0.01	0.01	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.047	0.045	4.35%	Yes	0.007	0.007	0.0007	No	<0.0005	N/A
Iron, dissolved	0.0001	0.042	0.019	**75.41%**	Yes	0.006	0.003	**0.0048**	Yes	-	-
Lead	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Lead, dissolved	0.1	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	1.6	1.6	0%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.0005	1.6	1.7	6.06%	Yes	0.4	0.4	<0.1	N/A	-	-
Manganese	0.0005	0.010	0.011	9.52%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	1	0.0092	0.0028	**106.67%**	Yes	0.002	0.001	<0.0005	N/A	-	-
Mercury (ng/L)	0.0001	< 1	1	0%	No	-	1	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Nickel	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.05	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.40	0.32	22.22%	Yes	0.1	0.1	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.0001	0.35	0.37	5.56%	Yes	0.05	0.05	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.00005	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.0005	< 0.00005	<0.00005	0%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.017	0.017	0%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	1	0.017	0.017	0%	Yes	0.002	0.002	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	0.0002	< 1	<1	0%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0001	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0002	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.1	< 0.0002	<0.0002	0%	N/A	-	-	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.0001	< 0.1	<0.1	0%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	< 0.0001	0.0001	0%	No	-	0.0001	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0005	< 0.0001	<0.0001	0%	N/A	-	-	<0.0001	N/A	-	-
Zinc	0.0005	0.0010	<0.0005	66.67%	No	0.0008	-	0.0005	No	<0.0005	N/A
Zinc, dissolved	0.001	0.0009	0.0013	36.36%	No	0.0007	0.0008	0.0005	No	-	-
Zirconium	0.001	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.1	< 0.001	<0.001	0%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	0.19	0.24	23.26%	Yes	0.05	0.04	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	0.24	0.20	18.18%	Yes	0.04	0.03	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	6.3	6.0	4.88%	Yes	0.9	0.9	<0.2	N/A	-	-
Carbon, Total Organic	0.2	5.6	5.6	0%	Yes	0.8	0.8	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	< 0.04	<0.04	0%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	1.1	0.98	11.54%	Yes	0.2	0.2	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0%	N/A	-	-	-	-	-	-
Physical Properties											
Apparent color (CU)	1	9	8	11.76%	Yes	3	3	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.52	7.48	0.53%	Yes	0.3	0.3	5.74	Yes	5.72	Yes
Specific Conductivity (µS/cm)	1	39	38	2.60%	Yes	6	6	<1	N/A	<1	N/A
Sum of ions	1	44	47	6.59%	Yes	7	7	<1	N/A	<1	N/A
Alkalinity, Total (as $CaCO_3$)	1	28	30	6.90%	Yes	4	4	<1	N/A	<1	N/A
Solids, Total dissolved	5	54	55	1.83%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	19	19	0%	Yes	5	5	<1	N/A	<1	N/A
Solids, Total suspended	1	2	2	0%	No	1	1	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.1	1.2	8.70%	Yes	0.3	0.3	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	0.007	0.006	15.38%	No	0.005	0.005	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0%	N/A	-	-	<0.01	N/A	<0.01	N/A

RDL = Reporting Detection Limit; N/A = Not Applicable; dash = no data.
Relative Percent Difference (RPD) = | ((Duplicate - Sample)/((Duplicate + Sample)/2))*100 |.
For calculation of RPDs, values <RDL were set equal to the RDL.
a) Ranking of a "yes" used only if either value is >5*RDL.
Bolded values for the sample or duplicate indicate exceedances of data quality control limits (RPD > 20%, outside sample precision, and both samples >5*RDL).
Bolded values for the field blank or trip blank indicate exceedances of data quality control limits (>5*RDL).

Appendix A, Table 3

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2020

Parameters	RDL	Lake D									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		24-Mar-20	24-Mar-20			Sample	Duplicate	24-Mar-20		24-Mar-20	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	38	30	23.53%	Yes	6	4	2	No	2	No
Calcium	0.1	7.0	5.8	18.75%	Yes	1	0.9	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	8.2	6.4	24.66%	Yes	1	1	<0.1	N/A	-	-
Carbonate (as CO_3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.2	0.2	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.6	1.5	6.45%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	1.8	1.6	11.76%	Yes	0.4	0.4	<0.1	N/A	-	-
Potassium	0.1	0.5	0.4	22.22%	No	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.6	0.4	40.00%	Yes	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.6	1.6	0.00%	Yes	0.4	0.4	0.1	No	0.1	No
Sodium, dissolved	0.1	1.7	1.6	6.06%	Yes	0.4	0.4	<0.1	N/A	-	-
Sulphate	0.2	1.0	1.2	18.18%	Yes	0.2	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.0023	0.0022	4.44%	No	0.001	0.001	0.0008	No	0.0024	No
Aluminum, dissolved	0.0005	0.0019	0.0014	30.30%	No	0.001	0.0008	0.0008	No	-	-
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.1	0.2	66.67%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0.00%	No	0.1	0.1	<0.1	N/A	-	-
Barium	0.0005	0.015	0.0072	**70.27%**	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.016	0.0072	**75.86%**	Yes	0.002	0.002	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	0.0004	66.67%	No	-	0.0003	0.0006	No	<0.0002	N/A
Copper, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	0.0002	No	-	-
Fluoride	0.01	0.04	0.04	0.00%	No	0.02	0.02	<0.01	N/A	<0.01	N/A
Iron	0.0005	1.09	0.054	**181.12%**	Yes	0.1	0.005	0.0006	No	<0.0005	N/A
Iron, dissolved	0.0005	1.04	0.050	**181.65%**	Yes	0.1	0.005	0.0014	No	-	-
Lead	0.0001	< 0.0001	0.0004	120.00%	No	-	0.0001	<0.0001	N/A	<0.0001	N/A
Lead, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	1.9	2.0	5.13%	Yes	0.5	0.3	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	1.9	1.9	0.00%	Yes	0.5	0.5	<0.1	N/A	-	-
Manganese	0.0005	0.20	0.0087	**183.33%**	Yes	0.02	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	0.0005	0.24	0.0082	**186.78%**	Yes	0.02	0.002	<0.0005	N/A	-	-
Mercury (ng/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Nickel	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.55	0.44	22.22%	Yes	0.1	0.1	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.57	0.46	21.36%	Yes	0.1	0.05	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.024	0.020	18.18%	Yes	0.004	0.003	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.026	0.019	31.11%	Yes	0.004	0.003	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Zinc	0.0005	0.0010	0.0015	40.00%	No	0.0008	0.001	0.0017	No	<0.0005	N/A
Zinc, dissolved	0.0005	0.0011	0.0016	37.04%	No	0.0007	0.0009	0.0013	No	-	-
Zirconium	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	0.84	0.48	**54.55%**	Yes	0.1	0.07	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	0.95	0.53	**56.76%**	Yes	0.1	0.08	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	7.4	7.0	5.56%	Yes	1	1	0.4	No	-	-
Carbon, Total Organic	0.2	6.3	7.0	10.53%	Yes	0.9	1	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	0.02	0.08	120.00%	No	0.01	0.03	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	0.03	0.10	107.69%	No	0.02	0.02	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	0.09	0.35	118.18%	No	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	0.13	0.44	108.77%	No	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	0.02	0.08	120.00%	No	0.01	0.03	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolve	0.01	0.03	0.10	107.69%	No	0.02	0.02	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	1.5	1.3	14.29%	Yes	0.2	0.2	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	0.02	<0.01	66.67%	No	0.01	-	<0.01	N/A	-	-
Physical Properties											
Apparent color (CU)	1	22	9	**83.87%**	Yes	3	3	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	6.92	7.01	1.29%	Yes	0.3	0.3	5.72	Yes	5.23	Yes
Specific Conductivity (µS/cm)	1	57	46	21.36%	Yes	8	7	<1	N/A	<1	N/A
Sum of ions	1	51	42	19.35%	Yes	8	6	2	No	2	No
Alkalinity, Total (as $CaCO_3$)	1	31	25	21.43%	Yes	5	4	2	No	2	No
Solids, Total dissolved	5	66	64	3.08%	Yes	20	20	<5	N/A	<5	N/A
Hardness, Total	1	24	21	13.33%	Yes	4	3	<1	N/A	<1	N/A
Solids, Total suspended	1	4	1	120.00%	No	2	1	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.6	0.6	**90.91%**	Yes	0.4	0.1	0.2	No	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	0.03	<0.02	40.00%	No	0.02	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	0.005	<0.005	0.00%	No	0.005	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 3

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2020

Parameters	RDL	Warner Rapids									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		07-Jun-20	07-Jun-20			Sample	Duplicate	07-Jun-20		07-Jun-20	
Inorganic Ions											
Bicarbonate (as HCO3)	1	13	15	14.29%	Yes	3	4	1	No	1	No
Calcium	0.1	2.2	2.2	0.00%	Yes	0.3	0.3	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	3.5	2.2	**45.61%**	Yes	0.5	0.3	<0.1	N/A	-	-
Carbonate (as CO3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.3	0.3	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	0.8	0.8	0.00%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	0.8	0.8	0.00%	Yes	0.1	0.1	<0.1	N/A	-	-
Potassium	0.1	0.5	0.5	0.00%	No	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.5	0.5	0.00%	No	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	0.1	No	0.1	No
Sodium, dissolved	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	<0.1	N/A	-	-
Sulphate	0.2	0.9	0.8	11.76%	No	0.2	0.2	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.034	0.035	2.90%	Yes	0.005	0.005	0.0031	Yes	0.0042	Yes
Aluminum, dissolved	0.0005	0.028	0.024	15.38%	Yes	0.004	0.004	0.0006	No	-	-
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.1	0.1	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	<0.1	0.00%	No	0.1	-	<0.1	N/A	-	-
Barium	0.0005	0.0057	0.0057	0.00%	Yes	0.001	0.001	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0056	0.0052	7.41%	Yes	0.001	0.001	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Fluoride	0.01	0.04	0.03	28.57%	No	0.02	0.01	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.56	0.55	1.80%	Yes	0.06	0.06	0.0011	No	<0.0005	N/A
Iron, dissolved	0.0005	0.37	0.29	**24.24%**	Yes	0.04	0.03	0.0011	No	-	-
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	0.0001	No	<0.0001	N/A
Lead, dissolved	0.0001	0.0001	<0.0001	0.00%	No	0.0001	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	1.2	1.2	0.00%	Yes	0.3	0.3	<0.1	N/A	-	-
Manganese	0.0005	0.022	0.022	0.00%	Yes	0.003	0.003	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	0.0005	0.012	0.011	8.70%	Yes	0.002	0.002	<0.0005	N/A	-	-
Mercury (ng/L)	1	1	2	66.67%	No	1	1	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Nickel	0.0001	0.0002	0.0001	66.67%	No	0.0001	0.0001	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.0001	0.0002	0.0002	0.00%	No	0.0001	0.0001	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.80	0.82	2.47%	Yes	0.2	0.2	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.82	0.74	10.26%	Yes	0.2	0.2	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.017	0.017	0.00%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.017	0.016	6.06%	Yes	0.002	0.002	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	0.0006	0.0005	18.18%	No	0.0003	0.0002	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.0002	0.0005	<0.0002	85.71%	No	0.0002	-	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Zinc	0.0005	< 0.0005	0.0008	46.15%	No	-	0.0007	0.0006	No	<0.0005	N/A
Zinc, dissolved	0.0005	0.0013	<0.0005	88.89%	No	0.0008	-	0.0009	No	-	-
Zirconium	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	0.001	<0.001	0.00%	No	0.001	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	0.02	<0.01	66.67%	No	0.01	-	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	8.2	7.7	6.29%	Yes	1	1	<0.2	N/A	-	-
Carbon, Total Organic	0.2	7.7	7.7	0.00%	Yes	1	1	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO3)	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO3), dissolved	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	0.26	0.30	14.29%	Yes	0.1	0.1	<0.05	N/A	0.06	No
Phosphorus, Total	0.01	0.01	<0.01	0.00%	No	0.01	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	0.01	<0.01	0.00%	No	0.01	-	<0.01	N/A	-	-
Physical Properties											
Apparent color (CU)	1	46	46	0.00%	Yes	7	7	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	6.81	7.08	3.89%	Yes	0.3	0.3	5.58	Yes	5.60	Yes
Specific Conductivity (µS/cm)	1	18	19	5.41%	Yes	4	5	<1	N/A	<1	N/A
Sum of ions	1	19	21	10.00%	Yes	5	3	1	No	1	No
Alkalinity, Total (as CaCO3)	1	11	12	8.70%	Yes	3	3	1	No	1	No
Solids, Total dissolved	5	44	35	22.78%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	9	9	0.00%	Yes	3	3	<1	N/A	<1	N/A
Solids, Total suspended	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.5	1.6	6.45%	Yes	0.4	0.4	0.1	No	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	0.007	<0.005	33.33%	No	0.005	-	<0.005	N/A	0.01	No
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	0.03	No

Appendix A, Table 3

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2020

Parameters	RDL	Jed Creek									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		27-Jul-20	27-Jul-20			Sample	Duplicate	27-Jul-20		27-Jul-20	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	16	10	46.15%	Yes	4	2	2	No	2	No
Calcium	0.1	2.4	2.4	0.00%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	2.5	2.5	0.00%	Yes	0.4	0.4	<0.1	N/A	-	-
Carbonate (as CO_3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.2	0.2	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	0.7	0.7	0.00%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	0.7	0.7	0.00%	Yes	0.1	0.1	<0.1	N/A	-	-
Potassium	0.1	0.4	0.4	0.00%	No	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.3	0.4	28.57%	No	0.1	0.2	<0.1	N/A	-	-
Sodium	0.1	1.0	1.0	0.00%	Yes	0.2	0.2	0.1	No	0.1	No
Sodium, dissolved	0.1	1.0	1.0	0.00%	Yes	0.2	0.2	<0.1	N/A	-	-
Sulphate	0.2	1.0	1.0	0.00%	No	0.2	0.2	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.040	0.041	2.47%	Yes	0.006	0.006	<0.0005	N/A	<0.0005	N/A
Aluminum, dissolved	0.0005	0.034	0.037	8.45%	Yes	0.005	0.006	<0.0005	N/A	-	-
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	0.1	0.1	0.00%	No	0.1	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0.00%	No	0.1	0.1	<0.1	N/A	-	-
Barium	0.0005	0.0095	0.0096	1.05%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0093	0.0092	1.08%	Yes	0.002	0.002	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	0.00001	0.00%	No	-	0.00001	0.00001	No	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Fluoride	0.01	0.02	0.02	0.00%	No	0.01	0.01	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.40	0.40	0.00%	Yes	0.04	0.04	<0.0005	N/A	<0.0005	N/A
Iron, dissolved	0.0005	0.28	0.26	7.41%	Yes	0.03	0.03	0.0006	No	-	-
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Lead, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	1.7	1.7	0.00%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	1.7	1.7	0.00%	Yes	0.4	0.4	<0.1	N/A	-	-
Manganese	0.0005	0.0090	0.0086	4.55%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	0.0005	0.0062	0.0063	1.60%	Yes	0.002	0.002	<0.0005	N/A	-	-
Mercury (ng/L)	1	2	2	0.00%	No	1	1	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	0.0005	No	-	-
Nickel	0.0001	0.0001	<0.0001	0.00%	No	0.0001	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.59	0.55	7.02%	Yes	0.1	0.1	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.59	0.55	7.02%	Yes	0.1	0.1	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.025	0.025	0.00%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.025	0.024	4.08%	Yes	0.004	0.004	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	0.0003	0.0004	28.57%	No	0.0002	0.0002	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.0002	0.0003	0.0002	40.00%	No	0.0002	0.0002	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Zinc	0.0005	0.0012	<0.0005	82.35%	No	0.0009	-	<0.0005	N/A	<0.0005	N/A
Zinc, dissolved	0.0005	< 0.0005	0.0013	88.89%	No	-	0.0008	<0.0005	N/A	-	-
Zirconium	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	0.01	0.02	66.67%	No	0.01	0.02	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	0.03	0.01	100.00%	No	0.02	0.01	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	6.8	7.1	4.32%	Yes	1	1	<0.2	N/A	-	-
Carbon, Total Organic	0.2	7.2	7.3	1.38%	Yes	1	1	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	0.30	0.25	18.18%	Yes	0.1	0.1	0.05	No	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Physical Properties											
Apparent color (CU)	1	58	57	1.74%	Yes	9	8	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	6.46	7.04	8.59%	Yes	0.2	0.3	5.53	Yes	5.60	Yes
Specific Conductivity (µS/cm)	1	16	17	6.06%	Yes	4	4	<1	N/A	<1	N/A
Sum of ions	1	22	16	31.58%	Yes	3	4	2	No	2	No
Alkalinity, Total (as $CaCO_3$)	1	13	8	**47.62%**	Yes	3	1	2	No	2	No
Solids, Total dissolved	5	25	21	17.39%	No	10	10	26	Yes	<5	N/A
Hardness, Total	1	9	9	0.00%	Yes	3	3	<1	N/A	<1	N/A
Solids, Total suspended	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Turbidity (NTU)	0.1	1.1	1.6	37.04%	Yes	0.3	0.4	0.1	No	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A

Appendix A, Table 3

QA/QC Results for Water Chemistry Data Collected in the Aquatic Study Area, 2020

Parameters	RDL	Forrest Lake Area 1									
		Sample	Duplicate	RPD	>5*RDL?[a]	Precision		QA/QC			
								Field Blank	>5*RDL?[a]	Trip Blank	>5*RDL?[a]
		25-Sep-2020	25-Sep-2020			Sample	Duplicate	25-Sep-2020		25-Sep-2020	
Inorganic Ions											
Bicarbonate (as HCO_3)	1	20	20	0.00%	Yes	3	3	2	No	<1	N/A
Calcium	0.1	3.5	3.6	2.82%	Yes	0.5	0.5	<0.1	N/A	<0.1	N/A
Calcium, dissolved	0.1	3.8	3.8	0.00%	Yes	0.6	0.6	0.1	No	-	-
Carbonate (as CO_3)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Chloride	0.1	0.6	0.6	0.00%	Yes	0.1	0.1	<0.1	N/A	<0.1	N/A
Hydroxide (as OH)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Magnesium	0.1	1.5	1.3	14.29%	Yes	0.4	0.3	<0.1	N/A	<0.1	N/A
Magnesium, dissolved	0.1	1.4	1.3	7.41%	Yes	0.4	0.3	0.3	No	-	-
Potassium	0.1	0.6	0.6	0.00%	Yes	0.2	0.2	<0.1	N/A	<0.1	N/A
Potassium, dissolved	0.1	0.6	0.6	0.00%	Yes	0.2	0.2	<0.1	N/A	-	-
Sodium	0.1	1.4	1.4	0.00%	Yes	0.4	0.4	0.2	No	0.2	No
Sodium, dissolved	0.1	1.4	1.5	6.90%	Yes	0.4	0.4	<0.1	N/A	-	-
Sulphate	0.2	1.4	1.4	0.00%	Yes	0.3	0.3	<0.2	N/A	<0.2	N/A
Metals											
Aluminum	0.0005	0.0025	0.0026	3.92%	Yes	0.001	0.001	0.0008	No	0.0018	No
Aluminum, dissolved	0.0005	0.0019	0.0021	10.00%	No	0.001	0.001	0.0012	No	-	-
Antimony	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Antimony, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Arsenic (µg/L)	0.1	< 0.1	0.1	0.00%	No	-	0.1	<0.1	N/A	<0.1	N/A
Arsenic, dissolved (µg/L)	0.1	0.1	<0.1	0.00%	No	0.1	-	<0.1	N/A	-	-
Barium	0.0005	0.0090	0.0092	2.20%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Barium, dissolved	0.0005	0.0087	0.0088	1.14%	Yes	0.002	0.002	<0.0005	N/A	-	-
Beryllium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Beryllium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Bismuth	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Bismuth, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Boron	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Boron, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Cadmium	0.00001	< 0.00001	0.00001	0.00%	No	-	0.00001	<0.00001	N/A	<0.00001	N/A
Cadmium, dissolved	0.00001	< 0.00001	<0.00001	0.00%	N/A	-	-	<0.00001	N/A	-	-
Cesium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Cesium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	No	-	-
Chromium	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Chromium, dissolved	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	-	-
Cobalt	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Cobalt, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Copper	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Copper, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	0.0004	No	-	-
Fluoride	0.01	0.04	0.04	0.00%	No	0.02	0.02	<0.01	N/A	<0.01	N/A
Iron	0.0005	0.031	0.026	17.54%	Yes	0.005	0.004	<0.0005	N/A	<0.0005	N/A
Iron, dissolved	0.0005	0.013	0.010	26.09%	Yes	0.002	0.002	<0.0005	N/A	-	-
Lead	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Lead, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Lithium (µg/L)	0.1	2.5	2.6	3.92%	Yes	0.4	0.4	<0.1	N/A	<0.1	N/A
Lithium, dissolved (µg/L)	0.1	2.5	2.6	3.92%	Yes	0.4	0.4	<0.1	N/A	-	-
Manganese	0.0005	0.0082	0.0082	0.00%	Yes	0.002	0.002	<0.0005	N/A	<0.0005	N/A
Manganese, dissolved	0.0005	0.0030	0.0030	0.00%	Yes	0.001	0.001	<0.0005	N/A	-	-
Mercury (ng/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Molybdenum	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Molybdenum, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Nickel	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Nickel, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Rubidium (µg/L)	0.05	0.58	0.60	3.39%	Yes	0.1	0.2	<0.05	N/A	<0.05	N/A
Rubidium, dissolved (µg/L)	0.05	0.57	0.52	9.17%	Yes	0.1	0.1	<0.05	N/A	-	-
Selenium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Selenium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Silver	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	<0.00005	N/A
Silver, dissolved	0.00005	< 0.00005	<0.00005	0.00%	N/A	-	-	<0.00005	N/A	-	-
Strontium	0.0005	0.030	0.030	0.00%	Yes	0.004	0.004	<0.0005	N/A	<0.0005	N/A
Strontium, dissolved	0.0005	0.030	0.030	0.00%	Yes	0.004	0.004	<0.0005	N/A	-	-
Tellurium (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
Tellurium, dissolved (µg/L)	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	-	-
Thallium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Thallium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Tin	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Tin, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Titanium	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	<0.0002	N/A
Titanium, dissolved	0.0002	< 0.0002	<0.0002	0.00%	N/A	-	-	<0.0002	N/A	-	-
Uranium (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	<0.1	N/A
Uranium, dissolved (µg/L)	0.1	< 0.1	<0.1	0.00%	N/A	-	-	<0.1	N/A	-	-
Vanadium	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	<0.0001	N/A
Vanadium, dissolved	0.0001	< 0.0001	<0.0001	0.00%	N/A	-	-	<0.0001	N/A	-	-
Zinc	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	<0.0005	N/A
Zinc, dissolved	0.0005	< 0.0005	<0.0005	0.00%	N/A	-	-	<0.0005	N/A	-	-
Zirconium	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	<0.001	N/A
Zirconium, dissolved	0.001	< 0.001	<0.001	0.00%	N/A	-	-	<0.001	N/A	-	-
Nutrients											
Ammonia (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Ammonia (as N), dissolved	0.01	< 0.01	0.01	0.00%	No	-	0.01	<0.01	N/A	-	-
Carbon, Organic dissolved	0.2	2.0	2.1	4.88%	Yes	0.5	0.5	<0.2	N/A	-	-
Carbon, Total Organic	0.2	2.1	2.1	0.00%	Yes	0.5	0.5	<0.2	N/A	<0.2	N/A
Nitrate (as N)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrate (as N), dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrate (NO_3)	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	<0.04	N/A
Nitrate (NO_3), dissolved	0.04	< 0.04	<0.04	0.00%	N/A	-	-	<0.04	N/A	-	-
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Nitrite+Nitrate-nitrogen, dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Nitrogen, Total Kjeldahl	0.05	0.18	0.20	10.53%	No	0.1	0.1	<0.05	N/A	<0.05	N/A
Phosphorus, Total	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A
Phosphorus, Total dissolved	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	-	-
Physical Properties											
Apparent color (CU)	1	4	3	28.57%	No	2	2	<1	N/A	-	-
Alkalinity, Phenolphthalein	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	<1	N/A
pH (pH units)	0.07	7.27	7.29	0.27%	Yes	0.3	0.3	5.38	Yes	5.53	Yes
Specific Conductivity (µS/cm)	1	30	32	6.45%	Yes	4	5	<1	N/A	<1	N/A
Sum of ions	1	29	29	0.00%	Yes	4	4	2	No	<1	N/A
Alkalinity, Total (as $CaCO_3$)	1	16	16	0.00%	Yes	4	4	2	No	<1	N/A
Solids, Total dissolved	5	30	30	0.00%	Yes	10	10	<5	N/A	<5	N/A
Hardness, Total	1	15	14	6.90%	Yes	4	4	<1	N/A	<1	N/A
Solids, Total suspended	1	< 1	<1	0.00%	N/A	-	-	<1	N/A	1	No
Turbidity (NTU)	0.1	0.7	0.7	0.00%	Yes	0.1	0.1	<0.1	N/A	-	-
Radionuclides											
Lead-210 (Bq/L)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	<0.02	N/A	<0.02	N/A
Polonium-210 (Bq/L)	0.005	< 0.005	<0.005	0.00%	N/A	-	-	<0.005	N/A	<0.005	N/A
Radium-226 (Bq/L)	0.005	0.006	<0.005	18.18%	No	0.005	-	<0.005	N/A	<0.005	N/A
Thorium-230 (Bq/L)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	<0.01	N/A	<0.01	N/A

RDL = Reporting Detection Limit; N/A = Not Applicable; dash = no data.
Relative Percent Difference (RPD) = | ((Duplicate - Sample)/((Duplicate + Sample)/2))*100 |.
For calculation of RPDs, values <RDL were set equal to the RDL.
a) Ranking of a "yes" used only if either value is >5*RDL.
Bolded values for the sample or duplicate indicate exceedances of data quality control limits (RPD > 20%, outside sample precision, and both samples >5*RDL).
Bolded values for the field blank or trip blank indicate exceedances of data quality control limits (>5*RDL).

Appendix A, Table 4

QA/QC Results for Sediment Chemistry and Physical Property Data Collected in the Aquatic Study Area, September/October 2018 and September 2019

Parameter	Broach Lake, Area 1 Station 3							Hodge Lake Area 2, Station 5							Patterson Lake North - West Basin Area 1, Station 3							Patterson Lake North - East Basin Area 3, Station 3						
	Sep 2018							Sep 2018							Sep 2018							Sep 2019						
	RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision		RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision		RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision		RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision	
						Sample	Duplicate						Sample	Duplicate						Sample	Duplicate						Sample	Duplicate
Inorganic Ions																												
Calcium	10	5200	4800	8.00%	Yes	500	500	10	760	940	21.18%	Yes	100	100	10	4400	4600	4.44%	Yes	400	500	10	1300	1300	17.14%	Yes	100	100
Magnesium	10	940	960	2.11%	Yes	100	100	10	260	290	10.91%	Yes	40	40	10	1800	1700	5.71%	Yes	200	200	10	400	380	5.94%	Yes	60	60
Potassium	10	760	680	11.11%	Yes	100	100	10	350	390	10.81%	Yes	50	60	10	1600	1600	0.00%	Yes	200	200	10	300	330	12.66%	Yes	40	30
Sodium	10	200	210	4.88%	Yes	30	30	10	80	80	0.00%	Yes	30	30	10	180	200	10.53%	Yes	40	30	10	20	40	133.33%	No	10	20
Metals																												
Aluminum	0.5	3790	3370	11.73%	Yes	400	300	0.5	1560	1720	9.76%	Yes	200	200	20	9300	8400	10.17%	Yes	900	800	0.5	3050	2730	6.06%	Yes	300	300
Antimony	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	0.2	0.2	0.00%	No	0.2	0.2	0.2	< 0.2	<0.2	0.00%	N/A	-	-
Arsenic	0.1	5.2	4.0	26.09%	Yes	0.8	0.6	0.1	1.0	1.1	9.52%	Yes	0.2	0.3	0.1	11	17	**42.86%**	Yes	1	2	0.1	2.8	3.3	27.78%	Yes	0.4	0.5
Barium	0.5	140	130	7.41%	Yes	10	10	0.5	29	30	3.39%	Yes	4	4	0.5	700	980	33.33%	Yes	70	100	0.5	72	92	**44.13%**	Yes	7	9
Beryllium	0.1	0.2	0.2	0.00%	No	0.1	0.1	0.1	< 0.1	0.1	0.00%	No	-	0.1	0.1	0.4	0.4	0.00%	No	0.1	0.1	0.1	0.2	0.2	0.00%	No	0.1	0.1
Boron	1	16	17	6.06%	Yes	4	4	1	3	5	50.00%	No	1	1	1	26	25	3.92%	Yes	4	4	1	10	10	14.29%	Yes	2	2
Cadmium	0.1	0.5	1.5	**100.00%**	Yes	0.1	0.4	0.1	0.2	0.2	0.00%	No	0.1	0.1	0.1	0.7	0.8	13.33%	Yes	0.1	0.1	0.1	0.1	0.1	0.00%	No	0.1	0.1
Cesium[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	<0.1	0.00%	No	0.1	-
Chromium	0.5	7.5	6.6	12.77%	Yes	2	2	0.5	2.7	3.5	25.81%	Yes	1	1	0.5	13	12	8.00%	Yes	2	2	0.5	5.9	6.8	2.41%	Yes	1	0.7
Cobalt	0.2	2.8	2.1	28.57%	Yes	0.7	0.5	0.2	0.9	1.0	10.53%	No	0.2	0.2	0.2	5.4	5.8	7.14%	Yes	0.8	0.9	0.2	3.2	2.2	3.51%	Yes	0.8	0.6
Copper	0.5	7.7	7.2	6.71%	Yes	2	2	0.5	1.6	2.2	31.58%	No	0.9	1	0.5	9.8	9.3	5.24%	Yes	2	2	0.5	2.6	2.2	6.25%	Yes	1	1
Iron	20	8400	6100	31.72%	Yes	800	600	20	5600	5500	1.80%	Yes	600	600	20	109000	116000	6.22%	Yes	10000	10000	20	56500	60600	27.38%	Yes	6000	6000
Lead	0.1	2.4	2.1	13.33%	Yes	0.4	0.3	0.1	2.3	2.4	4.26%	Yes	0.3	0.4	0.1	13	14	7.41%	Yes	1	1	0.1	3.1	3.2	5.00%	Yes	0.5	0.5
Manganese	0.5	350	320	8.96%	Yes	40	30	0.5	220	240	8.70%	Yes	20	20	20	17800	22100	21.55%	Yes	2000	2000	0.5	560	780	**88.89%**	Yes	80	100
Molybdenum	0.1	2.7	2.0	29.79%	Yes	0.4	0.3	0.1	0.1	0.5	133.33%	No	0.1	0.2	0.1	2.7	4.1	**41.18%**	Yes	0.4	0.6	0.1	0.9	1	8.00%	Yes	0.4	0.1
Nickel	0.1	10	8.8	12.77%	Yes	1	1	0.1	2.7	2.8	3.64%	Yes	0.4	0.4	0.1	14	13	7.41%	Yes	1	1	0.1	3.2	3.8	4.08%	Yes	0.5	0.4
Selenium	0.1	0.8	0.6	28.57%	Yes	0.3	0.2	0.1	0.1	0.2	66.67%	No	0.1	0.1	0.1	1.3	1.3	0.00%	Yes	0.3	0.3	0.1	0.3	0.2	28.57%	No	0.2	0.1
Silver	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	< 0.1	<0.1	0.00%	N/A	-	-
Strontium	0.5	62	68	9.23%	Yes	6	7	0.5	32	34	6.06%	Yes	5	5	0.5	64	69	7.52%	Yes	6	7	0.5	32	33	10.53%	Yes	5	5
Thallium	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-
Tin	0.1	0.1	0.2	66.67%	No	0.1	0.1	0.1	< 0.1	0.2	66.67%	No	-	0.1	0.1	0.4	0.4	0.00%	No	0.1	0.1	0.1	0.1	0.1	0.00%	No	0.1	0.1
Titanium	0.5	190	180	5.41%	Yes	20	20	0.5	95	100	5.13%	Yes	10	10	0.5	270	280	3.64%	Yes	30	30	0.5	140	110	6.90%	Yes	10	10
Uranium	0.1	0.3	0.3	0.00%	No	0.2	0.2	0.1	0.2	0.3	40.00%	No	0.1	0.2	0.1	1.9	2.2	14.63%	Yes	0.5	0.3	0.1	0.4	0.4	0.00%	No	0.2	0.2
Vanadium	0.1	8.8	7.6	14.63%	Yes	1	1	0.1	3.6	4.0	10.53%	Yes	0.5	0.6	0.1	21	20	4.88%	Yes	2	2	0.1	12	10	7.41%	Yes	1	1
Zinc	0.5	34	27	22.95%	Yes	5	4	0.5	9.8	11	11.54%	Yes	2	2	0.5	78	73	6.62%	Yes	8	7	0.5	26	24	6.90%	Yes	4	4
Nutrients																												
Carbon, Total Organic (%	0.01	22.9	22.8	0.44%	Yes	2	2	0.01	2.85	3.56	22.15%	Yes	0.3	0.4	0.01	14.7	14.6	0.68%	Yes	1	1	0.01	5.61	5.89	1.56%	Yes	0.6	0.6
Phosphorus, Total	10	560	560	0.00%	Yes	80	80	10	300	340	12.50%	Yes	40	50	10	4800	5200	8.00%	Yes	500	500	10	430	630	**50.00%**	Yes	40	60
Physical Properties																												
Clay (%)	0.01	2.7	2.7	0.00%	Yes	0.3	0.3	0.01	5.8	4.7	20.95%	Yes	0.6	0.5	0.01	5.3	10.6	**66.67%**	Yes	0.5	1	0.01	5.1	8	17.50%	Yes	0.5	0.8
Silt (%)	0.01	22.4	22.4	0.00%	Yes	2	2	0.01	28.8	27.9	3.17%	Yes	3	3	0.01	25.0	37.0	38.71%	Yes	2	4	0.01	35.6	67.8	8.36%	Yes	4	7
Fine sand (%)	0.01	36.4	33.1	9.50%	Yes	4	3	0.01	57.8	55.4	4.24%	Yes	6	6	0.01	37.5	35.6	5.20%	Yes	4	4	0.01	33.5	20.8	26.09%	Yes	3	2
Coarse sand (%)	0.01	38.6	41.8	7.96%	Yes	4	4	0.01	7.5	12.0	**46.15%**	Yes	0.8	1	0.01	32.3	16.7	**63.67%**	Yes	3	2	0.01	25.8	3.4	**117.95%**	Yes	2	0.3
Gravel (%)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	0.01	< 0.01	<0.01	0.00%	N/A	-	-	0.01	< 0.01	<0.01	0.00%	N/A	-	-	0.01	< 0.01	<0.01	0.00%	N/A	-	-
Loss on Ignition (%)	0	48.21	48.69	0.99%	Yes	-	-	0	6.41	7.67	17.90%	Yes	-	-	0	34.10	34.35	0.73%	Yes	-	-	0	13.95	14.52	5.03%	Yes	-	-
Moisture (%)	0.01	96.91	96.89	0.02%	Yes	10	10	0.01	70.11	76.53	8.76%	Yes	7	8	0.01	95.56	95.82	0.27%	Yes	10	10	0.01	84.45	86.18	0.18%	Yes	8	9
Radionuclides																												
Lead-210 (Bq/g)	0.04	< 0.04	0.04	0.00%	No	-	0.04	0.04	0.13	0.19	37.50%	No	0.05	0.06	0.04	0.68	0.80	16.22%	Yes	0.2	0.1	0.04	0.16	0.19	10.53%	No	0.06	0.06
Polonium-210 (Bq/g)	0.01	0.06	0.04	40.00%	No	0.02	0.02	0.01	0.16	0.18	11.76%	Yes	0.04	0.04	0.01	0.90	1.0	10.53%	Yes	0.1	0.1	0.01	0.17	0.22	14.29%	Yes	0.04	0.03
Radium-226 (Bq/g)	0.01	< 0.01	0.03	100.00%	No	-	0.02	0.01	< 0.01	0.03	100.00%	No	-	0.02	0.01	0.10	0.07	35.29%	Yes	0.02	0.04	0.01	0.05	0.06	22.22%	Yes	0.03	0.04
Thorium-230 (Bq/g)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	0.02	< 0.02	<0.02	0.00%	N/A	-	-	0.02	< 0.02	<0.02	0.00%	N/A	-	-	0.02	< 0.02	<0.02	0.00%	N/A	-	-

Appendix A, Table 4

QA/QC Results for Sediment Chemistry and Physical Property Data Collected in the Aquatic Study Area, September/October 2018 and September 2019

Parameter	Patterson Lake North - East Basin Area 3, Station 4							Clearwater River Area 2, Station 3							Clearwater River Area 2, Station 5						
	Sep 2019							Sep 2018							Sep 2018						
	RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision		RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision		RDL	Sample	Duplicate	RPD (%)	>5*RDL?[a]	Precision	
						Sample	Duplicate						Sample	Duplicate						Sample	Duplicate
Inorganic Ions																					
Calcium	10	1300	1300	0.00%	Yes	100	100	10	400	580	36.73%	Yes	60	90	10	4900	5600	13.33%	Yes	500	600
Magnesium	10	400	380	5.13%	Yes	60	60	10	120	180	40.00%	Yes	30	40	10	800	950	17.14%	Yes	100	100
Potassium	10	300	330	9.52%	Yes	40	30	10	180	380	**71.43%**	Yes	40	60	10	730	820	11.61%	Yes	100	100
Sodium	10	20	40	66.67%	No	10	20	10	60	90	40.00%	Yes	20	40	10	160	210	27.03%	Yes	40	30
Metals																					
Aluminum	0.5	3050	2730	11.07%	Yes	300	300	0.5	1120	1570	33.46%	Yes	100	200	0.5	4430	4800	8.02%	Yes	400	500
Antimony	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-
Arsenic	0.1	2.8	3.3	16.39%	Yes	0.4	0.5	0.1	1.4	1.8	25.00%	Yes	0.4	0.4	0.1	5.2	5.7	9.17%	Yes	0.8	0.8
Barium	0.5	72	92	24.39%	Yes	7	9	0.5	20	29	36.73%	Yes	3	4	0.5	94	110	15.69%	Yes	9	10
Beryllium	0.1	0.2	0.2	0.00%	No	0.1	0.1	0.1	0.1	0.2	66.67%	No	0.1	0.1	0.1	0.6	0.6	0.00%	Yes	0.1	0.1
Boron	1	10	10	0.00%	Yes	2	2	1	2	5	85.71%	No	1	1	1	14	16	13.33%	Yes	4	4
Cadmium	0.1	0.1	0.1	0.00%	No	0.1	0.1	0.1	0.3	0.8	90.91%	No	0.1	0.1	0.1	0.3	0.6	66.67%	No	0.1	0.1
Cesium[b]	0.1	0.1	<0.1	0.00%	No	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	0.5	5.9	6.8	14.17%	Yes	1	0.7	0.5	3.5	4.8	31.33%	Yes	1	1	0.5	16	17	6.06%	Yes	2	2
Cobalt	0.2	3.2	2.2	37.04%	Yes	0.8	0.6	0.2	0.3	0.4	28.57%	No	0.2	0.2	0.2	1.2	1.4	15.38%	Yes	0.2	0.2
Copper	0.5	2.6	2.2	16.67%	Yes	1	1	0.5	< 0.5	0.8	46.15%	No	-	0.6	0.5	2.5	5.1	68.42%	Yes	1	1
Iron	20	56500	60600	7.00%	Yes	6000	6000	20	7300	9500	26.19%	Yes	700	1000	20	46600	51800	10.57%	Yes	5000	5000
Lead	0.1	3.1	3.2	3.17%	Yes	0.5	0.5	0.1	1.3	1.7	26.67%	Yes	0.3	0.4	0.1	2.4	2.7	11.76%	Yes	0.4	0.4
Manganese	0.5	560	780	32.84%	Yes	80	100	0.5	58	55	5.31%	Yes	6	6	0.5	500	800	**46.15%**	Yes	50	80
Molybdenum	0.1	0.9	1.0	10.53%	Yes	0.4	0.1	0.1	< 0.1	0.2	66.67%	No	-	0.1	0.1	1.0	1.2	18.18%	Yes	0.2	0.3
Nickel	0.1	3.2	3.8	17.14%	Yes	0.5	0.4	0.1	0.4	0.6	40.00%	Yes	0.1	0.1	0.1	3.9	4.1	5.00%	Yes	0.6	0.6
Selenium	0.1	0.3	0.2	40.00%	No	0.2	0.1	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	0.3	0.3	0.00%	No	0.2	0.2
Silver	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	< 0.1	0.1	0.00%	No	-	0.1	0.1	< 0.1	<0.1	0.00%	N/A	-	-
Strontium	0.5	32	33	3.08%	Yes	5	5	0.5	25	28	11.32%	Yes	4	4	0.5	51	59	14.55%	Yes	5	6
Thallium	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-	0.2	< 0.2	<0.2	0.00%	N/A	-	-
Tin	0.1	0.1	0.1	0.00%	No	0.1	0.1	0.1	< 0.1	<0.1	0.00%	N/A	-	-	0.1	0.3	0.3	0.00%	No	0.1	0.1
Titanium	0.5	140	110	24.00%	Yes	10	10	0.5	70	88	22.78%	Yes	7	9	0.5	250	260	3.92%	Yes	20	30
Uranium	0.1	0.4	0.4	0.00%	No	0.2	0.2	0.1	0.2	0.3	40.00%	No	0.1	0.2	0.1	0.7	0.8	13.33%	Yes	0.2	0.3
Vanadium	0.1	12	10	18.18%	Yes	1	1	0.1	9.2	13	34.23%	Yes	1	1	0.1	53	54	1.87%	Yes	5	5
Zinc	0.5	26	24	8.00%	Yes	4	4	0.5	6.0	7.2	18.18%	Yes	2	2	0.5	20	24	18.18%	Yes	3	4
Nutrients																					
Carbon, Total Organic (%	0.01	5.61	5.89	4.87%	Yes	0.6	0.6	0.01	1.06	3.26	**101.85%**	Yes	0.1	0.3	0.01	18.4	19.4	5.29%	Yes	2	2
Phosphorus, Total	10	430	630	37.74%	Yes	40	60	10	140	210	40.00%	Yes	40	30	10	940	1000	6.19%	Yes	100	100
Physical Properties																					
Clay (%)	0.01	5.1	8.0	**44.27%**	Yes	0.5	0.8	0.01	8.5	10.3	19.15%	Yes	0.8	1	0.01	5.1	7.2	34.15%	Yes	0.5	0.7
Silt (%)	0.01	35.6	67.8	**62.28%**	Yes	4	7	0.01	30.2	42.0	32.69%	Yes	3	4	0.01	36.1	43.8	19.27%	Yes	4	4
Fine sand (%)	0.01	33.5	20.8	**46.78%**	Yes	3	2	0.01	27.5	33.7	20.26%	Yes	3	3	0.01	48.6	44.2	9.48%	Yes	5	4
Coarse sand (%)	0.01	25.8	3.4	**153.42%**	Yes	2	0.3	0.01	33.8	14.0	**82.85%**	Yes	3	1	0.01	10.2	4.8	**72.00%**	Yes	1	0.5
Gravel (%)	0.01	< 0.01	<0.01	0.00%	N/A	-	-	0.01	< 0.01	<0.01	0.00%	N/A	-	-	0.01	< 0.01	< 0.01	0.00%	N/A	-	-
Loss on Ignition (%)	0	13.95	14.52	4.00%	Yes	-	-	0	2.19	6.96	**104.26%**	Yes	-	-	0	37.92	40.02	5.39%	Yes	-	-
Moisture (%)	0.01	84.45	86.18	2.03%	Yes	8	9	0.01	43.43	62.33	35.74%	Yes	4	6	0.01	93.52	94.91	1.48%	Yes	9	9
Radionuclides																					
Lead-210 (Bq/g)	0.04	0.16	0.19	17.14%	No	0.06	0.06	0.04	< 0.04	<0.04	0.00%	N/A	-	-	0.04	0.33	0.32	3.08%	Yes	0.07	0.07
Polonium-210 (Bq/g)	0.01	0.17	0.22	25.64%	Yes	0.04	0.03	0.01	0.01	0.05	133.33%	No	0.01	0.02	0.01	0.28	0.32	13.33%	Yes	0.04	0.05
Radium-226 (Bq/g)	0.01	0.05	0.06	18.18%	Yes	0.03	0.04	0.01	< 0.01	0.03	100.00%	No	-	0.02	0.01	0.02	0.04	66.67%	No	0.02	0.03
Thorium-230 (Bq/g)	0.02	< 0.02	<0.02	0.00%	N/A	-	-	0.02	< 0.02	<0.02	0.00%	N/A	-	-	0.02	< 0.02	0.02	0.00%	No	-	0.02

RDL = Reporting Detection Limit; N/A = Not Applicable; dash = no data.

Relative Percent Difference (RPD) = | ((Duplicate - Sample)/((Duplicate + Sample)/2))*100 |.

For calculation of RPDs, values <RDL were set equal to the RDL.

Bolded values indicate exceedances of data quality control limits (RPD > 40%, outside sample precision, and both samples >5*RDL).

a) Ranking of a "yes" used only if either value is >5*RDL.

b) Cesium was not analyzed for until September 2019.

Appendix A, Table 5

Sorting Efficiency for Benthic Invertebrate Samples from the Aquatic Study Area, September/October 2018 and September 2019

Area	Sample	Number in First Sorting	Number in Re-Sorting	Sorting Efficiency (%)[a]
Beet Lake (2018)	1	400	11	97.3
Broach Lake (2018)	2	480	24	95.2
Forrest Lake Area 4 (2018)	3	1525	32	97.9
Lake G (2018)	2	5264	72	98.7
Lake H (2018)	4	16	0	100.0
Patterson Lake South Arm (2018)	2	917	8	99.1
Forrest Lake Area 3 (2019)	2	270	5	98.2
Average		**-**	**-**	**98.1**

a) Sorting efficiency (%) = [1-(number in re-sorting / (number in first sorting + number in re-sorting))] * 100.

Appendix A, Table 6

Subsample Count Accuracy for Benthic Invertebrate Samples from the Aquatic Study Area, September/October 2018

Area and Sample	Subsample[a]	Count	Sample Estimate[b]	Accuracy (%)[c]
Beet Lake Sample 3 (2018)	A	127	508	-1.6
	B	122	488	2.4
	C	120	480	4.0
	D	131	524	-4.8
Total actual number[d]		**500**	-	-

a) A subsample consisted of 1/4 of the sample.

b) Sample estimate = count x 4.

c) Accuracy (%) = ((total actual number - sample estimate) / total actual number) * 100.

d) Larger benthic invertebrates were counted in the whole sample without subsampling (n = 319 specimens); smaller invertebrates were counted in subsamples (n = 500 specimens).

Range in subsampling precision = 1.7 % to 8.4 % (average = 5.0%).

Appendix A, Table 7

Fish Chemistry QA/QC Screening Results for Large-Bodied Fish Collected in the Aquatic Study Area, August/October 2018 and August 2019

Sample Area	Species	Sample #	Matrix Description	Parameter	Revised Report Issued?
Broach Lake	Northern Pike	3	Fish Bone	Strontium	✓
	Northern Pike	3	Fish Bone	Cobalt	✓
	Northern Pike	3	Fish Bone	Zinc	✓
	Lake Whitefish	4	Fish Flesh	Iron	x
Hodge Lake	Northern Pike	4	Fish Flesh	Copper	x
Patterson Lake	Lake Whitefish	3	Fish Flesh	Zinc	x
Forrest Lake	Northern Pike	3	Fish Bone	Iron	✓
	Lake Whitefish	4	Fish Flesh	Barium	✓
Lloyd Lake Inlet	Lake Whitefish	5	Fish Flesh	Copper	✓
	Lake Whitefish	3	Fish Bone	Copper	✓

Appendix A, Table 8

Ageing QA/QC for Large-Bodied Fish Collected in the Aquatic Study Area, August/October 2018

Waterbody	Site	Date	Species/ Number	Length	Weight	Sex	Ageing Structure	Edge[a]	Confidence[b]	Age[c]
Beet Lake	GN4-1	2018-10-08	LW 003	41.2	1020	M	Otolith	++	6-7	14
	GN4-1	2018-10-08	LW 005	42.3	1050	M	Otolith	++	6	26
	GN4-1	2018-10-08	LW 006	43.0	1120	M	Otolith	++	7	17
	GN4-1	2018-10-08	LW 007	47.0	1480	M	Otolith	++	6	21
	GN4-1	2018-10-08	LW 008	45.8	1320	M	Otolith	++	7	20
	GN6-1	2018-10-09	NP 001	43.4	630	F	Cleithra	++	7	2
	GN6-1	2018-10-09	NP 002	46.3	860	M	Cleithra	++	7	2
Broach Lake	GN1-1	2018-10-09	NP 004	78.6	3720	F	Cleithra	++	6-7	6
	GN3-1	2018-10-11	LW 001	38.4	800	F	Otolith	+	6-7	7
	GN3-1	2018-10-11	LW 005	43.3	880	M	Otolith	++	6	25
	GN3-1	2018-10-11	LW 006	40.2	980	F	Otolith	+	7	7
	GN3-1	2018-10-11	LW 013	48.2	1240	F	Otolith	++	6	24
	GN3-1	2018-10-11	LW 014	40.3	1140	F	Otolith	++	7	20
	GN3-1	2018-10-11	NP 007	69.6	2540	F	Cleithra	++	6	5
	GN3-1	2018-10-11	NP 007	69.6	2540	F	Scales	++	6	4
	GN3-1	2018-10-11	NP 008	49.4	1040	F	Cleithra	++	6-7	2
	GN3-1	2018-10-11	NP 008	49.4	1040	F	Scales	++	6-7	2
	GN3-1	2018-10-11	NP 019	48.2	840	F	Cleithra	++	7	2
	GN3-1	2018-10-11	NP 020	55.4	1340	F	Cleithra	++	7	4
Clearwater River	AN1-1	2018-08-04	NP 001	51.9	940	F	Cleithra	++	7	6
	AN1-1	2018-08-04	NP 003	51.6	920	F	Cleithra	+	6-7	8
	GN1-1	2018-08-04	NP 001	44.1	620	F	Cleithra	++	7	3
	GN2-1	2018-08-04	NP 001	52.7	920	F	Cleithra	++	6-7	8
	GN3-1	2018-08-04	NP 001	49.6	760	M	Cleithra	+	7	6
Forrest Lake	GN5-1	2018-10-12	NP 001	57.3	1320	F	Cleithra	++	6-7	5
	HG1-1	2018-10-10	LW 001	35.0	1300	F	Otolith	++	7	19
	HG1-1	2018-10-10	LW 002	45.5	1420	F	Otolith	++	7	18
	HG1-1	2018-10-10	LW 003	45.2	1960	F	Otolith	+	7	26
	HG1-1	2018-10-10	LW 004	41.4	1080	F	Otolith	+	6	27
	HG1-1	2018-10-10	LW 005	40.4	960	F	Otolith	++	7	13
	HG1-1	2018-10-10	NP 006	54.4	1320	M	Cleithra	+	6-7	6
	HG2-1	2018-10-10	NP 002	53.8	1220	M	Cleithra	+	6-7	4
	HG3-1	2018-10-11	NP 017	62.5	2060	F	Cleithra	++	6-7	5
Lloyd Lake Inlet	HG1-1	2018-08-10	LW 019	46.1	1820	F	Otolith	+	7	12
	HG1-1	2018-08-10	LW 020	41.7	1120	M	Otolith	+	7	5
	HG1-1	2018-08-10	LW 021	40.2	1080	M	Otolith	+	7	5
	HG2-1	2018-08-11	LW 005	45.4	1260	F	Otolith	+	6-7	15
	HG2-1	2018-08-11	LW 006	44.5	1430	F	Otolith	+	6-7	15
	HG4-1	2018-08-12	NP 008	54.4	1020	M	Cleithra	+	6-7	6
	HG4-1	2018-08-12	NP 009	66.7	1960	M	Cleithra	+	7	7
	HG4-1	2018-08-12	NP 010	87.6	5120	M	Cleithra	++	6-7	10
	HG5-1	2018-08-12	NP 004	21.0	1060	M	Cleithra	+	6	6
	HG5-1	2018-08-12	NP 005	47.6	800	M	Cleithra	++	6-7	2
	HG5-1	2018-08-12	NP 005	47.6	800	M	Scales	++	7	2

Appendix A, Table 8

Ageing QA/QC for Large-Bodied Fish Collected in the Aquatic Study Area, August/October 2018

Waterbody	Site	Date	Species/ Number	Length	Weight	Sex	Ageing Structure	Edge[a]	Confidence[b]	Age[c]
Naomi Lake	GN3-1	2018-10-05	NP 001	54.7	1240	M	Cleithra	++	6-7	8
	GN6-1	2018-10-06	NP 005	53.8	1840	M	Cleithra	++	6	5
	GN6-1	2018-10-06	NP 006	46.5	760	F	Cleithra	++	6-7	3
	GN7-1	2018-10-06	LW 001	43.5	1080	M	Otolith	++	6-7	13
	GN7-1	2018-10-06	LW 004	40.8	1000	M	Otolith	++	7	18
	GN7-1	2018-10-06	LW 006	42.0	1060	M	Otolith	+	7	12
	GN7-1	2018-10-06	LW 007	44.0	1200	F	Otolith	++	6-7	22
	GN7-1	2018-10-06	LW 008	42.3	1140	M	Otolith	+	7	14
	GN8-1	2018-10-08	NP 005	33.4	420	M	Cleithra	++	7	2
	GN8-1	2018-10-08	NP 006	49.2	920	F	Cleithra	++	6-7	5
Patterson Lake	GN10-1	2018-10-11	LW 002	38.0	660	M	Otolith	+	6-7	11
	GN10-1	2018-10-11	NP 001	59.2	1580	M	Cleithra	+	6-7	6
	GN12-1	2018-10-12	LW 001	33.8	440	M	Otolith	++	7	12
	GN13-1	2018-10-12	LW 001	40.2	760	F	Otolith	+	7	13
	GN13-1	2018-10-12	LW 002	39.5	840	F	Otolith	+	6-7	12
	GN13-1	2018-10-12	LW 003	35.2	520	F	Otolith	+	6-7	13
	GN24-1	2018-10-10	NP 001	49.5	840	M	Cleithra	++	7	2
	GN26-1	2018-10-10	NP 001	49.3	760	F	Cleithra	++	6-7	2
	GN26-1	2018-10-10	NP 002	66.8	2220	M	Cleithra	++	6-7	5
	GN32-1	2018-10-12	NP 001	81.4	4220	F	Cleithra	++	7	7
	GN36-1	2018-10-12	LW 001	43.1	800	F	Otolith	++	7	26
	GN9-1	2018-10-11	LW 002	48.2	1260	F	Otolith	++	7	22

a) Edge = edge condition outside the last visible annulus; this is an indication of how much growth has occurred on the edge of the tissue outside the last visible annulus this year.

b) Confidence = confidence on a scale of 1 to 10 (7 indicates confidence with the age assessed; 6 means that something was seen to give some concern; 5 is a fairly low confidence in the age assessed).

c) Age = final assessed age.

AN = angling; GN = gillnet; HG = half standard gang of gillnets; LW = lake whitefish; NP = northern pike; F = female; M = male; + = some new growth showing on the edge of the tissue outside the last complete annulus. Generally less than half of the growth in the previous year; ++ = considerable new growth outside of the last visible complete annulus. Generally greater than 50% of the previous year's full growth.

Shading indicates duplicate ageing for QA/QC purposes.

APPENDIX B

SRC SHEETS AND QA/QC REPORTS

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
143-111 Research Drive, Saskatoon, SK Canada S7N 3R2

T: 306-933-6932 **F:** 306-933-7922
Toll-free: 1-800-240-8808
E: analytical@src.sk.ca

www.src.sk.ca/analytical

SRC Group # 2018-6585

Jun 18, 2018

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Jun-05-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2018-6585

Jun 18, 2018

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Jun-05-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

20699 CLEARV 05/21/2018 13:48 3008_FB_201805_WS *WATER*
20700 CLEARV 05/21/2018 13:48 3008_QAQC_201805_WS *WATER*
20701 BEETCK 05/21/2018 14:30 BEETCK_201805_WS *WATER*

Analyte	Units	20699	20700	20701
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	1±1	27±4	32±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.7±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.62±0.8	7.47±0.7	7.54±0.8
Specific conductivity	uS/cm	<1	31±5	34±5
Sum of ions	mg/L	1±1	36±5	42±6
Total alkalinity	mg/L	1±1	22±3	26±4
Total hardness	mg/L	<1	13±3	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.05±0.03
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05	0.32±0.2	0.16±0.1
Mercury	ng/L	<1	<1	1±1
Organic carbon	mg/L	<0.2	2.8±0.7	2.1±0.5
Organic carbon, dissolved	mg/L	0.4±0.3	3.0±0.8	2.4±0.6
Fluoride	mg/L	0.02±0.01	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	<5	34±10	42±10
Total suspended solids	mg/L	<1	2±1	2±1
Turbidity	NTU	<0.1	1.1±0.3	0.6±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	<0.1	3.1±0.5	3.7±0.6
Magnesium	mg/L	<0.1	1.2±0.3	1.4±0.4
Potassium	mg/L	<0.1	0.6±0.2	0.6±0.2
Sodium	mg/L	<0.1	1.5±0.4	1.7±0.4
Sulfate	mg/L	<0.2	1.4±0.3	1.6±0.4
Aluminum	mg/L	0.010±0.002	0.013±0.002	0.0068±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1

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CanNorth, Canada North Environmental Services Limited

20699 CLEARV 05/21/2018 13:48 3008_FB_201805_WS *WATER*
20700 CLEARV 05/21/2018 13:48 3008_QAQC_201805_WS *WATER*
20701 BEETCK 05/21/2018 14:30 BEETCK_201805_WS *WATER*

Analyte	Units	20699	20700	20701
Lab Section 2 (ICP)				
Barium	mg/L	<0.0005	0.0080±0.002	0.0092±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	<0.0005	0.24±0.02	0.090±0.009
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	<0.0005	0.015±0.002	0.012±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.028±0.004	0.030±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0011±0.0008	0.0011±0.0008
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 20699
This sample was reanalyzed for Aluminum and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 20701
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the

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SRC Group # 2018-6585

Jun 18, 2018

CanNorth, Canada North Environmental Services Limited recommended 48 hours.

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SRC Group # 2018-6585

Jun 18, 2018

CanNorth, Canada North Environmental Services Limited

20702	**BEETLK 05/23/2018 13:00 BEETLK_201805_WS *WATER***
20703	**BROALK-1 05/25/2018 12:30 BROALK-1_201805_WS *WATER***
20704	**CLEARV 05/21/2018 13:48 CLEARV_201805_WS *WATER***

Analyte	Units	20702	20703	20704
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	29±4	27±4	22±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.4±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.53±0.8	7.49±0.7	7.52±0.8
Specific conductivity	uS/cm	36±5	31±5	31±5
Sum of ions	mg/L	39±6	36±5	31±5
Total alkalinity	mg/L	24±4	22±3	18±4
Total hardness	mg/L	15±4	13±3	13±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.20±0.1	0.24±0.1	0.29±0.1
Mercury	ng/L	2±1	3±2	1±1
Organic carbon	mg/L	1.7±0.5	1.6±0.5	2.8±0.7
Organic carbon, dissolved	mg/L	1.9±0.6	1.9±0.6	3.2±0.8
Fluoride	mg/L	0.06±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	42±10	41±10	45±10
Total suspended solids	mg/L	2±1	2±1	2±1
Turbidity	NTU	0.7±0.1	0.5±0.1	1.1±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	3.8±0.6	3.4±0.5	3.4±0.5
Magnesium	mg/L	1.4±0.4	1.2±0.3	1.2±0.3
Potassium	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.7±0.4	1.6±0.4	1.5±0.4
Sulfate	mg/L	1.6±0.4	1.9±0.4	1.3±0.3
Aluminum	mg/L	0.0044±0.001	0.0058±0.001	0.014±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.010±0.002	0.014±0.002	0.0082±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.01±0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005

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SRC Group # 2018-6585

Jun 18, 2018

CanNorth, Canada North Environmental Services Limited

20702 BEETLK 05/23/2018 13:00 BEETLK_201805_WS *WATER*
20703 BROALK-1 05/25/2018 12:30 BROALK-1_201805_WS *WATER*
20704 CLEARV 05/21/2018 13:48 CLEARV_201805_WS *WATER*

Analyte	Units	20702	20703	20704
Lab Section 2 (ICP)				
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.095±0.01	0.036±0.005	0.25±0.02
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.025±0.004	0.016±0.002	0.016±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.035±0.005	0.028±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0003±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 20703
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 20704
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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20705	**FORRLK-1 05/23/2018 12:00 FORRLK-1_201805_WS *WATER***
20706	**FORRLKN 05/23/2018 10:40 FORRLKN_201805_WS *WATER***
20707	**JEDCK 05/22/2018 11:30 JEDCK_201805_WS *WATER***

Analyte	Units	20705	20706	20707
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	32±5	34±5	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.9±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.53±0.8	7.66±0.8	7.20±0.7
Specific conductivity	uS/cm	33±5	40±6	16±4
Sum of ions	mg/L	42±6	45±7	21±3
Total alkalinity	mg/L	26±4	28±4	12±3
Total hardness	mg/L	14±4	17±4	8±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.18±0.1	0.11±0.08	0.18±0.1
Mercury	ng/L	1±1	<1	2±1
Organic carbon	mg/L	2.2±0.6	1.3±0.5	4.2±0.6
Organic carbon, dissolved	mg/L	2.4±0.6	1.4±0.5	4.6±0.7
Fluoride	mg/L	0.06±0.02	0.07±0.02	0.04±0.02
Total dissolved solids	mg/L	45±10	43±10	38±10
Total suspended solids	mg/L	1±1	<1	2±1
Turbidity	NTU	0.4±0.1	0.2±0.1	1.0±0.2
Lab Section 2 (ICP)				
Calcium	mg/L	3.7±0.6	4.1±0.6	2.1±0.3
Magnesium	mg/L	1.3±0.3	1.6±0.4	0.7±0.1
Potassium	mg/L	0.6±0.2	0.8±0.3	0.5±0.2
Sodium	mg/L	1.6±0.4	2.0±0.3	1.0±0.2
Sulfate	mg/L	1.6±0.4	1.8±0.4	1.2±0.3
Aluminum	mg/L	0.012±0.002	0.0037±0.001	0.026±0.004
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0088±0.002	0.0075±0.002	0.0082±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005

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20705 FORRLK-1 05/23/2018 12:00 FORRLK-1_201805_WS *WATER*
20706 FORRLKN 05/23/2018 10:40 FORRLKN_201805_WS *WATER*
20707 JEDCK 05/22/2018 11:30 JEDCK_201805_WS *WATER*

Analyte	Units	20705	20706	20707
Lab Section 2 (ICP)				
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.054±0.005	0.018±0.003	0.51±0.05
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.0086±0.002	0.0078±0.002	0.013±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.031±0.005	0.024±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0004±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0003±0.0002
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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20708 LAKEG 05/24/2018 09:45 LAKEG_201805_WS *WATER*
20709 LAKEH 05/24/2018 12:30 LAKEH_201805_WS *WATER*
20710 LLOYLKI 05/27/2018 13:00 LLOYLKI_201805_WS *WATER*

Analyte	Units	20708	20709	20710
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	32±5	32±5	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1±0.1	0.2±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.38±0.7	7.57±0.8	7.34±0.7
Specific conductivity	uS/cm	26±4	30±4	22±3
Sum of ions	mg/L	39±6	39±6	24±4
Total alkalinity	mg/L	26±4	26±4	14±4
Total hardness	mg/L	12±3	13±3	10±2
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.85±0.2	0.75±0.2	0.33±0.2
Mercury	ng/L	2±1	2±1	3±2
Organic carbon	mg/L	6.2±0.9	6.8±1	4.5±0.7
Organic carbon, dissolved	mg/L	6.6±1	7.8±1	4.9±0.7
Fluoride	mg/L	0.05±0.02	0.06±0.02	0.05±0.02
Total dissolved solids	mg/L	84±20	44±10	47±10
Total suspended solids	mg/L	4±2	4±2	2±1
Turbidity	NTU	2.1±0.3	1.2±0.3	1.2±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	2.5±0.4	3.0±0.4	2.6±0.4
Magnesium	mg/L	1.3±0.3	1.3±0.3	0.9±0.1
Potassium	mg/L	0.5±0.2	0.8±0.3	0.6±0.2
Sodium	mg/L	1.6±0.4	1.7±0.4	1.3±0.3
Sulfate	mg/L	1.3±0.3	0.4±0.2	1.1±0.3
Aluminum	mg/L	0.010±0.002	0.014±0.002	0.048±0.007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0074±0.002	0.0011±0.0007	0.0059±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	0.00001±0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005

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20708 LAKEG 05/24/2018 09:45 LAKEG_201805_WS *WATER*
20709 LAKEH 05/24/2018 12:30 LAKEH_201805_WS *WATER*
20710 LLOYLKI 05/27/2018 13:00 LLOYLKI_201805_WS *WATER*

Analyte	Units	20708	20709	20710
Lab Section 2 (ICP)				
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.50±0.05	0.14±0.01	0.37±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.015±0.002	0.013±0.002	0.031±0.005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	<0.0001	0.0001±0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.019±0.003	0.010±0.002	0.023±0.003
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Zinc	mg/L	0.0021±0.001	0.0008±0.0007	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.005±0.005	<0.005
Radium-226	Bq/L	0.009±0.006	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 20709
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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CanNorth, Canada North Environmental Services Limited

20711	**LLOYLKO 05/27/2018 12:00 LLOYLKO_201805_WS *WATER***
20712	**NAOMLK-1 05/21/2018 11:30 NAOMLK-1_201805_WS *WATER***
20713	**PATTLKE 05/22/2018 16:00 PATTLKE_201805_WS *WATER***

Analyte	Units	20711	20712	20713
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	18±4	15±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.8±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.34±0.7	7.21±0.7	7.57±0.8
Specific conductivity	uS/cm	21±3	16±4	31±5
Sum of ions	mg/L	25±4	21±3	36±5
Total alkalinity	mg/L	15±4	12±3	22±3
Total hardness	mg/L	10±2	8±3	14±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.35±0.2	0.31±0.1	0.12±0.08
Mercury	ng/L	2±1	6±2	2±1
Organic carbon	mg/L	4.3±0.6	5.8±0.9	1.9±0.6
Organic carbon, dissolved	mg/L	4.6±0.7	6.0±0.9	2.1±0.5
Fluoride	mg/L	0.05±0.02	0.03±0.01	0.06±0.02
Total dissolved solids	mg/L	40±10	32±10	36±10
Total suspended solids	mg/L	3±1	3±1	<1
Turbidity	NTU	1.3±0.3	2.4±0.4	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	2.4±0.4	2.2±0.3	3.5±0.5
Magnesium	mg/L	0.9±0.1	0.6±0.1	1.3±0.3
Potassium	mg/L	0.6±0.2	0.5±0.2	0.5±0.2
Sodium	mg/L	1.3±0.3	1.0±0.2	1.4±0.4
Sulfate	mg/L	1.0±0.2	0.7±0.2	1.6±0.4
Aluminum	mg/L	0.010±0.002	0.029±0.004	0.0082±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0061±0.002	0.0085±0.002	0.010±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005

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20711 LLOYLKO 05/27/2018 12:00 LLOYLKO_201805_WS *WATER*
20712 NAOMLK-1 05/21/2018 11:30 NAOMLK-1_201805_WS *WATER*
20713 PATTLKE 05/22/2018 16:00 PATTLKE_201805_WS *WATER*

Analyte	Units	20711	20712	20713
Lab Section 2 (ICP)				
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.34±0.03	1.26±0.1	0.021±0.003
Lead	mg/L	<0.0001	0.0003±0.0001	<0.0001
Manganese	mg/L	0.034±0.005	0.068±0.007	0.030±0.004
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0002±0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.022±0.003	0.022±0.003	0.030±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0005±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0001±0.0001	0.0003±0.0002	<0.0001
Zinc	mg/L	<0.0005	0.0037±0.002	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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20714 PATTLKN 05/22/2018 14:00 PATTLKN_201805_WS *WATER*
20715 PATTLKNE 05/22/2018 13:00 PATTLKNE_201805_WS *WATER*
20716 WARNRP 05/29/2018 10:00 WARNRP_201805_WS *WATER*

Analyte	Units	20714	20715	20716
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	27±4	20±3	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.4±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.57±0.8	7.47±0.7	7.34±0.7
Specific conductivity	uS/cm	30±4	23±3	22±3
Sum of ions	mg/L	36±5	27±4	24±4
Total alkalinity	mg/L	22±3	16±4	14±4
Total hardness	mg/L	13±3	11±3	9±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.09	<0.04
Nitrate as nitrogen	mg/L	<0.01	0.02±0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.02±0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.11±0.08	0.20±0.1	0.68±0.2
Mercury	ng/L	2±1	4±2	2±1
Organic carbon	mg/L	1.9±0.6	2.6±0.6	6.3±0.9
Organic carbon, dissolved	mg/L	2.4±0.6	2.8±0.7	6.4±1
Fluoride	mg/L	0.05±0.02	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	38±10	35±10	44±10
Total suspended solids	mg/L	<1	2±1	4±2
Turbidity	NTU	0.4±0.1	1.1±0.3	1.4±0.4
Lab Section 2 (ICP)				
Calcium	mg/L	3.4±0.5	2.8±0.4	2.2±0.3
Magnesium	mg/L	1.2±0.3	0.9±0.1	0.9±0.1
Potassium	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.3±0.3	1.3±0.3
Sulfate	mg/L	1.6±0.4	1.3±0.3	1.1±0.3
Aluminum	mg/L	0.016±0.002	0.0098±0.002	0.023±0.003
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0095±0.002	0.010±0.002	0.0053±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005

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SRC Group # 2018-6585

Jun 18, 2018

CanNorth, Canada North Environmental Services Limited

20714 PATTLKN 05/22/2018 14:00 PATTLKN_201805_WS *WATER*
20715 PATTLKNE 05/22/2018 13:00 PATTLKNE_201805_WS *WATER*
20716 WARNRP 05/29/2018 10:00 WARNRP_201805_WS *WATER*

Analyte	Units	20714	20715	20716
Lab Section 2 (ICP)				
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.019±0.003	0.22±0.02	0.51±0.05
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.028±0.004	0.030±0.004	0.028±0.004
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0002±0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.027±0.004	0.019±0.003
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0007±0.0003
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0003±0.0002
Zinc	mg/L	<0.0005	<0.0005	0.0014±0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 20714
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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Jun 18, 2018

CanNorth, Canada North Environmental Services Limited

20717 CLEARV 05/21/2018 13:48 3008_TB_201805_WS *WATER*

Analyte	Units	20717
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	4±2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.61±0.8
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	4±2
Total alkalinity	mg/L	3±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	0.01±0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0008±0.0006
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002

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SRC Group # 2018-6585

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CanNorth, Canada North Environmental Services Limited

20717 CLEARV 05/21/2018 13:48 3008_TB_201805_WS *WATER*

Analyte	Units	20717
Lab Section 2 (ICP)		
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 20717
This sample was reanalyzed for Total alkalinity. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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This report was generated for samples included in SRC Group # 2018-6585

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0518
Ammonia as nitrogen	mg/L	1.65	1.64
Ammonia as nitrogen	mg/L	4.77	4.46
Antimony	mg/L	0.0500	0.0472
Arsenic	mg/L	50.0	49.9
Barium	mg/L	0.0500	0.0494
Beryllium	mg/L	0.0500	0.0487
Boron	mg/L	0.0500	0.0477
Cadmium	mg/L	0.0500	0.0487
Calcium	mg/L	63.4	61.2
Chloride	mg/L	6.85	7.95
Chromium	mg/L	0.0500	0.0499
Cobalt	mg/L	0.0500	0.0499
Copper	mg/L	0.0500	0.0495
Fluoride	mg/L	1.83	1.87
Iron	mg/L	0.0500	0.0492
Lead	mg/L	0.0500	0.0502
Lead-210	Bq/L	20.9	19.7
Lead-210	Bq	7.94	8.61
Magnesium	mg/L	16.5	16.2
Manganese	mg/L	0.0500	0.0500
Mercury	ng/L	49.4	51.8
Molybdenum	mg/L	0.0500	0.0487
Nickel	mg/L	0.0500	0.0500
Nitrite+Nitrate nitrogen	mg/L	1.28	1.30
Nitrite+Nitrate nitrogen	mg/L	6.10	6.42
Nitrite+Nitrate nitrogen	mg/L	1.28	1.34
Nitrite+Nitrate nitrogen	mg/L	6.10	6.62
Organic carbon	mg/L	18.4	19.8
Organic carbon	mg/L	19.1	19.0
Organic carbon	mg/L	0.22	<0.2

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QC Analysis	Units	Target Value	Obtained Value
pH	pH units	7.00	7.12
Phosphorus	mg/L	5.00	5.16
Polonium-210	Bq/L	21.0	18.3
Polonium-210	Bq	0.794	0.724
Potassium	mg/L	163	159
Radium-226	Bq/L	21.4	18.8
Radium-226	Bq	2.13	2.23
Selenium	mg/L	0.0500	0.0496
Silver	mg/L	0.0500	0.0488
Sodium	mg/L	100	97.5
Specific conductivity	uS/cm	192	186
Strontium	mg/L	0.0500	0.0502
Sulfate	mg/L	150	144
Thallium	mg/L	0.0500	0.0504
Thorium-230	Bq/L	20.5	19.5
Thorium-232	Bq	0.203	0.206
Tin	mg/L	0.0500	0.0457
Titanium	mg/L	0.0500	0.0516
Total alkalinity	mg/L	250	253
Total dissolved solids	mg/L	100	103
Total dissolved solids	mg/L	100	110
Total Kjeldahl nitrogen	mg/L	1.88	1.87
Total Kjeldahl nitrogen	mg/L	1.88	1.74
Total suspended solids	mg/L	100	90.1
Total suspended solids	mg/L	100	90.4
Turbidity	NTU	2.43	2.63
Uranium	mg/L	50.0	49.2
Vanadium	mg/L	0.0500	0.0494
Zinc	mg/L	0.0500	0.0496

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	20700	<0.00005	<0.00005
Silver	mg/L	20706	<0.00005	<0.00005
Aluminum	mg/L	20700	0.013	0.013
Aluminum	mg/L	20706	0.0037	0.0042
Arsenic	ug/L	20700	0.1	0.1
Arsenic	ug/L	20706	0.1	0.2
Boron	mg/L	20700	<0.01	<0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Boron	mg/L	20706	<0.01	<0.01
Barium	mg/L	20700	0.0080	0.0082
Barium	mg/L	20706	0.0075	0.0077
Beryllium	mg/L	20700	<0.0001	<0.0001
Beryllium	mg/L	20706	<0.0001	<0.0001
Calcium	mg/L	20699	<0.1	<0.1
Calcium	mg/L	20717	<0.1	<0.1
Calcium	mg/L	20764	<0.1	<0.1
Cadmium	mg/L	20700	<0.00001	0.00001
Cadmium	mg/L	20706	0.00001	0.00001
Chloride	mg/L	20699	<0.1	<0.1
Chloride	mg/L	20708	0.1	0.1
Chloride	mg/L	20717	<0.1	<0.1
Cobalt	mg/L	20700	<0.0001	<0.0001
Cobalt	mg/L	20706	<0.0001	<0.0001
Chromium	mg/L	20700	<0.0005	<0.0005
Chromium	mg/L	20706	<0.0005	<0.0005
Copper	mg/L	20700	<0.0002	<0.0002
Copper	mg/L	20706	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	20699	0.5	0.4
Organic carbon, dissolved	mg/L	20705	2.5	2.5
Organic carbon, dissolved	mg/L	20708	6.6	7.0
Organic carbon, dissolved	mg/L	20709	7.8	6.8
Fluoride	mg/L	20699	0.02	0.02
Fluoride	mg/L	20700	0.06	0.06
Fluoride	mg/L	20709	0.06	0.05
Iron	mg/L	20700	0.24	0.24
Iron	mg/L	20706	0.018	0.018
Mercury	ng/L	20589	5	5
Potassium	mg/L	20699	<0.1	<0.1
Potassium	mg/L	20717	<0.1	<0.1
Potassium	mg/L	20764	<0.1	<0.1
Magnesium	mg/L	20699	<0.1	<0.1
Magnesium	mg/L	20717	<0.1	<0.1
Magnesium	mg/L	20764	<0.1	<0.1
Manganese	mg/L	20700	0.015	0.015
Manganese	mg/L	20706	0.0078	0.0077
Molybdenum	mg/L	20700	<0.0001	<0.0001
Molybdenum	mg/L	20706	<0.0001	<0.0001
Sodium	mg/L	20699	<0.1	<0.1
Sodium	mg/L	20717	<0.1	<0.1
Sodium	mg/L	20764	<0.1	<0.1
Ammonia as nitrogen	mg/L	20631	0.66	0.64
Ammonia as nitrogen	mg/L	20704	<0.01	<0.01
Ammonia as nitrogen	mg/L	20716	<0.01	<0.01
Nickel	mg/L	20700	<0.0001	<0.0001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Nickel	mg/L	20706	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	20675	0.33	0.33
Nitrite+Nitrate as nitrogen	mg/L	20703	<0.01	<0.01
Nitrate as nitrogen	mg/L	20704	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	20714	<0.01	<0.01
Nitrate as nitrogen	mg/L	20717	<0.01	<0.01
Phosphorus	mg/L	20700	<0.01	<0.01
Phosphorus	mg/L	20706	<0.01	<0.01
Lead	mg/L	20700	<0.0001	<0.0001
Lead	mg/L	20706	<0.0001	<0.0001
Lead-210	Bq/L	20701	<0.02	<0.02
Lead-210	Bq/L	20715	<0.02	<0.02
pH	pH units	20699	5.62	5.68
pH	pH units	20700	7.47	7.51
pH	pH units	20709	7.57	7.62
Polonium-210	Bq/L	20379	0.005	<0.005
Polonium-210	Bq/L	20701	<0.005	<0.005
Polonium-210	Bq/L	20715	<0.005	<0.005
Radium-226	Bq/L	20699	<0.005	<0.005
Radium-226	Bq/L	20713	<0.005	<0.005
Radium-226	Bq/L	20717	<0.005	<0.005
Antimony	mg/L	20700	<0.0002	<0.0002
Antimony	mg/L	20706	<0.0002	<0.0002
Selenium	mg/L	20700	<0.0001	<0.0001
Selenium	mg/L	20706	<0.0001	<0.0001
Tin	mg/L	20700	<0.0001	<0.0001
Tin	mg/L	20706	<0.0001	<0.0001
Sulfate	mg/L	20699	<0.2	<0.2
Sulfate	mg/L	20717	<0.2	<0.2
Sulfate	mg/L	20764	<0.2	<0.2
Specific conductivity	uS/cm	20699	<1	<1
Specific conductivity	uS/cm	20700	31	30
Specific conductivity	uS/cm	20709	30	30
Strontium	mg/L	20700	0.028	0.028
Strontium	mg/L	20706	0.031	0.031
Thorium-230	Bq/L	20700	<0.01	<0.01
Thorium-230	Bq/L	20714	<0.01	<0.01
Titanium	mg/L	20700	<0.0002	0.0003
Titanium	mg/L	20706	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	20567	<0.05	<0.05
Total Kjeldahl nitrogen	mg/L	20700	0.25	0.32
Total Kjeldahl nitrogen	mg/L	20702	0.18	0.20
Total Kjeldahl nitrogen	mg/L	20727	1.8	1.4
Thallium	mg/L	20700	<0.0002	<0.0002
Thallium	mg/L	20706	<0.0002	<0.0002
Organic carbon	mg/L	20699	<0.2	<0.2

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Organic carbon	mg/L	20708	6.2	6.4
Organic carbon	mg/L	20724	18	18
Total alkalinity	mg/L	20699	1	<1
Total alkalinity	mg/L	20700	22	22
Total alkalinity	mg/L	20709	26	24
P. alkalinity	mg/L	20773	7	10
Total suspended solids	mg/L	20524	1	1
Total suspended solids	mg/L	20701	2	2
Total suspended solids	mg/L	20713	<1	<1
Turbidity	NTU	20700	1.08	1.11
Turbidity	NTU	20709	1.15	1.26
Uranium	ug/L	20700	<0.1	<0.1
Uranium	ug/L	20706	<0.1	<0.1
Vanadium	mg/L	20700	0.0002	0.0002
Vanadium	mg/L	20706	<0.0001	<0.0001
Zinc	mg/L	20700	0.0011	0.0010
Zinc	mg/L	20706	<0.0005	<0.0005

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	98
Ammonia as nitrogen	110
Antimony	80
Arsenic	102
Barium	100
Beryllium	102
Boron	97
Cadmium	104
Calcium	100
Chloride	105
Chromium	103
Cobalt	103
Copper	107
Fluoride	112
Iron	104
Lead	102
Magnesium	100
Manganese	102

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Spike Analysis	Percent Recovery
Mercury	94
Molybdenum	99
Nickel	105
Nitrite+Nitrate nitrogen	110
Nitrite+Nitrate nitrogen	104
Organic carbon	110
Organic Carbon, dissolved	110
Phosphorus	101
Potassium	99
Selenium	104
Silver	101
Sodium	101
Strontium	102
Sulfate	97
Thallium	102
Tin	90
Titanium	98
Total Kjeldahl nitrogen	97
Total Kjeldahl nitrogen	94
Uranium	97
Vanadium	102
Zinc	108

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-10241

Sep 13, 2018

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-20-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-10241

Sep 13, 2018

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-20-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

32826	**JEDCK 08/03/2018 09:20 JEDCK_201807_WS *WATER***
32827	**LAKEG 08/07/2018 13:05 LAKEG_201807_WS *WATER***
32828	**LAKEH 08/06/2018 07:58 LAKEH_201807_WS *WATER***

Analyte	Units	32826	32827	32828
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	13±3	27±4	23±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.3±0.1	<0.1	0.2±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.08±0.7	7.16±0.7	7.37±0.7
Specific conductivity	uS/cm	20±3	33±5	32±5
Sum of ions	mg/L	19±5	36±5	31±5
Total alkalinity	mg/L	11±3	22±3	19±5
Total hardness	mg/L	9±3	15±4	14±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.25±0.1	1.0±0.2	0.67±0.2
Mercury	ng/L	1±1	3±2	8±3
Organic carbon	mg/L	4.8±0.7	8.2±1	7.5±1
Organic carbon, dissolved	mg/L	5.0±0.8	8.2±1	7.6±1
Fluoride	mg/L	0.04±0.02	0.05±0.02	0.06±0.02
Total dissolved solids	mg/L	39±10	50±10	35±10
Total suspended solids	mg/L	<1	6±2	3±1
Turbidity	NTU	0.3±0.1	1.1±0.3	0.7±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	2.6±0.4	3.4±0.5	3.3±0.5
Magnesium	mg/L	0.7±0.1	1.6±0.4	1.5±0.4
Potassium	mg/L	0.4±0.2	0.6±0.2	0.8±0.3
Sodium	mg/L	1.2±0.3	1.8±0.4	1.8±0.4
Sulfate	mg/L	1.2±0.3	1.1±0.3	0.2±0.2
Aluminum	mg/L	0.016±0.002	0.0047±0.001	0.015±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	<0.1	0.2±0.1
Barium	mg/L	0.0098±0.002	0.0079±0.002	0.0011±0.0007

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SRC Group # 2018-10241

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CanNorth, Canada North Environmental Services Limited

32826 JEDCK 08/03/2018 09:20 JEDCK_201807_WS *WATER*
32827 LAKEG 08/07/2018 13:05 LAKEG_201807_WS *WATER*
32828 LAKEH 08/06/2018 07:58 LAKEH_201807_WS *WATER*

Analyte	Units	32826	32827	32828
Lab Section 2 (ICP)				
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	0.01±0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0002±0.0002	<0.0002	<0.0002
Iron	mg/L	0.25±0.02	0.26±0.03	0.12±0.01
Lead	mg/L	<0.0001	<0.0001	0.0002±0.0001
Manganese	mg/L	0.0060±0.002	0.024±0.004	0.021±0.003
Molybdenum	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.028±0.004	0.024±0.004	0.012±0.002
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	0.0003±0.0002	0.0021±0.0003
Titanium	mg/L	0.0003±0.0002	<0.0002	0.0006±0.0003
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0014±0.001	<0.0005	0.0011±0.0008
Phosphorus	mg/L	<0.01	0.01±0.01	0.02±0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.01±0.006	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32826
This sample was reanalyzed for Zinc. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 32828
This sample was reanalyzed for Tin. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2018-10241

Sep 13, 2018

CanNorth, Canada North Environmental Services Limited

32829	**LLOYLKI 08/09/2018 12:21 LLOYLKI_201807_WS *WATER***
32830	**LLOYLKO 08/09/2018 15:20 LLOYLKO_201807_WS *WATER***
32831	**MIRRRV 08/04/2018 09:45 MIRRRV_201807_WS *WATER***

Analyte	Units	32829	32830	32831
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	17±4	16±4	13±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.6±0.1	0.9±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.19±0.7	7.22±0.7	7.06±0.7
Specific conductivity	uS/cm	24±4	25±4	20±3
Sum of ions	mg/L	25±4	24±4	20±3
Total alkalinity	mg/L	14±4	13±3	11±3
Total hardness	mg/L	11±3	12±3	10±2
Ammonia as nitrogen	mg/L	0.04±0.02	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.30±0.1	0.34±0.2	0.34±0.2
Mercury	ng/L	7±2	<1	<1
Organic carbon	mg/L	4.2±0.6	4.7±0.7	4.4±0.7
Organic carbon, dissolved	mg/L	4.6±0.7	4.8±0.7	4.4±0.7
Fluoride	mg/L	0.05±0.02	0.05±0.02	0.04±0.02
Total dissolved solids	mg/L	41±10	37±10	39±10
Total suspended solids	mg/L	2±1	3±1	5±2
Turbidity	NTU	0.8±0.1	0.4±0.1	0.7±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	2.9±0.4	3.0±0.4	2.6±0.4
Magnesium	mg/L	1.0±0.2	1.0±0.2	0.8±0.1
Potassium	mg/L	0.5±0.2	0.5±0.2	0.3±0.1
Sodium	mg/L	1.4±0.4	1.4±0.4	1.2±0.3
Sulfate	mg/L	1.1±0.3	1.1±0.3	0.8±0.2
Aluminum	mg/L	0.0048±0.001	0.0052±0.001	0.015±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0049±0.001	0.0051±0.001	0.0046±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2018-10241

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CanNorth, Canada North Environmental Services Limited

32829 LLOYLKI 08/09/2018 12:21 LLOYLKI_201807_WS *WATER*
32830 LLOYLKO 08/09/2018 15:20 LLOYLKO_201807_WS *WATER*
32831 MIRRRV 08/04/2018 09:45 MIRRRV_201807_WS *WATER*

Analyte	Units	32829	32830	32831
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.27±0.03	0.27±0.03	0.74±0.07
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.024±0.004	0.026±0.004	0.024±0.004
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	<0.0001	0.0001±0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.024±0.004	0.025±0.004	0.025±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0015±0.0004	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0006±0.0003
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	0.02±0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32829
This sample was reanalyzed for Tin. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2018-10241

Sep 13, 2018

CanNorth, Canada North Environmental Services Limited

32832	**NAOMLK-1 08/03/2018 15:10 NAOMLK-1_201807_WS *WATER***
32833	**PATTLKE 08/02/2018 12:00 PATTLKE_201807_WS *WATER***
32834	**PATTLKN 08/02/2018 14:55 PATTLKN_201807_WS *WATER***

Analyte	Units	32832	32833	32834
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	15±4	27±4	22±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.5±0.1	0.5±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.03±0.7	7.35±0.7	7.26±0.7
Specific conductivity	uS/cm	20±3	31±5	30±4
Sum of ions	mg/L	21±3	36±5	31±5
Total alkalinity	mg/L	12±3	22±3	18±4
Total hardness	mg/L	10±2	15±4	14±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.40±0.2	0.17±0.1	0.16±0.1
Mercury	ng/L	2±1	5±2	3±2
Organic carbon	mg/L	6.5±1	1.8±0.5	1.9±0.6
Organic carbon, dissolved	mg/L	6.9±1	2.1±0.5	2.1±0.5
Fluoride	mg/L	0.03±0.01	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	41±10	41±10	46±10
Total suspended solids	mg/L	4±2	2±1	2±1
Turbidity	NTU	0.8±0.1	0.2±0.1	0.2±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	2.8±0.4	3.8±0.6	3.7±0.6
Magnesium	mg/L	0.8±0.1	1.3±0.3	1.3±0.3
Potassium	mg/L	0.5±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.1±0.3	1.5±0.4	1.4±0.4
Sulfate	mg/L	0.7±0.2	1.6±0.4	1.5±0.3
Aluminum	mg/L	0.014±0.002	0.0021±0.001	0.0023±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0066±0.002	0.0089±0.002	0.0094±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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32832 NAOMLK-1 08/03/2018 15:10 NAOMLK-1_201807_WS *WATER*
32833 PATTLKE 08/02/2018 12:00 PATTLKE_201807_WS *WATER*
32834 PATTLKN 08/02/2018 14:55 PATTLKN_201807_WS *WATER*

Analyte	Units	32832	32833	32834
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.64±0.06	0.011±0.002	0.030±0.004
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.032±0.005	0.0051±0.001	0.021±0.003
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.030±0.004	0.029±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0002±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	0.2±0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0020±0.001	0.0010±0.0008
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32833
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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CanNorth, Canada North Environmental Services Limited

32835 PATTLKNE 08/03/2018 09:45 PATTLKNE_201807_WS *WATER*
32836 JEDCK 08/03/2018 09:20 3008_QAQC_201807_WS *WATER*
32837 BEETCK 08/03/2018 16:04 BEETCK_201807_WS *WATER*

Analyte	Units	32835	32836	32837
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	17±4	12±3	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.3±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.10±0.7	7.08±0.7	7.33±0.7
Specific conductivity	uS/cm	25±4	19±5	36±5
Sum of ions	mg/L	24±4	18±4	37±6
Total alkalinity	mg/L	14±4	10±2	22±3
Total hardness	mg/L	12±3	10±2	17±4
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.27±0.1	0.21±0.1	0.23±0.1
Mercury	ng/L	3±2	<1	<1
Organic carbon	mg/L	2.6±0.6	4.6±0.7	2.3±0.6
Organic carbon, dissolved	mg/L	2.9±0.7	4.9±0.7	2.4±0.6
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.06±0.02
Total dissolved solids	mg/L	33±10	35±10	46±10
Total suspended solids	mg/L	3±1	2±1	2±1
Turbidity	NTU	0.9±0.1	0.3±0.1	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.0±0.4	2.6±0.4	4.2±0.6
Magnesium	mg/L	1.0±0.2	0.8±0.1	1.5±0.4
Potassium	mg/L	0.5±0.2	0.4±0.2	0.7±0.2
Sodium	mg/L	1.3±0.3	1.1±0.3	1.7±0.4
Sulfate	mg/L	1.2±0.3	1.1±0.3	1.6±0.4
Aluminum	mg/L	0.0038±0.001	0.015±0.002	0.0062±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.011±0.002	0.0095±0.002	0.0080±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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CanNorth, Canada North Environmental Services Limited

32835 PATTLKNE 08/03/2018 09:45 PATTLKNE_201807_WS *WATER*
32836 JEDCK 08/03/2018 09:20 3008_QAQC_201807_WS *WATER*
32837 BEETCK 08/03/2018 16:04 BEETCK_201807_WS *WATER*

Analyte	Units	32835	32836	32837
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.57±0.06	0.25±0.02	0.044±0.007
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.13±0.01	0.0057±0.001	0.0077±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.027±0.004	0.031±0.005
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	0.0015±0.001	<0.0005	<0.0005
Phosphorus	mg/L	0.01±0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.009±0.006	0.01±0.006	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2018-10241

Sep 13, 2018

CanNorth, Canada North Environmental Services Limited

32838	**BEETLK 08/03/2018 14:06 BEETLK_201807_WS *WATER***
32839	**BROALK-1 08/05/2018 13:00 BROALK-1_201807_WS *WATER***
32840	**CLEARV 08/03/2018 15:47 CLEARV_201807_WS *WATER***

Analyte	Units	32838	32839	32840
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	26±4	21±3	29±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.4±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.32±0.7	7.36±0.7	7.28±0.7
Specific conductivity	uS/cm	37±6	31±5	31±5
Sum of ions	mg/L	36±5	30±4	38±6
Total alkalinity	mg/L	21±3	17±4	24±4
Total hardness	mg/L	16±4	14±4	14±4
Ammonia as nitrogen	mg/L	<0.01	0.02±0.02	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.17±0.1	0.19±0.1	0.25±0.1
Mercury	ng/L	<1	2±1	<1
Organic carbon	mg/L	1.8±0.5	1.7±0.5	3.2±0.8
Organic carbon, dissolved	mg/L	2.1±0.5	1.9±0.6	3.5±0.9
Fluoride	mg/L	0.06±0.02	0.05±0.02	0.06±0.02
Total dissolved solids	mg/L	44±10	43±10	40±10
Total suspended solids	mg/L	2±1	2±1	2±1
Turbidity	NTU	0.4±0.1	0.2±0.1	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	4.0±0.6	3.6±0.5	3.6±0.5
Magnesium	mg/L	1.6±0.4	1.2±0.3	1.3±0.3
Potassium	mg/L	0.7±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.7±0.4	1.5±0.4	1.5±0.4
Sulfate	mg/L	1.7±0.4	1.9±0.4	1.3±0.3
Aluminum	mg/L	0.0036±0.001	0.0016±0.0009	0.010±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.5±0.2	0.2±0.1
Barium	mg/L	0.0097±0.002	0.014±0.002	0.0068±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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32838 BEETLK 08/03/2018 14:06 BEETLK_201807_WS *WATER*
32839 BROALK-1 08/05/2018 13:00 BROALK-1_201807_WS *WATER*
32840 CLEARV 08/03/2018 15:47 CLEARV_201807_WS *WATER*

Analyte	Units	32838	32839	32840
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.054±0.005	0.026±0.004	0.18±0.02
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.022±0.003	0.0079±0.002	0.014±0.002
Molybdenum	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.035±0.005	0.029±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0005±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Zinc	mg/L	<0.0005	0.0012±0.0009	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.01±0.006	0.005±0.005	0.008±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32838
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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32841 CLEARV_MF1 08/04/2018 08:42 CLEARV_MF1_201807_WS *WATER*
32842 CLEARV_MF2 08/04/2018 09:12 CLEARV_MF2_201807_WS *WATER*
32843 FORRLK-1 08/03/2018 13:38 FORRLK-1_201807_WS *WATER*

Analyte	Units	32841	32842	32843
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	26±4	21±3	22±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.7±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.17±0.7	7.03±0.7	7.26±0.7
Specific conductivity	uS/cm	24±4	21±3	33±5
Sum of ions	mg/L	34±5	28±4	31±5
Total alkalinity	mg/L	21±3	17±4	18±4
Total hardness	mg/L	12±3	11±3	14±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.29±0.1	0.28±0.1	0.20±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	3.7±0.9	4.2±0.6	2.2±0.6
Organic carbon, dissolved	mg/L	3.8±1	4.3±0.6	2.6±0.6
Fluoride	mg/L	0.05±0.02	0.04±0.02	0.05±0.02
Total dissolved solids	mg/L	42±10	38±10	37±10
Total suspended solids	mg/L	2±1	5±2	2±1
Turbidity	NTU	0.3±0.1	0.4±0.1	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.0±0.4	2.8±0.4	3.7±0.6
Magnesium	mg/L	1.1±0.3	0.9±0.1	1.3±0.3
Potassium	mg/L	0.5±0.2	0.4±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.2±0.3	1.5±0.4
Sulfate	mg/L	1.1±0.3	0.9±0.2	1.5±0.3
Aluminum	mg/L	0.0097±0.002	0.016±0.002	0.0060±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0074±0.002	0.0057±0.001	0.0083±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00002±0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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32841 CLEARV_MF1 08/04/2018 08:42 CLEARV_MF1_201807_WS *WATER*
32842 CLEARV_MF2 08/04/2018 09:12 CLEARV_MF2_201807_WS *WATER*
32843 FORRLK-1 08/03/2018 13:38 FORRLK-1_201807_WS *WATER*

Analyte	Units	32841	32842	32843
Lab Section 2 (ICP)				
Copper	mg/L	0.0005±0.0003	<0.0002	<0.0002
Iron	mg/L	0.31±0.03	0.66±0.07	0.039±0.006
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.019±0.003	0.025±0.004	0.0082±0.002
Molybdenum	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel	mg/L	0.0002±0.0001	0.0001±0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.026±0.004	0.030±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	0.0004±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	0.1±0.1
Vanadium	mg/L	0.0001±0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	0.0038±0.002	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	0.02±0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.009±0.006	0.006±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32843
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2018-10241

Sep 13, 2018

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32844	**FORRLKN 08/03/2018 12:40 FORRLKN_201807_WS *WATER***
32845	**HODGLK 08/11/2018 15:20 HODGLK_201807_WS *WATER***
32846	**WARNRP 08/13/2018 09:30 WARNRP_201807_WS *WATER***

Analyte	Units	32844	32845	32846
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	28±4	10±2	12±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	2.0±0.3	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.37±0.7	7.01±0.7	7.18±0.7
Specific conductivity	uS/cm	40±6	20±3	25±4
Sum of ions	mg/L	39±6	18±4	20±3
Total alkalinity	mg/L	23±3	8±1	10±2
Total hardness	mg/L	18±4	10±2	12±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.12±0.08	0.15±0.09	0.21±0.1
Mercury	ng/L	<1	2±1	<1
Organic carbon	mg/L	1.2±0.4	2.0±0.5	5.2±0.8
Organic carbon, dissolved	mg/L	1.5±0.5	2.2±0.6	5.4±0.8
Fluoride	mg/L	0.07±0.02	0.03±0.01	0.05±0.02
Total dissolved solids	mg/L	44±10	28±10	42±10
Total suspended solids	mg/L	2±1	2±1	2±1
Turbidity	NTU	0.2±0.1	0.3±0.1	1.1±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	4.4±0.7	2.7±0.4	3.1±0.5
Magnesium	mg/L	1.6±0.4	0.7±0.1	1.1±0.3
Potassium	mg/L	0.8±0.3	0.3±0.1	0.5±0.2
Sodium	mg/L	2.0±0.3	1.0±0.2	1.4±0.4
Sulfate	mg/L	1.7±0.4	1.1±0.3	1.0±0.2
Aluminum	mg/L	0.0030±0.001	0.0020±0.001	0.0075±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	<0.1	0.2±0.1
Barium	mg/L	0.0077±0.002	0.0068±0.002	0.0043±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	0.01±0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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32844 FORRLKN 08/03/2018 12:40 FORRLKN_201807_WS *WATER*
32845 HODGLK 08/11/2018 15:20 HODGLK_201807_WS *WATER*
32846 WARNRP 08/13/2018 09:30 WARNRP_201807_WS *WATER*

Analyte	Units	32844	32845	32846
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.012±0.002	0.012±0.002	0.53±0.05
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.0041±0.001	0.0050±0.001	0.017±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.061±0.006	0.022±0.003
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	0.0007±0.0002	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.005±0.005	0.009±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 32844
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0515
Ammonia as nitrogen	mg/L	1.65	1.54
Ammonia as nitrogen	mg/L	4.54	4.40
Antimony	mg/L	0.0500	0.0484
Arsenic	mg/L	50.0	50.1
Barium	mg/L	0.0493	0.0492
Beryllium	mg/L	0.0500	0.0505
Boron	mg/L	0.0500	0.0493
Cadmium	mg/L	0.0482	0.0490
Calcium	mg/L	63.4	62.3
Chloride	mg/L	6.85	7.04
Chromium	mg/L	0.0500	0.0503
Cobalt	mg/L	0.0500	0.0503
Copper	mg/L	0.0500	0.0500
Copper	mg/L	0.0500	0.0502
Fluoride	mV	55.0	59.8
Fluoride	mg/L	1.88	1.90
Iron	mg/L	0.0500	0.0500
Lead	mg/L	0.0488	0.0484
Lead-210	Bq/L	19.2	22.4
Lead-210	Bq	7.94	7.78
Lead-210	Bq/L	19.2	23.6
Lead-210	Bq	1.99	1.96
Magnesium	mg/L	16.5	16.6
Manganese	mg/L	0.0500	0.0500
Molybdenum	mg/L	0.0490	0.0487
Nickel	mg/L	0.0500	0.0503
Nickel	mg/L	0.0500	0.0506
Nitrite+Nitrate nitrogen	mg/L	1.28	1.17
Nitrite+Nitrate nitrogen	mg/L	6.46	5.91
Organic carbon	mg/L	28.2	29.0

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QC Analysis	Units	Target Value	Obtained Value
Organic carbon	mg/L	0.22	0.20
pH	pH units	7.00	7.01
Phosphorus	mg/L	5.16	5.19
Polonium-210	Bq/L	21.0	19.3
Polonium-210	Bq	0.079	0.064
Potassium	mg/L	163	163
Radium-226	Bq/L	21.4	19.8
Radium-226	Bq	2.13	2.27
Radium-226	Bq/L	21.4	22.5
Radium-226	Bq	0.427	0.430
Radium-226	Bq/L	21.4	21.4
Radium-226	Bq	2.13	2.20
Selenium	mg/L	0.0493	0.0494
Silver	mg/L	0.0500	0.0494
Sodium	mg/L	100	97.1
Specific conductivity	uS/cm	192	186
Strontium	mg/L	0.0490	0.0482
Sulfate	mg/L	150	147
Thallium	mg/L	0.0500	0.0492
Thorium-230	Bq/L	20.5	18.7
Thorium-230	Bq/L	20.5	18.3
Thorium-230	Bq/L	20.5	21.6
Thorium-232	Bq	0.203	0.180
Thorium-232	Bq	0.203	0.190
Thorium-232	Bq	0.203	0.198
Tin	mg/L	0.0500	0.0472
Titanium	mg/L	0.0500	0.0503
Total alkalinity	mg/L	250	252
Total dissolved solids	mg/L	100	98
Total dissolved solids	mg/L	100	108
Total dissolved solids	mg/L	100	109
Total Kjeldahl nitrogen	mg/L	1.88	1.83
Total Kjeldahl nitrogen	mg/L	1.88	2.04
Total suspended solids	mg/L	100	112
Total suspended solids	mg/L	100	110
Turbidity	NTU	12.6	12.8
Uranium	mg/L	50.0	49.3
Vanadium	mg/L	0.0500	0.0505
Zinc	mg/L	0.0500	0.0494
Zinc	mg/L	0.0500	0.0494

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Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	32833	<0.00005	<0.00005
Silver	mg/L	32842	<0.00005	<0.00005
Silver	mg/L	32889	<0.00005	<0.00005
Aluminum	mg/L	32833	0.0021	0.0021
Aluminum	mg/L	32842	0.016	0.015
Aluminum	mg/L	32889	0.030	0.030
Arsenic	ug/L	32833	0.1	0.1
Arsenic	ug/L	32842	0.2	0.2
Arsenic	ug/L	32889	0.2	0.2
Boron	mg/L	32833	<0.01	<0.01
Boron	mg/L	32842	<0.01	<0.01
Boron	mg/L	32889	0.03	0.03
Barium	mg/L	32833	0.0089	0.0088
Barium	mg/L	32842	0.0057	0.0058
Barium	mg/L	32889	0.054	0.053
Beryllium	mg/L	32833	<0.0001	<0.0001
Beryllium	mg/L	32842	<0.0001	<0.0001
Beryllium	mg/L	32889	<0.0001	<0.0001
Calcium	mg/L	32588	5.1	5.2
Calcium	mg/L	32597	19	19
Calcium	mg/L	32838	4.0	4.2
Calcium	mg/L	32969	2.9	3.0
Calcium	mg/L	32979	12	12
Cadmium	mg/L	32833	<0.00001	<0.00001
Cadmium	mg/L	32842	<0.00001	<0.00001
Cadmium	mg/L	32889	0.00001	0.00001
Chloride	mg/L	32600	1.1	1.1
Chloride	mg/L	32831	0.9	0.9
Chloride	mg/L	32839	0.4	0.4
Cobalt	mg/L	32833	<0.0001	<0.0001
Cobalt	mg/L	32842	<0.0001	<0.0001
Cobalt	mg/L	32889	<0.0001	<0.0001
Chromium	mg/L	32833	<0.0005	<0.0005
Chromium	mg/L	32842	<0.0005	<0.0005
Chromium	mg/L	32889	<0.0005	<0.0005
Copper	mg/L	32833	<0.0002	<0.0002
Copper	mg/L	32842	<0.0002	<0.0002
Copper	mg/L	32889	0.0013	0.0013
Copper	mg/L	32971	<0.002	<0.002

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Sep 13, 2018

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Organic carbon, dissolved	mg/L	32826	5.0	5.0
Organic carbon, dissolved	mg/L	32828	7.6	7.5
Organic carbon, dissolved	mg/L	32842	4.3	4.3
Fluoride	mg/L	32587	0.02	0.02
Fluoride	mg/L	32588	0.06	0.06
Fluoride	mg/L	32589	<0.01	<0.01
Fluoride	mg/L	32843	0.05	0.05
Iron	mg/L	32833	0.011	0.010
Iron	mg/L	32842	0.66	0.65
Iron	mg/L	32889	0.0056	0.0055
Mercury	ng/L	32826	1	<1
Mercury	ng/L	32836	<1	<1
Potassium	mg/L	32588	1.0	1.0
Potassium	mg/L	32597	2.6	2.6
Potassium	mg/L	32838	0.7	0.7
Potassium	mg/L	32969	1.9	1.9
Potassium	mg/L	32979	2.2	2.2
Magnesium	mg/L	32588	2.2	2.2
Magnesium	mg/L	32597	2.6	2.6
Magnesium	mg/L	32838	1.6	1.5
Magnesium	mg/L	32969	1.8	1.8
Magnesium	mg/L	32979	5.4	5.4
Manganese	mg/L	32833	0.0051	0.0052
Manganese	mg/L	32842	0.025	0.025
Manganese	mg/L	32889	<0.0005	<0.0005
Molybdenum	mg/L	32833	<0.0001	<0.0001
Molybdenum	mg/L	32842	<0.0001	<0.0001
Molybdenum	mg/L	32889	0.0015	0.0015
Sodium	mg/L	32588	2.9	2.9
Sodium	mg/L	32597	12	12
Sodium	mg/L	32838	1.7	1.7
Sodium	mg/L	32969	3.1	3.2
Sodium	mg/L	32979	4.0	4.0
Ammonia as nitrogen	mg/L	32826	<0.01	<0.01
Ammonia as nitrogen	mg/L	32836	<0.01	<0.01
Ammonia as nitrogen	mg/L	32846	<0.01	<0.01
Nickel	mg/L	32833	<0.0001	<0.0001
Nickel	mg/L	32842	0.0001	0.0001
Nickel	mg/L	32889	0.0014	0.0014
Nickel	mg/L	32971	0.005	0.005
Nitrite+Nitrate as nitrogen	mg/L	32826	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	32837	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	32838	<0.01	<0.01
Nitrate as nitrogen	mg/L	32971	<0.01	<0.01
Phosphorus	mg/L	32833	<0.01	<0.01
Phosphorus	mg/L	32842	0.02	0.02

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead	mg/L	32833	<0.0001	<0.0001
Lead	mg/L	32842	<0.0001	<0.0001
Lead	mg/L	32889	0.0001	0.0001
Lead-210	Bq/L	32833	<0.02	<0.02
Lead-210	Bq/L	32843	<0.02	<0.02
pH	pH units	32587	7.03	7.07
pH	pH units	32588	7.45	7.49
pH	pH units	32589	5.64	5.80
pH	pH units	32843	7.26	7.34
Polonium-210	Bq/L	32833	<0.005	<0.005
Polonium-210	Bq/L	32843	<0.005	<0.005
Radium-226	Bq/L	32883	0.06	0.06
Radium-226	Bq/L	32831	<0.005	<0.005
Radium-226	Bq/L	32841	0.005	<0.005
Antimony	mg/L	32833	<0.0002	<0.0002
Antimony	mg/L	32842	<0.0002	<0.0002
Antimony	mg/L	32889	<0.0002	<0.0002
Selenium	mg/L	32833	<0.0001	<0.0001
Selenium	mg/L	32842	<0.0001	<0.0001
Selenium	mg/L	32889	0.0004	0.0004
Tin	mg/L	32833	<0.0001	<0.0001
Tin	mg/L	32842	<0.0001	<0.0001
Tin	mg/L	32889	<0.0001	<0.0001
Sulfate	mg/L	32588	3.2	3.2
Sulfate	mg/L	32597	31	31
Sulfate	mg/L	32838	1.7	1.6
Sulfate	mg/L	32969	1.2	1.3
Sulfate	mg/L	32979	2.4	2.4
Specific conductivity	uS/cm	32587	18	17
Specific conductivity	uS/cm	32588	56	54
Specific conductivity	uS/cm	32589	<1	<1
Specific conductivity	uS/cm	32843	33	33
Strontium	mg/L	32833	0.030	0.030
Strontium	mg/L	32842	0.026	0.026
Strontium	mg/L	32889	0.23	0.23
Total dissolved solids	mg/L	32831	39	41
Thorium-230	Bq/L	30456	0.002	0.002
Thorium-230	Bq/L	32832	<0.01	<0.01
Thorium-230	Bq/L	32842	<0.01	<0.01
Titanium	mg/L	32833	<0.0002	<0.0002
Titanium	mg/L	32842	0.0004	0.0004
Titanium	mg/L	32889	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	32827	1.0	1.1
Total Kjeldahl nitrogen	mg/L	32833	0.17	0.16
Total Kjeldahl nitrogen	mg/L	33339	<0.05	<0.05
Thallium	mg/L	32833	<0.0002	<0.0002

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Thallium	mg/L	32842	<0.0002	<0.0002
Thallium	mg/L	32889	<0.0002	<0.0002
Organic carbon	mg/L	32828	7.5	7.2
Organic carbon	mg/L	32839	1.7	1.7
Total alkalinity	mg/L	32587	11	10
Total alkalinity	mg/L	32588	28	27
Total alkalinity	mg/L	32589	1	2
Total alkalinity	mg/L	32843	18	18
Total suspended solids	mg/L	32833	2	2
Total suspended solids	mg/L	32843	2	2
Total suspended solids	mg/L	33123	<1	<1
Turbidity	NTU	32826	0.287	0.297
Turbidity	NTU	32835	0.916	1.07
Turbidity	NTU	32844	0.230	0.165
Uranium	ug/L	32833	0.2	0.2
Uranium	ug/L	32842	<0.1	<0.1
Uranium	ug/L	32889	0.7	0.7
Vanadium	mg/L	32833	<0.0001	<0.0001
Vanadium	mg/L	32842	0.0002	0.0002
Vanadium	mg/L	32889	0.0004	0.0004
Zinc	mg/L	32833	0.0020	0.0020
Zinc	mg/L	32842	<0.0005	<0.0005
Zinc	mg/L	32889	0.0066	0.0066
Zinc	mg/L	32971	0.014	0.013

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	99
Ammonia as nitrogen	99
Antimony	91
Arsenic	97
Barium	96
Beryllium	101
Boron	104
Cadmium	98
Calcium	105
Chloride	110
Chromium	100
Cobalt	100

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Spike Analysis	Percent Recovery
Copper	102
Copper	99
Fluoride	103
Iron	98
Lead	96
Magnesium	104
Manganese	99
Mercury	98
Molybdenum	95
Nickel	100
Nickel	99
Nitrite+Nitrate nitrogen	110
Nitrite+Nitrate nitrogen	110
Organic carbon	105
Organic Carbon, dissolved	105
Organic Carbon, dissolved	98
Potassium	104
Selenium	98
Silver	95
Sodium	104
Strontium	96
Sulfate	102
Thallium	91
Thorium-230	89
Thorium-230	96
Tin	94
Titanium	97
Total Kjeldahl nitrogen	83
Total Kjeldahl nitrogen	95
Uranium	90
Vanadium	98
Zinc	101
Zinc	100

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2018-12515

Nov 02, 2018

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-05-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2018-12515

Nov 02, 2018

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211 Wheeler Street
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Attn: Kelly Wells

Date Samples Received: Oct-05-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

40514 CLEARV 09/29/2018 15:15 3008_QAQC_201809_WS *WATER*
40515 BEETCK 09/29/2018 15:30 BEETCK_201809_WS *WATER*
40516 BEETLK 10/02/2018 09:30 BEETLK_201809_WS *WATER*

Analyte	Units	40514	40515	40516
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	30±4	27±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.40±0.7	7.67±0.8	7.68±0.8
Specific conductivity	uS/cm	30±4	36±5	37±6
Sum of ions	mg/L	39±6	38±6	37±6
Total alkalinity	mg/L	25±4	22±3	21±3
Total hardness	mg/L	14±4	17±4	17±4
Ammonia as nitrogen	mg/L	0.01±0.01	<0.01	0.01±0.01
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.27±0.1	0.23±0.1	0.16±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	3.6±0.9	2.2±0.6	2.1±0.5
Organic carbon, dissolved	mg/L	3.7±0.9	2.4±0.6	2.1±0.5
Fluoride	mg/L	0.06±0.02	0.08±0.02	0.08±0.02
Total dissolved solids	mg/L	48±10	50±10	54±10
Total suspended solids	mg/L	4±2	2±1	<1
Turbidity	NTU	1.4±0.4	0.6±0.1	0.6±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.5±0.5	4.2±0.6	4.3±0.6
Magnesium	mg/L	1.2±0.3	1.6±0.4	1.6±0.4
Potassium	mg/L	0.6±0.2	0.7±0.2	0.8±0.3
Sodium	mg/L	1.5±0.4	1.7±0.4	1.7±0.4
Sulfate	mg/L	1.3±0.3	1.7±0.4	1.6±0.4
Aluminum	mg/L	0.018±0.003	0.0068±0.002	0.0016±0.0009
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0077±0.002	0.0089±0.002	0.0091±0.002

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40514 CLEARV 09/29/2018 15:15 3008_QAQC_201809_WS *WATER*
40515 BEETCK 09/29/2018 15:30 BEETCK_201809_WS *WATER*
40516 BEETLK 10/02/2018 09:30 BEETLK_201809_WS *WATER*

Analyte	Units	40514	40515	40516
Lab Section 2 (ICP)				
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.30±0.03	0.11±0.01	0.087±0.009
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.013±0.002	0.020±0.003	0.022±0.003
Molybdenum	mg/L	0.0002±0.0001	0.0001±0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.026±0.004	0.029±0.004	0.031±0.005
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0004±0.0002	0.0004±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0001±0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	0.02±0.02
Polonium-210	Bq/L	0.01±0.007	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	0.007±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity.

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SRC Group # 2018-12515

Nov 02, 2018

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40517	**BROALK 09/23/2018 09:23 BROALK_201809_WS *WATER***
40518	**CLEARV 09/29/2018 15:15 CLEARV_201809_WS *WATER***
40519	**FORRLKN 10/01/2018 09:15 FORRLKN_201809_WS *WATER***

Analyte	Units	40517	40518	40519
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	17±4	30±4	34±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.6±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.52±0.8	7.34±0.7	7.66±0.8
Specific conductivity	uS/cm	31±5	28±4	40±6
Sum of ions	mg/L	27±4	39±6	46±7
Total alkalinity	mg/L	14±4	25±4	28±4
Total hardness	mg/L	15±4	13±3	18±4
Ammonia as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrate as nitrogen	mg/L	0.04±0.02	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	0.04±0.02	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.13±0.08	0.35±0.2	0.10±0.07
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	1.6±0.5	3.5±0.9	1.2±0.4
Organic carbon, dissolved	mg/L	1.8±0.5	3.5±0.9	1.5±0.5
Fluoride	mg/L	0.07±0.02	0.06±0.02	0.09±0.02
Total dissolved solids	mg/L	30±10	47±10	54±10
Total suspended solids	mg/L	<1	4±2	<1
Turbidity	NTU	0.3±0.1	1.7±0.4	0.2±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.8±0.6	3.4±0.5	4.5±0.7
Magnesium	mg/L	1.3±0.3	1.2±0.3	1.7±0.4
Potassium	mg/L	0.6±0.2	0.6±0.2	0.9±0.3
Sodium	mg/L	1.6±0.4	1.5±0.4	2.1±0.3
Sulfate	mg/L	2.1±0.5	1.3±0.3	1.7±0.4
Aluminum	mg/L	<0.0005	0.026±0.004	0.0008±0.0006
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.016±0.002	0.0081±0.002	0.0077±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2018-12515

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40517 BROALK 09/23/2018 09:23 BROALK_201809_WS *WATER*
40518 CLEARV 09/29/2018 15:15 CLEARV_201809_WS *WATER*
40519 FORRLKN 10/01/2018 09:15 FORRLKN_201809_WS *WATER*

Analyte	Units	40517	40518	40519
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.028±0.004	0.42±0.04	0.0085±0.002
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.036±0.005	0.020±0.003	0.0025±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.036±0.005	0.027±0.004	0.030±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0007±0.0003	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	0.0027±0.001	<0.0005	0.0006±0.0006
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.009±0.006	<0.005
Radium-226	Bq/L	<0.005	<0.005	0.009±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity.

Note for Sample # 40519
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2018-12515

Nov 02, 2018

CanNorth, Canada North Environmental Services Limited

40520	**HODGLK 09/21/2018 09:42 HODGLK_201809_WS *WATER***
40521	**JEDCK 09/29/2018 09:58 JEDCK_201809_WS *WATER***
40522	**LAKEG 09/28/2018 09:00 LAKEG_201809_WS *WATER***

Analyte	Units	40520	40521	40522
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	16±4	17±4	32±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2.0±0.3	0.3±0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.25±0.7	7.37±0.7	7.58±0.8
Specific conductivity	uS/cm	20±3	18±4	30±4
Sum of ions	mg/L	24±4	24±4	41±6
Total alkalinity	mg/L	13±3	14±4	26±4
Total hardness	mg/L	10±2	10±2	15±4
Ammonia as nitrogen	mg/L	0.03±0.02	0.03±0.02	0.03±0.02
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.13±0.08	0.20±0.1	0.91±0.2
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.0±0.5	4.5±0.7	7.5±1
Organic carbon, dissolved	mg/L	2.2±0.6	4.6±0.7	8.0±1
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.06±0.02
Total dissolved solids	mg/L	38±10	54±10	67±20
Total suspended solids	mg/L	<1	<1	3±1
Turbidity	NTU	0.4±0.1	1.6±0.4	2.3±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	2.9±0.4	2.6±0.4	3.4±0.5
Magnesium	mg/L	0.7±0.1	0.8±0.1	1.7±0.4
Potassium	mg/L	0.3±0.1	0.4±0.2	0.5±0.2
Sodium	mg/L	1.0±0.2	1.2±0.3	1.8±0.4
Sulfate	mg/L	1.0±0.2	1.2±0.3	1.2±0.3
Aluminum	mg/L	0.0022±0.001	0.017±0.002	0.0063±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	<0.1
Barium	mg/L	0.0073±0.002	0.0090±0.002	0.0075±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.01±0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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40520 HODGLK 09/21/2018 09:42 HODGLK_201809_WS *WATER*
40521 JEDCK 09/29/2018 09:58 JEDCK_201809_WS *WATER*
40522 LAKEG 09/28/2018 09:00 LAKEG_201809_WS *WATER*

Analyte	Units	40520	40521	40522
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.030±0.004	0.42±0.04	0.26±0.03
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.015±0.002	0.0079±0.002	0.0073±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.060±0.006	0.025±0.004	0.022±0.003
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0003±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	0.0028±0.001	<0.0005	<0.0005
Phosphorus	mg/L	<0.01	<0.01	0.01±0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	0.006±0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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40523 LAKEH 09/27/2018 09:45 LAKEH_201809_WS *WATER*
40524 LLOYLKI 09/20/2018 12:15 LLOYLKI_201809_WS *WATER*
40525 LLOYLKO 09/26/2018 11:10 LLOYLKO_201809_WS *WATER*

Analyte	Units	40523	40524	40525
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	33±5	12±3	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.2±0.1	0.8±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.56±0.8	7.47±0.7	7.47±0.7
Specific conductivity	uS/cm	32±5	23±3	23±3
Sum of ions	mg/L	41±6	20±3	24±4
Total alkalinity	mg/L	27±4	10±2	14±4
Total hardness	mg/L	15±4	11±3	11±3
Ammonia as nitrogen	mg/L	<0.01	0.02±0.02	0.02±0.02
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.79±0.2	0.25±0.1	0.25±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	8.0±1	3.9±1	4.3±0.6
Organic carbon, dissolved	mg/L	8.8±1	4.2±0.6	4.5±0.7
Fluoride	mg/L	0.07±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	59±10	50±10	46±10
Total suspended solids	mg/L	2±1	2±1	<1
Turbidity	NTU	1.3±0.3	1.4±0.4	1.4±0.4
Lab Section 2 (ICP)				
Calcium	mg/L	3.5±0.5	2.9±0.4	2.9±0.4
Magnesium	mg/L	1.5±0.4	1.0±0.2	1.0±0.2
Potassium	mg/L	0.8±0.3	0.5±0.2	0.5±0.2
Sodium	mg/L	1.9±0.5	1.4±0.4	1.4±0.4
Sulfate	mg/L	0.3±0.2	1.0±0.2	1.0±0.2
Aluminum	mg/L	0.0072±0.002	0.0057±0.001	0.0062±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0010±0.0007	0.0049±0.001	0.0050±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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40523 LAKEH 09/27/2018 09:45 LAKEH_201809_WS *WATER*
40524 LLOYLKI 09/20/2018 12:15 LLOYLKI_201809_WS *WATER*
40525 LLOYLKO 09/26/2018 11:10 LLOYLKO_201809_WS *WATER*

Analyte	Units	40523	40524	40525
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.056±0.006	0.29±0.03	0.28±0.03
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.012±0.002	0.018±0.003	0.016±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.012±0.002	0.024±0.004	0.023±0.003
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0006±0.0006	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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40526	**NAOMLK-1 09/25/2018 09:40 NAOMILK-1_201809_WS *WATER***
40527	**PATTLKE 09/29/2018 12:45 PATTLKE_201809_WS *WATER***
40528	**PATTLKN 09/29/2018 11:15 PATTLKN_201809_WS *WATER***

Analyte	Units	40526	40527	40528
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	16±4	29±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.38±0.7	7.62±0.8	7.59±0.8
Specific conductivity	uS/cm	18±4	32±5	31±5
Sum of ions	mg/L	22±3	38±6	36±5
Total alkalinity	mg/L	13±3	24±4	22±3
Total hardness	mg/L	10±2	15±4	15±4
Ammonia as nitrogen	mg/L	0.02±0.02	0.02±0.02	0.02±0.02
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.26±0.1	0.10±0.07	0.12±0.08
Mercury	ng/L	3±2	<1	<1
Organic carbon	mg/L	6.2±0.9	1.9±0.6	2.0±0.5
Organic carbon, dissolved	mg/L	6.2±0.9	2.1±0.5	2.2±0.6
Fluoride	mg/L	0.04±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	45±10	45±10	44±10
Total suspended solids	mg/L	1±1	<1	<1
Turbidity	NTU	1.9±0.5	0.4±0.1	0.4±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	2.7±0.4	3.9±0.6	3.8±0.6
Magnesium	mg/L	0.8±0.1	1.4±0.4	1.3±0.3
Potassium	mg/L	0.4±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.1±0.3	1.4±0.4	1.4±0.4
Sulfate	mg/L	0.8±0.2	1.6±0.4	1.6±0.4
Aluminum	mg/L	0.013±0.002	0.0014±0.0008	0.0015±0.0008
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0061±0.002	0.010±0.002	0.0094±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001

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40526 NAOMLK-1 09/25/2018 09:40 NAOMILK-1_201809_WS *WATER*
40527 PATTLKE 09/29/2018 12:45 PATTLKE_201809_WS *WATER*
40528 PATTLKN 09/29/2018 11:15 PATTLKN_201809_WS *WATER*

Analyte	Units	40526	40527	40528
Lab Section 2 (ICP)				
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.35±0.04	0.018±0.003	0.012±0.002
Lead	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.018±0.003	0.021±0.003	0.010±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.022±0.003	0.030±0.004	0.030±0.004
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0017±0.0004	<0.0001	<0.0001
Titanium	mg/L	0.0002±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	0.1±0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0006±0.0006	<0.0005
Phosphorus	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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40529 PATTLKNE 09/29/2018 10:20 PATTLKNE_201809_WS *WATER*
40530 WARNRP 10/03/2018 WARNRP_201809_WS *WATER*

Analyte	Units	40529	40530
Lab Section 1 (Inorganics)			
Bicarbonate	mg/L	12±3	12±3
Carbonate	mg/L	<1	<1
Chloride	mg/L	0.4±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.53±0.8	7.46±0.7
Specific conductivity	uS/cm	24±4	22±3
Sum of ions	mg/L	20±3	19±5
Total alkalinity	mg/L	10±2	10±2
Total hardness	mg/L	12±3	10±2
Ammonia as nitrogen	mg/L	0.02±0.02	0.03±0.02
Nitrate as nitrogen	mg/L	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.23±0.1	0.22±0.1
Mercury	ng/L	<1	<1
Organic carbon	mg/L	2.7±0.7	5.2±0.8
Organic carbon, dissolved	mg/L	2.8±0.7	5.3±0.8
Fluoride	mg/L	0.05±0.02	0.06±0.02
Total dissolved solids	mg/L	39±10	44±10
Total suspended solids	mg/L	1±1	<1
Turbidity	NTU	1.1±0.3	1.5±0.4
Lab Section 2 (ICP)			
Calcium	mg/L	3.1±0.5	2.6±0.4
Magnesium	mg/L	1.0±0.2	1.0±0.2
Potassium	mg/L	0.5±0.2	0.5±0.2
Sodium	mg/L	1.3±0.3	1.4±0.4
Sulfate	mg/L	1.2±0.3	1.1±0.3
Aluminum	mg/L	0.0027±0.001	0.018±0.003
Antimony	mg/L	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1
Barium	mg/L	0.0084±0.002	0.0044±0.001
Beryllium	mg/L	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001

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40529 PATTLKNE 09/29/2018 10:20 PATTLKNE_201809_WS *WATER*
40530 WARNRP 10/03/2018 WARNRP_201809_WS *WATER*

Analyte	Units	40529	40530
Lab Section 2 (ICP)			
Copper	mg/L	<0.0002	<0.0002
Iron	mg/L	0.16±0.02	0.47±0.05
Lead	mg/L	<0.0001	<0.0001
Manganese	mg/L	0.021±0.003	0.018±0.003
Molybdenum	mg/L	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001
Selenium	mg/L	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.019±0.003
Thallium	mg/L	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0004±0.0002
Uranium	ug/L	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0003±0.0002
Zinc	mg/L	<0.0005	0.0005±0.0005
Phosphorus	mg/L	<0.01	<0.01
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/L	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005
Radium-226	Bq/L	0.009±0.006	0.006±0.005
Thorium-230	Bq/L	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 40529
Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity.

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SRC Group # 2018-12515

Nov 02, 2018

CanNorth, Canada North Environmental Services Limited

40531 CLEARV 10/02/2018 3008_TB_201809_WS *WATER*

Analyte	Units	40531
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	1±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.82±0.9
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1±1
Total alkalinity	mg/L	1±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0006±0.0006
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005

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SRC Group # 2018-12515

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CanNorth, Canada North Environmental Services Limited

40531 CLEARV 10/02/2018 3008_TB_201809_WS *WATER*

Analyte	Units	40531
Lab Section 2 (ICP)		
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	0.006±0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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40532 CLEARV 10/02/2018 3008_FB_201809_WS *WATER*

Analyte	Units	40532
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	<1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.85±0.9
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	<1
Total alkalinity	mg/L	<1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Turbidity	NTU	<0.1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0007±0.0006
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002

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CanNorth, Canada North Environmental Services Limited

40532 CLEARV 10/02/2018 3008_FB_201809_WS *WATER*

Analyte	Units	40532
Lab Section 2 (ICP)		
Iron	mg/L	0.0010±0.0007
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	0.0005±0.0005
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 40532
Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity.

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This report was generated for samples included in SRC Group # 2018-12515

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0525
Ammonia as nitrogen	mg/L	4.54	4.87
Ammonia as nitrogen	mg/L	1.61	1.61
Ammonia as nitrogen	mg/L	4.54	4.78
Ammonia as nitrogen	mg/L	1.65	1.59
Antimony	mg/L	0.0479	0.0466
Antimony	mg/L	0.0479	0.0463
Arsenic	mg/L	50.0	51.0
Arsenic	mg/L	50.0	50.3
Barium	mg/L	0.0493	0.0484
Barium	mg/L	0.0493	0.0488
Beryllium	mg/L	0.0500	0.0500
Beryllium	mg/L	0.0500	0.0520
Boron	mg/L	0.0500	0.0497
Boron	mg/L	0.0500	0.0516
Cadmium	mg/L	0.0482	0.0490
Cadmium	mg/L	0.0482	0.0478
Calcium	mg/L	63.4	63.3
Chloride	mg/L	6.98	6.94
Chromium	mg/L	0.0500	0.0502
Chromium	mg/L	0.0500	0.0499
Cobalt	mg/L	0.0500	0.0504
Cobalt	mg/L	0.0500	0.0497
Copper	mg/L	0.0500	0.0514
Copper	mg/L	0.0500	0.0502
Fluoride	mg/L	1.88	1.92
Fluoride	mg/L	1.83	1.93
Iron	mg/L	0.0500	0.0504
Iron	mg/L	0.0500	0.0494
Lead	mg/L	0.0488	0.0504
Lead	mg/L	0.0488	0.0500

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QC Analysis	Units	Target Value	Obtained Value
Lead-210	Bq/L	21.8	19.8
Lead-210	Bq	0.385	0.362
Lead-210	Bq/L	21.8	21.3
Lead-210	Bq	0.770	0.727
Lead-210	Bq/L	21.8	22.0
Lead-210	Bq	0.385	0.426
Magnesium	mg/L	16.5	16.8
Manganese	mg/L	0.0500	0.0504
Manganese	mg/L	0.0500	0.0497
Mercury	ng/L	56.1	51.5
Molybdenum	mg/L	0.0490	0.0476
Molybdenum	mg/L	0.0490	0.0476
Molybdenum	mg/L	0.0490	0.0488
Nickel	mg/L	0.0500	0.0516
Nickel	mg/L	0.0500	0.0503
Nitrite+Nitrate nitrogen	mg/L	1.21	1.25
Nitrite+Nitrate nitrogen	mg/L	6.46	6.24
Organic carbon	mg/L	28.2	28.3
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	7.03
pH	pH units	7.00	7.16
pH	pH units	7.00	7.12
Phosphorus	mg/L	5.16	5.14
Phosphorus	mg/L	5.16	5.18
Polonium-210	Bq/L	21.0	16.6
Polonium-210	Bq	0.385	0.389
Polonium-210	Bq/L	21.0	17.7
Polonium-210	Bq	0.770	0.731
Potassium	mg/L	163	162
Radium-226	Bq/L	21.4	20.9
Radium-226	Bq	0.043	0.063
Selenium	mg/L	0.0493	0.0506
Selenium	mg/L	0.0493	0.0501
Silver	mg/L	0.0500	0.0484
Silver	mg/L	0.0500	0.0479
Sodium	mg/L	100	97.6
Specific conductivity	uS/cm	192	185
Specific conductivity	uS/cm	192	182
Strontium	mg/L	0.0490	0.0498
Strontium	mg/L	0.0490	0.0480
Sulfate	mg/L	150	150
Thallium	mg/L	0.0500	0.0490
Thallium	mg/L	0.0500	0.0496
Thorium-230	Bq/L	20.5	20.8
Thorium-232	Bq	0.203	0.201

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QC Analysis	Units	Target Value	Obtained Value
Tin	mg/L	0.0472	0.0458
Tin	mg/L	0.0472	0.0455
Titanium	mg/L	0.0500	0.0505
Titanium	mg/L	0.0500	0.0498
Total alkalinity	mg/L	250	250
Total alkalinity	mg/L	250	251
Total alkalinity	mg/L	250	249
Total dissolved solids	mg/L	100	108
Total dissolved solids	mg/L	100	109
Total Kjeldahl nitrogen	mg/L	1.88	1.74
Total Kjeldahl nitrogen	mg/L	1.88	1.90
Total suspended solids	mg/L	100	99.1
Turbidity	NTU	12.6	12.7
Uranium	mg/L	50.0	49.5
Uranium	mg/L	50.0	48.9
Vanadium	mg/L	0.0500	0.0506
Vanadium	mg/L	0.0500	0.0501
Zinc	mg/L	0.0500	0.0483
Zinc	mg/L	0.0500	0.0493

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	40275	0.00006	0.00006
Silver	mg/L	40524	<0.00005	<0.00005
Silver	mg/L	40584	<0.00005	<0.00005
Silver	mg/L	40592	<0.00005	<0.00005
Aluminum	mg/L	40524	0.0057	0.0058
Aluminum	mg/L	40584	0.0026	0.0018
Aluminum	mg/L	40592	0.0071	0.0067
Arsenic	ug/L	40275	0.0009	0.0009
Arsenic	ug/L	40524	0.2	0.1
Arsenic	ug/L	40584	0.1	0.2
Arsenic	ug/L	40592	<0.1	<0.1
Boron	mg/L	40275	0.45	0.44
Boron	mg/L	40524	<0.01	<0.01
Boron	mg/L	40584	0.01	0.01
Boron	mg/L	40592	<0.01	<0.01
Barium	mg/L	40275	0.0022	0.0021
Barium	mg/L	40524	0.0049	0.0049
Barium	mg/L	40584	0.015	0.016

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Barium	mg/L	40592	0.0029	0.0030
Beryllium	mg/L	40275	<0.0001	<0.0001
Beryllium	mg/L	40524	<0.0001	<0.0001
Beryllium	mg/L	40584	<0.0001	<0.0001
Beryllium	mg/L	40592	<0.0001	<0.0001
Calcium	mg/L	40596	6.5	6.5
Calcium	mg/L	40598	<0.1	<0.1
Calcium	mg/L	40599	<0.1	<0.1
Cadmium	mg/L	40275	<0.00001	<0.00001
Cadmium	mg/L	40524	<0.00001	<0.00001
Cadmium	mg/L	40584	0.00001	0.00001
Cadmium	mg/L	40592	<0.00001	<0.00001
Chloride	mg/L	40517	0.4	0.4
Chloride	mg/L	40526	0.6	0.6
Chloride	mg/L	40589	1.5	1.5
Cobalt	mg/L	40275	0.240	0.236
Cobalt	mg/L	40524	<0.0001	<0.0001
Cobalt	mg/L	40584	0.0006	0.0007
Cobalt	mg/L	40592	<0.0001	<0.0001
Chromium	mg/L	40275	0.0007	0.0007
Chromium	mg/L	40524	<0.0005	<0.0005
Chromium	mg/L	40584	<0.0005	<0.0005
Chromium	mg/L	40592	<0.0005	<0.0005
Copper	mg/L	40275	0.068	0.067
Copper	mg/L	40524	<0.0002	<0.0002
Copper	mg/L	40584	<0.0002	<0.0002
Copper	mg/L	40592	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	40514	3.7	3.7
Organic carbon, dissolved	mg/L	40522	8.0	8.4
Organic carbon, dissolved	mg/L	40780	3.1	3.1
Fluoride	mg/L	40514	0.06	0.06
Fluoride	mg/L	40523	0.07	0.07
Fluoride	mg/L	42772	0.02	0.02
Iron	mg/L	40275	0.048	0.048
Iron	mg/L	40524	0.29	0.29
Iron	mg/L	40584	0.087	0.088
Iron	mg/L	40592	0.15	0.15
Mercury	ng/L	40000	5	5
Mercury	ng/L	40523	<1	<1
Potassium	mg/L	40596	0.9	0.9
Potassium	mg/L	40598	<0.1	<0.1
Potassium	mg/L	40599	<0.1	<0.1
Magnesium	mg/L	40596	0.9	0.9
Magnesium	mg/L	40598	<0.1	<0.1
Magnesium	mg/L	40599	<0.1	<0.1
Manganese	mg/L	40275	0.0012	0.0012

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Manganese	mg/L	40524	0.018	0.019	
Manganese	mg/L	40584	0.28	0.28	
Manganese	mg/L	40592	0.026	0.026	
Molybdenum	mg/L	40275	0.044	0.044	
Molybdenum	mg/L	40524	<0.0001	<0.0001	
Molybdenum	mg/L	40584	0.0044	0.0044	
Molybdenum	mg/L	40592	0.0002	0.0002	
Molybdenum	mg/L	40830	0.0002	0.0002	
Sodium	mg/L	40596	14	14	
Sodium	mg/L	40598	<0.1	<0.1	
Sodium	mg/L	40599	<0.1	<0.1	
Ammonia as nitrogen	mg/L	40521	0.03	0.02	
Ammonia as nitrogen	mg/L	40523	<0.01	<0.01	
Ammonia as nitrogen	mg/L	40590	0.05	0.05	
Nickel	mg/L	40275	0.036	0.036	
Nickel	mg/L	40524	<0.0001	<0.0001	
Nickel	mg/L	40584	0.0011	0.0011	
Nickel	mg/L	40592	<0.0001	<0.0001	
Nitrite+Nitrate as nitrogen	mg/L	40514	<0.01	<0.01	
Nitrate as nitrogen	mg/L	40514	<0.01	<0.01	
Phosphorus	mg/L	40275	<0.01	0.01	
Phosphorus	mg/L	40524	<0.01	0.01	
Phosphorus	mg/L	40592	0.02	0.02	
Lead	mg/L	40275	<0.0001	<0.0001	
Lead	mg/L	40524	<0.0001	<0.0001	
Lead	mg/L	40584	<0.0001	<0.0001	
Lead	mg/L	40592	<0.0001	<0.0001	
Lead-210	Bq/L	40193	<0.02	<0.02	
Lead-210	Bq/L	40516	<0.02	0.03	
Lead-210	Bq/L	40527	<0.02	<0.02	
Lead-210	Bq/L	40589	<0.02	<0.02	
Lead-210	Bq/L	43520	0.1	<0.08	
pH	pH units	40514	7.53	7.51	
pH	pH units	40523	7.57	7.70	
pH	pH units	40728	6.63	6.86	
pH	pH units	40731	5.85	5.72	
pH	pH units	42772	6.07	6.66	*(1)
Polonium-210	Bq/L	40193	0.009	0.01	
Polonium-210	Bq/L	40516	<0.005	<0.005	
Polonium-210	Bq/L	40527	<0.005	<0.005	
Radium-226	Bq/L	40378	<0.005	<0.005	
Radium-226	Bq/L	40514	0.008	<0.005	
Radium-226	Bq/L	40525	<0.005	<0.005	
Antimony	mg/L	40275	0.0011	0.0011	
Antimony	mg/L	40524	<0.0002	<0.0002	
Antimony	mg/L	40584	<0.0002	<0.0002	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Antimony	mg/L	40592	<0.0002	<0.0002
Selenium	mg/L	40275	0.0021	0.0021
Selenium	mg/L	40524	<0.0001	<0.0001
Selenium	mg/L	40584	0.0002	0.0002
Selenium	mg/L	40592	<0.0001	<0.0001
Tin	mg/L	40275	<0.0001	<0.0001
Tin	mg/L	40524	<0.0001	<0.0001
Tin	mg/L	40584	<0.0001	<0.0001
Tin	mg/L	40592	<0.0001	<0.0001
Sulfate	mg/L	40596	15	15
Sulfate	mg/L	40598	<0.2	<0.2
Sulfate	mg/L	40599	<0.2	<0.2
Specific conductivity	uS/cm	40514	30	28
Specific conductivity	uS/cm	40523	32	31
Specific conductivity	uS/cm	40731	<1	<1
Strontium	mg/L	40275	0.077	0.076
Strontium	mg/L	40524	0.024	0.024
Strontium	mg/L	40584	0.17	0.17
Strontium	mg/L	40592	0.010	0.010
Total dissolved solids	mg/L	40505	2640	2580
Total dissolved solids	mg/L	40530	44	51
Total dissolved solids	mg/L	40639	9440	9460
Thorium-230	Bq/L	40197	<0.01	<0.01
Thorium-230	Bq/L	40515	<0.01	<0.01
Thorium-230	Bq/L	40526	<0.01	<0.01
Titanium	mg/L	40275	0.0003	0.0004
Titanium	mg/L	40524	<0.0002	<0.0002
Titanium	mg/L	40584	<0.0002	<0.0002
Titanium	mg/L	40592	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	40532	<0.05	<0.05
Total Kjeldahl nitrogen	mg/L	40589	0.31	0.23
Thallium	mg/L	40275	<0.0002	<0.0002
Thallium	mg/L	40524	<0.0002	<0.0002
Thallium	mg/L	40584	<0.0002	<0.0002
Thallium	mg/L	40592	<0.0002	<0.0002
Organic carbon	mg/L	40518	3.5	3.6
Organic carbon	mg/L	40583	0.5	0.5
Organic carbon	mg/L	41021	2.4	2.3
Total alkalinity	mg/L	40514	17	22
Total alkalinity	mg/L	40523	33	27
Total alkalinity	mg/L	40728	187	188
Total alkalinity	mg/L	40731	<1	<1
Total alkalinity	mg/L	42772	4	3
Total suspended solids	mg/L	40519	<1	<1
Total suspended solids	mg/L	40528	<1	<1
Total suspended solids	mg/L	40586	3	3

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www.src.sk.ca/analytical

Nov 01, 2018

This report was generated for samples included in SRC Group # 2018-12515

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Turbidity	NTU	40514	1.37	1.51
Turbidity	NTU	40524	1.35	1.50
Turbidity	NTU	40532	0.083	0.077
Uranium	ug/L	40275	0.0004	0.0004
Uranium	ug/L	40524	<0.1	<0.1
Uranium	ug/L	40584	0.8	0.8
Uranium	ug/L	40592	0.2	0.2
Vanadium	mg/L	40275	0.011	0.011
Vanadium	mg/L	40524	<0.0001	<0.0001
Vanadium	mg/L	40584	0.0004	0.0004
Vanadium	mg/L	40592	0.0001	0.0001
Zinc	mg/L	40275	0.0017	0.0017
Zinc	mg/L	40524	0.0006	0.0007
Zinc	mg/L	40584	0.010	0.010
Zinc	mg/L	40592	<0.0005	<0.0005

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	102
Ammonia as nitrogen	100
Ammonia as nitrogen	100
Antimony	92
Arsenic	96
Arsenic	99
Barium	99
Barium	96
Beryllium	98
Boron	106
Cadmium	100
Cadmium	99
Calcium	110
Chloride	100
Chromium	102
Chromium	101
Cobalt	101
Cobalt	104
Copper	104
Copper	105

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Spike Analysis	Percent Recovery
Fluoride	107
Fluoride	117
Iron	101
Iron	101
Lead	99
Lead	98
Magnesium	112
Manganese	101
Manganese	99
Mercury	98
Molybdenum	95
Molybdenum	95
Molybdenum	95
Nickel	103
Nickel	104
Nitrite+Nitrate nitrogen	106
Organic carbon	105
Organic Carbon, dissolved	110
Phosphorus	99
Phosphorus	102
Potassium	108
Selenium	102
Selenium	100
Silver	100
Sodium	111
Strontium	98
Sulfate	109
Thallium	97
Tin	94
Titanium	101
Total Kjeldahl nitrogen	102
Total Kjeldahl nitrogen	105
Uranium	89
Uranium	89
Vanadium	100
Vanadium	99
Zinc	99
Zinc	102

*(1) The duplicate results for pH were outside the laboratory's specified limits. The data was reviewed and the duplicate samples were reanalyzed. All other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered

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acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2018-12932

Oct 31, 2018

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-16-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2018-12932

Oct 31, 2018

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
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Attn: Kelly Wells

Date Samples Received: Oct-16-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

42149 FORRLK 10/02/2018 FORRLK_201809_WS *WATER*

Analyte	Units	42149
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	28±4
Carbonate	mg/L	<1
Chloride	mg/L	0.6±0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.40±0.7
Specific conductivity	uS/cm	37±6
Sum of ions	mg/L	37±6
Total alkalinity	mg/L	23±3
Total hardness	mg/L	15±4
Ammonia as nitrogen	mg/L	<0.01
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.15±0.09
Mercury	ng/L	<1
Organic carbon	mg/L	2.4±0.6
Organic carbon, dissolved	mg/L	2.3±0.6
Fluoride	mg/L	0.05±0.02
Total dissolved solids	mg/L	31±10
Total suspended solids	mg/L	<1
Turbidity	NTU	0.4±0.1
Lab Section 2 (ICP)		
Calcium	mg/L	3.8±0.6
Magnesium	mg/L	1.4±0.4
Potassium	mg/L	0.5±0.2
Sodium	mg/L	1.4±0.4
Sulfate	mg/L	1.6±0.4
Aluminum	mg/L	0.0048±0.001
Antimony	mg/L	<0.0002
Arsenic	ug/L	0.1±0.1
Barium	mg/L	0.0099±0.002

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SRC Group # 2018-12932

Oct 31, 2018

CanNorth, Canada North Environmental Services Limited

42149 FORRLK 10/02/2018 FORRLK_201809_WS *WATER*

Analyte	Units	42149
Lab Section 2 (ICP)		
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	0.00001±0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	0.027±0.004
Lead	mg/L	<0.0001
Manganese	mg/L	0.0080±0.002
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	0.032±0.005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	0.1±0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	0.0011±0.0008
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 42149
Holding time for Turbidity between sampling and receipt in lab exceeds the recommended 48 hours.

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Oct 30, 2018

This report was generated for samples included in SRC Group # 2018-12932

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0486
Ammonia as nitrogen	mg/L	4.54	4.78
Ammonia as nitrogen	mg/L	1.65	1.59
Antimony	mg/L	0.0478	0.0469
Arsenic	mg/L	50.0	50.4
Barium	mg/L	0.0500	0.0486
Beryllium	mg/L	0.0500	0.0519
Boron	mg/L	0.0500	0.0506
Cadmium	mg/L	0.0486	0.0493
Calcium	mg/L	63.4	62.5
Chloride	mg/L	6.98	6.92
Chromium	mg/L	0.0500	0.0514
Cobalt	mg/L	0.0500	0.0515
Copper	mg/L	0.0500	0.0501
Fluoride	mg/L	1.83	1.98
Fluoride	mV	55.0	60.4
Iron	mg/L	0.0500	0.0508
Lead	mg/L	0.0500	0.0514
Lead-210	Bq/L	21.8	19.8
Lead-210	Bq	0.770	0.707
Magnesium	mg/L	16.5	16.4
Manganese	mg/L	0.0500	0.0522
Mercury	ng/L	56.1	49.5
Molybdenum	mg/L	0.0500	0.0489
Nickel	mg/L	0.0500	0.0498
Nitrite+Nitrate nitrogen	mg/L	1.21	1.25
Nitrite+Nitrate nitrogen	mg/L	6.46	6.22
Organic carbon	mg/L	28.2	28.4
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	7.02
Phosphorus	mg/L	5.17	5.37

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QC Analysis	Units	Target Value	Obtained Value
Polonium-210	Bq/L	21.0	19.2
Polonium-210	Bq	0.385	0.338
Potassium	mg/L	163	160
Radium-226	Bq/L	21.4	21.9
Radium-226	Bq	2.13	2.42
Selenium	mg/L	0.0500	0.0505
Silver	mg/L	0.0500	0.0500
Sodium	mg/L	100	97.0
Specific conductivity	uS/cm	192	185
Strontium	mg/L	0.0500	0.0501
Sulfate	mg/L	150	142
Thallium	mg/L	0.0500	0.0506
Thorium-230	Bq/L	20.5	20.2
Thorium-232	Bq	0.203	0.198
Tin	mg/L	0.0477	0.0451
Total alkalinity	mg/L	250	246
Total dissolved solids	mg/L	100	96
Total suspended solids	mg/L	100	96.9
Turbidity	NTU	24.3	24.2
Uranium	mg/L	50.0	50.8
Vanadium	mg/L	0.0500	0.0520
Zinc	mg/L	0.0500	0.0492

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	42149	<0.00005	<0.00005
Aluminum	mg/L	42149	0.0052	0.0048
Arsenic	ug/L	42149	0.1	0.1
Boron	mg/L	42149	<0.01	<0.01
Barium	mg/L	42149	0.0099	0.010
Beryllium	mg/L	42149	<0.0001	<0.0001
Calcium	mg/L	42187	<0.1	<0.1
Cadmium	mg/L	42149	0.00001	0.00001
Chloride	mg/L	42146	0.1	<0.1
Cobalt	mg/L	42149	<0.0001	<0.0001
Chromium	mg/L	42149	<0.0005	<0.0005
Copper	mg/L	42149	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	42101	6.4	6.2
Fluoride	mg/L	42126	0.21	0.20

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Iron	mg/L	42149	0.027	0.028
Mercury	ng/L	42019	<0.000001	<0.000001
Potassium	mg/L	42187	<0.1	<0.1
Magnesium	mg/L	42187	<0.1	<0.1
Manganese	mg/L	42149	0.0080	0.0086
Molybdenum	mg/L	42149	<0.0001	<0.0001
Sodium	mg/L	42187	1.0	0.9
Ammonia as nitrogen	mg/L	42441	0.42	0.43
Nickel	mg/L	42149	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	42178	0.01	0.01
Phosphorus	mg/L	42149	<0.01	<0.01
Lead	mg/L	42149	<0.0001	<0.0001
Lead-210	Bq/L	41745	<0.02	<0.02
pH	pH units	42144	6.63	6.62
Polonium-210	Bq/L	41745	0.02	0.03
Radium-226	Bq/L	42148	<0.005	<0.005
Antimony	mg/L	42149	<0.0002	<0.0002
Selenium	mg/L	42149	<0.0001	<0.0001
Tin	mg/L	42149	<0.0001	<0.0001
Sulfate	mg/L	42187	0.2	<0.2
Specific conductivity	uS/cm	42144	74	74
Strontium	mg/L	42149	0.032	0.032
Total dissolved solids	mg/L	42248	581	588
Thorium-230	Bq/L	41744	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	42149	0.15	0.15
Thallium	mg/L	42149	<0.0002	<0.0002
Organic carbon	mg/L	42178	<0.2	<0.2
Total alkalinity	mg/L	42144	9	10
Total suspended solids	mg/L	42149	<1	<1
Turbidity	NTU	42149	0.430	0.453
Uranium	ug/L	42149	0.1	0.1
Vanadium	mg/L	42149	<0.0001	<0.0001
Zinc	mg/L	42149	0.0012	0.0012

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	96
Ammonia as nitrogen	100
Antimony	94

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Spike Analysis	Percent Recovery
Arsenic	97
Barium	101
Beryllium	104
Boron	106
Cadmium	101
Calcium	113
Chloride	100
Chromium	102
Cobalt	103
Copper	101
Fluoride	117
Iron	101
Lead	102
Magnesium	110
Manganese	107
Mercury	98
Molybdenum	98
Nickel	100
Nitrite+Nitrate nitrogen	100
Organic carbon	100
Organic Carbon, dissolved	110
Potassium	108
Selenium	101
Silver	103
Sodium	111
Strontium	98
Sulfate	108
Thallium	101
Tin	93
Uranium	99
Vanadium	102
Zinc	103

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Mar-05-2019

Client P.O.: 3008_19WINT_WS Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Mar-05-2019

Client P.O.: 3008_19WINT_WS Rook I Environmental Baseline Studies

10326 JEDCK 02/21/2019 13:33 3008_201902_FB_WS *WATER*
10327 JEDCK 02/21/2019 13:33 3008_201902_QAQC_WS *WATER*
10328 BEETCK 02/23/2019 14:20 BEETCK_201902_WS *WATER*

Analyte	Units	10326	10327	10328
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	2±1	18±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.4±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.30±0.8	6.65±1	7.15±0.7
Specific conductivity	uS/cm	<1	26±4	42±6
Sum of ions	mg/L	2±1	26±4	40±6
Total alkalinity	mg/L	2±1	15±4	22±3
Total hardness	mg/L	<1	12±3	19±5
Ammonia as nitrogen	mg/L	<0.01	0.02±0.02	0.04±0.02
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	0.22	0.97
Nitrate (calc.), dissolved	mg/L	0.09	0.31	0.18
Nitrate as nitrogen	mg/L	0.03±0.02	0.05±0.02	0.22±0.03
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.07±0.02	0.04±0.02
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	0.05±0.02	0.22±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.07±0.02	0.04±0.02
Total Kjeldahl nitrogen	mg/L	<0.05	0.18±0.1	0.13±0.08
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	<0.2	3.1±0.8	3.3±0.8
Organic carbon, dissolved	mg/L	0.3±0.2	3.4±0.8	2.5±0.6
Fluoride	mg/L	<0.01	0.04±0.02	0.07±0.02
Total dissolved solids	mg/L	<5	47±10	51±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	21±3	3±2
Turbidity	NTU	<0.1	0.6±0.1	0.2±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	<0.1	3.4±0.5	4.8±0.7
Calcium, dissolved	mg/L	0.2±0.1	3.5±0.5	5.0±0.8
Magnesium	mg/L	<0.1	1.0±0.2	1.7±0.4

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

10326 JEDCK 02/21/2019 13:33 3008_201902_FB_WS *WATER*
10327 JEDCK 02/21/2019 13:33 3008_201902_QAQC_WS *WATER*
10328 BEETCK 02/23/2019 14:20 BEETCK_201902_WS *WATER*

Analyte	Units	10326	10327	10328
Lab Section 2 (ICP)				
Magnesium, dissolved	mg/L	<0.1	1.0±0.2	1.7±0.4
Potassium	mg/L	<0.1	0.5±0.2	0.7±0.2
Potassium, dissolved	mg/L	<0.1	0.6±0.2	0.8±0.3
Sodium	mg/L	<0.1	1.4±0.4	1.9±0.5
Sodium, dissolved	mg/L	0.1±0.1	1.4±0.4	2.0±0.3
Sulfate	mg/L	<0.2	1.5±0.3	1.8±0.4
Aluminum	mg/L	0.012±0.002	0.022±0.003	0.0022±0.001
Aluminum, dissolved	mg/L	0.0010±0.0007	0.016±0.002	0.0013±0.0008
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	0.0014±0.0008	0.012±0.002	0.011±0.002
Barium, dissolved	mg/L	<0.0005	0.012±0.002	0.011±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	0.00001±0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0008±0.0003	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.011±0.002	0.35±0.04	0.022±0.003
Iron, dissolved	mg/L	0.0008±0.0006	0.17±0.02	0.0087±0.002
Lead	mg/L	0.0003±0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	2.1±0.3	3.2±0.5
Lithium, dissolved	ug/L	<0.1	2.2±0.3	3.4±0.5
Manganese	mg/L	0.0007±0.0006	0.0097±0.002	0.0020±0.0009

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

10326 JEDCK 02/21/2019 13:33 3008_201902_FB_WS *WATER*
10327 JEDCK 02/21/2019 13:33 3008_201902_QAQC_WS *WATER*
10328 BEETCK 02/23/2019 14:20 BEETCK_201902_WS *WATER*

Analyte	Units	10326	10327	10328
Lab Section 2 (ICP)				
Manganese, dissolved	mg/L	<0.0005	0.0088±0.002	0.0008±0.0006
Molybdenum	mg/L	0.0003±0.0002	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0002±0.0001	<0.0001	0.0004±0.0002
Nickel, dissolved	mg/L	0.0003±0.0002	<0.0001	<0.0001
Rubidium	ug/L	<0.05	0.68±0.2	0.68±0.2
Rubidium, dissolved	ug/L	<0.05	0.61±0.2	0.71±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.031±0.005	0.034±0.005
Strontium, dissolved	mg/L	<0.0005	0.032±0.005	0.035±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0001±0.0001	<0.0001	0.0001±0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0007±0.0003	0.0004±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0003±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001
Zinc	mg/L	0.0031±0.002	0.0007±0.0006	0.0030±0.002
Zinc, dissolved	mg/L	0.0025±0.001	0.0006±0.0006	0.0018±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 10326
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

10329 BEETLK1 02/23/2019 10:15 BEETLK1_201902_WS *WATER*
10330 BROALK2 02/24/2019 12:10 BROALK2_201902_WS *WATER*
10331 CLEARV1 02/23/2019 15:02 CLEARV1_201902_WS *WATER*

Analyte	Units	10329	10330	10331
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	27±4	21±3	21±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.4±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.17±0.7	7.00±0.7	6.69±1
Specific conductivity	uS/cm	39±6	37±6	33±5
Sum of ions	mg/L	38±6	32±5	30±4
Total alkalinity	mg/L	22±3	17±4	17±4
Total hardness	mg/L	18±4	16±4	15±4
Ammonia as nitrogen	mg/L	0.02±0.02	0.09±0.04	0.06±0.03
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.06±0.02	0.04±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	0.31	0.22
Nitrate (calc.), dissolved	mg/L	0.18	0.35	0.26
Nitrate as nitrogen	mg/L	0.03±0.02	0.07±0.02	0.05±0.02
Nitrate as nitrogen, dissolved	mg/L	0.04±0.02	0.08±0.03	0.06±0.02
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	0.07±0.03	0.05±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.04±0.02	0.08±0.03	0.06±0.02
Total Kjeldahl nitrogen	mg/L	0.32±0.2	0.25±0.1	0.25±0.1
Mercury	ng/L	2±1	4±2	2±1
Organic carbon	mg/L	2.1±0.5	1.8±0.5	5.1±0.8
Organic carbon, dissolved	mg/L	2.1±0.5	2.1±0.5	5.5±0.8
Fluoride	mg/L	0.07±0.02	0.05±0.02	0.04±0.02
Total dissolved solids	mg/L	50±10	49±10	58±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	2±1	2±1	28±4
Turbidity	NTU	0.2±0.1	1.0±0.2	0.8±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	4.4±0.7	4.2±0.6	4.1±0.6
Calcium, dissolved	mg/L	4.6±0.7	4.5±0.7	4.4±0.7
Magnesium	mg/L	1.6±0.4	1.4±0.4	1.2±0.3
Magnesium, dissolved	mg/L	1.6±0.4	1.4±0.4	1.3±0.3
Potassium	mg/L	0.7±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.8±0.3	0.7±0.2	0.7±0.2
Sodium	mg/L	1.7±0.4	1.7±0.4	1.5±0.4
Sodium, dissolved	mg/L	1.8±0.4	1.8±0.4	1.6±0.4

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CanNorth, Canada North Environmental Services Limited

10329 BEETLK1 02/23/2019 10:15 BEETLK1_201902_WS *WATER*
10330 BROALK2 02/24/2019 12:10 BROALK2_201902_WS *WATER*
10331 CLEARV1 02/23/2019 15:02 CLEARV1_201902_WS *WATER*

Analyte	Units	10329	10330	10331
Lab Section 2 (ICP)				
Sulfate	mg/L	1.5±0.3	2.0±0.5	1.2±0.3
Aluminum	mg/L	0.0012±0.0008	0.0008±0.0006	0.020±0.003
Aluminum, dissolved	mg/L	0.0007±0.0006	0.0007±0.0006	0.018±0.003
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0095±0.002	0.024±0.004	0.012±0.002
Barium, dissolved	mg/L	0.0095±0.002	0.022±0.003	0.012±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	0.01±0.01	<0.01
Boron, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0014±0.0004	<0.0002	0.0002±0.0002
Copper, dissolved	mg/L	0.0011±0.0004	0.0012±0.0005	<0.0002
Iron	mg/L	0.013±0.002	0.087±0.009	0.56±0.06
Iron, dissolved	mg/L	0.0026±0.001	0.014±0.002	0.44±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.0±0.4	3.1±0.5	2.0±0.3
Lithium, dissolved	ug/L	3.2±0.5	3.2±0.5	2.1±0.3
Manganese	mg/L	0.0022±0.0009	0.31±0.03	0.053±0.005
Manganese, dissolved	mg/L	<0.0005	0.18±0.02	0.054±0.005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel	mg/L	0.0002±0.0001	<0.0001	0.0002±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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10329 BEETLK1 02/23/2019 10:15 BEETLK1_201902_WS *WATER*
10330 BROALK2 02/24/2019 12:10 BROALK2_201902_WS *WATER*
10331 CLEARV1 02/23/2019 15:02 CLEARV1_201902_WS *WATER*

Analyte	Units	10329	10330	10331
Lab Section 2 (ICP)				
Rubidium	ug/L	0.61±0.2	0.57±0.1	0.87±0.2
Rubidium, dissolved	ug/L	0.59±0.1	0.58±0.1	0.91±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.040±0.006	0.031±0.005
Strontium, dissolved	mg/L	0.032±0.005	0.042±0.006	0.032±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0001±0.0001	0.0011±0.0003	<0.0001
Tin, dissolved	mg/L	<0.0001	0.0008±0.0003	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0005±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0005±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0002±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	0.0014±0.001	<0.0005	0.0007±0.0006
Zinc, dissolved	mg/L	0.0013±0.0008	0.0010±0.0007	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 10330
This sample was reanalyzed for Copper, dissolved, Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 11.1 °C upon receipt.

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10332 FORRLK1 02/20/2019 11:40 FORRLK1_201902_WS *WATER*
10333 FORRLK2 02/20/2019 13:52 FORRLK2_201902_WS *WATER*
10334 HODGLK1 02/23/2019 12:10 HODGLK1_201902_WS *WATER*

Analyte	Units	10332	10333	10334
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	29±4	32±5	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.8±0.1	2.1±0.3
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.17±0.7	7.35±0.7	6.87±1
Specific conductivity	uS/cm	38±6	43±6	22±3
Sum of ions	mg/L	40±6	44±7	23±3
Total alkalinity	mg/L	24±4	26±4	12±3
Total hardness	mg/L	18±4	18±4	10±2
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01	0.01±0.01
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	0.01±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.09	0.09	0.18
Nitrate (calc.), dissolved	mg/L	0.09	0.09	0.18
Nitrate as nitrogen	mg/L	0.02±0.01	0.02±0.01	0.04±0.02
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.04±0.02
Nitrite+Nitrate as nitrogen	mg/L	0.02±0.01	0.02±0.01	0.04±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.04±0.02
Total Kjeldahl nitrogen	mg/L	0.17±0.1	0.10±0.07	0.13±0.08
Mercury	ng/L	2±1	2±1	3±2
Organic carbon	mg/L	2.4±0.6	1.3±0.5	2.0±0.5
Organic carbon, dissolved	mg/L	2.6±0.6	1.5±0.5	2.3±0.6
Fluoride	mg/L	0.06±0.02	0.07±0.02	0.03±0.01
Total dissolved solids	mg/L	46±10	52±10	38±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	2±1	<1	5±2
Turbidity	NTU	0.3±0.1	0.2±0.1	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	4.4±0.7	4.5±0.7	3.0±0.4
Calcium, dissolved	mg/L	4.9±0.7	4.8±0.7	3.2±0.5
Magnesium	mg/L	1.6±0.4	1.7±0.4	0.7±0.1
Magnesium, dissolved	mg/L	1.7±0.4	1.8±0.4	0.7±0.1
Potassium	mg/L	0.6±0.2	0.8±0.3	0.3±0.1
Potassium, dissolved	mg/L	0.7±0.2	0.9±0.3	0.4±0.2
Sodium	mg/L	1.6±0.4	2.0±0.3	1.0±0.2
Sodium, dissolved	mg/L	1.8±0.4	2.1±0.3	1.0±0.2

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10332 FORRLK1 02/20/2019 11:40 FORRLK1_201902_WS *WATER*
10333 FORRLK2 02/20/2019 13:52 FORRLK2_201902_WS *WATER*
10334 HODGLK1 02/23/2019 12:10 HODGLK1_201902_WS *WATER*

Analyte	Units	10332	10333	10334
Lab Section 2 (ICP)				
Sulfate	mg/L	1.7±0.4	1.7±0.4	1.1±0.3
Aluminum	mg/L	0.0039±0.001	0.0011±0.0007	0.0012±0.0008
Aluminum, dissolved	mg/L	0.0019±0.001	<0.0005	0.0009±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	<0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.012±0.002	0.0085±0.002	0.0071±0.002
Barium, dissolved	mg/L	0.012±0.002	0.0059±0.001	0.0075±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	0.01±0.01
Boron, dissolved	mg/L	0.01±0.01	<0.01	0.01±0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0014±0.0004	0.0002±0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.060±0.006	0.0052±0.001	0.014±0.002
Iron, dissolved	mg/L	0.038±0.006	<0.0005	0.0031±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.9±0.4	3.4±0.5	1.8±0.4
Lithium, dissolved	ug/L	3.1±0.5	3.5±0.5	1.8±0.4
Manganese	mg/L	0.0035±0.001	0.0009±0.0006	0.010±0.002
Manganese, dissolved	mg/L	0.0040±0.001	<0.0005	0.0041±0.001
Molybdenum	mg/L	0.0001±0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	0.0001±0.0001	0.0005±0.0002	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-2467

Mar 19, 2019

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10332 FORRLK1 02/20/2019 11:40 FORRLK1_201902_WS *WATER*
10333 FORRLK2 02/20/2019 13:52 FORRLK2_201902_WS *WATER*
10334 HODGLK1 02/23/2019 12:10 HODGLK1_201902_WS *WATER*

Analyte	Units	10332	10333	10334
Lab Section 2 (ICP)				
Rubidium	ug/L	0.67±0.2	0.56±0.1	0.66±0.2
Rubidium, dissolved	ug/L	0.71±0.2	0.64±0.2	0.67±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.034±0.005	0.031±0.005	0.061±0.006
Strontium, dissolved	mg/L	0.036±0.005	0.030±0.004	0.063±0.006
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0009±0.0003
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0005±0.0002
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	0.1±0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0018±0.001	0.0009±0.0007	<0.0005
Zinc, dissolved	mg/L	0.0009±0.0007	<0.0005	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 10333
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 10334
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2019-2467

Mar 19, 2019

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10335 JEDCK 02/21/2019 13:33 JEDCK_201902_WS *WATER*
10336 LAKED 02/24/2019 11:30 LAKED_201902_WS *WATER*
10337 LAKEG2 05/22/2019 13:24 LAKEG2_201902_WS *WATER*

Analyte	Units	10335	10336	10337
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	20±3	39±6	38±6
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	<0.1	0.1±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.72±1	7.04±0.7	7.30±0.7
Specific conductivity	uS/cm	27±4	57±8	58±9
Sum of ions	mg/L	29±4	52±8	51±8
Total alkalinity	mg/L	16±4	32±5	31±5
Total hardness	mg/L	12±3	25±4	24±4
Ammonia as nitrogen	mg/L	0.02±0.02	0.57±0.08	0.51±0.08
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.65±0.1	0.45±0.07
Nitrate (calc. from NO2+NO3-N)	mg/L	0.31	0.09	0.09
Nitrate (calc.), dissolved	mg/L	0.31	0.18	0.09
Nitrate as nitrogen	mg/L	0.07±0.02	0.02±0.01	0.02±0.01
Nitrate as nitrogen, dissolved	mg/L	0.07±0.02	0.04±0.02	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	0.07±0.03	0.02±0.01	0.02±0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.07±0.02	0.04±0.02	0.02±0.01
Total Kjeldahl nitrogen	mg/L	0.18±0.1	1.3±0.2	1.4±0.2
Mercury	ng/L	2±1	2±1	5±2
Organic carbon	mg/L	3.2±0.8	6.4±1	9.6±1
Organic carbon, dissolved	mg/L	3.5±0.9	7.1±1	10±2
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.06±0.02
Total dissolved solids	mg/L	54±10	72±20	88±20
Total suspended solids	mg/L	<1	3±1	<1
True color	CU	21±3	26±4	58±9
Turbidity	NTU	0.6±0.1	5.0±0.8	3.0±0.4
Lab Section 2 (ICP)				
Calcium	mg/L	3.3±0.5	7.4±1	5.8±0.9
Calcium, dissolved	mg/L	3.6±0.5	8.2±1	6.0±0.9
Magnesium	mg/L	1.0±0.2	1.7±0.4	2.4±0.4
Magnesium, dissolved	mg/L	1.1±0.3	1.8±0.4	2.4±0.4
Potassium	mg/L	0.6±0.2	0.5±0.2	0.8±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.9±0.3
Sodium	mg/L	1.4±0.4	1.7±0.4	2.3±0.3
Sodium, dissolved	mg/L	1.5±0.4	1.7±0.4	2.4±0.4

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10335 JEDCK 02/21/2019 13:33 JEDCK_201902_WS *WATER*
10336 LAKED 02/24/2019 11:30 LAKED_201902_WS *WATER*
10337 LAKEG2 05/22/2019 13:24 LAKEG2_201902_WS *WATER*

Analyte	Units	10335	10336	10337
Lab Section 2 (ICP)				
Sulfate	mg/L	1.6±0.4	0.8±0.2	1.2±0.3
Aluminum	mg/L	0.020±0.003	0.0016±0.0009	0.0044±0.001
Aluminum, dissolved	mg/L	0.018±0.003	0.0017±0.0009	0.0037±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.012±0.002	0.011±0.002	0.019±0.003
Barium, dissolved	mg/L	0.013±0.002	0.012±0.002	0.018±0.003
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	0.0002±0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.36±0.04	1.58±0.2	2.44±0.2
Iron, dissolved	mg/L	0.24±0.02	1.64±0.2	2.18±0.2
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.2±0.3	1.7±0.4	3.1±0.5
Lithium, dissolved	ug/L	2.2±0.3	1.8±0.4	3.2±0.5
Manganese	mg/L	0.0094±0.002	0.20±0.02	0.27±0.03
Manganese, dissolved	mg/L	0.0090±0.002	0.30±0.03	0.26±0.03
Molybdenum	mg/L	<0.0001	<0.0001	0.0001±0.0001
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Nickel	mg/L	<0.0001	0.0003±0.0002	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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10335 JEDCK 02/21/2019 13:33 JEDCK_201902_WS *WATER*
10336 LAKED 02/24/2019 11:30 LAKED_201902_WS *WATER*
10337 LAKEG2 05/22/2019 13:24 LAKEG2_201902_WS *WATER*

Analyte	Units	10335	10336	10337
Lab Section 2 (ICP)				
Rubidium	ug/L	0.62±0.2	0.51±0.1	0.72±0.2
Rubidium, dissolved	ug/L	0.66±0.2	0.49±0.05	0.77±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.019±0.003	0.035±0.005
Strontium, dissolved	mg/L	0.033±0.005	0.022±0.003	0.036±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0004±0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0005±0.0002
Titanium	mg/L	0.0004±0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	0.0003±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0005±0.0005	0.0006±0.0006	0.0009±0.0007
Zinc, dissolved	mg/L	0.0012±0.0008	0.0012±0.0008	0.0011±0.0007
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.02±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	0.005±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 11.1 °C upon receipt.

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10338 LAKEH2 02/22/2019 11:00 LAKEH2_201902_WS *WATER*
10339 LAKEJ 02/25/2019 10:22 LAKEJ_201902_WS *WATER*
10340 LLOYLKI 02/21/2019 12:41 LLOYLKI_201902_WS *WATER*

Analyte	Units	10338	10339	10340
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	41±6	5±2	16±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.2±0.1	0.1±0.1	0.9±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.37±0.7	5.98±0.9	6.75±1
Specific conductivity	uS/cm	53±8	6±1	29±4
Sum of ions	mg/L	53±8	8±3	25±4
Total alkalinity	mg/L	34±5	4±1	13±3
Total hardness	mg/L	22±3	2±1	13±3
Ammonia as nitrogen	mg/L	0.43±0.06	0.13±0.03	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.42±0.06	0.16±0.04	0.04±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.09	0.09	0.31
Nitrate (calc.), dissolved	mg/L	0.09	0.13	0.40
Nitrate as nitrogen	mg/L	0.02±0.01	0.02±0.01	0.07±0.02
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.03±0.02	0.09±0.03
Nitrite+Nitrate as nitrogen	mg/L	0.02±0.01	0.02±0.01	0.07±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.03±0.02	0.09±0.03
Total Kjeldahl nitrogen	mg/L	1.1±0.2	0.86±0.2	0.23±0.1
Mercury	ng/L	5±2	2±1	2±1
Organic carbon	mg/L	8.7±1	6.9±1	3.6±0.9
Organic carbon, dissolved	mg/L	9.0±1	7.0±1	3.9±1
Fluoride	mg/L	0.07±0.02	0.02±0.01	0.05±0.02
Total dissolved solids	mg/L	54±10	29±10	37±10
Total suspended solids	mg/L	14±4	3±1	4±2
True color	CU	5±2	6±2	16±4
Turbidity	NTU	4.8±0.7	0.7±0.1	1.1±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	5.4±0.8	0.7±0.2	3.4±0.5
Calcium, dissolved	mg/L	5.5±0.8	0.8±0.1	3.7±0.6
Magnesium	mg/L	2.1±0.3	0.2±0.1	1.1±0.3
Magnesium, dissolved	mg/L	2.1±0.3	0.2±0.1	1.1±0.3
Potassium	mg/L	1.2±0.3	0.4±0.2	0.6±0.2
Potassium, dissolved	mg/L	1.2±0.3	0.4±0.2	0.6±0.2
Sodium	mg/L	2.4±0.4	0.8±0.1	1.5±0.4
Sodium, dissolved	mg/L	2.4±0.4	0.8±0.1	1.6±0.4

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10339 LAKEJ 02/25/2019 10:22 LAKEJ_201902_WS *WATER*
10340 LLOYLKI 02/21/2019 12:41 LLOYLKI_201902_WS *WATER*

Analyte	Units	10338	10339	10340
Lab Section 2 (ICP)				
Sulfate	mg/L	0.2±0.2	0.7±0.2	1.3±0.3
Aluminum	mg/L	0.0034±0.001	0.0095±0.002	0.0098±0.002
Aluminum, dissolved	mg/L	0.0012±0.0008	0.0078±0.002	0.0074±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0029±0.001	0.0069±0.002	0.0071±0.002
Barium, dissolved	mg/L	0.0022±0.001	0.0064±0.002	0.0074±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Boron, dissolved	mg/L	0.01±0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	0.0005±0.0003	0.0006±0.0003
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0010±0.0004
Iron	mg/L	1.38±0.1	0.17±0.02	0.58±0.06
Iron, dissolved	mg/L	0.15±0.02	0.091±0.009	0.38±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	4.0±0.6	0.1±0.1	1.9±0.5
Lithium, dissolved	ug/L	4.1±0.6	0.1±0.1	2.0±0.3
Manganese	mg/L	0.13±0.01	0.018±0.003	0.032±0.005
Manganese, dissolved	mg/L	0.13±0.01	0.019±0.003	0.029±0.004
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001

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10338 LAKEH2 02/22/2019 11:00 LAKEH2_201902_WS *WATER*
10339 LAKEJ 02/25/2019 10:22 LAKEJ_201902_WS *WATER*
10340 LLOYLKI 02/21/2019 12:41 LLOYLKI_201902_WS *WATER*

Analyte	Units	10338	10339	10340
Lab Section 2 (ICP)				
Rubidium	ug/L	1.9±0.3	0.76±0.2	0.57±0.1
Rubidium, dissolved	ug/L	1.8±0.3	0.80±0.2	0.68±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.018±0.003	0.0064±0.002	0.026±0.004
Strontium, dissolved	mg/L	0.018±0.003	0.0065±0.002	0.028±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0008±0.0003	<0.0001	<0.0001
Tin, dissolved	mg/L	0.0008±0.0003	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0004±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0019±0.001	0.0017±0.001	0.0020±0.001
Zinc, dissolved	mg/L	0.0010±0.0007	0.0015±0.0008	0.0026±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.006±0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

10341	**LLOYLKO 02/21/2019 14:25 LLOYLKO_201902_WS *WATER***
10342	**NAOMLK-1 02/22/2019 11:41 NAOMLK_201902_WS *WATER***
10343	**PATTLKE1 02/21/2019 09:55 PATTLKE1_201902_WS *WATER***

Analyte	Units	10341	10342	10343
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	21±3	15±4	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.9±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.38±0.7	6.60±1	7.17±0.7
Specific conductivity	uS/cm	28±4	24±4	35±5
Sum of ions	mg/L	30±4	22±3	25±4
Total alkalinity	mg/L	17±4	12±3	12±3
Total hardness	mg/L	12±3	11±3	15±4
Ammonia as nitrogen	mg/L	0.05±0.03	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.06±0.02	<0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.35	0.49	0.31
Nitrate (calc.), dissolved	mg/L	0.31	0.53	0.22
Nitrate as nitrogen	mg/L	0.08±0.03	0.11±0.03	0.07±0.02
Nitrate as nitrogen, dissolved	mg/L	0.07±0.02	0.12±0.03	0.05±0.02
Nitrite+Nitrate as nitrogen	mg/L	0.08±0.03	0.11±0.03	0.07±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.07±0.02	0.12±0.03	0.05±0.02
Total Kjeldahl nitrogen	mg/L	0.22±0.1	0.25±0.1	0.15±0.09
Mercury	ng/L	2±1	2±1	3±2
Organic carbon	mg/L	3.4±0.8	6.7±1	2.0±0.5
Organic carbon, dissolved	mg/L	3.5±0.9	7.2±1	2.2±0.6
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.05±0.02
Total dissolved solids	mg/L	30±10	43±10	35±10
Total suspended solids	mg/L	1±1	3±1	1±1
True color	CU	20±3	42±6	1±1
Turbidity	NTU	1.6±0.4	1.1±0.3	0.2±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.2±0.5	3.0±0.4	3.9±0.6
Calcium, dissolved	mg/L	3.4±0.5	3.2±0.5	4.3±0.6
Magnesium	mg/L	1.0±0.2	0.8±0.1	1.4±0.4
Magnesium, dissolved	mg/L	1.0±0.2	0.7±0.1	1.5±0.4
Potassium	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.5±0.4	1.1±0.3	1.5±0.4
Sodium, dissolved	mg/L	1.5±0.4	1.1±0.3	1.5±0.4

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10341 LLOYLKO 02/21/2019 14:25 LLOYLKO_201902_WS *WATER*
10342 NAOMLK-1 02/22/2019 11:41 NAOMLK_201902_WS *WATER*
10343 PATTLKE1 02/21/2019 09:55 PATTLKE1_201902_WS *WATER*

Analyte	Units	10341	10342	10343
Lab Section 2 (ICP)				
Sulfate	mg/L	1.2±0.3	0.8±0.2	1.6±0.4
Aluminum	mg/L	0.010±0.002	0.034±0.005	0.0010±0.0007
Aluminum, dissolved	mg/L	0.0063±0.002	0.033±0.005	0.0007±0.0006
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0074±0.002	0.010±0.002	0.010±0.002
Barium, dissolved	mg/L	0.0073±0.002	0.011±0.002	0.010±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	0.0008±0.0003	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.74±0.07	0.84±0.08	0.015±0.002
Iron, dissolved	mg/L	0.23±0.02	0.69±0.07	0.0054±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.8±0.4	1.2±0.3	2.6±0.4
Lithium, dissolved	ug/L	1.8±0.4	1.3±0.3	2.7±0.4
Manganese	mg/L	0.039±0.006	0.099±0.01	0.013±0.002
Manganese, dissolved	mg/L	0.035±0.005	0.096±0.01	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001

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10341 LLOYLKO 02/21/2019 14:25 LLOYLKO_201902_WS *WATER*
10342 NAOMLK-1 02/22/2019 11:41 NAOMLK_201902_WS *WATER*
10343 PATTLKE1 02/21/2019 09:55 PATTLKE1_201902_WS *WATER*

Analyte	Units	10341	10342	10343
Lab Section 2 (ICP)				
Rubidium	ug/L	0.65±0.2	0.99±0.2	0.61±0.2
Rubidium, dissolved	ug/L	0.63±0.2	0.88±0.2	0.64±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.026±0.004	0.027±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.027±0.004	0.028±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0004±0.0002	0.0007±0.0003	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0006±0.0003	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0001±0.0001	0.0003±0.0002	<0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0003±0.0002	<0.0001
Zinc	mg/L	0.0005±0.0005	0.0009±0.0007	0.0006±0.0006
Zinc, dissolved	mg/L	0.0005±0.0005	0.0013±0.0008	0.0012±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.01±0.01	0.01±0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2019-2467

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10344 PATTLKN1 02/20/2019 12:44 PATTLKN1_201902_WS *WATER*
10345 PATTLKNE1 02/20/2019 16:04 PATTLKNE1_201902_WS *WATER*
10346 WARNRP 02/25/2019 15:00 WARNRP_201902_WS *WATER*

Analyte	Units	10344	10345	10346
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	18±4	27±4	20±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.6±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.96±1	7.22±0.7	6.75±1
Specific conductivity	uS/cm	29±4	34±5	30±4
Sum of ions	mg/L	26±4	37±6	29±4
Total alkalinity	mg/L	15±4	22±3	16±4
Total hardness	mg/L	13±3	16±4	12±3
Ammonia as nitrogen	mg/L	0.12±0.03	0.02±0.02	0.03±0.02
Ammonia nitrogen, dissolved	mg/L	0.16±0.04	0.02±0.01	0.05±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	0.13	0.35
Nitrate (calc.), dissolved	mg/L	0.18	0.09	0.35
Nitrate as nitrogen	mg/L	0.03±0.02	0.03±0.02	0.08±0.03
Nitrate as nitrogen, dissolved	mg/L	0.04±0.02	0.02±0.01	0.08±0.03
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	0.03±0.02	0.08±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.04±0.02	0.02±0.01	0.08±0.03
Total Kjeldahl nitrogen	mg/L	0.34±0.2	0.18±0.1	0.36±0.2
Mercury	ng/L	4±2	2±1	2±1
Organic carbon	mg/L	2.8±0.7	2.2±0.6	4.9±0.7
Organic carbon, dissolved	mg/L	3.0±0.8	2.3±0.6	4.5±0.7
Fluoride	mg/L	0.04±0.02	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	39±10	52±10	54±10
Total suspended solids	mg/L	2±1	<1	11±3
True color	CU	9±3	2±1	20±3
Turbidity	NTU	2.1±0.3	0.2±0.1	6.0±0.9
Lab Section 2 (ICP)				
Calcium	mg/L	3.3±0.5	4.0±0.6	3.2±0.5
Calcium, dissolved	mg/L	3.5±0.5	4.1±0.6	3.4±0.5
Magnesium	mg/L	1.1±0.3	1.4±0.4	1.1±0.3
Magnesium, dissolved	mg/L	1.1±0.3	1.4±0.4	1.1±0.3
Potassium	mg/L	0.6±0.2	0.6±0.2	0.8±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.8±0.3
Sodium	mg/L	1.4±0.4	1.5±0.4	1.6±0.4
Sodium, dissolved	mg/L	1.4±0.4	1.6±0.4	1.6±0.4

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10344 PATTLKN1 02/20/2019 12:44 PATTLKN1_201902_WS *WATER*
10345 PATTLKNE1 02/20/2019 16:04 PATTLKNE1_201902_WS *WATER*
10346 WARNRP 02/25/2019 15:00 WARNRP_201902_WS *WATER*

Analyte	Units	10344	10345	10346
Lab Section 2 (ICP)				
Sulfate	mg/L	1.3±0.3	1.6±0.4	1.4±0.3
Aluminum	mg/L	0.0025±0.001	0.0006±0.0006	0.031±0.005
Aluminum, dissolved	mg/L	0.0018±0.0009	0.0008±0.0006	0.0099±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.012±0.002	0.010±0.002	0.0082±0.002
Barium, dissolved	mg/L	0.013±0.002	0.010±0.002	0.0067±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	0.0001±0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	0.0005±0.0003
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0003±0.0002
Iron	mg/L	0.47±0.05	0.0085±0.002	0.96±0.1
Iron, dissolved	mg/L	0.42±0.04	0.0055±0.001	0.34±0.03
Lead	mg/L	<0.0001	<0.0001	0.0001±0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.1±0.3	2.6±0.4	1.4±0.4
Lithium, dissolved	ug/L	2.1±0.3	2.6±0.4	1.5±0.4
Manganese	mg/L	0.11±0.01	0.0024±0.001	0.065±0.006
Manganese, dissolved	mg/L	0.13±0.01	<0.0005	0.011±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0028±0.0004
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0054±0.0008

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10345 PATTLKNE1 02/20/2019 16:04 PATTLKNE1_201902_WS *WATER*
10346 WARNRP 02/25/2019 15:00 WARNRP_201902_WS *WATER*

Analyte	Units	10344	10345	10346
Lab Section 2 (ICP)				
Rubidium	ug/L	0.65±0.2	0.60±0.2	0.85±0.2
Rubidium, dissolved	ug/L	0.66±0.2	0.61±0.2	0.82±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.029±0.004	0.032±0.005	0.023±0.003
Strontium, dissolved	mg/L	0.029±0.004	0.032±0.005	0.024±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0008±0.0003
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0005±0.0002
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	0.0028±0.001	0.0006±0.0006	0.0029±0.002
Zinc, dissolved	mg/L	0.0012±0.0008	0.0006±0.0006	0.0039±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	0.005±0.005
Radium-226	Bq/L	<0.005	0.007±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2019-2467

Mar 19, 2019

CanNorth, Canada North Environmental Services Limited

10347 JEDCK 02/21/2019 13:33 3008_201902_TB_WS *WATER*

Analyte	Units	10347
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	1±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.38±0.8
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1±1
Total alkalinity	mg/L	1±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.09
Nitrate as nitrogen	mg/L	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	0.02±0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	1±1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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CanNorth, Canada North Environmental Services Limited

10347 JEDCK 02/21/2019 13:33 3008_201902_TB_WS *WATER*

Analyte	Units	10347
Lab Section 2 (ICP)		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 11.1 °C upon receipt.

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This report was generated for samples included in SRC Group # 2019-2467

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0481
Ammonia as nitrogen	mg/L	1.61	1.70
Ammonia as nitrogen	mg/L	8.24	8.35
Ammonia as nitrogen	mg/L	1.65	1.69
Ammonia as nitrogen	mg/L	8.24	8.55
Ammonia as nitrogen	mg/L	1.65	1.72
Ammonia as nitrogen	mg/L	8.24	8.49
Ammonia as nitrogen	mg/L	1.65	1.66
Ammonia as nitrogen	mg/L	8.24	8.55
Antimony	mg/L	0.0500	0.0459
Arsenic	mg/L	50.0	50.2
Barium	mg/L	0.0500	0.0491
Beryllium	mg/L	0.0500	0.0457
Bismuth	mg/L	0.0500	0.0481
Boron	mg/L	0.0500	0.0513
Cadmium	mg/L	0.0500	0.0496
Calcium	mg/L	63.4	61.2
Calcium	mg/L	63.4	62.8
Chloride	mg/L	6.90	7.17
Chromium	mg/L	0.0500	0.0514
Cobalt	mg/L	0.0500	0.0521
Copper	mg/L	0.0500	0.0502
Fluoride	mg/L	1.83	1.95
Fluoride	mV	55.0	60.3
Fluoride	mg/L	1.83	1.96
Fluoride	mV	55.0	60.3
Iron	mg/L	0.0500	0.0503
Lead	mg/L	0.0500	0.0488
Lead-210	Bq/L	21.8	19.1
Lead-210	Bq	0.385	0.333
Magnesium	mg/L	16.5	16.2

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QC Analysis	Units	Target Value	Obtained Value	
Magnesium	mg/L	16.5	15.6	
Manganese	mg/L	0.0500	0.0500	
Mercury	ng/L	56.1	59.2	
Molybdenum	mg/L	0.0500	0.0491	
Nickel	mg/L	0.0500	0.0502	
Nitrite+Nitrate nitrogen	mg/L	6.05	6.71	
Nitrite+Nitrate nitrogen	mg/L	1.25	1.31	
Nitrite+Nitrate nitrogen	mg/L	1.25	1.32	
Nitrite+Nitrate nitrogen	mg/L	6.05	6.47	
Organic carbon	mg/L	13.8	13.8	
Organic carbon	mg/L	13.8	14.2	
Organic carbon	mg/L	0.22	0.20	
Organic carbon	mg/L	13.8	13.3	
pH	pH units	7.00	6.94	
pH	pH units	7.00	7.10	
Phosphorus	mg/L	5.00	4.85	
Polonium-210	Bq/L	21.0	17.8	
Polonium-210	Bq	0.385	0.330	
Potassium	mg/L	163	159	
Potassium	mg/L	163	163	
Radium-226	Bq/L	21.4	21.2	
Radium-226	Bq	0.043	0.045	
Radium-226	Bq/L	21.4	25.2	*(1)
Radium-226	Bq	2.13	2.24	
Rubidium	mg/L	50.0	48.4	
Selenium	mg/L	0.0500	0.0512	
Silver	mg/L	0.0500	0.0512	
Sodium	mg/L	97.6	96.7	
Sodium	mg/L	100	97.8	
Specific conductivity	uS/cm	186	190	
Strontium	mg/L	0.0500	0.0477	
Sulfate	mg/L	147	144	
Thallium	mg/L	0.0500	0.0490	
Thorium-230	Bq/L	20.5	20.3	
Thorium-232	Bq	0.188	0.195	
Tin	mg/L	0.0500	0.0480	
Titanium	mg/L	0.0500	0.0488	
Total alkalinity	mg/L	250	244	
Total alkalinity	mg/L	250	254	
Total dissolved solids	mg/L	100	107	
Total dissolved solids	mg/L	100	112	
Total Kjeldahl nitrogen	mg/L	1.88	1.93	
Total Kjeldahl nitrogen	mg/L	1.88	1.92	
Total Kjeldahl nitrogen	mg/L	1.88	1.81	
Total suspended solids	mg/L	100	95.2	

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QC Analysis	Units	Target Value	Obtained Value
Total suspended solids	mg/L	100	96.4
True color	TCU	20.0	18.6
Turbidity	NTU	10.8	10.6
Turbidity	NTU	10.8	10.3
Uranium	mg/L	50.0	48.4
Vanadium	mg/L	0.0500	0.0514
Zinc	mg/L	0.0500	0.0498

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	10327	<0.00005	<0.00005
Silver	mg/L	10328	<0.00005	<0.00005
Silver	mg/L	10337	<0.00005	<0.00005
Aluminum	mg/L	10327	0.022	0.022
Aluminum	mg/L	10328	0.0013	0.0013
Aluminum	mg/L	10337	0.0044	0.0043
Arsenic	ug/L	10327	0.1	0.1
Arsenic	ug/L	10328	0.1	0.2
Arsenic	ug/L	10337	0.1	0.1
Boron	mg/L	10327	<0.01	<0.01
Boron	mg/L	10328	<0.01	0.01
Boron	mg/L	10337	<0.01	<0.01
Barium	mg/L	10327	0.012	0.012
Barium	mg/L	10328	0.011	0.011
Barium	mg/L	10337	0.018	0.019
Beryllium	mg/L	10327	<0.0001	<0.0001
Beryllium	mg/L	10328	<0.0001	<0.0001
Beryllium	mg/L	10337	<0.0001	<0.0001
Bismuth	mg/L	10327	<0.0002	<0.0002
Bismuth	mg/L	10328	<0.0002	<0.0002
Bismuth	mg/L	10337	<0.0002	<0.0002
Calcium	mg/L	10326	<0.1	<0.1
Calcium, dissolved	mg/L	10326	0.2	0.2
Calcium	mg/L	10335	3.3	3.3
Calcium	mg/L	10347	<0.1	<0.1
Calcium, dissolved	mg/L	10347	<0.1	<0.1
Calcium, dissolved	mg/L	10673	5.3	5.3
Calcium, dissolved	mg/L	10757	23	23
Cadmium	mg/L	10327	<0.00001	<0.00001
Cadmium	mg/L	10328	0.00001	0.00001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Cadmium	mg/L	10337	0.00001	0.00001
Chloride	mg/L	10326	<0.1	<0.1
Chloride	mg/L	10333	0.8	0.8
Chloride	mg/L	10342	0.6	0.6
Cobalt	mg/L	10327	<0.0001	<0.0001
Cobalt	mg/L	10328	<0.0001	<0.0001
Cobalt	mg/L	10337	<0.0001	<0.0001
Chromium	mg/L	10327	<0.0005	<0.0005
Chromium	mg/L	10328	<0.0005	<0.0005
Chromium	mg/L	10337	<0.0005	<0.0005
Copper	mg/L	10327	<0.0002	<0.0002
Copper	mg/L	10328	<0.0002	<0.0002
Copper	mg/L	10337	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	10326	0.3	0.2
Organic carbon, dissolved	mg/L	10341	3.5	3.5
Fluoride	mg/L	10326	<0.01	<0.01
Fluoride	mg/L	10333	0.07	0.08
Fluoride	mg/L	10342	0.04	0.05
Iron	mg/L	10327	0.35	0.35
Iron	mg/L	10328	0.0087	0.0092
Iron	mg/L	10337	2.43	2.44
Mercury	ng/L	10077	4	4
Mercury	ng/L	10333	2	1
Mercury	ng/L	10342	2	2
Potassium, dissolved	mg/L	10326	<0.1	<0.1
Potassium	mg/L	10326	<0.1	<0.1
Potassium	mg/L	10335	0.6	0.5
Potassium	mg/L	10347	<0.1	<0.1
Potassium, dissolved	mg/L	10347	<0.1	<0.1
Potassium, dissolved	mg/L	10673	1.5	1.5
Lithium	ug/L	10327	2.1	2.1
Lithium	ug/L	10328	3.4	3.4
Lithium	ug/L	10337	3.1	3.0
Magnesium	mg/L	10326	<0.1	<0.1
Magnesium, dissolved	mg/L	10326	<0.1	<0.1
Magnesium	mg/L	10335	1.0	1.0
Magnesium, dissolved	mg/L	10347	<0.1	<0.1
Magnesium	mg/L	10347	<0.1	<0.1
Magnesium, dissolved	mg/L	10673	1.9	1.9
Magnesium, dissolved	mg/L	10757	5.6	5.7
Manganese	mg/L	10327	0.0097	0.0097
Manganese	mg/L	10328	0.0008	0.0008
Manganese	mg/L	10337	0.26	0.27
Molybdenum	mg/L	10327	<0.0001	<0.0001
Molybdenum	mg/L	10328	<0.0001	<0.0001
Molybdenum	mg/L	10337	0.0001	0.0001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Nitrite+Nitrate as nitrogen, dissolved	mg/L	10340	0.12	0.11
Nitrite+Nitrate as nitrogen, dissolved	mg/L	10346	0.09	0.09
Nitrate as nitrogen, dissolved	mg/L	10340	0.12	0.11
Nitrate as nitrogen, dissolved	mg/L	10346	0.09	0.09
Sodium, dissolved	mg/L	10326	0.1	0.1
Sodium	mg/L	10326	<0.1	<0.1
Sodium	mg/L	10335	1.4	1.4
Sodium	mg/L	10347	<0.1	<0.1
Sodium, dissolved	mg/L	10347	<0.1	<0.1
Sodium, dissolved	mg/L	10673	2.8	2.9
Ammonia as nitrogen	mg/L	9526	0.58	0.63
Ammonia as nitrogen	mg/L	10332	0.02	0.03
Ammonia as nitrogen	mg/L	10333	<0.01	0.01
Ammonia as nitrogen	mg/L	10341	0.05	0.05
Ammonia as nitrogen	mg/L	10343	<0.01	<0.01
Ammonia as nitrogen	mg/L	10428	0.01	0.01
Ammonia as nitrogen	mg/L	12093	0.09	0.09
Ammonia nitrogen, dissolved	mg/L	10326	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	10334	0.02	0.02
Nickel	mg/L	10327	<0.0001	<0.0001
Nickel	mg/L	10328	0.0001	<0.0001
Nickel	mg/L	10337	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	10326	0.03	0.03
Nitrite+Nitrate as nitrogen	mg/L	10334	0.04	0.04
Nitrite+Nitrate as nitrogen	mg/L	10338	0.02	0.02
Nitrite+Nitrate as nitrogen	mg/L	10346	0.08	0.08
Nitrite+Nitrate as nitrogen	mg/L	12050	0.24	0.24
Nitrite+Nitrate as nitrogen, dissolved	mg/L	10310	0.07	0.18
Phosphorus	mg/L	10327	<0.01	<0.01
Phosphorus	mg/L	10328	<0.01	<0.01
Phosphorus	mg/L	10337	0.02	0.01
Lead	mg/L	10327	<0.0001	<0.0001
Lead	mg/L	10328	<0.0001	<0.0001
Lead	mg/L	10337	<0.0001	<0.0001
Lead-210	Bq/L	10328	<0.02	<0.02
Lead-210	Bq/L	10337	<0.02	<0.02
pH	pH units	10326	5.30	5.44
pH	pH units	10333	7.35	7.36
pH	pH units	10342	6.60	6.60
pH	pH units	12040	6.56	6.52
Polonium-210	Bq/L	10328	<0.005	<0.005
Polonium-210	Bq/L	10337	<0.005	<0.005
Radium-226	Bq/L	10226	0.006	0.006
Radium-226	Bq/L	10326	<0.005	0.006
Radium-226	Bq/L	10347	<0.005	<0.005
Rubidium	ug/L	10327	0.66	0.68

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Rubidium	ug/L	10328	0.71	0.71
Rubidium	ug/L	10337	0.72	0.71
Antimony	mg/L	10327	<0.0002	<0.0002
Antimony	mg/L	10328	<0.0002	<0.0002
Antimony	mg/L	10337	<0.0002	<0.0002
Selenium	mg/L	10327	<0.0001	<0.0001
Selenium	mg/L	10328	<0.0001	<0.0001
Selenium	mg/L	10337	<0.0001	<0.0001
Tin	mg/L	10327	<0.0001	<0.0001
Tin	mg/L	10328	<0.0001	<0.0001
Tin	mg/L	10337	0.0004	0.0004
Sulfate	mg/L	10326	<0.2	<0.2
Sulfate	mg/L	10335	1.6	1.5
Sulfate	mg/L	10347	<0.2	<0.2
Specific conductivity	uS/cm	10326	<1	<1
Specific conductivity	uS/cm	10333	43	43
Specific conductivity	uS/cm	10342	24	23
Strontium	mg/L	10327	0.031	0.031
Strontium	mg/L	10328	0.035	0.035
Strontium	mg/L	10337	0.035	0.035
Total dissolved solids	mg/L	10315	1140	1140
Total dissolved solids	mg/L	10327	47	44
Tellurium	ug/L	10327	<1	<1
Tellurium	ug/L	10328	<1	<1
Tellurium	ug/L	10337	<1	<1
Thorium-230	Bq/L	10327	<0.01	<0.01
Thorium-230	Bq/L	10336	<0.01	<0.01
Titanium	mg/L	10327	0.0003	0.0004
Titanium	mg/L	10328	<0.0002	<0.0002
Titanium	mg/L	10337	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	10040	1.8	1.5
Total Kjeldahl nitrogen	mg/L	10335	0.18	0.21
Total Kjeldahl nitrogen	mg/L	11621	0.13	0.10
Thallium	mg/L	10327	<0.0002	<0.0002
Thallium	mg/L	10328	<0.0002	<0.0002
Thallium	mg/L	10337	<0.0002	<0.0002
Organic carbon	mg/L	10326	<0.2	<0.2
Organic carbon	mg/L	10347	<0.2	<0.2
Organic carbon	mg/L	10782	<0.2	<0.2
Total alkalinity	mg/L	10326	2	1
Total alkalinity	mg/L	10333	26	22
Total alkalinity	mg/L	10342	12	13
Total alkalinity	mg/L	12039	10	12
True color	CU	10326	<1	<1
True color	CU	10335	21	20
Total suspended solids	mg/L	10313	2	2

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Total suspended solids	mg/L	10345	<1	<1
Total suspended solids	mg/L	10773	2	2
Turbidity	NTU	10326	0.096	0.097
Turbidity	NTU	10333	0.153	0.139
Uranium	ug/L	10327	<0.1	<0.1
Uranium	ug/L	10328	<0.1	<0.1
Uranium	ug/L	10337	<0.1	<0.1
Vanadium	mg/L	10327	0.0002	0.0002
Vanadium	mg/L	10328	<0.0001	<0.0001
Vanadium	mg/L	10337	<0.0001	<0.0001
Zinc	mg/L	10327	0.0007	0.0006
Zinc	mg/L	10328	0.0018	0.0019
Zinc	mg/L	10337	0.0009	0.0009
Zirconium	mg/L	10327	<0.001	<0.001
Zirconium	mg/L	10328	<0.001	<0.001
Zirconium	mg/L	10337	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	102
Ammonia as nitrogen	110
Ammonia as nitrogen	88
Ammonia as nitrogen	110
Ammonia as nitrogen	100
Ammonia as nitrogen	88
Ammonia as nitrogen	92
Antimony	102
Arsenic	102
Barium	103
Beryllium	95
Boron	106
Cadmium	103
Calcium	99
Calcium	100
Chloride	90
Chromium	105
Cobalt	107
Copper	103

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143-111 Research Drive, Saskatoon, SK Canada S7N 3R2
T: 306-933-6932 F: 306-933-7922
Toll-free: 1-800-240-8808
E: analytical@src.sk.ca
www.src.sk.ca/analytical

Mar 19, 2019

This report was generated for samples included in SRC Group # 2019-2467

Spike Analysis	Percent Recovery
Fluoride	108
Fluoride	110
Iron	99
Lead	100
Magnesium	99
Magnesium	100
Manganese	102
Mercury	110
Molybdenum	97
Nickel	105
Nitrite+Nitrate nitrogen	107
Nitrite+Nitrate nitrogen	98
Nitrite+Nitrate nitrogen	90
Nitrite+Nitrate nitrogen	108
Nitrite+Nitrate nitrogen	106
Nitrite+Nitrate nitrogen	98
Organic carbon	110
Organic carbon	95
Organic Carbon	100
Organic Carbon, dissolved	109
Phosphorus	96
Potassium	98
Potassium	100
Selenium	107
Silver	104
Sodium	101
Sodium	101
Strontium	96
Sulfate	98
Thallium	101
Tin	97
Titanium	97
Total Kjeldahl nitrogen	102
Total Kjeldahl nitrogen	116
Total Kjeldahl nitrogen	107
Uranium	97
Vanadium	106
Zinc	102

*(1) The Radium-226 result for the quality control sample was outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered

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acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Jun-03-2019

Client P.O.: 3008_19SPR_WS Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Jun-03-2019

Client P.O.: 3008_19SPR_WS Rook I Environmental Baseline Studies

29318 CLEARV1 05/26/2019 09:55 3008_FB_201905_WS *WATER*

Analyte	Units	29318
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	1±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	6.35±1
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1±1
Total alkalinity	mg/L	1±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Organic carbon, dissolved	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
True color	CU	<1
Turbidity	NTU	<0.1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1

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Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29318 CLEARV1 05/26/2019 09:55 3008_FB_201905_WS *WATER*

Analyte	Units	29318
Lab Section 2 (ICP)		
Sodium	mg/L	0.2±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0005±0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	0.0033±0.002
Zirconium	mg/L	<0.001
Phosphorus	mg/L	0.02±0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29318 CLEARV1 05/26/2019 09:55 3008_FB_201905_WS *WATER*

Analyte	Units	29318
Lab Section 4 (Radiochemistry)		
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

This sample was reanalyzed for Zinc. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 7.9 °C upon receipt.

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29319 CLEARV1 05/26/2019 09:55 3008_TB_201905_WS *WATER*

Analyte	Units	29319
Lab Section 1 (Inorganics)		
Bicarbonate	mg/L	1±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.50±0.8
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1±1
Total alkalinity	mg/L	1±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	2±1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29319 CLEARV1 05/26/2019 09:55 3008_TB_201905_WS *WATER*

Analyte	Units	29319
Lab Section 2 (ICP)		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

This sample was reanalyzed for Mercury. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 7.9 °C upon receipt.

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29320	**CLEARV1 05/26/2019 09:55 3008_QAQC_201905_WS *WATER***
29321	**BEETCK 05/26/2019 12:19 BEETCK_201905_WS *WATER***
29322	**BEETLK1 05/26/2019 13:00 BEETLK1_201905_WS *WATER***

Analyte	Units	29320	29321	29322
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	29±4	29±4	32±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.37±0.7	7.39±0.7	7.39±0.7
Specific conductivity	uS/cm	33±5	38±6	38±6
Sum of ions	mg/L	39±6	40±6	43±6
Total alkalinity	mg/L	24±4	24±4	26±4
Total hardness	mg/L	15±4	17±4	18±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.16±0.04
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.26±0.1	0.21±0.1	0.21±0.1
Mercury	ng/L	2±1	1±1	2±1
Organic carbon	mg/L	2.6±0.6	2.4±0.6	1.8±0.5
Organic carbon, dissolved	mg/L	2.6±0.6	3.0±0.8	2.0±0.5
Fluoride	mg/L	0.05±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	46±10	48±10	46±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	7±2	8±3	1±1
Turbidity	NTU	1.3±0.3	0.6±0.1	0.8±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	3.9±0.6	4.3±0.6	4.4±0.7
Calcium, dissolved	mg/L	3.9±0.6	4.3±0.6	4.4±0.7
Magnesium	mg/L	1.4±0.4	1.6±0.4	1.6±0.4
Magnesium, dissolved	mg/L	1.4±0.4	1.6±0.4	1.6±0.4
Potassium	mg/L	0.7±0.2	0.7±0.2	0.7±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.7±0.2	0.8±0.3
Sodium	mg/L	1.6±0.4	1.7±0.4	1.7±0.4
Sodium, dissolved	mg/L	1.6±0.4	1.7±0.4	1.7±0.4

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29320	**CLEARV1 05/26/2019 09:55 3008_QAQC_201905_WS *WATER***
29321	**BEETCK 05/26/2019 12:19 BEETCK_201905_WS *WATER***
29322	**BEETLK1 05/26/2019 13:00 BEETLK1_201905_WS *WATER***

Analyte	Units	29320	29321	29322
Lab Section 2 (ICP)				
Sulfate	mg/L	1.4±0.3	1.6±0.4	1.6±0.4
Aluminum	mg/L	0.0099±0.002	0.0092±0.002	0.0022±0.001
Aluminum, dissolved	mg/L	0.0077±0.002	0.0097±0.002	0.0029±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0074±0.002	0.0089±0.002	0.0097±0.002
Barium, dissolved	mg/L	0.0073±0.002	0.0087±0.002	0.0092±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.18±0.02	0.095±0.01	0.12±0.01
Iron, dissolved	mg/L	0.12±0.01	0.066±0.007	0.027±0.004
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.6±0.4	3.3±0.5	3.3±0.5
Lithium, dissolved	ug/L	2.7±0.4	3.2±0.5	3.2±0.5
Manganese	mg/L	0.010±0.002	0.0099±0.002	0.029±0.004
Manganese, dissolved	mg/L	0.0043±0.001	0.0068±0.002	0.015±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29320	**CLEARV1 05/26/2019 09:55 3008_QAQC_201905_WS *WATER***
29321	**BEETCK 05/26/2019 12:19 BEETCK_201905_WS *WATER***
29322	**BEETLK1 05/26/2019 13:00 BEETLK1_201905_WS *WATER***

Analyte	Units	29320	29321	29322
Lab Section 2 (ICP)				
Rubidium	ug/L	0.55±0.1	0.59±0.1	0.56±0.1
Rubidium, dissolved	ug/L	0.56±0.1	0.60±0.2	0.54±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.026±0.004	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.028±0.004	0.030±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0002±0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0001±0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0013±0.0009	0.0012±0.0009	0.0015±0.001
Zinc, dissolved	mg/L	0.0011±0.0007	0.0026±0.001	0.0027±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29323	**BROALK2 05/24/2019 14:00 BROALK2_201905_WS *WATER***
29324	**CLEARV_MF3 05/17/2019 12:00 CLEARV_MF3_201905_WS *WATER***
29325	**CLEARV1 05/26/2019 09:55 CLEARV1_201905_WS *WATER***

Analyte	Units	29323	29324	29325
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	32±5	18±4	32±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.4±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.32±0.7	7.27±0.7	7.39±0.7
Specific conductivity	uS/cm	42±6	25±4	33±5
Sum of ions	mg/L	42±6	25±4	41±6
Total alkalinity	mg/L	26±4	15±4	26±4
Total hardness	mg/L	16±4	12±3	15±4
Ammonia as nitrogen	mg/L	0.18±0.04	0.02±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.16±0.04	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.33±0.2	0.22±0.1	0.25±0.1
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	1.5±0.5	2.6±0.6	2.6±0.6
Organic carbon, dissolved	mg/L	1.7±0.5	2.7±0.7	2.8±0.7
Fluoride	mg/L	0.05±0.02	0.03±0.01	0.05±0.02
Total dissolved solids	mg/L	48±10	38±10	58±10
Total suspended solids	mg/L	<1	<1	3±1
True color	CU	<1	11±3	8±3
Turbidity	NTU	1.3±0.3	1.2±0.3	1.3±0.3
Lab Section 2 (ICP)				
Calcium	mg/L	4.2±0.6	3.0±0.4	3.8±0.6
Calcium, dissolved	mg/L	4.2±0.6	3.0±0.4	3.9±0.6
Magnesium	mg/L	1.3±0.3	1.0±0.2	1.4±0.4
Magnesium, dissolved	mg/L	1.3±0.3	1.0±0.2	1.4±0.4
Potassium	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.7±0.2
Sodium	mg/L	1.6±0.4	1.3±0.3	1.6±0.4
Sodium, dissolved	mg/L	1.6±0.4	1.3±0.3	1.6±0.4

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29323 BROALK2 05/24/2019 14:00 BROALK2_201905_WS *WATER*
29324 CLEARV_MF3 05/17/2019 12:00 CLEARV_MF3_201905_WS *WATER*
29325 CLEARV1 05/26/2019 09:55 CLEARV1_201905_WS *WATER*

Analyte	Units	29323	29324	29325
Lab Section 2 (ICP)				
Sulfate	mg/L	1.8±0.4	1.1±0.3	1.4±0.3
Aluminum	mg/L	0.0021±0.001	0.0081±0.002	0.014±0.002
Aluminum, dissolved	mg/L	0.0019±0.001	0.0054±0.001	0.0079±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.041±0.006	0.0057±0.001	0.0078±0.002
Barium, dissolved	mg/L	0.041±0.006	0.0055±0.001	0.0070±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.12±0.01	0.26±0.03	0.20±0.02
Iron, dissolved	mg/L	0.024±0.004	0.21±0.02	0.11±0.01
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.2±0.5	2.1±0.3	2.9±0.4
Lithium, dissolved	ug/L	3.1±0.5	2.0±0.3	2.8±0.4
Manganese	mg/L	1.44±0.1	0.0098±0.002	0.010±0.002
Manganese, dissolved	mg/L	1.47±0.1	0.0005±0.0005	0.0041±0.001
Molybdenum	mg/L	0.0002±0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	0.0002±0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29323 BROALK2 05/24/2019 14:00 BROALK2_201905_WS *WATER*
29324 CLEARV_MF3 05/17/2019 12:00 CLEARV_MF3_201905_WS *WATER*
29325 CLEARV1 05/26/2019 09:55 CLEARV1_201905_WS *WATER*

Analyte	Units	29323	29324	29325
Lab Section 2 (ICP)				
Rubidium	ug/L	0.54±0.1	0.52±0.1	0.56±0.1
Rubidium, dissolved	ug/L	0.58±0.1	0.50±0.1	0.55±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.039±0.006	0.023±0.003	0.029±0.004
Strontium, dissolved	mg/L	0.038±0.006	0.023±0.003	0.028±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0003±0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0024±0.001	0.0007±0.0006	0.0013±0.0009
Zinc, dissolved	mg/L	0.0028±0.001	0.0017±0.0009	0.0011±0.0007
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.005±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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SRC Group # 2019-7104

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29326 FORRLK1 05/25/2019 15:53 FORRLK1_201905_WS *WATER*
29327 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_ABOVE *WATER*
29328 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_BELOW *WATER*

Analyte	Units	29326	29327	29328
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	28±4	29±4	33±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.7±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.40±0.7	7.52±0.8	7.50±0.8
Specific conductivity	uS/cm	35±5	41±6	42±6
Sum of ions	mg/L	38±6	41±6	45±7
Total alkalinity	mg/L	23±3	24±4	27±4
Total hardness	mg/L	16±4	18±4	18±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.22±0.1	0.12±0.08	0.14±0.09
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	2.0±0.5	1.1±0.4	1.1±0.4
Organic carbon, dissolved	mg/L	2.7±0.7	1.2±0.4	1.4±0.5
Fluoride	mg/L	0.04±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	57±10	58±10	55±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	3±2	<1	<1
Turbidity	NTU	0.6±0.1	0.4±0.1	0.3±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	4.1±0.6	4.6±0.7	4.6±0.7
Calcium, dissolved	mg/L	4.1±0.6	4.6±0.7	4.6±0.7
Magnesium	mg/L	1.4±0.4	1.7±0.4	1.7±0.4
Magnesium, dissolved	mg/L	1.5±0.4	1.7±0.4	1.7±0.4
Potassium	mg/L	0.6±0.2	0.9±0.3	0.8±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.8±0.3	0.8±0.3
Sodium	mg/L	1.5±0.4	2.0±0.3	2.0±0.3
Sodium, dissolved	mg/L	1.5±0.4	1.9±0.5	2.0±0.3

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29326 FORRLK1 05/25/2019 15:53 FORRLK1_201905_WS *WATER*
29327 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_ABOVE *WATER*
29328 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_BELOW *WATER*

Analyte	Units	29326	29327	29328
Lab Section 2 (ICP)				
Sulfate	mg/L	1.6±0.4	1.8±0.4	1.8±0.4
Aluminum	mg/L	0.0079±0.002	<0.0005	0.0015±0.0008
Aluminum, dissolved	mg/L	0.0080±0.002	0.0009±0.0007	0.0009±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0094±0.002	0.0075±0.002	0.0079±0.002
Barium, dissolved	mg/L	0.0091±0.002	0.0076±0.002	0.0073±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.046±0.007	0.011±0.002	0.0099±0.002
Iron, dissolved	mg/L	0.017±0.002	0.0047±0.001	0.0024±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.9±0.4	3.7±0.6	3.7±0.6
Lithium, dissolved	ug/L	2.8±0.4	3.5±0.5	3.6±0.5
Manganese	mg/L	0.015±0.002	0.0040±0.001	0.0057±0.001
Manganese, dissolved	mg/L	0.0081±0.002	0.0011±0.0007	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29326 FORRLK1 05/25/2019 15:53 FORRLK1_201905_WS *WATER*
29327 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_ABOVE *WATER*
29328 FORRLK2 05/29/2019 09:43 FORRLK2_201905_WS_BELOW *WATER*

Analyte	Units	29326	29327	29328
Lab Section 2 (ICP)				
Rubidium	ug/L	0.60±0.2	0.59±0.1	0.56±0.1
Rubidium, dissolved	ug/L	0.55±0.1	0.61±0.2	0.56±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.031±0.005	0.030±0.004	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0017±0.001	0.0026±0.001	0.0016±0.001
Zinc, dissolved	mg/L	0.0017±0.0009	0.0017±0.0009	0.0021±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	0.006±0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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29329	**HODGLK1 05/24/2019 11:20 HODGLK1_201905_WS *WATER***
29330	**JEDCK 05/27/2019 16:37 JEDCK_201905_WS *WATER***
29331	**LAKED 05/25/2019 13:45 LAKED_201905_WS *WATER***

Analyte	Units	29329	29330	29331
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	15±4	16±4	32±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2.0±0.3	0.3±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.07±0.7	7.16±0.7	7.46±0.7
Specific conductivity	uS/cm	22±3	20±3	35±5
Sum of ions	mg/L	23±3	23±3	41±6
Total alkalinity	mg/L	12±3	13±3	26±4
Total hardness	mg/L	10±2	10±2	18±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.13±0.08	0.22±0.1	0.59±0.1
Mercury	ng/L	2±1	1±1	2±1
Organic carbon	mg/L	1.9±0.6	3.5±0.9	5.3±0.8
Organic carbon, dissolved	mg/L	2.1±0.5	3.7±0.9	6.7±1
Fluoride	mg/L	0.02±0.01	0.03±0.01	0.03±0.01
Total dissolved solids	mg/L	37±10	40±10	40±10
Total suspended solids	mg/L	1±1	1±1	2±1
True color	CU	2±1	18±4	7±2
Turbidity	NTU	0.4±0.1	0.9±0.1	1.0±0.2
Lab Section 2 (ICP)				
Calcium	mg/L	3.0±0.4	2.6±0.4	5.0±0.8
Calcium, dissolved	mg/L	3.0±0.4	2.6±0.4	5.0±0.8
Magnesium	mg/L	0.7±0.1	0.8±0.1	1.3±0.3
Magnesium, dissolved	mg/L	0.7±0.1	0.8±0.1	1.4±0.4
Potassium	mg/L	0.2±0.1	0.5±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.3±0.1	0.5±0.2	0.4±0.2
Sodium	mg/L	1.0±0.2	1.2±0.3	1.4±0.4
Sodium, dissolved	mg/L	1.0±0.2	1.1±0.3	1.4±0.4

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29329 HODGLK1 05/24/2019 11:20 HODGLK1_201905_WS *WATER*
29330 JEDCK 05/27/2019 16:37 JEDCK_201905_WS *WATER*
29331 LAKED 05/25/2019 13:45 LAKED_201905_WS *WATER*

Analyte	Units	29329	29330	29331
Lab Section 2 (ICP)				
Sulfate	mg/L	1.1±0.3	1.2±0.3	1.0±0.2
Aluminum	mg/L	0.0040±0.001	0.019±0.003	0.0037±0.001
Aluminum, dissolved	mg/L	0.0015±0.0008	0.014±0.002	0.0048±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0068±0.002	0.0080±0.002	0.0043±0.001
Barium, dissolved	mg/L	0.0066±0.002	0.0076±0.002	0.0040±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Boron, dissolved	mg/L	0.01±0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.024±0.004	0.43±0.04	0.17±0.02
Iron, dissolved	mg/L	0.0026±0.001	0.27±0.03	0.12±0.01
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.9±0.5	1.8±0.4	1.7±0.4
Lithium, dissolved	ug/L	1.9±0.5	1.8±0.4	1.8±0.4
Manganese	mg/L	0.0088±0.002	0.011±0.002	0.010±0.002
Manganese, dissolved	mg/L	0.0005±0.0005	0.0062±0.002	0.0024±0.001
Molybdenum	mg/L	<0.0001	0.0001±0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-7104

Jun 26, 2019

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29329	**HODGLK1 05/24/2019 11:20 HODGLK1_201905_WS *WATER***
29330	**JEDCK 05/27/2019 16:37 JEDCK_201905_WS *WATER***
29331	**LAKED 05/25/2019 13:45 LAKED_201905_WS *WATER***

Analyte	Units	29329	29330	29331
Lab Section 2 (ICP)				
Rubidium	ug/L	0.62±0.2	0.60±0.2	0.34±0.1
Rubidium, dissolved	ug/L	0.58±0.1	0.60±0.2	0.36±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.061±0.006	0.025±0.004	0.015±0.002
Strontium, dissolved	mg/L	0.061±0.006	0.024±0.004	0.014±0.002
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0060±0.0009	<0.0001	<0.0001
Tin, dissolved	mg/L	0.0023±0.0003	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0003±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001
Zinc	mg/L	0.0012±0.0009	0.0020±0.001	0.0016±0.001
Zinc, dissolved	mg/L	0.0017±0.0009	0.0013±0.0008	0.0018±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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29332 LAKEG1 05/28/2019 16:07 LAKEG1_201905_WS *WATER*
29333 LAKEH2 05/28/2019 13:45 LAKEH2_201905_WS *WATER*
29334 LAKEJ 05/25/2019 09:50 LAKEJ_201905_WS *WATER*

Analyte	Units	29332	29333	29334
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	33±5	33±5	5±2
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1±0.1	0.2±0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.33±0.7	7.47±0.7	6.35±1
Specific conductivity	uS/cm	33±5	34±5	1±1
Sum of ions	mg/L	42±6	41±6	7±2
Total alkalinity	mg/L	27±4	27±4	4±1
Total hardness	mg/L	15±4	15±4	1±1
Ammonia as nitrogen	mg/L	0.03±0.02	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.60±0.2	0.54±0.1	0.67±0.2
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	6.1±0.9	6.4±1	5.6±0.8
Organic carbon, dissolved	mg/L	6.4±1	6.6±1	6.8±1
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.01±0.01
Total dissolved solids	mg/L	37±10	42±10	<5
Total suspended solids	mg/L	2±1	3±1	3±1
True color	CU	17±4	3±2	4±2
Turbidity	NTU	1.1±0.3	1.5±0.4	1.5±0.4
Lab Section 2 (ICP)				
Calcium	mg/L	3.4±0.5	3.6±0.5	0.4±0.2
Calcium, dissolved	mg/L	3.4±0.5	3.6±0.5	0.4±0.1
Magnesium	mg/L	1.6±0.4	1.5±0.4	0.1±0.1
Magnesium, dissolved	mg/L	1.6±0.4	1.5±0.4	0.1±0.1
Potassium	mg/L	0.6±0.2	0.8±0.3	0.2±0.1
Potassium, dissolved	mg/L	0.6±0.2	0.8±0.3	0.3±0.1
Sodium	mg/L	1.7±0.4	1.8±0.4	0.6±0.1
Sodium, dissolved	mg/L	1.7±0.4	1.8±0.4	0.6±0.1

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29332 LAKEG1 05/28/2019 16:07 LAKEG1_201905_WS *WATER*
29333 LAKEH2 05/28/2019 13:45 LAKEH2_201905_WS *WATER*
29334 LAKEJ 05/25/2019 09:50 LAKEJ_201905_WS *WATER*

Analyte	Units	29332	29333	29334
Lab Section 2 (ICP)				
Sulfate	mg/L	1.1±0.3	0.3±0.2	0.6±0.2
Aluminum	mg/L	0.0047±0.001	0.0085±0.002	0.0093±0.002
Aluminum, dissolved	mg/L	0.0029±0.001	0.0060±0.002	0.0059±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0055±0.001	0.0010±0.0007	0.0031±0.001
Barium, dissolved	mg/L	0.0050±0.001	0.0008±0.0006	0.0027±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	0.0007±0.0004	<0.0002	<0.0002
Iron	mg/L	0.40±0.04	0.18±0.02	0.059±0.006
Iron, dissolved	mg/L	0.24±0.02	0.12±0.01	0.019±0.003
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.6±0.4	3.3±0.5	0.1±0.1
Lithium, dissolved	ug/L	2.5±0.4	3.4±0.5	0.1±0.1
Manganese	mg/L	0.012±0.002	0.016±0.002	0.0039±0.001
Manganese, dissolved	mg/L	0.0064±0.002	0.0007±0.0006	0.0025±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29332 LAKEG1 05/28/2019 16:07 LAKEG1_201905_WS *WATER*
29333 LAKEH2 05/28/2019 13:45 LAKEH2_201905_WS *WATER*
29334 LAKEJ 05/25/2019 09:50 LAKEJ_201905_WS *WATER*

Analyte	Units	29332	29333	29334
Lab Section 2 (ICP)				
Rubidium	ug/L	0.44±0.1	1.2±0.2	0.54±0.1
Rubidium, dissolved	ug/L	0.43±0.05	1.2±0.2	0.47±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.020±0.003	0.012±0.002	0.0042±0.001
Strontium, dissolved	mg/L	0.019±0.003	0.012±0.002	0.0038±0.001
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0027±0.001	0.0012±0.0009	0.0017±0.001
Zinc, dissolved	mg/L	0.0030±0.001	0.0021±0.001	0.0023±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.01±0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.01±0.007	0.008±0.006
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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29335	**LLOYLKI 05/25/2019 14:06 LLOYLKI_20190525_WS *WATER***
29336	**LLOYLKO 05/25/2019 13:01 LLOYLKO_201905_WS *WATER***
29337	**NAOMLK 05/26/2019 11:09 NAOMLK_20190526_WS *WATER***

Analyte	Units	29335	29336	29337
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	18±4	28±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.7±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.23±0.7	7.24±0.7	7.15±0.7
Specific conductivity	uS/cm	27±4	24±4	18±4
Sum of ions	mg/L	26±4	35±5	32±5
Total alkalinity	mg/L	15±4	23±3	21±3
Total hardness	mg/L	12±3	11±3	9±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.28±0.1	0.30±0.1	0.21±0.1
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	3.1±0.8	3.3±0.8	5.3±0.8
Organic carbon, dissolved	mg/L	3.4±0.8	3.8±1	5.7±0.8
Fluoride	mg/L	0.04±0.02	0.03±0.01	0.02±0.01
Total dissolved solids	mg/L	44±10	26±10	24±10
Total suspended solids	mg/L	1±1	2±1	3±1
True color	CU	9±3	10±2	30±4
Turbidity	NTU	1.2±0.3	0.9±0.1	1.8±0.4
Lab Section 2 (ICP)				
Calcium	mg/L	3.2±0.5	2.8±0.4	2.6±0.4
Calcium, dissolved	mg/L	3.2±0.5	2.9±0.4	2.7±0.4
Magnesium	mg/L	1.1±0.3	1.0±0.2	0.7±0.1
Magnesium, dissolved	mg/L	1.1±0.3	1.0±0.2	0.7±0.1
Potassium	mg/L	0.6±0.2	0.6±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.4±0.2
Sodium	mg/L	1.4±0.4	1.3±0.3	1.0±0.2
Sodium, dissolved	mg/L	1.4±0.4	1.3±0.3	1.0±0.2

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29335 LLOYLKI 05/25/2019 14:06 LLOYLKI_20190525_WS *WATER*
29336 LLOYLKO 05/25/2019 13:01 LLOYLKO_201905_WS *WATER*
29337 NAOMLK 05/26/2019 11:09 NAOMLK_20190526_WS *WATER*

Analyte	Units	29335	29336	29337
Lab Section 2 (ICP)				
Sulfate	mg/L	1.1±0.3	1.0±0.2	0.6±0.2
Aluminum	mg/L	0.0070±0.002	0.0074±0.002	0.025±0.004
Aluminum, dissolved	mg/L	0.0041±0.001	0.0041±0.001	0.020±0.003
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0058±0.001	0.0048±0.001	0.0070±0.002
Barium, dissolved	mg/L	0.0052±0.001	0.0044±0.001	0.0065±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.31±0.03	0.35±0.04	0.96±0.1
Iron, dissolved	mg/L	0.17±0.02	0.22±0.02	0.76±0.08
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.0±0.3	1.9±0.5	1.3±0.3
Lithium, dissolved	ug/L	2.1±0.3	1.9±0.5	1.2±0.3
Manganese	mg/L	0.045±0.007	0.022±0.003	0.021±0.003
Manganese, dissolved	mg/L	0.020±0.003	0.0019±0.001	0.0023±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-7104

Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29335 LLOYLKI 05/25/2019 14:06 LLOYLKI_20190525_WS *WATER*
29336 LLOYLKO 05/25/2019 13:01 LLOYLKO_201905_WS *WATER*
29337 NAOMLK 05/26/2019 11:09 NAOMLK_20190526_WS *WATER*

Analyte	Units	29335	29336	29337
Lab Section 2 (ICP)				
Rubidium	ug/L	0.55±0.1	0.54±0.1	0.74±0.2
Rubidium, dissolved	ug/L	0.64±0.2	0.57±0.1	0.73±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.024±0.004	0.022±0.003	0.024±0.004
Strontium, dissolved	mg/L	0.024±0.004	0.022±0.003	0.023±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0042±0.0006	0.0017±0.0004	<0.0001
Tin, dissolved	mg/L	0.0039±0.0006	0.0081±0.001	<0.0001
Titanium	mg/L	<0.0002	0.0003±0.0002	0.0005±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0004±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0001±0.0001	0.0003±0.0002
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	0.0012±0.0009	0.0016±0.001	0.0014±0.001
Zinc, dissolved	mg/L	0.0023±0.001	0.0028±0.001	0.0018±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	0.007±0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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Jun 26, 2019

CanNorth, Canada North Environmental Services Limited

29338	**PATTLKE1 05/27/2019 10:35 PATTLKE1_201905_WS *WATER***
29339	**PATTLKN1 05/27/2019 14:40 PATTLKN1_201905_WS *WATER***
29340	**PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_ABOVE *WATER***

Analyte	Units	29338	29339	29340
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	30±4	24±4	20±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.5±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.42±0.7	7.41±0.7	7.32±0.7
Specific conductivity	uS/cm	34±5	33±5	26±4
Sum of ions	mg/L	40±6	33±5	28±4
Total alkalinity	mg/L	25±4	20±3	16±4
Total hardness	mg/L	16±4	15±4	12±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.11±0.08	0.10±0.07	0.18±0.1
Mercury	ng/L	1±1	2±1	2±1
Organic carbon	mg/L	1.8±0.5	1.8±0.5	2.6±0.6
Organic carbon, dissolved	mg/L	2.2±0.6	2.0±0.5	3.0±0.8
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	33±10	32±10	17±9
Total suspended solids	mg/L	<1	<1	2±1
True color	CU	<1	<1	4±2
Turbidity	NTU	0.4±0.1	0.6±0.1	0.8±0.1
Lab Section 2 (ICP)				
Calcium	mg/L	4.0±0.6	3.9±0.6	3.2±0.5
Calcium, dissolved	mg/L	4.0±0.6	3.9±0.6	3.2±0.5
Magnesium	mg/L	1.4±0.4	1.4±0.4	1.0±0.2
Magnesium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.0±0.2
Potassium	mg/L	0.6±0.2	0.6±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.5±0.4	1.4±0.4	1.3±0.3
Sodium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.3±0.3

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29338 PATTLKE1 05/27/2019 10:35 PATTLKE1_201905_WS *WATER*
29339 PATTLKN1 05/27/2019 14:40 PATTLKN1_201905_WS *WATER*
29340 PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_ABOVE *WATER*

Analyte	Units	29338	29339	29340
Lab Section 2 (ICP)				
Sulfate	mg/L	1.7±0.4	1.6±0.4	1.2±0.3
Aluminum	mg/L	0.0009±0.0007	0.0008±0.0006	0.0038±0.001
Aluminum, dissolved	mg/L	0.0012±0.0008	0.0008±0.0006	0.0013±0.0008
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0097±0.002	0.0098±0.002	0.0092±0.002
Barium, dissolved	mg/L	0.0093±0.002	0.0091±0.002	0.0088±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.024±0.004	0.018±0.003	0.13±0.01
Iron, dissolved	mg/L	0.0023±0.001	0.0015±0.0008	0.038±0.006
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.8±0.4	2.8±0.4	2.2±0.3
Lithium, dissolved	ug/L	2.8±0.4	2.8±0.4	2.3±0.3
Manganese	mg/L	0.037±0.006	0.027±0.004	0.017±0.002
Manganese, dissolved	mg/L	0.0093±0.002	0.0076±0.002	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29338 PATTLKE1 05/27/2019 10:35 PATTLKE1_201905_WS *WATER*
29339 PATTLKN1 05/27/2019 14:40 PATTLKN1_201905_WS *WATER*
29340 PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_ABOVE *WATER*

Analyte	Units	29338	29339	29340
Lab Section 2 (ICP)				
Rubidium	ug/L	0.54±0.1	0.62±0.2	0.60±0.2
Rubidium, dissolved	ug/L	0.60±0.2	0.53±0.1	0.66±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.030±0.004	0.027±0.004
Strontium, dissolved	mg/L	0.030±0.004	0.030±0.004	0.028±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0019±0.001	0.0016±0.001	0.0016±0.001
Zinc, dissolved	mg/L	0.0016±0.0009	0.0012±0.0008	0.0012±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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29341 PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_BELOW *WATER*
29342 WARNRP 05/30/2019 09:09 WARNRP_20190530_WS *WATER*

Analyte	Units	29341	29342
Lab Section 1 (Inorganics)			
Bicarbonate	mg/L	29±4	29±4
Carbonate	mg/L	<1	<1
Chloride	mg/L	0.4±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.21±0.7	7.27±0.7
Specific conductivity	uS/cm	26±4	27±4
Sum of ions	mg/L	37±6	37±6
Total alkalinity	mg/L	24±4	24±4
Total hardness	mg/L	12±3	12±3
Ammonia as nitrogen	mg/L	0.04±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.23±0.1	0.19±0.1
Mercury	ng/L	2±1	2±1
Organic carbon	mg/L	2.5±0.6	4.2±0.6
Organic carbon, dissolved	mg/L	2.7±0.7	4.6±0.7
Fluoride	mg/L	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	29±10	34±10
Total suspended solids	mg/L	2±1	1±1
True color	CU	4±2	18±4
Turbidity	NTU	1.0±0.2	1.2±0.3
Lab Section 2 (ICP)			
Calcium	mg/L	3.2±0.5	3.0±0.4
Calcium, dissolved	mg/L	3.2±0.5	3.0±0.4
Magnesium	mg/L	1.0±0.2	1.1±0.3
Magnesium, dissolved	mg/L	1.0±0.2	1.1±0.3
Potassium	mg/L	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.6±0.2
Sodium	mg/L	1.3±0.3	1.4±0.4
Sodium, dissolved	mg/L	1.3±0.3	1.4±0.4

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CanNorth, Canada North Environmental Services Limited

29341 PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_BELOW *WATER*
29342 WARNRP 05/30/2019 09:09 WARNRP_20190530_WS *WATER*

Analyte	Units	29341	29342
Lab Section 2 (ICP)			
Sulfate	mg/L	1.2±0.3	1.2±0.3
Aluminum	mg/L	0.0033±0.001	0.014±0.002
Aluminum, dissolved	mg/L	0.0018±0.0009	0.0074±0.002
Antimony	mg/L	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1
Barium	mg/L	0.010±0.002	0.0047±0.001
Barium, dissolved	mg/L	0.0097±0.002	0.0042±0.001
Beryllium	mg/L	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002
Iron	mg/L	0.22±0.02	0.41±0.04
Iron, dissolved	mg/L	0.092±0.009	0.28±0.03
Lead	mg/L	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001
Lithium	ug/L	2.2±0.3	1.6±0.4
Lithium, dissolved	ug/L	2.3±0.3	1.6±0.4
Manganese	mg/L	0.024±0.004	0.032±0.005
Manganese, dissolved	mg/L	0.0008±0.0006	0.020±0.003
Molybdenum	mg/L	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001

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29341 PATTLKNE1 05/28/2019 11:04 PATTLKNE1_201905_WS_BELOW *WATER*
29342 WARNRP 05/30/2019 09:09 WARNRP_20190530_WS *WATER*

Analyte	Units	29341	29342
Lab Section 2 (ICP)			
Rubidium	ug/L	0.62±0.2	0.84±0.2
Rubidium, dissolved	ug/L	0.57±0.1	0.78±0.2
Selenium	mg/L	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.021±0.003
Strontium, dissolved	mg/L	0.027±0.004	0.021±0.003
Tellurium	ug/L	<1	<1
Tellurium, dissolved	ug/L	<1	<1
Thallium	mg/L	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0002±0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0002±0.0001
Zinc	mg/L	0.0018±0.001	0.0032±0.002
Zinc, dissolved	mg/L	0.0024±0.001	0.0020±0.001
Zirconium	mg/L	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/L	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for Turbidity and True color.

The temperature of the cooler was 7.9 °C upon receipt.

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CanNorth, Canada North Environmental Services Limited

29343 05/17/2019 CR_WC_MS_06 (CLEARV_MF3_201905_WS) *WATER*

Analyte	Units	29343
Lab Section 1 (Inorganics)		
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.16±0.1
Mercury	ng/L	1±1
Organic carbon	mg/L	3.2±0.8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 7.9 °C upon receipt.

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Jun 25, 2019

This report was generated for samples included in SRC Group # 2019-7104

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0486
Ammonia as nitrogen	mg/L	8.24	8.38
Ammonia as nitrogen	mg/L	1.65	1.72
Ammonia as nitrogen	mg/L	1.65	1.69
Ammonia as nitrogen	mg/L	8.24	8.26
Antimony	mg/L	0.0472	0.0483
Arsenic	mg/L	50.0	49.6
Barium	mg/L	0.0481	0.0485
Beryllium	mg/L	0.0500	0.0507
Bismuth	mg/L	0.0500	0.0492
Boron	mg/L	0.0500	0.0465
Cadmium	mg/L	0.0500	0.0489
Calcium	mg/L	63.4	63.5
Chloride	mg/L	5.65	5.94
Chromium	mg/L	0.0500	0.0492
Cobalt	mg/L	0.0500	0.0492
Copper	mg/L	0.0500	0.0499
Fluoride	mg/L	1.36	1.35
Iron	mg/L	0.0500	0.0489
Lead	mg/L	0.0500	0.0496
Lead-210	Bq/L	21.8	19.3
Lead-210	Bq	1.92	1.84
Lead-210	Bq/L	21.8	19.0
Lead-210	Bq	0.385	0.392
Magnesium	mg/L	16.5	16.6
Manganese	mg/L	0.0500	0.0494
Mercury	ug/L	56.1	57.1
Molybdenum	mg/L	0.0486	0.0489
Nickel	mg/L	0.0500	0.0503
Nitrite+Nitrate nitrogen	mg/L	6.05	6.33
Nitrite+Nitrate nitrogen	mg/L	1.21	1.30

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QC Analysis	Units	Target Value	Obtained Value	
Nitrite+Nitrate nitrogen	mg/L	1.21	1.24	
Nitrite+Nitrate nitrogen	mg/L	6.05	6.21	
Organic carbon	mg/L	13.8	12.9	
Organic carbon	mg/L	0.22	<0.2	
Organic carbon	mg/L	13.8	14.5	
Organic carbon	mg/L	0.22	<0.2	
Organic carbon	mg/L	13.8	13.0	
Organic carbon	mg/L	0.22	<0.2	
pH	pH units	7.00	6.97	
pH	pH units	7.00	6.97	
Phosphorus	mg/L	5.00	5.06	
Polonium-210	Bq/L	21.0	20.3	
Polonium-210	Bq	1.92	1.80	
Polonium-210	Bq/L	21.0	18.8	
Polonium-210	Bq	0.077	0.070	
Potassium	mg/L	163	165	
Radium-226	Bq/L	21.4	18.1	
Radium-226	Bq	0.427	0.408	
Radium-226	Bq/L	21.4	20.4	
Radium-226	Bq	0.043	0.043	
Rubidium	mg/L	50.0	49.4	
Selenium	mg/L	0.0500	0.0499	
Silver	mg/L	0.0500	0.0498	
Sodium	mg/L	100	99.1	
Specific conductivity	uS/cm	192	181	
Strontium	mg/L	0.0500	0.0500	
Sulfate	mg/L	150	148	
Thallium	mg/L	0.0500	0.0494	
Thorium-230	Bq/L	19.9	19.1	
Thorium-232	Bq	0.188	0.167	
Tin	mg/L	0.0471	0.0460	
Titanium	mg/L	0.0500	0.0499	
Total alkalinity	mg/L	250	253	
Total alkalinity	mg/L	250	252	
Total dissolved solids	mg/L	100	103	
Total dissolved solids	mg/L	100	101	
Total dissolved solids	mg/L	100	102	
Total dissolved solids	mg/L	100	120	*(1)
Total Kjeldahl nitrogen	mg/L	1.82	1.68	
Total Kjeldahl nitrogen	mg/L	1.82	1.87	
Total suspended solids	mg/L	100	91.3	
Total suspended solids	mg/L	100	88.2	
True color	TCU	20.0	17.8	
Turbidity	NTU	12.2	12.0	
Uranium	mg/L	50.0	48.9	

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QC Analysis	Units	Target Value	Obtained Value
Vanadium	mg/L	0.0500	0.0494
Zinc	mg/L	0.0500	0.0497
Zinc	mg/L	0.0500	0.0484

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	29320	<0.00005	<0.00005
Silver	mg/L	29326	<0.00005	<0.00005
Silver	mg/L	29337	<0.00005	<0.00005
Silver	mg/L	29338	<0.00005	<0.00005
Aluminum	mg/L	29320	0.0082	0.0077
Aluminum	mg/L	29326	0.0080	0.0084
Aluminum	mg/L	29337	0.020	0.020
Aluminum	mg/L	29338	0.0013	0.0012
Arsenic	ug/L	29320	0.1	0.1
Arsenic	ug/L	29326	0.1	0.1
Arsenic	ug/L	29337	0.1	0.2
Arsenic	ug/L	29338	0.1	0.1
Boron	mg/L	29320	<0.01	<0.01
Boron	mg/L	29326	<0.01	<0.01
Boron	mg/L	29337	<0.01	<0.01
Boron	mg/L	29338	<0.01	<0.01
Barium	mg/L	29320	0.0073	0.0073
Barium	mg/L	29326	0.0091	0.0092
Barium	mg/L	29337	0.0065	0.0066
Barium	mg/L	29338	0.0093	0.0092
Beryllium	mg/L	29320	<0.0001	<0.0001
Beryllium	mg/L	29326	<0.0001	<0.0001
Beryllium	mg/L	29337	<0.0001	<0.0001
Beryllium	mg/L	29338	<0.0001	<0.0001
Bismuth	mg/L	29320	<0.0002	<0.0002
Bismuth	mg/L	29326	<0.0002	<0.0002
Bismuth	mg/L	29337	<0.0002	<0.0002
Bismuth	mg/L	29338	<0.0002	<0.0002
Calcium	mg/L	29312	16	16
Calcium	mg/L	29321	4.3	4.3
Calcium	mg/L	29321	4.3	4.3
Calcium, dissolved	mg/L	29537	15	15
Calcium, dissolved	mg/L	29538	7.4	7.5
Calcium, dissolved	mg/L	29617	12	12

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Calcium, dissolved	mg/L	29618	10	10
Cadmium	mg/L	29320	<0.00001	<0.00001
Cadmium	mg/L	29326	<0.00001	<0.00001
Cadmium	mg/L	29337	0.00001	0.00001
Cadmium	mg/L	29338	<0.00001	<0.00001
Chloride	mg/L	28938	0.1	<0.1
Chloride	mg/L	29323	0.4	0.4
Chloride	mg/L	29332	0.1	0.1
Chloride	mg/L	29341	0.4	0.4
Cobalt	mg/L	29320	<0.0001	<0.0001
Cobalt	mg/L	29326	<0.0001	<0.0001
Cobalt	mg/L	29337	<0.0001	<0.0001
Cobalt	mg/L	29338	<0.0001	<0.0001
Chromium	mg/L	29320	<0.0005	<0.0005
Chromium	mg/L	29326	<0.0005	<0.0005
Chromium	mg/L	29337	<0.0005	<0.0005
Chromium	mg/L	29338	<0.0005	<0.0005
Copper	mg/L	29320	<0.0002	<0.0002
Copper	mg/L	29326	<0.0002	<0.0002
Copper	mg/L	29337	<0.0002	<0.0002
Copper	mg/L	29338	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	29318	<0.2	<0.2
Organic carbon, dissolved	mg/L	29334	7.5	7.7
Fluoride	mg/L	29283	0.29	0.28
Fluoride	mg/L	29323	0.05	0.04
Fluoride	mg/L	29332	0.04	0.04
Fluoride	mg/L	29342	0.04	0.03
Fluoride	mg/L	29398	0.04	0.04
Iron	mg/L	29320	0.12	0.12
Iron	mg/L	29326	0.017	0.017
Iron	mg/L	29337	0.76	0.76
Iron	mg/L	29338	0.0023	0.0024
Mercury	ng/L	29319	2	2
Mercury	ng/L	29325	2	2
Mercury	ng/L	29334	2	2
Potassium	mg/L	29312	1.4	1.4
Potassium	mg/L	29321	0.7	0.7
Potassium	mg/L	29321	0.7	0.7
Potassium, dissolved	mg/L	29537	1.7	1.7
Potassium, dissolved	mg/L	29538	0.9	0.8
Potassium, dissolved	mg/L	29617	2.2	2.2
Potassium, dissolved	mg/L	29618	1.6	1.7
Lithium	ug/L	29320	2.7	2.7
Lithium	ug/L	29326	2.8	2.8
Lithium	ug/L	29337	1.2	1.2
Lithium	ug/L	29338	2.8	2.9

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Magnesium	mg/L	29312	1.9	1.9
Magnesium	mg/L	29321	1.6	1.6
Magnesium	mg/L	29321	1.6	1.6
Magnesium, dissolved	mg/L	29537	7.9	7.9
Magnesium, dissolved	mg/L	29538	3.4	3.4
Magnesium, dissolved	mg/L	29617	5.4	5.4
Magnesium, dissolved	mg/L	29618	2.9	2.9
Manganese	mg/L	29320	0.0044	0.0043
Manganese	mg/L	29326	0.0083	0.0081
Manganese	mg/L	29337	0.0023	0.0024
Manganese	mg/L	29338	0.0094	0.0093
Molybdenum	mg/L	29320	<0.0001	<0.0001
Molybdenum	mg/L	29326	<0.0001	0.0001
Molybdenum	mg/L	29337	<0.0001	<0.0001
Molybdenum	mg/L	29338	0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29327	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29331	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29332	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29342	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29327	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29327	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29331	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29332	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29342	<0.01	<0.01
Sodium	mg/L	29312	2.7	2.7
Sodium	mg/L	29321	1.7	1.7
Sodium	mg/L	29321	1.7	1.7
Sodium, dissolved	mg/L	29537	4.4	4.4
Sodium, dissolved	mg/L	29538	1.4	1.4
Sodium, dissolved	mg/L	29617	4.0	3.9
Sodium, dissolved	mg/L	29618	3.7	3.7
Ammonia as nitrogen	mg/L	29279	2.6	2.6
Ammonia as nitrogen	mg/L	29307	1.8	1.8
Ammonia as nitrogen	mg/L	29326	<0.01	<0.01
Ammonia as nitrogen	mg/L	29327	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	29318	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	29324	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	29337	<0.01	<0.01
Nickel	mg/L	29320	<0.0001	<0.0001
Nickel	mg/L	29326	<0.0001	<0.0001
Nickel	mg/L	29337	<0.0001	<0.0001
Nickel	mg/L	29338	<0.0001	<0.0001
Nitrate as nitrogen	mg/L	29318	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29318	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29325	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29336	<0.01	<0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Phosphorus	mg/L	29320	<0.01	<0.01
Phosphorus	mg/L	29326	<0.01	<0.01
Phosphorus	mg/L	29337	<0.01	<0.01
Phosphorus	mg/L	29338	<0.01	<0.01
Lead	mg/L	29320	<0.0001	<0.0001
Lead	mg/L	29326	<0.0001	<0.0001
Lead	mg/L	29337	<0.0001	<0.0001
Lead	mg/L	29338	<0.0001	<0.0001
Lead-210	Bq/L	29320	<0.02	<0.02
Lead-210	Bq/L	29331	<0.02	<0.02
pH	pH units	29311	7.99	7.96
pH	pH units	29323	7.32	7.33
pH	pH units	29332	7.34	7.37
pH	pH units	29342	7.27	7.28
pH	pH units	29398	7.24	7.25
pH	pH units	29516	7.34	7.33
Polonium-210	Bq/L	29320	<0.005	<0.005
Radium-226	Bq/L	28914	0.02	<0.01
Radium-226	Bq/L	29318	<0.005	<0.005
Radium-226	Bq/L	29329	<0.005	<0.005
Radium-226	Bq/L	29342	<0.005	<0.005
Rubidium	ug/L	29320	0.64	0.56
Rubidium	ug/L	29326	0.59	0.55
Rubidium	ug/L	29337	0.73	0.79
Rubidium	ug/L	29338	0.60	0.62
Antimony	mg/L	29320	<0.0002	<0.0002
Antimony	mg/L	29326	<0.0002	<0.0002
Antimony	mg/L	29337	<0.0002	<0.0002
Antimony	mg/L	29338	<0.0002	<0.0002
Selenium	mg/L	29320	<0.0001	<0.0001
Selenium	mg/L	29326	<0.0001	<0.0001
Selenium	mg/L	29337	<0.0001	<0.0001
Selenium	mg/L	29338	<0.0001	<0.0001
Tin	mg/L	29320	<0.0001	<0.0001
Tin	mg/L	29326	<0.0001	<0.0001
Tin	mg/L	29337	<0.0001	<0.0001
Tin	mg/L	29338	<0.0001	<0.0001
Sulfate	mg/L	29312	1.5	1.5
Sulfate	mg/L	29321	1.6	1.6
Sulfate	mg/L	29321	1.6	1.5
Specific conductivity	uS/cm	29311	108	108
Specific conductivity	uS/cm	29323	42	39
Specific conductivity	uS/cm	29332	33	31
Specific conductivity	uS/cm	29342	27	25
Specific conductivity	uS/cm	29398	29	27
Strontium	mg/L	29320	0.028	0.028

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Strontium	mg/L	29326	0.031	0.030	
Strontium	mg/L	29337	0.024	0.023	
Strontium	mg/L	29338	0.030	0.030	
Total dissolved solids	mg/L	29307	1400	1380	
Total dissolved solids	mg/L	29339	32	24	*(2)
Total dissolved solids	mg/L	29614	368	373	
Tellurium	ug/L	29320	<1	<1	
Tellurium	ug/L	29326	<1	<1	
Tellurium	ug/L	29337	<1	<1	
Tellurium	ug/L	29338	<1	<1	
Thorium-230	Bq/L	29319	<0.01	<0.01	
Thorium-230	Bq/L	29330	<0.01	<0.01	
Titanium	mg/L	29320	<0.0002	<0.0002	
Titanium	mg/L	29326	<0.0002	<0.0002	
Titanium	mg/L	29337	0.0004	0.0005	
Titanium	mg/L	29338	<0.0002	<0.0002	
Total Kjeldahl nitrogen	mg/L	29318	<0.05	<0.05	
Total Kjeldahl nitrogen	mg/L	29324	0.22	0.23	
Total Kjeldahl nitrogen	mg/L	29329	0.13	0.18	
Total Kjeldahl nitrogen	mg/L	29331	0.59	0.56	
Thallium	mg/L	29320	<0.0002	<0.0002	
Thallium	mg/L	29326	<0.0002	<0.0002	
Thallium	mg/L	29337	<0.0002	<0.0002	
Thallium	mg/L	29338	<0.0002	<0.0002	
Organic carbon	mg/L	29324	2.6	2.6	
Organic carbon	mg/L	29787	13	14	
Organic carbon, dissolved	mg/L	29799	6.5	6.5	
Total alkalinity	mg/L	29311	50	50	
Total alkalinity	mg/L	29323	26	24	
Total alkalinity	mg/L	29342	24	24	
Total alkalinity	mg/L	29398	17	23	
Total alkalinity	mg/L	29516	24	28	
True color	CU	29318	<1	<1	
True color	CU	29339	<1	<1	
True color	CU	29340	4	3	
Total suspended solids	mg/L	28172	<1	<1	
Total suspended solids	mg/L	29335	1	1	
Turbidity	NTU	29396	0.363	0.352	
Uranium	ug/L	29320	<0.1	<0.1	
Uranium	ug/L	29326	<0.1	<0.1	
Uranium	ug/L	29337	<0.1	<0.1	
Uranium	ug/L	29338	<0.1	<0.1	
Vanadium	mg/L	29320	<0.0001	<0.0001	
Vanadium	mg/L	29326	<0.0001	<0.0001	
Vanadium	mg/L	29337	0.0002	0.0002	
Vanadium	mg/L	29338	<0.0001	<0.0001	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Zinc	mg/L	29320	0.0011	0.0011
Zinc	mg/L	29326	0.0017	0.0018
Zinc	mg/L	29337	0.0018	0.0018
Zinc	mg/L	29338	0.0016	0.0016
Zinc	mg/L	30653	0.0010	0.0010
Zirconium	mg/L	29320	<0.001	<0.001
Zirconium	mg/L	29326	<0.001	<0.001
Zirconium	mg/L	29337	<0.001	<0.001
Zirconium	mg/L	29338	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	108
Ammonia as nitrogen	106
Ammonia as nitrogen	110
Ammonia as nitrogen	100
Antimony	95
Arsenic	100
Barium	97
Beryllium	105
Boron	105
Cadmium	100
Calcium	104
Chloride	105
Chromium	103
Cobalt	103
Copper	102
Fluoride	116
Iron	100
Lead	99
Lead-210	88
Magnesium	106
Manganese	102
Mercury	106
Molybdenum	96
Nickel	102
Nitrite+Nitrate nitrogen	110
Nitrite+Nitrate nitrogen	100

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Spike Analysis	Percent Recovery
Organic Carbon	98
Organic Carbon	100
Organic carbon	100
Organic carbon	110
Organic Carbon, dissolved	105
Organic Carbon, dissolved	105
Phosphorus	102
Polonium-210	92
Potassium	102
Radium-226	100
Selenium	102
Silver	99
Sodium	104
Strontium	100
Sulfate	100
Thallium	99
Thorium-230	101
Tin	91
Titanium	103
Total Kjeldahl nitrogen	100
Uranium	96
Vanadium	101
Zinc	104
Zinc	105

*(1) The Total dissolved solids result for the quality control sample was just outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(2) The duplicate results for Total dissolved solids were just outside the laboratory's specified limits. The data was reviewed and the sample was reanalyzed. All other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-07-2019

Client P.O.: 3008_19SUMM_WS Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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Date Samples Received: Aug-07-2019

Client P.O.: 3008_19SUMM_WS Rook I Environmental Baseline Studies

44028	**JEDCK 07/23/2019 16:25 3008_FB_20190717_WS *WATER***
44029	**JEDCK 07/23/2019 16:25 3008_QAQC_20190717_WS *WATER***
44030	**BEETCK 07/28/2019 12:55 BEETCK_20190717_WS *WATER***

Analyte	Units	44028	44029	44030
Lab Section 1				
Bicarbonate	mg/L	2±1	11±3	28±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.3±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.69±0.2	7.11±0.3	7.39±0.3
Specific conductivity	uS/cm	<1	20±3	36±5
Sum of ions	mg/L	2±1	18±4	38±6
Total alkalinity	mg/L	2±1	9±1	23±3
Total hardness	mg/L	<1	10±2	17±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05	0.20±0.1	0.20±0.1
Mercury	ng/L	4±2	2±1	2±1
Organic carbon	mg/L	<0.2	3.7±0.9	2.3±0.6
Organic carbon, dissolved	mg/L	0.6±0.3	3.8±1	3.0±0.8
Fluoride	mg/L	0.02±0.01	0.06±0.02	0.08±0.02
Total dissolved solids	mg/L	<5	37±10	45±10
Total suspended solids	mg/L	<1	1±1	1±1
True color	CU	<1	16±4	3±2
Turbidity	NTU	<0.1	0.9±0.1	0.6±0.1
Lab Section 2				
Calcium	mg/L	<0.1	2.7±0.4	4.2±0.6
Calcium, dissolved	mg/L	<0.1	2.7±0.4	4.1±0.6
Magnesium	mg/L	<0.1	0.8±0.1	1.6±0.4

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44028	**JEDCK 07/23/2019 16:25 3008_FB_20190717_WS *WATER***
44029	**JEDCK 07/23/2019 16:25 3008_QAQC_20190717_WS *WATER***
44030	**BEETCK 07/28/2019 12:55 BEETCK_20190717_WS *WATER***

Analyte	Units	44028	44029	44030
Lab Section 2				
Magnesium, dissolved	mg/L	<0.1	0.8±0.1	1.6±0.4
Potassium	mg/L	<0.1	0.4±0.2	0.7±0.2
Potassium, dissolved	mg/L	<0.1	0.4±0.2	0.6±0.2
Sodium	mg/L	0.1±0.1	1.2±0.3	1.7±0.4
Sodium, dissolved	mg/L	<0.1	1.2±0.3	1.7±0.4
Sulfate	mg/L	<0.2	1.3±0.3	1.6±0.4
Aluminum	mg/L	0.0013±0.0008	0.015±0.002	0.0074±0.002
Aluminum, dissolved	mg/L	<0.0005	0.011±0.002	0.0057±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	0.1±0.1
Barium	mg/L	<0.0005	0.0082±0.002	0.0083±0.002
Barium, dissolved	mg/L	<0.0005	0.0078±0.002	0.0077±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	<0.0005	0.26±0.03	0.059±0.006
Iron, dissolved	mg/L	<0.0005	0.17±0.02	0.019±0.003
Lead	mg/L	0.0001±0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	1.8±0.4	3.0±0.4
Lithium, dissolved	ug/L	<0.1	1.8±0.4	3.1±0.5
Manganese	mg/L	<0.0005	0.0086±0.002	0.0092±0.002

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44028	**JEDCK 07/23/2019 16:25 3008_FB_20190717_WS *WATER***
44029	**JEDCK 07/23/2019 16:25 3008_QAQC_20190717_WS *WATER***
44030	**BEETCK 07/28/2019 12:55 BEETCK_20190717_WS *WATER***

Analyte	Units	44028	44029	44030
Lab Section 2				
Manganese, dissolved	mg/L	<0.0005	0.0047±0.001	0.0019±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Rubidium	ug/L	<0.05	0.59±0.1	0.53±0.1
Rubidium, dissolved	ug/L	<0.05	0.56±0.1	0.59±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.026±0.004	0.030±0.004
Strontium, dissolved	mg/L	<0.0005	0.026±0.004	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0019±0.0005	<0.0001	<0.0001
Tin, dissolved	mg/L	0.0072±0.001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0002±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0002±0.0001	<0.0001
Zinc	mg/L	0.0029±0.002	0.0019±0.001	0.0008±0.0007
Zinc, dissolved	mg/L	0.0028±0.001	0.0007±0.0006	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44028
This sample was reanalyzed for Mercury, Tin and Tin, dissolved, Zinc and Zinc, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44031	**BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_ABOVE *WATER***
44032	**BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_BELOW *WATER***
44033	**BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_ABOVE *WATER***

Analyte	Units	44031	44032	44033
Lab Section 1				
Bicarbonate	mg/L	24±4	29±4	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.46±0.3	7.20±0.3	7.38±0.3
Specific conductivity	uS/cm	38±6	38±6	32±5
Sum of ions	mg/L	35±5	40±6	27±4
Total alkalinity	mg/L	20±3	24±4	14±4
Total hardness	mg/L	17±4	18±4	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.07±0.02	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.14±0.09	0.28±0.1	0.39±0.2
Mercury	ng/L	3±2	3±2	6±2
Organic carbon	mg/L	1.9±0.6	1.7±0.5	1.6±0.5
Organic carbon, dissolved	mg/L	2.8±0.7	2.4±0.6	2.5±0.6
Fluoride	mg/L	0.09±0.02	0.08±0.02	0.08±0.02
Total dissolved solids	mg/L	40±10	42±10	39±10
Total suspended solids	mg/L	<1	2±1	<1
True color	CU	2±1	1±1	<1
Turbidity	NTU	0.4±0.1	0.8±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	4.3±0.6	4.4±0.7	3.8±0.6
Calcium, dissolved	mg/L	4.3±0.6	4.4±0.7	3.8±0.6
Magnesium	mg/L	1.6±0.4	1.7±0.4	1.3±0.3
Magnesium, dissolved	mg/L	1.6±0.4	1.6±0.4	1.3±0.3
Potassium	mg/L	0.7±0.2	0.7±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.7±0.2	0.7±0.2	0.6±0.2
Sodium	mg/L	1.8±0.4	1.7±0.4	1.6±0.4
Sodium, dissolved	mg/L	1.7±0.4	1.7±0.4	1.6±0.4

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44031 BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_ABOVE *WATER*
44032 BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_BELOW *WATER*
44033 BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_ABOVE *WATER*

Analyte	Units	44031	44032	44033
Lab Section 2				
Sulfate	mg/L	1.7±0.4	1.7±0.4	1.9±0.4
Aluminum	mg/L	0.0016±0.0009	0.0015±0.0008	0.0019±0.001
Aluminum, dissolved	mg/L	0.0016±0.0009	0.0006±0.0006	<0.0005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0077±0.002	0.010±0.002	0.014±0.002
Barium, dissolved	mg/L	0.0078±0.002	0.0094±0.002	0.014±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.011±0.002	0.10±0.01	0.0088±0.002
Iron, dissolved	mg/L	0.011±0.002	0.016±0.002	0.0039±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.0±0.4	3.0±0.4	2.9±0.4
Lithium, dissolved	ug/L	3.1±0.5	3.0±0.4	2.9±0.4
Manganese	mg/L	0.0057±0.001	0.046±0.007	0.0032±0.001
Manganese, dissolved	mg/L	0.0047±0.001	0.0041±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	0.0001±0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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44031	**BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_ABOVE *WATER***
44032	**BEETLK1 07/29/2019 14:05 BEETLK1_20190717_WS_BELOW *WATER***
44033	**BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_ABOVE *WATER***

Analyte	Units	44031	44032	44033
Lab Section 2				
Rubidium	ug/L	0.60±0.2	0.58±0.1	0.54±0.1
Rubidium, dissolved	ug/L	0.59±0.1	0.61±0.2	0.53±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.032±0.005	0.036±0.005
Strontium, dissolved	mg/L	0.031±0.005	0.032±0.005	0.036±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0002±0.0001	0.0002±0.0001	0.0003±0.0002
Tin, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0002±0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0006±0.0003
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0011±0.0008	0.0009±0.0007	0.0012±0.0009
Zinc, dissolved	mg/L	0.0015±0.0008	0.0008±0.0006	0.0016±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	0.02±0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44034	**BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_BELOW *WATER***
44035	**CLEARV1 07/28/2019 10:10 CLEARV1_20190717_WS *WATER***
44036	**FORRLK1 07/30/2019 15:11 FORRLK1_20190717_WS *WATER***

Analyte	Units	44034	44035	44036
Lab Section 1				
Bicarbonate	mg/L	20±3	18±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.5±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.28±0.3	7.30±0.3	7.44±0.3
Specific conductivity	uS/cm	35±5	32±5	33±5
Sum of ions	mg/L	30±4	27±4	36±5
Total alkalinity	mg/L	16±4	15±4	22±3
Total hardness	mg/L	15±4	15±4	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.26	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.13	<0.04	<0.04
Nitrate as nitrogen	mg/L	0.06±0.02	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	0.06±0.03	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.22±0.1	0.22±0.1	0.17±0.1
Mercury	ng/L	4±2	2±1	2±1
Organic carbon	mg/L	1.6±0.5	3.5±0.9	2.2±0.6
Organic carbon, dissolved	mg/L	2.2±0.6	3.8±1	2.6±0.6
Fluoride	mg/L	0.08±0.02	0.08±0.02	0.08±0.02
Total dissolved solids	mg/L	43±10	41±10	38±10
Total suspended solids	mg/L	<1	1±1	<1
True color	CU	<1	9±3	3±2
Turbidity	NTU	0.3±0.1	1.1±0.3	0.5±0.1
Lab Section 2				
Calcium	mg/L	3.9±0.6	3.8±0.6	3.9±0.6
Calcium, dissolved	mg/L	3.9±0.6	3.8±0.6	4.0±0.6
Magnesium	mg/L	1.3±0.3	1.4±0.4	1.4±0.4
Magnesium, dissolved	mg/L	1.3±0.3	1.4±0.4	1.4±0.4
Potassium	mg/L	0.5±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.6±0.4	1.6±0.4	1.5±0.4
Sodium, dissolved	mg/L	1.6±0.4	1.5±0.4	1.5±0.4

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth, Canada North Environmental Services Limited

44034 BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_BELOW *WATER*
44035 CLEARV1 07/28/2019 10:10 CLEARV1_20190717_WS *WATER*
44036 FORRLK1 07/30/2019 15:11 FORRLK1_20190717_WS *WATER*

Analyte	Units	44034	44035	44036
Lab Section 2				
Sulfate	mg/L	2.0±0.5	1.2±0.3	1.6±0.4
Aluminum	mg/L	0.0013±0.0008	0.012±0.002	0.0053±0.001
Aluminum, dissolved	mg/L	0.0008±0.0006	0.0079±0.002	0.0071±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.2±0.1	<0.1
Barium	mg/L	0.015±0.002	0.0080±0.002	0.0077±0.002
Barium, dissolved	mg/L	0.015±0.002	0.0075±0.002	0.0083±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.0094±0.002	0.20±0.02	0.033±0.005
Iron, dissolved	mg/L	0.0007±0.0006	0.097±0.01	0.029±0.004
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.0±0.4	2.6±0.4	2.7±0.4
Lithium, dissolved	ug/L	3.0±0.4	2.6±0.4	2.7±0.4
Manganese	mg/L	0.011±0.002	0.018±0.003	0.0072±0.002
Manganese, dissolved	mg/L	<0.0005	0.0056±0.001	0.0065±0.002
Molybdenum	mg/L	0.0001±0.0001	<0.0001	0.0001±0.0001
Molybdenum, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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44034 BROALK2 07/18/2019 11:48 BROALK2_20190717_WS_BELOW *WATER*
44035 CLEARV1 07/28/2019 10:10 CLEARV1_20190717_WS *WATER*
44036 FORRLK1 07/30/2019 15:11 FORRLK1_20190717_WS *WATER*

Analyte	Units	44034	44035	44036
Lab Section 2				
Rubidium	ug/L	0.56±0.1	0.63±0.2	0.57±0.1
Rubidium, dissolved	ug/L	0.49±0.05	0.67±0.2	0.68±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.036±0.005	0.030±0.004	0.030±0.004
Strontium, dissolved	mg/L	0.036±0.005	0.030±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0001±0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	0.0006±0.0002	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0004±0.0002	0.0002±0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0001±0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0012±0.0009	0.0006±0.0006	0.0007±0.0006
Zinc, dissolved	mg/L	0.0012±0.0008	0.0008±0.0006	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth, Canada North Environmental Services Limited

44037	**FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_ABOVE *WATER***
44038	**FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_BELOW *WATER***
44039	**HODGLK1 07/19/2019 12:20 HODGLK1_20190717_WS_ABOVE *WATER***

Analyte	Units	44037	44038	44039
Lab Section 1				
Bicarbonate	mg/L	27±4	27±4	11±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.7±0.1	1.8±0.4
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.50±0.3	7.48±0.3	7.06±0.3
Specific conductivity	uS/cm	42±6	42±6	21±3
Sum of ions	mg/L	39±6	38±6	19±5
Total alkalinity	mg/L	22±3	22±3	9±1
Total hardness	mg/L	19±5	18±4	10±2
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.14±0.09	0.16±0.1	0.16±0.1
Mercury	ng/L	4±2	3±2	2±1
Organic carbon	mg/L	1.3±0.5	1.3±0.5	2.1±0.5
Organic carbon, dissolved	mg/L	2.0±0.5	1.9±0.6	2.8±0.7
Fluoride	mg/L	0.10±0.02	0.10±0.02	0.05±0.02
Total dissolved solids	mg/L	46±10	50±10	36±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	<1	2±1
Turbidity	NTU	0.2±0.1	0.3±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	4.5±0.7	4.5±0.7	3.0±0.4
Calcium, dissolved	mg/L	4.6±0.7	4.6±0.7	2.9±0.4
Magnesium	mg/L	1.8±0.4	1.7±0.4	0.7±0.1
Magnesium, dissolved	mg/L	1.8±0.4	1.7±0.4	0.7±0.1
Potassium	mg/L	0.9±0.3	0.8±0.3	0.4±0.2
Potassium, dissolved	mg/L	0.9±0.3	0.9±0.3	0.4±0.2
Sodium	mg/L	2.0±0.3	2.0±0.3	1.0±0.2
Sodium, dissolved	mg/L	2.0±0.3	2.0±0.3	1.0±0.2

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44037 FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_ABOVE *WATER*
44038 FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_BELOW *WATER*
44039 HODGLK1 07/19/2019 12:20 HODGLK1_20190717_WS_ABOVE *WATER*

Analyte	Units	44037	44038	44039
Lab Section 2				
Sulfate	mg/L	1.8±0.4	1.8±0.4	1.0±0.2
Aluminum	mg/L	0.0010±0.0007	0.0010±0.0007	0.0037±0.001
Aluminum, dissolved	mg/L	0.0011±0.0007	0.0009±0.0007	0.0011±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	<0.1
Barium	mg/L	0.0076±0.002	0.0078±0.002	0.0066±0.002
Barium, dissolved	mg/L	0.0074±0.002	0.0077±0.002	0.0066±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	0.01±0.01
Boron, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.010±0.002	0.013±0.002	0.0046±0.001
Iron, dissolved	mg/L	0.0024±0.001	0.0010±0.0007	0.0011±0.0007
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.4±0.5	3.4±0.5	1.8±0.4
Lithium, dissolved	ug/L	3.4±0.5	3.4±0.5	1.8±0.4
Manganese	mg/L	0.0024±0.001	0.0040±0.001	0.0022±0.0009
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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44037	**FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_ABOVE *WATER***
44038	**FORRLK2 07/29/2019 11:57 FORRLK2_20190717_WS_BELOW *WATER***
44039	**HODGLK1 07/19/2019 12:20 HODGLK1_20190717_WS_ABOVE *WATER***

Analyte	Units	44037	44038	44039
Lab Section 2				
Rubidium	ug/L	0.60±0.2	0.54±0.1	0.61±0.2
Rubidium, dissolved	ug/L	0.63±0.2	0.66±0.2	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.031±0.005	0.062±0.006
Strontium, dissolved	mg/L	0.031±0.005	0.031±0.005	0.060±0.006
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0008±0.0003	0.0002±0.0001	<0.0001
Tin, dissolved	mg/L	0.0001±0.0001	0.0002±0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0010±0.0008	0.0008±0.0007	0.0021±0.001
Zinc, dissolved	mg/L	0.0013±0.0008	0.0012±0.0008	0.0019±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	0.007±0.005	0.006±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44040	**HODGLK1 07/19/2019 12:20 HODGLK1_20190717_WS_BELOW *WATER***
44041	**JEDCK 07/23/2019 16:25 JEDCK_20190717_WS *WATER***
44042	**LAKED 07/23/2019 13:40 LAKED_20190717_WS *WATER***

Analyte	Units	44040	44041	44042
Lab Section 1				
Bicarbonate	mg/L	12±3	8±3	30±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	1.8±0.4	0.3±0.1	0.1±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.03±0.3	7.16±0.3	7.46±0.3
Specific conductivity	uS/cm	21±3	19±5	39±6
Sum of ions	mg/L	20±3	15±4	40±6
Total alkalinity	mg/L	10±2	7±1	25±4
Total hardness	mg/L	10±2	10±2	20±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.01±0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.12±0.08	0.22±0.1	0.58±0.1
Mercury	ng/L	2±1	2±1	5±2
Organic carbon	mg/L	2.0±0.5	3.8±1	6.3±0.9
Organic carbon, dissolved	mg/L	2.4±0.6	4.2±0.6	7.7±1
Fluoride	mg/L	0.05±0.02	0.06±0.02	0.06±0.02
Total dissolved solids	mg/L	32±10	35±10	60±20
Total suspended solids	mg/L	<1	1±1	3±1
True color	CU	2±1	17±4	6±2
Turbidity	NTU	0.4±0.1	0.9±0.1	1.2±0.3
Lab Section 2				
Calcium	mg/L	3.0±0.4	2.8±0.4	5.7±0.8
Calcium, dissolved	mg/L	2.9±0.4	2.6±0.4	5.7±0.8
Magnesium	mg/L	0.7±0.1	0.8±0.1	1.5±0.4
Magnesium, dissolved	mg/L	0.7±0.1	0.8±0.1	1.5±0.4
Potassium	mg/L	0.3±0.1	0.4±0.2	0.3±0.1
Potassium, dissolved	mg/L	0.4±0.2	0.5±0.2	0.4±0.2
Sodium	mg/L	1.0±0.2	1.2±0.3	1.5±0.4
Sodium, dissolved	mg/L	1.0±0.2	1.2±0.3	1.5±0.4

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth, Canada North Environmental Services Limited

44040 HODGLK1 07/19/2019 12:20 HODGLK1_20190717_WS_BELOW *WATER*
44041 JEDCK 07/23/2019 16:25 JEDCK_20190717_WS *WATER*
44042 LAKED 07/23/2019 13:40 LAKED_20190717_WS *WATER*

Analyte	Units	44040	44041	44042
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.2±0.3	1.0±0.2
Aluminum	mg/L	0.0012±0.0008	0.015±0.002	0.0040±0.001
Aluminum, dissolved	mg/L	0.0012±0.0008	0.011±0.002	0.0023±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0070±0.002	0.0084±0.002	0.0054±0.001
Barium, dissolved	mg/L	0.0069±0.002	0.0079±0.002	0.0049±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0007±0.0004	<0.0002
Iron	mg/L	0.0083±0.002	0.27±0.03	0.059±0.006
Iron, dissolved	mg/L	0.0020±0.001	0.16±0.02	0.029±0.004
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.8±0.4	1.7±0.4	1.7±0.4
Lithium, dissolved	ug/L	1.8±0.4	1.8±0.4	1.7±0.4
Manganese	mg/L	0.0038±0.001	0.0088±0.002	0.019±0.003
Manganese, dissolved	mg/L	<0.0005	0.0048±0.001	0.0009±0.0007
Molybdenum	mg/L	<0.0001	0.0001±0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001

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44042 LAKED 07/23/2019 13:40 LAKED_20190717_WS *WATER*

Analyte	Units	44040	44041	44042
Lab Section 2				
Rubidium	ug/L	0.65±0.2	0.61±0.2	0.38±0.1
Rubidium, dissolved	ug/L	0.66±0.2	0.56±0.1	0.35±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.061±0.006	0.026±0.004	0.018±0.003
Strontium, dissolved	mg/L	0.062±0.006	0.026±0.004	0.017±0.002
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0003±0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0004±0.0002
Titanium	mg/L	<0.0002	0.0003±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0002±0.0001	0.0002±0.0001
Vanadium, dissolved	mg/L	<0.0001	0.0002±0.0001	0.0001±0.0001
Zinc	mg/L	0.0015±0.001	0.0008±0.0007	0.0010±0.0008
Zinc, dissolved	mg/L	0.0014±0.0008	0.0018±0.0009	0.0020±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	0.005±0.005
Radium-226	Bq/L	0.008±0.005	<0.005	0.005±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44043 LAKEG1 07/26/2019 15:29 LAKEG1_20190717_WS *WATER*
44044 LAKEH1 07/26/2019 14:15 LAKEH1_20190717_WS *WATER*
44045 LAKEJ 07/23/2019 11:45 LAKEJ_20190717_WS *WATER*

Analyte	Units	44043	44044	44045
Lab Section 1				
Bicarbonate	mg/L	24±4	30±4	4±2
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1±0.1	0.2±0.1	0.1±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.30±0.3	7.42±0.3	6.27±0.2
Specific conductivity	uS/cm	37±6	34±5	<1
Sum of ions	mg/L	33±5	39±6	6±2
Total alkalinity	mg/L	20±3	25±4	3±1
Total hardness	mg/L	17±4	16±4	2±1
Ammonia as nitrogen	mg/L	0.04±0.02	0.01±0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.67±0.2	0.61±0.2	0.57±0.1
Mercury	ng/L	2±1	2±1	7±2
Organic carbon	mg/L	8.2±1	8.6±1	7.4±1
Organic carbon, dissolved	mg/L	8.4±1	9.9±1	8.4±1
Fluoride	mg/L	0.08±0.02	0.08±0.02	0.04±0.02
Total dissolved solids	mg/L	58±10	44±10	20±10
Total suspended solids	mg/L	5±2	6±2	2±1
True color	CU	13±3	4±2	5±2
Turbidity	NTU	2.1±0.3	1.5±0.4	1.0±0.2
Lab Section 2				
Calcium	mg/L	3.9±0.6	3.8±0.6	0.3±0.2
Calcium, dissolved	mg/L	3.8±0.6	3.7±0.6	0.4±0.1
Magnesium	mg/L	1.8±0.4	1.6±0.4	0.2±0.1
Magnesium, dissolved	mg/L	1.8±0.4	1.6±0.4	0.2±0.1
Potassium	mg/L	0.6±0.2	0.9±0.3	0.3±0.1
Potassium, dissolved	mg/L	0.6±0.2	0.9±0.3	0.3±0.1
Sodium	mg/L	1.9±0.5	2.0±0.3	0.7±0.1
Sodium, dissolved	mg/L	1.8±0.4	1.9±0.5	0.7±0.1

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44044 LAKEH1 07/26/2019 14:15 LAKEH1_20190717_WS *WATER*
44045 LAKEJ 07/23/2019 11:45 LAKEJ_20190717_WS *WATER*

Analyte	Units	44043	44044	44045
Lab Section 2				
Sulfate	mg/L	1.1±0.3	0.3±0.2	0.7±0.2
Aluminum	mg/L	0.0043±0.001	0.021±0.003	0.020±0.003
Aluminum, dissolved	mg/L	0.0030±0.001	0.0083±0.002	0.0083±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	0.2±0.1	0.2±0.1
Barium	mg/L	0.0078±0.002	0.0015±0.0008	0.0029±0.001
Barium, dissolved	mg/L	0.0068±0.002	0.0009±0.0007	0.0025±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	0.01±0.01	<0.01
Boron, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.35±0.04	0.14±0.01	0.033±0.005
Iron, dissolved	mg/L	0.16±0.02	0.033±0.005	0.0078±0.002
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.6±0.4	3.3±0.5	0.1±0.1
Lithium, dissolved	ug/L	2.6±0.4	3.4±0.5	<0.1
Manganese	mg/L	0.035±0.005	0.022±0.003	0.0033±0.001
Manganese, dissolved	mg/L	0.011±0.002	0.0007±0.0006	0.0013±0.0008
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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44044 LAKEH1 07/26/2019 14:15 LAKEH1_20190717_WS *WATER*
44045 LAKEJ 07/23/2019 11:45 LAKEJ_20190717_WS *WATER*

Analyte	Units	44043	44044	44045
Lab Section 2				
Rubidium	ug/L	0.60±0.2	1.4±0.2	0.70±0.2
Rubidium, dissolved	ug/L	0.49±0.05	1.5±0.2	0.66±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.024±0.004	0.014±0.002	0.0036±0.001
Strontium, dissolved	mg/L	0.024±0.004	0.014±0.002	0.0033±0.001
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0006±0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Titanium	mg/L	<0.0002	0.0002±0.0002	0.0003±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0056±0.001	0.0017±0.001	0.0010±0.0008
Zinc, dissolved	mg/L	0.0045±0.001	0.0011±0.0007	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.02±0.01
Phosphorus, dissolved	mg/L	0.01±0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	0.008±0.006	0.007±0.005	0.008±0.006
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44046	**LLOYLKI 07/22/2019 13:00 LLOYLKI_20190717_WS *WATER***
44047	**NAOMLK 07/28/2019 11:03 NAOMLK_20190717_WS *WATER***
44048	**PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_ABOVE *WATER***

Analyte	Units	44046	44047	44048
Lab Section 1				
Bicarbonate	mg/L	15±4	17±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.5±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.26±0.3	7.13±0.3	7.42±0.3
Specific conductivity	uS/cm	25±4	22±3	32±5
Sum of ions	mg/L	23±3	24±4	36±5
Total alkalinity	mg/L	12±3	14±4	22±3
Total hardness	mg/L	12±3	12±3	16±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.24±0.1	0.23±0.1	0.10±0.07
Mercury	ng/L	2±1	4±2	3±2
Organic carbon	mg/L	3.6±0.9	5.6±0.8	2.0±0.5
Organic carbon, dissolved	mg/L	3.8±1	6.1±0.9	2.8±0.7
Fluoride	mg/L	0.07±0.02	0.06±0.02	0.07±0.02
Total dissolved solids	mg/L	37±10	39±10	38±10
Total suspended solids	mg/L	1±1	2±1	<1
True color	CU	7±2	17±4	<1
Turbidity	NTU	1.0±0.2	2.9±0.4	0.3±0.1
Lab Section 2				
Calcium	mg/L	3.2±0.5	3.2±0.5	4.0±0.6
Calcium, dissolved	mg/L	3.0±0.4	3.1±0.5	3.9±0.6
Magnesium	mg/L	1.1±0.3	0.9±0.1	1.4±0.4
Magnesium, dissolved	mg/L	1.1±0.3	0.9±0.1	1.4±0.4
Potassium	mg/L	0.6±0.2	0.4±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.5±0.4	1.2±0.3	1.5±0.4
Sodium, dissolved	mg/L	1.4±0.4	1.1±0.3	1.5±0.4

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44047	**NAOMLK 07/28/2019 11:03 NAOMLK_20190717_WS *WATER***
44048	**PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_ABOVE *WATER***

Analyte	Units	44046	44047	44048
Lab Section 2				
Sulfate	mg/L	1.0±0.2	0.6±0.2	1.5±0.3
Aluminum	mg/L	0.0025±0.001	0.0093±0.002	0.0010±0.0007
Aluminum, dissolved	mg/L	0.0021±0.001	0.0047±0.001	0.0014±0.0008
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0024±0.001	0.0076±0.002	0.0086±0.002
Barium, dissolved	mg/L	0.0041±0.001	0.0067±0.002	0.0084±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.10±0.01	0.63±0.06	0.012±0.002
Iron, dissolved	mg/L	0.053±0.005	0.28±0.03	0.0048±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.0±0.2	1.5±0.4	2.6±0.4
Lithium, dissolved	ug/L	1.9±0.5	1.5±0.4	2.6±0.4
Manganese	mg/L	0.0097±0.002	0.074±0.007	0.0052±0.001
Manganese, dissolved	mg/L	0.0014±0.0008	0.010±0.002	0.0007±0.0006
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-11059

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44046	**LLOYLKI 07/22/2019 13:00 LLOYLKI_20190717_WS *WATER***
44047	**NAOMLK 07/28/2019 11:03 NAOMLK_20190717_WS *WATER***
44048	**PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_ABOVE *WATER***

Analyte	Units	44046	44047	44048
Lab Section 2				
Rubidium	ug/L	0.32±0.1	0.77±0.2	0.52±0.1
Rubidium, dissolved	ug/L	0.55±0.1	0.82±0.2	0.54±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.012±0.002	0.030±0.004	0.030±0.004
Strontium, dissolved	mg/L	0.024±0.004	0.029±0.004	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	0.0004±0.0002	0.0010±0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0003±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0001±0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0028±0.001	0.0008±0.0007	0.0011±0.0008
Zinc, dissolved	mg/L	0.0031±0.001	0.0014±0.0008	0.0008±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	0.03±0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.01±0.006	0.007±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44046
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

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Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

Note for Sample # 44048
This sample was reanalyzed for Tin. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.1 °C upon receipt.

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SRC Group # 2019-11059

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44049	**PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_BELOW *WATER***
44050	**PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_ABOVE *WATER***
44051	**PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_BELOW *WATER***

Analyte	Units	44049	44050	44051
Lab Section 1				
Bicarbonate	mg/L	30±4	17±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.5±0.1	0.6±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.32±0.3	7.42±0.3	7.31±0.3
Specific conductivity	uS/cm	33±5	32±5	32±5
Sum of ions	mg/L	40±6	26±4	35±5
Total alkalinity	mg/L	25±4	14±4	21±3
Total hardness	mg/L	16±4	15±4	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.10±0.07	0.16±0.1	0.13±0.08
Mercury	ng/L	2±1	3±2	2±1
Organic carbon	mg/L	1.8±0.5	2.8±0.7	2.0±0.5
Organic carbon, dissolved	mg/L	2.4±0.6	2.5±0.6	2.6±0.6
Fluoride	mg/L	0.07±0.02	0.07±0.02	0.07±0.02
Total dissolved solids	mg/L	33±10	32±10	33±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	<1	1±1
Turbidity	NTU	0.4±0.1	0.3±0.1	0.4±0.1
Lab Section 2				
Calcium	mg/L	4.1±0.6	3.9±0.6	3.9±0.6
Calcium, dissolved	mg/L	3.9±0.6	3.8±0.6	3.8±0.6
Magnesium	mg/L	1.4±0.4	1.4±0.4	1.4±0.4
Magnesium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.4±0.4
Potassium	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.5±0.4	1.5±0.4	1.5±0.4
Sodium, dissolved	mg/L	1.5±0.4	1.4±0.4	1.4±0.4

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44049 PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_BELOW *WATER*
44050 PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_ABOVE *WATER*
44051 PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_BELOW *WATER*

Analyte	Units	44049	44050	44051
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.5±0.3	1.4±0.3
Aluminum	mg/L	0.0010±0.0007	0.0016±0.0009	0.0008±0.0006
Aluminum, dissolved	mg/L	0.0008±0.0006	0.0013±0.0008	0.0011±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.010±0.002	0.0086±0.002	0.0098±0.002
Barium, dissolved	mg/L	0.0098±0.002	0.0084±0.002	0.0097±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0006±0.0003	<0.0002
Iron	mg/L	0.017±0.002	0.0068±0.002	0.010±0.002
Iron, dissolved	mg/L	0.0016±0.0009	0.0023±0.001	0.0044±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.6±0.4	2.6±0.4	2.6±0.4
Lithium, dissolved	ug/L	2.6±0.4	2.6±0.4	2.6±0.4
Manganese	mg/L	0.014±0.002	0.0043±0.001	0.0090±0.002
Manganese, dissolved	mg/L	<0.0005	<0.0005	0.0037±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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44049 PATTLKE1 07/27/2019 15:36 PATTLKE1_20190717_WS_BELOW *WATER*
44050 PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_ABOVE *WATER*
44051 PATTLKN1 07/27/2019 13:07 PATTLKN1_20190717_WS_BELOW *WATER*

Analyte	Units	44049	44050	44051
Lab Section 2				
Rubidium	ug/L	0.56±0.1	0.60±0.2	0.57±0.1
Rubidium, dissolved	ug/L	0.66±0.2	0.61±0.2	0.54±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.030±0.004	0.030±0.004	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0002±0.0001
Tin, dissolved	mg/L	0.0003±0.0002	<0.0001	0.0001±0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0007±0.0006	0.0007±0.0006	0.0008±0.0007
Zinc, dissolved	mg/L	0.0013±0.0008	0.0020±0.001	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.007±0.005	0.005±0.005	0.006±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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44052	**PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_ABOVE *WATER***
44053	**PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_BELOW *WATER***
44054	**WARNRP 08/01/2019 08:58 WARNRP_20190717_WS *WATER***

Analyte	Units	44052	44053	44054
Lab Section 1				
Bicarbonate	mg/L	20±3	17±4	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.4±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.32±0.3	7.17±0.3	7.28±0.3
Specific conductivity	uS/cm	26±4	26±4	25±4
Sum of ions	mg/L	28±4	25±4	23±3
Total alkalinity	mg/L	16±4	14±4	12±3
Total hardness	mg/L	13±3	12±3	13±3
Ammonia as nitrogen	mg/L	0.02±0.02	0.05±0.03	0.09±0.04
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.05±0.02	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.21±0.1	0.27±0.1	0.24±0.1
Mercury	ng/L	4±2	7±2	2±1
Organic carbon	mg/L	2.8±0.7	2.6±0.6	4.9±0.7
Organic carbon, dissolved	mg/L	3.6±0.9	3.0±0.8	5.2±0.8
Fluoride	mg/L	0.06±0.02	0.06±0.02	0.07±0.02
Total dissolved solids	mg/L	34±10	33±10	30±10
Total suspended solids	mg/L	1±1	2±1	1±1
True color	CU	2±1	3±2	22±3
Turbidity	NTU	0.7±0.1	2.2±0.3	1.5±0.4
Lab Section 2				
Calcium	mg/L	3.3±0.5	3.3±0.5	3.2±0.5
Calcium, dissolved	mg/L	3.2±0.5	3.2±0.5	3.1±0.5
Magnesium	mg/L	1.1±0.3	1.0±0.2	1.2±0.3
Magnesium, dissolved	mg/L	1.1±0.3	1.0±0.2	1.2±0.3
Potassium	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.3±0.3	1.5±0.4
Sodium, dissolved	mg/L	1.4±0.4	1.3±0.3	1.4±0.4

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44052 PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_ABOVE *WATER*
44053 PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_BELOW *WATER*
44054 WARNRP 08/01/2019 08:58 WARNRP_20190717_WS *WATER*

Analyte	Units	44052	44053	44054
Lab Section 2				
Sulfate	mg/L	1.2±0.3	1.1±0.3	1.1±0.3
Aluminum	mg/L	0.0028±0.001	0.0024±0.001	0.011±0.002
Aluminum, dissolved	mg/L	0.0010±0.0007	0.0015±0.0008	0.0070±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0075±0.002	0.011±0.002	0.0046±0.001
Barium, dissolved	mg/L	0.0071±0.002	0.011±0.002	0.0041±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0008±0.0004	<0.0002
Iron	mg/L	0.042±0.006	0.30±0.03	0.48±0.05
Iron, dissolved	mg/L	0.0098±0.002	0.21±0.02	0.34±0.03
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.1±0.3	2.1±0.3	1.5±0.4
Lithium, dissolved	ug/L	2.2±0.3	2.1±0.3	1.5±0.4
Manganese	mg/L	0.016±0.002	0.057±0.006	0.030±0.004
Manganese, dissolved	mg/L	0.0012±0.0008	0.068±0.007	0.013±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0002±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0002±0.0001

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44052 PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_ABOVE *WATER*
44053 PATTLKNE1 07/27/2019 08:59 PATTLKNE1_20190717_WS_BELOW *WATER*
44054 WARNRP 08/01/2019 08:58 WARNRP_20190717_WS *WATER*

Analyte	Units	44052	44053	44054
Lab Section 2				
Rubidium	ug/L	0.66±0.2	0.61±0.2	0.86±0.2
Rubidium, dissolved	ug/L	0.69±0.2	0.62±0.2	0.83±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.028±0.004	0.028±0.004	0.023±0.003
Strontium, dissolved	mg/L	0.028±0.004	0.028±0.004	0.023±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0003±0.0002	0.0011±0.0003	<0.0001
Tin, dissolved	mg/L	0.0001±0.0001	0.0003±0.0002	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0003±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0002±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	0.0009±0.0007	0.0011±0.0008	0.0012±0.0009
Zinc, dissolved	mg/L	0.0012±0.0008	0.0018±0.0009	0.0016±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	0.01±0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.009±0.006	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth, Canada North Environmental Services Limited

44055 JEDCK 07/23/2019 16:25 3008_TB_20190717_WS *WATER*

Analyte	Units	44055
Lab Section 1		
Bicarbonate	mg/L	4±2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.62±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	4±2
Total alkalinity	mg/L	3±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	1±1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	0.02±0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0013±0.0008
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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44055 JEDCK 07/23/2019 16:25 3008_TB_20190717_WS *WATER*

Analyte	Units	44055
Lab Section 2		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	0.01±0.006
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 6.1 °C upon receipt.

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SRC Group # 2019-11059

Aug 29, 2019

CanNorth, Canada North Environmental Services Limited

44056 LLOYLKO 07/22/2019 11:48 LLOYLKO_20190717_WS *WATER*

Analyte	Units	44056
Lab Section 1		
Bicarbonate	mg/L	15±4
Carbonate	mg/L	<1
Chloride	mg/L	0.7±0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.28±0.3
Specific conductivity	uS/cm	26±4
Sum of ions	mg/L	23±3
Total alkalinity	mg/L	12±3
Total hardness	mg/L	13±3
Ammonia as nitrogen	mg/L	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.22±0.1
Organic carbon	mg/L	3.6±0.9
Organic carbon, dissolved	mg/L	3.7±0.9
Fluoride	mg/L	0.07±0.02
Total dissolved solids	mg/L	32±10
Total suspended solids	mg/L	2±1
True color	CU	9±3
Turbidity	NTU	1.4±0.4
Lab Section 2		
Calcium	mg/L	3.2±0.5
Calcium, dissolved	mg/L	3.1±0.5
Magnesium	mg/L	1.2±0.3
Magnesium, dissolved	mg/L	1.1±0.3
Potassium	mg/L	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2
Sodium	mg/L	1.4±0.4
Sodium, dissolved	mg/L	1.4±0.4
Sulfate	mg/L	0.9±0.2

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CanNorth, Canada North Environmental Services Limited

44056 LLOYLKO 07/22/2019 11:48 LLOYLKO_20190717_WS *WATER*

Analyte	Units	44056
Lab Section 2		
Aluminum	mg/L	0.0043±0.001
Aluminum, dissolved	mg/L	0.0026±0.001
Antimony	mg/L	<0.0002
Antimony, dissolved	mg/L	<0.0002
Arsenic	ug/L	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1
Barium	mg/L	0.0044±0.001
Barium, dissolved	mg/L	0.0045±0.001
Beryllium	mg/L	<0.0001
Beryllium, dissolved	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Bismuth, dissolved	mg/L	<0.0002
Boron	mg/L	<0.01
Boron, dissolved	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cadmium, dissolved	mg/L	<0.00001
Cesium	ug/L	<0.1
Cesium, dissolved	ug/L	<0.1
Chromium	mg/L	<0.0005
Chromium, dissolved	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Cobalt, dissolved	mg/L	<0.0001
Copper	mg/L	<0.0002
Copper, dissolved	mg/L	0.0003±0.0002
Iron	mg/L	0.17±0.02
Iron, dissolved	mg/L	0.062±0.006
Lead	mg/L	<0.0001
Lead, dissolved	mg/L	<0.0001
Lithium	ug/L	1.8±0.4
Lithium, dissolved	ug/L	1.9±0.5
Manganese	mg/L	0.026±0.004
Manganese, dissolved	mg/L	0.0016±0.0009
Molybdenum	mg/L	<0.0001
Molybdenum, dissolved	mg/L	<0.0001
Nickel	mg/L	<0.0001
Nickel, dissolved	mg/L	<0.0001

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CanNorth, Canada North Environmental Services Limited

44056 LLOYLKO 07/22/2019 11:48 LLOYLKO_20190717_WS *WATER*

Analyte	Units	44056
Lab Section 2		
Rubidium	ug/L	0.52±0.1
Rubidium, dissolved	ug/L	0.58±0.1
Selenium	mg/L	<0.0001
Selenium, dissolved	mg/L	<0.0001
Silver	mg/L	<0.00005
Silver, dissolved	mg/L	<0.00005
Strontium	mg/L	0.024±0.004
Strontium, dissolved	mg/L	0.024±0.004
Tellurium	ug/L	<1
Tellurium, dissolved	ug/L	<1
Thallium	mg/L	<0.0002
Thallium, dissolved	mg/L	<0.0002
Tin	mg/L	<0.0001
Tin, dissolved	mg/L	<0.0001
Titanium	mg/L	<0.0002
Titanium, dissolved	mg/L	<0.0002
Uranium	ug/L	<0.1
Uranium, dissolved	ug/L	<0.1
Vanadium	mg/L	<0.0001
Vanadium, dissolved	mg/L	<0.0001
Zinc	mg/L	0.0011±0.0008
Zinc, dissolved	mg/L	0.0036±0.001
Zirconium	mg/L	<0.001
Zirconium, dissolved	mg/L	<0.001
Phosphorus	mg/L	<0.01
Phosphorus, dissolved	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 6.1 °C upon receipt.

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Aug 28, 2019

This report was generated for samples included in SRC Group # 2019-11059

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0524
Ammonia as nitrogen	mg/L	1.65	1.73
Ammonia as nitrogen	mg/L	8.24	8.17
Ammonia as nitrogen	mg/L	1.65	1.74
Ammonia as nitrogen	mg/L	8.24	8.38
Antimony	mg/L	0.0472	0.0491
Arsenic	mg/L	50.0	50.5
Barium	mg/L	0.0481	0.0500
Beryllium	mg/L	0.0500	0.0516
Bismuth	mg/L	0.0500	0.0508
Boron	mg/L	0.0500	0.0500
Cadmium	mg/L	0.0480	0.0501
Calcium	mg/L	63.4	63.5
Chloride	mg/L	5.65	5.62
Chromium	mg/L	0.0500	0.0510
Cobalt	mg/L	0.0500	0.0511
Copper	mg/L	0.0500	0.0505
Fluoride	mg/L	0.280	0.290
Fluoride	mV	55.0	59.7
Iron	mg/L	0.0500	0.0510
Lead	mg/L	0.0500	0.0509
Lead-210	Bq/L	21.6	20.7
Lead-210	Bq	0.770	0.733
Lead-210	Bq/L	21.6	20.8
Lead-210	Bq	0.385	0.479
Lead-210	Bq/L	21.6	22.4
Lead-210	Bq	0.770	0.770
Magnesium	mg/L	16.5	16.9
Manganese	mg/L	0.0500	0.0511
Mercury	ug/L	56.1	51.0
Molybdenum	mg/L	0.0486	0.0500

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QC Analysis	Units	Target Value	Obtained Value
Nickel	mg/L	0.0500	0.0511
Nitrite+Nitrate nitrogen	mg/L	6.05	6.50
Nitrite+Nitrate nitrogen	mg/L	1.21	1.30
Nitrite+Nitrate nitrogen	mg/L	1.21	1.29
Nitrite+Nitrate nitrogen	mg/L	6.05	6.51
Nitrite+Nitrate nitrogen	mg/L	6.05	6.40
Nitrite+Nitrate nitrogen	mg/L	1.21	1.29
Nitrite+Nitrate nitrogen	mg/L	6.48	6.36
Nitrite+Nitrate nitrogen	mg/L	1.30	1.30
Organic carbon	mg/L	28.6	29.0
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	29.0
Organic carbon	mg/L	28.6	28.4
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	6.96
Phosphorus	mg/L	5.00	5.35
Polonium-210	Bq/L	18.8	19.8
Polonium-210	Bq	0.385	0.377
Polonium-210	Bq/L	18.8	18.7
Polonium-210	Bq/L	18.8	19.5
Polonium-210	Bq	0.077	0.075
Potassium	mg/L	163	166
Radium-226	Bq/L	18.4	17.8
Radium-226	Bq	0.427	0.363
Radium-226	Bq/L	18.4	16.3
Radium-226	Bq	0.043	0.036
Rubidium	mg/L	50.0	50.5
Selenium	mg/L	0.0500	0.0500
Silver	mg/L	0.0500	0.0510
Sodium	mg/L	100	99.6
Specific conductivity	uS/cm	192	183
Strontium	mg/L	0.0500	0.0499
Sulfate	mg/L	150	152
Thallium	mg/L	0.0500	0.0501
Thorium-230	Bq/L	19.9	18.9
Thorium-232	Bq	0.203	0.176
Tin	mg/L	0.0471	0.0447
Titanium	mg/L	0.0500	0.0501
Total alkalinity	mg/L	250	248
Total dissolved solids	mg/L	100	100
Total dissolved solids	mg/L	100	93
Total Kjeldahl nitrogen	mg/L	1.82	1.94
Total Kjeldahl nitrogen	mg/L	1.82	1.74
Total Kjeldahl nitrogen	mg/L	1.82	1.72
Total Kjeldahl nitrogen	mg/L	1.82	1.76

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QC Analysis	Units	Target Value	Obtained Value
Total suspended solids	mg/L	100	92.8
True color	TCU	20.0	18.2
Turbidity	NTU	12.2	11.7
Uranium	mg/L	50.0	49.8
Vanadium	mg/L	0.0500	0.0520
Zinc	mg/L	0.0500	0.0504

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	44031	<0.00005	<0.00005
Silver	mg/L	44042	<0.00005	<0.00005
Silver, dissolved	mg/L	44046	<0.00005	<0.00005
Silver	mg/L	44052	<0.00005	<0.00005
Aluminum	mg/L	44031	0.0016	0.0014
Aluminum	mg/L	44042	0.0040	0.0039
Aluminum, dissolved	mg/L	44046	0.0021	0.0023
Aluminum	mg/L	44052	0.0028	0.0025
Arsenic	ug/L	44031	0.1	0.1
Arsenic	ug/L	44042	0.1	0.1
Arsenic, dissolved	ug/L	44046	0.1	0.2
Arsenic	ug/L	44052	0.1	0.1
Boron	mg/L	44031	<0.01	<0.01
Boron	mg/L	44042	<0.01	<0.01
Boron, dissolved	mg/L	44046	<0.01	<0.01
Boron	mg/L	44052	<0.01	<0.01
Barium	mg/L	44031	0.0076	0.0077
Barium	mg/L	44042	0.0054	0.0053
Barium, dissolved	mg/L	44046	0.0041	0.0042
Barium	mg/L	44052	0.0075	0.0074
Beryllium	mg/L	44031	<0.0001	<0.0001
Beryllium	mg/L	44042	<0.0001	<0.0001
Beryllium, dissolved	mg/L	44046	<0.0001	<0.0001
Beryllium	mg/L	44052	<0.0001	<0.0001
Bismuth	mg/L	44031	<0.0002	<0.0002
Bismuth	mg/L	44042	<0.0002	<0.0002
Bismuth, dissolved	mg/L	44046	<0.0002	<0.0002
Bismuth	mg/L	44052	<0.0002	<0.0002
Calcium	mg/L	43818	13	14
Calcium	mg/L	43928	101	101
Calcium	mg/L	44031	4.3	4.3

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Calcium	mg/L	44037	4.5	4.6
Calcium	mg/L	44042	5.7	5.7
Calcium	mg/L	44043	3.9	3.9
Cadmium	mg/L	44031	<0.00001	<0.00001
Cadmium	mg/L	44042	<0.00001	<0.00001
Cadmium, dissolved	mg/L	44046	<0.00001	<0.00001
Cadmium	mg/L	44052	<0.00001	<0.00001
Chloride	mg/L	43899	0.2	0.1
Chloride	mg/L	44030	0.6	0.6
Chloride	mg/L	44038	0.7	0.7
Chloride	mg/L	44047	0.5	0.5
Cobalt	mg/L	44031	<0.0001	<0.0001
Cobalt	mg/L	44042	<0.0001	<0.0001
Cobalt, dissolved	mg/L	44046	<0.0001	<0.0001
Cobalt	mg/L	44052	<0.0001	<0.0001
Chromium	mg/L	44031	<0.0005	<0.0005
Chromium	mg/L	44042	<0.0005	<0.0005
Chromium, dissolved	mg/L	44046	<0.0005	<0.0005
Chromium	mg/L	44052	<0.0005	<0.0005
Copper	mg/L	44031	<0.0002	<0.0002
Copper	mg/L	44042	<0.0002	<0.0002
Copper, dissolved	mg/L	44046	<0.0002	<0.0002
Copper	mg/L	44052	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	43607	3.4	3.2
Organic carbon, dissolved	mg/L	44034	2.2	2.2
Organic carbon, dissolved	mg/L	44040	2.4	2.4
Fluoride	mg/L	43882	0.08	0.07
Fluoride	mg/L	43898	0.15	0.14
Fluoride	mg/L	44034	0.08	0.08
Fluoride	mg/L	44043	0.08	0.08
Iron	mg/L	44031	0.011	0.012
Iron	mg/L	44042	0.059	0.060
Iron, dissolved	mg/L	44046	0.053	0.054
Iron	mg/L	44052	0.042	0.044
Mercury	ng/L	44028	4	4
Mercury	ng/L	44035	2	2
Mercury	ng/L	44044	2	2
Mercury	ng/L	44055	1	2
Potassium	mg/L	43818	3.8	3.8
Potassium	mg/L	43928	3.4	3.4
Potassium	mg/L	44031	0.7	0.8
Potassium	mg/L	44037	0.9	0.9
Potassium	mg/L	44042	0.3	0.4
Potassium	mg/L	44043	0.6	0.7
Lithium	ug/L	44031	3.0	3.0
Lithium	ug/L	44042	1.7	1.7

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Aug 28, 2019

This report was generated for samples included in SRC Group # 2019-11059

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lithium, dissolved	ug/L	44046	1.9	1.9
Lithium	ug/L	44052	2.1	2.1
Magnesium	mg/L	43818	11	11
Magnesium	mg/L	43928	50	50
Magnesium	mg/L	44031	1.6	1.6
Magnesium	mg/L	44037	1.8	1.8
Magnesium	mg/L	44042	1.5	1.5
Magnesium	mg/L	44043	1.8	1.8
Manganese	mg/L	44031	0.0057	0.0056
Manganese	mg/L	44042	0.019	0.019
Manganese, dissolved	mg/L	44046	0.0014	0.0014
Manganese	mg/L	44052	0.016	0.017
Molybdenum	mg/L	44031	<0.0001	<0.0001
Molybdenum	mg/L	44042	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	44046	<0.0001	<0.0001
Molybdenum	mg/L	44052	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	44028	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	44028	0.02	0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	44039	0.01	0.01
Nitrate as nitrogen, dissolved	mg/L	44052	0.01	0.01
Nitrate as nitrogen, dissolved	mg/L	44056	0.02	0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	39688	<0.01	<0.01
Sodium	mg/L	43818	44	44
Sodium	mg/L	43928	5.1	5.2
Sodium	mg/L	44031	1.8	1.7
Sodium	mg/L	44037	2.0	2.0
Sodium	mg/L	44042	1.5	1.5
Sodium	mg/L	44043	1.9	1.9
Ammonia as nitrogen	mg/L	43581	<0.01	<0.01
Ammonia as nitrogen	mg/L	43904	<0.01	<0.01
Ammonia as nitrogen	mg/L	44037	<0.01	<0.01
Ammonia as nitrogen	mg/L	44048	0.02	<0.01
Ammonia as nitrogen	mg/L	44752	0.30	0.29
Ammonia nitrogen, dissolved	mg/L	44028	0.01	0.01
Ammonia nitrogen, dissolved	mg/L	44039	0.02	0.02
Ammonia nitrogen, dissolved	mg/L	44052	0.02	0.02
Ammonia nitrogen, dissolved	mg/L	44056	<0.01	<0.01
Nickel	mg/L	44031	<0.0001	<0.0001
Nickel	mg/L	44042	<0.0001	<0.0001
Nickel, dissolved	mg/L	44046	<0.0001	<0.0001
Nickel	mg/L	44052	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	44028	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44029	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44030	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44039	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44050	<0.01	<0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Nitrite+Nitrate as nitrogen	mg/L	44056	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44543	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	44278	0.91	0.95
Nitrite+Nitrate as nitrogen	mg/L	44527	<0.04	<0.04
Phosphorus	mg/L	44031	<0.01	<0.01
Phosphorus	mg/L	44042	<0.01	<0.01
Phosphorus, dissolved	mg/L	44046	<0.01	<0.01
Phosphorus	mg/L	44052	<0.01	<0.01
Lead	mg/L	44031	<0.0001	<0.0001
Lead	mg/L	44042	<0.0001	<0.0001
Lead, dissolved	mg/L	44046	<0.0001	<0.0001
Lead	mg/L	44052	<0.0001	<0.0001
Lead-210	Bq/L	43881	<0.02	<0.02
Lead-210	Bq/L	43906	0.03	<0.02
Lead-210	Bq/L	44030	<0.02	<0.02
Lead-210	Bq/L	44041	<0.02	<0.02
Lead-210	Bq/L	44052	<0.02	<0.02
Lead-210	Bq/L	44659	<0.02	<0.02
pH	pH units	43882	7.35	7.39
pH	pH units	43898	11.32	11.24
pH	pH units	44034	7.28	7.28
pH	pH units	44043	7.30	7.34
Polonium-210	Bq/L	43906	<0.005	<0.005
Polonium-210	Bq/L	44030	<0.005	<0.005
Polonium-210	Bq/L	44041	<0.005	<0.005
Polonium-210	Bq/L	44052	<0.005	<0.005
Radium-226	Bq/L	44864	0.03	0.05
Radium-226	Bq/L	44028	<0.005	<0.005
Radium-226	Bq/L	44039	0.006	0.006
Radium-226	Bq/L	44050	0.01	<0.005
Rubidium	ug/L	44031	0.60	0.61
Rubidium	ug/L	44042	0.38	0.36
Rubidium, dissolved	ug/L	44046	0.55	0.57
Rubidium	ug/L	44052	0.66	0.70
Antimony	mg/L	44031	<0.0002	<0.0002
Antimony	mg/L	44042	<0.0002	<0.0002
Antimony, dissolved	mg/L	44046	<0.0002	<0.0002
Antimony	mg/L	44052	<0.0002	<0.0002
Selenium	mg/L	44031	<0.0001	<0.0001
Selenium	mg/L	44042	<0.0001	<0.0001
Selenium, dissolved	mg/L	44046	<0.0001	<0.0001
Selenium	mg/L	44052	<0.0001	<0.0001
Tin	mg/L	44031	0.0002	0.0002
Tin	mg/L	44042	0.0003	0.0003
Tin, dissolved	mg/L	44046	<0.0001	<0.0001
Tin	mg/L	44052	0.0003	0.0003

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Sulfate	mg/L	43818	72	72	
Sulfate	mg/L	43928	240	240	
Sulfate	mg/L	44031	1.7	1.6	
Sulfate	mg/L	44037	1.8	1.7	
Sulfate	mg/L	44042	1.0	1.0	
Sulfate	mg/L	44043	1.1	1.1	
Specific conductivity	uS/cm	43882	34	33	
Specific conductivity	uS/cm	43898	569	560	
Specific conductivity	uS/cm	44034	35	32	
Specific conductivity	uS/cm	44043	37	35	
Strontium	mg/L	44031	0.030	0.030	
Strontium	mg/L	44042	0.018	0.018	
Strontium, dissolved	mg/L	44046	0.024	0.024	
Strontium	mg/L	44052	0.028	0.028	
Total dissolved solids	mg/L	43899	39	42	
Tellurium	ug/L	44031	<1	<1	
Tellurium	ug/L	44042	<1	<1	
Tellurium, dissolved	ug/L	44046	<1	<1	
Tellurium	ug/L	44052	<1	<1	
Thorium-230	Bq/L	44029	<0.01	<0.01	
Thorium-230	Bq/L	44040	<0.01	<0.01	
Thorium-230	Bq/L	44051	<0.01	0.02	
Titanium	mg/L	44031	<0.0002	<0.0002	
Titanium	mg/L	44042	<0.0002	<0.0002	
Titanium, dissolved	mg/L	44046	<0.0002	<0.0002	
Titanium	mg/L	44052	<0.0002	<0.0002	
Total Kjeldahl nitrogen	mg/L	43610	0.11	0.15	
Total Kjeldahl nitrogen	mg/L	44031	0.14	0.24	
Total Kjeldahl nitrogen	mg/L	44092	0.07	<0.05	
Total Kjeldahl nitrogen	mg/L	44182	4.8	4.5	
Total Kjeldahl nitrogen	mg/L	46419	5.8	6.0	
Thallium	mg/L	44031	<0.0002	<0.0002	
Thallium	mg/L	44042	<0.0002	<0.0002	
Thallium, dissolved	mg/L	44046	<0.0002	<0.0002	
Thallium	mg/L	44052	<0.0002	<0.0002	
Organic carbon	mg/L	43584	<0.2	<0.2	
Organic carbon	mg/L	44034	1.6	1.6	
Organic carbon	mg/L	44042	5.8	6.3	
Organic carbon	mg/L	44055	<0.2	<0.2	
Total alkalinity	mg/L	43898	142	136	
Total alkalinity	mg/L	44034	16	11	*(1)
Total alkalinity	mg/L	44043	20	23	
P. alkalinity	mg/L	44088	3	5	
True color	CU	44028	<1	<1	
True color	CU	44034	<1	<1	
Total suspended solids	mg/L	43898	28	28	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Turbidity	NTU	44028	0.091	0.107
Turbidity	NTU	44038	0.336	0.327
Turbidity	NTU	44046	1.05	1.01
Turbidity	NTU	44056	1.43	1.53
Uranium	ug/L	44031	<0.1	<0.1
Uranium	ug/L	44042	<0.1	<0.1
Uranium, dissolved	ug/L	44046	<0.1	<0.1
Uranium	ug/L	44052	<0.1	<0.1
Vanadium	mg/L	44031	<0.0001	<0.0001
Vanadium	mg/L	44042	0.0002	0.0001
Vanadium, dissolved	mg/L	44046	<0.0001	<0.0001
Vanadium	mg/L	44052	<0.0001	<0.0001
Zinc	mg/L	44031	0.0011	0.0011
Zinc	mg/L	44042	0.0010	0.0010
Zinc, dissolved	mg/L	44046	0.0031	0.0031
Zinc	mg/L	44052	0.0009	0.0009
Zirconium	mg/L	44031	<0.001	<0.001
Zirconium	mg/L	44042	<0.001	<0.001
Zirconium, dissolved	mg/L	44046	<0.001	<0.001
Zirconium	mg/L	44052	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	108
Ammonia as nitrogen	110
Ammonia as nitrogen	102
Ammonia as nitrogen	80
Antimony	96
Arsenic	102
Barium	102
Beryllium	107
Bismuth	81
Boron	109
Cadmium	104
Calcium	105
Chloride	95
Chromium	107
Cobalt	107

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Spike Analysis	Percent Recovery
Copper	107
Fluoride	104
Iron	102
Lead	104
Lead-210	92
Lithium	108
Magnesium	107
Manganese	106
Mercury	110
Molybdenum	99
Nickel	105
Nitrite+Nitrate nitrogen	102
Nitrite+Nitrate nitrogen	100
Nitrite+Nitrate nitrogen	100
Nitrite+Nitrate nitrogen	99
Nitrite+Nitrate nitrogen	110
Organic carbon	95
Organic carbon	100
Organic Carbon	110
Organic Carbon, dissolved	105
Organic Carbon, dissolved	95
Phosphorus	104
Potassium	106
Rubidium	102
Selenium	105
Silver	104
Sodium	108
Strontium	101
Sulfate	102
Tellerium	101
Thallium	104
Tin	88
Titanium	101
Total Kjeldahl nitrogen	98
Total Kjeldahl nitrogen	100
Total Kjeldahl nitrogen	99
Total Kjeldahl nitrogen	80
Uranium	100
Vanadium	106
Zinc	110
Zirconium	112

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*(1) The duplicate results for Total alkalinity were just outside the laboratory's specified limits. The data was reviewed and all other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-04-2019

Client P.O.: 3008_19FALL_WS Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-04-2019

Client P.O.: 3008_19FALL_WS Rook I Environmental Baseline Studies

57457 LAKED 09/25/2019 13:31 3008_TB_20190923_WS *WATER*

Analyte	Units	57457
Lab Section 1		
Bicarbonate	mg/L	<1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.72±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	<1
Total alkalinity	mg/L	<1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57457 LAKED 09/25/2019 13:31 3008_TB_20190923_WS *WATER*

Analyte	Units	57457
Lab Section 2		
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57458	**LAKED 09/25/2019 13:31 3008_FB_20190923_WS *WATER***
57459	**LAKED 09/25/2019 13:31 3008_QAQC_20190923_WS *WATER***
57460	**BEETCK 10/01/2019 13:00 BEETCK_20190923_WS *WATER***

Analyte	Units	57458	57459	57460
Lab Section 1				
Bicarbonate	mg/L	<1	37±6	35±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	<0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.74±0.2	7.48±0.3	7.48±0.3
Specific conductivity	uS/cm	<1	38±6	37±6
Sum of ions	mg/L	<1	47±7	46±7
Total alkalinity	mg/L	<1	30±4	29±4
Total hardness	mg/L	<1	19±5	18±4
Ammonia as nitrogen	mg/L	<0.01	0.24±0.04	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.20±0.03	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05	0.98±0.2	0.19±0.1
Mercury	ng/L	<1	1±1	<1
Organic carbon	mg/L	<0.2	5.6±0.8	2.7±0.7
Organic carbon, dissolved	mg/L	<0.2	6.0±0.9	3.0±0.8
Fluoride	mg/L	<0.01	0.03±0.01	0.06±0.02
Total dissolved solids	mg/L	<5	55±10	42±10
Total suspended solids	mg/L	<1	2±1	1±1
True color	CU	<1	8±3	9±3
Turbidity	NTU	<0.1	1.2±0.3	0.9±0.1
Lab Section 2				
Calcium	mg/L	<0.1	5.5±0.8	4.4±0.7
Calcium, dissolved	mg/L	<0.1	5.5±0.8	4.4±0.7
Magnesium	mg/L	<0.1	1.4±0.4	1.6±0.4
Magnesium, dissolved	mg/L	<0.1	1.4±0.4	1.6±0.4
Potassium	mg/L	<0.1	0.4±0.2	0.7±0.2
Potassium, dissolved	mg/L	<0.1	0.4±0.2	0.6±0.2
Sodium	mg/L	<0.1	1.4±0.4	1.7±0.4
Sodium, dissolved	mg/L	<0.1	1.4±0.4	1.7±0.4

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57458	**LAKED 09/25/2019 13:31 3008_FB_20190923_WS *WATER***
57459	**LAKED 09/25/2019 13:31 3008_QAQC_20190923_WS *WATER***
57460	**BEETCK 10/01/2019 13:00 BEETCK_20190923_WS *WATER***

Analyte	Units	57458	57459	57460
Lab Section 2				
Sulfate	mg/L	<0.2	1.0±0.2	1.5±0.3
Aluminum	mg/L	0.0026±0.001	0.0057±0.001	0.0098±0.002
Aluminum, dissolved	mg/L	0.0017±0.0009	0.0032±0.001	0.0099±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	0.1±0.1
Barium	mg/L	<0.0005	0.0061±0.002	0.0082±0.002
Barium, dissolved	mg/L	<0.0005	0.0059±0.001	0.0084±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	0.0004±0.0003	0.0006±0.0003	<0.0002
Iron	mg/L	0.0007±0.0006	0.045±0.007	0.11±0.01
Iron, dissolved	mg/L	0.0048±0.001	0.019±0.003	0.062±0.006
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	1.6±0.4	2.9±0.4
Lithium, dissolved	ug/L	<0.1	1.7±0.4	3.0±0.4
Manganese	mg/L	<0.0005	0.011±0.002	0.023±0.003
Manganese, dissolved	mg/L	<0.0005	0.0028±0.001	0.0098±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57458	**LAKED 09/25/2019 13:31 3008_FB_20190923_WS *WATER***
57459	**LAKED 09/25/2019 13:31 3008_QAQC_20190923_WS *WATER***
57460	**BEETCK 10/01/2019 13:00 BEETCK_20190923_WS *WATER***

Analyte	Units	57458	57459	57460
Lab Section 2				
Rubidium	ug/L	<0.05	0.32±0.1	0.61±0.2
Rubidium, dissolved	ug/L	<0.05	0.37±0.05	0.62±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.017±0.002	0.030±0.004
Strontium, dissolved	mg/L	<0.0005	0.017±0.002	0.032±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	0.0001±0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0005±0.0005	<0.0005	0.0007±0.0006
Zinc, dissolved	mg/L	0.0005±0.0005	0.0013±0.0008	0.0012±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.006±0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57458
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 57460
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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SRC Group # 2019-14330

Oct 25, 2019

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57461 BEETLK1 10/01/2019 13:50 BEETLK1_20190923_WS *WATER*
57462 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_ABOVE *WATER*
57463 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_BELOW *WATER*

Analyte	Units	57461	57462	57463
Lab Section 1				
Bicarbonate	mg/L	30±4	28±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.4±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.54±0.3	7.51±0.3	7.39±0.3
Specific conductivity	uS/cm	38±6	32±5	32±5
Sum of ions	mg/L	40±6	37±6	36±5
Total alkalinity	mg/L	25±4	23±3	21±3
Total hardness	mg/L	17±4	14±4	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	<0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	0.13
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	0.18
Nitrate as nitrogen	mg/L	<0.01	<0.01	0.03±0.02
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.04±0.02
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	0.03±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.04±0.02
Total Kjeldahl nitrogen	mg/L	0.13±0.08	0.12±0.08	0.08±0.06
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	1.8±0.5	1.5±0.5	1.4±0.5
Organic carbon, dissolved	mg/L	2.0±0.5	1.9±0.6	1.6±0.5
Fluoride	mg/L	0.06±0.02	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	39±10	38±10	35±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	2±1	1±1	2±1
Turbidity	NTU	1.1±0.3	0.3±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	4.2±0.6	3.8±0.6	4.0±0.6
Calcium, dissolved	mg/L	3.7±0.6	3.8±0.6	4.0±0.6
Magnesium	mg/L	1.5±0.4	1.2±0.3	1.2±0.3
Magnesium, dissolved	mg/L	1.2±0.3	1.2±0.3	1.3±0.3
Potassium	mg/L	0.7±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.7±0.4	1.6±0.4	1.6±0.4
Sodium, dissolved	mg/L	1.5±0.4	1.5±0.4	1.6±0.4

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57461 BEETLK1 10/01/2019 13:50 BEETLK1_20190923_WS *WATER*
57462 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_ABOVE *WATER*
57463 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_BELOW *WATER*

Analyte	Units	57461	57462	57463
Lab Section 2				
Sulfate	mg/L	1.6±0.4	1.8±0.4	1.9±0.4
Aluminum	mg/L	0.0039±0.001	0.0023±0.001	0.0024±0.001
Aluminum, dissolved	mg/L	0.0013±0.0008	0.0024±0.001	0.0009±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0089±0.002	0.014±0.002	0.016±0.002
Barium, dissolved	mg/L	0.0081±0.002	0.014±0.002	0.015±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0006±0.0003	<0.0002
Iron	mg/L	0.10±0.01	0.016±0.002	0.019±0.003
Iron, dissolved	mg/L	0.018±0.003	0.0022±0.001	0.0012±0.0008
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.0±0.4	2.9±0.4	3.0±0.4
Lithium, dissolved	ug/L	3.0±0.4	2.9±0.4	2.9±0.4
Manganese	mg/L	0.036±0.005	0.0057±0.001	0.030±0.004
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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57461 BEETLK1 10/01/2019 13:50 BEETLK1_20190923_WS *WATER*
57462 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_ABOVE *WATER*
57463 BROALK2 09/25/2019 09:24 BROALK2_20190923_WS_BELOW *WATER*

Analyte	Units	57461	57462	57463
Lab Section 2				
Rubidium	ug/L	0.56±0.1	0.53±0.1	0.54±0.1
Rubidium, dissolved	ug/L	0.63±0.2	0.54±0.1	0.56±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.036±0.005	0.037±0.006
Strontium, dissolved	mg/L	0.031±0.005	0.036±0.005	0.038±0.006
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0006±0.0006	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	0.0010±0.0007	0.0015±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57461
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 57463
This sample was reanalyzed for Ammonia as nitrogen, Ammonia nitrogen, dissolved, Nitrate (calc. from NO2+NO3-N), Nitrate (calc.), dissolved, Nitrate as nitrogen, Nitrate as nitrogen, dissolved, Nitrite+Nitrate as nitrogen and Nitrite+Nitrate as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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CanNorth, Canada North Environmental Services Limited

57464 CLEARV1 10/01/2019 10:10 CLEARV1_20190923_WS *WATER*
57465 FORRLK1 09/26/2019 15:30 FORRLK1_20190923_WS *WATER*
57466 FORRLK2 10/02/2019 09:00 FORRLK2_20190923_WS *WATER*

Analyte	Units	57464	57465	57466
Lab Section 1				
Bicarbonate	mg/L	26±4	29±4	29±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.40±0.3	7.48±0.3	7.46±0.3
Specific conductivity	uS/cm	28±4	33±5	43±6
Sum of ions	mg/L	34±5	39±6	40±6
Total alkalinity	mg/L	21±3	24±4	24±4
Total hardness	mg/L	14±4	16±4	18±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.01±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.31±0.1	0.17±0.1	0.06±0.05
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	3.5±0.9	2.1±0.5	1.2±0.4
Organic carbon, dissolved	mg/L	3.8±1	2.3±0.6	1.4±0.5
Fluoride	mg/L	0.04±0.02	0.05±0.02	0.07±0.02
Total dissolved solids	mg/L	32±10	34±10	40±10
Total suspended solids	mg/L	5±2	1±1	<1
True color	CU	16±4	6±2	<1
Turbidity	NTU	2.7±0.4	0.8±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	3.5±0.5	4.0±0.6	4.4±0.7
Calcium, dissolved	mg/L	3.6±0.5	4.0±0.6	4.5±0.7
Magnesium	mg/L	1.2±0.3	1.4±0.4	1.7±0.4
Magnesium, dissolved	mg/L	1.2±0.3	1.4±0.4	1.7±0.4
Potassium	mg/L	0.6±0.2	0.6±0.2	0.8±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.9±0.3
Sodium	mg/L	1.4±0.4	1.5±0.4	2.0±0.3
Sodium, dissolved	mg/L	1.4±0.4	1.5±0.4	1.9±0.5

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57464 CLEARV1 10/01/2019 10:10 CLEARV1_20190923_WS *WATER*
57465 FORRLK1 09/26/2019 15:30 FORRLK1_20190923_WS *WATER*
57466 FORRLK2 10/02/2019 09:00 FORRLK2_20190923_WS *WATER*

Analyte	Units	57464	57465	57466
Lab Section 2				
Sulfate	mg/L	1.2±0.3	1.6±0.4	1.6±0.4
Aluminum	mg/L	0.027±0.004	0.011±0.002	0.0017±0.0009
Aluminum, dissolved	mg/L	0.010±0.002	0.0089±0.002	0.0016±0.0009
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0080±0.002	0.0087±0.002	0.0075±0.002
Barium, dissolved	mg/L	0.0067±0.002	0.0083±0.002	0.0068±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.39±0.04	0.050±0.005	0.012±0.002
Iron, dissolved	mg/L	0.095±0.01	0.022±0.003	0.0017±0.0009
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.3±0.3	2.7±0.4	3.4±0.5
Lithium, dissolved	ug/L	2.2±0.3	2.7±0.4	3.2±0.5
Manganese	mg/L	0.024±0.004	0.0069±0.002	0.0027±0.001
Manganese, dissolved	mg/L	0.0071±0.002	0.0042±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57464 CLEARV1 10/01/2019 10:10 CLEARV1_20190923_WS *WATER*
57465 FORRLK1 09/26/2019 15:30 FORRLK1_20190923_WS *WATER*
57466 FORRLK2 10/02/2019 09:00 FORRLK2_20190923_WS *WATER*

Analyte	Units	57464	57465	57466
Lab Section 2				
Rubidium	ug/L	0.67±0.2	0.65±0.2	0.63±0.2
Rubidium, dissolved	ug/L	0.61±0.2	0.59±0.1	0.49±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.028±0.004	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.025±0.004	0.030±0.004	0.029±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0007±0.0003	0.0002±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0007±0.0006	0.0007±0.0006
Zinc, dissolved	mg/L	<0.0005	0.0010±0.0007	0.0008±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	0.02±0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57466
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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CanNorth, Canada North Environmental Services Limited

57467	**HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_ABOVE *WATER***
57468	**HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_BELOW *WATER***
57469	**JEDCK 09/27/2019 16:00 JEDCK_20190923_WS *WATER***

Analyte	Units	57467	57468	57469
Lab Section 1				
Bicarbonate	mg/L	13±3	15±4	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2.0±0.3	2.0±0.3	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.22±0.3	7.10±0.3	7.16±0.3
Specific conductivity	uS/cm	21±3	22±3	17±4
Sum of ions	mg/L	21±3	23±3	21±3
Total alkalinity	mg/L	11±3	12±3	12±3
Total hardness	mg/L	10±2	10±2	9±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.04±0.02	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.07±0.06	0.14±0.09	0.21±0.1
Mercury	ng/L	<1	<1	1±1
Organic carbon	mg/L	1.8±0.5	1.8±0.5	6.4±1
Organic carbon, dissolved	mg/L	2.3±0.6	2.3±0.6	6.7±1
Fluoride	mg/L	0.02±0.01	0.02±0.01	0.03±0.01
Total dissolved solids	mg/L	27±10	27±10	34±10
Total suspended solids	mg/L	1±1	1±1	2±1
True color	CU	2±1	2±1	48±7
Turbidity	NTU	0.4±0.1	0.4±0.1	2.8±0.4
Lab Section 2				
Calcium	mg/L	2.9±0.4	3.0±0.4	2.6±0.4
Calcium, dissolved	mg/L	3.0±0.4	3.1±0.5	2.6±0.4
Magnesium	mg/L	0.6±0.1	0.7±0.1	0.7±0.1
Magnesium, dissolved	mg/L	0.6±0.1	0.7±0.1	0.7±0.1
Potassium	mg/L	0.3±0.1	0.4±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.3±0.1	0.3±0.1	0.4±0.2
Sodium	mg/L	1.0±0.2	1.0±0.2	1.1±0.3
Sodium, dissolved	mg/L	0.9±0.1	1.0±0.2	1.0±0.2

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CanNorth, Canada North Environmental Services Limited

57467 HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_ABOVE *WATER*
57468 HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_BELOW *WATER*
57469 JEDCK 09/27/2019 16:00 JEDCK_20190923_WS *WATER*

Analyte	Units	57467	57468	57469
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.1±0.3	1.1±0.3
Aluminum	mg/L	0.0033±0.001	0.0036±0.001	0.034±0.005
Aluminum, dissolved	mg/L	0.0033±0.001	0.0026±0.001	0.029±0.004
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	0.0064±0.002	0.0073±0.002	0.0095±0.002
Barium, dissolved	mg/L	0.0063±0.002	0.0069±0.002	0.0090±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	0.01±0.01	<0.01
Boron, dissolved	mg/L	0.01±0.01	0.01±0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.0087±0.002	0.028±0.004	0.58±0.06
Iron, dissolved	mg/L	0.0010±0.0007	0.0075±0.002	0.32±0.03
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.7±0.4	1.8±0.4	1.5±0.4
Lithium, dissolved	ug/L	1.7±0.4	1.8±0.4	1.5±0.4
Manganese	mg/L	0.0026±0.001	0.016±0.002	0.015±0.002
Manganese, dissolved	mg/L	<0.0005	0.0085±0.002	0.0089±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001

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57467 HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_ABOVE *WATER*
57468 HODGLK1 09/24/2019 11:30 HODGLK1_20190923_WS_BELOW *WATER*
57469 JEDCK 09/27/2019 16:00 JEDCK_20190923_WS *WATER*

Analyte	Units	57467	57468	57469
Lab Section 2				
Rubidium	ug/L	0.67±0.2	0.69±0.2	0.70±0.2
Rubidium, dissolved	ug/L	0.64±0.2	0.67±0.2	0.66±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.061±0.006	0.063±0.006	0.025±0.004
Strontium, dissolved	mg/L	0.060±0.006	0.062±0.006	0.025±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0004±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0004±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	0.0002±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Zinc	mg/L	<0.0005	0.0024±0.001	<0.0005
Zinc, dissolved	mg/L	<0.0005	0.0016±0.0009	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57468
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Oct 25, 2019

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Note for Sample # 57469
This sample was reanalyzed for Amonia as nitrogen, Ammonia nitrogen, dissolved, Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57470 LAKED 09/25/2019 13:31 LAKED_20190923_WS *WATER*
57471 LAKEG1 09/28/2019 15:00 LAKEG1_20190923_WS *WATER*
57472 LAKEH1 09/30/2019 09:30 LAKEH1_20190923_WS *WATER*

Analyte	Units	57470	57471	57472
Lab Section 1				
Bicarbonate	mg/L	34±5	20±3	34±5
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.1±0.1	0.2±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.52±0.3	7.38±0.3	7.47±0.3
Specific conductivity	uS/cm	39±6	33±5	32±5
Sum of ions	mg/L	44±7	30±4	42±6
Total alkalinity	mg/L	28±4	16±4	28±4
Total hardness	mg/L	19±5	15±4	15±4
Ammonia as nitrogen	mg/L	0.19±0.05	0.25±0.04	<0.01
Ammonia nitrogen, dissolved	mg/L	0.24±0.04	0.26±0.04	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.80	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.89	<0.04
Nitrate as nitrogen	mg/L	<0.01	0.18±0.04	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.20±0.03	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.18±0.04	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.20±0.03	<0.01
Total Kjeldahl nitrogen	mg/L	1.1±0.2	0.71±0.2	0.95±0.2
Mercury	ng/L	<1	1±1	<1
Organic carbon	mg/L	5.6±0.8	7.1±1	7.0±1
Organic carbon, dissolved	mg/L	6.3±0.9	7.8±1	7.4±1
Fluoride	mg/L	0.03±0.01	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	54±10	41±10	40±10
Total suspended solids	mg/L	2±1	2±1	7±3
True color	CU	9±3	23±3	4±2
Turbidity	NTU	1.1±0.3	1.6±0.4	2.5±0.4
Lab Section 2				
Calcium	mg/L	5.4±0.8	3.5±0.5	3.6±0.5
Calcium, dissolved	mg/L	5.4±0.8	3.4±0.5	3.4±0.5
Magnesium	mg/L	1.4±0.4	1.6±0.4	1.5±0.4
Magnesium, dissolved	mg/L	1.4±0.4	1.6±0.4	1.4±0.4
Potassium	mg/L	0.4±0.2	0.6±0.2	0.8±0.3
Potassium, dissolved	mg/L	0.4±0.2	0.6±0.2	0.8±0.3
Sodium	mg/L	1.4±0.4	1.6±0.4	1.8±0.4
Sodium, dissolved	mg/L	1.4±0.4	1.6±0.4	1.7±0.4

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57471 LAKEG1 09/28/2019 15:00 LAKEG1_20190923_WS *WATER*
57472 LAKEH1 09/30/2019 09:30 LAKEH1_20190923_WS *WATER*

Analyte	Units	57470	57471	57472
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.2±0.3	0.3±0.2
Aluminum	mg/L	0.0064±0.002	0.0063±0.002	0.010±0.002
Aluminum, dissolved	mg/L	0.0049±0.001	0.0052±0.001	0.0024±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	<0.1	0.2±0.1
Barium	mg/L	0.0063±0.002	0.0070±0.002	0.0011±0.0007
Barium, dissolved	mg/L	0.0061±0.002	0.0064±0.002	0.0006±0.0006
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.047±0.007	0.15±0.02	0.080±0.008
Iron, dissolved	mg/L	0.042±0.006	0.078±0.008	0.0050±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.6±0.4	2.4±0.4	3.2±0.5
Lithium, dissolved	ug/L	1.6±0.4	2.3±0.3	2.9±0.4
Manganese	mg/L	0.010±0.002	0.0074±0.002	0.019±0.003
Manganese, dissolved	mg/L	0.0092±0.002	0.0036±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57470 LAKED 09/25/2019 13:31 LAKED_20190923_WS *WATER*
57471 LAKEG1 09/28/2019 15:00 LAKEG1_20190923_WS *WATER*
57472 LAKEH1 09/30/2019 09:30 LAKEH1_20190923_WS *WATER*

Analyte	Units	57470	57471	57472
Lab Section 2				
Rubidium	ug/L	0.40±0.1	0.50±0.1	1.3±0.2
Rubidium, dissolved	ug/L	0.35±0.05	0.47±0.05	1.1±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.017±0.002	0.020±0.003	0.013±0.002
Strontium, dissolved	mg/L	0.017±0.002	0.019±0.003	0.011±0.002
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0010±0.0008	0.0014±0.001	0.0013±0.0009
Zinc, dissolved	mg/L	0.0009±0.0007	0.0014±0.0008	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	0.01±0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	0.03±0.02
Polonium-210	Bq/L	0.007±0.005	0.008±0.006	0.006±0.005
Radium-226	Bq/L	<0.005	0.007±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57470
This sample was reanalyzed for Ammonia as nitrogen, Ammonia nitrogen, dissolved, Aluminum dissolved, Iron dissolved and Manganese dissolved. Reanalysis confirms original results are within the

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expected measurement uncertainty.

Note for Sample # 57471
This sample was reanalyzed for Ammonia as nitrogen, Ammonia nitrogen, dissolved, Nitrate (calc. from NO2+NO3-N), Nitrate (calc.), dissolved, Nitrate as nitrogen, Nitrate as nitrogen, dissolved, Nitrite+Nitrate as nitrogen and Nitrite+Nitrate as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 57472
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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SRC Group # 2019-14330

Oct 25, 2019

CanNorth, Canada North Environmental Services Limited

57473	**LAKEJ 09/24/2019 14:16 LAKEJ_20190923_WS *WATER***
57474	**LLOYLKI 09/20/2019 12:51 LLOYLKI_20190923_WS *WATER***
57475	**LLOYLKO 09/19/2019 12:25 LLOYLKO_20190923_WS *WATER***

Analyte	Units	57473	57474	57475
Lab Section 1				
Bicarbonate	mg/L	5±2	16±4	12±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1±0.1	0.7±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.38±0.2	7.24±0.3	7.28±0.3
Specific conductivity	uS/cm	<1	23±3	25±4
Sum of ions	mg/L	7±2	24±4	20±3
Total alkalinity	mg/L	4±1	13±3	10±2
Total hardness	mg/L	<1	12±3	12±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.95±0.2	0.34±0.2	0.46±0.2
Mercury	ng/L	1±1	4±2	<1
Organic carbon	mg/L	5.2±0.8	6.2±0.9	6.2±0.9
Organic carbon, dissolved	mg/L	5.6±0.8	6.3±0.9	6.5±1
Fluoride	mg/L	0.02±0.01	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	14±8	34±10	36±10
Total suspended solids	mg/L	4±2	2±1	1±1
True color	CU	6±2	34±5	29±4
Turbidity	NTU	1.5±0.4	1.9±0.5	1.8±0.4
Lab Section 2				
Calcium	mg/L	0.3±0.2	3.0±0.4	3.1±0.5
Calcium, dissolved	mg/L	0.4±0.1	3.0±0.4	3.1±0.5
Magnesium	mg/L	<0.1	1.0±0.2	1.1±0.3
Magnesium, dissolved	mg/L	0.1±0.1	1.0±0.2	1.1±0.3
Potassium	mg/L	0.3±0.1	0.6±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.3±0.1	0.4±0.2	0.4±0.2
Sodium	mg/L	0.6±0.1	1.4±0.4	1.3±0.3
Sodium, dissolved	mg/L	0.6±0.1	1.4±0.4	1.3±0.3

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57473	**LAKEJ 09/24/2019 14:16 LAKEJ_20190923_WS *WATER***
57474	**LLOYLKI 09/20/2019 12:51 LLOYLKI_20190923_WS *WATER***
57475	**LLOYLKO 09/19/2019 12:25 LLOYLKO_20190923_WS *WATER***

Analyte	Units	57473	57474	57475
Lab Section 2				
Sulfate	mg/L	0.6±0.2	0.9±0.2	0.9±0.2
Aluminum	mg/L	0.015±0.002	0.014±0.002	0.013±0.002
Aluminum, dissolved	mg/L	0.0074±0.002	0.011±0.002	0.0084±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0030±0.001	0.0062±0.002	0.0060±0.002
Barium, dissolved	mg/L	0.0023±0.001	0.0055±0.001	0.0052±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.038±0.006	0.42±0.04	0.33±0.03
Iron, dissolved	mg/L	0.0095±0.002	0.18±0.02	0.14±0.01
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	0.1±0.1	1.8±0.4	1.8±0.4
Lithium, dissolved	ug/L	<0.1	1.7±0.4	1.8±0.4
Manganese	mg/L	0.0047±0.001	0.025±0.004	0.025±0.004
Manganese, dissolved	mg/L	0.0020±0.001	0.0029±0.001	0.0010±0.0007
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001

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57473 LAKEJ 09/24/2019 14:16 LAKEJ_20190923_WS *WATER*
57474 LLOYLKI 09/20/2019 12:51 LLOYLKI_20190923_WS *WATER*
57475 LLOYLKO 09/19/2019 12:25 LLOYLKO_20190923_WS *WATER*

Analyte	Units	57473	57474	57475
Lab Section 2				
Rubidium	ug/L	0.63±0.2	0.59±0.1	0.57±0.1
Rubidium, dissolved	ug/L	0.58±0.1	0.64±0.2	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.0037±0.001	0.024±0.004	0.024±0.004
Strontium, dissolved	mg/L	0.0030±0.001	0.024±0.004	0.024±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	0.0003±0.0002	<0.0001
Tin, dissolved	mg/L	<0.0001	0.0002±0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0002±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	0.0001±0.0001	0.0001±0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0011±0.0008	<0.0005	<0.0005
Zinc, dissolved	mg/L	0.0011±0.0007	0.0005±0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.01±0.01	0.03±0.02	<0.01
Phosphorus, dissolved	mg/L	<0.01	0.02±0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	0.03±0.02	<0.02	<0.02
Polonium-210	Bq/L	0.01±0.007	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	0.009±0.006	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57473
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 57474
This sample was reanalyzed for Mercury. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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57476	**NAOMLK 10/01/2019 11:00 NAOMLK_20190923_WS *WATER***
57477	**PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_ABOVE *WATER***
57478	**PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_BELOW *WATER***

Analyte	Units	57476	57477	57478
Lab Section 1				
Bicarbonate	mg/L	8±3	29±4	29±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.09±0.3	7.52±0.3	7.41±0.3
Specific conductivity	uS/cm	16±4	32±5	33±5
Sum of ions	mg/L	14±4	38±6	39±6
Total alkalinity	mg/L	7±1	24±4	24±4
Total hardness	mg/L	9±3	15±4	16±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.40±0.2	0.18±0.1	0.12±0.08
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	7.2±1	1.8±0.5	1.6±0.5
Organic carbon, dissolved	mg/L	7.4±1	2.2±0.6	2.0±0.5
Fluoride	mg/L	0.03±0.01	0.05±0.02	0.05±0.02
Total dissolved solids	mg/L	40±10	32±10	38±10
Total suspended solids	mg/L	2±1	<1	<1
True color	CU	40±6	1±1	<1
Turbidity	NTU	3.1±0.5	0.4±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	2.5±0.4	3.9±0.6	4.0±0.6
Calcium, dissolved	mg/L	2.6±0.4	4.0±0.6	4.1±0.6
Magnesium	mg/L	0.6±0.1	1.4±0.4	1.4±0.4
Magnesium, dissolved	mg/L	0.6±0.1	1.4±0.4	1.4±0.4
Potassium	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	0.9±0.1	1.4±0.4	1.4±0.4
Sodium, dissolved	mg/L	0.9±0.1	1.4±0.4	1.4±0.4

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57476	**NAOMLK 10/01/2019 11:00 NAOMLK_20190923_WS *WATER***
57477	**PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_ABOVE *WATER***
57478	**PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_BELOW *WATER***

Analyte	Units	57476	57477	57478
Lab Section 2				
Sulfate	mg/L	0.6±0.2	1.5±0.3	1.6±0.4
Aluminum	mg/L	0.028±0.004	0.0014±0.0008	0.0024±0.001
Aluminum, dissolved	mg/L	0.022±0.003	0.0022±0.001	0.0034±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0078±0.002	0.0087±0.002	0.012±0.002
Barium, dissolved	mg/L	0.0073±0.002	0.0084±0.002	0.011±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.66±0.07	0.014±0.002	0.013±0.002
Iron, dissolved	mg/L	0.38±0.04	0.0032±0.001	0.0022±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.1±0.3	2.5±0.4	2.6±0.4
Lithium, dissolved	ug/L	1.1±0.3	2.5±0.4	2.6±0.4
Manganese	mg/L	0.028±0.004	0.0080±0.002	0.026±0.004
Manganese, dissolved	mg/L	0.014±0.002	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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57476 NAOMLK 10/01/2019 11:00 NAOMLK_20190923_WS *WATER*
57477 PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_ABOVE *WATER*
57478 PATTLKE1 09/30/2019 14:52 PATTLKE1_20190923_WS_BELOW *WATER*

Analyte	Units	57476	57477	57478
Lab Section 2				
Rubidium	ug/L	0.77±0.2	0.52±0.1	0.53±0.1
Rubidium, dissolved	ug/L	0.83±0.2	0.54±0.1	0.60±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.024±0.004	0.029±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.023±0.003	0.029±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	0.0003±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0002±0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	0.0002±0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0007±0.0006	0.0008±0.0007	0.0012±0.0009
Zinc, dissolved	mg/L	0.0009±0.0007	0.0011±0.0007	0.0024±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.008±0.005	0.009±0.006	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57476
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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CanNorth, Canada North Environmental Services Limited

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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CanNorth, Canada North Environmental Services Limited

57479	**PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_ABOVE *WATER***
57480	**PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_BELOW *WATER***
57481	**PATTLKNE1 09/30/2019 10:00 PATTLKNE1_20190923_WS *WATER***

Analyte	Units	57479	57480	57481
Lab Section 1				
Bicarbonate	mg/L	27±4	27±4	22±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.52±0.3	7.42±0.3	7.20±0.3
Specific conductivity	uS/cm	32±5	32±5	25±4
Sum of ions	mg/L	36±5	36±5	30±4
Total alkalinity	mg/L	22±3	22±3	18±4
Total hardness	mg/L	15±4	15±4	12±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.20±0.1	0.13±0.08	0.21±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	1.9±0.6	1.7±0.5	2.6±0.6
Organic carbon, dissolved	mg/L	3.3±0.8	2.1±0.5	2.8±0.7
Fluoride	mg/L	0.05±0.02	0.05±0.02	0.04±0.02
Total dissolved solids	mg/L	29±10	37±10	30±10
Total suspended solids	mg/L	<1	<1	1±1
True color	CU	<1	1±1	4±2
Turbidity	NTU	0.4±0.1	0.4±0.1	1.1±0.3
Lab Section 2				
Calcium	mg/L	3.8±0.6	3.9±0.6	3.2±0.5
Calcium, dissolved	mg/L	3.9±0.6	3.9±0.6	2.9±0.4
Magnesium	mg/L	1.3±0.3	1.3±0.3	1.0±0.2
Magnesium, dissolved	mg/L	1.3±0.3	1.4±0.4	1.0±0.2
Potassium	mg/L	0.6±0.2	0.5±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.4±0.4	1.3±0.3
Sodium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.4±0.4

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SRC Group # 2019-14330

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57479 PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_ABOVE *WATER*
57480 PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_BELOW *WATER*
57481 PATTLKNE1 09/30/2019 10:00 PATTLKNE1_20190923_WS *WATER*

Analyte	Units	57479	57480	57481
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.7±0.4	1.2±0.3
Aluminum	mg/L	0.0031±0.001	0.0022±0.001	0.0050±0.001
Aluminum, dissolved	mg/L	0.0022±0.001	0.0018±0.0009	0.0021±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0086±0.002	0.011±0.002	0.0088±0.002
Barium, dissolved	mg/L	0.0085±0.002	0.010±0.002	0.0083±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.012±0.002	0.014±0.002	0.16±0.02
Iron, dissolved	mg/L	0.0020±0.001	0.0019±0.001	0.049±0.007
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.5±0.4	2.6±0.4	2.0±0.3
Lithium, dissolved	ug/L	2.6±0.4	2.5±0.4	2.1±0.3
Manganese	mg/L	0.0056±0.001	0.023±0.003	0.023±0.003
Manganese, dissolved	mg/L	<0.0005	<0.0005	0.0018±0.0009
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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57479 PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_ABOVE *WATER*
57480 PATTLKN1 09/30/2019 12:00 PATTLKN1_20190923_WS_BELOW *WATER*
57481 PATTLKNE1 09/30/2019 10:00 PATTLKNE1_20190923_WS *WATER*

Analyte	Units	57479	57480	57481
Lab Section 2				
Rubidium	ug/L	0.57±0.1	0.62±0.2	0.62±0.2
Rubidium, dissolved	ug/L	0.59±0.1	0.60±0.2	0.61±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.030±0.004	0.031±0.005	0.028±0.004
Strontium, dissolved	mg/L	0.030±0.004	0.031±0.005	0.028±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0009±0.0007	0.0010±0.0008	<0.0005
Zinc, dissolved	mg/L	0.0010±0.0007	0.0008±0.0006	0.0010±0.0007
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	0.03±0.02	0.03±0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.007±0.005	<0.005	0.007±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57479
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 57481
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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57482 WARNRP 10/03/2019 09:00 WARNRP_20190923_WS *WATER*

Analyte	Units	57482
Lab Section 1		
Bicarbonate	mg/L	10±2
Carbonate	mg/L	<1
Chloride	mg/L	0.6±0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.27±0.3
Specific conductivity	uS/cm	22±3
Sum of ions	mg/L	17±4
Total alkalinity	mg/L	8±1
Total hardness	mg/L	11±3
Ammonia as nitrogen	mg/L	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.36±0.2
Mercury	ng/L	1±1
Organic carbon	mg/L	7.5±1
Organic carbon, dissolved	mg/L	7.4±1
Fluoride	mg/L	0.04±0.02
Total dissolved solids	mg/L	45±10
Total suspended solids	mg/L	2±1
True color	CU	45±7
Turbidity	NTU	2.1±0.3
Lab Section 2		
Calcium	mg/L	2.8±0.4
Calcium, dissolved	mg/L	2.9±0.4
Magnesium	mg/L	1.0±0.2
Magnesium, dissolved	mg/L	1.0±0.2
Potassium	mg/L	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2
Sodium	mg/L	1.4±0.4
Sodium, dissolved	mg/L	1.4±0.4

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CanNorth, Canada North Environmental Services Limited

57482 WARNRP 10/03/2019 09:00 WARNRP_20190923_WS *WATER*

Analyte	Units	57482
Lab Section 2		
Sulfate	mg/L	0.9±0.2
Aluminum	mg/L	0.030±0.004
Aluminum, dissolved	mg/L	0.020±0.003
Antimony	mg/L	<0.0002
Antimony, dissolved	mg/L	<0.0002
Arsenic	ug/L	0.2±0.1
Arsenic, dissolved	ug/L	0.2±0.1
Barium	mg/L	0.0054±0.001
Barium, dissolved	mg/L	0.0049±0.001
Beryllium	mg/L	<0.0001
Beryllium, dissolved	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Bismuth, dissolved	mg/L	<0.0002
Boron	mg/L	<0.01
Boron, dissolved	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cadmium, dissolved	mg/L	<0.00001
Cesium	ug/L	<0.1
Cesium, dissolved	ug/L	<0.1
Chromium	mg/L	<0.0005
Chromium, dissolved	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Cobalt, dissolved	mg/L	<0.0001
Copper	mg/L	<0.0002
Copper, dissolved	mg/L	<0.0002
Iron	mg/L	0.70±0.07
Iron, dissolved	mg/L	0.46±0.05
Lead	mg/L	<0.0001
Lead, dissolved	mg/L	<0.0001
Lithium	ug/L	1.3±0.3
Lithium, dissolved	ug/L	1.2±0.3
Manganese	mg/L	0.025±0.004
Manganese, dissolved	mg/L	0.012±0.002
Molybdenum	mg/L	<0.0001
Molybdenum, dissolved	mg/L	<0.0001
Nickel	mg/L	0.0002±0.0001
Nickel, dissolved	mg/L	0.0002±0.0001

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CanNorth, Canada North Environmental Services Limited

57482 WARNRP 10/03/2019 09:00 WARNRP_20190923_WS *WATER*

Analyte	Units	57482
Lab Section 2		
Rubidium	ug/L	0.72±0.2
Rubidium, dissolved	ug/L	0.75±0.2
Selenium	mg/L	<0.0001
Selenium, dissolved	mg/L	<0.0001
Silver	mg/L	<0.00005
Silver, dissolved	mg/L	<0.00005
Strontium	mg/L	0.020±0.003
Strontium, dissolved	mg/L	0.020±0.003
Tellurium	ug/L	<1
Tellurium, dissolved	ug/L	<1
Thallium	mg/L	<0.0002
Thallium, dissolved	mg/L	<0.0002
Tin	mg/L	<0.0001
Tin, dissolved	mg/L	<0.0001
Titanium	mg/L	0.0004±0.0002
Titanium, dissolved	mg/L	<0.0002
Uranium	ug/L	<0.1
Uranium, dissolved	ug/L	<0.1
Vanadium	mg/L	0.0003±0.0002
Vanadium, dissolved	mg/L	0.0002±0.0001
Zinc	mg/L	0.0015±0.001
Zinc, dissolved	mg/L	0.0010±0.0007
Zirconium	mg/L	<0.001
Zirconium, dissolved	mg/L	<0.001
Phosphorus	mg/L	<0.01
Phosphorus, dissolved	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	0.03±0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57482
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 6.2 °C upon receipt.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity for samples 57458 to 57481.

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Oct 24, 2019

This report was generated for samples included in SRC Group # 2019-14330

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0519
Aluminum	mg/L	0.0500	0.0484
Ammonia as nitrogen	mg/L	1.77	1.81
Ammonia as nitrogen	mg/L	8.24	8.37
Ammonia as nitrogen	mg/L	1.77	1.78
Ammonia as nitrogen	mg/L	8.36	8.19
Antimony	mg/L	0.0460	0.0457
Arsenic	mg/L	50.0	49.4
Arsenic	mg/L	50.0	49.4
Barium	mg/L	0.0500	0.0483
Beryllium	mg/L	0.0500	0.0525
Bismuth	mg/L	0.0500	0.0501
Boron	mg/L	0.0500	0.0507
Cadmium	mg/L	0.0500	0.0490
Calcium	mg/L	63.4	62.5
Chloride	mg/L	5.65	6.08
Chromium	mg/L	0.0500	0.0496
Cobalt	mg/L	0.0500	0.0500
Copper	mg/L	0.0500	0.0498
Fluoride	mg/L	1.36	1.40
Iron	mg/L	0.0500	0.0496
Iron	mg/L	0.0500	0.0491
Lead	mg/L	0.0500	0.0502
Lead-210	Bq/L	19.7	23.0
Lead-210	Bq	0.370	0.435
Lead-210	Bq/L	19.7	16.8
Lead-210	Bq	0.750	0.729
Lead-210	Bq/L	19.7	20.1
Lead-210	Bq	1.87	1.95
Lead-210	Bq/L	19.7	17.6
Lead-210	Bq	0.370	0.339

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QC Analysis	Units	Target Value	Obtained Value	
Lead-210	Bq/L	19.7	18.1	
Lead-210	Bq	7.47	6.24	
Magnesium	mg/L	16.5	16.3	
Manganese	mg/L	0.0500	0.0508	
Manganese	mg/L	0.0500	0.0496	
Mercury	ng/L	52.8	50.0	
Molybdenum	mg/L	0.0500	0.0487	
Nickel	mg/L	0.0500	0.0500	
Nitrite+Nitrate nitrogen	mg/L	6.05	6.42	
Nitrite+Nitrate nitrogen	mg/L	1.21	1.28	
Nitrite+Nitrate nitrogen	mg/L	6.48	6.47	
Nitrite+Nitrate nitrogen	mg/L	1.28	1.29	
Organic carbon	mg/L	28.6	28.5	
Organic carbon	mg/L	0.22	<0.2	
Organic carbon	mg/L	28.6	28.1	
Organic carbon	mg/L	0.22	<0.2	
Organic carbon	mg/L	28.6	27.4	
Organic carbon	mg/L	0.22	<0.2	
pH	pH units	7.00	7.03	
pH	pH units	7.00	6.97	
Phosphorus	mg/L	5.00	5.23	
Polonium-210	Bq/L	18.8	18.5	
Polonium-210	Bq	0.075	0.073	
Polonium-210	Bq/L	18.8	20.2	
Polonium-210	Bq	0.370	0.326	
Polonium-210	Bq/L	18.8	18.9	
Polonium-210	Bq	0.750	0.686	
Potassium	mg/L	163	163	
Radium-226	Bq/L	21.4	15.5	*(1)
Radium-226	Bq	0.427	0.416	
Radium-226	Bq/L	21.4	17.6	
Radium-226	Bq/L	21.4	16.9	*(2)
Radium-226	Bq	0.043	0.050	
Radium-226	Bq	2.13	2.34	
Radium-226	Bq/L	21.4	16.3	*(3)
Radium-226	Bq	0.427	0.406	
Radium-226	Bq/L	16.8	18.0	
Radium-226	Bq	0.043	0.039	
Rubidium	mg/L	50.0	49.3	
Selenium	mg/L	0.0500	0.0492	
Silver	mg/L	0.0500	0.0497	
Sodium	mg/L	100	98.6	
Specific conductivity	uS/cm	192	186	
Strontium	mg/L	0.0500	0.0484	
Sulfate	mg/L	150	148	

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QC Analysis	Units	Target Value	Obtained Value
Thallium	mg/L	0.0500	0.0503
Thorium-230	Bq/L	19.9	17.4
Thorium-230	Bq/L	19.9	19.1
Thorium-232	Bq	0.195	0.183
Thorium-232	Bq	0.195	0.193
Tin	mg/L	0.0500	0.0460
Titanium	mg/L	0.0500	0.0499
Total alkalinity	mg/L	250	251
Total alkalinity	mg/L	250	249
Total dissolved solids	mg/L	100	103
Total dissolved solids	mg/L	100	90
Total Kjeldahl nitrogen	mg/L	1.82	1.82
Total Kjeldahl nitrogen	mg/L	1.82	1.64
Total Kjeldahl nitrogen	mg/L	1.82	1.96
Total suspended solids	mg/L	100	107
Total suspended solids	mg/L	100	91.1
True color	TCU	30.1	30.2
True color	TCU	30.1	29.0
Turbidity	NTU	12.2	11.7
Turbidity	NTU	12.2	12.3
Uranium	mg/L	50.0	49.1
Vanadium	mg/L	0.0500	0.0506
Zinc	mg/L	0.0500	0.0494

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	57457	<0.00005	<0.00005
Silver	mg/L	57459	<0.00005	<0.00005
Silver	mg/L	57463	<0.00005	<0.00005
Silver, dissolved	mg/L	57469	<0.00005	<0.00005
Silver	mg/L	57473	<0.00005	<0.00005
Aluminum	mg/L	57457	<0.0005	<0.0005
Aluminum	mg/L	57459	0.0032	0.0032
Aluminum	mg/L	57463	0.0030	0.0030
Aluminum, dissolved	mg/L	57469	0.029	0.030
Aluminum	mg/L	57473	0.015	0.015
Aluminum, dissolved	mg/L	59834	0.031	0.028
Arsenic	ug/L	57457	<0.1	<0.1
Arsenic	ug/L	57459	0.1	0.2

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Arsenic	ug/L	57463	0.1	0.2
Arsenic, dissolved	ug/L	57469	0.1	0.2
Arsenic	ug/L	57473	0.2	0.2
Arsenic	ug/L	59834	0.0041	0.0041
Boron	mg/L	57457	<0.01	<0.01
Boron	mg/L	57459	<0.01	<0.01
Boron	mg/L	57463	<0.01	0.01
Boron, dissolved	mg/L	57469	<0.01	<0.01
Boron	mg/L	57473	<0.01	<0.01
Barium	mg/L	57457	<0.0005	<0.0005
Barium	mg/L	57459	0.0059	0.0059
Barium	mg/L	57463	0.016	0.016
Barium, dissolved	mg/L	57469	0.0090	0.0089
Barium	mg/L	57473	0.0030	0.0031
Beryllium	mg/L	57457	<0.0001	<0.0001
Beryllium	mg/L	57459	<0.0001	<0.0001
Beryllium	mg/L	57463	<0.0001	<0.0001
Beryllium, dissolved	mg/L	57469	<0.0001	<0.0001
Beryllium	mg/L	57473	<0.0001	<0.0001
Bismuth	mg/L	57457	<0.0002	<0.0002
Bismuth	mg/L	57459	<0.0002	<0.0002
Bismuth	mg/L	57463	<0.0002	<0.0002
Bismuth, dissolved	mg/L	57469	<0.0002	<0.0002
Bismuth	mg/L	57473	<0.0002	<0.0002
Calcium	mg/L	57460	4.4	4.4
Calcium	mg/L	57461	3.7	3.7
Calcium	mg/L	57467	3.0	2.9
Calcium	mg/L	57472	3.4	3.4
Calcium	mg/L	57474	3.0	3.0
Calcium	mg/L	57475	3.1	3.1
Cadmium	mg/L	57457	<0.00001	<0.00001
Cadmium	mg/L	57459	<0.00001	<0.00001
Cadmium	mg/L	57463	<0.00001	<0.00001
Cadmium, dissolved	mg/L	57469	<0.00001	<0.00001
Cadmium	mg/L	57473	<0.00001	0.00001
Chloride	mg/L	57431	0.2	0.2
Chloride	mg/L	57464	0.6	0.6
Chloride	mg/L	57471	0.1	0.1
Chloride	mg/L	57480	0.6	0.6
Cobalt	mg/L	57457	<0.0001	<0.0001
Cobalt	mg/L	57459	<0.0001	<0.0001
Cobalt	mg/L	57463	<0.0001	<0.0001
Cobalt, dissolved	mg/L	57469	<0.0001	<0.0001
Cobalt	mg/L	57473	<0.0001	<0.0001
Chromium	mg/L	57457	<0.0005	<0.0005
Chromium	mg/L	57459	<0.0005	<0.0005

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Chromium	mg/L	57463	<0.0005	<0.0005
Chromium, dissolved	mg/L	57469	<0.0005	<0.0005
Chromium	mg/L	57473	<0.0005	<0.0005
Copper	mg/L	57457	<0.0002	<0.0002
Copper	mg/L	57459	0.0006	0.0006
Copper	mg/L	57463	<0.0002	<0.0002
Copper, dissolved	mg/L	57469	<0.0002	<0.0002
Copper	mg/L	57473	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	57414	7.8	7.5
Organic carbon, dissolved	mg/L	57468	2.3	2.3
Organic carbon, dissolved	mg/L	57481	2.8	2.8
Organic carbon, dissolved	mg/L	57862	3.9	3.9
Fluoride	mg/L	57457	<0.01	<0.01
Fluoride	mg/L	57466	0.07	0.07
Fluoride	mg/L	57475	0.04	0.04
Iron	mg/L	57457	<0.0005	<0.0005
Iron	mg/L	57459	0.019	0.019
Iron	mg/L	57463	0.019	0.019
Iron, dissolved	mg/L	57469	0.32	0.32
Iron	mg/L	57473	0.038	0.038
Iron, dissolved	mg/L	59834	0.076	0.078
Mercury	ng/L	57416	7	7
Mercury	ng/L	57425	11	11
Mercury	ng/L	57462	<1	<1
Mercury	ng/L	57471	1	1
Mercury	ng/L	57480	<1	<1
Potassium	mg/L	57460	0.7	0.7
Potassium	mg/L	57461	0.6	0.6
Potassium	mg/L	57467	0.3	0.3
Potassium	mg/L	57472	0.8	0.8
Potassium	mg/L	57474	0.4	0.5
Potassium	mg/L	57475	0.5	0.5
Lithium	ug/L	57457	<0.1	<0.1
Lithium	ug/L	57459	1.7	1.6
Lithium	ug/L	57463	3.0	2.9
Lithium, dissolved	ug/L	57469	1.5	1.5
Lithium	ug/L	57473	0.1	0.1
Magnesium	mg/L	57460	1.6	1.6
Magnesium	mg/L	57461	1.2	1.2
Magnesium	mg/L	57467	0.6	0.6
Magnesium	mg/L	57472	1.4	1.4
Magnesium	mg/L	57474	1.0	1.0
Magnesium	mg/L	57475	1.1	1.0
Manganese	mg/L	57457	<0.0005	<0.0005
Manganese	mg/L	57459	0.0028	0.0028
Manganese	mg/L	57463	0.030	0.030

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Manganese, dissolved	mg/L	57469	0.0089	0.0088
Manganese	mg/L	57473	0.0047	0.0046
Manganese, dissolved	mg/L	59834	0.034	0.035
Molybdenum	mg/L	57457	<0.0001	<0.0001
Molybdenum	mg/L	57459	<0.0001	<0.0001
Molybdenum	mg/L	57463	<0.0001	0.0001
Molybdenum, dissolved	mg/L	57469	<0.0001	<0.0001
Molybdenum	mg/L	57473	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57458	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57463	0.04	0.04
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57467	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57468	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57471	0.20	0.20
Nitrite+Nitrate as nitrogen, dissolved	mg/L	57479	<0.01	<0.01
Sodium	mg/L	57460	1.7	1.7
Sodium	mg/L	57461	1.5	1.5
Sodium	mg/L	57467	0.9	0.9
Sodium	mg/L	57472	1.7	1.7
Sodium	mg/L	57474	1.4	1.4
Sodium	mg/L	57475	1.3	1.3
Ammonia as nitrogen	mg/L	57419	<0.01	<0.01
Ammonia as nitrogen	mg/L	57461	<0.01	<0.01
Ammonia as nitrogen	mg/L	57462	<0.01	<0.01
Ammonia as nitrogen	mg/L	57474	<0.01	<0.01
Ammonia as nitrogen	mg/L	59502	0.06	0.07
Ammonia nitrogen, dissolved	mg/L	57458	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	57471	0.24	0.26
Nickel	mg/L	57457	<0.0001	<0.0001
Nickel	mg/L	57459	<0.0001	<0.0001
Nickel	mg/L	57463	<0.0001	<0.0001
Nickel, dissolved	mg/L	57469	0.0001	0.0001
Nickel	mg/L	57473	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	57457	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	57463	0.03	0.03
Nitrate as nitrogen	mg/L	57468	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	57469	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	57471	0.18	0.18
Nitrite+Nitrate as nitrogen	mg/L	57480	<0.01	<0.01
Phosphorus	mg/L	57457	<0.01	<0.01
Phosphorus	mg/L	57459	<0.01	<0.01
Phosphorus	mg/L	57463	<0.01	<0.01
Phosphorus, dissolved	mg/L	57469	<0.01	<0.01
Phosphorus	mg/L	57473	0.01	<0.01
Lead	mg/L	57457	<0.0001	<0.0001
Lead	mg/L	57459	<0.0001	<0.0001
Lead	mg/L	57463	<0.0001	<0.0001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead, dissolved	mg/L	57469	<0.0001	<0.0001
Lead	mg/L	57473	<0.0001	<0.0001
Lead-210	Bq/L	57457	<0.02	<0.02
Lead-210	Bq/L	57464	<0.02	<0.02
Lead-210	Bq/L	57473	0.03	0.02
Lead-210	Bq/L	57864	0.04	<0.02
Lead-210	Bq/L	58008	<0.02	<0.02
Lead-210	Bq/L	58448	0.1	<0.1
pH	pH units	57457	5.72	5.73
pH	pH units	57466	7.59	7.63
pH	pH units	57466	7.46	7.43
pH	pH units	57475	7.28	7.30
pH	pH units	57676	7.51	7.58
Polonium-210	Bq/L	56800	0.000064	0.000058
Polonium-210	Bq/L	57457	<0.005	<0.005
Polonium-210	Bq/L	57464	0.005	<0.005
Polonium-210	Bq/L	57473	0.01	0.02
Radium-226	Bq/L	57901	1.4	1.4
Radium-226	Bq/L	57930	0.02	0.03
Radium-226	Bq/L	57458	<0.005	<0.005
Radium-226	Bq/L	57465	<0.005	<0.005
Radium-226	Bq/L	57475	0.005	<0.005
Radium-226	Bq/L	57862	0.06	0.05
Rubidium	ug/L	57457	<0.05	<0.05
Rubidium	ug/L	57459	0.37	0.42
Rubidium	ug/L	57463	0.54	0.53
Rubidium, dissolved	ug/L	57469	0.66	0.62
Rubidium	ug/L	57473	0.63	0.64
Antimony	mg/L	57457	<0.0002	<0.0002
Antimony	mg/L	57459	<0.0002	<0.0002
Antimony	mg/L	57463	<0.0002	<0.0002
Antimony, dissolved	mg/L	57469	<0.0002	<0.0002
Antimony	mg/L	57473	<0.0002	<0.0002
Selenium	mg/L	57457	<0.0001	<0.0001
Selenium	mg/L	57459	<0.0001	<0.0001
Selenium	mg/L	57463	<0.0001	<0.0001
Selenium, dissolved	mg/L	57469	<0.0001	<0.0001
Selenium	mg/L	57473	<0.0001	<0.0001
Tin	mg/L	57457	<0.0001	<0.0001
Tin	mg/L	57459	<0.0001	<0.0001
Tin	mg/L	57463	<0.0001	<0.0001
Tin, dissolved	mg/L	57469	<0.0001	<0.0001
Tin	mg/L	57473	<0.0001	<0.0001
Sulfate	mg/L	57460	1.5	1.5
Sulfate	mg/L	57461	1.8	1.8
Sulfate	mg/L	57467	1.0	1.0

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Sulfate	mg/L	57472	0.3	0.2	
Sulfate	mg/L	57474	0.8	0.9	
Sulfate	mg/L	57475	0.9	0.9	
Specific conductivity	uS/cm	57457	<1	<1	
Specific conductivity	uS/cm	57466	43	42	
Specific conductivity	uS/cm	57475	25	24	
Strontium	mg/L	57457	<0.0005	<0.0005	
Strontium	mg/L	57459	0.017	0.017	
Strontium	mg/L	57463	0.037	0.038	
Strontium, dissolved	mg/L	57469	0.025	0.025	
Strontium	mg/L	57473	0.0037	0.0036	
Total dissolved solids	mg/L	57466	40	40	
Tellurium	ug/L	57457	<1	<1	
Tellurium	ug/L	57459	<1	<1	
Tellurium	ug/L	57463	<1	<1	
Tellurium, dissolved	ug/L	57469	<1	<1	
Tellurium	ug/L	57473	<1	<1	
Thorium-230	Bq/L	57459	<0.01	<0.01	
Thorium-230	Bq/L	57466	<0.01	<0.01	
Thorium-230	Bq/L	57474	<0.01	<0.01	
Titanium	mg/L	57457	<0.0002	<0.0002	
Titanium	mg/L	57459	<0.0002	<0.0002	
Titanium	mg/L	57463	<0.0002	<0.0002	
Titanium, dissolved	mg/L	57469	0.0004	0.0003	
Titanium	mg/L	57473	<0.0002	<0.0002	
Total Kjeldahl nitrogen	mg/L	57311	0.26	0.25	
Total Kjeldahl nitrogen	mg/L	57315	0.12	0.11	
Total Kjeldahl nitrogen	mg/L	57477	0.18	0.20	
Total Kjeldahl nitrogen	mg/L	60538	<0.05	<0.05	
Thallium	mg/L	57457	<0.0002	<0.0002	
Thallium	mg/L	57459	<0.0002	<0.0002	
Thallium	mg/L	57463	<0.0002	<0.0002	
Thallium, dissolved	mg/L	57469	<0.0002	<0.0002	
Thallium	mg/L	57473	<0.0002	<0.0002	
Organic carbon	mg/L	57393	<0.2	<0.2	
Organic carbon	mg/L	57458	<0.2	<0.2	
Organic carbon	mg/L	57473	5.2	5.3	
Organic carbon	mg/L	57482	7.5	7.5	
Total alkalinity	mg/L	57457	<1	<1	
Total alkalinity	mg/L	57466	22	27	*(4)
Total alkalinity	mg/L	57475	10	13	
Total alkalinity	mg/L	57676	281	278	
True color	CU	57466	<1	<1	
True color	CU	57478	<1	<1	
True color	CU	57482	45	45	
Total suspended solids	mg/L	57446	<1	<1	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Total suspended solids	mg/L	57464	5	4
Total suspended solids	mg/L	57465	1	2
Turbidity	NTU	57117	0.694	0.729
Turbidity	NTU	57445	0.262	0.236
Turbidity	NTU	57466	0.294	0.301
Turbidity	NTU	57474	1.90	1.92
Uranium	ug/L	57457	<0.1	<0.1
Uranium	ug/L	57459	<0.1	<0.1
Uranium	ug/L	57463	<0.1	<0.1
Uranium, dissolved	ug/L	57469	<0.1	<0.1
Uranium	ug/L	57473	<0.1	<0.1
Vanadium	mg/L	57457	<0.0001	<0.0001
Vanadium	mg/L	57459	<0.0001	<0.0001
Vanadium	mg/L	57463	<0.0001	<0.0001
Vanadium, dissolved	mg/L	57469	0.0002	0.0002
Vanadium	mg/L	57473	0.0002	0.0001
Zinc	mg/L	57457	<0.0005	<0.0005
Zinc	mg/L	57459	0.0013	0.0013
Zinc	mg/L	57463	<0.0005	<0.0005
Zinc, dissolved	mg/L	57469	0.0006	0.0005
Zinc	mg/L	57473	0.0011	0.0011
Zirconium	mg/L	57457	<0.001	<0.001
Zirconium	mg/L	57459	<0.001	<0.001
Zirconium	mg/L	57463	<0.001	<0.001
Zirconium, dissolved	mg/L	57469	<0.001	<0.001
Zirconium	mg/L	57473	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	104
Aluminum	100
Ammonia as nitrogen	107
Ammonia as nitrogen	99
Antimony	97
Arsenic	103
Arsenic	98
Barium	101
Beryllium	105
Boron	111

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Spike Analysis	Percent Recovery
Cadmium	100
Calcium	102
Chloride	105
Chromium	103
Cobalt	104
Copper	104
Fluoride	104
Iron	113
Iron	98
Lead	100
Lead-210	100
Magnesium	102
Manganese	102
Manganese	104
Mercury	102
Molybdenum	100
Nickel	100
Nitrite+Nitrate nitrogen	117
Nitrite+Nitrate nitrogen	112
Nitrite+Nitrate nitrogen	110
Organic carbon	90
Organic carbon	95
Organic Carbon	110
Organic Carbon, dissolved	95
Organic Carbon, dissolved	98
Organic Carbon, dissolved	106
Phosphorus	103
Polonium-210	80
Potassium	100
Selenium	102
Silver	101
Sodium	102
Strontium	96
Sulfate	98
Thallium	101
Tin	95
Titanium	99
Total Kjeldahl nitrogen	102
Total Kjeldahl nitrogen	98
Total Kjeldahl nitrogen	94
Uranium	99
Vanadium	102
Zinc	103

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SRC Group # 2020-3407

Apr 11, 2020

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Mar-26-2020

Client P.O.: 3008_20WINT_WS Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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Attn: Kelly Wells

Date Samples Received: Mar-26-2020

Client P.O.: 3008_20WINT_WS Rook I Environmental Baseline Studies

17289	**LAKED 03/24/2020 10:11 3008_FB_20200301_WS *WATER***
17290	**LAKED 03/24/2020 10:11 3008_QAQC_20200301_WS *WATER***
17291	**BEETCK 03/21/2020 14:00 BEETCK_20200301_WS *WATER***

Analyte	Units	17289	17290	17291
Lab Section 1				
Bicarbonate	mg/L	2±1	30±4	30±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.2±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.72±0.2	7.01±0.3	7.04±0.3
Specific conductivity	uS/cm	<1	46±7	42±6
Sum of ions	mg/L	2±1	42±6	42±6
Total alkalinity	mg/L	2±1	25±4	25±4
Total hardness	mg/L	<1	21±3	19±5
Ammonia as nitrogen	mg/L	<0.01	0.48±0.07	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.53±0.08	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.35	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.44	0.13
Nitrate as nitrogen	mg/L	<0.01	0.08±0.03	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.10±0.02	0.03±0.02
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.08±0.03	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.10±0.02	0.03±0.02
Total Kjeldahl nitrogen	mg/L	<0.05	1.3±0.2	0.22±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	<0.2	7.0±1	2.4±0.6
Organic carbon, dissolved	mg/L	0.4±0.3	7.0±1	2.4±0.6
Fluoride	mg/L	<0.01	0.04±0.02	0.06±0.02
Total dissolved solids	mg/L	<5	64±20	58±10
Total suspended solids	mg/L	<1	1±1	<1
True color	CU	<1	9±3	1±1
Turbidity	NTU	0.2±0.1	0.6±0.1	0.3±0.1
Lab Section 2				
Calcium	mg/L	<0.1	5.8±0.9	4.8±0.7
Magnesium	mg/L	<0.1	1.5±0.4	1.7±0.4
Potassium	mg/L	<0.1	0.4±0.2	0.7±0.2

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17289	**LAKED 03/24/2020 10:11 3008_FB_20200301_WS *WATER***
17290	**LAKED 03/24/2020 10:11 3008_QAQC_20200301_WS *WATER***
17291	**BEETCK 03/21/2020 14:00 BEETCK_20200301_WS *WATER***

Analyte	Units	17289	17290	17291
Lab Section 2				
Sodium	mg/L	0.1±0.1	1.6±0.4	1.8±0.4
Sulfate	mg/L	<0.2	1.2±0.3	1.8±0.4
Aluminum	mg/L	0.0008±0.0006	0.0022±0.001	0.0045±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.2±0.1	0.1±0.1
Barium	mg/L	<0.0005	0.0072±0.002	0.011±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0006±0.0003	0.0004±0.0003	<0.0002
Iron	mg/L	0.0006±0.0006	0.054±0.005	0.024±0.004
Lead	mg/L	<0.0001	0.0004±0.0001	<0.0001
Lithium	ug/L	<0.1	2.0±0.3	3.5±0.5
Manganese	mg/L	<0.0005	0.0087±0.002	0.0060±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Rubidium	ug/L	<0.05	0.44±0.1	0.67±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.020±0.003	0.037±0.006
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0017±0.001	0.0015±0.001	0.0007±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	0.02±0.02

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17289	**LAKED 03/24/2020 10:11 3008_FB_20200301_WS *WATER***
17290	**LAKED 03/24/2020 10:11 3008_QAQC_20200301_WS *WATER***
17291	**BEETCK 03/21/2020 14:00 BEETCK_20200301_WS *WATER***

Analyte	Units	17289	17290	17291
Lab Section 4				
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17289
This sample was reanalyzed for metals (Lab Section 2) and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17290
This sample was reanalyzed for metals (Lab Section 2), Nitrate as nitrogen, dissolved and Nitrate as nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17291
This sample was reanalyzed for Nitrate as nitrogen, dissolved and Nitrate as nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

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17292	**BEETLK1 03/22/2020 14:00 BEETLK1_20200301_WS *WATER***
17293	**BROALK2 03/19/2020 11:30 BROALK2_20200301_WS *WATER***
17294	**CLEARV1 03/21/2020 13:05 CLEARV1_20200301_WS *WATER***

Analyte	Units	17292	17293	17294
Lab Section 1				
Bicarbonate	mg/L	34±5	21±3	13±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.5±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.97±0.3	7.00±0.3	6.31±0.2
Specific conductivity	uS/cm	44±7	34±5	22±3
Sum of ions	mg/L	45±7	31±5	20±3
Total alkalinity	mg/L	28±4	17±4	11±3
Total hardness	mg/L	18±4	15±4	10±2
Ammonia as nitrogen	mg/L	0.30±0.04	<0.01	0.05±0.03
Ammonia nitrogen, dissolved	mg/L	0.28±0.04	0.01±0.01	0.08±0.03
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	0.26	0.22
Nitrate (calc.), dissolved	mg/L	0.22	0.31	0.35
Nitrate as nitrogen	mg/L	0.03±0.02	0.06±0.02	0.05±0.02
Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	0.07±0.02	0.08±0.03
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	0.06±0.03	0.05±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	0.07±0.02	0.08±0.03
Total Kjeldahl nitrogen	mg/L	0.37±0.2	0.22±0.1	0.36±0.2
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.0±0.5	1.7±0.5	7.4±1
Organic carbon, dissolved	mg/L	2.0±0.5	1.9±0.6	7.4±1
Fluoride	mg/L	0.06±0.02	0.05±0.02	0.03±0.01
Total dissolved solids	mg/L	50±10	55±10	55±10
Total suspended solids	mg/L	2±1	<1	1±1
True color	CU	3±2	<1	54±8
Turbidity	NTU	3.3±0.5	0.3±0.1	1.7±0.4
Lab Section 2				
Calcium	mg/L	4.6±0.7	3.9±0.6	3.0±0.4
Magnesium	mg/L	1.6±0.4	1.3±0.3	0.7±0.1
Potassium	mg/L	0.7±0.2	0.5±0.2	0.5±0.2
Sodium	mg/L	1.7±0.4	1.6±0.4	1.0±0.2
Sulfate	mg/L	1.5±0.3	1.9±0.4	0.8±0.2
Aluminum	mg/L	0.0009±0.0007	0.0008±0.0006	0.053±0.005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.2±0.1

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17292 BEETLK1 03/22/2020 14:00 BEETLK1_20200301_WS *WATER*
17293 BROALK2 03/19/2020 11:30 BROALK2_20200301_WS *WATER*
17294 CLEARV1 03/21/2020 13:05 CLEARV1_20200301_WS *WATER*

Analyte	Units	17292	17293	17294
Lab Section 2				
Barium	mg/L	0.022±0.003	0.017±0.002	0.013±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.85±0.08	0.023±0.003	1.20±0.1
Lead	mg/L	0.0013±0.0003	<0.0001	0.0001±0.0001
Lithium	ug/L	3.2±0.5	3.1±0.5	1.2±0.3
Manganese	mg/L	1.10±0.1	0.020±0.003	0.074±0.007
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium	ug/L	0.66±0.2	0.56±0.1	0.96±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.036±0.005	0.041±0.006	0.029±0.004
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0006±0.0003
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	0.0013±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17292

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This sample was reanalyzed for Iron, Lead and Manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17294
This sample was reanalyzed for Aluminum, Iron and Manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

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17295	**FORRLK1 03/21/2020 15:00 FORRLK1_20200301_WS *WATER***
17296	**FORRLK2 03/22/2020 10:30 FORRLK2_20200301_WS *WATER***
17297	**HODGLK1 03/17/2020 14:00 HODGLK1_20200301_WS *WATER***

Analyte	Units	17295	17296	17297
Lab Section 1				
Bicarbonate	mg/L	26±4	38±6	12±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.9±0.1	2.0±0.3
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.11±0.3	7.19±0.3	6.64±0.3
Specific conductivity	uS/cm	38±6	45±7	22±3
Sum of ions	mg/L	36±5	50±8	20±3
Total alkalinity	mg/L	21±3	31±5	10±2
Total hardness	mg/L	17±4	19±5	10±2
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.02±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.04	0.13
Nitrate (calc.), dissolved	mg/L	<0.04	0.18	0.18
Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	0.03±0.02
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.04±0.02	0.04±0.02
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	0.03±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.04±0.02	0.04±0.02
Total Kjeldahl nitrogen	mg/L	0.12±0.08	0.16±0.1	0.09±0.07
Mercury	ng/L	1±1	<1	2±1
Organic carbon	mg/L	2.5±0.6	1.3±0.5	2.1±0.5
Organic carbon, dissolved	mg/L	2.5±0.6	1.5±0.5	2.3±0.6
Fluoride	mg/L	0.06±0.02	0.08±0.02	0.03±0.01
Total dissolved solids	mg/L	49±10	62±20	37±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	<1	1±1
Turbidity	NTU	0.4±0.1	0.2±0.1	0.4±0.1
Lab Section 2				
Calcium	mg/L	4.3±0.6	4.7±0.7	2.9±0.4
Magnesium	mg/L	1.6±0.4	1.8±0.4	0.7±0.1
Potassium	mg/L	0.6±0.2	0.9±0.3	0.4±0.2
Sodium	mg/L	1.6±0.4	2.0±0.3	1.0±0.2
Sulfate	mg/L	1.7±0.4	1.7±0.4	1.0±0.2
Aluminum	mg/L	0.0031±0.001	0.0010±0.0007	0.0019±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	<0.1

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17295 FORRLK1 03/21/2020 15:00 FORRLK1_20200301_WS *WATER*
17296 FORRLK2 03/22/2020 10:30 FORRLK2_20200301_WS *WATER*
17297 HODGLK1 03/17/2020 14:00 HODGLK1_20200301_WS *WATER*

Analyte	Units	17295	17296	17297
Lab Section 2				
Barium	mg/L	0.011±0.002	0.0089±0.002	0.0078±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	0.01±0.01
Cadmium	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.018±0.003	0.014±0.002	0.031±0.005
Lead	mg/L	<0.0001	<0.0001	0.0004±0.0001
Lithium	ug/L	3.1±0.5	3.8±0.6	1.9±0.5
Manganese	mg/L	0.0020±0.0009	0.0013±0.0007	0.037±0.006
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0003±0.0002
Rubidium	ug/L	0.65±0.2	0.61±0.2	0.65±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.036±0.005	0.034±0.005	0.064±0.006
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	0.0003±0.0002
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0010±0.0008	<0.0005	0.0007±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17295

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SRC Group # 2020-3407

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This sample was reanalyzed for Iron. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17296
This sample was reanalyzed for Nitrate as nitrogen, dissolved and Nitrate as nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17297
This sample was reanalyzed for Lead, Manganese and Nickel. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

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SRC Group # 2020-3407

Apr 11, 2020

CanNorth, Canada North Environmental Services Limited

17298	**JEDCK 03/23/2020 14:00 JEDCK_20200301_WS *WATER***
17299	**LAKED 03/24/2020 10:11 LAKED_20200301_WS *WATER***
17300	**LAKEG2 03/23/2020 12:32 LAKEG2_20200301_WS *WATER***

Analyte	Units	17298	17299	17300
Lab Section 1				
Bicarbonate	mg/L	15±4	38±6	50±8
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.2±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.64±0.3	6.92±0.3	7.03±0.3
Specific conductivity	uS/cm	27±4	57±8	82±10
Sum of ions	mg/L	23±3	51±8	71±10
Total alkalinity	mg/L	12±3	31±5	41±6
Total hardness	mg/L	12±3	24±4	33±5
Ammonia as nitrogen	mg/L	<0.01	0.84±0.1	0.65±0.1
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.95±0.1	0.65±0.1
Nitrate (calc. from NO2+NO3-N)	mg/L	0.22	0.09	1.0
Nitrate (calc.), dissolved	mg/L	0.26	0.13	1.2
Nitrate as nitrogen	mg/L	0.05±0.02	0.02±0.01	0.23±0.03
Nitrate as nitrogen, dissolved	mg/L	0.06±0.02	0.03±0.02	0.26±0.04
Nitrite+Nitrate as nitrogen	mg/L	0.05±0.02	0.02±0.01	0.23±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.06±0.02	0.03±0.02	0.26±0.04
Total Kjeldahl nitrogen	mg/L	0.23±0.1	1.5±0.2	1.4±0.2
Mercury	ng/L	<1	<1	3±2
Organic carbon	mg/L	3.4±0.8	6.3±0.9	11±2
Organic carbon, dissolved	mg/L	3.2±0.8	7.4±1	11±2
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.07±0.02
Total dissolved solids	mg/L	49±10	66±20	114±20
Total suspended solids	mg/L	<1	4±2	1±1
True color	CU	18±4	22±3	72±10
Turbidity	NTU	0.6±0.1	1.6±0.4	1.9±0.5
Lab Section 2				
Calcium	mg/L	3.1±0.5	7.0±1	7.8±1
Magnesium	mg/L	1.0±0.2	1.6±0.4	3.3±0.5
Potassium	mg/L	0.5±0.2	0.5±0.2	1.2±0.3
Sodium	mg/L	1.3±0.3	1.6±0.4	3.9±0.6
Sulfate	mg/L	1.5±0.3	1.0±0.2	3.0±0.8
Aluminum	mg/L	0.022±0.003	0.0023±0.001	0.016±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.2±0.1

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17298 JEDCK 03/23/2020 14:00 JEDCK_20200301_WS *WATER*
17299 LAKED 03/24/2020 10:11 LAKED_20200301_WS *WATER*
17300 LAKEG2 03/23/2020 12:32 LAKEG2_20200301_WS *WATER*

Analyte	Units	17298	17299	17300
Lab Section 2				
Barium	mg/L	0.012±0.002	0.015±0.002	0.024±0.004
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	0.0001±0.0001
Copper	mg/L	<0.0002	<0.0002	0.0019±0.0004
Iron	mg/L	0.27±0.03	1.09±0.1	1.72±0.2
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.2±0.3	1.9±0.5	4.7±0.7
Manganese	mg/L	0.0068±0.002	0.20±0.02	0.31±0.03
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium	ug/L	0.58±0.1	0.55±0.1	1.1±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.024±0.004	0.050±0.005
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	<0.0002	0.0003±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0006±0.0006	0.0010±0.0008	0.0034±0.002
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.02±0.01
Phosphorus, dissolved	mg/L	<0.01	0.02±0.01	0.02±0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	0.03±0.02	0.02±0.02
Polonium-210	Bq/L	<0.005	0.005±0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17299

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SRC Group # 2020-3407

Apr 11, 2020

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This sample was reanalyzed for metals (Lab Section 2), Organic carbon, and Organic carbon, dissolved as well as Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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17301	**LAKEH2 03/23/2020 10:23 LAKEH2_20200301_WS *WATER***
17302	**LAKEJ 03/17/2020 11:14 LAKEJ_20200301_WS *WATER***
17303	**LLOYLKI 03/18/2020 13:51 LLOYLKI_20200301_WS *WATER***

Analyte	Units	17301	17302	17303
Lab Section 1				
Bicarbonate	mg/L	37±6	7±2	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.3±0.1	0.2±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.68±0.3	5.92±0.2	6.50±0.3
Specific conductivity	uS/cm	54±8	5±1	29±4
Sum of ions	mg/L	49±7	10±2	26±4
Total alkalinity	mg/L	30±4	6±1	14±4
Total hardness	mg/L	22±3	2±1	13±3
Ammonia as nitrogen	mg/L	0.60±0.09	0.14±0.04	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.56±0.08	0.16±0.04	0.04±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	0.31
Nitrate (calc.), dissolved	mg/L	0.09	0.04	0.35
Nitrate as nitrogen	mg/L	<0.01	<0.01	0.07±0.02
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.01±0.01	0.08±0.03
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	0.07±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.01±0.01	0.08±0.03
Total Kjeldahl nitrogen	mg/L	1.3±0.2	0.82±0.2	0.27±0.1
Mercury	ng/L	<1	3±2	3±2
Organic carbon	mg/L	9.5±1	6.4±1	5.2±0.8
Organic carbon, dissolved	mg/L	9.6±1	7.1±1	4.9±0.7
Fluoride	mg/L	0.06±0.02	0.02±0.01	0.05±0.02
Total dissolved solids	mg/L	62±20	19±10	51±10
Total suspended solids	mg/L	7±3	2±1	<1
True color	CU	12±3	5±2	29±4
Turbidity	NTU	4.6±0.7	1.1±0.3	1.8±0.4
Lab Section 2				
Calcium	mg/L	5.4±0.8	0.6±0.2	3.4±0.5
Magnesium	mg/L	2.1±0.3	0.2±0.1	1.2±0.3
Potassium	mg/L	1.2±0.3	0.4±0.2	0.5±0.2
Sodium	mg/L	2.3±0.3	0.7±0.1	1.5±0.4
Sulfate	mg/L	0.3±0.2	0.9±0.2	1.1±0.3
Aluminum	mg/L	0.0065±0.002	0.0087±0.002	0.014±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.2±0.1

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17301 LAKEH2 03/23/2020 10:23 LAKEH2_20200301_WS *WATER*
17302 LAKEJ 03/17/2020 11:14 LAKEJ_20200301_WS *WATER*
17303 LLOYLKI 03/18/2020 13:51 LLOYLKI_20200301_WS *WATER*

Analyte	Units	17301	17302	17303
Lab Section 2				
Barium	mg/L	0.0034±0.001	0.0044±0.001	0.0078±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	0.0004±0.0003	0.0006±0.0003
Iron	mg/L	2.08±0.2	0.028±0.004	0.69±0.07
Lead	mg/L	<0.0001	0.0006±0.0002	0.0010±0.0002
Lithium	ug/L	4.3±0.6	0.1±0.1	2.0±0.3
Manganese	mg/L	0.14±0.01	0.0050±0.001	0.080±0.008
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0004±0.0002	0.0001±0.0001
Rubidium	ug/L	1.9±0.3	0.80±0.2	0.66±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.021±0.003	0.0055±0.001	0.029±0.004
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	0.0014±0.0004	0.0003±0.0002
Titanium	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0005±0.0005	0.0013±0.0009	0.0014±0.001
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17302

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SRC Group # 2020-3407

Apr 11, 2020

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This sample was reanalyzed for Lead, Nickel, Tin, Organic carbon, and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17303
This sample was reanalyzed for Copper, Lead and Manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

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17304	**LLOYLKO 03/18/2020 12:13 LLOYLKO_20200301_WS *WATER***
17305	**NAOMLK 03/21/2020 11:11 NAOMLK_20200301_WS *WATER***
17306	**PATTLKE1 03/20/2020 09:52 PATTLKE1_20200301_WS *WATER***

Analyte	Units	17304	17305	17306
Lab Section 1				
Bicarbonate	mg/L	15±4	12±3	44±7
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.9±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.39±0.2	6.32±0.2	7.03±0.3
Specific conductivity	uS/cm	24±4	20±3	35±5
Sum of ions	mg/L	23±3	18±4	54±8
Total alkalinity	mg/L	12±3	10±2	36±5
Total hardness	mg/L	11±3	10±2	16±4
Ammonia as nitrogen	mg/L	0.03±0.02	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.05±0.02	0.03±0.02	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.18	0.40	0.22
Nitrate (calc.), dissolved	mg/L	0.22	0.44	0.31
Nitrate as nitrogen	mg/L	0.04±0.02	0.09±0.03	0.05±0.02
Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	0.10±0.02	0.07±0.02
Nitrite+Nitrate as nitrogen	mg/L	0.04±0.02	0.09±0.03	0.05±0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	0.10±0.02	0.07±0.02
Total Kjeldahl nitrogen	mg/L	0.30±0.1	0.29±0.1	0.11±0.08
Mercury	ng/L	2±1	<1	<1
Organic carbon	mg/L	4.4±0.7	9.1±1	2.4±0.6
Organic carbon, dissolved	mg/L	4.1±0.6	8.8±1	2.2±0.6
Fluoride	mg/L	0.04±0.02	0.03±0.01	0.05±0.02
Total dissolved solids	mg/L	45±10	58±10	54±10
Total suspended solids	mg/L	<1	1±1	<1
True color	CU	31±5	55±8	<1
Turbidity	NTU	1.7±0.4	1.4±0.4	0.4±0.1
Lab Section 2				
Calcium	mg/L	2.9±0.4	2.7±0.4	4.0±0.6
Magnesium	mg/L	1.0±0.2	0.7±0.1	1.4±0.4
Potassium	mg/L	0.5±0.2	0.4±0.2	0.6±0.2
Sodium	mg/L	1.3±0.3	1.0±0.2	1.5±0.4
Sulfate	mg/L	1.0±0.2	0.6±0.2	1.5±0.3
Aluminum	mg/L	0.021±0.003	0.054±0.005	0.0020±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.1±0.1

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SRC Group # 2020-3407

Apr 11, 2020

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17304	**LLOYLKO 03/18/2020 12:13 LLOYLKO_20200301_WS *WATER***
17305	**NAOMLK 03/21/2020 11:11 NAOMLK_20200301_WS *WATER***
17306	**PATTLKE1 03/20/2020 09:52 PATTLKE1_20200301_WS *WATER***

Analyte	Units	17304	17305	17306
Lab Section 2				
Barium	mg/L	0.0069±0.002	0.010±0.002	0.011±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.0004±0.0003	<0.0002	<0.0002
Iron	mg/L	0.97±0.1	0.87±0.09	0.023±0.003
Lead	mg/L	0.0015±0.0004	<0.0001	<0.0001
Lithium	ug/L	1.7±0.4	1.1±0.3	2.7±0.4
Manganese	mg/L	0.033±0.005	0.079±0.008	0.091±0.009
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0002±0.0001	0.0001±0.0001	<0.0001
Rubidium	ug/L	0.65±0.2	0.89±0.2	0.65±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.026±0.004	0.027±0.004	0.034±0.005
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0002±0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0005±0.0002	0.0008±0.0003	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0028±0.001	0.0007±0.0006	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.005±0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17304

Environmental Analytical Laboratories
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SRC Group # 2020-3407

Apr 11, 2020

CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Iron, Lead and Zinc. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17305
This sample was reanalyzed for Ammonia as nitrogen, dissolved and Ammonia as nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 17306
This sample was reanalyzed for Manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

The temperature of the cooler was 11.1 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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Apr 11, 2020

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17307	**PATTLKN1 03/20/2020 13:55 PATTLKN1_20200301_WS *WATER***
17308	**PATTLKNE1 03/23/2020 14:33 PATTLKNE1_20200301_WS *WATER***
17309	**WARNRP 03/25/2020 09:30 WARNRP_20200301_WS *WATER***

Analyte	Units	17307	17308	17309
Lab Section 1				
Bicarbonate	mg/L	22±3	21±3	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.5±0.1	0.7±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.06±0.3	6.80±0.3	6.64±0.3
Specific conductivity	uS/cm	32±5	27±4	27±4
Sum of ions	mg/L	31±5	29±4	23±3
Total alkalinity	mg/L	18±4	17±4	12±3
Total hardness	mg/L	14±4	12±3	12±3
Ammonia as nitrogen	mg/L	0.05±0.03	<0.01	0.01±0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.04±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	0.44	0.26
Nitrate (calc.), dissolved	mg/L	0.13	0.49	0.40
Nitrate as nitrogen	mg/L	0.03±0.02	0.10±0.02	0.06±0.02
Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	0.11±0.03	0.09±0.03
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	0.10±0.02	0.06±0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	0.11±0.03	0.09±0.03
Total Kjeldahl nitrogen	mg/L	0.20±0.1	0.22±0.1	0.27±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.7±0.7	3.6±0.9	5.0±0.8
Organic carbon, dissolved	mg/L	2.6±0.6	3.3±0.8	4.9±0.7
Fluoride	mg/L	0.05±0.02	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	51±10	45±10	64±20
Total suspended solids	mg/L	<1	<1	<1
True color	CU	1±1	6±2	29±4
Turbidity	NTU	0.2±0.1	0.5±0.1	2.4±0.4
Lab Section 2				
Calcium	mg/L	3.7±0.6	3.2±0.5	3.0±0.4
Magnesium	mg/L	1.3±0.3	1.1±0.3	1.1±0.3
Potassium	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.3±0.3	1.4±0.4
Sulfate	mg/L	1.4±0.3	1.2±0.3	1.1±0.3
Aluminum	mg/L	<0.0005	0.0047±0.001	0.022±0.003
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	0.1±0.1

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17307	**PATTLKN1 03/20/2020 13:55 PATTLKN1_20200301_WS *WATER***
17308	**PATTLKNE1 03/23/2020 14:33 PATTLKNE1_20200301_WS *WATER***
17309	**WARNRP 03/25/2020 09:30 WARNRP_20200301_WS *WATER***

Analyte	Units	17307	17308	17309
Lab Section 2				
Barium	mg/L	0.0097±0.002	0.011±0.002	0.0065±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.020±0.003	0.096±0.01	0.80±0.08
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.6±0.4	2.2±0.3	1.5±0.4
Manganese	mg/L	0.0069±0.002	0.016±0.002	0.016±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium	ug/L	0.62±0.2	0.64±0.2	0.92±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.031±0.005	0.024±0.004
Tellurium	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0003±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0005±0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.007±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17307

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SRC Group # 2020-3407

Apr 11, 2020

CanNorth, Canada North Environmental Services Limited

Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

Note for Sample # 17308
Holding time for Turbidity and colour exceeds the recommended 48 hours between sampling and receipt in lab.

Note for Sample # 17309
This sample was reanalyzed for Ammonia as nitrogen, dissolved, Ammonia as nitrogen as well as Nitrate as nitrogen, dissolved and Nitrate as nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 11.1 °C upon receipt.

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17310 LAKED 03/24/2020 10:11 3008_TB_20200301_WS *WATER*

Analyte	Units	17310
Lab Section 1		
Bicarbonate	mg/L	2±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.23±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2±1
Total alkalinity	mg/L	2±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0024±0.001
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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17310 LAKED 03/24/2020 10:11 3008_TB_20200301_WS *WATER*

Analyte	Units	17310
Lab Section 2		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17310
This sample was reanalyzed for metals (Lab Section 2). Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 11.1 °C upon receipt.

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Apr 11, 2020

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Analyte Methods

Name	Units	Method
P. alkalinity	mg/L	Chm-211
Organic carbon, dissolved	mg/L	Chm-399
Organic carbon	mg/L	Chm-399
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
True color	CU	Chm-220
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Mercury	ng/L	Chm-309
Ammonia as nitrogen	mg/L	Chm-123
Ammonia nitrogen, dissolved	mg/L	Chm-123
Nitrite+Nitrate as nitrogen	mg/L	Chm-124
Nitrite+Nitrate as nitrogen, dissolved	mg/L	Chm-124
Nitrate as nitrogen	mg/L	Chm-124
Nitrate as nitrogen, dissolved	mg/L	Chm-124
Total Kjeldahl nitrogen	mg/L	Chm-128
Nitrate (calc. from NO2+NO3-N)	mg/L	Chm-124
Nitrate (calc.), dissolved	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Turbidity	NTU	Chm-316
Silver	mg/L	Chm-522
Aluminum	mg/L	Chm-522
Arsenic	ug/L	Chm-522
Boron	mg/L	Chm-522
Barium	mg/L	Chm-522
Beryllium	mg/L	Chm-522
Bismuth	mg/L	Chm-522
Calcium	mg/L	Chm-508
Cadmium	mg/L	Chm-522
Cobalt	mg/L	Chm-522
Chromium	mg/L	Chm-522

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Name	Units	Method
Cesium	ug/L	Chm-522
Copper	mg/L	Chm-522
Iron	mg/L	Chm-522
Potassium	mg/L	Chm-508
Lithium	ug/L	Chm-522
Magnesium	mg/L	Chm-508
Manganese	mg/L	Chm-522
Molybdenum	mg/L	Chm-522
Sodium	mg/L	Chm-508
Nickel	mg/L	Chm-522
Phosphorus	mg/L	Chm-522
Phosphorus, dissolved	mg/L	Chm-501 / Chm-522
Lead	mg/L	Chm-522
Rubidium	ug/L	Chm-522
Antimony	mg/L	Chm-522
Selenium	mg/L	Chm-522
Tin	mg/L	Chm-522
Sulfate	mg/L	Chm-508
Strontium	mg/L	Chm-522
Tellurium	ug/L	Chm-522
Titanium	mg/L	Chm-522
Thallium	mg/L	Chm-522
Uranium	ug/L	Chm-522
Vanadium	mg/L	Chm-522
Zinc	mg/L	Chm-522
Zirconium	mg/L	Chm-522
Lead-210	Bq/L	Rad-101
Polonium-210	Bq/L	Rad-103
Radium-226	Bq/L	Rad-105
Thorium-230	Bq/L	Rad-106

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Apr 11, 2020

This report was generated for samples included in SRC Group # 2020-3407

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value	
Aluminum	mg/L	0.0500	0.0507	
Ammonia as nitrogen	mg/L	1.65	1.75	
Ammonia as nitrogen	mg/L	8.24	8.60	
Ammonia as nitrogen	mg/L	0.11	0.090	*(1)
Ammonia as nitrogen	mg/L	1.08	1.07	
Antimony	mg/L	0.0460	0.0472	
Arsenic	mg/L	50.0	51.0	
Barium	mg/L	0.0490	0.0504	
Beryllium	mg/L	0.0520	0.0511	
Bismuth	mg/L	0.0500	0.0508	
Boron	mg/L	0.0500	0.0524	
Cadmium	mg/L	0.0490	0.0483	
Calcium	mg/L	61.4	59.5	
Chloride	mg/L	5.65	5.59	
Chromium	mg/L	0.0500	0.0499	
Cobalt	mg/L	0.0500	0.0500	
Copper	mg/L	0.0500	0.0512	
Fluoride	mg/L	1.36	1.39	
Iron	mg/L	0.0500	0.0496	
Lead	mg/L	0.0500	0.0504	
Lead-210	Bq/L	19.7	19.0	
Lead-210	Bq	0.370	0.358	
Lead-210	Bq/L	19.7	21.2	
Lead-210	Bq	0.750	0.794	
Magnesium	mg/L	16.5	15.6	
Manganese	mg/L	0.0500	0.0504	
Mercury	ng/L	56.1	50.3	
Molybdenum	mg/L	0.0498	0.0518	
Nickel	mg/L	0.0500	0.0516	
Nitrite+Nitrate nitrogen	mg/L	1.21	1.32	
Nitrite+Nitrate nitrogen	mg/L	6.35	6.19	

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QC Analysis	Units	Target Value	Obtained Value
Organic carbon	mg/L	28.6	27.6
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	29.2
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	29.8
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	6.93
Phosphorus	mg/L	5.18	5.26
Polonium-210	Bq/L	18.8	20.6
Polonium-210	Bq	0.370	0.372
Potassium	mg/L	161	155
Radium-226	Bq/L	16.8	16.5
Radium-226	Bq	2.13	2.08
Rubidium	mg/L	50.0	51.0
Selenium	mg/L	0.0500	0.0499
Silver	mg/L	0.0500	0.0493
Sodium	mg/L	96.6	94.5
Specific conductivity	uS/cm	192	184
Strontium	mg/L	0.0490	0.0504
Sulfate	mg/L	142	141
Thallium	mg/L	0.0500	0.0495
Thorium-230	Bq/L	19.9	19.3
Thorium-230	Bq/L	19.9	18.9
Thorium-232	Bq	0.203	0.193
Thorium-232	Bq	0.203	0.187
Tin	mg/L	0.0477	0.0468
Titanium	mg/L	0.0500	0.0511
Total alkalinity	mg/L	250	245
Total dissolved solids	mg/L	100	99.4
Total Kjeldahl nitrogen	mg/L	1.82	2.03
Total Kjeldahl nitrogen	mg/L	1.82	1.76
Total suspended solids	mg/L	100	94.9
Total suspended solids	mg/L	100	94.4
True color	TCU	15	13
Turbidity	NTU	6.53	6.27
Uranium	mg/L	49.2	50.5
Vanadium	mg/L	0.0500	0.0505
Zinc	mg/L	0.0500	0.0514

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	17291	<0.00005	<0.00005
Silver	mg/L	17291	<0.00005	<0.00005
Aluminum	mg/L	17291	<0.0005	<0.0005
Aluminum	mg/L	17291	0.0045	0.0049
Arsenic	ug/L	17291	0.1	0.1
Arsenic	ug/L	17291	0.1	0.2
Boron	mg/L	17291	<0.01	<0.01
Boron	mg/L	17291	<0.01	<0.01
Barium	mg/L	17291	0.011	0.010
Barium	mg/L	17291	0.011	0.011
Beryllium	mg/L	17291	<0.0001	<0.0001
Beryllium	mg/L	17291	<0.0001	<0.0001
Bismuth	mg/L	17291	<0.0002	<0.0002
Bismuth	mg/L	17291	<0.0002	<0.0002
Calcium	mg/L	17290	5.8	5.9
Calcium	mg/L	17294	3.0	3.0
Calcium	mg/L	17303	3.4	3.4
Calcium	mg/L	17310	<0.1	<0.1
Cadmium	mg/L	17291	<0.00001	<0.00001
Cadmium	mg/L	17291	0.00001	<0.00001
Chloride	mg/L	17270	1.2	1.2
Chloride	mg/L	17295	0.7	0.7
Chloride	mg/L	17304	0.9	0.9
Cobalt	mg/L	17291	<0.0001	<0.0001
Cobalt	mg/L	17291	<0.0001	<0.0001
Chromium	mg/L	17291	<0.0005	<0.0005
Chromium	mg/L	17291	<0.0005	<0.0005
Copper	mg/L	17291	<0.0002	<0.0002
Copper	mg/L	17291	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	17294	7.4	7.4
Organic carbon, dissolved	mg/L	17304	4.1	4.1
Fluoride	mg/L	17285	3.1	3.1
Fluoride	mg/L	17296	0.08	0.07
Fluoride	mg/L	17305	0.03	0.03
Iron	mg/L	17291	0.024	0.025
Iron	mg/L	17291	0.014	0.012
Mercury	ng/L	17289	<1	<1
Mercury	ng/L	17291	<1	<1
Mercury	ng/L	17300	3	3
Mercury	ng/L	17309	<1	<1
Potassium	mg/L	17290	0.4	0.4
Potassium	mg/L	17294	0.5	0.5
Potassium	mg/L	17303	0.5	0.6
Potassium	mg/L	17310	<0.1	<0.1
Lithium	ug/L	17291	3.4	3.5
Lithium	ug/L	17291	3.5	3.5

Environmental Analytical Laboratories
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Apr 11, 2020

This report was generated for samples included in SRC Group # 2020-3407

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Magnesium	mg/L	17290	1.5	1.5
Magnesium	mg/L	17294	0.7	0.7
Magnesium	mg/L	17303	1.2	1.2
Magnesium	mg/L	17310	<0.1	<0.1
Manganese	mg/L	17291	0.0051	0.0052
Manganese	mg/L	17291	0.0060	0.0062
Molybdenum	mg/L	17291	<0.0001	<0.0001
Molybdenum	mg/L	17291	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	17291	0.03	0.03
Nitrite+Nitrate as nitrogen, dissolved	mg/L	17291	0.03	0.03
Sodium	mg/L	17290	1.6	1.6
Sodium	mg/L	17294	1.0	1.0
Sodium	mg/L	17303	1.5	1.5
Sodium	mg/L	17310	0.1	0.2
Nitrate as nitrogen	mg/L	16863	4.0	3.9
Ammonia as nitrogen	mg/L	17158	0.10	0.10
Ammonia as nitrogen	mg/L	17291	<0.01	<0.01
Ammonia as nitrogen	mg/L	17301	0.60	0.61
Ammonia as nitrogen	mg/L	17321	0.34	0.34
Ammonia nitrogen, dissolved	mg/L	17291	0.03	0.03
Nickel	mg/L	17291	<0.0001	0.0001
Nickel	mg/L	17291	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	17291	<0.01	0.01
Nitrite+Nitrate as nitrogen	mg/L	17306	0.05	0.05
Nitrate as nitrogen	mg/L	17306	0.05	0.05
Nitrite+Nitrate as nitrogen	mg/L	17264	6.3	6.4
Phosphorus	mg/L	17291	<0.01	<0.01
Phosphorus	mg/L	17291	<0.01	<0.01
Phosphorus, dissolved	mg/L	17301	<0.01	<0.01
Lead	mg/L	17291	<0.0001	<0.0001
Lead	mg/L	17291	<0.0001	<0.0001
Lead-210	Bq/L	17265	<0.02	<0.02
Lead-210	Bq/L	17298	<0.02	<0.02
pH	pH units	17285	8.58	8.57
pH	pH units	17296	7.19	7.20
pH	pH units	17305	6.32	6.37
Polonium-210	Bq/L	17265	<0.005	0.01
Polonium-210	Bq/L	17298	<0.005	<0.005
Radium-226	Bq/L	17266	<0.005	<0.005
Radium-226	Bq/L	17292	<0.005	<0.005
Radium-226	Bq/L	17303	<0.005	0.006
Radium-226	Bq/L	17310	<0.005	0.006
Rubidium	ug/L	17291	0.78	0.72
Rubidium	ug/L	17291	0.73	0.79
Antimony	mg/L	17291	<0.0002	<0.0002
Antimony	mg/L	17291	<0.0002	<0.0002

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Selenium	mg/L	17291	<0.0001	<0.0001	
Selenium	mg/L	17291	<0.0001	<0.0001	
Tin	mg/L	17291	<0.0001	<0.0001	
Tin	mg/L	17291	<0.0001	<0.0001	
Sulfate	mg/L	17290	1.2	1.1	
Sulfate	mg/L	17294	0.8	0.8	
Sulfate	mg/L	17303	1.1	1.1	
Sulfate	mg/L	17310	<0.2	<0.2	
Specific conductivity	uS/cm	17285	3460	3460	
Specific conductivity	uS/cm	17296	45	44	
Specific conductivity	uS/cm	17305	20	21	
Strontium	mg/L	17291	0.038	0.038	
Strontium	mg/L	17291	0.038	0.038	
Total dissolved solids	mg/L	17290	64.1	67.5	
Total dissolved solids	mg/L	17300	114.0	108.0	
Tellurium	ug/L	17291	<1	<1	
Tellurium	ug/L	17291	<1	<1	
Thorium-230	Bq/L	17297	<0.01	<0.01	
Thorium-230	Bq/L	19722	<0.01	<0.01	
Titanium	mg/L	17291	0.0006	0.0008	
Titanium	mg/L	17291	<0.0002	<0.0002	
Total Kjeldahl nitrogen	mg/L	17267	1.2	1.2	
Total Kjeldahl nitrogen	mg/L	17293	0.22	0.24	
Total Kjeldahl nitrogen	mg/L	17302	0.82	0.97	
Total Kjeldahl nitrogen	mg/L	17339	1.6	1.7	
Total Kjeldahl nitrogen	mg/L	19722	0.98	1.1	
Thallium	mg/L	17291	<0.0002	<0.0002	
Thallium	mg/L	17291	<0.0002	<0.0002	
Organic carbon	mg/L	17158	9.8	9.7	
Organic carbon	mg/L	17268	2.4	2.4	
Organic carbon	mg/L	17289	<0.2	<0.2	
Organic carbon	mg/L	17295	2.5	2.6	
Organic carbon	mg/L	17305	8.4	8.2	
Total alkalinity	mg/L	17285	616	619	
Total alkalinity	mg/L	17296	31	24	*(2)
Total alkalinity	mg/L	17305	10	8	
True color	CU	17289	<1	<1	
True color	CU	17299	22	22	
True color	CU	17309	29	29	
Total suspended solids	mg/L	17158	5	6	
Turbidity	NTU	17289	0.205	0.208	
Turbidity	NTU	17299	1.64	1.64	
Turbidity	NTU	17309	2.41	2.44	
Uranium	ug/L	17291	<0.1	<0.1	
Uranium	ug/L	17291	<0.1	<0.1	
Vanadium	mg/L	17291	<0.0001	<0.0001	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Vanadium	mg/L	17291	<0.0001	<0.0001
Zinc	mg/L	17291	0.0007	0.0008
Zinc	mg/L	17291	0.0019	0.0019
Zirconium	mg/L	17291	<0.001	<0.001
Zirconium	mg/L	17291	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	111
Ammonia as nitrogen	104
Ammonia as nitrogen	100
Ammonia as nitrogen	113
Antimony	88
Arsenic	98
Barium	104
Beryllium	105
Bismuth	87
Boron	103
Cadmium	98
Calcium	97
Chloride	95
Chromium	101
Cobalt	108
Copper	100
Fluoride	120
Iron	96
Lead	104
Lithium	110
Magnesium	100
Manganese	100
Mercury	100
Molybdenum	97
Nickel	100
Nitrite+Nitrate nitrogen	110
Organic carbon	90
Organic Carbon	90
Organic Carbon	97

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Spike Analysis	Percent Recovery
Organic carbon	100
Organic Carbon, dissolved	97
Organic Carbon, dissolved	105
Phosphorus	106
Potassium	98
Rubidium	101
Selenium	99
Silver	98
Sodium	100
Strontium	101
Sulfate	95
Tellerium	99
Thallium	104
Tin	89
Titanium	100
Total Kjeldahl nitrogen	110
Total Kjeldahl nitrogen	120
Uranium	101
Vanadium	98
Zinc	107
Zirconium	110

*(1) The Ammonia as nitrogen result for the quality control sample was just outside the laboratory's specified limits. The data was reviewed and a number of samples were reanalyzed with comparable results. Additional quality control measures in the same batch were within specified limits.

*(2) The duplicate result for Total Alkalinity was just outside the laboratory's specified limits. The data was reviewed and the duplicate sample was reanalyzed. All other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2020-5506

May 30, 2020

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: May-22-2020

Client P.O.: 3008_20WINT_WS Rook 1
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 2 authorized by Keith Gipman, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: May-22-2020

Client P.O.: 3008_20WINT_WS Rook 1
Environmental Baseline Studies

26260 LAKED 03/24/2020 10:11 3008_QAQC_20200301_WS *WATER*
26261 LAKED 03/24/2020 10:11 3008_FB_20200301_WS *WATER*
26262 BEETCK 03/21/2020 14:00 BEETCK_20200301_WS *WATER*

Analyte	Units	26260	26261	26262
Lab Section 2				
Calcium, dissolved	mg/L	6.4±1	<0.1	5.3±0.8
Magnesium, dissolved	mg/L	1.6±0.4	<0.1	1.9±0.5
Potassium, dissolved	mg/L	0.4±0.2	<0.1	0.8±0.3
Sodium, dissolved	mg/L	1.6±0.4	<0.1	1.9±0.5
Aluminum, dissolved	mg/L	0.0014±0.0008	0.0008±0.0006	0.0009±0.0007
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.1±0.1	<0.1	0.1±0.1
Barium, dissolved	mg/L	0.0072±0.002	<0.0005	0.011±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Iron, dissolved	mg/L	0.050±0.005	0.0014±0.0008	0.011±0.002
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	1.9±0.5	<0.1	3.4±0.5
Manganese, dissolved	mg/L	0.0082±0.002	<0.0005	0.0055±0.001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Rubidium, dissolved	ug/L	0.46±0.05	<0.05	0.73±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.019±0.003	<0.0005	0.037±0.006
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

26260	**LAKED 03/24/2020 10:11 3008_QAQC_20200301_WS *WATER***
26261	**LAKED 03/24/2020 10:11 3008_FB_20200301_WS *WATER***
26262	**BEETCK 03/21/2020 14:00 BEETCK_20200301_WS *WATER***

Analyte	Units	26260	26261	26262
Lab Section 2				
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0016±0.0009	0.0013±0.0008	<0.0005
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 9.6 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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26263	**BEETLK1 03/22/2020 14:00 BEETLK1_20200301_WS *WATER***
26264	**BROALK2 03/19/2020 11:30 BROALK2_20200301_WS *WATER***
26265	**CLEARV1 03/21/2020 13:05 CLEARV1_20200301_WS *WATER***

Analyte	Units	26263	26264	26265
Lab Section 2				
Calcium, dissolved	mg/L	4.8±0.7	4.3±0.6	3.2±0.5
Magnesium, dissolved	mg/L	1.7±0.4	1.4±0.4	0.8±0.1
Potassium, dissolved	mg/L	0.8±0.3	0.6±0.2	0.5±0.2
Sodium, dissolved	mg/L	1.7±0.4	1.6±0.4	1.0±0.2
Aluminum, dissolved	mg/L	<0.0005	0.0006±0.0006	0.042±0.006
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	<0.1
Barium, dissolved	mg/L	0.021±0.003	0.017±0.002	0.012±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.17±0.02	0.0008±0.0006	0.61±0.06
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	3.0±0.4	3.1±0.5	1.2±0.3
Manganese, dissolved	mg/L	1.06±0.1	<0.0005	0.073±0.007
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium, dissolved	ug/L	0.67±0.2	0.53±0.1	0.90±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.036±0.005	0.040±0.006	0.029±0.004
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0005±0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	<0.0005	0.0008±0.0006	0.0010±0.0007
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

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26266	**FORRLK1 03/21/2020 15:00 FORRLK1_20200301_WS *WATER***
26267	**FORRLK2 03/22/2020 10:30 FORRLK2_20200301_WS *WATER***
26268	**HODGLK1 03/17/2020 14:00 HODGLK1_20200301_WS *WATER***

Analyte	Units	26266	26267	26268
Lab Section 2				
Calcium, dissolved	mg/L	4.8±0.7	5.1±0.8	3.3±0.5
Magnesium, dissolved	mg/L	1.6±0.4	1.9±0.5	0.7±0.1
Potassium, dissolved	mg/L	0.7±0.2	0.9±0.3	0.4±0.2
Sodium, dissolved	mg/L	1.6±0.4	2.0±0.3	1.0±0.2
Aluminum, dissolved	mg/L	0.0011±0.0007	0.0008±0.0006	0.0006±0.0006
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	<0.1
Barium, dissolved	mg/L	0.011±0.002	0.0088±0.002	0.0077±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0003±0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.011±0.002	0.0025±0.001	0.0056±0.001
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Lithium, dissolved	ug/L	2.9±0.4	3.6±0.5	1.8±0.4
Manganese, dissolved	mg/L	0.0015±0.0008	<0.0005	0.029±0.004
Molybdenum, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Rubidium, dissolved	ug/L	0.67±0.2	0.65±0.2	0.65±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.036±0.005	0.035±0.005	0.066±0.007
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0006±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0025±0.001	0.0010±0.0007	0.0012±0.0008
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 9.6 °C upon receipt.

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

26269	**JEDCK 03/23/2020 14:00 JEDCK_20200301_WS *WATER***
26270	**LAKED 03/24/2020 10:11 LAKED_20200301_WS *WATER***
26271	**LAKEG2 03/23/2020 12:32 LAKEG2_20200301_WS *WATER***

Analyte	Units	26269	26270	26271
Lab Section 2				
Calcium, dissolved	mg/L	3.4±0.5	8.2±1	8.2±1
Magnesium, dissolved	mg/L	1.0±0.2	1.8±0.4	3.4±0.5
Potassium, dissolved	mg/L	0.5±0.2	0.6±0.2	1.2±0.3
Sodium, dissolved	mg/L	1.3±0.3	1.7±0.4	3.7±0.6
Aluminum, dissolved	mg/L	0.020±0.003	0.0019±0.001	0.0099±0.002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium, dissolved	mg/L	0.012±0.002	0.016±0.002	0.022±0.003
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0006±0.0003
Iron, dissolved	mg/L	0.19±0.02	1.04±0.1	1.58±0.2
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	2.1±0.3	1.9±0.5	4.3±0.6
Manganese, dissolved	mg/L	0.0062±0.002	0.24±0.02	0.32±0.03
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium, dissolved	ug/L	0.66±0.2	0.57±0.1	1.1±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.031±0.005	0.026±0.004	0.048±0.007
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0004±0.0002	<0.0002	0.0003±0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0009±0.0007	0.0011±0.0007	0.0027±0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 9.6 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

26272	**LAKEH2 03/23/2020 10:23 LAKEH2_20200301_WS *WATER***
26273	**LAKEJ 03/17/2020 11:14 LAKEJ_20200301_WS *WATER***
26274	**LLOYLKI 03/18/2020 13:51 LLOYLKI_20200301_WS *WATER***

Analyte	Units	26272	26273	26274
Lab Section 2				
Calcium, dissolved	mg/L	5.9±0.9	0.7±0.1	3.7±0.6
Magnesium, dissolved	mg/L	2.3±0.3	0.2±0.1	1.2±0.3
Potassium, dissolved	mg/L	1.2±0.3	0.4±0.2	0.6±0.2
Sodium, dissolved	mg/L	2.3±0.3	0.8±0.1	1.5±0.4
Aluminum, dissolved	mg/L	0.0030±0.001	0.0073±0.002	0.011±0.002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Barium, dissolved	mg/L	0.0029±0.001	0.0049±0.001	0.0076±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.01±0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0004±0.0003
Iron, dissolved	mg/L	1.67±0.2	0.017±0.002	0.48±0.05
Lead, dissolved	mg/L	<0.0001	0.0004±0.0002	0.0005±0.0002
Lithium, dissolved	ug/L	4.1±0.6	0.1±0.1	2.0±0.3
Manganese, dissolved	mg/L	0.15±0.02	0.0055±0.001	0.073±0.007
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Rubidium, dissolved	ug/L	1.8±0.3	0.85±0.2	0.66±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.021±0.003	0.0060±0.002	0.028±0.004
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	0.0011±0.0003	0.0002±0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0010±0.0007	0.0015±0.0008	0.0014±0.0008
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

26275	**LLOYLKO 03/18/2020 12:13 LLOYLKO_20200301_WS *WATER***
26276	**NAOMLK 03/21/2020 11:11 NAOMLK_20200301_WS *WATER***
26277	**PATTLKE1 03/20/2020 09:52 PATTLKE1_20200301_WS *WATER***

Analyte	Units	26275	26276	26277
Lab Section 2				
Calcium, dissolved	mg/L	3.1±0.5	2.9±0.4	4.4±0.7
Magnesium, dissolved	mg/L	1.0±0.2	0.7±0.1	1.5±0.4
Potassium, dissolved	mg/L	0.5±0.2	0.4±0.2	0.6±0.2
Sodium, dissolved	mg/L	1.3±0.3	1.0±0.2	1.4±0.4
Aluminum, dissolved	mg/L	0.015±0.002	0.052±0.005	0.0007±0.0006
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Barium, dissolved	mg/L	0.0070±0.002	0.010±0.002	0.0095±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0003±0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.61±0.06	0.77±0.08	0.0036±0.001
Lead, dissolved	mg/L	0.0004±0.0002	<0.0001	<0.0001
Lithium, dissolved	ug/L	1.6±0.4	1.0±0.2	2.6±0.4
Manganese, dissolved	mg/L	0.032±0.005	0.071±0.007	0.0017±0.0009
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001±0.0001	0.0001±0.0001	<0.0001
Rubidium, dissolved	ug/L	0.65±0.2	0.89±0.2	0.64±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.026±0.004	0.026±0.004	0.034±0.005
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0003±0.0002	0.0006±0.0003	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0011±0.0007	0.0008±0.0006	<0.0005
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

26278	**PATTLKN1 03/20/2020 13:55 PATTLKN1_20200301_WS *WATER***
26279	**PATTLKNE1 03/23/2020 14:33 PATTLKNE1_20200301_WS *WATER***
26280	**WARNRP 03/25/2020 09:30 WARNRP_20200301_WS *WATER***

Analyte	Units	26278	26279	26280
Lab Section 2				
Calcium, dissolved	mg/L	4.1±0.6	3.6±0.5	3.4±0.5
Magnesium, dissolved	mg/L	1.4±0.4	1.1±0.3	1.1±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Sodium, dissolved	mg/L	1.4±0.4	1.3±0.3	1.4±0.4
Aluminum, dissolved	mg/L	0.0011±0.0007	0.0029±0.001	0.015±0.002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium, dissolved	mg/L	0.017±0.002	0.011±0.002	0.0064±0.002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0036±0.0009	<0.0002	<0.0002
Iron, dissolved	mg/L	0.0083±0.002	0.059±0.006	0.48±0.05
Lead, dissolved	mg/L	0.0002±0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	2.4±0.4	2.1±0.3	1.5±0.4
Manganese, dissolved	mg/L	<0.0005	0.012±0.002	0.010±0.002
Molybdenum, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001±0.0001	<0.0001	0.0002±0.0001
Rubidium, dissolved	ug/L	0.53±0.1	0.66±0.2	0.84±0.2
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.032±0.005	0.030±0.004	0.024±0.004
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0003±0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0032±0.001	<0.0005	0.0009±0.0007
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001

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SRC Group # 2020-5506

May 30, 2020

CanNorth, Canada North Environmental Services Limited

Analyte Methods

Name	Units	Method
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Bismuth, dissolved	mg/L	Chm-501 / Chm-522
Calcium, dissolved	mg/L	Chm-501 / Chm-522
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Cesium, dissolved	ug/L	Chm-501 / Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium, dissolved	mg/L	Chm-501 / Chm-522
Lithium, dissolved	ug/L	Chm-501 / Chm-522
Magnesium, dissolved	mg/L	Chm-501 / Chm-522
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium, dissolved	mg/L	Chm-501 / Chm-522
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Rubidium, dissolved	ug/L	Chm-501 / Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium, dissolved	mg/L	Chm-501 / Chm-522
Tin, dissolved	mg/L	Chm-501 / Chm-522
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Tellurium, dissolved	ug/L	Chm-501 / Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Zirconium, dissolved	mg/L	Chm-501 / Chm-522

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Oct 24, 2019

This report was generated for samples included in SRC Group # 2019-14330

*(1)(2)(3) The Radium-226 results for the quality control samples were just outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(4) The duplicate result for Total alkalinity was just outside the laboratory's specified limits. The data was reviewed and the duplicate samples were reanalyzed. All other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

SASKATCHEWAN RESEARCH COUNCIL
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May 30, 2020

This report was generated for samples included in SRC Group # 2020-5506

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0525
Antimony	mg/L	0.0472	0.0488
Arsenic	mg/L	50.0	51.9
Barium	mg/L	0.0497	0.0504
Beryllium	mg/L	0.0520	0.0509
Bismuth	mg/L	0.0504	0.0516
Boron	mg/L	0.0500	0.0504
Cadmium	mg/L	0.0490	0.0501
Calcium	mg/L	5.20	4.99
Chromium	mg/L	0.0500	0.0516
Cobalt	mg/L	0.0500	0.0515
Copper	mg/L	0.0500	0.0511
Iron	mg/L	0.0500	0.0517
Lead	mg/L	0.0500	0.0513
Magnesium	mg/L	5.12	5.04
Manganese	mg/L	0.0500	0.0520
Molybdenum	mg/L	0.0498	0.0511
Nickel	mg/L	0.0506	0.0522
Potassium	mg/L	4.92	4.86
Rubidium	mg/L	50.0	51.0
Selenium	mg/L	0.0500	0.0504
Silver	mg/L	0.0500	0.0512
Sodium	mg/L	5.00	4.93
Strontium	mg/L	0.0490	0.0499
Thallium	mg/L	0.0500	0.0512
Tin	mg/L	0.0477	0.0478
Titanium	mg/L	0.0500	0.0528
Uranium	mg/L	50.3	50.7
Vanadium	mg/L	0.0500	0.0515
Zinc	mg/L	0.0500	0.0514

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May 30, 2020

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Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver, dissolved	mg/L	26261	<0.00005	<0.00005
Aluminum, dissolved	mg/L	26261	0.0010	0.0012
Arsenic, dissolved	ug/L	26261	<0.1	<0.1
Boron, dissolved	mg/L	26261	<0.01	<0.01
Barium, dissolved	mg/L	26261	<0.0005	<0.0005
Beryllium, dissolved	mg/L	26261	<0.0001	<0.0001
Bismuth, dissolved	mg/L	26261	<0.0002	<0.0002
Calcium, dissolved	mg/L	26261	<0.1	<0.1
Cadmium, dissolved	mg/L	26261	0.00001	<0.00001
Cobalt, dissolved	mg/L	26261	<0.0001	<0.0001
Chromium, dissolved	mg/L	26261	<0.0005	<0.0005
Copper, dissolved	mg/L	26261	0.0002	0.0002
Iron, dissolved	mg/L	26261	0.0014	0.0014
Potassium, dissolved	mg/L	26261	<0.1	<0.1
Lithium, dissolved	ug/L	26261	<0.1	<0.1
Magnesium, dissolved	mg/L	26261	<0.1	<0.1
Manganese, dissolved	mg/L	26261	<0.0005	<0.0005
Molybdenum, dissolved	mg/L	26261	<0.0001	<0.0001
Sodium, dissolved	mg/L	26261	<0.1	<0.1
Nickel, dissolved	mg/L	26261	<0.0001	<0.0001
Lead, dissolved	mg/L	26261	<0.0001	<0.0001
Rubidium, dissolved	ug/L	26261	<0.05	<0.05
Antimony, dissolved	mg/L	26261	<0.0002	<0.0002
Selenium, dissolved	mg/L	26261	<0.0001	<0.0001
Tin, dissolved	mg/L	26261	<0.0001	<0.0001
Strontium, dissolved	mg/L	26261	<0.0005	<0.0005
Tellurium, dissolved	ug/L	26261	<1	<1
Titanium, dissolved	mg/L	26261	<0.0002	<0.0002
Thallium, dissolved	mg/L	26261	<0.0002	<0.0002
Uranium, dissolved	ug/L	26261	<0.1	<0.1
Vanadium, dissolved	mg/L	26261	<0.0001	<0.0001
Zinc, dissolved	mg/L	26261	0.0013	0.0013
Zirconium, dissolved	mg/L	26261	<0.001	<0.001

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May 30, 2020

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Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	**Percent Recovery**
Aluminum	108
Antimony	85
Arsenic	100
Barium	101
Beryllium	103
Boron	116
Cadmium	103
Chromium	106
Cobalt	106
Copper	103
Iron	101
Lead	104
Manganese	107
Molybdenum	97
Nickel	104
Selenium	100
Silver	102
Strontium	102
Thallium	102
Tin	87
Titanium	106
Uranium	98
Vanadium	104
Zinc	106

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-6455

Jun 29, 2020

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Mitchell Thorarinson

Date Samples Received: Jun-11-2020

Client P.O.: 3008_20SPRI_WS 2020 Water Sampling Program

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
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SRC Group # 2020-6455

Jun 29, 2020

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Mitchell Thorarinson

Date Samples Received: Jun-11-2020

Client P.O.: 3008_20SPRI_WS 2020 Water Sampling Program

29418	**WARNRP 06/07/2020 10:10 3008_20200601_FB *WATER***
29419	**WARNRP 06/07/2020 10:10 3008_20200601_QAQC *WATER***
29420	**BEETCK 06/08/2020 10:45 BEETCK_20200601_WS *WATER***

Analyte	Units	29418	29419	29420
Lab Section 1				
Bicarbonate	mg/L	1±1	15±4	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.3±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.58±0.2	7.08±0.3	7.47±0.3
Specific conductivity	uS/cm	<1	19±5	35±5
Sum of ions	mg/L	1±1	21±3	36±5
Total alkalinity	mg/L	1±1	12±3	22±3
Total hardness	mg/L	<1	9±3	15±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05	0.30±0.1	0.33±0.2
Mercury	ng/L	<1	2±1	1±1
Organic carbon	mg/L	<0.2	7.7±1	3.2±0.8
Organic carbon, dissolved	mg/L	<0.2	7.7±1	3.3±0.8
Fluoride	mg/L	<0.01	0.03±0.01	0.04±0.02
Total dissolved solids	mg/L	<5	35±10	45±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	46±7	10±2
Turbidity	NTU	0.1±0.1	1.6±0.4	1.3±0.3
Lab Section 2				
Calcium	mg/L	<0.1	2.2±0.3	3.9±0.6
Calcium, dissolved	mg/L	<0.1	2.2±0.3	3.8±0.6
Magnesium	mg/L	<0.1	0.8±0.1	1.4±0.4

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CanNorth, Canada North Environmental Services Limited

29418	**WARNRP 06/07/2020 10:10 3008_20200601_FB *WATER***
29419	**WARNRP 06/07/2020 10:10 3008_20200601_QAQC *WATER***
29420	**BEETCK 06/08/2020 10:45 BEETCK_20200601_WS *WATER***

Analyte	Units	29418	29419	29420
Lab Section 2				
Magnesium, dissolved	mg/L	<0.1	0.8±0.1	1.4±0.4
Potassium	mg/L	<0.1	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	<0.1	0.5±0.2	0.6±0.2
Sodium	mg/L	0.1±0.1	1.2±0.3	1.6±0.4
Sodium, dissolved	mg/L	<0.1	1.2±0.3	1.6±0.4
Sulfate	mg/L	<0.2	0.8±0.2	1.4±0.3
Aluminum	mg/L	0.0031±0.001	0.035±0.005	0.011±0.002
Aluminum, dissolved	mg/L	0.0006±0.0006	0.024±0.004	0.0063±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium	mg/L	<0.0005	0.0057±0.001	0.0099±0.002
Barium, dissolved	mg/L	<0.0005	0.0052±0.001	0.0087±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.0011±0.0007	0.55±0.06	0.19±0.02
Iron, dissolved	mg/L	0.0011±0.0007	0.29±0.03	0.071±0.007
Lead	mg/L	0.0001±0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	1.2±0.3	3.2±0.5
Lithium, dissolved	ug/L	<0.1	1.2±0.3	3.2±0.5
Manganese	mg/L	<0.0005	0.022±0.003	0.016±0.002

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29418	**WARNRP 06/07/2020 10:10 3008_20200601_FB *WATER***
29419	**WARNRP 06/07/2020 10:10 3008_20200601_QAQC *WATER***
29420	**BEETCK 06/08/2020 10:45 BEETCK_20200601_WS *WATER***

Analyte	Units	29418	29419	29420
Lab Section 2				
Manganese, dissolved	mg/L	<0.0005	0.011±0.002	0.0046±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	0.0002±0.0001	<0.0001
Rubidium	ug/L	<0.05	0.82±0.2	0.62±0.2
Rubidium, dissolved	ug/L	<0.05	0.74±0.2	0.59±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.017±0.002	0.031±0.005
Strontium, dissolved	mg/L	<0.0005	0.016±0.002	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0005±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0006±0.0006	0.0008±0.0007	<0.0005
Zinc, dissolved	mg/L	0.0009±0.0007	<0.0005	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	0.01±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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Jun 29, 2020

CanNorth, Canada North Environmental Services Limited

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29418
This sample was reanalyzed for Aluminum. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 29420
This sample was reanalyzed for Total Kjeldahl nitrogen and iron. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29421	**BEETLK1 06/08/2020 09:56 BEETLK1_20200601_WS *WATER***
29422	**BROALK2 06/02/2020 12:20 BROALK_20200601_WS *WATER***
29423	**CLEARV1 06/08/2020 11:30 CLEARV1_20200601_WS *WATER***

Analyte	Units	29421	29422	29423
Lab Section 1				
Bicarbonate	mg/L	27±4	30±4	28±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.4±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.46±0.3	7.37±0.3	7.32±0.3
Specific conductivity	uS/cm	37±6	35±5	26±4
Sum of ions	mg/L	37±6	39±6	36±5
Total alkalinity	mg/L	22±3	25±4	23±3
Total hardness	mg/L	16±4	14±4	12±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.01±0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	0.09	<0.04
Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.31±0.1	0.17±0.1	0.34±0.2
Mercury	ng/L	<1	<1	2±1
Organic carbon	mg/L	2.0±0.5	1.6±0.5	4.7±0.7
Organic carbon, dissolved	mg/L	2.4±0.6	1.8±0.5	4.4±0.7
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.03±0.01
Total dissolved solids	mg/L	40±10	39±10	35±10
Total suspended solids	mg/L	1±1	<1	4±2
True color	CU	1±1	<1	25±4
Turbidity	NTU	1.0±0.2	0.4±0.1	2.5±0.4
Lab Section 2				
Calcium	mg/L	4.0±0.6	3.7±0.6	3.1±0.5
Calcium, dissolved	mg/L	4.0±0.6	3.7±0.6	3.1±0.5
Magnesium	mg/L	1.5±0.4	1.2±0.3	1.1±0.3
Magnesium, dissolved	mg/L	1.5±0.4	1.2±0.3	1.1±0.3
Potassium	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.5±0.2	0.5±0.2
Sodium	mg/L	1.6±0.4	1.6±0.4	1.3±0.3
Sodium, dissolved	mg/L	1.6±0.4	1.5±0.4	1.3±0.3

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29421	**BEETLK1 06/08/2020 09:56 BEETLK1_20200601_WS *WATER***
29422	**BROALK2 06/02/2020 12:20 BROALK_20200601_WS *WATER***
29423	**CLEARV1 06/08/2020 11:30 CLEARV1_20200601_WS *WATER***

Analyte	Units	29421	29422	29423
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.9±0.4	1.2±0.3
Aluminum	mg/L	0.0024±0.001	0.0007±0.0006	0.031±0.005
Aluminum, dissolved	mg/L	0.0008±0.0006	<0.0005	0.016±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	<0.1	0.1±0.1
Barium	mg/L	0.0097±0.002	0.016±0.002	0.0085±0.002
Barium, dissolved	mg/L	0.0091±0.002	0.015±0.002	0.0073±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.092±0.009	0.015±0.002	0.44±0.04
Iron, dissolved	mg/L	0.015±0.002	0.0022±0.001	0.18±0.02
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.2±0.5	3.4±0.5	2.4±0.4
Lithium, dissolved	ug/L	3.3±0.5	3.2±0.5	2.5±0.4
Manganese	mg/L	0.016±0.002	0.022±0.003	0.022±0.003
Manganese, dissolved	mg/L	0.0008±0.0006	0.0024±0.001	0.0064±0.002
Molybdenum	mg/L	<0.0001	0.0001±0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29421	**BEETLK1 06/08/2020 09:56 BEETLK1_20200601_WS *WATER***
29422	**BROALK2 06/02/2020 12:20 BROALK_20200601_WS *WATER***
29423	**CLEARV1 06/08/2020 11:30 CLEARV1_20200601_WS *WATER***

Analyte	Units	29421	29422	29423
Lab Section 2				
Rubidium	ug/L	0.65±0.2	0.51±0.1	0.66±0.2
Rubidium, dissolved	ug/L	0.56±0.1	0.54±0.1	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.038±0.006	0.027±0.004
Strontium, dissolved	mg/L	0.031±0.005	0.037±0.006	0.026±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0006±0.0003
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0013±0.0009	0.0008±0.0007
Zinc, dissolved	mg/L	<0.0005	0.0016±0.0009	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	0.01±0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29421
This sample was reanalyzed for Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 29422
This sample was reanalyzed for Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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CanNorth, Canada North Environmental Services Limited

29424	**FORRLK1 06/07/2020 14:00 FORRLK1_20200601_WS *WATER***
29425	**FORRLK2 06/08/2020 08:40 FORRLK2_20200601_WS *WATER***
29426	**HODGLK1 06/03/2020 10:20 HODGLK1_20200601_WS *WATER***

Analyte	Units	29424	29425	29426
Lab Section 1				
Bicarbonate	mg/L	26±4	28±4	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.7±0.1	1.9±0.5
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.48±0.3	7.49±0.3	6.98±0.3
Specific conductivity	uS/cm	35±5	42±6	21±3
Sum of ions	mg/L	35±5	39±6	22±3
Total alkalinity	mg/L	21±3	23±3	12±3
Total hardness	mg/L	15±4	18±4	9±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	0.09	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.22±0.1	0.13±0.08	0.14±0.09
Mercury	ng/L	1±1	<1	<1
Organic carbon	mg/L	1.9±0.6	1.2±0.4	2.1±0.5
Organic carbon, dissolved	mg/L	1.9±0.6	1.8±0.5	2.5±0.6
Fluoride	mg/L	0.04±0.02	0.05±0.02	0.02±0.01
Total dissolved solids	mg/L	22±10	50±10	30±10
Total suspended solids	mg/L	4±2	<1	<1
True color	CU	3±2	<1	2±1
Turbidity	NTU	1.4±0.4	0.3±0.1	0.5±0.1
Lab Section 2				
Calcium	mg/L	3.8±0.6	4.4±0.7	2.8±0.4
Calcium, dissolved	mg/L	3.8±0.6	4.4±0.7	2.8±0.4
Magnesium	mg/L	1.4±0.4	1.6±0.4	0.6±0.1
Magnesium, dissolved	mg/L	1.4±0.4	1.6±0.4	0.6±0.1
Potassium	mg/L	0.6±0.2	0.8±0.3	0.3±0.1
Potassium, dissolved	mg/L	0.6±0.2	0.8±0.3	0.3±0.1
Sodium	mg/L	1.5±0.4	1.9±0.5	0.9±0.1
Sodium, dissolved	mg/L	1.5±0.4	1.9±0.5	0.9±0.1

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SRC Group # 2020-6455

Jun 29, 2020

CanNorth, Canada North Environmental Services Limited

29424 FORRLK1 06/07/2020 14:00 FORRLK1_20200601_WS *WATER*
29425 FORRLK2 06/08/2020 08:40 FORRLK2_20200601_WS *WATER*
29426 HODGLK1 06/03/2020 10:20 HODGLK1_20200601_WS *WATER*

Analyte	Units	29424	29425	29426
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.6±0.4	1.0±0.2
Aluminum	mg/L	0.0065±0.002	0.0010±0.0007	0.0033±0.001
Aluminum, dissolved	mg/L	0.0009±0.0007	<0.0005	0.0008±0.0006
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	<0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.2±0.1	<0.1
Barium	mg/L	0.0099±0.002	0.0082±0.002	0.0073±0.002
Barium, dissolved	mg/L	0.0085±0.002	0.0078±0.002	0.0070±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.079±0.008	0.015±0.002	0.039±0.006
Iron, dissolved	mg/L	0.0046±0.001	0.0015±0.0008	0.0045±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.1±0.5	3.8±0.6	2.0±0.3
Lithium, dissolved	ug/L	3.1±0.5	3.8±0.6	1.9±0.5
Manganese	mg/L	0.030±0.004	0.0087±0.002	0.015±0.002
Manganese, dissolved	mg/L	0.0026±0.001	<0.0005	0.0019±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29424	**FORRLK1 06/07/2020 14:00 FORRLK1_20200601_WS *WATER***
29425	**FORRLK2 06/08/2020 08:40 FORRLK2_20200601_WS *WATER***
29426	**HODGLK1 06/03/2020 10:20 HODGLK1_20200601_WS *WATER***

Analyte	Units	29424	29425	29426
Lab Section 2				
Rubidium	ug/L	0.58±0.1	0.62±0.2	0.60±0.2
Rubidium, dissolved	ug/L	0.57±0.1	0.58±0.1	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.032±0.005	0.064±0.006
Strontium, dissolved	mg/L	0.031±0.005	0.033±0.005	0.063±0.006
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	0.0006±0.0006
Zinc, dissolved	mg/L	0.0005±0.0005	0.0013±0.0008	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.006±0.005	0.009±0.006	0.01±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29424
This sample was reanalyzed for Total suspended solids, Turbidity, iron, iron (dissolved) and manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 29425
This sample was reanalyzed for Ammonia nitrogen, dissolved, Nitrate, dissolved, Nitrate as nitrogen, dissolved, Nitrite +Nitrate as nitrogen, dissolved and manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 29426
This sample was reanalyzed for Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29427	**JEDCK 06/05/2020 13:30 JEDCK_20200601_WS *WATER***
29428	**LAKED 06/05/2020 09:15 LAKED_20200601_WS *WATER***
29429	**LAKEG1 06/05/2020 12:22 LAKEG1_20200601_WS *WATER***

Analyte	Units	29427	29428	29429
Lab Section 1				
Bicarbonate	mg/L	17±4	33±5	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.2±0.1	<0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.66±0.3	7.26±0.3	6.95±0.3
Specific conductivity	uS/cm	14±4	36±5	27±4
Sum of ions	mg/L	22±3	42±6	34±5
Total alkalinity	mg/L	14±4	27±4	22±3
Total hardness	mg/L	7±2	17±4	13±3
Ammonia as nitrogen	mg/L	0.01±0.01	0.02±0.02	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.04±0.02	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	0.13	<0.04
Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.03±0.02	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.03±0.02	<0.01
Total Kjeldahl nitrogen	mg/L	0.21±0.1	0.66±0.2	0.52±0.1
Mercury	ng/L	2±1	1±1	2±1
Organic carbon	mg/L	6.4±1	6.0±0.9	7.8±1
Organic carbon, dissolved	mg/L	6.6±1	6.4±1	7.2±1
Fluoride	mg/L	0.02±0.01	0.02±0.01	0.03±0.01
Total dissolved solids	mg/L	36±10	51±10	42±10
Total suspended solids	mg/L	1±1	1±1	2±1
True color	CU	42±6	13±3	26±4
Turbidity	NTU	1.5±0.4	1.2±0.3	2.2±0.3
Lab Section 2				
Calcium	mg/L	2.0±0.3	5.0±0.8	3.1±0.5
Calcium, dissolved	mg/L	2.0±0.3	4.9±0.7	3.1±0.5
Magnesium	mg/L	0.6±0.1	1.2±0.3	1.3±0.3
Magnesium, dissolved	mg/L	0.6±0.1	1.2±0.3	1.3±0.3
Potassium	mg/L	0.4±0.2	0.3±0.1	0.5±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.4±0.2	0.5±0.2
Sodium	mg/L	0.9±0.1	1.3±0.3	1.3±0.3
Sodium, dissolved	mg/L	0.9±0.1	1.3±0.3	1.4±0.4

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29427	**JEDCK 06/05/2020 13:30 JEDCK_20200601_WS *WATER***
29428	**LAKED 06/05/2020 09:15 LAKED_20200601_WS *WATER***
29429	**LAKEG1 06/05/2020 12:22 LAKEG1_20200601_WS *WATER***

Analyte	Units	29427	29428	29429
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.0±0.2	0.9±0.2
Aluminum	mg/L	0.040±0.006	0.0040±0.001	0.0059±0.001
Aluminum, dissolved	mg/L	0.031±0.005	0.0024±0.001	0.0038±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	<0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	<0.1
Barium	mg/L	0.0074±0.002	0.0061±0.002	0.0078±0.002
Barium, dissolved	mg/L	0.0076±0.002	0.0052±0.001	0.0071±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	0.0002±0.0002	<0.0002	<0.0002
Iron	mg/L	0.49±0.05	0.32±0.03	0.76±0.08
Iron, dissolved	mg/L	0.18±0.02	0.25±0.02	0.55±0.06
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.4±0.4	1.7±0.4	2.1±0.3
Lithium, dissolved	ug/L	1.4±0.4	1.7±0.4	2.1±0.3
Manganese	mg/L	0.017±0.002	0.0083±0.002	0.013±0.002
Manganese, dissolved	mg/L	0.0029±0.001	0.0012±0.0008	0.0026±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001

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29427 JEDCK 06/05/2020 13:30 JEDCK_20200601_WS *WATER*
29428 LAKED 06/05/2020 09:15 LAKED_20200601_WS *WATER*
29429 LAKEG1 06/05/2020 12:22 LAKEG1_20200601_WS *WATER*

Analyte	Units	29427	29428	29429
Lab Section 2				
Rubidium	ug/L	0.77±0.2	0.37±0.1	0.42±0.1
Rubidium, dissolved	ug/L	0.74±0.2	0.39±0.05	0.42±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.020±0.003	0.016±0.002	0.020±0.003
Strontium, dissolved	mg/L	0.020±0.003	0.016±0.002	0.020±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	0.0003±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0005±0.0005	<0.0005	0.0007±0.0006
Zinc, dissolved	mg/L	0.0010±0.0007	0.0006±0.0006	0.0017±0.0009
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.007±0.005	0.005±0.005
Radium-226	Bq/L	0.01±0.006	<0.005	0.01±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

Note for Sample # 29428

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This sample was reanalyzed for aluminum. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 29429
This sample was reanalyzed for Total Kjeldahl nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 10.4 °C upon receipt.

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CanNorth, Canada North Environmental Services Limited

29430	**LAKEH1 05/06/2020 13:00 LAKEH1_20200601_WS *WATER***
29431	**LAKEJ 06/03/2020 15:00 LAKEJ_20200601_WS *WATER***
29432	**LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_ABOVE *WATER***

Analyte	Units	29430	29431	29432
Lab Section 1				
Bicarbonate	mg/L	30±4	2±1	24±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1±0.1	<0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.95±0.3	6.16±0.2	6.44±0.2
Specific conductivity	uS/cm	30±4	<1	19±5
Sum of ions	mg/L	37±6	4±2	30±4
Total alkalinity	mg/L	25±4	2±1	20±3
Total hardness	mg/L	13±3	1±1	9±3
Ammonia as nitrogen	mg/L	0.02±0.02	0.01±0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.03±0.02	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.13	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.03±0.02	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.03±0.02	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.78±0.2	0.51±0.1	0.26±0.1
Mercury	ng/L	1±1	<1	1±1
Organic carbon	mg/L	7.0±1	4.8±0.7	5.8±0.9
Organic carbon, dissolved	mg/L	7.2±1	4.4±0.7	5.6±0.8
Fluoride	mg/L	0.03±0.01	0.01±0.01	0.03±0.01
Total dissolved solids	mg/L	42±10	5±5	40±10
Total suspended solids	mg/L	8±3	1±1	<1
True color	CU	6±2	3±2	33±5
Turbidity	NTU	3.2±0.5	1.3±0.3	1.5±0.4
Lab Section 2				
Calcium	mg/L	3.2±0.5	0.4±0.2	2.3±0.3
Calcium, dissolved	mg/L	3.2±0.5	0.4±0.1	2.3±0.3
Magnesium	mg/L	1.3±0.3	0.1±0.1	0.8±0.1
Magnesium, dissolved	mg/L	1.3±0.3	0.1±0.1	0.8±0.1
Potassium	mg/L	0.7±0.2	0.3±0.1	0.5±0.2
Potassium, dissolved	mg/L	0.7±0.2	0.2±0.1	0.5±0.2
Sodium	mg/L	1.6±0.4	0.6±0.1	1.2±0.3
Sodium, dissolved	mg/L	1.5±0.4	0.5±0.1	1.2±0.3

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29430 LAKEH1 05/06/2020 13:00 LAKEH1_20200601_WS *WATER*
29431 LAKEJ 06/03/2020 15:00 LAKEJ_20200601_WS *WATER*
29432 LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_ABOVE *WATER*

Analyte	Units	29430	29431	29432
Lab Section 2				
Sulfate	mg/L	0.3±0.2	0.6±0.2	0.8±0.2
Aluminum	mg/L	0.020±0.003	0.0099±0.002	0.013±0.002
Aluminum, dissolved	mg/L	0.0064±0.002	0.0053±0.001	0.013±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	<0.1
Barium	mg/L	0.0030±0.001	0.0025±0.001	0.0058±0.001
Barium, dissolved	mg/L	0.0018±0.0009	0.0023±0.001	0.0060±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	0.0004±0.0003	<0.0002	<0.0002
Iron	mg/L	0.39±0.04	0.061±0.006	0.52±0.05
Iron, dissolved	mg/L	0.10±0.01	0.026±0.004	0.46±0.05
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.2±0.5	<0.1	1.7±0.4
Lithium, dissolved	ug/L	3.1±0.5	<0.1	1.7±0.4
Manganese	mg/L	0.022±0.003	0.0028±0.001	0.046±0.007
Manganese, dissolved	mg/L	<0.0005	0.0011±0.0007	0.042±0.006
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001

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29430	**LAKEH1 05/06/2020 13:00 LAKEH1_20200601_WS *WATER***
29431	**LAKEJ 06/03/2020 15:00 LAKEJ_20200601_WS *WATER***
29432	**LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_ABOVE *WATER***

Analyte	Units	29430	29431	29432
Lab Section 2				
Rubidium	ug/L	1.2±0.2	0.50±0.1	0.59±0.1
Rubidium, dissolved	ug/L	1.2±0.2	0.49±0.05	0.58±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.015±0.002	0.0039±0.001	0.020±0.003
Strontium, dissolved	mg/L	0.013±0.002	0.0038±0.001	0.019±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0003±0.0002	<0.0002	0.0002±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0008±0.0007	0.0006±0.0006	0.0005±0.0005
Zinc, dissolved	mg/L	0.0015±0.0008	0.0007±0.0006	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	0.01±0.007	0.008±0.006	<0.005
Radium-226	Bq/L	0.009±0.006	<0.005	0.009±0.006
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29431
This sample was reanalyzed for Nitrate, dissolved, Nitrate as nitrogen, dissolved, Nitrite+Nitrate as nitrogen, dissolved, Organic carbon and Organic carbon, dissolved. Reanalysis confirms original

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results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29433	**LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_BELOW *WATER***
29434	**LLOYLKO 06/04/2020 10:30 LLOYLKO_20200601_WS *WATER***
29435	**NAOMLK 06/07/2020 14:42 NAOMLK_20200601_WS *WATER***

Analyte	Units	29433	29434	29435
Lab Section 1				
Bicarbonate	mg/L	18±4	15±4	10±2
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.5±0.1	0.5±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.48±0.2	6.96±0.3	6.47±0.2
Specific conductivity	uS/cm	21±3	19±5	17±4
Sum of ions	mg/L	24±4	21±3	14±4
Total alkalinity	mg/L	15±4	12±3	8±1
Total hardness	mg/L	10±2	9±3	7±2
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	<0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.26±0.1	0.30±0.1	0.27±0.1
Mercury	ng/L	1±1	1±1	1±1
Organic carbon	mg/L	5.3±0.8	6.2±0.9	10±2
Organic carbon, dissolved	mg/L	5.2±0.8	5.5±0.8	8.4±1
Fluoride	mg/L	0.03±0.01	0.03±0.01	0.02±0.01
Total dissolved solids	mg/L	45±10	39±10	29±10
Total suspended solids	mg/L	1±1	1±1	1±1
True color	CU	30±4	33±5	55±8
Turbidity	NTU	1.9±0.5	2.0±0.3	2.0±0.3
Lab Section 2				
Calcium	mg/L	2.5±0.4	2.3±0.3	1.9±0.5
Calcium, dissolved	mg/L	2.5±0.4	2.3±0.3	1.9±0.5
Magnesium	mg/L	0.9±0.1	0.8±0.1	0.5±0.1
Magnesium, dissolved	mg/L	0.9±0.1	0.8±0.1	0.5±0.1
Potassium	mg/L	0.5±0.2	0.5±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.4±0.2
Sodium	mg/L	1.2±0.3	1.2±0.3	0.8±0.1
Sodium, dissolved	mg/L	1.2±0.3	1.2±0.3	0.8±0.1

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29433 LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_BELOW *WATER*
29434 LLOYLKO 06/04/2020 10:30 LLOYLKO_20200601_WS *WATER*
29435 NAOMLK 06/07/2020 14:42 NAOMLK_20200601_WS *WATER*

Analyte	Units	29433	29434	29435
Lab Section 2				
Sulfate	mg/L	0.9±0.2	0.9±0.2	0.6±0.2
Aluminum	mg/L	0.011±0.002	0.015±0.002	0.044±0.007
Aluminum, dissolved	mg/L	0.0096±0.002	0.0098±0.002	0.031±0.005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0063±0.002	0.0059±0.001	0.0073±0.002
Barium, dissolved	mg/L	0.0060±0.002	0.0052±0.001	0.0066±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0004±0.0003	<0.0002
Iron	mg/L	0.60±0.06	0.61±0.06	0.94±0.09
Iron, dissolved	mg/L	0.47±0.05	0.37±0.04	0.39±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.8±0.4	1.7±0.4	0.9±0.3
Lithium, dissolved	ug/L	1.8±0.4	1.7±0.4	0.9±0.3
Manganese	mg/L	0.070±0.007	0.044±0.007	0.032±0.005
Manganese, dissolved	mg/L	0.059±0.006	0.020±0.003	0.019±0.003
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001±0.0001	0.0001±0.0001	0.0001±0.0001

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29433	**LLOYLKI 06/04/2020 14:00 LLOYLKI_20200601_WS_BELOW *WATER***
29434	**LLOYLKO 06/04/2020 10:30 LLOYLKO_20200601_WS *WATER***
29435	**NAOMLK 06/07/2020 14:42 NAOMLK_20200601_WS *WATER***

Analyte	Units	29433	29434	29435
Lab Section 2				
Rubidium	ug/L	0.60±0.2	0.58±0.1	0.93±0.2
Rubidium, dissolved	ug/L	0.61±0.2	0.62±0.2	0.90±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.021±0.003	0.020±0.003	0.019±0.003
Strontium, dissolved	mg/L	0.020±0.003	0.019±0.003	0.018±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0006±0.0003
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0004±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	0.0006±0.0006
Zinc, dissolved	mg/L	0.0009±0.0007	0.0006±0.0006	0.0012±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.009±0.006	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29433
This sample was reanalyzed for Nitrate, dissolved, Nitrate as nitrogen, dissolved and Nitrite+Nitrate as nitrogen, dissolved.
Reanalysis confirms original results are within the expected measurement

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uncertainty.

Note for Sample # 29434
This sample was reanalyzed for manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 29435
This sample was reanalyzed for Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29436	**PATTLKE1 06/06/2020 08:43 PATTLKE1_20200601_WS *WATER***
29437	**PATTLKN1 06/06/2020 10:30 PATTLKN1_20200601_WS *WATER***
29438	**PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_ABOVE *WATER***

Analyte	Units	29436	29437	29438
Lab Section 1				
Bicarbonate	mg/L	22±3	22±3	17±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.5±0.1	0.5±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.20±0.3	7.09±0.3	7.12±0.3
Specific conductivity	uS/cm	34±5	33±5	24±4
Sum of ions	mg/L	31±5	31±5	24±4
Total alkalinity	mg/L	18±4	18±4	14±4
Total hardness	mg/L	15±4	14±4	11±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	<0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	<0.04	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.18±0.1	0.19±0.1	0.25±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.1±0.5	1.9±0.6	3.0±0.8
Organic carbon, dissolved	mg/L	2.2±0.6	2.4±0.6	3.6±0.9
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	37±10	42±10	37±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	<1	7±2
Turbidity	NTU	0.6±0.1	0.6±0.1	1.1±0.3
Lab Section 2				
Calcium	mg/L	3.8±0.6	3.6±0.5	2.8±0.4
Calcium, dissolved	mg/L	3.8±0.6	3.6±0.5	2.9±0.4
Magnesium	mg/L	1.3±0.3	1.2±0.3	0.9±0.1
Magnesium, dissolved	mg/L	1.3±0.3	1.2±0.3	0.9±0.1
Potassium	mg/L	0.5±0.2	0.5±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.5±0.2
Sodium	mg/L	1.4±0.4	1.4±0.4	1.2±0.3
Sodium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.2±0.3

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CanNorth, Canada North Environmental Services Limited

29436 PATTLKE1 06/06/2020 08:43 PATTLKE1_20200601_WS *WATER*
29437 PATTLKN1 06/06/2020 10:30 PATTLKN1_20200601_WS *WATER*
29438 PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_ABOVE *WATER*

Analyte	Units	29436	29437	29438
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.4±0.3	1.2±0.3
Aluminum	mg/L	0.0006±0.0006	0.0008±0.0006	0.0061±0.002
Aluminum, dissolved	mg/L	<0.0005	<0.0005	0.0065±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	<0.1
Barium	mg/L	0.010±0.002	0.0097±0.002	0.010±0.002
Barium, dissolved	mg/L	0.0093±0.002	0.0090±0.002	0.0098±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.031±0.005	0.019±0.003	0.22±0.02
Iron, dissolved	mg/L	0.0033±0.001	0.0017±0.0009	0.086±0.009
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001
Lithium	ug/L	2.9±0.4	2.8±0.4	2.1±0.3
Lithium, dissolved	ug/L	2.9±0.4	2.7±0.4	2.2±0.3
Manganese	mg/L	0.042±0.006	0.035±0.005	0.018±0.003
Manganese, dissolved	mg/L	<0.0005	<0.0005	0.0006±0.0006
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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29437	**PATTLKN1 06/06/2020 10:30 PATTLKN1_20200601_WS *WATER***
29438	**PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_ABOVE *WATER***

Analyte	Units	29436	29437	29438
Lab Section 2				
Rubidium	ug/L	0.58±0.1	0.61±0.2	0.64±0.2
Rubidium, dissolved	ug/L	0.53±0.1	0.58±0.1	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.032±0.005	0.028±0.004
Strontium, dissolved	mg/L	0.032±0.005	0.031±0.005	0.027±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.01±0.006	0.008±0.005	0.007±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29436
This sample was reanalyzed for Ammonia nitrogen, dissolved, Nitrate, dissolved, Nitrate as nitrogen, dissolved, Nitrite+Nitrate as nitrogen, dissolved and iron. Reanalysis confirms original

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results are within the expected measurement uncertainty.

Note for Sample # 29437
This sample was reanalyzed for manganese. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29439 PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_BELOW *WATER*
29440 WARNRP 06/07/2020 10:10 WARNRP_20200601_WS *WATER*

Analyte	Units	29439	29440
Lab Section 1			
Bicarbonate	mg/L	18±4	13±3
Carbonate	mg/L	<1	<1
Chloride	mg/L	0.3±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.00±0.3	6.81±0.3
Specific conductivity	uS/cm	26±4	18±4
Sum of ions	mg/L	25±4	19±5
Total alkalinity	mg/L	15±4	11±3
Total hardness	mg/L	11±3	9±3
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.04±0.02	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	0.13	<0.04
Nitrate (calc.), dissolved	mg/L	0.22	<0.04
Nitrate as nitrogen	mg/L	0.03±0.02	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	<0.01
Nitrite+Nitrate as nitrogen	mg/L	0.03±0.02	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.05±0.02	<0.01
Total Kjeldahl nitrogen	mg/L	0.25±0.1	0.26±0.1
Mercury	ng/L	<1	1±1
Organic carbon	mg/L	2.9±0.7	7.7±1
Organic carbon, dissolved	mg/L	3.4±0.8	8.2±1
Fluoride	mg/L	0.03±0.01	0.04±0.02
Total dissolved solids	mg/L	30±10	44±10
Total suspended solids	mg/L	<1	<1
True color	CU	7±2	46±7
Turbidity	NTU	1.1±0.3	1.5±0.4
Lab Section 2			
Calcium	mg/L	2.9±0.4	2.2±0.3
Calcium, dissolved	mg/L	3.7±0.6	3.5±0.5
Magnesium	mg/L	0.9±0.1	0.8±0.1
Magnesium, dissolved	mg/L	0.9±0.1	0.8±0.1
Potassium	mg/L	0.5±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2
Sodium	mg/L	1.2±0.3	1.2±0.3
Sodium, dissolved	mg/L	1.2±0.3	1.2±0.3

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29439 PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_BELOW *WATER*
29440 WARNRP 06/07/2020 10:10 WARNRP_20200601_WS *WATER*

Analyte	Units	29439	29440
Lab Section 2			
Sulfate	mg/L	1.2±0.3	0.9±0.2
Aluminum	mg/L	0.0059±0.001	0.034±0.005
Aluminum, dissolved	mg/L	0.0047±0.001	0.028±0.004
Antimony	mg/L	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1
Barium	mg/L	0.011±0.002	0.0057±0.001
Barium, dissolved	mg/L	0.010±0.002	0.0056±0.001
Beryllium	mg/L	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002
Iron	mg/L	0.25±0.02	0.56±0.06
Iron, dissolved	mg/L	0.11±0.01	0.37±0.04
Lead	mg/L	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	0.0001±0.0001
Lithium	ug/L	2.1±0.3	1.2±0.3
Lithium, dissolved	ug/L	2.2±0.3	1.2±0.3
Manganese	mg/L	0.023±0.003	0.022±0.003
Manganese, dissolved	mg/L	0.0014±0.0008	0.012±0.002
Molybdenum	mg/L	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0002±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0002±0.0001

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29439 PATTLKNE1 06/06/2020 11:45 PATTLKNE1_20200601_WS_BELOW *WATER*
29440 WARNRP 06/07/2020 10:10 WARNRP_20200601_WS *WATER*

Analyte	Units	29439	29440
Lab Section 2			
Rubidium	ug/L	0.65±0.2	0.80±0.2
Rubidium, dissolved	ug/L	0.64±0.2	0.82±0.2
Selenium	mg/L	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005
Strontium	mg/L	0.028±0.004	0.017±0.002
Strontium, dissolved	mg/L	0.028±0.004	0.017±0.002
Tellurium	ug/L	<1	<1
Tellurium, dissolved	ug/L	<1	<1
Thallium	mg/L	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0006±0.0003
Titanium, dissolved	mg/L	<0.0002	0.0005±0.0002
Uranium	ug/L	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	0.0013±0.0008
Zirconium	mg/L	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	0.001±0.001
Phosphorus	mg/L	<0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	0.01±0.01
Lab Section 4			
Lead-210	Bq/L	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005
Radium-226	Bq/L	0.01±0.006	0.007±0.005
Thorium-230	Bq/L	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29439
This sample was reanalyzed for calcium, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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Note for Sample # 29440
This sample was reanalyzed for Ammonia nitrogen, dissolved, Organic carbon, Organic carbon, dissolved and Calcium, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 10.4 °C upon receipt.

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29441 WARNRP 06/07/2020 10:10 3008_20200601_TB *WATER*

Analyte	Units	29441
Lab Section 1		
Bicarbonate	mg/L	1±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.60±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1±1
Total alkalinity	mg/L	1±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.06±0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0042±0.001
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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29441 WARNRP 06/07/2020 10:10 3008_20200601_TB *WATER*

Analyte	Units	29441
Lab Section 2		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	0.01±0.006
Thorium-230	Bq/L	0.03±0.02

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 29441
This sample was reanalyzed for Total Kjeldahl nitrogen and Aluminum.
Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 10.4 °C upon receipt.

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Analyte Methods

Name	Units	Method
P. alkalinity	mg/L	Chm-211
Organic carbon, dissolved	mg/L	Chm-399
Organic carbon	mg/L	Chm-399
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
True color	CU	Chm-220
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Mercury	ng/L	Chm-309
Ammonia as nitrogen	mg/L	Chm-123
Ammonia nitrogen, dissolved	mg/L	Chm-123
Nitrite+Nitrate as nitrogen	mg/L	Chm-124
Nitrite+Nitrate as nitrogen, dissolved	mg/L	Chm-124
Nitrate as nitrogen	mg/L	Chm-124
Nitrate as nitrogen, dissolved	mg/L	Chm-124
Total Kjeldahl nitrogen	mg/L	Chm-128
Nitrate (calc. from NO2+NO3-N)	mg/L	Chm-124
Nitrate (calc.), dissolved	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Turbidity	NTU	Chm-316
Silver	mg/L	Chm-522
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum	mg/L	Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic	ug/L	Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron	mg/L	Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium	mg/L	Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium	mg/L	Chm-522

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Name	Units	Method
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Bismuth	mg/L	Chm-522
Bismuth, dissolved	mg/L	Chm-501 / Chm-522
Calcium	mg/L	Chm-508
Calcium, dissolved	mg/L	Chm-501 / Chm-508
Cadmium	mg/L	Chm-522
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt	mg/L	Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium	mg/L	Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Cesium	ug/L	Chm-522
Cesium, dissolved	ug/L	Chm-501 / Chm-522
Copper	mg/L	Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron	mg/L	Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium	mg/L	Chm-508
Potassium, dissolved	mg/L	Chm-501 / Chm-508
Lithium	ug/L	Chm-522
Lithium, dissolved	ug/L	Chm-501 / Chm-522
Magnesium	mg/L	Chm-508
Magnesium, dissolved	mg/L	Chm-501 / Chm-508
Manganese	mg/L	Chm-522
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum	mg/L	Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium	mg/L	Chm-508
Sodium, dissolved	mg/L	Chm-501 / Chm-508
Nickel	mg/L	Chm-522
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Phosphorus	mg/L	Chm-522
Phosphorus, dissolved	mg/L	Chm-501 / Chm-522
Lead	mg/L	Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Rubidium	ug/L	Chm-522
Rubidium, dissolved	ug/L	Chm-501 / Chm-522
Antimony	mg/L	Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium	mg/L	Chm-522

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SRC Group # 2020-6455

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CanNorth, Canada North Environmental Services Limited

Name	Units	Method
Selenium, dissolved	mg/L	Chm-501 / Chm-522
Tin	mg/L	Chm-522
Tin, dissolved	mg/L	Chm-501 / Chm-522
Sulfate	mg/L	Chm-508
Strontium	mg/L	Chm-522
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Tellurium	ug/L	Chm-522
Tellurium, dissolved	ug/L	Chm-501 / Chm-522
Titanium	mg/L	Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium	mg/L	Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium	ug/L	Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium	mg/L	Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc	mg/L	Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Zirconium	mg/L	Chm-522
Zirconium, dissolved	mg/L	Chm-501 / Chm-522
Lead-210	Bq/L	Rad-101
Polonium-210	Bq/L	Rad-103
Radium-226	Bq/L	Rad-105
Thorium-230	Bq/L	Rad-106

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Quality Control Report

Mitchell Thorarinson
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0510
Ammonia as nitrogen	mg/L	0.108	0.101
Ammonia as nitrogen	mg/L	1.08	1.06
Ammonia as nitrogen	mg/L	0.108	0.107
Ammonia as nitrogen	mg/L	1.08	1.05
Antimony	mg/L	0.0472	0.0496
Arsenic	mg/L	50.0	51.7
Barium	mg/L	0.0497	0.0503
Beryllium	mg/L	0.0520	0.0516
Bismuth	mg/L	0.0504	0.0513
Boron	mg/L	0.0500	0.0515
Cadmium	mg/L	0.0490	0.0519
Calcium	mg/L	61.4	60.3
Calcium	mg/L	61.4	60.6
Chloride	mg/L	5.65	5.72
Chromium	mg/L	0.0500	0.0510
Cobalt	mg/L	0.0500	0.0509
Copper	mg/L	0.0500	0.0512
Fluoride	mg/L	1.36	1.35
Fluoride	mg/L	1.36	1.36
Iron	mg/L	0.0500	0.0510
Lead	mg/L	0.0500	0.0511
Lead-210	Bq/L	19.7	15.5
Lead-210	Bq	0.750	0.679
Lead-210	Bq/L	19.7	19.4
Lead-210	Bq	7.47	7.74
Magnesium	mg/L	16.0	15.6
Manganese	mg/L	0.0500	0.0512
Mercury	ng/L	52.0	56.8
Molybdenum	mg/L	0.0498	0.0508
Nickel	mg/L	0.0506	0.0525

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QC Analysis	Units	Target Value	Obtained Value
Nitrite+Nitrate nitrogen	mg/L	1.29	1.30
Nitrite+Nitrate nitrogen	mg/L	7.88	7.86
Nitrite+Nitrate nitrogen	mg/L	1.29	1.30
Nitrite+Nitrate nitrogen	mg/L	7.88	7.86
Organic carbon	mg/L	28.6	28.6
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	29.4
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	28.7
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	6.97
pH	pH units	7.00	6.95
Phosphorus	mg/L	5.18	5.28
Polonium-210	Bq/L	18.8	20.9
Polonium-210	Bq	0.750	0.807
Polonium-210	Bq/L	18.8	20.4
Polonium-210	Bq	0.075	0.088
Potassium	mg/L	161	159
Radium-226	Bq/L	18.9	21.6
Radium-226	Bq	0.427	0.423
Radium-226	Bq/L	18.9	18.7
Radium-226	Bq	2.13	1.95
Rubidium	mg/L	50.0	49.6
Selenium	mg/L	0.0500	0.0502
Silver	mg/L	0.0500	0.0525
Sodium	mg/L	96.6	95.0
Specific conductivity	uS/cm	192	190
Specific conductivity	uS/cm	192	186
Strontium	mg/L	0.0490	0.0505
Sulfate	mg/L	142	142
Thallium	mg/L	0.0500	0.0508
Thorium-230	Bq/L	19.9	20.6
Thorium-230	Bq/L	19.9	20.2
Thorium-232	Bq	0.203	0.187
Thorium-232	Bq	0.203	0.184
Tin	mg/L	0.0477	0.0491
Titanium	mg/L	0.0500	0.0513
Total alkalinity	mg/L	250	252
Total alkalinity	mg/L	250	247
Total alkalinity	mg/L	250	251
Total dissolved solids	mg/L	100	102
Total dissolved solids	mg/L	100	97.1
Total Kjeldahl nitrogen	mg/L	1.67	1.50
Total Kjeldahl nitrogen	mg/L	1.67	1.58
Total suspended solids	mg/L	100	89.0

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QC Analysis	Units	Target Value	Obtained Value
Total suspended solids	mg/L	100	95.3
True color	TCU	50	51
Turbidity	NTU	26.6	25.3
Turbidity	NTU	26.6	25.7
Uranium	mg/L	50.3	51.3
Vanadium	mg/L	0.0500	0.0510
Zinc	mg/L	0.0500	0.0516

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	29422	<0.00005	<0.00005
Silver, dissolved	mg/L	29423	<0.00005	<0.00005
Silver	mg/L	29432	<0.00005	<0.00005
Silver, dissolved	mg/L	29433	<0.00005	<0.00005
Silver	mg/L	29441	<0.00005	<0.00005
Aluminum	mg/L	29422	0.0007	0.0009
Aluminum, dissolved	mg/L	29423	0.016	0.016
Aluminum	mg/L	29432	0.013	0.013
Aluminum, dissolved	mg/L	29433	0.0096	0.010
Aluminum	mg/L	29441	0.0044	0.0042
Arsenic	ug/L	29422	0.1	0.1
Arsenic, dissolved	ug/L	29423	0.1	<0.1
Arsenic	ug/L	29432	0.1	0.1
Arsenic, dissolved	ug/L	29433	0.1	<0.1
Arsenic	ug/L	29441	<0.1	<0.1
Boron	mg/L	29422	<0.01	<0.01
Boron, dissolved	mg/L	29423	<0.01	<0.01
Boron	mg/L	29432	<0.01	<0.01
Boron, dissolved	mg/L	29433	<0.01	<0.01
Boron	mg/L	29441	<0.01	<0.01
Barium	mg/L	29422	0.016	0.016
Barium, dissolved	mg/L	29423	0.0073	0.0076
Barium	mg/L	29432	0.0058	0.0058
Barium, dissolved	mg/L	29433	0.0060	0.0061
Barium	mg/L	29441	<0.0005	<0.0005
Beryllium	mg/L	29422	<0.0001	<0.0001
Beryllium, dissolved	mg/L	29423	<0.0001	<0.0001
Beryllium	mg/L	29432	<0.0001	<0.0001
Beryllium, dissolved	mg/L	29433	<0.0001	<0.0001
Beryllium	mg/L	29441	<0.0001	<0.0001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Bismuth	mg/L	29422	<0.0002	<0.0002
Bismuth, dissolved	mg/L	29423	<0.0002	<0.0002
Bismuth	mg/L	29432	<0.0002	<0.0002
Bismuth, dissolved	mg/L	29433	<0.0002	<0.0002
Bismuth	mg/L	29441	<0.0002	<0.0002
Calcium	mg/L	29419	2.2	2.2
Calcium	mg/L	29420	3.8	3.9
Calcium	mg/L	29429	3.1	3.1
Calcium	mg/L	29436	3.8	3.8
Calcium	mg/L	29507	1.0	1.0
Calcium	mg/L	29511	2.9	2.9
Calcium, dissolved	mg/L	29873	6.6	6.6
Cadmium	mg/L	29422	<0.00001	<0.00001
Cadmium, dissolved	mg/L	29423	<0.00001	<0.00001
Cadmium	mg/L	29432	<0.00001	<0.00001
Cadmium, dissolved	mg/L	29433	<0.00001	0.00001
Cadmium	mg/L	29441	<0.00001	<0.00001
Chloride	mg/L	29423	0.5	0.5
Chloride	mg/L	29432	0.5	0.5
Chloride	mg/L	29440	0.3	0.3
Chloride	mg/L	29456	1.7	1.7
Cobalt	mg/L	29422	<0.0001	<0.0001
Cobalt, dissolved	mg/L	29423	<0.0001	<0.0001
Cobalt	mg/L	29432	<0.0001	<0.0001
Cobalt, dissolved	mg/L	29433	<0.0001	<0.0001
Cobalt	mg/L	29441	<0.0001	<0.0001
Chromium	mg/L	29422	<0.0005	<0.0005
Chromium, dissolved	mg/L	29423	<0.0005	<0.0005
Chromium	mg/L	29432	<0.0005	<0.0005
Chromium, dissolved	mg/L	29433	<0.0005	<0.0005
Chromium	mg/L	29441	<0.0005	<0.0005
Copper	mg/L	29422	<0.0002	<0.0002
Copper, dissolved	mg/L	29423	<0.0002	<0.0002
Copper	mg/L	29432	<0.0002	<0.0002
Copper, dissolved	mg/L	29433	<0.0002	<0.0002
Copper	mg/L	29441	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	29370	9.7	9.8
Organic carbon, dissolved	mg/L	29424	2.4	2.4
Organic carbon, dissolved	mg/L	29433	5.8	5.8
Organic carbon, dissolved	mg/L	29500	26	25
Fluoride	mg/L	29418	<0.01	<0.01
Fluoride	mg/L	29419	0.03	0.02
Fluoride	mg/L	29426	0.02	0.02
Fluoride	mg/L	29437	0.04	0.05
Fluoride	mg/L	29438	0.04	0.03
Fluoride	mg/L	29439	0.03	0.04

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Iron	mg/L	29422	0.015	0.016
Iron, dissolved	mg/L	29423	0.18	0.18
Iron	mg/L	29432	0.52	0.52
Iron, dissolved	mg/L	29433	0.47	0.48
Iron	mg/L	29441	<0.0005	<0.0005
Mercury	ng/L	29418	<1	<1
Mercury	ng/L	29421	<1	1
Mercury	ng/L	29430	1	1
Mercury	ng/L	29439	<1	<1
Potassium	mg/L	29419	0.5	0.5
Potassium	mg/L	29420	0.6	0.6
Potassium	mg/L	29429	0.5	0.5
Potassium	mg/L	29436	0.5	0.5
Potassium	mg/L	29507	0.2	0.2
Potassium	mg/L	29511	1.0	1.0
Lithium	ug/L	29422	3.4	3.3
Lithium, dissolved	ug/L	29423	2.5	2.4
Lithium	ug/L	29432	1.7	1.7
Lithium, dissolved	ug/L	29433	1.8	1.8
Lithium	ug/L	29441	<0.1	<0.1
Magnesium	mg/L	29419	0.8	0.8
Magnesium	mg/L	29420	1.4	1.4
Magnesium	mg/L	29429	1.3	1.3
Magnesium	mg/L	29436	1.3	1.3
Magnesium	mg/L	29507	0.3	0.3
Magnesium	mg/L	29511	0.3	0.3
Manganese	mg/L	29422	0.022	0.022
Manganese, dissolved	mg/L	29423	0.0064	0.0061
Manganese	mg/L	29432	0.046	0.047
Manganese, dissolved	mg/L	29433	0.059	0.059
Manganese	mg/L	29441	<0.0005	<0.0005
Molybdenum	mg/L	29422	0.0001	0.0001
Molybdenum, dissolved	mg/L	29423	<0.0001	<0.0001
Molybdenum	mg/L	29432	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	29433	<0.0001	<0.0001
Molybdenum	mg/L	29441	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29418	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29425	0.02	0.02
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29432	0.01	0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	29440	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29418	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	29425	0.02	0.02
Nitrate as nitrogen, dissolved	mg/L	29432	0.01	0.01
Nitrate as nitrogen, dissolved	mg/L	29440	<0.01	<0.01
Sodium	mg/L	29419	1.2	1.2
Sodium	mg/L	29420	1.6	1.6

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Sodium	mg/L	29429	1.3	1.3
Sodium	mg/L	29436	1.4	1.4
Sodium	mg/L	29507	0.8	0.8
Sodium	mg/L	29511	5.5	5.5
Ammonia as nitrogen	mg/L	29419	<0.01	<0.01
Ammonia as nitrogen	mg/L	29426	<0.01	<0.01
Ammonia as nitrogen	mg/L	29426	0.03	0.02
Ammonia as nitrogen	mg/L	29435	<0.01	<0.01
Ammonia as nitrogen	mg/L	29440	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	29440	0.02	0.02
Ammonia as nitrogen	mg/L	29441	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	29421	0.03	0.02
Ammonia nitrogen, dissolved	mg/L	29426	0.03	0.02
Ammonia nitrogen, dissolved	mg/L	29435	0.03	0.02
Ammonia as nitrogen	mg/L	29440	0.02	0.02
Nickel	mg/L	29422	<0.0001	<0.0001
Nickel, dissolved	mg/L	29423	<0.0001	<0.0001
Nickel	mg/L	29432	0.0001	0.0001
Nickel, dissolved	mg/L	29433	0.0001	0.0001
Nickel	mg/L	29441	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	29418	<0.01	<0.01
Nitrate as nitrogen	mg/L	29418	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29419	<0.01	<0.01
Nitrate as nitrogen	mg/L	29419	<0.01	<0.01
Nitrate as nitrogen	mg/L	29425	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29425	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29432	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	29440	<0.01	<0.01
Nitrate as nitrogen	mg/L	29440	<0.01	<0.01
Phosphorus	mg/L	29422	0.01	0.01
Phosphorus, dissolved	mg/L	29423	<0.01	<0.01
Phosphorus	mg/L	29432	<0.01	<0.01
Phosphorus, dissolved	mg/L	29433	<0.01	0.01
Phosphorus	mg/L	29441	<0.01	<0.01
Lead	mg/L	29422	<0.0001	<0.0001
Lead, dissolved	mg/L	29423	<0.0001	<0.0001
Lead	mg/L	29432	<0.0001	<0.0001
Lead, dissolved	mg/L	29433	<0.0001	<0.0001
Lead	mg/L	29441	<0.0001	<0.0001
Lead-210	Bq/L	29420	<0.02	<0.02
Lead-210	Bq/L	29431	<0.02	<0.02
Lead-210	Bq/L	29441	<0.02	<0.02
pH	pH units	29418	5.58	5.38
pH	pH units	29419	7.08	6.96
pH	pH units	29426	6.98	6.90
pH	pH units	29437	7.09	7.26

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
pH	pH units	29438	7.12	7.04
pH	pH units	29439	7.00	7.06
Polonium-210	Bq/L	29420	<0.005	<0.005
Polonium-210	Bq/L	29431	0.008	0.008
Polonium-210	Bq/L	29441	<0.005	<0.005
Radium-226	Bq/L	29418	<0.005	<0.005
Radium-226	Bq/L	29429	0.02	<0.005
Radium-226	Bq/L	29440	0.009	0.005
Rubidium	ug/L	29422	0.51	0.51
Rubidium, dissolved	ug/L	29423	0.63	0.69
Rubidium	ug/L	29432	0.59	0.61
Rubidium, dissolved	ug/L	29433	0.61	0.62
Rubidium	ug/L	29441	<0.05	<0.05
Antimony	mg/L	29422	<0.0002	<0.0002
Antimony, dissolved	mg/L	29423	<0.0002	<0.0002
Antimony	mg/L	29432	<0.0002	<0.0002
Antimony, dissolved	mg/L	29433	<0.0002	<0.0002
Antimony	mg/L	29441	<0.0002	<0.0002
Selenium	mg/L	29422	<0.0001	<0.0001
Selenium, dissolved	mg/L	29423	<0.0001	<0.0001
Selenium	mg/L	29432	<0.0001	<0.0001
Selenium, dissolved	mg/L	29433	<0.0001	<0.0001
Selenium	mg/L	29441	<0.0001	<0.0001
Tin	mg/L	29422	<0.0001	<0.0001
Tin, dissolved	mg/L	29423	<0.0001	<0.0001
Tin	mg/L	29432	<0.0001	<0.0001
Tin, dissolved	mg/L	29433	<0.0001	<0.0001
Tin	mg/L	29441	<0.0001	<0.0001
Sulfate	mg/L	29419	0.8	0.8
Sulfate	mg/L	29420	1.4	1.4
Sulfate	mg/L	29429	0.9	0.9
Sulfate	mg/L	29436	1.5	1.5
Sulfate	mg/L	29507	0.4	0.4
Sulfate	mg/L	29511	9.8	9.8
Specific conductivity	uS/cm	29418	<1	<1
Specific conductivity	uS/cm	29419	19	18
Specific conductivity	uS/cm	29426	21	21
Specific conductivity	uS/cm	29437	33	32
Specific conductivity	uS/cm	29438	24	24
Specific conductivity	uS/cm	29439	26	25
Strontium	mg/L	29422	0.038	0.038
Strontium, dissolved	mg/L	29423	0.026	0.026
Strontium	mg/L	29432	0.020	0.020
Strontium, dissolved	mg/L	29433	0.020	0.020
Strontium	mg/L	29441	<0.0005	<0.0005
Total dissolved solids	mg/L	30045	309.0	316.0

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Tellurium	ug/L	29422	<1	<1
Tellurium, dissolved	ug/L	29423	<1	<1
Tellurium	ug/L	29432	<1	<1
Tellurium, dissolved	ug/L	29433	<1	<1
Tellurium	ug/L	29441	<1	<1
Thorium-230	Bq/L	29244	<0.1	<0.1
Thorium-230	Bq/L	29419	<0.01	<0.01
Thorium-230	Bq/L	29430	<0.01	<0.01
Titanium	mg/L	29422	<0.0002	<0.0002
Titanium, dissolved	mg/L	29423	0.0002	<0.0002
Titanium	mg/L	29432	0.0002	<0.0002
Titanium, dissolved	mg/L	29433	<0.0002	<0.0002
Titanium	mg/L	29441	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	29302	1.8	1.7
Total Kjeldahl nitrogen	mg/L	29425	0.13	0.11
Total Kjeldahl nitrogen	mg/L	29436	0.18	0.18
Total Kjeldahl nitrogen	mg/L	29862	0.22	0.23
Thallium	mg/L	29422	<0.0002	<0.0002
Thallium, dissolved	mg/L	29423	<0.0002	<0.0002
Thallium	mg/L	29432	<0.0002	<0.0002
Thallium, dissolved	mg/L	29433	<0.0002	<0.0002
Thallium	mg/L	29441	<0.0002	<0.0002
Organic carbon	mg/L	29206	2.4	2.4
Organic carbon	mg/L	29419	7.7	7.8
Organic carbon	mg/L	29429	7.8	7.9
Organic carbon	mg/L	29438	3.0	3.0
Total alkalinity	mg/L	29418	1	2
Total alkalinity	mg/L	29419	12	15
Total alkalinity	mg/L	29426	12	11
Total alkalinity	mg/L	29437	18	22
Total alkalinity	mg/L	29438	14	15
Total alkalinity	mg/L	29439	15	15
True color	CU	29418	<1	<1
True color	CU	29428	13	14
True color	CU	29438	7	7
Total suspended solids	mg/L	29432	<1	<1
Turbidity	NTU	29418	1.02	1.05
Turbidity	NTU	29428	1.15	1.13
Turbidity	NTU	29440	1.51	1.58
Turbidity	NTU	30952	1.32	1.36
Uranium	ug/L	29422	<0.1	<0.1
Uranium, dissolved	ug/L	29423	<0.1	<0.1
Uranium	ug/L	29432	<0.1	<0.1
Uranium, dissolved	ug/L	29433	<0.1	<0.1
Uranium	ug/L	29441	<0.1	<0.1
Vanadium	mg/L	29422	<0.0001	<0.0001

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Jun 29, 2020

This report was generated for samples included in SRC Group # 2020-6455

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Vanadium, dissolved	mg/L	29423	<0.0001	<0.0001
Vanadium	mg/L	29432	<0.0001	<0.0001
Vanadium, dissolved	mg/L	29433	<0.0001	<0.0001
Vanadium	mg/L	29441	<0.0001	<0.0001
Zinc	mg/L	29422	0.0013	0.0015
Zinc, dissolved	mg/L	29423	<0.0005	<0.0005
Zinc	mg/L	29432	0.0005	<0.0005
Zinc, dissolved	mg/L	29433	0.0009	0.0010
Zinc	mg/L	29441	<0.0005	<0.0005
Zirconium	mg/L	29422	<0.001	<0.001
Zirconium, dissolved	mg/L	29423	<0.001	<0.001
Zirconium	mg/L	29432	<0.001	<0.001
Zirconium, dissolved	mg/L	29433	<0.001	<0.001
Zirconium	mg/L	29441	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	109
Ammonia as nitrogen	100
Ammonia as nitrogen	90
Antimony	82
Arsenic	103
Barium	102
Beryllium	105
Boron	106
Cadmium	107
Calcium	98
Calcium	98
Chloride	100
Chromium	102
Cobalt	105
Copper	105
Fluoride	105
Fluoride	100
Iron	83
Lead	83
Magnesium	98
Manganese	110

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Spike Analysis	Percent Recovery
Mercury	98
Molybdenum	89
Nickel	104
Nitrite+Nitrate nitrogen	110
Nitrite+Nitrate nitrogen	82
Organic carbon	105
Organic Carbon	112
Organic carbon	110
Organic Carbon	110
Organic Carbon, dissolved	100
Organic Carbon, dissolved	95
Organic Carbon, dissolved	105
Organic Carbon, dissolved	100
Phosphorus	105
Potassium	99
Selenium	101
Silver	104
Sodium	101
Strontium	103
Sulfate	95
Thallium	103
Tin	84
Titanium	94
Total Kjeldahl nitrogen	88
Total Kjeldahl nitrogen	96
Uranium	92
Vanadium	105
Zinc	111

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Mitchell Thorarinson

Date Samples Received: Jul-31-2020

Client P.O.: 3008_20SUMM_WS 2020 Water Sampling Program Canada North Environmental Services

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All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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Attn: Mitchell Thorarinson

Date Samples Received: Jul-31-2020

Client P.O.: 3008_20SUMM_WS 2020 Water Sampling Program Canada North Environmental Services

36867 JEDCK 07/27/2020 12:00 3008_FB_20200721_WS *WATER*
36868 JEDCK 07/27/2020 12:00 3008_QAQC_20200721_WS *WATER*
36869 BEETCK 07/26/2020 14:13 BEETCK_20200721_WS *WATER*

Analyte	Units	36867	36868	36869
Lab Section 1				
Bicarbonate	mg/L	2±1	10±2	27±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.2±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.53±0.2	7.04±0.3	7.41±0.3
Specific conductivity	uS/cm	<1	17±4	33±5
Sum of ions	mg/L	2±1	16±4	37±6
Total alkalinity	mg/L	2±1	8±1	22±3
Total hardness	mg/L	<1	9±3	16±4
Ammonia as nitrogen	mg/L	<0.01	0.02±0.02	0.01±0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.01±0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.05±0.05	0.25±0.1	0.28±0.1
Mercury	ng/L	<1	2±1	1±1
Organic carbon	mg/L	<0.2	7.3±1	4.1±0.6
Organic carbon, dissolved	mg/L	<0.2	7.1±1	3.8±1
Fluoride	mg/L	<0.01	0.02±0.01	0.04±0.02
Total dissolved solids	mg/L	26±10	21±10	21±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	57±8	24±4
Turbidity	NTU	0.1±0.1	1.6±0.4	1.3±0.3
Lab Section 2				
Calcium	mg/L	<0.1	2.4±0.4	3.9±0.6
Calcium, dissolved	mg/L	<0.1	2.5±0.4	3.9±0.6

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36867 JEDCK 07/27/2020 12:00 3008_FB_20200721_WS *WATER*
36868 JEDCK 07/27/2020 12:00 3008_QAQC_20200721_WS *WATER*
36869 BEETCK 07/26/2020 14:13 BEETCK_20200721_WS *WATER*

Analyte	Units	36867	36868	36869
Lab Section 2				
Magnesium	mg/L	<0.1	0.7±0.1	1.5±0.4
Magnesium, dissolved	mg/L	<0.1	0.7±0.1	1.5±0.4
Potassium	mg/L	<0.1	0.4±0.2	0.7±0.2
Potassium, dissolved	mg/L	<0.1	0.4±0.2	0.6±0.2
Sodium	mg/L	0.1±0.1	1.0±0.2	1.7±0.4
Sodium, dissolved	mg/L	<0.1	1.0±0.2	1.6±0.4
Sulfate	mg/L	<0.2	1.0±0.2	1.4±0.3
Aluminum	mg/L	<0.0005	0.041±0.006	0.011±0.002
Aluminum, dissolved	mg/L	<0.0005	0.037±0.006	0.0076±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	0.1±0.1
Barium	mg/L	<0.0005	0.0096±0.002	0.0075±0.002
Barium, dissolved	mg/L	<0.0005	0.0092±0.002	0.0072±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	<0.0005	0.40±0.04	0.17±0.02
Iron, dissolved	mg/L	0.0006±0.0006	0.26±0.03	0.11±0.01
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	1.7±0.4	3.1±0.5
Lithium, dissolved	ug/L	<0.1	1.7±0.4	3.1±0.5

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36867	**JEDCK 07/27/2020 12:00 3008_FB_20200721_WS *WATER***
36868	**JEDCK 07/27/2020 12:00 3008_QAQC_20200721_WS *WATER***
36869	**BEETCK 07/26/2020 14:13 BEETCK_20200721_WS *WATER***

Analyte	Units	36867	36868	36869
Lab Section 2				
Manganese	mg/L	<0.0005	0.0086±0.002	0.011±0.002
Manganese, dissolved	mg/L	<0.0005	0.0063±0.002	0.0051±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	0.0005±0.0002	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Rubidium	ug/L	<0.05	0.55±0.1	0.65±0.2
Rubidium, dissolved	ug/L	<0.05	0.55±0.1	0.56±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.025±0.004	0.030±0.004
Strontium, dissolved	mg/L	<0.0005	0.024±0.004	0.029±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0004±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	0.0010±0.0008
Zinc, dissolved	mg/L	<0.0005	0.0013±0.0008	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005

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36867	**JEDCK 07/27/2020 12:00 3008_FB_20200721_WS *WATER***
36868	**JEDCK 07/27/2020 12:00 3008_QAQC_20200721_WS *WATER***
36869	**BEETCK 07/26/2020 14:13 BEETCK_20200721_WS *WATER***

Analyte	Units	36867	36868	36869
Lab Section 4				
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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Aug 25, 2020

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36870	**BEETLK1 07/26/2020 15:00 BEETLK1_20200721_WS_ABOVE *WATER***
36871	**BEETLK1 07/26/2020 15:00 BEETLK1_20200721_WS_BELOW *WATER***
36872	**BROALK2 07/22/2020 12:34 BROALK_20200721_WS_ABOVE *WATER***

Analyte	Units	36870	36871	36872
Lab Section 1				
Bicarbonate	mg/L	24±4	26±4	20±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.53±0.3	7.31±0.3	7.45±0.3
Specific conductivity	uS/cm	36±5	38±6	32±5
Sum of ions	mg/L	34±5	36±5	29±4
Total alkalinity	mg/L	20±3	21±3	16±4
Total hardness	mg/L	16±4	17±4	14±4
Ammonia as nitrogen	mg/L	<0.01	0.04±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.03±0.02	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.09	0.09
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.02±0.01	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.02±0.01	0.02±0.01
Total Kjeldahl nitrogen	mg/L	0.24±0.1	0.21±0.1	0.15±0.09
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.2±0.6	2.0±0.5	1.6±0.5
Organic carbon, dissolved	mg/L	2.2±0.6	2.0±0.5	1.7±0.5
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	22±10	26±10	20±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	2±1	2±1	<1
Turbidity	NTU	1.4±0.4	0.8±0.1	0.4±0.1
Lab Section 2				
Calcium	mg/L	4.1±0.6	4.2±0.6	3.7±0.6
Calcium, dissolved	mg/L	4.1±0.6	4.2±0.6	3.7±0.6
Magnesium	mg/L	1.5±0.4	1.5±0.4	1.2±0.3
Magnesium, dissolved	mg/L	1.5±0.4	1.5±0.4	1.2±0.3
Potassium	mg/L	0.7±0.2	0.7±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.7±0.4	1.7±0.4	1.6±0.4
Sodium, dissolved	mg/L	1.7±0.4	1.7±0.4	1.5±0.4

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36871	**BEETLK1 07/26/2020 15:00 BEETLK1_20200721_WS_BELOW *WATER***
36872	**BROALK2 07/22/2020 12:34 BROALK_20200721_WS_ABOVE *WATER***

Analyte	Units	36870	36871	36872
Lab Section 2				
Sulfate	mg/L	1.4±0.3	1.5±0.3	1.9±0.4
Aluminum	mg/L	0.0018±0.0009	0.0012±0.0008	0.0025±0.001
Aluminum, dissolved	mg/L	<0.0005	0.0008±0.0006	0.0028±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium	mg/L	0.0079±0.002	0.0097±0.002	0.014±0.002
Barium, dissolved	mg/L	0.0077±0.002	0.0093±0.002	0.014±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.020±0.003	0.065±0.006	0.012±0.002
Iron, dissolved	mg/L	0.0038±0.001	0.0091±0.002	0.0033±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.2±0.5	3.2±0.5	3.0±0.4
Lithium, dissolved	ug/L	3.1±0.5	3.2±0.5	3.1±0.5
Manganese	mg/L	0.0063±0.002	0.032±0.005	0.0054±0.001
Manganese, dissolved	mg/L	<0.0005	0.0009±0.0007	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36870	**BEETLK1 07/26/2020 15:00 BEETLK1_20200721_WS_ABOVE *WATER***
36871	**BEETLK1 07/26/2020 15:00 BEETLK1_20200721_WS_BELOW *WATER***
36872	**BROALK2 07/22/2020 12:34 BROALK_20200721_WS_ABOVE *WATER***

Analyte	Units	36870	36871	36872
Lab Section 2				
Rubidium	ug/L	0.57±0.1	0.61±0.2	0.51±0.1
Rubidium, dissolved	ug/L	0.58±0.1	0.60±0.2	0.52±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.032±0.005	0.036±0.005
Strontium, dissolved	mg/L	0.030±0.004	0.031±0.005	0.036±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	0.0005±0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36872
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36873	**BROALK2 07/22/2020 12:34 BROALK_20200721_WS_BELOW *WATER***
36874	**CLEARV1 07/26/2020 12:40 CLEARV1_20200721_WS *WATER***
36875	**FORRLK1 07/25/2020 15:40 FORRLK1_20200721_WS *WATER***

Analyte	Units	36873	36874	36875
Lab Section 1				
Bicarbonate	mg/L	20±3	16±4	21±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.5±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.34±0.3	7.20±0.3	7.31±0.3
Specific conductivity	uS/cm	32±5	25±4	32±5
Sum of ions	mg/L	30±4	24±4	30±4
Total alkalinity	mg/L	16±4	13±3	17±4
Total hardness	mg/L	15±4	12±3	15±4
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.04±0.02	0.03±0.02	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	0.09	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.13	0.04	0.04
Nitrate as nitrogen	mg/L	0.02±0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	0.01±0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	0.02±0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.03±0.02	0.01±0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.19±0.1	0.25±0.1	0.23±0.1
Mercury	ng/L	<1	1±1	<1
Organic carbon	mg/L	1.6±0.5	5.2±0.8	2.7±0.7
Organic carbon, dissolved	mg/L	1.7±0.5	5.4±0.8	2.7±0.7
Fluoride	mg/L	0.03±0.01	0.03±0.01	0.04±0.02
Total dissolved solids	mg/L	23±10	26±10	31±10
Total suspended solids	mg/L	<1	3±1	<1
True color	CU	<1	37±6	9±3
Turbidity	NTU	0.4±0.1	2.8±0.4	0.9±0.1
Lab Section 2				
Calcium	mg/L	3.8±0.6	3.2±0.5	3.8±0.6
Calcium, dissolved	mg/L	3.9±0.6	3.3±0.5	3.8±0.6
Magnesium	mg/L	1.3±0.3	1.1±0.3	1.4±0.4
Magnesium, dissolved	mg/L	1.3±0.3	1.1±0.3	1.4±0.4
Potassium	mg/L	0.5±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.6±0.4	1.3±0.3	1.4±0.4
Sodium, dissolved	mg/L	1.6±0.4	1.3±0.3	1.4±0.4

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36873 BROALK2 07/22/2020 12:34 BROALK_20200721_WS_BELOW *WATER*
36874 CLEARV1 07/26/2020 12:40 CLEARV1_20200721_WS *WATER*
36875 FORRLK1 07/25/2020 15:40 FORRLK1_20200721_WS *WATER*

Analyte	Units	36873	36874	36875
Lab Section 2				
Sulfate	mg/L	1.9±0.4	1.1±0.3	1.5±0.3
Aluminum	mg/L	0.0009±0.0007	0.027±0.004	0.0084±0.002
Aluminum, dissolved	mg/L	0.0025±0.001	0.014±0.002	0.0054±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.1±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.016±0.002	0.0078±0.002	0.0087±0.002
Barium, dissolved	mg/L	0.015±0.002	0.0068±0.002	0.0082±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.011±0.002	0.42±0.04	0.056±0.006
Iron, dissolved	mg/L	0.0010±0.0007	0.19±0.02	0.021±0.003
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.1±0.5	2.2±0.3	2.7±0.4
Lithium, dissolved	ug/L	3.0±0.4	2.3±0.3	2.7±0.4
Manganese	mg/L	0.011±0.002	0.032±0.005	0.012±0.002
Manganese, dissolved	mg/L	<0.0005	0.0042±0.001	0.0057±0.001
Molybdenum	mg/L	0.0001±0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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36873	**BROALK2 07/22/2020 12:34 BROALK_20200721_WS_BELOW *WATER***
36874	**CLEARV1 07/26/2020 12:40 CLEARV1_20200721_WS *WATER***
36875	**FORRLK1 07/25/2020 15:40 FORRLK1_20200721_WS *WATER***

Analyte	Units	36873	36874	36875
Lab Section 2				
Rubidium	ug/L	0.51±0.1	0.70±0.2	0.60±0.2
Rubidium, dissolved	ug/L	0.50±0.1	0.74±0.2	0.60±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.037±0.006	0.028±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.037±0.006	0.027±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0004±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0005±0.0005	0.0010±0.0008
Zinc, dissolved	mg/L	0.0008±0.0006	<0.0005	0.0015±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36873
This sample was reanalyzed for Aluminum and Aluminum, dissolved.
Reanalysis confirms original results are within the expected measurement uncertainty.

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This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 36874
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 36875
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2020-8782

Aug 25, 2020

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36876	**FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_ABOVE *WATER***
36877	**FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_BELOW *WATER***
36878	**HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_ABOVE *WATER***

Analyte	Units	36876	36877	36878
Lab Section 1				
Bicarbonate	mg/L	28±4	28±4	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.8±0.1	0.8±0.1	1.9±0.5
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.55±0.3	7.61±0.3	6.62±0.3
Specific conductivity	uS/cm	40±6	42±6	20±3
Sum of ions	mg/L	39±6	39±6	22±3
Total alkalinity	mg/L	23±3	23±3	12±3
Total hardness	mg/L	18±4	18±4	9±3
Ammonia as nitrogen	mg/L	<0.01	0.02±0.02	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	0.09	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.02±0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.15±0.09	0.17±0.1	0.18±0.1
Mercury	ng/L	1±1	<1	<1
Organic carbon	mg/L	1.3±0.5	1.3±0.5	2.2±0.6
Organic carbon, dissolved	mg/L	1.3±0.5	1.3±0.5	2.8±0.7
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.02±0.01
Total dissolved solids	mg/L	33±10	30±10	14±8
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	<1	3±2
Turbidity	NTU	1.3±0.3	0.4±0.1	0.4±0.1
Lab Section 2				
Calcium	mg/L	4.4±0.7	4.5±0.7	2.8±0.4
Calcium, dissolved	mg/L	4.4±0.7	4.5±0.7	2.8±0.4
Magnesium	mg/L	1.7±0.4	1.7±0.4	0.6±0.1
Magnesium, dissolved	mg/L	1.7±0.4	1.7±0.4	0.6±0.1
Potassium	mg/L	0.8±0.3	0.8±0.3	0.3±0.1
Potassium, dissolved	mg/L	0.8±0.3	0.8±0.3	0.3±0.1
Sodium	mg/L	1.9±0.5	2.0±0.3	0.9±0.1
Sodium, dissolved	mg/L	1.9±0.5	2.0±0.3	0.9±0.1

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36876 FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_ABOVE *WATER*
36877 FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_BELOW *WATER*
36878 HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_ABOVE *WATER*

Analyte	Units	36876	36877	36878
Lab Section 2				
Sulfate	mg/L	1.6±0.4	1.6±0.4	1.0±0.2
Aluminum	mg/L	0.0017±0.0009	0.0013±0.0008	0.0079±0.002
Aluminum, dissolved	mg/L	0.0005±0.0005	0.013±0.002	0.0023±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	<0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	<0.1
Barium	mg/L	0.0074±0.002	0.0080±0.002	0.0065±0.002
Barium, dissolved	mg/L	0.0074±0.002	0.0080±0.002	0.0063±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	0.01±0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.0079±0.002	0.0007±0.0006	0.0084±0.002
Iron, dissolved	mg/L	0.0036±0.001	0.014±0.002	0.0025±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	3.6±0.5	3.6±0.5	1.8±0.4
Lithium, dissolved	ug/L	3.6±0.5	3.6±0.5	1.8±0.4
Manganese	mg/L	0.0023±0.0009	<0.0005	0.0031±0.001
Manganese, dissolved	mg/L	0.0006±0.0006	0.0050±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36876 FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_ABOVE *WATER*
36877 FORRLK2 07/25/2020 14:30 FORRLK2_20200721_WS_BELOW *WATER*
36878 HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_ABOVE *WATER*

Analyte	Units	36876	36877	36878
Lab Section 2				
Rubidium	ug/L	0.64±0.2	0.62±0.2	0.67±0.2
Rubidium, dissolved	ug/L	0.59±0.1	0.61±0.2	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.032±0.005	0.032±0.005	0.060±0.006
Strontium, dissolved	mg/L	0.031±0.005	0.032±0.005	0.060±0.006
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36876
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Turbidity. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 36877
This sample was reanalyzed for Aluminum, Aluminum, dissolved; Iron, Iron, dissolved; and Manganese, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36879	**HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_BELOW *WATER***
36880	**JEDCK 07/27/2020 12:00 JEDCK_20200721_WS *WATER***
36881	**LAKED 07/25/2020 10:00 LAKED_20200721_WS *WATER***

Analyte	Units	36879	36880	36881
Lab Section 1				
Bicarbonate	mg/L	17±4	16±4	38±6
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2.0±0.3	0.2±0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.49±0.2	6.46±0.2	6.97±0.3
Specific conductivity	uS/cm	21±3	16±4	35±5
Sum of ions	mg/L	25±4	22±3	47±7
Total alkalinity	mg/L	14±4	13±3	31±5
Total hardness	mg/L	10±2	9±3	18±4
Ammonia as nitrogen	mg/L	0.01±0.01	0.01±0.01	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	0.03±0.02	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	<0.04	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.18±0.1	0.30±0.1	0.70±0.2
Mercury	ng/L	<1	2±1	<1
Organic carbon	mg/L	2.0±0.5	7.2±1	6.0±0.9
Organic carbon, dissolved	mg/L	2.2±0.6	6.8±1	6.2±0.9
Fluoride	mg/L	0.02±0.01	0.02±0.01	0.03±0.01
Total dissolved solids	mg/L	18±9	25±10	32±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	2±1	58±9	9±3
Turbidity	NTU	0.6±0.1	1.1±0.3	1.8±0.4
Lab Section 2				
Calcium	mg/L	2.9±0.4	2.4±0.4	5.1±0.8
Calcium, dissolved	mg/L	2.9±0.4	2.5±0.4	5.1±0.8
Magnesium	mg/L	0.7±0.1	0.7±0.1	1.3±0.3
Magnesium, dissolved	mg/L	0.7±0.1	0.7±0.1	1.3±0.3
Potassium	mg/L	0.3±0.1	0.4±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.3±0.1	0.3±0.1
Sodium	mg/L	1.0±0.2	1.0±0.2	1.3±0.3
Sodium, dissolved	mg/L	1.0±0.2	1.0±0.2	1.3±0.3

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36879	**HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_BELOW *WATER***
36880	**JEDCK 07/27/2020 12:00 JEDCK_20200721_WS *WATER***
36881	**LAKED 07/25/2020 10:00 LAKED_20200721_WS *WATER***

Analyte	Units	36879	36880	36881
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.0±0.2	1.0±0.2
Aluminum	mg/L	0.0023±0.001	0.040±0.006	0.0032±0.001
Aluminum, dissolved	mg/L	0.0006±0.0006	0.034±0.005	0.0017±0.0009
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	<0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	<0.1
Barium	mg/L	0.0071±0.002	0.0095±0.002	0.0050±0.001
Barium, dissolved	mg/L	0.0069±0.002	0.0093±0.002	0.0046±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.015±0.002	0.40±0.04	0.056±0.006
Iron, dissolved	mg/L	0.0020±0.001	0.28±0.03	0.022±0.003
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.9±0.5	1.7±0.4	1.6±0.4
Lithium, dissolved	ug/L	1.8±0.4	1.7±0.4	1.5±0.4
Manganese	mg/L	0.0062±0.002	0.0090±0.002	0.015±0.002
Manganese, dissolved	mg/L	<0.0005	0.0062±0.002	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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36879	**HODGLK1 07/24/2020 13:25 HODGLK1_20200721_WS_BELOW *WATER***
36880	**JEDCK 07/27/2020 12:00 JEDCK_20200721_WS *WATER***
36881	**LAKED 07/25/2020 10:00 LAKED_20200721_WS *WATER***

Analyte	Units	36879	36880	36881
Lab Section 2				
Rubidium	ug/L	0.62±0.2	0.59±0.1	0.36±0.1
Rubidium, dissolved	ug/L	0.64±0.2	0.59±0.1	0.39±0.05
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.062±0.006	0.025±0.004	0.016±0.002
Strontium, dissolved	mg/L	0.062±0.006	0.025±0.004	0.016±0.002
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	0.0003±0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	0.0003±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0010±0.0008	0.0012±0.0009	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36879
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2020-8782

Aug 25, 2020

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Note for Sample # 36880
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36882	**LAKEG1 07/27/2020 10:45 LAKEG1_20200721_WS *WATER***
36883	**LAKEH1 07/27/2020 11:20 LAKEH1_20200721_WS *WATER***
36884	**LAKEJ 07/24/2020 10:20 LAKEJ_20200721_WS *WATER***

Analyte	Units	36882	36883	36884
Lab Section 1				
Bicarbonate	mg/L	34±5	33±5	11±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.2±0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.72±0.3	6.93±0.3	5.50±0.2
Specific conductivity	uS/cm	28±4	29±4	<1
Sum of ions	mg/L	42±6	40±6	13±3
Total alkalinity	mg/L	28±4	27±4	9±1
Total hardness	mg/L	15±4	14±4	1±1
Ammonia as nitrogen	mg/L	0.03±0.02	0.01±0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.05±0.02	0.03±0.02	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	0.04	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.01±0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	0.01±0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	1.1±0.2	0.64±0.2	0.62±0.2
Mercury	ng/L	2±1	<1	<1
Organic carbon	mg/L	8.6±1	7.2±1	5.7±0.8
Organic carbon, dissolved	mg/L	8.4±1	7.0±1	5.8±0.9
Fluoride	mg/L	0.03±0.01	0.03±0.01	0.01±0.01
Total dissolved solids	mg/L	33±10	28±10	21±10
Total suspended solids	mg/L	7±3	1±1	<1
True color	CU	24±4	5±2	7±2
Turbidity	NTU	5.4±0.8	3.1±0.5	1.7±0.4
Lab Section 2				
Calcium	mg/L	3.4±0.5	3.2±0.5	0.4±0.2
Calcium, dissolved	mg/L	3.4±0.5	3.3±0.5	0.4±0.1
Magnesium	mg/L	1.5±0.4	1.4±0.4	0.1±0.1
Magnesium, dissolved	mg/L	1.5±0.4	1.4±0.4	0.1±0.1
Potassium	mg/L	0.5±0.2	0.8±0.3	0.3±0.1
Potassium, dissolved	mg/L	0.5±0.2	0.8±0.3	0.3±0.1
Sodium	mg/L	1.4±0.4	1.6±0.4	0.6±0.1
Sodium, dissolved	mg/L	1.4±0.4	1.6±0.4	0.5±0.1

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36882 LAKEG1 07/27/2020 10:45 LAKEG1_20200721_WS *WATER*
36883 LAKEH1 07/27/2020 11:20 LAKEH1_20200721_WS *WATER*
36884 LAKEJ 07/24/2020 10:20 LAKEJ_20200721_WS *WATER*

Analyte	Units	36882	36883	36884
Lab Section 2				
Sulfate	mg/L	1.0±0.2	0.2±0.2	0.7±0.2
Aluminum	mg/L	0.010±0.002	0.043±0.006	0.016±0.002
Aluminum, dissolved	mg/L	0.0044±0.001	0.0063±0.002	0.0096±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0071±0.002	0.0011±0.0007	0.0027±0.001
Barium, dissolved	mg/L	0.0057±0.001	0.0009±0.0007	0.0018±0.0009
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.39±0.04	0.093±0.009	0.035±0.005
Iron, dissolved	mg/L	0.18±0.02	0.0093±0.002	0.012±0.002
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.1±0.3	3.0±0.4	<0.1
Lithium, dissolved	ug/L	2.0±0.3	3.0±0.4	<0.1
Manganese	mg/L	0.029±0.004	0.024±0.004	0.0035±0.001
Manganese, dissolved	mg/L	0.0075±0.002	<0.0005	0.0010±0.0007
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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36882 LAKEG1 07/27/2020 10:45 LAKEG1_20200721_WS *WATER*
36883 LAKEH1 07/27/2020 11:20 LAKEH1_20200721_WS *WATER*
36884 LAKEJ 07/24/2020 10:20 LAKEJ_20200721_WS *WATER*

Analyte	Units	36882	36883	36884
Lab Section 2				
Rubidium	ug/L	0.54±0.1	1.3±0.2	0.66±0.2
Rubidium, dissolved	ug/L	0.44±0.05	1.2±0.2	0.70±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.022±0.003	0.014±0.002	0.0037±0.001
Strontium, dissolved	mg/L	0.021±0.003	0.013±0.002	0.0034±0.001
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0013±0.0009	0.0006±0.0006	0.0009±0.0007
Zinc, dissolved	mg/L	0.0006±0.0006	0.0007±0.0006	0.0006±0.0006
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.01±0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	0.03±0.02	<0.03	0.03±0.02
Polonium-210	Bq/L	0.009±0.006	<0.008	0.01±0.007
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36882
This sample was reanalyzed for Total Kjeldahl nitrogen. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2020-8782

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Note for Sample # 36883
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36885	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_ABOVE *WATER***
36886	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_BELOW *WATER***
36887	**LLOYLKO 07/23/2020 11:35 LLOYLKO_20200721_WS *WATER***

Analyte	Units	36885	36886	36887
Lab Section 1				
Bicarbonate	mg/L	30±4	12±3	106±10
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.5±0.1	0.5±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.36±0.2	7.23±0.3	5.46±0.2
Specific conductivity	uS/cm	21±3	22±3	21±3
Sum of ions	mg/L	36±5	18±4	112±10
Total alkalinity	mg/L	25±4	10±2	87±10
Total hardness	mg/L	10±2	10±2	10±2
Ammonia as nitrogen	mg/L	0.02±0.02	0.01±0.01	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.04±0.02	<0.01	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.04	<0.04	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	<0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.01±0.01	<0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.40±0.2	0.37±0.2	0.41±0.2
Mercury	ng/L	2±1	2±1	2±1
Organic carbon	mg/L	6.4±1	6.1±0.9	6.7±1
Organic carbon, dissolved	mg/L	6.4±1	6.8±1	6.6±1
Fluoride	mg/L	0.03±0.01	0.03±0.01	0.03±0.01
Total dissolved solids	mg/L	31±10	32±10	29±10
Total suspended solids	mg/L	<1	<1	1±1
True color	CU	39±6	39±6	45±7
Turbidity	NTU	1.6±0.4	1.6±0.4	2.2±0.3
Lab Section 2				
Calcium	mg/L	2.6±0.4	2.6±0.4	2.7±0.4
Calcium, dissolved	mg/L	2.6±0.4	2.6±0.4	2.7±0.4
Magnesium	mg/L	0.9±0.1	0.9±0.1	0.9±0.1
Magnesium, dissolved	mg/L	0.9±0.1	0.9±0.1	1.0±0.2
Potassium	mg/L	0.5±0.2	0.5±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.5±0.2
Sodium	mg/L	1.2±0.3	1.2±0.3	1.2±0.3
Sodium, dissolved	mg/L	1.2±0.3	1.2±0.3	1.2±0.3

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36885	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_ABOVE *WATER***
36886	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_BELOW *WATER***
36887	**LLOYLKO 07/23/2020 11:35 LLOYLKO_20200721_WS *WATER***

Analyte	Units	36885	36886	36887
Lab Section 2				
Sulfate	mg/L	0.7±0.2	0.7±0.2	0.7±0.2
Aluminum	mg/L	0.0086±0.002	0.0090±0.002	0.013±0.002
Aluminum, dissolved	mg/L	0.0080±0.002	0.0081±0.002	0.0094±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.2±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.2±0.1
Barium	mg/L	0.0063±0.002	0.0061±0.002	0.0066±0.002
Barium, dissolved	mg/L	0.0056±0.001	0.0056±0.001	0.0057±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.43±0.04	0.42±0.04	0.59±0.06
Iron, dissolved	mg/L	0.29±0.03	0.29±0.03	0.37±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.6±0.4	1.7±0.4	1.6±0.4
Lithium, dissolved	ug/L	1.7±0.4	1.7±0.4	1.6±0.4
Manganese	mg/L	0.019±0.003	0.021±0.003	0.036±0.005
Manganese, dissolved	mg/L	0.0028±0.001	0.0030±0.001	0.0029±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	0.0001±0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001

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36885	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_ABOVE *WATER***
36886	**LLOYLKI 07/23/2020 14:47 LLOYLKI_20200721_WS_BELOW *WATER***
36887	**LLOYLKO 07/23/2020 11:35 LLOYLKO_20200721_WS *WATER***

Analyte	Units	36885	36886	36887
Lab Section 2				
Rubidium	ug/L	0.70±0.2	0.67±0.2	0.69±0.2
Rubidium, dissolved	ug/L	0.66±0.2	0.68±0.2	0.68±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.022±0.003	0.022±0.003	0.023±0.003
Strontium, dissolved	mg/L	0.022±0.003	0.022±0.003	0.022±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0002±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0005±0.0005	<0.0005
Zinc, dissolved	mg/L	0.0010±0.0007	0.0005±0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	0.01±0.01	0.01±0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36885
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36888	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_ABOVE *WATER***
36889	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_BELOW *WATER***
36890	**PATTLKE1 07/28/2020 09:00 PATTLKE1_20200721_WS_ABOVE *WATER***

Analyte	Units	36888	36889	36890
Lab Section 1				
Bicarbonate	mg/L	77±10	96±10	126±10
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.4±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.44±0.2	5.41±0.2	5.52±0.2
Specific conductivity	uS/cm	14±4	15±4	32±5
Sum of ions	mg/L	82±10	101±10	135±10
Total alkalinity	mg/L	63±9	79±10	103±10
Total hardness	mg/L	8±3	8±3	15±4
Ammonia as nitrogen	mg/L	<0.01	0.04±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.01±0.01	0.06±0.02	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	0.04	0.09
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	0.01±0.01	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	0.01±0.01	0.02±0.01
Total Kjeldahl nitrogen	mg/L	0.32±0.2	0.35±0.2	0.18±0.1
Mercury	ng/L	2±1	1±1	<1
Organic carbon	mg/L	9.2±1	9.3±1	1.9±0.6
Organic carbon, dissolved	mg/L	9.5±1	9.2±1	2.4±0.6
Fluoride	mg/L	0.02±0.01	0.02±0.01	0.04±0.02
Total dissolved solids	mg/L	30±10	37±10	30±10
Total suspended solids	mg/L	<1	2±1	<1
True color	CU	60±9	62±9	<1
Turbidity	NTU	2.5±0.4	4.6±0.7	0.4±0.1
Lab Section 2				
Calcium	mg/L	2.3±0.3	2.4±0.4	3.8±0.6
Calcium, dissolved	mg/L	2.3±0.3	2.4±0.4	3.8±0.6
Magnesium	mg/L	0.6±0.1	0.6±0.1	1.3±0.3
Magnesium, dissolved	mg/L	0.6±0.1	0.6±0.1	1.3±0.3
Potassium	mg/L	0.4±0.2	0.4±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.4±0.2	0.5±0.2
Sodium	mg/L	0.8±0.1	0.8±0.1	1.4±0.4
Sodium, dissolved	mg/L	0.8±0.1	0.8±0.1	1.4±0.4

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36888	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_ABOVE *WATER***
36889	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_BELOW *WATER***
36890	**PATTLKE1 07/28/2020 09:00 PATTLKE1_20200721_WS_ABOVE *WATER***

Analyte	Units	36888	36889	36890
Lab Section 2				
Sulfate	mg/L	0.5±0.2	0.5±0.2	1.5±0.3
Aluminum	mg/L	0.042±0.006	0.038±0.006	0.0016±0.0009
Aluminum, dissolved	mg/L	0.032±0.005	0.027±0.004	<0.0005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.2±0.1	0.1±0.1
Barium	mg/L	0.0080±0.002	0.0089±0.002	0.0082±0.002
Barium, dissolved	mg/L	0.0074±0.002	0.0085±0.002	0.0082±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.75±0.08	0.99±0.1	0.016±0.002
Iron, dissolved	mg/L	0.48±0.05	0.53±0.05	0.0042±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.0±0.2	1.0±0.2	2.7±0.4
Lithium, dissolved	ug/L	1.0±0.2	1.0±0.2	2.7±0.4
Manganese	mg/L	0.029±0.004	0.068±0.007	0.0037±0.001
Manganese, dissolved	mg/L	0.0061±0.002	0.035±0.005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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36888	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_ABOVE *WATER***
36889	**NAOMLK 07/26/2020 10:40 NAOMLK_20200721_WS_BELOW *WATER***
36890	**PATTLKE1 07/28/2020 09:00 PATTLKE1_20200721_WS_ABOVE *WATER***

Analyte	Units	36888	36889	36890
Lab Section 2				
Rubidium	ug/L	0.91±0.2	0.92±0.2	0.60±0.2
Rubidium, dissolved	ug/L	0.95±0.2	0.92±0.2	0.56±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.023±0.003	0.023±0.003	0.034±0.005
Strontium, dissolved	mg/L	0.023±0.003	0.023±0.003	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0006±0.0003	0.0005±0.0002	<0.0002
Titanium, dissolved	mg/L	0.0003±0.0002	0.0004±0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0007±0.0006	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	0.05±0.03	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36889
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Environmental Analytical Laboratories
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The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36891	**PATTLKE1 07/28/2020 09:00 PATTLKE1_20200721_WS_BELOW *WATER***
36892	**PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_ABOVE *WATER***
36893	**PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_BELOW *WATER***

Analyte	Units	36891	36892	36893
Lab Section 1				
Bicarbonate	mg/L	95±10	120±10	110±10
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.65±0.2	5.54±0.2	5.57±0.2
Specific conductivity	uS/cm	34±5	32±5	32±5
Sum of ions	mg/L	104±10	129±10	119±10
Total alkalinity	mg/L	78±10	98±10	90±10
Total hardness	mg/L	15±4	14±4	14±4
Ammonia as nitrogen	mg/L	0.01±0.01	0.02±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	<0.04	0.09
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	<0.01	0.02±0.01
Total Kjeldahl nitrogen	mg/L	0.14±0.09	0.17±0.1	0.14±0.09
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	1.8±0.5	2.1±0.5	1.9±0.6
Organic carbon, dissolved	mg/L	2.0±0.5	2.2±0.6	1.8±0.5
Fluoride	mg/L	0.03±0.01	0.04±0.02	0.03±0.01
Total dissolved solids	mg/L	34±10	43±10	37±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	1±1	1±1
Turbidity	NTU	0.6±0.1	1.9±0.5	1.9±0.5
Lab Section 2				
Calcium	mg/L	3.9±0.6	3.7±0.6	3.7±0.6
Calcium, dissolved	mg/L	3.9±0.6	3.7±0.6	3.8±0.6
Magnesium	mg/L	1.4±0.4	1.3±0.3	1.3±0.3
Magnesium, dissolved	mg/L	1.4±0.4	1.3±0.3	1.3±0.3
Potassium	mg/L	0.6±0.2	0.5±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.6±0.2
Sodium	mg/L	1.4±0.4	1.4±0.4	1.4±0.4
Sodium, dissolved	mg/L	1.5±0.4	1.4±0.4	1.4±0.4

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36891 PATTLKE1 07/28/2020 09:00 PATTLKE1_20200721_WS_BELOW *WATER*
36892 PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_ABOVE *WATER*
36893 PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_BELOW *WATER*

Analyte	Units	36891	36892	36893
Lab Section 2				
Sulfate	mg/L	1.6±0.4	1.4±0.3	1.5±0.3
Aluminum	mg/L	0.0038±0.001	0.0019±0.001	0.0014±0.0008
Aluminum, dissolved	mg/L	<0.0005	0.0008±0.0006	<0.0005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	<0.1
Arsenic, dissolved	ug/L	<0.1	0.1±0.1	<0.1
Barium	mg/L	0.010±0.002	0.0082±0.002	0.0097±0.002
Barium, dissolved	mg/L	0.0097±0.002	0.0082±0.002	0.0092±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	0.01±0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	0.0002±0.0002	<0.0002
Iron	mg/L	0.017±0.002	0.0091±0.002	0.012±0.002
Iron, dissolved	mg/L	0.0022±0.001	0.0060±0.002	0.0013±0.0008
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.7±0.4	2.6±0.4	2.6±0.4
Lithium, dissolved	ug/L	2.7±0.4	2.6±0.4	2.6±0.4
Manganese	mg/L	0.023±0.003	0.0040±0.001	0.015±0.002
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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36892	**PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_ABOVE *WATER***
36893	**PATTLKN1 07/27/2020 13:50 PATTLKN1_20200721_WS_BELOW *WATER***

Analyte	Units	36891	36892	36893
Lab Section 2				
Rubidium	ug/L	0.57±0.1	0.57±0.1	0.61±0.2
Rubidium, dissolved	ug/L	0.61±0.2	0.56±0.1	0.61±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.031±0.005	0.030±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	0.0007±0.0006	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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36894	**PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_ABOVE *WATER***
36895	**PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_BELOW *WATER***
36896	**WARNRP 07/29/2020 10:15 WARNRP_20200721_WS *WATER***

Analyte	Units	36894	36895	36896
Lab Section 1				
Bicarbonate	mg/L	115±10	32±5	10±2
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.4±0.1	0.3±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.46±0.2	7.23±0.3	6.82±0.3
Specific conductivity	uS/cm	23±3	24±4	22±3
Sum of ions	mg/L	122±10	39±6	17±4
Total alkalinity	mg/L	94±10	26±4	8±1
Total hardness	mg/L	11±3	11±3	12±3
Ammonia as nitrogen	mg/L	0.02±0.02	0.19±0.05	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.03±0.02	0.15±0.04	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	0.04	<0.04
Nitrate (calc.), dissolved	mg/L	0.09	0.09	0.09
Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.02±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	0.01±0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.02±0.01
Total Kjeldahl nitrogen	mg/L	0.17±0.1	0.33±0.2	0.42±0.2
Mercury	ng/L	<1	2±1	2±1
Organic carbon	mg/L	3.3±0.8	3.0±0.8	11±2
Organic carbon, dissolved	mg/L	3.2±0.8	3.8±1	11±2
Fluoride	mg/L	0.03±0.01	0.02±0.01	0.03±0.01
Total dissolved solids	mg/L	32±10	37±10	50±10
Total suspended solids	mg/L	2±1	2±1	2±1
True color	CU	7±2	16±4	86±10
Turbidity	NTU	1.2±0.3	2.2±0.3	3.2±0.5
Lab Section 2				
Calcium	mg/L	2.9±0.4	3.0±0.4	3.0±0.4
Calcium, dissolved	mg/L	2.9±0.4	3.0±0.4	3.0±0.4
Magnesium	mg/L	0.9±0.1	0.9±0.1	1.1±0.3
Magnesium, dissolved	mg/L	0.9±0.1	0.9±0.1	1.1±0.3
Potassium	mg/L	0.5±0.2	0.5±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.5±0.2	0.4±0.2
Sodium	mg/L	1.2±0.3	1.2±0.3	1.2±0.3
Sodium, dissolved	mg/L	1.2±0.3	1.2±0.3	1.2±0.3

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36894 PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_ABOVE *WATER*
36895 PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_BELOW *WATER*
36896 WARNRP 07/29/2020 10:15 WARNRP_20200721_WS *WATER*

Analyte	Units	36894	36895	36896
Lab Section 2				
Sulfate	mg/L	1.2±0.3	1.2±0.3	0.8±0.2
Aluminum	mg/L	0.0058±0.001	0.0038±0.001	0.046±0.007
Aluminum, dissolved	mg/L	0.0040±0.001	0.0020±0.001	0.034±0.005
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	0.2±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.2±0.1
Barium	mg/L	0.0084±0.002	0.013±0.002	0.0081±0.002
Barium, dissolved	mg/L	0.0082±0.002	0.012±0.002	0.0073±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00001±0.00001	0.00001±0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	0.0001±0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.077±0.008	0.79±0.08	1.14±0.1
Iron, dissolved	mg/L	0.052±0.005	0.40±0.04	0.69±0.07
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.1±0.3	2.0±0.3	1.1±0.3
Lithium, dissolved	ug/L	2.0±0.3	2.0±0.3	1.1±0.3
Manganese	mg/L	0.017±0.002	0.16±0.02	0.043±0.006
Manganese, dissolved	mg/L	0.010±0.002	0.11±0.01	0.031±0.005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0002±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0002±0.0001

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36894	**PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_ABOVE *WATER***
36895	**PATTLKNE1 07/27/2020 12:30 PATTLKNE1_20200721_WS_BELOW *WATER***
36896	**WARNRP 07/29/2020 10:15 WARNRP_20200721_WS *WATER***

Analyte	Units	36894	36895	36896
Lab Section 2				
Rubidium	ug/L	0.60±0.2	0.62±0.2	0.80±0.2
Rubidium, dissolved	ug/L	0.62±0.2	0.67±0.2	0.77±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.027±0.004	0.022±0.003
Strontium, dissolved	mg/L	0.027±0.004	0.027±0.004	0.022±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0006±0.0003
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0005±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	0.0005±0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	0.01±0.01	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	0.03±0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36895
This sample was reanalyzed for Ammonia as nitrogen and Ammonia as nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36897 JEDCK 07/27/2020 12:00 3008_TB_20200721_WS *WATER*

Analyte	Units	36897
Lab Section 1		
Bicarbonate	mg/L	2±1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.60±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2±1
Total alkalinity	mg/L	2±1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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SRC Group # 2020-8782

Aug 25, 2020

CanNorth, Canada North Environmental Services Limited

36897 JEDCK 07/27/2020 12:00 3008_TB_20200721_WS *WATER*

Analyte	Units	36897
Lab Section 2		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 19.3 °C upon receipt.

Holding time for Turbidity and True color between sampling and receipt in lab exceeds the recommended 48 hours.

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Analyte Methods

Name	Units	Method
P. alkalinity	mg/L	Chm-211
Organic carbon, dissolved	mg/L	Chm-399
Organic carbon	mg/L	Chm-399
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
True color	CU	Chm-220
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Mercury	ng/L	Chm-309
Ammonia as nitrogen	mg/L	Chm-123
Ammonia nitrogen, dissolved	mg/L	Chm-123
Nitrite+Nitrate as nitrogen	mg/L	Chm-124
Nitrite+Nitrate as nitrogen, dissolved	mg/L	Chm-124
Nitrate as nitrogen	mg/L	Chm-124
Nitrate as nitrogen, dissolved	mg/L	Chm-124
Total Kjeldahl nitrogen	mg/L	Chm-128
Nitrate (calc. from NO2+NO3-N)	mg/L	Chm-124
Nitrate (calc.), dissolved	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Turbidity	NTU	Chm-316
Silver	mg/L	Chm-522
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum	mg/L	Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic	ug/L	Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron	mg/L	Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium	mg/L	Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium	mg/L	Chm-522

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Name	Units	Method
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Bismuth	mg/L	Chm-522
Bismuth, dissolved	mg/L	Chm-501 / Chm-522
Calcium	mg/L	Chm-508
Calcium, dissolved	mg/L	Chm-501 / Chm-508
Cadmium	mg/L	Chm-522
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt	mg/L	Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium	mg/L	Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Cesium	ug/L	Chm-522
Cesium, dissolved	ug/L	Chm-501 / Chm-522
Copper	mg/L	Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron	mg/L	Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium	mg/L	Chm-508
Potassium, dissolved	mg/L	Chm-501 / Chm-508
Lithium	ug/L	Chm-522
Lithium, dissolved	ug/L	Chm-501 / Chm-522
Magnesium	mg/L	Chm-508
Magnesium, dissolved	mg/L	Chm-501 / Chm-508
Manganese	mg/L	Chm-522
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum	mg/L	Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium	mg/L	Chm-508
Sodium, dissolved	mg/L	Chm-501 / Chm-508
Nickel	mg/L	Chm-522
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Phosphorus	mg/L	Chm-522
Phosphorus, dissolved	mg/L	Chm-501 / Chm-522
Lead	mg/L	Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Rubidium	ug/L	Chm-522
Rubidium, dissolved	ug/L	Chm-501 / Chm-522
Antimony	mg/L	Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium	mg/L	Chm-522

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Name	Units	Method
Selenium, dissolved	mg/L	Chm-501 / Chm-522
Tin	mg/L	Chm-522
Tin, dissolved	mg/L	Chm-501 / Chm-522
Sulfate	mg/L	Chm-508
Strontium	mg/L	Chm-522
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Tellurium	ug/L	Chm-522
Tellurium, dissolved	ug/L	Chm-501 / Chm-522
Titanium	mg/L	Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium	mg/L	Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium	ug/L	Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium	mg/L	Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc	mg/L	Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Zirconium	mg/L	Chm-522
Zirconium, dissolved	mg/L	Chm-501 / Chm-522
Lead-210	Bq/L	Rad-101
Polonium-210	Bq/L	Rad-103
Radium-226	Bq/L	Rad-105
Thorium-230	Bq/L	Rad-106

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Quality Control Report

Mitchell Thorarinson
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0511
Ammonia as nitrogen	mg/L	0.108	0.110
Ammonia as nitrogen	mg/L	1.08	1.08
Antimony	mg/L	0.0472	0.0508
Arsenic	mg/L	50.0	49.7
Barium	mg/L	0.0497	0.0496
Beryllium	mg/L	0.0520	0.0494
Bismuth	mg/L	0.0504	0.0485
Boron	mg/L	0.0500	0.0525
Cadmium	mg/L	0.0490	0.0504
Calcium	mg/L	63.4	62.1
Calcium	mg/L	63.4	62.2
Chloride	mg/L	5.65	5.73
Chromium	mg/L	0.0500	0.0502
Cobalt	mg/L	0.0500	0.0514
Copper	mg/L	0.0500	0.0503
Fluoride	mg/L	1.36	1.45
Iron	mg/L	0.0500	0.0501
Lead	mg/L	0.0500	0.0493
Lead-210	Bq/L	19.7	16.4
Lead-210	Bq	0.370	0.369
Lead-210	Bq/L	19.7	22.9
Lead-210	Bq	7.47	8.09
Lead-210	Bq/L	19.7	23.8
Lead-210	Bq	1.87	1.98
Lead-210	Bq/L	19.7	22.0
Lead-210	Bq	7.47	7.88
Magnesium	mg/L	16.5	16.0
Magnesium	mg/L	16.5	16.0
Manganese	mg/L	0.0510	0.0511
Mercury	ng/L	56.1	64.7

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QC Analysis	Units	Target Value	Obtained Value
Molybdenum	mg/L	0.0498	0.0487
Nickel	mg/L	0.0506	0.0507
Nitrite+Nitrate nitrogen	mg/L	0.945	1.02
Nitrite+Nitrate nitrogen	mg/L	7.88	7.94
Organic carbon	mg/L	28.6	29.3
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.6	29.3
Organic carbon	mg/L	0.22	0.20
Organic carbon	mg/L	28.6	28.2
Organic carbon	mg/L	0.22	0.20
pH	pH units	7.00	7.00
pH	pH units	7.00	7.03
pH	pH units	7.00	6.99
Phosphorus	mg/L	5.18	5.18
Polonium-210	Bq/L	18.8	19.7
Polonium-210	Bq	0.370	0.414
Polonium-210	Bq/L	18.8	21.9
Polonium-210	Bq	0.075	0.080
Polonium-210	Bq/L	18.8	21.1
Polonium-210	Bq	0.075	0.077
Potassium	mg/L	163	162
Potassium	mg/L	163	162
Radium-226	Bq/L	21.4	21.6
Radium-226	Bq	0.043	0.047
Rubidium	mg/L	50.0	48.2
Selenium	mg/L	0.0500	0.0499
Silver	mg/L	0.0500	0.0504
Sodium	mg/L	100	97.8
Sodium	mg/L	100	97.0
Specific conductivity	uS/cm	192	185
Specific conductivity	uS/cm	192	182
Strontium	mg/L	0.0490	0.0486
Sulfate	mg/L	150	144
Thallium	mg/L	0.0500	0.0484
Thorium-230	Bq/L	19.9	18.9
Thorium-230	Bq/L	19.9	20.2
Thorium-232	Bq	0.203	0.192
Thorium-232	Bq	0.203	0.163
Tin	mg/L	0.0477	0.0499
Titanium	mg/L	0.0500	0.0495
Total alkalinity	mg/L	250	252
Total alkalinity	mg/L	250	258
Total alkalinity	mg/L	250	248
Total alkalinity	mg/L	250	246
Total dissolved solids	mg/L	100	111

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QC Analysis	Units	Target Value	Obtained Value	
Total dissolved solids	mg/L	100	90.1	
Total dissolved solids	mg/L	100	102	
Total Kjeldahl nitrogen	mg/L	1.67	1.70	
Total Kjeldahl nitrogen	mg/L	1.67	1.69	
Total suspended solids	mg/L	100	118	*(1)
True color	TCU	50.0	48.9	
Turbidity	NTU	26.6	25.3	
Uranium	mg/L	50.3	47.0	
Vanadium	mg/L	0.0500	0.0515	
Zinc	mg/L	0.0500	0.0507	

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	36884	<0.00005	<0.00005
Aluminum	mg/L	36884	0.010	0.0096
Arsenic	ug/L	36884	0.2	0.1
Boron	mg/L	36884	<0.01	<0.01
Barium	mg/L	36884	0.0018	0.0018
Beryllium	mg/L	36884	<0.0001	<0.0001
Bismuth	mg/L	36884	<0.0002	<0.0002
Calcium	mg/L	36814	12	12
Calcium	mg/L	36868	2.4	2.5
Calcium, dissolved	mg/L	36869	3.9	3.9
Calcium	mg/L	36876	4.4	4.4
Calcium	mg/L	36877	4.5	4.5
Calcium, dissolved	mg/L	36880	2.5	2.5
Calcium	mg/L	36883	3.2	3.2
Calcium, dissolved	mg/L	36895	3.0	3.0
Calcium, dissolved	mg/L	37031	<0.1	<0.1
Cadmium	mg/L	36884	0.00001	0.00001
Chloride	mg/L	36635	3.0	3.0
Chloride	mg/L	36871	0.6	0.6
Chloride	mg/L	36879	2.0	2.0
Chloride	mg/L	36888	0.4	0.4
Chloride	mg/L	36896	0.3	0.3
Cobalt	mg/L	36884	<0.0001	<0.0001
Chromium	mg/L	36884	<0.0005	<0.0005
Copper	mg/L	36884	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	36816	2.1	2.0
Organic carbon, dissolved	mg/L	36873	1.7	1.7

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Organic carbon, dissolved	mg/L	36883	7.0	6.8
Organic carbon, dissolved	mg/L	36892	2.2	2.2
Fluoride	mg/L	36819	0.04	0.04
Fluoride	mg/L	36868	0.02	0.02
Fluoride	mg/L	36877	0.04	0.05
Fluoride	mg/L	36886	0.03	0.03
Fluoride	mg/L	36895	0.02	0.03
Iron	mg/L	36884	0.012	0.012
Mercury	ng/L	36288	5	5
Mercury	ng/L	36869	1	<1
Mercury	ng/L	36878	<1	<1
Mercury	ng/L	36887	2	2
Mercury	ng/L	36896	2	2
Potassium	mg/L	36814	1.1	1.1
Potassium	mg/L	36868	0.4	0.3
Potassium, dissolved	mg/L	36869	0.6	0.6
Potassium	mg/L	36876	0.8	0.8
Potassium	mg/L	36877	0.8	0.8
Potassium, dissolved	mg/L	36880	0.3	0.3
Potassium	mg/L	36883	0.8	0.8
Potassium, dissolved	mg/L	36895	0.5	0.5
Potassium, dissolved	mg/L	37031	<0.1	<0.1
Lithium	ug/L	36884	<0.1	<0.1
Magnesium	mg/L	36814	4.5	4.5
Magnesium	mg/L	36868	0.7	0.7
Magnesium, dissolved	mg/L	36869	1.5	1.4
Magnesium	mg/L	36876	1.7	1.7
Magnesium	mg/L	36877	1.7	1.7
Magnesium, dissolved	mg/L	36880	0.7	0.7
Magnesium	mg/L	36883	1.4	1.3
Magnesium, dissolved	mg/L	36895	0.9	0.9
Magnesium, dissolved	mg/L	37031	<0.1	<0.1
Manganese	mg/L	36884	0.0010	0.0010
Molybdenum	mg/L	36884	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	36867	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	36874	0.01	0.01
Nitrate as nitrogen, dissolved	mg/L	36883	0.01	0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	36894	0.02	0.02
Nitrate as nitrogen, dissolved	mg/L	36867	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	36874	0.01	0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	36883	0.01	0.01
Nitrate as nitrogen, dissolved	mg/L	36894	0.02	0.02
Sodium	mg/L	36814	2.4	2.4
Sodium	mg/L	36868	1.0	1.0
Sodium, dissolved	mg/L	36869	1.6	1.7
Sodium	mg/L	36876	1.9	1.9

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Sodium	mg/L	36877	2.0	2.0
Sodium, dissolved	mg/L	36880	1.0	1.0
Sodium	mg/L	36883	1.6	1.6
Sodium, dissolved	mg/L	36895	1.2	1.2
Sodium, dissolved	mg/L	37031	8.1	8.1
Ammonia as nitrogen	mg/L	36858	<0.01	<0.01
Ammonia as nitrogen	mg/L	36879	0.01	0.01
Ammonia as nitrogen	mg/L	36893	<0.01	0.01
Ammonia nitrogen, dissolved	mg/L	36879	0.03	0.01
Ammonia nitrogen, dissolved	mg/L	36881	0.03	0.03
Ammonia nitrogen, dissolved	mg/L	36893	0.02	0.02
Nickel	mg/L	36884	<0.0001	<0.0001
Nitrate as nitrogen	mg/L	36867	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	36867	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	36874	<0.01	<0.01
Nitrate as nitrogen	mg/L	36874	<0.01	<0.01
Nitrate as nitrogen	mg/L	36883	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	36883	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	36894	<0.01	<0.01
Nitrate as nitrogen	mg/L	36894	<0.01	<0.01
Nitrate as nitrogen	mg/L	36897	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	36897	<0.01	<0.01
Phosphorus	mg/L	36884	<0.01	<0.01
Lead	mg/L	36884	<0.0001	<0.0001
Lead-210	Bq/L	36867	<0.02	<0.02
Lead-210	Bq/L	36878	<0.02	<0.02
Lead-210	Bq/L	36889	0.06	0.04
Lead-210	Bq/L	37040	<0.02	<0.02
Lead-210	Bq/L	38609	<0.02	<0.02
pH	pH units	36819	7.64	7.62
pH	pH units	36868	7.04	6.85
pH	pH units	36877	7.61	7.58
pH	pH units	36886	7.23	7.23
pH	pH units	36895	7.23	7.23
pH	pH units	39096	7.39	7.22
Polonium-210	Bq/L	36867	<0.005	<0.005
Polonium-210	Bq/L	36878	<0.005	<0.005
Polonium-210	Bq/L	36889	<0.005	<0.005
Polonium-210	Bq/L	37040	<0.005	<0.005
Radium-226	Bq/L	36872	<0.005	<0.005
Radium-226	Bq/L	36883	<0.005	<0.005
Radium-226	Bq/L	36897	<0.005	<0.005
Rubidium	ug/L	36884	0.70	0.70
Antimony	mg/L	36884	<0.0002	<0.0002
Selenium	mg/L	36884	<0.0001	<0.0001
Tin	mg/L	36884	<0.0001	<0.0001

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Sulfate	mg/L	36814	1.0	0.9
Sulfate	mg/L	36868	1.0	1.0
Sulfate	mg/L	36876	1.6	1.6
Sulfate	mg/L	36877	1.6	1.7
Sulfate	mg/L	36883	0.2	0.2
Specific conductivity	uS/cm	36819	153	151
Specific conductivity	uS/cm	36868	17	16
Specific conductivity	uS/cm	36877	42	43
Specific conductivity	uS/cm	36886	22	20
Specific conductivity	uS/cm	36895	24	25
Strontium	mg/L	36884	0.0034	0.0035
Total dissolved solids	mg/L	36859	7640.0	7630.0
Tellurium	ug/L	36884	<1	<1
Thorium-230	Bq/L	36854	<0.02	<0.02
Thorium-230	Bq/L	36877	<0.01	<0.01
Thorium-230	Bq/L	36888	<0.01	<0.01
Titanium	mg/L	36884	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	36643	0.06	0.07
Total Kjeldahl nitrogen	mg/L	36644	0.64	0.69
Total Kjeldahl nitrogen	mg/L	36878	0.18	0.17
Thallium	mg/L	36884	<0.0002	<0.0002
Organic carbon	mg/L	36815	3.9	3.9
Organic carbon	mg/L	36872	1.6	1.7
Organic carbon	mg/L	36892	2.1	2.1
Organic carbon	mg/L	36897	<0.2	<0.2
Organic carbon	mg/L	37236	2.1	2.1
Total alkalinity	mg/L	36868	8	10
Total alkalinity	mg/L	36877	23	22
Total alkalinity	mg/L	36886	10	10
Total alkalinity	mg/L	39096	25	29
True color	CU	36867	<1	<1
True color	CU	36877	<1	<1
True color	CU	36887	45	45
True color	CU	36896	86	86
Total suspended solids	mg/L	36813	<1	<1
Total suspended solids	mg/L	36875	<1	<1
Total suspended solids	mg/L	36887	1	1
Total suspended solids	mg/L	36897	<1	<1
Turbidity	NTU	36867	0.128	0.121
Turbidity	NTU	36877	1.90	1.95
Turbidity	NTU	36887	2.91	2.93
Uranium	ug/L	36884	<0.1	<0.1
Vanadium	mg/L	36884	<0.0001	<0.0001
Zinc	mg/L	36884	0.0006	0.0006
Zirconium	mg/L	36884	<0.001	<0.001

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Aug 25, 2020

This report was generated for samples included in SRC Group # 2020-8782

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	107
Ammonia as nitrogen	100
Antimony	99
Arsenic	102
Barium	98
Beryllium	99
Boron	90
Cadmium	104
Calcium	106
Calcium	108
Chloride	90
Chromium	106
Cobalt	105
Copper	99
Fluoride	116
Iron	101
Lead	102
Magnesium	106
Magnesium	108
Manganese	106
Mercury	104
Molybdenum	97
Nickel	101
Nitrite+Nitrate nitrogen	100
Organic carbon	95
Organic carbon	105
Organic Carbon	104
Organic carbon	100
Organic Carbon, dissolved	100
Organic Carbon, dissolved	100
Organic Carbon, dissolved	120
Potassium	106
Potassium	107
Selenium	103
Silver	101
Sodium	109

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Spike Analysis	Percent Recovery
Sodium	109
Strontium	92
Sulfate	102
Thallium	101
Thorium-230	102
Tin	97
Titanium	99
Total Kjeldahl nitrogen	104
Total Kjeldahl nitrogen	115
Uranium	96
Vanadium	106
Zinc	100

*(1) The Total suspended solids result for the quality control sample was just outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Mitchell Thorarinson

Date Samples Received: Sep-29-2020

Client P.O.: 3008_20FALL_WS 2020 Fall Surveys

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
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Attn: Mitchell Thorarinson

Date Samples Received: Sep-29-2020 Client P.O.: 3008_20FALL_WS 2020 Fall Surveys

49485 FORRLK1 09/25/2020 09:20 3008_FB_20200903_WS *WATER*
49486 FORRLK1 09/25/2020 09:20 3008_QAQC_20200903_WS *WATER*
49487 BEETCK 09/23/2020 14:45 BEETCK_20200903_WS *WATER*

Analyte	Units	49485	49486	49487
Lab Section 1				
Bicarbonate	mg/L	2±1	20±3	22±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.38±0.2	7.29±0.3	7.32±0.3
Specific conductivity	uS/cm	<1	32±5	36±5
Sum of ions	mg/L	2±1	29±4	32±5
Total alkalinity	mg/L	2±1	16±4	18±4
Total hardness	mg/L	<1	14±4	16±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	0.01±0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05	0.20±0.1	0.18±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	<0.2	2.1±0.5	2.8±0.7
Organic carbon, dissolved	mg/L	<0.2	2.1±0.5	3.6±0.9
Fluoride	mg/L	<0.01	0.04±0.02	0.05±0.02
Total dissolved solids	mg/L	<5	30±10	27±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	<1	3±2	10±2
Turbidity	NTU	<0.1	0.7±0.1	0.8±0.1
Lab Section 2				
Calcium	mg/L	<0.1	3.6±0.5	4.0±0.6
Calcium, dissolved	mg/L	0.1±0.1	3.8±0.6	4.2±0.6
Magnesium	mg/L	<0.1	1.3±0.3	1.5±0.4

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49485 FORRLK1 09/25/2020 09:20 3008_FB_20200903_WS *WATER*
49486 FORRLK1 09/25/2020 09:20 3008_QAQC_20200903_WS *WATER*
49487 BEETCK 09/23/2020 14:45 BEETCK_20200903_WS *WATER*

Analyte	Units	49485	49486	49487
Lab Section 2				
Magnesium, dissolved	mg/L	0.3±0.1	1.3±0.3	1.6±0.4
Potassium	mg/L	<0.1	0.6±0.2	0.7±0.2
Potassium, dissolved	mg/L	<0.1	0.6±0.2	0.7±0.2
Sodium	mg/L	0.2±0.1	1.4±0.4	1.7±0.4
Sodium, dissolved	mg/L	<0.1	1.5±0.4	1.7±0.4
Sulfate	mg/L	<0.2	1.4±0.3	1.5±0.3
Aluminum	mg/L	0.0008±0.0006	0.0026±0.001	0.0068±0.002
Aluminum, dissolved	mg/L	0.0012±0.0008	0.0021±0.001	0.0090±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	<0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	<0.0005	0.0092±0.002	0.0082±0.002
Barium, dissolved	mg/L	<0.0005	0.0088±0.002	0.0078±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	0.1±0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	0.0004±0.0003	<0.0002	<0.0002
Iron	mg/L	<0.0005	0.026±0.004	0.11±0.01
Iron, dissolved	mg/L	<0.0005	0.010±0.002	0.056±0.006
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	2.6±0.4	2.9±0.4
Lithium, dissolved	ug/L	<0.1	2.6±0.4	2.9±0.4
Manganese	mg/L	<0.0005	0.0082±0.002	0.015±0.002

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49485 FORRLK1 09/25/2020 09:20 3008_FB_20200903_WS *WATER*
49486 FORRLK1 09/25/2020 09:20 3008_QAQC_20200903_WS *WATER*
49487 BEETCK 09/23/2020 14:45 BEETCK_20200903_WS *WATER*

Analyte	Units	49485	49486	49487
Lab Section 2				
Manganese, dissolved	mg/L	<0.0005	0.0030±0.001	0.0068±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Rubidium	ug/L	<0.05	0.60±0.2	0.64±0.2
Rubidium, dissolved	ug/L	<0.05	0.52±0.1	0.60±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	<0.0005	0.030±0.004	0.030±0.004
Strontium, dissolved	mg/L	<0.0005	0.030±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

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SRC Group # 2020-11628

Oct 20, 2020

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Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 49485
This sample was reanalyzed for Aluminum, Aluminum dissolved and Copper dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49488 BEETLK1 09/23/2020 13:00 BEETLK1_20200903_WS *WATER*
49489 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_ABOVE *WATER*
49490 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_BELOW *WATER*

Analyte	Units	49488	49489	49490
Lab Section 1				
Bicarbonate	mg/L	34±5	24±4	20±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.7±0.1	0.4±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.35±0.3	7.30±0.3	7.21±0.3
Specific conductivity	uS/cm	36±5	30±4	31±5
Sum of ions	mg/L	44±7	33±5	30±4
Total alkalinity	mg/L	28±4	20±3	16±4
Total hardness	mg/L	16±4	14±4	14±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	0.09
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	0.22
Nitrate as nitrogen	mg/L	<0.01	<0.01	0.02±0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.05±0.02
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	0.02±0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.05±0.02
Total Kjeldahl nitrogen	mg/L	0.18±0.1	0.13±0.08	0.15±0.09
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.1±0.5	1.7±0.5	1.6±0.5
Organic carbon, dissolved	mg/L	2.0±0.5	1.6±0.5	1.5±0.5
Fluoride	mg/L	0.05±0.02	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	40±10	39±10	42±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	3±2	<1	<1
Turbidity	NTU	0.9±0.1	0.5±0.1	0.6±0.1
Lab Section 2				
Calcium	mg/L	4.1±0.6	3.6±0.5	3.7±0.6
Calcium, dissolved	mg/L	4.2±0.6	3.8±0.6	3.9±0.6
Magnesium	mg/L	1.5±0.4	1.2±0.3	1.2±0.3
Magnesium, dissolved	mg/L	1.6±0.4	1.3±0.3	1.4±0.4
Potassium	mg/L	0.7±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.7±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	1.7±0.4	1.5±0.4	1.6±0.4
Sodium, dissolved	mg/L	1.7±0.4	1.5±0.4	1.6±0.4

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49489 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_ABOVE *WATER*
49490 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_BELOW *WATER*

Analyte	Units	49488	49489	49490
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.8±0.4	1.9±0.4
Aluminum	mg/L	0.0015±0.0008	0.0017±0.0009	0.0022±0.001
Aluminum, dissolved	mg/L	0.0023±0.001	0.0018±0.0009	0.0017±0.0009
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.3±0.2
Barium	mg/L	0.0086±0.002	0.015±0.002	0.016±0.002
Barium, dissolved	mg/L	0.0079±0.002	0.014±0.002	0.015±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	0.00001±0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.067±0.007	0.018±0.003	0.013±0.002
Iron, dissolved	mg/L	0.016±0.002	0.0014±0.0008	0.0015±0.0008
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.9±0.4	2.9±0.4	3.0±0.4
Lithium, dissolved	ug/L	2.8±0.4	2.8±0.4	3.0±0.4
Manganese	mg/L	0.024±0.004	0.0080±0.002	0.016±0.002
Manganese, dissolved	mg/L	0.0024±0.001	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	0.0001±0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49488 BEETLK1 09/23/2020 13:00 BEETLK1_20200903_WS *WATER*
49489 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_ABOVE *WATER*
49490 BROALK2 09/19/2020 11:15 BROALK2_20200903_WS_BELOW *WATER*

Analyte	Units	49488	49489	49490
Lab Section 2				
Rubidium	ug/L	0.62±0.2	0.50±0.1	0.52±0.1
Rubidium, dissolved	ug/L	0.61±0.2	0.50±0.1	0.51±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.031±0.005	0.036±0.005	0.037±0.006
Strontium, dissolved	mg/L	0.031±0.005	0.036±0.005	0.036±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	0.0014±0.0008
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	0.006±0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 49490
This sample was reanalyzed for Arsenic dissolved and Zinc dissolved.
Reanalysis confirms original results are within the expected measurement uncertainty.

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Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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49491 CLEARV1 09/23/2020 14:20 CLEARV1_20200903_WS *WATER*
49492 FORRLK1 09/25/2020 09:20 FORRLK1_20200903_WS *WATER*
49493 FORRLK2 09/23/2020 16:30 FORRLK2_20200903_WS *WATER*

Analyte	Units	49491	49492	49493
Lab Section 1				
Bicarbonate	mg/L	20±3	20±3	37±6
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.8±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.16±0.3	7.27±0.3	7.45±0.3
Specific conductivity	uS/cm	25±4	30±4	39±6
Sum of ions	mg/L	28±4	29±4	48±7
Total alkalinity	mg/L	16±4	16±4	30±4
Total hardness	mg/L	12±3	15±4	18±4
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.28±0.1	0.18±0.1	0.11±0.08
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	5.1±0.8	2.1±0.5	1.3±0.5
Organic carbon, dissolved	mg/L	5.4±0.8	2.0±0.5	1.3±0.5
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.06±0.02
Total dissolved solids	mg/L	39±10	30±10	35±10
Total suspended solids	mg/L	1±1	<1	<1
True color	CU	28±4	4±2	<1
Turbidity	NTU	3.4±0.5	0.7±0.1	0.4±0.1
Lab Section 2				
Calcium	mg/L	3.2±0.5	3.5±0.5	4.4±0.7
Calcium, dissolved	mg/L	3.3±0.5	3.8±0.6	4.6±0.7
Magnesium	mg/L	1.1±0.3	1.5±0.4	1.6±0.4
Magnesium, dissolved	mg/L	1.2±0.3	1.4±0.4	2.0±0.3
Potassium	mg/L	0.6±0.2	0.6±0.2	0.8±0.3
Potassium, dissolved	mg/L	0.6±0.2	0.6±0.2	0.9±0.3
Sodium	mg/L	1.3±0.3	1.4±0.4	1.9±0.5
Sodium, dissolved	mg/L	1.3±0.3	1.4±0.4	1.9±0.5

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49491 CLEARV1 09/23/2020 14:20 CLEARV1_20200903_WS *WATER*
49492 FORRLK1 09/25/2020 09:20 FORRLK1_20200903_WS *WATER*
49493 FORRLK2 09/23/2020 16:30 FORRLK2_20200903_WS *WATER*

Analyte	Units	49491	49492	49493
Lab Section 2				
Sulfate	mg/L	1.1±0.3	1.4±0.3	1.7±0.4
Aluminum	mg/L	0.034±0.005	0.0025±0.001	0.0040±0.001
Aluminum, dissolved	mg/L	0.021±0.003	0.0019±0.001	0.0010±0.0007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.1±0.1	0.1±0.1	0.1±0.1
Barium	mg/L	0.0084±0.002	0.0090±0.002	0.0074±0.002
Barium, dissolved	mg/L	0.0072±0.002	0.0087±0.002	0.0073±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	0.00001±0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.48±0.05	0.031±0.005	0.010±0.002
Iron, dissolved	mg/L	0.20±0.02	0.013±0.002	0.0007±0.0006
Lead	mg/L	0.0001±0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.2±0.3	2.5±0.4	3.4±0.5
Lithium, dissolved	ug/L	2.1±0.3	2.5±0.4	3.3±0.5
Manganese	mg/L	0.040±0.006	0.0082±0.002	0.0021±0.0009
Manganese, dissolved	mg/L	0.0077±0.002	0.0030±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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49492 FORRLK1 09/25/2020 09:20 FORRLK1_20200903_WS *WATER*
49493 FORRLK2 09/23/2020 16:30 FORRLK2_20200903_WS *WATER*

Analyte	Units	49491	49492	49493
Lab Section 2				
Rubidium	ug/L	0.70±0.2	0.58±0.1	0.60±0.2
Rubidium, dissolved	ug/L	0.69±0.2	0.57±0.1	0.61±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.027±0.004	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.026±0.004	0.030±0.004	0.031±0.005
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0006±0.0003	<0.0002	<0.0002
Titanium, dissolved	mg/L	0.0002±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	<0.005	0.006±0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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49494 HODGLK1 09/20/2020 11:30 HODGLK1_20200903_WS_ABOVE *WATER*
49495 HODGLK1 09/20/2020 11:30 HODGLK1_20200903_WS_BELOW *WATER*
49496 JEDCK 09/22/2020 15:00 JEDCK_20200903_WS *WATER*

Analyte	Units	49494	49495	49496
Lab Section 1				
Bicarbonate	mg/L	10±2	11±3	7±2
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	1.8±0.4	1.9±0.5	0.2±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.98±0.3	6.98±0.3	6.81±0.3
Specific conductivity	uS/cm	19±5	19±5	14±4
Sum of ions	mg/L	17±4	18±4	12±3
Total alkalinity	mg/L	8±1	9±1	6±1
Total hardness	mg/L	10±2	9±3	8±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.14±0.09	0.14±0.09	0.22±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	2.3±0.6	2.3±0.6	8.8±1
Organic carbon, dissolved	mg/L	2.3±0.6	2.3±0.6	8.4±1
Fluoride	mg/L	0.02±0.01	0.02±0.01	0.03±0.01
Total dissolved solids	mg/L	22±10	25±10	32±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	5±2	4±2	79±10
Turbidity	NTU	0.5±0.1	0.6±0.1	2.0±0.3
Lab Section 2				
Calcium	mg/L	2.7±0.4	2.7±0.4	2.3±0.3
Calcium, dissolved	mg/L	2.8±0.4	2.8±0.4	2.4±0.4
Magnesium	mg/L	0.7±0.1	0.6±0.1	0.6±0.1
Magnesium, dissolved	mg/L	0.7±0.1	0.7±0.1	0.7±0.1
Potassium	mg/L	0.3±0.1	0.3±0.1	0.4±0.2
Potassium, dissolved	mg/L	0.3±0.1	0.4±0.2	0.4±0.2
Sodium	mg/L	0.9±0.1	0.9±0.1	0.9±0.1
Sodium, dissolved	mg/L	0.9±0.1	0.9±0.1	0.9±0.1

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49495 HODGLK1 09/20/2020 11:30 HODGLK1_20200903_WS_BELOW *WATER*
49496 JEDCK 09/22/2020 15:00 JEDCK_20200903_WS *WATER*

Analyte	Units	49494	49495	49496
Lab Section 2				
Sulfate	mg/L	1.0±0.2	1.0±0.2	1.0±0.2
Aluminum	mg/L	0.0070±0.002	0.0053±0.001	0.053±0.005
Aluminum, dissolved	mg/L	0.0038±0.001	0.0029±0.001	0.048±0.007
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	0.0067±0.002	0.0068±0.002	0.0092±0.002
Barium, dissolved	mg/L	0.0065±0.002	0.0064±0.002	0.0088±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	0.00001±0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.018±0.003	0.017±0.002	0.64±0.06
Iron, dissolved	mg/L	0.0042±0.001	0.0045±0.001	0.43±0.04
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	1.7±0.4	1.7±0.4	1.4±0.4
Lithium, dissolved	ug/L	1.7±0.4	1.7±0.4	1.4±0.4
Manganese	mg/L	0.0026±0.001	0.0033±0.001	0.014±0.002
Manganese, dissolved	mg/L	<0.0005	<0.0005	0.011±0.002
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001

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49495 HODGLK1 09/20/2020 11:30 HODGLK1_20200903_WS_BELOW *WATER*
49496 JEDCK 09/22/2020 15:00 JEDCK_20200903_WS *WATER*

Analyte	Units	49494	49495	49496
Lab Section 2				
Rubidium	ug/L	0.65±0.2	0.66±0.2	0.60±0.2
Rubidium, dissolved	ug/L	0.60±0.2	0.64±0.2	0.63±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.059±0.006	0.060±0.006	0.023±0.003
Strontium, dissolved	mg/L	0.058±0.006	0.058±0.006	0.023±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	0.0004±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0003±0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	0.0007±0.0006	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	0.0005±0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.006	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49497 LAKED 09/22/2020 09:40 LAKED_20200903_WS *WATER*
49498 LAKEG1 09/22/2020 13:30 LAKEG1_20200903_WS *WATER*
49499 LAKEH1 09/22/2020 14:20 LAKEH1_20200903_WS *WATER*

Analyte	Units	49497	49498	49499
Lab Section 1				
Bicarbonate	mg/L	29±4	27±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	<0.1	0.2±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.35±0.3	7.14±0.3	7.28±0.3
Specific conductivity	uS/cm	32±5	28±4	29±4
Sum of ions	mg/L	38±6	34±5	33±5
Total alkalinity	mg/L	24±4	22±3	21±3
Total hardness	mg/L	17±4	14±4	13±3
Ammonia as nitrogen	mg/L	0.03±0.02	0.03±0.02	<0.01
Ammonia nitrogen, dissolved	mg/L	0.04±0.02	0.02±0.01	0.01±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.64±0.2	0.87±0.2	0.55±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	6.4±1	11±2	7.5±1
Organic carbon, dissolved	mg/L	6.3±0.9	8.8±1	7.0±1
Fluoride	mg/L	0.03±0.01	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	37±10	45±10	40±10
Total suspended solids	mg/L	2±1	4±2	6±2
True color	CU	10±2	30±4	7±2
Turbidity	NTU	1.3±0.3	4.1±0.6	1.7±0.4
Lab Section 2				
Calcium	mg/L	4.8±0.7	3.4±0.5	3.0±0.4
Calcium, dissolved	mg/L	4.9±0.7	3.5±0.5	3.2±0.5
Magnesium	mg/L	1.2±0.3	1.3±0.3	1.3±0.3
Magnesium, dissolved	mg/L	1.3±0.3	1.6±0.4	1.4±0.4
Potassium	mg/L	0.3±0.1	0.5±0.2	0.7±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.5±0.2	0.8±0.3
Sodium	mg/L	1.3±0.3	1.4±0.4	1.5±0.4
Sodium, dissolved	mg/L	1.3±0.3	1.4±0.4	1.6±0.4

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49498 LAKEG1 09/22/2020 13:30 LAKEG1_20200903_WS *WATER*
49499 LAKEH1 09/22/2020 14:20 LAKEH1_20200903_WS *WATER*

Analyte	Units	49497	49498	49499
Lab Section 2				
Sulfate	mg/L	1.0±0.2	0.9±0.2	0.3±0.2
Aluminum	mg/L	0.0049±0.001	0.0086±0.002	0.015±0.002
Aluminum, dissolved	mg/L	0.0018±0.0009	0.0045±0.001	0.0058±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	<0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	0.0055±0.001	0.0076±0.002	0.0015±0.0008
Barium, dissolved	mg/L	0.0052±0.001	0.0071±0.002	0.0012±0.0008
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.040±0.006	0.35±0.04	0.076±0.008
Iron, dissolved	mg/L	0.020±0.003	0.20±0.02	0.011±0.002
Lead	mg/L	<0.0001	<0.0001	0.0001±0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0001±0.0001
Lithium	ug/L	1.5±0.4	2.1±0.3	2.9±0.4
Lithium, dissolved	ug/L	1.4±0.4	2.0±0.3	2.8±0.4
Manganese	mg/L	0.0060±0.002	0.013±0.002	0.013±0.002
Manganese, dissolved	mg/L	0.0010±0.0007	0.0036±0.001	0.0006±0.0006
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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49497 LAKED 09/22/2020 09:40 LAKED_20200903_WS *WATER*
49498 LAKEG1 09/22/2020 13:30 LAKEG1_20200903_WS *WATER*
49499 LAKEH1 09/22/2020 14:20 LAKEH1_20200903_WS *WATER*

Analyte	Units	49497	49498	49499
Lab Section 2				
Rubidium	ug/L	0.35±0.1	0.48±0.1	1.2±0.2
Rubidium, dissolved	ug/L	0.37±0.05	0.39±0.05	1.2±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.016±0.002	0.022±0.003	0.014±0.002
Strontium, dissolved	mg/L	0.016±0.002	0.021±0.003	0.013±0.002
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	0.02±0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	0.008±0.006	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 49498
This sample was reanalyzed for Organic carbon. Reanalysis confirms original results are within the expected measurement uncertainty.

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Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49500 LAKEJ 09/20/2020 09:45 LAKEJ_20200903_WS *WATER*
49501 LLOYLKI 09/21/2020 14:00 LLOYLKI_20200903_WS *WATER*
49502 LLOYLKO 09/21/2020 11:05 LLOYLKO_20200903_WS *WATER*

Analyte	Units	49500	49501	49502
Lab Section 1				
Bicarbonate	mg/L	4±2	8±3	15±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.6±0.1	0.5±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.34±0.2	6.92±0.3	6.98±0.3
Specific conductivity	uS/cm	4±1	16±4	18±4
Sum of ions	mg/L	7±2	14±4	21±3
Total alkalinity	mg/L	3±1	7±1	12±3
Total hardness	mg/L	2±1	9±3	9±3
Ammonia as nitrogen	mg/L	0.41±0.06	0.01±0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	0.41±0.06	0.02±0.01	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	1.0±0.2	0.30±0.1	0.28±0.1
Mercury	ng/L	1±1	<1	<1
Organic carbon	mg/L	5.9±0.9	6.5±1	7.7±1
Organic carbon, dissolved	mg/L	5.6±0.8	6.5±1	6.6±1
Fluoride	mg/L	0.02±0.01	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	16±9	34±10	36±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	17±4	38±6	40±6
Turbidity	NTU	2.0±0.3	2.0±0.3	2.6±0.4
Lab Section 2				
Calcium	mg/L	0.4±0.2	2.0±0.3	2.3±0.3
Calcium, dissolved	mg/L	0.6±0.1	2.3±0.3	2.5±0.4
Magnesium	mg/L	0.2±0.1	0.9±0.1	0.8±0.1
Magnesium, dissolved	mg/L	0.2±0.1	0.8±0.1	1.0±0.2
Potassium	mg/L	0.3±0.1	0.4±0.2	0.4±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.4±0.2	0.4±0.2
Sodium	mg/L	0.5±0.1	1.2±0.3	1.2±0.3
Sodium, dissolved	mg/L	0.5±0.1	1.2±0.3	1.1±0.3

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49500 LAKEJ 09/20/2020 09:45 LAKEJ_20200903_WS *WATER*
49501 LLOYLKI 09/21/2020 14:00 LLOYLKI_20200903_WS *WATER*
49502 LLOYLKO 09/21/2020 11:05 LLOYLKO_20200903_WS *WATER*

Analyte	Units	49500	49501	49502
Lab Section 2				
Sulfate	mg/L	0.9±0.2	0.7±0.2	0.7±0.2
Aluminum	mg/L	0.025±0.004	0.011±0.002	0.014±0.002
Aluminum, dissolved	mg/L	0.018±0.003	0.0083±0.002	0.0087±0.002
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	0.1±0.1	<0.1
Barium	mg/L	0.0044±0.001	0.0056±0.001	0.0059±0.001
Barium, dissolved	mg/L	0.0042±0.001	0.0053±0.001	0.0054±0.001
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.026±0.004	0.40±0.04	0.49±0.05
Iron, dissolved	mg/L	0.024±0.004	0.25±0.02	0.31±0.03
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	<0.1	1.4±0.4	1.4±0.4
Lithium, dissolved	ug/L	<0.1	1.5±0.4	1.5±0.4
Manganese	mg/L	0.0035±0.001	0.016±0.002	0.020±0.003
Manganese, dissolved	mg/L	0.0030±0.001	0.0037±0.001	0.0042±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	0.0001±0.0001	0.0001±0.0001
Nickel, dissolved	mg/L	<0.0001	0.0001±0.0001	<0.0001

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49500 LAKEJ 09/20/2020 09:45 LAKEJ_20200903_WS *WATER*
49501 LLOYLKI 09/21/2020 14:00 LLOYLKI_20200903_WS *WATER*
49502 LLOYLKO 09/21/2020 11:05 LLOYLKO_20200903_WS *WATER*

Analyte	Units	49500	49501	49502
Lab Section 2				
Rubidium	ug/L	1.1±0.2	0.61±0.2	0.53±0.1
Rubidium, dissolved	ug/L	1.1±0.2	0.60±0.2	0.55±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.0049±0.001	0.020±0.003	0.020±0.003
Strontium, dissolved	mg/L	0.0049±0.001	0.020±0.003	0.020±0.003
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0002±0.0002	<0.0002	0.0002±0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0009±0.0007	<0.0005	<0.0005
Zinc, dissolved	mg/L	0.0008±0.0006	0.0005±0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	0.01±0.007	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 49500
This sample was reanalyzed for Ammonia as nitrogen and Ammonia nitrogen, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2020-11628

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CanNorth, Canada North Environmental Services Limited

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49503 NAOMLK 09/23/2020 11:15 NAOMLK_20200903_WS *WATER*
49504 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_ABOVE *WATER*
49505 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_BELOW *WATER*

Analyte	Units	49503	49504	49505
Lab Section 1				
Bicarbonate	mg/L	2±1	28±4	21±3
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.4±0.1	0.6±0.1	0.6±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.63±0.3	7.35±0.3	7.20±0.3
Specific conductivity	uS/cm	12±3	30±4	32±5
Sum of ions	mg/L	7±2	37±6	30±4
Total alkalinity	mg/L	2±1	23±3	17±4
Total hardness	mg/L	7±2	15±4	15±4
Ammonia as nitrogen	mg/L	0.02±0.02	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	0.09
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	0.02±0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	0.02±0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	0.01±0.01
Total Kjeldahl nitrogen	mg/L	0.31±0.1	0.14±0.09	0.11±0.08
Mercury	ng/L	1±1	<1	<1
Organic carbon	mg/L	12±2	1.9±0.6	1.5±0.5
Organic carbon, dissolved	mg/L	11±2	2.0±0.5	1.7±0.5
Fluoride	mg/L	0.02±0.01	0.04±0.02	0.04±0.02
Total dissolved solids	mg/L	40±10	35±10	38±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	81±10	1±1	<1
Turbidity	NTU	2.6±0.4	0.6±0.1	0.6±0.1
Lab Section 2				
Calcium	mg/L	2.0±0.3	3.8±0.6	3.9±0.6
Calcium, dissolved	mg/L	2.1±0.3	3.8±0.6	4.0±0.6
Magnesium	mg/L	0.5±0.1	1.3±0.3	1.4±0.4
Magnesium, dissolved	mg/L	0.6±0.1	1.4±0.4	1.5±0.4
Potassium	mg/L	0.4±0.2	0.6±0.2	0.6±0.2
Potassium, dissolved	mg/L	0.4±0.2	0.6±0.2	0.6±0.2
Sodium	mg/L	0.8±0.1	1.4±0.4	1.4±0.4
Sodium, dissolved	mg/L	0.8±0.1	1.4±0.4	1.4±0.4

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49503 NAOMLK 09/23/2020 11:15 NAOMLK_20200903_WS *WATER*
49504 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_ABOVE *WATER*
49505 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_BELOW *WATER*

Analyte	Units	49503	49504	49505
Lab Section 2				
Sulfate	mg/L	0.7±0.2	1.4±0.3	1.6±0.4
Aluminum	mg/L	0.052±0.005	0.0015±0.0008	0.0010±0.0007
Aluminum, dissolved	mg/L	0.047±0.007	0.0012±0.0008	0.0012±0.0008
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.2±0.1	0.1±0.1	0.1±0.1
Arsenic, dissolved	ug/L	0.2±0.1	<0.1	<0.1
Barium	mg/L	0.0082±0.002	0.0088±0.002	0.011±0.002
Barium, dissolved	mg/L	0.0080±0.002	0.0084±0.002	0.011±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	1.02±0.1	0.020±0.003	0.017±0.002
Iron, dissolved	mg/L	0.68±0.07	0.0093±0.002	0.0021±0.001
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	0.8±0.3	2.5±0.4	2.6±0.4
Lithium, dissolved	ug/L	0.8±0.3	2.4±0.4	2.5±0.4
Manganese	mg/L	0.032±0.005	0.0084±0.002	0.034±0.005
Manganese, dissolved	mg/L	0.025±0.004	0.0022±0.001	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.0001±0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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49503 NAOMLK 09/23/2020 11:15 NAOMLK_20200903_WS *WATER*
49504 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_ABOVE *WATER*
49505 PATTLKE1 09/25/2020 15:20 PATTLKE1_20200903_WS_BELOW *WATER*

Analyte	Units	49503	49504	49505
Lab Section 2				
Rubidium	ug/L	0.84±0.2	0.56±0.1	0.58±0.1
Rubidium, dissolved	ug/L	0.82±0.2	0.62±0.2	0.55±0.1
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.020±0.003	0.030±0.004	0.031±0.005
Strontium, dissolved	mg/L	0.020±0.003	0.030±0.004	0.030±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0005±0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	0.0004±0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	0.0008±0.0007	<0.0005	<0.0005
Zinc, dissolved	mg/L	0.0006±0.0006	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.006
Radium-226	Bq/L	0.008±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49506 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_ABOVE *WATER*
49507 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_BELOW *WATER*
49508 PATTLKNE1 09/24/2020 12:30 PATTLKNE1_20200903_WS *WATER*

Analyte	Units	49506	49507	49508
Lab Section 1				
Bicarbonate	mg/L	26±4	16±4	26±4
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.6±0.1	0.6±0.1	0.4±0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.33±0.3	7.22±0.3	7.17±0.3
Specific conductivity	uS/cm	30±4	31±5	22±3
Sum of ions	mg/L	35±5	25±4	33±5
Total alkalinity	mg/L	21±3	13±3	21±3
Total hardness	mg/L	14±4	14±4	11±3
Ammonia as nitrogen	mg/L	<0.01	<0.01	0.02±0.02
Ammonia nitrogen, dissolved	mg/L	0.02±0.01	0.02±0.01	0.03±0.02
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04	<0.04	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04	<0.04	<0.04
Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01	<0.01	<0.01
Total Kjeldahl nitrogen	mg/L	0.15±0.09	0.13±0.08	0.26±0.1
Mercury	ng/L	<1	<1	<1
Organic carbon	mg/L	1.9±0.6	1.8±0.5	3.5±0.9
Organic carbon, dissolved	mg/L	2.0±0.5	1.9±0.6	3.4±0.8
Fluoride	mg/L	0.04±0.02	0.04±0.02	0.03±0.01
Total dissolved solids	mg/L	39±10	42±10	35±10
Total suspended solids	mg/L	<1	<1	<1
True color	CU	1±1	1±1	9±3
Turbidity	NTU	0.4±0.1	0.5±0.1	1.2±0.3
Lab Section 2				
Calcium	mg/L	3.6±0.5	3.7±0.6	2.8±0.4
Calcium, dissolved	mg/L	3.8±0.6	3.8±0.6	2.9±0.4
Magnesium	mg/L	1.3±0.3	1.3±0.3	1.0±0.2
Magnesium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.0±0.2
Potassium	mg/L	0.5±0.2	0.5±0.2	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2	0.6±0.2	0.4±0.2
Sodium	mg/L	1.4±0.4	1.4±0.4	1.2±0.3
Sodium, dissolved	mg/L	1.4±0.4	1.4±0.4	1.2±0.3

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49506 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_ABOVE *WATER*
49507 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_BELOW *WATER*
49508 PATTLKNE1 09/24/2020 12:30 PATTLKNE1_20200903_WS *WATER*

Analyte	Units	49506	49507	49508
Lab Section 2				
Sulfate	mg/L	1.5±0.3	1.4±0.3	1.1±0.3
Aluminum	mg/L	0.0020±0.001	0.0006±0.0006	0.0036±0.001
Aluminum, dissolved	mg/L	0.0013±0.0008	0.0006±0.0006	0.0020±0.001
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1	0.1±0.1
Arsenic, dissolved	ug/L	<0.1	<0.1	0.1±0.1
Barium	mg/L	0.0084±0.002	0.010±0.002	0.0086±0.002
Barium, dissolved	mg/L	0.0082±0.002	0.010±0.002	0.0081±0.002
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	<0.0002	<0.0002	<0.0002
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001	<0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Cesium	ug/L	<0.1	<0.1	<0.1
Cesium, dissolved	ug/L	<0.1	<0.1	<0.1
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001	<0.0001
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	0.013±0.002	0.011±0.002	0.14±0.01
Iron, dissolved	mg/L	0.0031±0.001	0.0007±0.0006	0.056±0.006
Lead	mg/L	<0.0001	<0.0001	<0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium	ug/L	2.5±0.4	2.6±0.4	1.9±0.5
Lithium, dissolved	ug/L	2.5±0.4	2.4±0.4	1.9±0.5
Manganese	mg/L	0.0060±0.002	0.013±0.002	0.025±0.004
Manganese, dissolved	mg/L	<0.0005	<0.0005	0.0026±0.001
Molybdenum	mg/L	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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49506 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_ABOVE *WATER*
49507 PATTLKN1 09/24/2020 13:40 PATTLKN1_20200903_WS_BELOW *WATER*
49508 PATTLKNE1 09/24/2020 12:30 PATTLKNE1_20200903_WS *WATER*

Analyte	Units	49506	49507	49508
Lab Section 2				
Rubidium	ug/L	0.63±0.2	0.60±0.2	0.66±0.2
Rubidium, dissolved	ug/L	0.57±0.1	0.60±0.2	0.64±0.2
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.029±0.004	0.031±0.005	0.026±0.004
Strontium, dissolved	mg/L	0.029±0.004	0.030±0.004	0.026±0.004
Tellurium	ug/L	<1	<1	<1
Tellurium, dissolved	ug/L	<1	<1	<1
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	<0.0001	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	<0.0002	<0.0002	<0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001	<0.0001
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc	mg/L	<0.0005	<0.0005	<0.0005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Zirconium	mg/L	<0.001	<0.001	<0.001
Zirconium, dissolved	mg/L	<0.001	<0.001	<0.001
Phosphorus	mg/L	<0.01	<0.01	<0.01
Phosphorus, dissolved	mg/L	<0.01	<0.01	<0.01
Lab Section 4				
Lead-210	Bq/L	<0.02	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005	<0.005
Radium-226	Bq/L	0.005±0.005	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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CanNorth, Canada North Environmental Services Limited

49509 WARNRP 09/26/2020 10:00 WARNRP_20200903_WS *WATER*

Analyte	Units	49509
Lab Section 1		
Bicarbonate	mg/L	15±4
Carbonate	mg/L	<1
Chloride	mg/L	0.4±0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.00±0.3
Specific conductivity	uS/cm	19±5
Sum of ions	mg/L	21±3
Total alkalinity	mg/L	12±3
Total hardness	mg/L	10±2
Ammonia as nitrogen	mg/L	<0.01
Ammonia nitrogen, dissolved	mg/L	0.02±0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate (calc.), dissolved	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrate as nitrogen, dissolved	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	0.30±0.1
Mercury	ng/L	<1
Organic carbon	mg/L	8.3±1
Organic carbon, dissolved	mg/L	7.8±1
Fluoride	mg/L	0.04±0.02
Total dissolved solids	mg/L	42±10
Total suspended solids	mg/L	3±1
True color	CU	53±8
Turbidity	NTU	2.0±0.3
Lab Section 2		
Calcium	mg/L	2.5±0.4
Calcium, dissolved	mg/L	2.7±0.4
Magnesium	mg/L	0.9±0.1
Magnesium, dissolved	mg/L	1.0±0.2
Potassium	mg/L	0.5±0.2
Potassium, dissolved	mg/L	0.5±0.2
Sodium	mg/L	1.2±0.3
Sodium, dissolved	mg/L	1.3±0.3

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49509 WARNRP 09/26/2020 10:00 WARNRP_20200903_WS *WATER*

Analyte	Units	49509
Lab Section 2		
Sulfate	mg/L	0.8±0.2
Aluminum	mg/L	0.031±0.005
Aluminum, dissolved	mg/L	0.022±0.003
Antimony	mg/L	<0.0002
Antimony, dissolved	mg/L	<0.0002
Arsenic	ug/L	0.1±0.1
Arsenic, dissolved	ug/L	<0.1
Barium	mg/L	0.0058±0.001
Barium, dissolved	mg/L	0.0055±0.001
Beryllium	mg/L	<0.0001
Beryllium, dissolved	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Bismuth, dissolved	mg/L	<0.0002
Boron	mg/L	<0.01
Boron, dissolved	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cadmium, dissolved	mg/L	<0.00001
Cesium	ug/L	<0.1
Cesium, dissolved	ug/L	<0.1
Chromium	mg/L	<0.0005
Chromium, dissolved	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Cobalt, dissolved	mg/L	<0.0001
Copper	mg/L	<0.0002
Copper, dissolved	mg/L	<0.0002
Iron	mg/L	0.78±0.08
Iron, dissolved	mg/L	0.53±0.05
Lead	mg/L	<0.0001
Lead, dissolved	mg/L	<0.0001
Lithium	ug/L	1.1±0.3
Lithium, dissolved	ug/L	1.1±0.3
Manganese	mg/L	0.024±0.004
Manganese, dissolved	mg/L	0.014±0.002
Molybdenum	mg/L	<0.0001
Molybdenum, dissolved	mg/L	<0.0001
Nickel	mg/L	0.0002±0.0001
Nickel, dissolved	mg/L	0.0002±0.0001

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143-111 Research Drive, Saskatoon, SK Canada S7N 3R2

T: 306-933-6932 **F:** 306-933-7922
Toll-free: 1-800-240-8808
E: analytical@src.sk.ca

www.src.sk.ca/analytical

SRC Group # 2020-11628

Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49509 WARNRP 09/26/2020 10:00 WARNRP_20200903_WS *WATER*

Analyte	Units	49509
Lab Section 2		
Rubidium	ug/L	0.83±0.2
Rubidium, dissolved	ug/L	0.86±0.2
Selenium	mg/L	<0.0001
Selenium, dissolved	mg/L	<0.0001
Silver	mg/L	<0.00005
Silver, dissolved	mg/L	<0.00005
Strontium	mg/L	0.018±0.003
Strontium, dissolved	mg/L	0.018±0.003
Tellurium	ug/L	<1
Tellurium, dissolved	ug/L	<1
Thallium	mg/L	<0.0002
Thallium, dissolved	mg/L	<0.0002
Tin	mg/L	<0.0001
Tin, dissolved	mg/L	<0.0001
Titanium	mg/L	0.0004±0.0002
Titanium, dissolved	mg/L	0.0003±0.0002
Uranium	ug/L	<0.1
Uranium, dissolved	ug/L	<0.1
Vanadium	mg/L	<0.0001
Vanadium, dissolved	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zinc, dissolved	mg/L	<0.0005
Zirconium	mg/L	<0.001
Zirconium, dissolved	mg/L	<0.001
Phosphorus	mg/L	0.01±0.01
Phosphorus, dissolved	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Time between sampling and receipt in lab exceeds the recommended 48 hours for True color and Turbidity.

The temperature of the cooler was 15.4 °C upon receipt.

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CanNorth, Canada North Environmental Services Limited

49510 FORRLK1 09/25/2020 09:20 3008_TB_20200903_WS *WATER*

Analyte	Units	49510
Lab Section 1		
Bicarbonate	mg/L	<1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.53±0.2
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	<1
Total alkalinity	mg/L	<1
Total hardness	mg/L	<1
Ammonia as nitrogen	mg/L	<0.01
Nitrate (calc. from NO2+NO3-N)	mg/L	<0.04
Nitrate as nitrogen	mg/L	<0.01
Nitrite+Nitrate as nitrogen	mg/L	<0.01
Total Kjeldahl nitrogen	mg/L	<0.05
Mercury	ng/L	<1
Organic carbon	mg/L	<0.2
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	1±1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.2±0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0018±0.0009
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Cesium	ug/L	<0.1
Chromium	mg/L	<0.0005

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Oct 20, 2020

CanNorth, Canada North Environmental Services Limited

49510 FORRLK1 09/25/2020 09:20 3008_TB_20200903_WS *WATER*

Analyte	Units	49510
Lab Section 2		
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Rubidium	ug/L	<0.05
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Tellurium	ug/L	<1
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Zirconium	mg/L	<0.001
Phosphorus	mg/L	<0.01
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 49510
This sample was reanalyzed for Aluminum. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 15.4 °C upon receipt.

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Analyte Methods

Name	Units	Method
P. alkalinity	mg/L	Chm-211
Organic carbon, dissolved	mg/L	Chm-399
Organic carbon	mg/L	Chm-399
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
True color	CU	Chm-220
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Mercury	ng/L	Chm-309
Ammonia as nitrogen	mg/L	Chm-123
Ammonia nitrogen, dissolved	mg/L	Chm-123
Nitrite+Nitrate as nitrogen	mg/L	Chm-124
Nitrite+Nitrate as nitrogen, dissolved	mg/L	Chm-124
Nitrate as nitrogen	mg/L	Chm-124
Nitrate as nitrogen, dissolved	mg/L	Chm-124
Total Kjeldahl nitrogen	mg/L	Chm-128
Nitrate (calc. from NO2+NO3-N)	mg/L	Chm-124
Nitrate (calc.), dissolved	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Turbidity	NTU	Chm-316
Silver	mg/L	Chm-522
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum	mg/L	Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic	ug/L	Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron	mg/L	Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium	mg/L	Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium	mg/L	Chm-522

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Name	Units	Method
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Bismuth	mg/L	Chm-522
Bismuth, dissolved	mg/L	Chm-501 / Chm-522
Calcium	mg/L	Chm-508
Calcium, dissolved	mg/L	Chm-501 / Chm-508
Cadmium	mg/L	Chm-522
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt	mg/L	Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium	mg/L	Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Cesium	ug/L	Chm-522
Cesium, dissolved	ug/L	Chm-501 / Chm-522
Copper	mg/L	Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron	mg/L	Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium	mg/L	Chm-508
Potassium, dissolved	mg/L	Chm-501 / Chm-508
Lithium	ug/L	Chm-522
Lithium, dissolved	ug/L	Chm-501 / Chm-522
Magnesium	mg/L	Chm-508
Magnesium, dissolved	mg/L	Chm-501 / Chm-508
Manganese	mg/L	Chm-522
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum	mg/L	Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium	mg/L	Chm-508
Sodium, dissolved	mg/L	Chm-501 / Chm-508
Nickel	mg/L	Chm-522
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Phosphorus	mg/L	Chm-522
Phosphorus, dissolved	mg/L	Chm-501 / Chm-522
Lead	mg/L	Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Rubidium	ug/L	Chm-522
Rubidium, dissolved	ug/L	Chm-501 / Chm-522
Antimony	mg/L	Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium	mg/L	Chm-522

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Name	Units	Method
Selenium, dissolved	mg/L	Chm-501 / Chm-522
Tin	mg/L	Chm-522
Tin, dissolved	mg/L	Chm-501 / Chm-522
Sulfate	mg/L	Chm-508
Strontium	mg/L	Chm-522
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Tellurium	ug/L	Chm-522
Tellurium, dissolved	ug/L	Chm-501 / Chm-522
Titanium	mg/L	Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium	mg/L	Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium	ug/L	Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium	mg/L	Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc	mg/L	Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Zirconium	mg/L	Chm-522
Zirconium, dissolved	mg/L	Chm-501 / Chm-522
Lead-210	Bq/L	Rad-101
Polonium-210	Bq/L	Rad-103
Radium-226	Bq/L	Rad-105
Thorium-230	Bq/L	Rad-106

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Quality Control Report

Mitchell Thorarinson
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	mg/L	0.0500	0.0509
Ammonia as nitrogen	mg/L	0.11	0.094
Ammonia as nitrogen	mg/L	1.08	1.09
Ammonia as nitrogen	mg/L	0.108	0.112
Ammonia as nitrogen	mg/L	1.08	1.07
Antimony	mg/L	0.0480	0.0479
Arsenic	mg/L	50.0	49.6
Barium	mg/L	0.0500	0.0495
Beryllium	mg/L	0.0500	0.0497
Bismuth	mg/L	0.0500	0.0495
Boron	mg/L	0.0500	0.0499
Cadmium	mg/L	0.0500	0.0497
Calcium	mg/L	63.4	61.8
Chloride	mg/L	5.65	5.73
Chromium	mg/L	0.0500	0.0496
Cobalt	mg/L	0.0510	0.0508
Copper	mg/L	0.0500	0.0506
Fluoride	mg/L	1.36	1.38
Iron	mg/L	0.0500	0.0495
Lead	mg/L	0.0500	0.0507
Lead-210	Bq/L	15.5	15.4
Lead-210	Bq	1.87	1.96
Lead-210	Bq/L	15.5	15.9
Lead-210	Bq	0.750	0.739
Lead-210	Bq/L	15.5	15.2
Lead-210	Bq	0.750	0.690
Lead-210	Bq/L	15.5	15.6
Lead-210	Bq	7.47	7.33
Magnesium	mg/L	16.5	16.2
Magnesium	mg/L	16.5	16.4
Manganese	mg/L	0.0510	0.0507

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QC Analysis	Units	Target Value	Obtained Value
Mercury	ng/L	37.4	36.8
Molybdenum	mg/L	0.0500	0.0488
Nickel	mg/L	0.0510	0.0513
Nitrite+Nitrate nitrogen	mg/L	0.945	1.02
Nitrite+Nitrate nitrogen	mg/L	7.56	7.94
Nitrite+Nitrate nitrogen	mg/L	1.01	0.930
Nitrite+Nitrate nitrogen	mg/L	7.93	7.81
Organic carbon	mg/L	28.0	28.4
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.0	28.5
Organic carbon	mg/L	0.22	<0.2
Organic carbon	mg/L	28.0	27.5
Organic carbon	mg/L	0.22	<0.2
pH	pH units	7.00	7.02
pH	pH units	7.00	6.98
Phosphorus	mg/L	5.20	5.16
Polonium-210	Bq/L	16.4	15.0
Polonium-210	Bq	1.87	1.98
Polonium-210	Bq/L	16.4	14.0
Polonium-210	Bq	0.750	0.731
Polonium-210	Bq/L	16.4	16.3
Polonium-210	Bq	0.750	0.798
Polonium-210	Bq/L	16.4	15.3
Polonium-210	Bq	0.370	0.361
Potassium	mg/L	163	160
Radium-226	Bq/L	21.4	20.5
Radium-226	Bq	0.043	0.038
Radium-226	Bq/L	21.4	19.9
Radium-226	Bq	0.427	0.417
Rubidium	mg/L	49.0	48.6
Selenium	mg/L	0.0500	0.0496
Silver	mg/L	0.0500	0.0503
Sodium	mg/L	98.2	96.9
Specific conductivity	uS/cm	137	132
Specific conductivity	uS/cm	137	136
Strontium	mg/L	0.0500	0.0488
Sulfate	mg/L	150	143
Thallium	mg/L	0.0500	0.0496
Thorium-230	Bq/L	19.9	19.2
Thorium-230	Bq/L	19.9	19.6
Thorium-230	Bq/L	19.9	19.2
Thorium-232	Bq	0.203	0.168
Thorium-232	Bq	0.203	0.213
Thorium-232	Bq	0.203	0.189
Tin	mg/L	0.0460	0.0461

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QC Analysis	Units	Target Value	Obtained Value	
Titanium	mg/L	0.0500	0.0505	
Total alkalinity	mg/L	250	248	
Total alkalinity	mg/L	250	251	
Total dissolved solids	mg/L	100	108	
Total dissolved solids	mg/L	100	115	
Total dissolved solids	mg/L	100	101	
Total Kjeldahl nitrogen	mg/L	1.67	1.67	
Total suspended solids	mg/L	100	97.3	
Total suspended solids	mg/L	100	119	*(1)
True color	TCU	45	45	
Turbidity	NTU	26.6	24.5	
Uranium	mg/L	48.5	48.8	
Vanadium	mg/L	0.0510	0.0507	
Zinc	mg/L	0.0500	0.0506	

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	mg/L	49486	<0.00005	<0.00005
Aluminum	mg/L	49486	0.0024	0.0025
Arsenic	ug/L	49486	<0.1	0.1
Boron	mg/L	49486	<0.01	<0.01
Barium	mg/L	49486	0.0089	0.0090
Beryllium	mg/L	49486	<0.0001	<0.0001
Bismuth	mg/L	49486	<0.0002	<0.0002
Calcium	mg/L	49492	3.5	3.7
Calcium	mg/L	49493	4.6	4.5
Calcium	mg/L	49501	2.0	2.2
Calcium, dissolved	mg/L	49502	2.5	2.4
Calcium	mg/L	49510	<0.1	<0.1
Calcium	mg/L	49522	<0.1	<0.1
Cadmium	mg/L	49486	<0.00001	<0.00001
Chloride	mg/L	49485	<0.1	<0.1
Chloride	mg/L	49494	1.8	1.9
Chloride	mg/L	49501	0.6	0.6
Chloride	mg/L	49510	<0.1	<0.1
Cobalt	mg/L	49486	<0.0001	<0.0001
Chromium	mg/L	49486	<0.0005	<0.0005
Copper	mg/L	49486	<0.0002	<0.0002
Organic carbon, dissolved	mg/L	49355	3.7	3.7
Organic carbon, dissolved	mg/L	49486	2.1	2.1

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Organic carbon, dissolved	mg/L	49496	8.3	8.6
Organic carbon, dissolved	mg/L	49506	2.0	2.0
Organic carbon, dissolved	mg/L	49907	4.8	4.7
Fluoride	mg/L	49485	<0.01	<0.01
Fluoride	mg/L	49492	0.04	0.04
Fluoride	mg/L	49501	0.04	0.04
Fluoride	mg/L	49510	<0.01	<0.01
Iron	mg/L	49486	0.010	0.010
Mercury	ng/L	49490	<1	<1
Mercury	ng/L	49499	<1	<1
Mercury	ng/L	49508	<1	<1
Mercury	ng/L	49519	<1	<1
Potassium	mg/L	49492	0.6	0.6
Potassium	mg/L	49493	0.9	0.9
Potassium	mg/L	49501	0.4	0.4
Potassium, dissolved	mg/L	49502	0.4	0.4
Potassium	mg/L	49510	<0.1	<0.1
Potassium	mg/L	49522	<0.1	<0.1
Lithium	ug/L	49486	2.5	2.6
Magnesium	mg/L	49492	1.5	1.3
Magnesium	mg/L	49493	2.0	1.7
Magnesium	mg/L	49501	0.9	0.8
Magnesium	mg/L	49510	<0.1	<0.1
Magnesium	mg/L	49522	<0.1	<0.1
Magnesium, dissolved	mg/L	49594	<0.1	<0.1
Manganese	mg/L	49486	0.0030	0.0031
Molybdenum	mg/L	49486	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen, dissolved	mg/L	49485	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	49493	<0.01	<0.01
Nitrite+Nitrate as nitrogen, dissolved	mg/L	49499	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	49485	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	49493	<0.01	<0.01
Nitrate as nitrogen, dissolved	mg/L	49499	<0.01	<0.01
Sodium	mg/L	49492	1.4	1.4
Sodium	mg/L	49493	1.9	1.9
Sodium	mg/L	49501	1.2	1.2
Sodium, dissolved	mg/L	49502	1.1	1.1
Sodium	mg/L	49510	0.2	0.2
Sodium	mg/L	49522	0.2	0.2
Ammonia as nitrogen	mg/L	49485	<0.01	<0.01
Ammonia as nitrogen	mg/L	49493	<0.01	<0.01
Ammonia as nitrogen	mg/L	49499	<0.01	<0.01
Ammonia as nitrogen	mg/L	49510	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	49485	<0.01	0.01
Ammonia nitrogen, dissolved	mg/L	49493	<0.01	<0.01
Ammonia nitrogen, dissolved	mg/L	49499	0.01	0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Ammonia nitrogen, dissolved	mg/L	49500	0.41	0.41
Nickel	mg/L	49486	<0.0001	<0.0001
Nitrite+Nitrate as nitrogen	mg/L	49485	<0.01	<0.01
Nitrate as nitrogen	mg/L	49485	<0.01	<0.01
Nitrate as nitrogen	mg/L	49493	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	49493	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	49499	<0.01	<0.01
Nitrate as nitrogen	mg/L	49499	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	49510	<0.01	<0.01
Nitrate as nitrogen	mg/L	49510	<0.01	<0.01
Nitrite+Nitrate as nitrogen	mg/L	51813	<0.04	<0.04
Phosphorus	mg/L	49486	<0.01	<0.01
Lead	mg/L	49486	<0.0001	<0.0001
Lead-210	Bq/L	49487	<0.02	<0.02
Lead-210	Bq/L	49497	<0.02	<0.02
Lead-210	Bq/L	49507	<0.02	<0.02
Lead-210	Bq/L	50315	<0.08	<0.08
pH	pH units	49485	5.38	5.27
pH	pH units	49492	7.27	7.30
pH	pH units	49501	6.92	6.97
pH	pH units	49510	5.53	5.48
Polonium-210	Bq/L	48980	0.000060	0.000056
Polonium-210	Bq/L	49487	<0.005	<0.005
Polonium-210	Bq/L	49497	0.005	<0.005
Polonium-210	Bq/L	49507	<0.005	<0.005
Radium-226	Bq/L	49429	0.01	0.01
Radium-226	Bq/L	49485	<0.005	<0.005
Radium-226	Bq/L	49495	<0.005	<0.005
Radium-226	Bq/L	49505	0.008	<0.005
Rubidium	ug/L	49486	0.52	0.53
Antimony	mg/L	49486	<0.0002	<0.0002
Selenium	mg/L	49486	<0.0001	<0.0001
Tin	mg/L	49486	<0.0001	<0.0001
Sulfate	mg/L	49492	1.4	1.5
Sulfate	mg/L	49493	1.5	1.6
Sulfate	mg/L	49501	0.7	0.7
Sulfate	mg/L	49510	<0.2	<0.2
Sulfate	mg/L	49522	<0.2	<0.2
Specific conductivity	uS/cm	49485	<1	<1
Specific conductivity	uS/cm	49492	30	30
Specific conductivity	uS/cm	49501	16	16
Specific conductivity	uS/cm	49510	<1	<1
Specific conductivity	uS/cm	49595	121	118
Strontium	mg/L	49486	0.030	0.030
Total dissolved solids	mg/L	49431	465.0	456.0
Tellurium	ug/L	49486	<1	<1

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Oct 19, 2020

This report was generated for samples included in SRC Group # 2020-11628

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Thorium-230	Bq/L	47880	0.11	0.10
Thorium-230	Bq/L	49486	<0.01	<0.01
Thorium-230	Bq/L	49496	<0.01	<0.01
Thorium-230	Bq/L	49506	<0.01	<0.01
Titanium	mg/L	49486	<0.0002	<0.0002
Total Kjeldahl nitrogen	mg/L	49033	0.22	0.19
Total Kjeldahl nitrogen	mg/L	49486	0.20	0.16
Total Kjeldahl nitrogen	mg/L	49496	0.22	0.22
Total Kjeldahl nitrogen	mg/L	49507	0.13	0.15
Thallium	mg/L	49486	<0.0002	<0.0002
Organic carbon	mg/L	49355	3.5	3.4
Organic carbon	mg/L	49487	2.8	2.9
Organic carbon	mg/L	49497	6.4	6.4
Organic carbon	mg/L	49505	1.5	1.5
Organic carbon	mg/L	49510	<0.2	<0.2
Organic carbon	mg/L	49598	12	12
Organic carbon	mg/L	50336	5.4	5.4
Total alkalinity	mg/L	49485	2	<1
Total alkalinity	mg/L	49501	7	10
Total alkalinity	mg/L	49510	<1	1
Total alkalinity	mg/L	49594	2	2
True color	CU	49485	<1	<1
True color	CU	49495	4	4
True color	CU	49505	<1	<1
Total suspended solids	mg/L	49485	<1	<1
Total suspended solids	mg/L	49494	<1	<1
Total suspended solids	mg/L	49504	<1	<1
Total suspended solids	mg/L	49510	1	1
Turbidity	NTU	49485	0.088	0.096
Turbidity	NTU	49495	0.643	0.566
Turbidity	NTU	49506	0.409	0.445
Uranium	ug/L	49486	<0.1	<0.1
Vanadium	mg/L	49486	<0.0001	<0.0001
Zinc	mg/L	49486	<0.0005	0.0005
Zirconium	mg/L	49486	<0.001	<0.001

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Aluminum	104

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Spike Analysis	Percent Recovery
Ammonia as nitrogen	80
Ammonia as nitrogen	100
Ammonia as nitrogen	93
Antimony	82
Arsenic	99
Barium	100
Beryllium	103
Boron	102
Cadmium	101
Calcium	103
Chloride	95
Chromium	104
Cobalt	105
Copper	103
Iron	94
Lead	102
Lead-210	104
Magnesium	103
Magnesium	104
Manganese	104
Mercury	102
Molybdenum	94
Nickel	104
Nitrite+Nitrate nitrogen	110
Nitrite+Nitrate nitrogen	110
Organic Carbon	102
Organic carbon	100
Organic Carbon	110
Organic Carbon, dissolved	105
Organic Carbon, dissolved	90
Phosphorus	103
Polonium-210	102
Potassium	103
Selenium	98
Silver	99
Sodium	104
Strontium	101
Sulfate	98
Thallium	102
Thorium-230	98
Tin	81
Titanium	96
Total Kjeldahl nitrogen	96

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Spike Analysis	Percent Recovery
Uranium	95
Vanadium	102
Zinc	104

*(1) The Total suspended solids result for the quality control sample was just outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2018-12934

Feb 22, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-16-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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211 Wheeler Street
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Attn: Kelly Wells

Date Samples Received: Oct-16-2018

Client P.O.: 3008 Rook I - Aquatic Baseline Studies

42559	**HODGLK-5 09/22/2018 14:15 3008_QAQC_1_SED_0-2 *SEDIMENT***
42560	**PATTLKN-3 09/22/2018 11:47 3008_QAQC_2_SED_0-2 *SEDIMENT***
42561	**BROALK-3 09/24/2018 10:04 3008_QAQC_3_SED_0-2 *SEDIMENT***

Analyte	Units	42559	42560	42561
Lab Section 2 (ICP)				
Aluminum	ug/g	1720±200	8400±800	3370±300
Antimony	ug/g	<0.2	0.2±0.2	<0.2
Arsenic	ug/g	1.1±0.3	17±2	4.0±0.6
Barium	ug/g	30±4	980±100	130±10
Beryllium	ug/g	0.1±0.1	0.4±0.1	0.2±0.1
Boron	ug/g	5±1	25±4	17±4
Cadmium	ug/g	0.2±0.1	0.8±0.1	1.5±0.4
Calcium	ug/g	940±100	4600±500	4800±500
Chromium	ug/g	3.5±1	12±2	6.6±2
Cobalt	ug/g	1.0±0.2	5.8±0.9	2.1±0.5
Copper	ug/g	2.2±1	9.3±2	7.2±2
Iron	ug/g	5500±600	116000±10000	6100±600
Lead	ug/g	2.4±0.4	14±1	2.1±0.3
Magnesium	ug/g	290±40	1700±200	960±100
Manganese	ug/g	240±20	22100±2000	320±30
Molybdenum	ug/g	0.5±0.2	4.1±0.6	2.0±0.3
Nickel	ug/g	2.8±0.4	13±1	8.8±1
Phosphorus	ug/g	340±50	5200±500	560±80
Potassium	ug/g	390±60	1600±200	680±100
Selenium	ug/g	0.2±0.1	1.3±0.3	0.6±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	80±30	200±30	210±30
Strontium	ug/g	34±5	69±7	68±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.4±0.1	0.2±0.1
Titanium	ug/g	100±10	280±30	180±20
Uranium	ug/g	0.3±0.2	2.2±0.3	0.3±0.2
Vanadium	ug/g	4.0±0.6	20±2	7.6±1
Zinc	ug/g	11±2	73±7	27±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.19±0.06	0.80±0.1	0.04±0.04

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42559	**HODGLK-5 09/22/2018 14:15 3008_QAQC_1_SED_0-2 *SEDIMENT***
42560	**PATTLKN-3 09/22/2018 11:47 3008_QAQC_2_SED_0-2 *SEDIMENT***
42561	**BROALK-3 09/24/2018 10:04 3008_QAQC_3_SED_0-2 *SEDIMENT***

Analyte	Units	42559	42560	42561
Lab Section 4 (Radiochemistry)				
Polonium-210	Bq/g	0.18±0.04	1.0±0.1	0.04±0.02
Radium-226	Bq/g	0.03±0.02	0.07±0.04	0.03±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02
Lab Section 6 (SPTP)				
Organic carbon	%	3.56±0.4	14.6±1	22.8±2
Loss on ignition	%	7.67	34.35	48.69
Moisture	%	76.53±8	95.82±10	96.89±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	12.0±1	16.7±2	41.8±4
Fine Sand by laser diffraction	vol %	55.4±6	35.6±4	33.1±3
Silt by laser diffraction	vol %	27.9±3	37.0±4	22.4±2
Clay by laser diffraction	vol %	4.7±0.5	10.6±1	2.7±0.3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42562 CLEARV-3 09/24/2018 12:25 3008_QAQC_4_SED_0-2 *SEDIMENT*
42563 CLEARV-5 09/24/2018 15:00 3008_QAQC_5_SED_0-2 *SEDIMENT*
42564 NAOMLK-1 09/24/2018 12:11 3008_QAQC_6_SED_0-2 *SEDIMENT*

Analyte	Units	42562	42563	42564
Lab Section 2 (ICP)				
Aluminum	ug/g	1570±200	4800±500	8700±900
Antimony	ug/g	<0.2	<0.2	0.2±0.2
Arsenic	ug/g	1.8±0.4	5.7±0.8	11±1
Barium	ug/g	29±4	110±10	150±20
Beryllium	ug/g	0.2±0.1	0.6±0.1	0.7±0.1
Boron	ug/g	5±1	16±4	29±4
Cadmium	ug/g	0.8±0.1	0.6±0.1	0.4±0.1
Calcium	ug/g	580±90	5600±600	3700±400
Chromium	ug/g	4.8±1	17±2	21±3
Cobalt	ug/g	0.4±0.2	1.4±0.2	5.3±0.8
Copper	ug/g	0.8±0.6	5.1±1	4.4±1
Iron	ug/g	9500±1000	51800±5000	111000±10000
Lead	ug/g	1.7±0.4	2.7±0.4	4.8±0.7
Magnesium	ug/g	180±40	950±100	680±100
Manganese	ug/g	55±6	800±80	880±90
Molybdenum	ug/g	0.2±0.1	1.2±0.3	1.9±0.5
Nickel	ug/g	0.6±0.1	4.1±0.6	8.1±1
Phosphorus	ug/g	210±30	1000±100	1800±200
Potassium	ug/g	380±60	820±100	600±90
Selenium	ug/g	<0.1	0.3±0.2	0.7±0.2
Silver	ug/g	0.1±0.1	<0.1	<0.1
Sodium	ug/g	90±40	210±30	80±30
Strontium	ug/g	28±4	59±6	47±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	0.3±0.1	0.5±0.1
Titanium	ug/g	88±9	260±30	220±20
Uranium	ug/g	0.3±0.2	0.8±0.3	1.2±0.3
Vanadium	ug/g	13±1	54±5	56±6
Zinc	ug/g	7.2±2	24±4	60±6
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	0.32±0.07	0.76±0.2
Polonium-210	Bq/g	0.05±0.02	0.32±0.05	0.58±0.09
Radium-226	Bq/g	0.03±0.02	0.04±0.03	0.08±0.04
Thorium-230	Bq/g	<0.02	0.02±0.02	<0.02

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42562	**CLEARV-3 09/24/2018 12:25 3008_QAQC_4_SED_0-2 *SEDIMENT***
42563	**CLEARV-5 09/24/2018 15:00 3008_QAQC_5_SED_0-2 *SEDIMENT***
42564	**NAOMLK-1 09/24/2018 12:11 3008_QAQC_6_SED_0-2 *SEDIMENT***

Analyte	Units	42562	42563	42564
Lab Section 6 (SPTP)				
Organic carbon	%	3.26±0.3	19.4±2	22.8±2
Loss on ignition	%	6.96	40.02	48.16
Moisture	%	62.33±6	94.91±9	96.24±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	14.0±1	4.8±0.5	0.96±0.1
Fine Sand by laser diffraction	vol %	33.7±3	44.2±4	46.6±5
Silt by laser diffraction	vol %	42.0±4	43.8±4	44.4±4
Clay by laser diffraction	vol %	10.3±1	7.2±0.7	8.0±0.8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42562
This sample was reanalyzed for Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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Feb 22, 2019

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42565 BEETLK2-1 09/30/2018 16:25 BEETLK2-1_201809_SED_0-2 *SEDIMENT*
42566 BEETLK2-2 10/01/2018 09:43 BEETLK2-2_201809_SED_0-2 *SEDIMENT*
42567 BEETLK2-3 10/01/2018 11:15 BEETLK2-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42565	42566	42567
Lab Section 2 (ICP)				
Aluminum	ug/g	1010±100	1020±100	930±90
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.8±0.1	0.6±0.1
Barium	ug/g	21±3	22±3	20±3
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	2±1	2±1	<1
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.1±0.1
Calcium	ug/g	200±30	240±40	220±30
Chromium	ug/g	0.9±0.7	1.2±0.8	1.0±0.7
Cobalt	ug/g	<0.2	<0.2	0.2±0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	1680±200	1780±200	1820±200
Lead	ug/g	1.4±0.4	1.3±0.3	1.3±0.3
Magnesium	ug/g	130±30	140±40	140±40
Manganese	ug/g	45±7	80±8	65±6
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.3±0.1	0.4±0.1	0.3±0.1
Phosphorus	ug/g	50±20	60±20	50±20
Potassium	ug/g	370±60	390±60	320±50
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	100±20	100±20	80±30
Strontium	ug/g	23±3	24±4	23±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	86±9	74±7	95±10
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	1.1±0.3	1.1±0.3	1.2±0.3
Zinc	ug/g	1.4±0.8	1.4±0.8	1.4±0.8
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	<0.04	<0.04
Polonium-210	Bq/g	<0.01	0.01±0.01	0.01±0.01
Radium-226	Bq/g	0.02±0.02	0.02±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42565 BEETLK2-1 09/30/2018 16:25 BEETLK2-1_201809_SED_0-2 *SEDIMENT*
42566 BEETLK2-2 10/01/2018 09:43 BEETLK2-2_201809_SED_0-2 *SEDIMENT*
42567 BEETLK2-3 10/01/2018 11:15 BEETLK2-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42565	42566	42567
Lab Section 6 (SPTP)				
Organic carbon	%	0.21±0.03	0.18±0.04	0.21±0.03
Loss on ignition	%	0.51	0.52	0.50
Moisture	%	28.49±3	31.17±3	38.09±4
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	73.9±7	73.3±7	64.5±6
Fine Sand by laser diffraction	vol %	19.5±2	14.1±1	21.7±2
Silt by laser diffraction	vol %	5.0±0.5	9.8±1	10.3±1
Clay by laser diffraction	vol %	1.6±0.2	2.8±0.3	3.5±0.4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42568 BEETLK2-4 10/01/2018 13:15 BEETLK2-4_201809_SED_0-2 *SEDIMENT*
42569 BEETLK2-5 10/01/2018 14:45 BEETLK2-5_201809_SED_0-2 *SEDIMENT*
42570 BROALK-1 09/23/2018 14:00 BROALK-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42568	42569	42570
Lab Section 2 (ICP)				
Aluminum	ug/g	920±90	790±80	3340±300
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.8±0.1	3.8±0.6
Barium	ug/g	25±4	20±3	140±10
Beryllium	ug/g	<0.1	<0.1	0.2±0.1
Boron	ug/g	1±1	<1	14±4
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.6±0.1
Calcium	ug/g	200±30	200±30	5100±500
Chromium	ug/g	0.8±0.6	1.3±0.8	7.8±2
Cobalt	ug/g	<0.2	<0.2	2.0±0.5
Copper	ug/g	<0.5	<0.5	7.1±2
Iron	ug/g	1620±200	1870±200	6100±600
Lead	ug/g	1.2±0.3	1.1±0.3	1.9±0.5
Magnesium	ug/g	110±30	120±30	950±100
Manganese	ug/g	62±6	120±10	310±30
Molybdenum	ug/g	<0.1	<0.1	2.8±0.4
Nickel	ug/g	0.2±0.1	0.3±0.1	8.7±1
Phosphorus	ug/g	50±20	60±20	490±70
Potassium	ug/g	410±60	270±40	710±100
Selenium	ug/g	<0.1	<0.1	0.8±0.3
Silver	ug/g	<0.1	<0.1	0.1±0.1
Sodium	ug/g	110±30	70±30	220±30
Strontium	ug/g	20±3	20±3	66±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	0.3±0.1
Titanium	ug/g	71±7	58±6	180±20
Uranium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Vanadium	ug/g	0.8±0.3	0.9±0.3	7.5±1
Zinc	ug/g	1.4±0.8	1.4±0.8	26±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	<0.04	<0.04
Polonium-210	Bq/g	0.01±0.01	0.02±0.01	0.03±0.02
Radium-226	Bq/g	0.02±0.02	<0.01	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42568 BEETLK2-4 10/01/2018 13:15 BEETLK2-4_201809_SED_0-2 *SEDIMENT*
42569 BEETLK2-5 10/01/2018 14:45 BEETLK2-5_201809_SED_0-2 *SEDIMENT*
42570 BROALK-1 09/23/2018 14:00 BROALK-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42568	42569	42570
Lab Section 6 (SPTP)				
Organic carbon	%	0.30±0.04	0.30±0.04	23.0±2
Loss on ignition	%	0.68	0.70	48.67
Moisture	%	36.89±4	36.95±4	96.90±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	81.0±8	69.7±7	36.7±4
Fine Sand by laser diffraction	vol %	10.2±1	18.2±2	40.8±4
Silt by laser diffraction	vol %	6.9±0.7	9.2±0.9	20.0±2
Clay by laser diffraction	vol %	1.9±0.2	2.8±0.3	2.5±0.2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42571 BROALK-2 09/24/2018 09:20 BROALK-2_201809_SED_0-2 *SEDIMENT*
42572 BROALK-3 09/24/2018 10:04 BROALK-3_201809_SED_0-2 *SEDIMENT*
42573 BROALK-4 09/24/2018 11:55 BROALK-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42571	42572	42573
Lab Section 2 (ICP)				
Aluminum	ug/g	4290±400	3790±400	3490±300
Antimony	ug/g	0.2±0.2	<0.2	<0.2
Arsenic	ug/g	4.5±0.7	5.2±0.8	4.6±0.7
Barium	ug/g	130±10	140±10	120±10
Beryllium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Boron	ug/g	14±4	16±4	13±3
Cadmium	ug/g	0.6±0.1	0.5±0.1	0.7±0.1
Calcium	ug/g	4600±500	5200±500	4400±400
Chromium	ug/g	8.4±2	7.5±2	8.2±2
Cobalt	ug/g	2.3±0.6	2.8±0.7	2.2±0.6
Copper	ug/g	7.9±2	7.7±2	6.6±2
Iron	ug/g	7800±800	8400±800	8700±900
Lead	ug/g	9.5±1	2.4±0.4	4.6±0.7
Magnesium	ug/g	1000±100	940±100	960±100
Manganese	ug/g	410±40	350±40	350±40
Molybdenum	ug/g	1.9±0.5	2.7±0.4	2.6±0.4
Nickel	ug/g	9.0±1	10±1	8.9±1
Phosphorus	ug/g	590±90	560±80	580±90
Potassium	ug/g	940±100	760±100	740±100
Selenium	ug/g	0.6±0.2	0.8±0.3	0.5±0.2
Silver	ug/g	<0.1	<0.1	0.1±0.1
Sodium	ug/g	210±30	200±30	220±30
Strontium	ug/g	57±6	62±6	59±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.3±0.1	0.1±0.1	0.2±0.1
Titanium	ug/g	220±20	190±20	190±20
Uranium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Vanadium	ug/g	9.7±1	8.8±1	7.7±1
Zinc	ug/g	32±5	34±5	30±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.33±0.07	<0.04	0.22±0.06
Polonium-210	Bq/g	0.21±0.03	0.06±0.02	0.16±0.04
Radium-226	Bq/g	0.02±0.02	<0.01	0.06±0.04
Thorium-230	Bq/g	0.02±0.02	<0.02	0.06±0.04

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42571	**BROALK-2 09/24/2018 09:20 BROALK-2_201809_SED_0-2 *SEDIMENT***
42572	**BROALK-3 09/24/2018 10:04 BROALK-3_201809_SED_0-2 *SEDIMENT***
42573	**BROALK-4 09/24/2018 11:55 BROALK-4_201809_SED_0-2 *SEDIMENT***

Analyte	Units	42571	42572	42573
Lab Section 6 (SPTP)				
Organic carbon	%	22.3±2	22.9±2	20.8±2
Loss on ignition	%	47.35	48.21	43.59
Moisture	%	97.02±10	96.91±10	97.48±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	50.6±5	38.6±4	46.4±5
Fine Sand by laser diffraction	vol %	31.4±3	36.4±4	30.5±3
Silt by laser diffraction	vol %	16.1±2	22.4±2	20.3±2
Clay by laser diffraction	vol %	1.9±0.2	2.7±0.3	2.8±0.3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42571
This sample was reanalyzed for Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42574 BROALK-5 09/24/2018 14:15 BROALK-5_201809_SED_0-2 *SEDIMENT*
42575 CLEARV-1 09/24/2018 09:45 CLEARV-1_201809_SED_0-2 *SEDIMENT*
42576 CLEARV-2 09/24/2018 16:00 CLEARV-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42574	42575	42576
Lab Section 2 (ICP)				
Aluminum	ug/g	Not Reported	3940±400	3360±300
Antimony	ug/g	Not Reported	<0.2	<0.2
Arsenic	ug/g	Not Reported	6.1±0.9	7.9±1
Barium	ug/g	Not Reported	77±8	100±10
Beryllium	ug/g	Not Reported	0.8±0.2	0.5±0.1
Boron	ug/g	Not Reported	12±3	23±3
Cadmium	ug/g	Not Reported	0.3±0.1	0.1±0.1
Calcium	ug/g	Not Reported	3500±400	3500±400
Chromium	ug/g	Not Reported	18±3	19±3
Cobalt	ug/g	Not Reported	1.6±0.2	1.5±0.2
Copper	ug/g	Not Reported	2.3±1	2.3±1
Iron	ug/g	Not Reported	40500±4000	94100±9000
Lead	ug/g	Not Reported	2.5±0.4	1.9±0.5
Magnesium	ug/g	Not Reported	560±80	620±90
Manganese	ug/g	Not Reported	240±20	620±60
Molybdenum	ug/g	Not Reported	0.8±0.3	1.4±0.4
Nickel	ug/g	Not Reported	3.5±0.5	3.6±0.5
Phosphorus	ug/g	Not Reported	1000±100	1300±100
Potassium	ug/g	Not Reported	560±80	630±90
Selenium	ug/g	Not Reported	0.3±0.2	0.2±0.1
Silver	ug/g	Not Reported	<0.1	<0.1
Sodium	ug/g	Not Reported	130±30	140±40
Strontium	ug/g	Not Reported	41±6	40±6
Thallium	ug/g	Not Reported	<0.2	<0.2
Tin	ug/g	Not Reported	0.3±0.1	0.3±0.1
Titanium	ug/g	Not Reported	270±30	210±20
Uranium	ug/g	Not Reported	0.9±0.3	0.9±0.3
Vanadium	ug/g	Not Reported	88±9	82±8
Zinc	ug/g	Not Reported	18±3	16±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.35±0.07	0.26±0.06	0.25±0.06
Polonium-210	Bq/g	0.36±0.05	0.14±0.04	0.21±0.03
Radium-226	Bq/g	0.04±0.03	0.02±0.02	0.02±0.02
Thorium-230	Bq/g	0.04±0.03	0.02±0.02	<0.02

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42575 CLEARV-1 09/24/2018 09:45 CLEARV-1_201809_SED_0-2 *SEDIMENT*
42576 CLEARV-2 09/24/2018 16:00 CLEARV-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42574	42575	42576
Lab Section 6 (SPTP)				
Organic carbon	%	23.7±2	17.4±2	18.6±2
Loss on ignition	%	50.30	36.50	41.20
Moisture	%	97.56±10	93.19±9	92.99±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	55.0±6	11.7±1	4.2±0.4
Fine Sand by laser diffraction	vol %	30.2±3	44.5±4	45.0±4
Silt by laser diffraction	vol %	13.2±1	38.8±4	43.4±4
Clay by laser diffraction	vol %	1.7±0.2	5.1±0.5	7.4±0.7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42574
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42577 CLEARV-3 09/24/2018 12:25 CLEARV-3_201809_SED_0-2 *SEDIMENT*
42578 CLEARV-4 09/24/2018 13:30 CLEARV-4_201809_SED_0-2 *SEDIMENT*
42579 CLEARV-5 09/24/2018 15:00 CLEARV-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42577	42578	42579
Lab Section 2 (ICP)				
Aluminum	ug/g	1120±100	2940±300	4430±400
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.4±0.4	5.1±0.8	5.2±0.8
Barium	ug/g	20±3	100±10	94±9
Beryllium	ug/g	0.1±0.1	0.4±0.1	0.6±0.1
Boron	ug/g	2±1	29±4	14±4
Cadmium	ug/g	0.3±0.1	0.2±0.1	0.3±0.1
Calcium	ug/g	400±60	4300±400	4900±500
Chromium	ug/g	3.5±1	13±2	16±2
Cobalt	ug/g	0.3±0.2	1.2±0.2	1.2±0.2
Copper	ug/g	<0.5	1.6±0.9	2.5±1
Iron	ug/g	7300±700	62400±6000	46600±5000
Lead	ug/g	1.3±0.3	2.0±0.3	2.4±0.4
Magnesium	ug/g	120±30	800±100	800±100
Manganese	ug/g	58±6	740±70	500±50
Molybdenum	ug/g	<0.1	0.9±0.3	1.0±0.2
Nickel	ug/g	0.4±0.1	3.2±0.5	3.9±0.6
Phosphorus	ug/g	140±40	1500±200	940±100
Potassium	ug/g	180±40	620±90	730±100
Selenium	ug/g	<0.1	0.2±0.1	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	60±20	130±30	160±40
Strontium	ug/g	25±4	67±7	51±5
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	0.2±0.1	0.3±0.1
Titanium	ug/g	70±7	170±20	250±20
Uranium	ug/g	0.2±0.1	0.6±0.2	0.7±0.2
Vanadium	ug/g	9.2±1	44±4	53±5
Zinc	ug/g	6.0±2	16±2	20±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	0.24±0.06	0.33±0.07
Polonium-210	Bq/g	0.01±0.01	0.16±0.04	0.28±0.04
Radium-226	Bq/g	<0.01	0.02±0.02	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42578 CLEARV-4 09/24/2018 13:30 CLEARV-4_201809_SED_0-2 *SEDIMENT*
42579 CLEARV-5 09/24/2018 15:00 CLEARV-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42577	42578	42579
Lab Section 6 (SPTP)				
Organic carbon	%	1.06±0.1	12.9±1	18.4±2
Loss on ignition	%	2.19	27.41	37.92
Moisture	%	43.43±4	90.85±9	93.52±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	33.8±3	14.2±1	10.2±1
Fine Sand by laser diffraction	vol %	27.5±3	44.5±4	48.6±5
Silt by laser diffraction	vol %	30.2±3	34.9±3	36.1±4
Clay by laser diffraction	vol %	8.5±0.8	6.4±0.6	5.1±0.5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42580 FORRLK-1 09/26/2018 09:50 FORRLK-1_201809_SED_0-2 *SEDIMENT*
42581 FORRLK-2 09/26/2018 10:45 FORRLK-2_201809_SED_0-2 *SEDIMENT*
42582 FORRLK-3 09/26/2018 12:15 FORRLK-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42580	42581	42582
Lab Section 2 (ICP)				
Aluminum	ug/g	2320±200	2850±300	3230±300
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.4±0.4	2.2±0.3	2.8±0.4
Barium	ug/g	52±5	77±8	100±10
Beryllium	ug/g	0.1±0.1	0.2±0.1	0.2±0.1
Boron	ug/g	4±1	4±1	6±1
Cadmium	ug/g	0.3±0.1	0.5±0.1	0.3±0.1
Calcium	ug/g	2200±200	4300±400	5400±500
Chromium	ug/g	3.8±1	5.8±1	5.9±1
Cobalt	ug/g	0.8±0.2	1.2±0.2	1.3±0.2
Copper	ug/g	1.9±1	1.8±0.9	2.7±1
Iron	ug/g	6600±700	10100±1000	14800±1000
Lead	ug/g	1.8±0.4	2.7±0.4	2.5±0.4
Magnesium	ug/g	480±70	680±100	790±100
Manganese	ug/g	210±20	300±30	490±50
Molybdenum	ug/g	0.2±0.1	0.4±0.2	0.6±0.2
Nickel	ug/g	2.0±0.3	2.3±0.3	3.1±0.5
Phosphorus	ug/g	360±50	330±50	630±90
Potassium	ug/g	450±70	450±70	570±80
Selenium	ug/g	0.2±0.1	0.3±0.2	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	110±30	130±30	150±40
Strontium	ug/g	29±4	47±7	51±5
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	0.1±0.1	0.1±0.1
Titanium	ug/g	190±20	200±20	200±20
Uranium	ug/g	1.9±0.5	1.5±0.4	4.2±0.6
Vanadium	ug/g	5.5±0.8	9.0±1	11±1
Zinc	ug/g	7.5±2	12±2	13±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.20±0.06	0.26±0.06	0.36±0.07
Polonium-210	Bq/g	0.31±0.05	0.27±0.04	0.34±0.05
Radium-226	Bq/g	0.01±0.01	0.02±0.02	0.04±0.03
Thorium-230	Bq/g	<0.02	0.03±0.02	0.03±0.02

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42580 FORRLK-1 09/26/2018 09:50 FORRLK-1_201809_SED_0-2 *SEDIMENT*
42581 FORRLK-2 09/26/2018 10:45 FORRLK-2_201809_SED_0-2 *SEDIMENT*
42582 FORRLK-3 09/26/2018 12:15 FORRLK-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42580	42581	42582
Lab Section 6 (SPTP)				
Organic carbon	%	13.0±1	17.4±2	18.9±2
Loss on ignition	%	26.22	33.25	37.45
Moisture	%	89.68±9	89.42±9	93.08±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	5.8±0.6	29.9±3	16.3±2
Fine Sand by laser diffraction	vol %	44.3±4	42.8±4	47.8±5
Silt by laser diffraction	vol %	44.7±4	24.6±2	32.2±3
Clay by laser diffraction	vol %	5.2±0.5	2.8±0.3	3.6±0.4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42580
This sample was reanalyzed for Lead 210 and Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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SRC Group # 2018-12934

Feb 22, 2019

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42583 FORRLK-4 09/26/2018 13:00 FORRLK-4_201809_SED_0-2 *SEDIMENT*
42584 FORRLK-5 09/29/2018 12:00 FORRLK-5_201809_SED_0-2 *SEDIMENT*
42585 FORRLKN-1 09/29/2018 11:19 FORRLKN-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42583	42584	42585
Lab Section 2 (ICP)				
Aluminum	ug/g	2460±200	3360±300	1410±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.9±0.5	3.2±0.5	1.4±0.4
Barium	ug/g	70±7	100±10	28±4
Beryllium	ug/g	0.1±0.1	0.2±0.1	<0.1
Boron	ug/g	6±1	5±1	3±1
Cadmium	ug/g	0.4±0.1	0.4±0.1	0.2±0.1
Calcium	ug/g	3100±300	6200±600	600±90
Chromium	ug/g	4.3±1	7.0±2	2.3±1
Cobalt	ug/g	0.9±0.2	1.3±0.2	0.6±0.2
Copper	ug/g	2.4±1	2.2±1	0.7±0.6
Iron	ug/g	10000±1000	15300±2000	3680±400
Lead	ug/g	2.2±0.3	2.4±0.4	2.1±0.3
Magnesium	ug/g	600±90	790±100	270±40
Manganese	ug/g	420±40	480±50	92±9
Molybdenum	ug/g	0.3±0.2	0.8±0.3	<0.1
Nickel	ug/g	2.2±0.3	3.2±0.5	1.4±0.4
Phosphorus	ug/g	390±60	390±60	200±30
Potassium	ug/g	490±70	470±70	360±50
Selenium	ug/g	0.2±0.1	0.4±0.2	0.1±0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	120±30	120±30	60±20
Strontium	ug/g	38±6	56±6	21±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.1±0.1	0.1±0.1	<0.1
Titanium	ug/g	210±20	230±20	100±10
Uranium	ug/g	2.3±0.3	1.8±0.4	0.2±0.1
Vanadium	ug/g	6.4±1	11±1	3.0±0.4
Zinc	ug/g	9.0±2	16±2	5.9±1
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.27±0.06	0.17±0.06	0.13±0.05
Polonium-210	Bq/g	0.25±0.04	0.16±0.04	0.11±0.03
Radium-226	Bq/g	0.01±0.01	0.02±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42585 FORRLKN-1 09/29/2018 11:19 FORRLKN-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42583	42584	42585
Lab Section 6 (SPTP)				
Organic carbon	%	12.1±1	12.3±1	1.84±0.2
Loss on ignition	%	24.74	39.10	3.82
Moisture	%	90.35±9	90.95±9	70.86±7
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	11.7±1	13.1±1	52.1±5
Fine Sand by laser diffraction	vol %	50.9±5	45.6±4	33.9±3
Silt by laser diffraction	vol %	33.2±3	37.2±4	11.8±1
Clay by laser diffraction	vol %	4.2±0.4	4.1±0.4	2.2±0.2

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42586 FORRLKN-2 09/30/2018 12:00 FORRLKN-2_201809_SED_0-2 *SEDIMENT*
42587 FORRLKN-3 09/30/2018 12:30 FORRLKN-3_201809_SED_0-2 *SEDIMENT*
42588 FORRLKN-4 09/30/2018 13:02 FORRLKN-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42586	42587	42588
Lab Section 2 (ICP)				
Aluminum	ug/g	1940±200	1440±100	2910±300
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.8±0.4	1.1±0.3	6.3±0.9
Barium	ug/g	34±5	26±4	46±7
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	4±1	<1	8±1
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.2±0.1
Calcium	ug/g	980±100	460±70	1600±200
Chromium	ug/g	3.1±1	1.7±0.9	5.1±1
Cobalt	ug/g	0.6±0.2	0.5±0.2	2.0±0.5
Copper	ug/g	0.7±0.6	<0.5	2.2±1
Iron	ug/g	5200±500	2230±200	8100±800
Lead	ug/g	2.4±0.4	1.6±0.4	3.2±0.5
Magnesium	ug/g	400±60	240±40	610±90
Manganese	ug/g	130±10	81±8	160±20
Molybdenum	ug/g	<0.1	<0.1	0.8±0.3
Nickel	ug/g	1.6±0.4	0.9±0.1	3.5±0.5
Phosphorus	ug/g	230±30	90±30	410±60
Potassium	ug/g	500±80	490±70	680±100
Selenium	ug/g	0.1±0.1	<0.1	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	100±20	130±30	160±40
Strontium	ug/g	25±4	22±3	28±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	0.2±0.1
Titanium	ug/g	170±20	120±10	160±20
Uranium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Vanadium	ug/g	3.8±0.6	2.1±0.3	6.3±0.9
Zinc	ug/g	6.0±2	2.7±1	12±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.13±0.05	<0.04	0.27±0.06
Polonium-210	Bq/g	0.18±0.04	0.04±0.02	0.21±0.03
Radium-226	Bq/g	<0.01	<0.01	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42587 FORRLKN-3 09/30/2018 12:30 FORRLKN-3_201809_SED_0-2 *SEDIMENT*
42588 FORRLKN-4 09/30/2018 13:02 FORRLKN-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42586	42587	42588
Lab Section 6 (SPTP)				
Organic carbon	%	3.09±0.3	0.75±0.1	4.79±0.5
Loss on ignition	%	6.56	1.57	10.14
Moisture	%	77.04±8	43.86±4	85.53±8
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	25.0±2	46.9±5	28.0±3
Fine Sand by laser diffraction	vol %	51.5±5	33.4±3	44.5±4
Silt by laser diffraction	vol %	20.0±2	16.1±2	23.6±2
Clay by laser diffraction	vol %	3.5±0.4	3.6±0.4	3.9±0.4

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42589 FORRLKN-5 09/30/2018 13:35 FORRLKN-5_201809_SED_0-2 *SEDIMENT*
42590 HODGLK-1 09/22/2018 10:15 HODGLK-1_201809_SED_0-2 *SEDIMENT*
42591 HODGLK-2 09/22/2018 11:15 HODGLK-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42589	42590	42591
Lab Section 2 (ICP)				
Aluminum	ug/g	3950±400	1940±200	2330±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	5.8±0.9	1.2±0.3	1.4±0.4
Barium	ug/g	79±8	36±5	43±6
Beryllium	ug/g	0.1±0.1	0.1±0.1	0.1±0.1
Boron	ug/g	14±4	5±1	6±1
Cadmium	ug/g	0.5±0.1	0.4±0.1	0.3±0.1
Calcium	ug/g	2700±300	990±100	1100±100
Chromium	ug/g	7.3±2	3.2±1	4.1±1
Cobalt	ug/g	1.6±0.2	1.0±0.2	1.2±0.2
Copper	ug/g	4.3±1	2.0±1	2.5±1
Iron	ug/g	21100±2000	4320±400	7200±700
Lead	ug/g	5.3±0.8	2.8±0.4	3.2±0.5
Magnesium	ug/g	910±100	300±40	400±60
Manganese	ug/g	370±40	250±20	380±40
Molybdenum	ug/g	0.2±0.1	0.1±0.1	0.4±0.2
Nickel	ug/g	4.6±0.7	2.7±0.4	3.5±0.5
Phosphorus	ug/g	920±100	240±40	420±60
Potassium	ug/g	970±100	440±70	490±70
Selenium	ug/g	0.4±0.2	0.2±0.1	0.2±0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	190±50	100±20	80±30
Strontium	ug/g	38±6	37±6	40±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.1±0.1	0.1±0.1
Titanium	ug/g	240±20	120±10	150±20
Uranium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Vanadium	ug/g	8.7±1	4.5±0.7	5.7±0.8
Zinc	ug/g	18±3	28±4	15±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.39±0.07	0.20±0.06	0.18±0.06
Polonium-210	Bq/g	0.41±0.06	0.17±0.04	0.23±0.03
Radium-226	Bq/g	<0.01	0.02±0.02	0.03±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42589	**FORRLKN-5 09/30/2018 13:35 FORRLKN-5_201809_SED_0-2 *SEDIMENT***
42590	**HODGLK-1 09/22/2018 10:15 HODGLK-1_201809_SED_0-2 *SEDIMENT***
42591	**HODGLK-2 09/22/2018 11:15 HODGLK-2_201809_SED_0-2 *SEDIMENT***

Analyte	Units	42589	42590	42591
Lab Section 6 (SPTP)				
Organic carbon	%	9.78±1	2.93±0.3	3.85±0.4
Loss on ignition	%	20.78	6.49	8.38
Moisture	%	93.42±9	68.66±7	75.28±8
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	31.7±3	21.9±2	7.8±0.8
Fine Sand by laser diffraction	vol %	46.0±5	56.4±6	63.5±6
Silt by laser diffraction	vol %	19.4±2	17.7±2	23.5±2
Clay by laser diffraction	vol %	3.0±0.3	4.0±0.4	5.2±0.5

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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42592 HODGLK-3 09/22/2018 12:15 HODGLK-3_201809_SED_0-2 *SEDIMENT*
42593 HODGLK-4 09/22/2018 13:15 HODGLK-4_201809_SED_0-2 *SEDIMENT*
42594 HODGLK-5 09/22/2018 14:15 HODGLK-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42592	42593	42594
Lab Section 2 (ICP)				
Aluminum	ug/g	1600±200	1620±200	1560±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.2±0.3	1.3±0.3	1.0±0.2
Barium	ug/g	28±4	33±5	29±4
Beryllium	ug/g	0.1±0.1	<0.1	<0.1
Boron	ug/g	3±1	4±1	3±1
Cadmium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Calcium	ug/g	900±100	850±100	760±100
Chromium	ug/g	2.6±1	2.8±1	2.7±1
Cobalt	ug/g	0.9±0.2	0.8±0.2	0.9±0.2
Copper	ug/g	1.6±0.9	1.5±0.8	1.6±0.9
Iron	ug/g	6700±700	6000±600	5600±600
Lead	ug/g	2.4±0.4	2.4±0.4	2.3±0.3
Magnesium	ug/g	280±40	280±40	260±40
Manganese	ug/g	220±20	320±30	220±20
Molybdenum	ug/g	0.2±0.1	0.2±0.1	0.1±0.1
Nickel	ug/g	2.2±0.3	2.3±0.3	2.7±0.4
Phosphorus	ug/g	330±50	310±50	300±40
Potassium	ug/g	370±60	400±60	350±50
Selenium	ug/g	0.1±0.1	0.1±0.1	0.1±0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	90±40	80±30	80±30
Strontium	ug/g	34±5	34±5	32±5
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	94±9	99±10	95±10
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	3.8±0.6	3.8±0.6	3.6±0.5
Zinc	ug/g	9.4±2	9.3±2	9.8±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.15±0.06	0.22±0.06	0.13±0.05
Polonium-210	Bq/g	0.15±0.04	0.21±0.03	0.16±0.04
Radium-226	Bq/g	0.01±0.01	0.02±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42593 HODGLK-4 09/22/2018 13:15 HODGLK-4_201809_SED_0-2 *SEDIMENT*
42594 HODGLK-5 09/22/2018 14:15 HODGLK-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42592	42593	42594
Lab Section 6 (SPTP)				
Organic carbon	%	2.71±0.3	3.10±0.3	2.85±0.3
Loss on ignition	%	5.71	6.84	6.41
Moisture	%	71.37±7	72.12±7	70.11±7
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	12.1±1	16.6±2	7.5±0.8
Fine Sand by laser diffraction	vol %	52.6±5	57.1±6	57.8±6
Silt by laser diffraction	vol %	29.3±3	21.7±2	28.8±3
Clay by laser diffraction	vol %	6.1±0.6	4.6±0.5	5.8±0.6

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42595 LAKEG-1 09/28/2018 09:42 LAKEG-1_201809_SED_0-2 *SEDIMENT*
42596 LAKEG-2 09/28/2018 10:30 LAKEG-2_201809_SED_0-2 *SEDIMENT*
42597 LAKEG-3 09/28/2018 11:08 LAKEG-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42595	42596	42597
Lab Section 2 (ICP)				
Aluminum	ug/g	4620±500	Not Reported	4380±400
Antimony	ug/g	<0.2	Not Reported	<0.2
Arsenic	ug/g	4.8±0.7	Not Reported	3.5±0.5
Barium	ug/g	69±7	Not Reported	65±6
Beryllium	ug/g	0.1±0.1	Not Reported	0.1±0.1
Boron	ug/g	10±2	Not Reported	10±2
Cadmium	ug/g	0.3±0.1	Not Reported	0.3±0.1
Calcium	ug/g	4600±500	Not Reported	4000±400
Chromium	ug/g	7.6±2	Not Reported	7.4±2
Cobalt	ug/g	2.2±0.6	Not Reported	2.3±0.6
Copper	ug/g	4.2±1	Not Reported	4.0±1
Iron	ug/g	21600±2000	Not Reported	24500±2000
Lead	ug/g	4.7±0.7	Not Reported	3.1±0.5
Magnesium	ug/g	990±100	Not Reported	950±100
Manganese	ug/g	330±30	Not Reported	340±30
Molybdenum	ug/g	0.8±0.3	Not Reported	0.9±0.3
Nickel	ug/g	5.4±0.8	Not Reported	5.5±0.8
Phosphorus	ug/g	900±100	Not Reported	880±100
Potassium	ug/g	720±100	Not Reported	670±100
Selenium	ug/g	0.6±0.2	Not Reported	0.6±0.2
Silver	ug/g	<0.1	Not Reported	<0.1
Sodium	ug/g	150±40	Not Reported	150±40
Strontium	ug/g	34±5	Not Reported	32±5
Thallium	ug/g	<0.2	Not Reported	<0.2
Tin	ug/g	0.2±0.1	Not Reported	0.2±0.1
Titanium	ug/g	160±20	Not Reported	160±20
Uranium	ug/g	0.3±0.2	Not Reported	0.3±0.2
Vanadium	ug/g	11±1	Not Reported	10±1
Zinc	ug/g	33±5	Not Reported	33±5
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.27±0.06	0.35±0.07	0.28±0.07
Polonium-210	Bq/g	0.23±0.03	0.50±0.08	0.24±0.04
Radium-226	Bq/g	0.02±0.02	0.03±0.02	0.05±0.03
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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SRC Group # 2018-12934

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42595 LAKEG-1 09/28/2018 09:42 LAKEG-1_201809_SED_0-2 *SEDIMENT*
42596 LAKEG-2 09/28/2018 10:30 LAKEG-2_201809_SED_0-2 *SEDIMENT*
42597 LAKEG-3 09/28/2018 11:08 LAKEG-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42595	42596	42597
Lab Section 6 (SPTP)				
Organic carbon	%	23.4±2	24.6±2	23.5±2
Loss on ignition	%	47.46	48.08	45.73
Moisture	%	95.88±10	96.44±10	95.59±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	56.0±6	46.2±5	49.6±5
Fine Sand by laser diffraction	vol %	27.2±3	35.6±4	28.7±3
Silt by laser diffraction	vol %	14.5±1	15.4±2	18.8±2
Clay by laser diffraction	vol %	2.3±0.2	2.7±0.3	2.9±0.3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42596
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42598 LAKEG-4 09/28/2018 12:43 LAKEG-4_201809_SED_0-2 *SEDIMENT*
42599 LAKEG-5 09/28/2018 13:26 LAKEG-5_201809_SED_0-2 *SEDIMENT*
42600 LAKEH-1 09/27/2018 10:15 LAKEH-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42598	42599	42600
Lab Section 2 (ICP)				
Aluminum	ug/g	4150±400	4600±500	2280±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	5.2±0.8	4.1±0.6	1.5±0.4
Barium	ug/g	66±7	56±6	44±7
Beryllium	ug/g	0.1±0.1	0.2±0.1	<0.1
Boron	ug/g	9±1	10±2	6±1
Cadmium	ug/g	0.4±0.1	0.3±0.1	0.5±0.1
Calcium	ug/g	3800±400	3000±300	2400±200
Chromium	ug/g	6.7±2	7.2±2	4.0±1
Cobalt	ug/g	1.8±0.2	1.9±0.2	0.8±0.2
Copper	ug/g	4.2±1	3.4±1	5.0±1
Iron	ug/g	21700±2000	15400±2000	3200±300
Lead	ug/g	2.1±0.3	5.6±0.8	3.8±0.6
Magnesium	ug/g	910±100	800±100	620±90
Manganese	ug/g	300±30	160±20	68±7
Molybdenum	ug/g	0.6±0.2	0.9±0.3	<0.1
Nickel	ug/g	4.9±0.7	5.0±0.8	2.3±0.3
Phosphorus	ug/g	830±100	580±90	630±90
Potassium	ug/g	660±100	600±90	520±80
Selenium	ug/g	0.6±0.2	0.5±0.2	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	150±40	120±30	130±30
Strontium	ug/g	34±5	26±4	39±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.1±0.1	0.2±0.1	0.2±0.1
Titanium	ug/g	160±20	170±20	100±10
Uranium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Vanadium	ug/g	9.4±1	11±1	7.0±1
Zinc	ug/g	30±4	31±5	16±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.24±0.06	0.26±0.06	0.43±0.1
Polonium-210	Bq/g	0.15±0.04	0.17±0.04	0.52±0.08
Radium-226	Bq/g	0.02±0.02	0.03±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42598 LAKEG-4 09/28/2018 12:43 LAKEG-4_201809_SED_0-2 *SEDIMENT*
42599 LAKEG-5 09/28/2018 13:26 LAKEG-5_201809_SED_0-2 *SEDIMENT*
42600 LAKEH-1 09/27/2018 10:15 LAKEH-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42598	42599	42600
Lab Section 6 (SPTP)				
Organic carbon	%	22.6±2	22.7±2	15.4±2
Loss on ignition	%	44.20	44.36	32.27
Moisture	%	95.27±10	94.93±9	97.19±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	49.7±5	37.7±4	25.9±2
Fine Sand by laser diffraction	vol %	29.9±3	38.5±4	39.7±4
Silt by laser diffraction	vol %	17.8±2	20.3±2	31.3±3
Clay by laser diffraction	vol %	2.7±0.3	3.5±0.4	3.1±0.3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42601 LAKEH-2 09/27/2018 11:45 LAKEH-2_201809_SED_0-2 *SEDIMENT*
42602 LAKEH-3 09/27/2018 13:00 LAKEH-3_201809_SED_0-2 *SEDIMENT*
42603 LAKEH-4 09/27/2018 14:00 LAKEH-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42601	42602	42603
Lab Section 2 (ICP)				
Aluminum	ug/g	3640±400	Not Reported	Not Reported
Antimony	ug/g	<0.2	Not Reported	Not Reported
Arsenic	ug/g	2.2±0.3	Not Reported	Not Reported
Barium	ug/g	77±8	Not Reported	Not Reported
Beryllium	ug/g	0.1±0.1	Not Reported	Not Reported
Boron	ug/g	11±3	Not Reported	Not Reported
Cadmium	ug/g	0.4±0.1	Not Reported	Not Reported
Calcium	ug/g	4100±400	Not Reported	Not Reported
Chromium	ug/g	6.8±2	Not Reported	Not Reported
Cobalt	ug/g	1.8±0.2	Not Reported	Not Reported
Copper	ug/g	4.9±1	Not Reported	Not Reported
Iron	ug/g	6800±700	Not Reported	Not Reported
Lead	ug/g	5.0±0.8	Not Reported	Not Reported
Magnesium	ug/g	1100±100	Not Reported	Not Reported
Manganese	ug/g	130±10	Not Reported	Not Reported
Molybdenum	ug/g	0.4±0.2	Not Reported	Not Reported
Nickel	ug/g	4.3±0.6	Not Reported	Not Reported
Phosphorus	ug/g	1500±200	Not Reported	Not Reported
Potassium	ug/g	940±100	Not Reported	Not Reported
Selenium	ug/g	0.5±0.2	Not Reported	Not Reported
Silver	ug/g	<0.1	Not Reported	Not Reported
Sodium	ug/g	190±50	Not Reported	Not Reported
Strontium	ug/g	50±5	Not Reported	Not Reported
Thallium	ug/g	<0.2	Not Reported	Not Reported
Tin	ug/g	0.4±0.1	Not Reported	Not Reported
Titanium	ug/g	150±20	Not Reported	Not Reported
Uranium	ug/g	0.4±0.2	Not Reported	Not Reported
Vanadium	ug/g	12±1	Not Reported	Not Reported
Zinc	ug/g	25±4	Not Reported	Not Reported
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.96±0.1	1.1±0.2	1.1±0.3
Polonium-210	Bq/g	1.2±0.1	1.2±0.1	1.1±0.2
Radium-226	Bq/g	<0.01	0.06±0.04	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42601 LAKEH-2 09/27/2018 11:45 LAKEH-2_201809_SED_0-2 *SEDIMENT*
42602 LAKEH-3 09/27/2018 13:00 LAKEH-3_201809_SED_0-2 *SEDIMENT*
42603 LAKEH-4 09/27/2018 14:00 LAKEH-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42601	42602	42603
Lab Section 6 (SPTP)				
Organic carbon	%	29.9±3	34.6±3	36.4±4
Loss on ignition	%	62.29	73.57	75.66
Moisture	%	98.24±10	98.79±10	98.87±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	5.2±0.5	14.1±1	23.8±2
Fine Sand by laser diffraction	vol %	23.3±2	23.6±2	27.2±3
Silt by laser diffraction	vol %	62.6±6	52.8±5	43.1±4
Clay by laser diffraction	vol %	8.9±0.9	9.5±1	5.9±0.6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42602
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Note for Sample # 42603
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42604 LAKEH-5 09/27/2018 15:23 LAKEH-5_201809_SED_0-2 *SEDIMENT*
42605 LLOYLKI-1 09/25/2018 10:00 LLOYLKI-1_201809_SED_0-2 *SEDIMENT*
42606 LLOYLKI-2 09/25/2018 10:40 LLOYLKI-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42604	42605	42606
Lab Section 2 (ICP)				
Aluminum	ug/g	1710±200	8400±800	8800±900
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.3±0.3	4.7±0.7	6.1±0.9
Barium	ug/g	32±5	82±8	100±10
Beryllium	ug/g	<0.1	0.3±0.1	0.3±0.1
Boron	ug/g	4±1	17±4	20±3
Cadmium	ug/g	0.3±0.1	0.2±0.1	0.3±0.1
Calcium	ug/g	1400±100	1900±200	2300±200
Chromium	ug/g	3.9±1	13±2	14±2
Cobalt	ug/g	0.9±0.2	2.6±0.6	2.7±0.7
Copper	ug/g	2.4±1	3.0±1	3.6±1
Iron	ug/g	2310±200	47600±5000	66000±7000
Lead	ug/g	3.1±0.5	3.2±0.5	3.3±0.5
Magnesium	ug/g	380±60	1100±100	1200±100
Manganese	ug/g	51±5	360±40	590±60
Molybdenum	ug/g	<0.1	0.2±0.1	0.4±0.2
Nickel	ug/g	2.2±0.3	6.7±1	7.3±1
Phosphorus	ug/g	420±60	1200±100	1600±200
Potassium	ug/g	420±60	1200±100	1300±100
Selenium	ug/g	0.2±0.1	0.4±0.2	0.5±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	100±20	120±30	160±40
Strontium	ug/g	33±5	40±6	45±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.1±0.1	0.3±0.1	0.3±0.1
Titanium	ug/g	98±10	290±30	300±30
Uranium	ug/g	0.3±0.2	0.7±0.2	0.7±0.2
Vanadium	ug/g	5.1±0.8	20±2	22±2
Zinc	ug/g	9.8±2	22±3	24±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.33±0.07	0.33±0.07	0.32±0.07
Polonium-210	Bq/g	0.35±0.05	0.22±0.03	0.33±0.05
Radium-226	Bq/g	<0.01	0.02±0.02	0.04±0.03
Thorium-230	Bq/g	<0.02	0.02±0.02	<0.02

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42604 LAKEH-5 09/27/2018 15:23 LAKEH-5_201809_SED_0-2 *SEDIMENT*
42605 LLOYLKI-1 09/25/2018 10:00 LLOYLKI-1_201809_SED_0-2 *SEDIMENT*
42606 LLOYLKI-2 09/25/2018 10:40 LLOYLKI-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42604	42605	42606
Lab Section 6 (SPTP)				
Organic carbon	%	11.4±1	11.7±1	12.5±1
Loss on ignition	%	23.35	23.29	26.18
Moisture	%	95.17±10	91.22±9	92.92±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	34.9±3	2.3±0.2	0.8±0.1
Fine Sand by laser diffraction	vol %	31.2±3	48.6±5	35.6±4
Silt by laser diffraction	vol %	30.2±3	42.9±4	54.1±5
Clay by laser diffraction	vol %	3.7±0.4	6.2±0.6	9.6±1

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42607 LLOYLKI-3 09/25/2018 11:20 LLOYLKI-3_201809_SED_0-2 *SEDIMENT*
42608 LLOYLKI-4 09/25/2018 12:20 LLOYLKI-4_201809_SED_0-2 *SEDIMENT*
42609 LLOYLKI-5 09/25/2018 12:56 LLOYLKI-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42607	42608	42609
Lab Section 2 (ICP)				
Aluminum	ug/g	8800±900	9300±900	8700±900
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	6.7±1	6.0±0.9	7.2±1
Barium	ug/g	110±10	100±10	110±10
Beryllium	ug/g	0.3±0.1	0.4±0.1	0.4±0.1
Boron	ug/g	19±5	22±3	20±3
Cadmium	ug/g	0.2±0.1	0.3±0.1	0.3±0.1
Calcium	ug/g	2400±200	2400±200	2300±200
Chromium	ug/g	14±2	17±2	13±2
Cobalt	ug/g	2.9±0.7	4.4±0.7	2.5±0.6
Copper	ug/g	3.8±1	4.0±1	3.9±1
Iron	ug/g	74700±7000	62600±6000	75600±8000
Lead	ug/g	3.4±0.5	3.8±0.6	3.5±0.5
Magnesium	ug/g	1200±100	1300±100	1200±100
Manganese	ug/g	620±60	540±50	720±70
Molybdenum	ug/g	0.4±0.2	0.7±0.2	0.8±0.3
Nickel	ug/g	7.1±1	8.5±1	7.3±1
Phosphorus	ug/g	1800±200	1400±100	1900±200
Potassium	ug/g	1300±100	1400±100	1300±100
Selenium	ug/g	0.4±0.2	0.5±0.2	0.5±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	150±40	160±40	150±40
Strontium	ug/g	46±7	48±7	46±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.3±0.1	0.3±0.1	0.3±0.1
Titanium	ug/g	270±30	300±30	300±30
Uranium	ug/g	0.7±0.2	0.8±0.3	0.8±0.3
Vanadium	ug/g	22±2	23±2	22±2
Zinc	ug/g	24±4	26±4	26±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.24±0.06	0.28±0.07	0.33±0.07
Polonium-210	Bq/g	0.32±0.05	0.26±0.04	0.33±0.05
Radium-226	Bq/g	0.03±0.02	0.03±0.02	0.03±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42607 LLOYLKI-3 09/25/2018 11:20 LLOYLKI-3_201809_SED_0-2 *SEDIMENT*
42608 LLOYLKI-4 09/25/2018 12:20 LLOYLKI-4_201809_SED_0-2 *SEDIMENT*
42609 LLOYLKI-5 09/25/2018 12:56 LLOYLKI-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42607	42608	42609
Lab Section 6 (SPTP)				
Organic carbon	%	12.6±1	12.4±1	12.6±1
Loss on ignition	%	25.95	24.97	25.96
Moisture	%	93.45±9	91.92±9	92.91±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	1.2±0.1	1.7±0.2	1.4±0.1
Fine Sand by laser diffraction	vol %	43.3±4	47.3±5	44.8±4
Silt by laser diffraction	vol %	47.6±5	44.2±4	46.2±5
Clay by laser diffraction	vol %	8.0±0.8	6.7±0.7	7.7±0.8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42610 NAOMLK-1 09/24/2018 12:11 NAOMLK-1_201809_SED_0-2 *SEDIMENT*
42611 NAOMLK-2 09/24/2018 13:00 NAOMLK-2_201809_SED_0-2 *SEDIMENT*
42612 NAOMLK-3 09/25/2018 14:30 NAOMLK-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42610	42611	42612
Lab Section 2 (ICP)				
Aluminum	ug/g	Not Reported	8800±900	Not Reported
Antimony	ug/g	Not Reported	<0.2	Not Reported
Arsenic	ug/g	Not Reported	11±1	Not Reported
Barium	ug/g	Not Reported	140±10	Not Reported
Beryllium	ug/g	Not Reported	0.8±0.2	Not Reported
Boron	ug/g	Not Reported	30±4	Not Reported
Cadmium	ug/g	Not Reported	0.4±0.1	Not Reported
Calcium	ug/g	Not Reported	3800±400	Not Reported
Chromium	ug/g	Not Reported	21±3	Not Reported
Cobalt	ug/g	Not Reported	4.9±0.7	Not Reported
Copper	ug/g	Not Reported	5.2±1	Not Reported
Iron	ug/g	Not Reported	104000±10000	Not Reported
Lead	ug/g	Not Reported	4.9±0.7	Not Reported
Magnesium	ug/g	Not Reported	700±100	Not Reported
Manganese	ug/g	Not Reported	940±90	Not Reported
Molybdenum	ug/g	Not Reported	2.0±0.3	Not Reported
Nickel	ug/g	Not Reported	8.3±1	Not Reported
Phosphorus	ug/g	Not Reported	2000±200	Not Reported
Potassium	ug/g	Not Reported	630±90	Not Reported
Selenium	ug/g	Not Reported	0.7±0.2	Not Reported
Silver	ug/g	Not Reported	<0.1	Not Reported
Sodium	ug/g	Not Reported	90±40	Not Reported
Strontium	ug/g	Not Reported	49±7	Not Reported
Thallium	ug/g	Not Reported	<0.2	Not Reported
Tin	ug/g	Not Reported	0.3±0.1	Not Reported
Titanium	ug/g	Not Reported	230±20	Not Reported
Uranium	ug/g	Not Reported	1.3±0.3	Not Reported
Vanadium	ug/g	Not Reported	59±6	Not Reported
Zinc	ug/g	Not Reported	60±6	Not Reported
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.66±0.2	0.72±0.2	0.46±0.1
Polonium-210	Bq/g	0.60±0.09	0.59±0.09	0.61±0.09
Radium-226	Bq/g	0.06±0.04	0.06±0.04	0.06±0.04
Thorium-230	Bq/g	0.02±0.02	0.02±0.02	<0.02

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SRC Group # 2018-12934

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42610 NAOMLK-1 09/24/2018 12:11 NAOMLK-1_201809_SED_0-2 *SEDIMENT*
42611 NAOMLK-2 09/24/2018 13:00 NAOMLK-2_201809_SED_0-2 *SEDIMENT*
42612 NAOMLK-3 09/25/2018 14:30 NAOMLK-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42610	42611	42612
Lab Section 6 (SPTP)				
Organic carbon	%	23.0±2	23.4±2	23.5±2
Loss on ignition	%	51.26	48.58	48.68
Moisture	%	97.03±10	96.32±10	96.71±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	1.0±0.1	1.3±0.1	3.0±0.3
Fine Sand by laser diffraction	vol %	45.4±4	45.6±4	47.6±5
Silt by laser diffraction	vol %	46.4±5	45.6±4	41.7±4
Clay by laser diffraction	vol %	7.2±0.7	7.4±0.7	7.7±0.8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42610
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Note for Sample # 42612
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42613 NAOMLK-4 09/25/2018 15:15 NAOMLK-4_201809_SED_0-2 *SEDIMENT*
42614 NAOMLK-5 09/25/2018 16:00 NAOMLK-5_201809_SED_0-2 *SEDIMENT*
42615 PATTLKE-1 09/23/2018 09:00 PATTLKE-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42613	42614	42615
Lab Section 2 (ICP)				
Aluminum	ug/g	9000±900	Not Reported	590±60
Antimony	ug/g	<0.2	Not Reported	<0.2
Arsenic	ug/g	10±1	Not Reported	0.5±0.1
Barium	ug/g	150±20	Not Reported	19±3
Beryllium	ug/g	0.8±0.2	Not Reported	<0.1
Boron	ug/g	34±5	Not Reported	3±1
Cadmium	ug/g	0.5±0.1	Not Reported	<0.1
Calcium	ug/g	3800±400	Not Reported	230±30
Chromium	ug/g	22±3	Not Reported	<0.5
Cobalt	ug/g	5.0±0.8	Not Reported	<0.2
Copper	ug/g	5.5±1	Not Reported	<0.5
Iron	ug/g	98300±10000	Not Reported	1000±100
Lead	ug/g	5.2±0.8	Not Reported	1.1±0.3
Magnesium	ug/g	720±100	Not Reported	70±30
Manganese	ug/g	880±90	Not Reported	86±9
Molybdenum	ug/g	2.1±0.3	Not Reported	<0.1
Nickel	ug/g	8.6±1	Not Reported	<0.1
Phosphorus	ug/g	1800±200	Not Reported	60±20
Potassium	ug/g	660±100	Not Reported	240±40
Selenium	ug/g	0.7±0.2	Not Reported	<0.1
Silver	ug/g	<0.1	Not Reported	<0.1
Sodium	ug/g	110±30	Not Reported	80±30
Strontium	ug/g	48±7	Not Reported	18±3
Thallium	ug/g	<0.2	Not Reported	<0.2
Tin	ug/g	0.3±0.1	Not Reported	<0.1
Titanium	ug/g	240±20	Not Reported	29±4
Uranium	ug/g	1.3±0.3	Not Reported	0.3±0.2
Vanadium	ug/g	60±6	Not Reported	0.1±0.1
Zinc	ug/g	61±6	Not Reported	1.1±0.7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.62±0.2	0.67±0.2	<0.04
Polonium-210	Bq/g	0.50±0.08	0.82±0.1	0.01±0.01
Radium-226	Bq/g	0.07±0.04	0.05±0.03	<0.01
Thorium-230	Bq/g	0.03±0.02	<0.02	<0.02

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42613 NAOMLK-4 09/25/2018 15:15 NAOMLK-4_201809_SED_0-2 *SEDIMENT*
42614 NAOMLK-5 09/25/2018 16:00 NAOMLK-5_201809_SED_0-2 *SEDIMENT*
42615 PATTLKE-1 09/23/2018 09:00 PATTLKE-1_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42613	42614	42615
Lab Section 6 (SPTP)				
Organic carbon	%	23.8±2	23.1±2	0.48±0.07
Loss on ignition	%	48.82	48.68	0.94
Moisture	%	96.50±10	96.44±10	23.49±2
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	1.4±0.1	1.2±0.1	62.9±6
Fine Sand by laser diffraction	vol %	46.3±5	46.8±5	17.7±2
Silt by laser diffraction	vol %	45.5±4	45.3±4	15.7±2
Clay by laser diffraction	vol %	6.8±0.7	6.8±0.7	3.8±0.4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 42614
Insufficient sample left to reanalyze for Lab Section 2 (ICP). 02/19/2018

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42616 PATTLKE-2 09/23/2018 10:50 PATTLKE-2_201809_SED_0-2 *SEDIMENT*
42617 PATTLKE-3 09/23/2018 12:30 PATTLKE-3_201809_SED_0-2 *SEDIMENT*
42618 PATTLKE-4 09/23/2018 13:30 PATTLKE-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42616	42617	42618
Lab Section 2 (ICP)				
Aluminum	ug/g	930±90	680±70	690±70
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.5±0.1	0.5±0.1
Barium	ug/g	23±3	22±3	20±3
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	2±1	2±1	1±1
Cadmium	ug/g	0.2±0.1	0.2±0.1	0.1±0.1
Calcium	ug/g	340±50	240±40	200±30
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.2	<0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	880±90	1080±100	930±90
Lead	ug/g	1.3±0.3	1.1±0.3	1.2±0.3
Magnesium	ug/g	120±30	80±30	80±30
Manganese	ug/g	44±7	99±10	73±7
Molybdenum	ug/g	0.1±0.1	<0.1	<0.1
Nickel	ug/g	0.1±0.1	<0.1	<0.1
Phosphorus	ug/g	60±20	50±20	50±20
Potassium	ug/g	340±50	250±40	250±40
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	120±30	100±20	100±20
Strontium	ug/g	21±3	19±3	19±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	69±7	32±5	34±5
Uranium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Vanadium	ug/g	0.5±0.2	0.1±0.1	0.2±0.1
Zinc	ug/g	1.6±0.9	1.0±0.7	1.0±0.7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	<0.04	0.05±0.04
Polonium-210	Bq/g	0.01±0.01	0.02±0.01	0.02±0.01
Radium-226	Bq/g	0.02±0.02	<0.01	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42616 PATTLKE-2 09/23/2018 10:50 PATTLKE-2_201809_SED_0-2 *SEDIMENT*
42617 PATTLKE-3 09/23/2018 12:30 PATTLKE-3_201809_SED_0-2 *SEDIMENT*
42618 PATTLKE-4 09/23/2018 13:30 PATTLKE-4_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42616	42617	42618
Lab Section 6 (SPTP)				
Organic carbon	%	0.58±0.09	0.52±0.08	0.45±0.07
Loss on ignition	%	1.07	1.00	0.83
Moisture	%	28.68±3	23.86±2	25.34±2
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	65.3±6	76.3±8	80.3±8
Fine Sand by laser diffraction	vol %	23.4±2	12.5±1	11.2±1
Silt by laser diffraction	vol %	9.3±0.9	9.0±0.9	7.0±0.7
Clay by laser diffraction	vol %	2.0±0.2	2.1±0.2	1.6±0.2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42619 PATTLKE-5 09/23/2018 15:10 PATTLKE-5_201809_SED_0-2 *SEDIMENT*
42620 PATTLKN-1 09/22/2018 10:15 PATTLKN-1_201809_SED_0-2 *SEDIMENT*
42621 PATTLKN-2 09/22/2018 10:45 PATTLKN-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42619	42620	42621
Lab Section 2 (ICP)				
Aluminum	ug/g	790±80	8900±900	6700±700
Antimony	ug/g	<0.2	0.2±0.2	0.2±0.2
Arsenic	ug/g	0.4±0.1	14±1	46±5
Barium	ug/g	20±3	740±70	1050±100
Beryllium	ug/g	<0.1	0.3±0.1	0.3±0.1
Boron	ug/g	1±1	26±4	21±3
Cadmium	ug/g	0.1±0.1	0.7±0.1	0.4±0.1
Calcium	ug/g	220±30	4000±400	4800±500
Chromium	ug/g	<0.5	12±2	9.7±2
Cobalt	ug/g	<0.2	5.2±0.8	4.4±0.7
Copper	ug/g	<0.5	11±2	7.7±2
Iron	ug/g	820±80	122000±10000	182000±20000
Lead	ug/g	1.1±0.3	15±2	12±1
Magnesium	ug/g	100±20	1700±200	1500±200
Manganese	ug/g	56±6	18100±2000	20800±2000
Molybdenum	ug/g	<0.1	2.5±0.4	9.4±1
Nickel	ug/g	<0.1	15±2	11±1
Phosphorus	ug/g	50±20	4600±500	7100±700
Potassium	ug/g	300±40	1500±200	1200±100
Selenium	ug/g	<0.1	1.4±0.4	1.5±0.4
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	110±30	160±40	130±30
Strontium	ug/g	19±3	60±6	71±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	0.4±0.1	0.3±0.1
Titanium	ug/g	41±6	280±30	220±20
Uranium	ug/g	0.3±0.2	1.7±0.4	2.9±0.4
Vanadium	ug/g	0.2±0.1	20±2	17±2
Zinc	ug/g	1.2±0.8	71±7	53±5
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	0.64±0.2	0.92±0.1
Polonium-210	Bq/g	0.01±0.01	0.74±0.1	1.2±0.1
Radium-226	Bq/g	<0.01	0.14±0.04	0.18±0.04
Thorium-230	Bq/g	<0.02	<0.02	0.02±0.02

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42619 PATTLKE-5 09/23/2018 15:10 PATTLKE-5_201809_SED_0-2 *SEDIMENT*
42620 PATTLKN-1 09/22/2018 10:15 PATTLKN-1_201809_SED_0-2 *SEDIMENT*
42621 PATTLKN-2 09/22/2018 10:45 PATTLKN-2_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42619	42620	42621
Lab Section 6 (SPTP)				
Organic carbon	%	0.49±0.07	15.0±2	14.1±1
Loss on ignition	%	0.98	34.86	34.18
Moisture	%	26.62±3	94.52±9	95.60±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	71.4±7	24.3±2	14.8±1
Fine Sand by laser diffraction	vol %	14.9±1	37.9±4	42.6±4
Silt by laser diffraction	vol %	11.4±1	30.9±3	35.3±4
Clay by laser diffraction	vol %	2.3±0.2	6.9±0.7	7.3±0.7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42622 PATTLKN-3 09/22/2018 11:47 PATTLKN-3_201809_SED_0-2 *SEDIMENT*
42623 PATTLKN-4 09/22/2018 12:47 PATTLKN-4_201809_SED_0-2 *SEDIMENT*
42624 PATTLKN-5 09/22/2018 13:30 PATTLKN-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42622	42623	42624
Lab Section 2 (ICP)				
Aluminum	ug/g	9300±900	8100±800	8600±900
Antimony	ug/g	0.2±0.2	<0.2	0.2±0.2
Arsenic	ug/g	11±1	15±2	15±2
Barium	ug/g	700±70	790±80	950±100
Beryllium	ug/g	0.4±0.1	0.3±0.1	0.3±0.1
Boron	ug/g	26±4	22±3	24±4
Cadmium	ug/g	0.7±0.1	0.6±0.1	0.6±0.1
Calcium	ug/g	4400±400	4200±400	4200±400
Chromium	ug/g	13±2	11±2	11±2
Cobalt	ug/g	5.4±0.8	4.7±0.7	5.1±0.8
Copper	ug/g	9.8±2	7.9±2	8.4±2
Iron	ug/g	109000±10000	99200±10000	118000±10000
Lead	ug/g	13±1	9.0±1	12±1
Magnesium	ug/g	1800±200	1700±200	1700±200
Manganese	ug/g	17800±2000	18100±2000	21800±2000
Molybdenum	ug/g	2.7±0.4	3.8±0.6	4.0±0.6
Nickel	ug/g	14±1	12±1	12±1
Phosphorus	ug/g	4800±500	3400±300	3900±400
Potassium	ug/g	1600±200	1500±200	1400±100
Selenium	ug/g	1.3±0.3	1.1±0.3	1.3±0.3
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	180±40	160±40	140±40
Strontium	ug/g	64±6	64±6	65±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.4±0.1	0.3±0.1	0.3±0.1
Titanium	ug/g	270±30	290±30	270±30
Uranium	ug/g	1.9±0.5	1.9±0.5	1.8±0.4
Vanadium	ug/g	21±2	18±2	19±2
Zinc	ug/g	78±8	65±6	71±7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.68±0.2	0.52±0.1	0.67±0.2
Polonium-210	Bq/g	0.90±0.1	0.78±0.1	0.85±0.1
Radium-226	Bq/g	0.10±0.02	0.14±0.04	0.17±0.04
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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42622 PATTLKN-3 09/22/2018 11:47 PATTLKN-3_201809_SED_0-2 *SEDIMENT*
42623 PATTLKN-4 09/22/2018 12:47 PATTLKN-4_201809_SED_0-2 *SEDIMENT*
42624 PATTLKN-5 09/22/2018 13:30 PATTLKN-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42622	42623	42624
Lab Section 6 (SPTP)				
Organic carbon	%	14.7±1	12.0±1	13.4±1
Loss on ignition	%	34.10	27.53	31.77
Moisture	%	95.56±10	94.39±9	95.27±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	32.3±3	23.0±2	23.0±2
Fine Sand by laser diffraction	vol %	37.5±4	43.7±4	41.1±4
Silt by laser diffraction	vol %	25.0±2	27.8±3	29.4±3
Clay by laser diffraction	vol %	5.3±0.5	5.5±0.6	6.5±0.6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42625 PATTLKNE-1 10/01/2018 10:00 PATTLKNE-1_201809_SED_0-2 *SEDIMENT*
42626 PATTLKNE-2 10/01/2018 10:30 PATTLKNE-2_201809_SED_0-2 *SEDIMENT*
42627 PATTLKNE-3 10/02/2018 11:15 PATTLKNE-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42625	42626	42627
Lab Section 2 (ICP)				
Aluminum	ug/g	1040±100	1040±100	4550±400
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.9±0.1	1.1±0.3	3.5±0.5
Barium	ug/g	25±4	47±7	92±9
Beryllium	ug/g	<0.1	<0.1	0.3±0.1
Boron	ug/g	4±1	13±3	25±4
Cadmium	ug/g	0.2±0.1	0.3±0.1	0.3±0.1
Calcium	ug/g	450±70	990±100	2500±200
Chromium	ug/g	1.1±0.7	0.9±0.7	8.8±2
Cobalt	ug/g	0.2±0.2	<0.2	2.6±0.6
Copper	ug/g	0.6±0.6	<0.5	4.7±1
Iron	ug/g	4530±400	7100±700	54300±5000
Lead	ug/g	1.7±0.4	1.6±0.4	5.8±0.9
Magnesium	ug/g	180±40	290±40	700±100
Manganese	ug/g	200±20	78±8	480±50
Molybdenum	ug/g	0.2±0.1	0.4±0.2	1.2±0.3
Nickel	ug/g	0.6±0.1	0.6±0.1	5.8±0.9
Phosphorus	ug/g	190±50	480±70	820±100
Potassium	ug/g	250±40	340±50	680±100
Selenium	ug/g	<0.1	<0.1	0.5±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	70±30	100±20	100±20
Strontium	ug/g	26±4	29±4	42±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	0.2±0.1
Titanium	ug/g	59±6	44±7	180±20
Uranium	ug/g	0.2±0.1	0.2±0.1	0.7±0.2
Vanadium	ug/g	1.9±0.5	2.6±0.4	17±2
Zinc	ug/g	4.7±1	6.9±2	31±5
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.09±0.05	0.04±0.04	0.46±0.1
Polonium-210	Bq/g	0.14±0.04	0.06±0.02	0.39±0.06
Radium-226	Bq/g	<0.01	<0.01	0.04±0.03
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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SRC Group # 2018-12934

Feb 22, 2019

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42625 PATTLKNE-1 10/01/2018 10:00 PATTLKNE-1_201809_SED_0-2 *SEDIMENT*
42626 PATTLKNE-2 10/01/2018 10:30 PATTLKNE-2_201809_SED_0-2 *SEDIMENT*
42627 PATTLKNE-3 10/02/2018 11:15 PATTLKNE-3_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42625	42626	42627
Lab Section 6 (SPTP)				
Organic carbon	%	2.47±0.2	2.83±0.3	12.1±1
Loss on ignition	%	5.29	6.35	25.88
Moisture	%	75.61±8	51.21±5	94.22±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	51.4±5	77.7±8	27.9±3
Fine Sand by laser diffraction	vol %	41.7±4	18.9±2	53.1±5
Silt by laser diffraction	vol %	5.6±0.6	2.6±0.3	16.4±2
Clay by laser diffraction	vol %	1.3±0.1	0.8±0.1	2.5±0.2

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Revised results for Lab Section 2 (ICP). 02/22/2018 KG

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42628 PATTLKNE-4 10/02/2018 12:55 PATTLKNE-4_201809_SED_0-2 *SEDIMENT*
42629 PATTLKNE-5 10/02/2018 13:30 PATTLKNE-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42628	42629
Lab Section 2 (ICP)			
Aluminum	ug/g	4160±400	4480±400
Antimony	ug/g	<0.2	<0.2
Arsenic	ug/g	3.8±0.6	3.8±0.6
Barium	ug/g	94±9	110±10
Beryllium	ug/g	0.3±0.1	0.3±0.1
Boron	ug/g	22±3	23±3
Cadmium	ug/g	0.3±0.1	0.3±0.1
Calcium	ug/g	2300±200	2500±200
Chromium	ug/g	7.8±2	8.4±2
Cobalt	ug/g	2.6±0.6	2.7±0.7
Copper	ug/g	4.4±1	4.5±1
Iron	ug/g	59400±6000	61000±6000
Lead	ug/g	5.2±0.8	5.4±0.8
Magnesium	ug/g	650±100	690±100
Manganese	ug/g	570±60	680±70
Molybdenum	ug/g	1.2±0.3	1.1±0.3
Nickel	ug/g	5.1±0.8	5.3±0.8
Phosphorus	ug/g	900±100	980±100
Potassium	ug/g	620±90	680±100
Selenium	ug/g	0.4±0.2	0.5±0.2
Silver	ug/g	<0.1	<0.1
Sodium	ug/g	80±30	90±40
Strontium	ug/g	40±6	41±6
Thallium	ug/g	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.2±0.1
Titanium	ug/g	180±20	190±20
Uranium	ug/g	0.6±0.2	0.7±0.2
Vanadium	ug/g	16±2	17±2
Zinc	ug/g	28±4	31±5
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/g	0.38±0.07	0.07±0.05
Polonium-210	Bq/g	0.42±0.06	0.16±0.04
Radium-226	Bq/g	0.03±0.02	0.03±0.02
Thorium-230	Bq/g	<0.02	<0.02

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42629 PATTLKNE-5 10/02/2018 13:30 PATTLKNE-5_201809_SED_0-2 *SEDIMENT*

Analyte	Units	42628	42629
Lab Section 6 (SPTP)			
Organic carbon	%	12.2±1	11.7±1
Loss on ignition	%	25.29	25.56
Moisture	%	94.32±9	93.89±9
Gravel	vol %	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	33.3±3	21.5±2
Fine Sand by laser diffraction	vol %	53.0±5	58.0±6
Silt by laser diffraction	vol %	11.7±1	17.8±2
Clay by laser diffraction	vol %	2.0±0.2	2.6±0.3

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42630 FORRLKN-1 09/29/2018 13:20 FORRLKN-1_201809_SED_0-5 *SEDIMENT*
42631 FORRLKN-2 09/29/2018 14:00 FORRLKN-2_201809_SED_0-5 *SEDIMENT*
42632 FORRLKN-3 09/29/2018 14:52 FORRLKN-3_201809_SED_0-5 *SEDIMENT*

Analyte	Units	42630	42631	42632
Lab Section 6 (SPTP)				
Organic carbon	%	0.33±0.05	0.42±0.06	0.57±0.08
Moisture	%	25.52±2	30.30±3	34.36±3
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	88.0±9	88.0±9	84.2±8
Fine Sand by laser diffraction	vol %	9.9±1	9.6±1	12.9±1
Silt by laser diffraction	vol %	1.5±0.2	1.8±0.2	2.1±0.2
Clay by laser diffraction	vol %	0.7±0.1	0.7±0.1	0.8±0.1

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42633 FORRLKN-4 09/29/2018 15:25 FORRLKN-4_201809_SED_0-5 *SEDIMENT*
42634 FORRLKN-5 09/29/2018 16:00 FORRLKN-5_201809_SED_0-5 *SEDIMENT*
42635 PATTLKN-1 09/22/2018 14:51 PATTLKN-1_201809_SED_0-5 *SEDIMENT*

Analyte	Units	42633	42634	42635
Lab Section 6 (SPTP)				
Organic carbon	%	0.50±0.08	0.42±0.06	0.35±0.05
Moisture	%	33.33±3	29.43±3	27.49±3
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	83.4±8	86.5±9	90.5±9
Fine Sand by laser diffraction	vol %	13.8±1	10.9±1	7.4±0.7
Silt by laser diffraction	vol %	2.0±0.2	1.8±0.2	1.4±0.1
Clay by laser diffraction	vol %	0.8±0.1	0.7±0.1	0.7±0.1

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42636 PATTLKN-2 09/22/2018 15:30 PATTLKN-2_201809_SED_0-5 *SEDIMENT*
42637 PATTLKN-3 09/22/2018 16:11 PATTLKN-3_201809_SED_0-5 *SEDIMENT*
42638 PATTLKN-4 09/22/2018 16:39 PATTLKN-4_201809_SED_0-5 *SEDIMENT*

Analyte	Units	42636	42637	42638
Lab Section 6 (SPTP)				
Organic carbon	%	0.30±0.04	0.31±0.05	0.32±0.05
Moisture	%	25.54±2	25.14±2	26.00±3
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	91.2±9	84.8±8	89.6±9
Fine Sand by laser diffraction	vol %	7.1±0.7	11.8±1	8.2±0.8
Silt by laser diffraction	vol %	1.1±0.1	2.5±0.2	1.5±0.2
Clay by laser diffraction	vol %	0.7±0.1	0.9±0.1	0.7±0.1

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42639	**PATTLKN-5 09/22/2018 17:09 PATTLKN-5_201809_SED_0-5 *SEDIMENT***
42640	**PATTLKNE-1 10/02/2018 14:50 PATTLKNE-1_201809_SED_0-5 *SEDIMENT***
42641	**PATTLKNE-2 10/02/2018 15:18 PATTLKNE-2_201809_SED_0-5 *SEDIMENT***

Analyte	Units	42639	42640	42641
Lab Section 6 (SPTP)				
Organic carbon	%	0.34±0.05	9.47±0.9	6.42±0.6
Moisture	%	27.15±3	83.23±8	87.09±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	81.8±8	27.3±3	26.4±3
Fine Sand by laser diffraction	vol %	14.9±1	52.7±5	53.0±5
Silt by laser diffraction	vol %	2.4±0.2	17.2±2	17.6±2
Clay by laser diffraction	vol %	0.9±0.1	2.9±0.3	3.0±0.3

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42642 PATTLKNE-3 10/02/2018 15:43 PATTLKNE-3_201809_SED_0-5 *SEDIMENT*
42643 PATTLKNE-4 10/02/2018 16:05 PATTLKNE-4_201809_SED_0-5 *SEDIMENT*
42644 PATTLKNE-5 10/02/2018 16:36 PATTLKNE-5_201809_SED_0-5 *SEDIMENT*

Analyte	Units	42642	42643	42644
Lab Section 6 (SPTP)				
Organic carbon	%	4.18±0.4	4.48±0.4	5.51±0.6
Moisture	%	82.65±8	77.90±8	83.37±8
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	37.3±4	28.5±3	27.4±3
Fine Sand by laser diffraction	vol %	48.0±5	52.3±5	53.4±5
Silt by laser diffraction	vol %	12.5±1	16.0±2	16.1±2
Clay by laser diffraction	vol %	2.2±0.2	3.2±0.3	3.0±0.3

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Dec 10, 2018

This report was generated for samples included in SRC Group # 2018-12934

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	ug/g	23600	25300
Aluminum	ug/g	23600	23800
Aluminum	ug/g	23600	28200
Arsenic	ug/g	17.0	16.5
Arsenic	ug/g	17.0	17.2
Arsenic	ug/g	17.0	17.9
Barium	ug/g	99.0	96.7
Barium	ug/g	99.0	99.3
Barium	ug/g	99.0	99.5
Beryllium	ug/g	0.634	0.699
Beryllium	ug/g	0.634	0.652
Beryllium	ug/g	0.634	0.628
Cadmium	ug/g	0.244	0.243
Cadmium	ug/g	0.244	0.250
Cadmium	ug/g	0.244	0.247
Calcium	ug/g	7000	5910
Calcium	ug/g	7000	6500
Calcium	ug/g	7000	7100
Chromium	ug/g	41.4	39.7
Chromium	ug/g	41.4	39.6
Chromium	ug/g	41.4	41.3
Cobalt	ug/g	13.7	13.2
Cobalt	ug/g	13.7	13.5
Cobalt	ug/g	13.7	13.9
Copper	ug/g	43.6	41.7
Copper	ug/g	43.6	45.6
Copper	ug/g	43.6	46.4
Iron	ug/g	37600	43000
Iron	ug/g	37600	40900
Iron	ug/g	37600	44700
Lead	ug/g	13.3	14.4

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QC Analysis	Units	Target Value	Obtained Value	
Lead	ug/g	13.3	14.0	
Lead	ug/g	13.3	13.4	
Lead-210	Bq/L	21.8	30.3	*(1)
Lead-210	Bq	7.70	8.48	
Lead-210	Bq/L	21.8	23.7	
Lead-210	Bq	0.770	0.817	
Lead-210	Bq	0.385	0.439	
Lead-210	Bq/L	21.8	25.7	
Lead-210	Bq/L	21.8	22.4	
Lead-210	Bq	0.385	0.330	
Lead-210	Bq/L	21.8	23.4	
Lead-210	Bq	7.70	7.78	
Lead-210	Bq/L	21.8	19.1	
Lead-210	Bq	1.92	1.80	
Lead-210	Bq/L	21.8	16.8	
Lead-210	Bq	0.770	0.609	
Lead-210	Bq/L	21.8	21.0	
Lead-210	Bq	0.770	0.889	
Magnesium	ug/g	7400	7100	
Magnesium	ug/g	7400	7730	
Magnesium	ug/g	7400	8010	
Manganese	ug/g	1230	1460	
Manganese	ug/g	1230	1320	
Manganese	ug/g	1230	1490	
Molybdenum	ug/g	0.766	0.733	
Molybdenum	ug/g	0.766	0.849	
Molybdenum	ug/g	0.766	0.762	
Nickel	ug/g	20.5	19.8	
Nickel	ug/g	20.5	20.7	
Nickel	ug/g	20.5	21.4	
Organic carbon	%	5.41	5.24	
Particle Size 0.3 um	um	0.245	0.244	
Particle Size 15 um	um	14.4	14.2	
Particle Size 500 um	um	582	583	
Phosphorus	ug/g	830	784	
Phosphorus	ug/g	830	845	
Phosphorus	ug/g	830	889	
Polonium-210	Bq/L	21.0	16.9	
Polonium-210	Bq	1.92	1.69	
Polonium-210	Bq/L	21.0	16.1	
Polonium-210	Bq	0.077	0.060	
Polonium-210	Bq/L	21.0	19.6	
Polonium-210	Bq	0.770	0.736	
Polonium-210	Bq/L	21.0	21.1	
Polonium-210	Bq	0.385	0.339	

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QC Analysis	Units	Target Value	Obtained Value	
Polonium-210	Bq/L	21.0	19.0	
Polonium-210	Bq	0.077	0.067	
Polonium-210	Bq/L	21.0	18.1	
Polonium-210	Bq	1.92	1.78	
Polonium-210	Bq/L	21.0	23.8	
Polonium-210	Bq	0.0770	0.102	
Potassium	ug/g	1700	1490	
Potassium	ug/g	1700	1600	
Potassium	ug/g	1700	1650	
Radium-226	Bq/L	21.4	21.0	
Radium-226	Bq	0.427	0.448	
Radium-226	Bq/L	21.4	22.1	
Radium-226	Bq	2.13	2.44	
Radium-226	Bq/L	21.4	20.6	
Radium-226	Bq	0.043	0.044	
Radium-226	Bq/L	21.4	21.1	
Radium-226	Bq	0.427	0.526	*(2)
Selenium	ug/g	0.420	0.518	
Selenium	ug/g	0.420	0.516	
Selenium	ug/g	0.420	0.537	
Silver	ug/g	0.314	0.312	
Silver	ug/g	0.314	0.311	
Silver	ug/g	0.314	0.307	
Sodium	ug/g	893	753	
Sodium	ug/g	893	778	
Sodium	ug/g	893	831	
Strontium	ug/g	27.3	27.3	
Strontium	ug/g	27.3	29.0	
Strontium	ug/g	27.3	28.8	
Thorium-230	Bq/L	20.5	20.5	
Thorium-230	Bq/L	20.5	21.1	
Thorium-230	Bq/L	20.5	21.6	
Thorium-232	Bq	0.203	0.203	
Thorium-232	Bq	0.203	0.221	
Thorium-232	Bq	0.203	0.182	
Tin	ug/g	1.52	1.64	
Tin	ug/g	1.52	1.53	
Tin	ug/g	1.52	1.46	
Titanium	ug/g	1990	2150	
Titanium	ug/g	1990	2210	
Titanium	ug/g	1990	2230	
Uranium	ug/g	1.20	1.22	
Uranium	ug/g	1.20	1.24	
Uranium	ug/g	1.20	1.17	
Vanadium	ug/g	71.2	71.1	

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QC Analysis	Units	Target Value	Obtained Value
Vanadium	ug/g	71.2	74.2
Vanadium	ug/g	71.2	75.4
Zinc	ug/g	74.8	73.8
Zinc	ug/g	74.8	76.6
Zinc	ug/g	74.8	76.3

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	42559	<0.1	<0.1
Silver	ug/g	42568	<0.1	<0.1
Silver	ug/g	42581	<0.1	<0.1
Silver	ug/g	42590	<0.1	<0.1
Silver	ug/g	42604	<0.1	<0.1
Silver	ug/g	42608	0.1	<0.1
Silver	ug/g	42618	<0.1	<0.1
Silver	ug/g	42629	<0.1	<0.1
Aluminum	ug/g	42559	1950	1860
Aluminum	ug/g	42568	790	790
Aluminum	ug/g	42581	3580	3420
Aluminum	ug/g	42590	1890	1910
Aluminum	ug/g	42604	1720	1800
Aluminum	ug/g	42608	8500	8300
Aluminum	ug/g	42618	700	860
Aluminum	ug/g	42629	4270	4050
Arsenic	ug/g	42559	1.6	1.4
Arsenic	ug/g	42568	0.7	0.7
Arsenic	ug/g	42581	3.1	3.1
Arsenic	ug/g	42590	1.5	1.5
Arsenic	ug/g	42604	1.4	1.5
Arsenic	ug/g	42608	6.0	5.9
Arsenic	ug/g	42618	0.6	0.7
Arsenic	ug/g	42629	4.1	3.8
Boron	ug/g	42559	5	6
Boron	ug/g	42568	1	1
Boron	ug/g	42581	6	5
Boron	ug/g	42590	7	6
Boron	ug/g	42604	4	4
Boron	ug/g	42608	18	17
Boron	ug/g	42618	1	2
Boron	ug/g	42629	23	21

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Barium	ug/g	42559	35	34
Barium	ug/g	42568	20	20
Barium	ug/g	42581	100	98
Barium	ug/g	42590	36	39
Barium	ug/g	42604	31	33
Barium	ug/g	42608	96	91
Barium	ug/g	42618	22	28
Barium	ug/g	42629	100	100
Beryllium	ug/g	42559	0.1	0.1
Beryllium	ug/g	42568	<0.1	<0.1
Beryllium	ug/g	42581	0.3	0.3
Beryllium	ug/g	42590	0.1	0.1
Beryllium	ug/g	42604	<0.1	<0.1
Beryllium	ug/g	42608	0.3	0.3
Beryllium	ug/g	42618	<0.1	<0.1
Beryllium	ug/g	42629	0.3	0.3
Organic carbon	%	42593	3.10	3.14
Organic carbon	%	42632	0.57	0.58
Organic carbon	%	42644	5.51	5.52
Calcium	ug/g	42559	960	930
Calcium	ug/g	42568	200	180
Calcium	ug/g	42581	5800	5600
Calcium	ug/g	42590	840	850
Calcium	ug/g	42604	1500	1600
Calcium	ug/g	42608	2300	2200
Calcium	ug/g	42618	250	250
Calcium	ug/g	42629	2400	2300
Cadmium	ug/g	42559	0.1	0.1
Cadmium	ug/g	42568	<0.1	<0.1
Cadmium	ug/g	42581	0.2	0.2
Cadmium	ug/g	42590	0.1	0.1
Cadmium	ug/g	42604	0.1	0.1
Cadmium	ug/g	42608	0.2	0.2
Cadmium	ug/g	42618	<0.1	<0.1
Cadmium	ug/g	42629	0.2	0.2
Clay by laser diffraction	vol %	42559	4.7	4.8
Clay by laser diffraction	vol %	42570	2.5	2.2
Clay by laser diffraction	vol %	42579	5.1	4.9
Clay by laser diffraction	vol %	42589	3.0	2.7
Clay by laser diffraction	vol %	42599	3.5	3.3
Clay by laser diffraction	vol %	42609	7.7	7.8
Clay by laser diffraction	vol %	42621	7.3	7.9
Clay by laser diffraction	vol %	42631	0.7	0.7
Clay by laser diffraction	vol %	42641	3.0	2.9
Cobalt	ug/g	42559	1.5	1.5
Cobalt	ug/g	42568	0.7	0.5

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Cobalt	ug/g	42581	2.0	1.9
Cobalt	ug/g	42590	1.6	1.9
Cobalt	ug/g	42604	1.2	1.4
Cobalt	ug/g	42608	3.4	3.4
Cobalt	ug/g	42618	0.8	0.8
Cobalt	ug/g	42629	4.0	3.6
Coarse Sand by laser diffraction	vol %	42570	36.7	41.5
Coarse Sand by laser diffraction	vol %	42579	10.2	11.6
Coarse Sand by laser diffraction	vol %	42589	31.7	33.3
Coarse Sand by laser diffraction	vol %	42599	12.0	10.0
Coarse Sand by laser diffraction	vol %	42599	37.7	40.3
Coarse Sand by laser diffraction	vol %	42609	1.4	1.3
Coarse Sand by laser diffraction	vol %	42621	14.8	12.1
Coarse Sand by laser diffraction	vol %	42631	88.0	87.7
Coarse Sand by laser diffraction	vol %	42641	26.4	25.7
Chromium	ug/g	42559	300	270
Chromium	ug/g	42568	290	270
Chromium	ug/g	42581	570	570
Chromium	ug/g	42590	390	410
Chromium	ug/g	42604	470	510
Chromium	ug/g	42608	300	300
Chromium	ug/g	42618	340	370
Chromium	ug/g	42629	410	390
Copper	ug/g	42559	5.4	5.1
Copper	ug/g	42568	1.6	1.4
Copper	ug/g	42581	4.5	4.2
Copper	ug/g	42590	3.9	4.0
Copper	ug/g	42604	3.6	3.7
Copper	ug/g	42608	4.4	4.4
Copper	ug/g	42618	1.7	1.7
Copper	ug/g	42629	5.5	5.2
Iron	ug/g	42559	9000	8200
Iron	ug/g	42568	3570	3230
Iron	ug/g	42581	17900	18000
Iron	ug/g	42590	7100	7400
Iron	ug/g	42604	5400	5900
Iron	ug/g	42608	58700	59500
Iron	ug/g	42618	3180	3220
Iron	ug/g	42629	60000	57200
Fine Sand by laser diffraction	vol %	42559	55.4	56.5
Fine Sand by laser diffraction	vol %	42570	40.8	38.6
Fine Sand by laser diffraction	vol %	42579	48.6	48.2
Fine Sand by laser diffraction	vol %	42589	46.0	46.8
Fine Sand by laser diffraction	vol %	42599	38.5	37.7
Fine Sand by laser diffraction	vol %	42609	44.8	44.6
Fine Sand by laser diffraction	vol %	42621	42.6	42.5

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Fine Sand by laser diffraction	vol %	42631	9.6	10.2	
Fine Sand by laser diffraction	vol %	42641	53.0	54.4	
Gravel	vol %	42559	<0.01	<0.01	
Gravel	vol %	42570	<0.01	<0.01	
Gravel	vol %	42579	<0.01	<0.01	
Gravel	vol %	42589	<0.01	<0.01	
Gravel	vol %	42599	<0.01	<0.01	
Gravel	vol %	42609	<0.01	<0.01	
Gravel	vol %	42621	<0.01	<0.01	
Gravel	vol %	42631	<0.01	<0.01	
Gravel	vol %	42641	<0.01	<0.01	
Potassium	ug/g	42559	410	390	
Potassium	ug/g	42568	290	320	
Potassium	ug/g	42581	480	450	
Potassium	ug/g	42590	410	400	
Potassium	ug/g	42604	370	380	
Potassium	ug/g	42608	1200	1200	
Potassium	ug/g	42618	300	400	*(3)
Potassium	ug/g	42629	650	600	
Magnesium	ug/g	42559	310	300	
Magnesium	ug/g	42568	90	80	
Magnesium	ug/g	42581	830	800	
Magnesium	ug/g	42590	280	290	
Magnesium	ug/g	42604	380	390	
Magnesium	ug/g	42608	1100	1100	
Magnesium	ug/g	42618	70	70	
Magnesium	ug/g	42629	620	580	
Manganese	ug/g	42559	290	290	
Manganese	ug/g	42568	79	66	
Manganese	ug/g	42581	410	400	
Manganese	ug/g	42590	310	350	
Manganese	ug/g	42604	86	89	
Manganese	ug/g	42608	520	500	
Manganese	ug/g	42618	97	100	
Manganese	ug/g	42629	690	660	
Molybdenum	ug/g	42559	1.1	1.1	
Molybdenum	ug/g	42568	0.7	0.6	
Molybdenum	ug/g	42581	1.8	1.7	
Molybdenum	ug/g	42590	1.4	1.4	
Molybdenum	ug/g	42604	1.4	1.4	
Molybdenum	ug/g	42608	1.3	1.3	
Molybdenum	ug/g	42618	0.8	0.8	
Molybdenum	ug/g	42629	2.0	1.8	
Sodium	ug/g	42559	70	70	
Sodium	ug/g	42568	80	90	
Sodium	ug/g	42581	110	110	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Sodium	ug/g	42590	80	70
Sodium	ug/g	42604	80	90
Sodium	ug/g	42608	140	120
Sodium	ug/g	42618	90	120
Sodium	ug/g	42629	80	80
Nickel	ug/g	42559	6.0	5.8
Nickel	ug/g	42568	4.1	3.5
Nickel	ug/g	42581	9.3	8.8
Nickel	ug/g	42590	7.3	7.7
Nickel	ug/g	42604	7.8	8.2
Nickel	ug/g	42608	11	10
Nickel	ug/g	42618	4.4	4.4
Nickel	ug/g	42629	10	9.5
Phosphorus	ug/g	42559	400	380
Phosphorus	ug/g	42568	60	50
Phosphorus	ug/g	42581	490	460
Phosphorus	ug/g	42590	280	290
Phosphorus	ug/g	42604	480	500
Phosphorus	ug/g	42608	1400	1400
Phosphorus	ug/g	42618	50	50
Phosphorus	ug/g	42629	950	870
Lead	ug/g	42559	8.7	8.4
Lead	ug/g	42568	2.6	2.3
Lead	ug/g	42581	4.6	4.4
Lead	ug/g	42590	5.0	5.4
Lead	ug/g	42604	3.6	3.7
Lead	ug/g	42608	4.2	4.0
Lead	ug/g	42618	1.3	1.4
Lead	ug/g	42629	5.6	5.3
Lead-210	Bq/g	41263	<0.004	0.005
Lead-210	Bq/g	41276	<0.004	<0.004
Lead-210	Bq/g	41285	<0.006	<0.006
Lead-210	Bq/g	42566	<0.04	<0.04
Lead-210	Bq/g	42577	<0.04	<0.04
Lead-210	Bq/g	42585	0.12	0.13
Lead-210	Bq/g	42604	0.35	0.30
Lead-210	Bq/g	42617	<0.04	<0.04
Lead-210	Bq/g	42625	0.10	0.09
Lead-210	Bq/g	44335	<0.1	<0.1
Lead-210	Bq/g	49706	4.2	4.2
Polonium-210	Bq/g	41285	0.065	0.063
Polonium-210	Bq/g	42566	0.01	0.02
Polonium-210	Bq/g	42577	0.01	0.01
Polonium-210	Bq/g	42585	0.12	0.10
Polonium-210	Bq/g	42593	0.21	0.20
Polonium-210	Bq/g	42604	0.38	0.32

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Polonium-210	Bq/g	42617	0.01	0.02
Polonium-210	Bq/g	42625	0.15	0.13
Polonium-210	Bq/g	49706	3.4	3.7
Radium-226	Bq/g	42559	0.02	0.04
Radium-226	Bq/g	42565	<0.01	0.02
Radium-226	Bq/g	42577	<0.01	<0.01
Radium-226	Bq/g	42585	<0.01	<0.01
Radium-226	Bq/g	42599	0.04	0.02
Radium-226	Bq/g	42612	0.06	0.07
Radium-226	Bq/g	42625	<0.01	<0.01
Radium-226	Bq/g	45361	0.05	0.06
Radium-226	Bq/g	47572	0.01	0.02
Antimony	ug/g	42559	<0.2	<0.2
Antimony	ug/g	42568	<0.2	<0.2
Antimony	ug/g	42581	<0.2	<0.2
Antimony	ug/g	42590	<0.2	<0.2
Antimony	ug/g	42604	<0.2	<0.2
Antimony	ug/g	42608	<0.2	<0.2
Antimony	ug/g	42618	<0.2	<0.2
Antimony	ug/g	42629	<0.2	<0.2
Selenium	ug/g	42559	0.2	0.2
Selenium	ug/g	42568	<0.1	<0.1
Selenium	ug/g	42581	0.5	0.5
Selenium	ug/g	42590	0.2	0.2
Selenium	ug/g	42604	0.2	0.3
Selenium	ug/g	42608	0.5	0.5
Selenium	ug/g	42618	<0.1	<0.1
Selenium	ug/g	42629	0.5	0.5
Silt by laser diffraction	vol %	42559	27.9	28.7
Silt by laser diffraction	vol %	42570	20.0	17.7
Silt by laser diffraction	vol %	42579	36.1	35.3
Silt by laser diffraction	vol %	42589	19.4	17.2
Silt by laser diffraction	vol %	42599	20.3	18.7
Silt by laser diffraction	vol %	42609	46.2	46.3
Silt by laser diffraction	vol %	42621	35.3	37.5
Silt by laser diffraction	vol %	42631	1.8	1.5
Silt by laser diffraction	vol %	42641	17.6	16.9
Tin	ug/g	42559	0.2	0.2
Tin	ug/g	42568	0.1	0.1
Tin	ug/g	42581	0.3	0.3
Tin	ug/g	42590	0.3	0.3
Tin	ug/g	42604	0.3	0.3
Tin	ug/g	42608	0.4	0.4
Tin	ug/g	42618	0.2	0.2
Tin	ug/g	42629	0.4	0.4
Strontium	ug/g	42559	39	37

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Strontium	ug/g	42568	20	18
Strontium	ug/g	42581	60	57
Strontium	ug/g	42590	35	36
Strontium	ug/g	42604	33	34
Strontium	ug/g	42608	45	43
Strontium	ug/g	42618	18	19
Strontium	ug/g	42629	42	40
Thorium-230	Bq/g	42565	<0.02	<0.02
Thorium-230	Bq/g	42577	<0.02	<0.02
Thorium-230	Bq/g	42585	<0.02	<0.02
Thorium-230	Bq/g	42590	<0.02	<0.02
Thorium-230	Bq/g	42607	<0.02	0.02
Thorium-230	Bq/g	42615	<0.02	<0.02
Thorium-230	Bq/g	42619	<0.02	<0.02
Titanium	ug/g	42559	120	110
Titanium	ug/g	42568	68	60
Titanium	ug/g	42581	240	230
Titanium	ug/g	42590	120	120
Titanium	ug/g	42604	95	97
Titanium	ug/g	42608	280	310
Titanium	ug/g	42618	39	46
Titanium	ug/g	42629	200	190
Thallium	ug/g	42559	<0.2	<0.2
Thallium	ug/g	42568	<0.2	<0.2
Thallium	ug/g	42581	<0.2	<0.2
Thallium	ug/g	42590	<0.2	<0.2
Thallium	ug/g	42604	<0.2	<0.2
Thallium	ug/g	42608	<0.2	<0.2
Thallium	ug/g	42618	<0.2	<0.2
Thallium	ug/g	42629	<0.2	<0.2
Uranium	ug/g	42559	0.5	0.5
Uranium	ug/g	42568	0.3	0.3
Uranium	ug/g	42581	2.5	2.3
Uranium	ug/g	42590	0.4	0.4
Uranium	ug/g	42604	0.4	0.4
Uranium	ug/g	42608	0.8	0.8
Uranium	ug/g	42618	0.4	0.4
Uranium	ug/g	42629	0.7	0.7
Vanadium	ug/g	42559	6.0	5.7
Vanadium	ug/g	42568	1.8	1.6
Vanadium	ug/g	42581	14	14
Vanadium	ug/g	42590	5.9	6.2
Vanadium	ug/g	42604	7.0	7.4
Vanadium	ug/g	42608	23	22
Vanadium	ug/g	42618	1.6	1.6
Vanadium	ug/g	42629	18	17

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Zinc	ug/g	42559	23	23
Zinc	ug/g	42568	8.2	7.4
Zinc	ug/g	42581	18	17
Zinc	ug/g	42590	19	20
Zinc	ug/g	42604	17	16
Zinc	ug/g	42608	27	25
Zinc	ug/g	42618	1.5	1.6
Zinc	ug/g	42629	30	29

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Lead-210	88
Thorium-230	85

*(1) The Lead-210 result for the quality control sample was outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(2) The Radium-226 result for the calibration check standard was outside the laboratory's specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(3) The duplicate results for Potassium were outside the laboratory's specified limits. The data was reviewed and additional quality control measures in the same batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-2471

Mar 20, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Mar-05-2019

Client P.O.: 3008_18_SED Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-2471

Mar 20, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
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Attn: Kelly Wells

Date Samples Received: Mar-05-2019

Client P.O.: 3008_18_SED Rook I
Environmental Baseline Studies

10399 NAOMLK-1 02/22/2019 11:30 NAOMLK-1_201902_SED_0-2 *SEDIMENT*
10400 NAOMLK-2 02/22/2019 13:10 NAOMLK-2_201902_SED_0-2 *SEDIMENT*
10401 NAOMLK-3 02/22/2019 14:00 NAOMLK-3_201902_SED_0-2 *SEDIMENT*

Analyte	Units	10399	10400	10401
Lab Section 2 (ICP)				
Aluminum	ug/g	8300±800	9800±1000	9600±1000
Antimony	ug/g	<0.2	0.2±0.2	0.3±0.2
Arsenic	ug/g	11±1	10±1	9.7±1
Barium	ug/g	150±20	150±20	140±10
Beryllium	ug/g	0.7±0.1	0.7±0.1	0.7±0.1
Boron	ug/g	27±4	27±4	26±4
Cadmium	ug/g	0.4±0.1	0.4±0.1	0.4±0.1
Calcium	ug/g	3700±400	4000±400	3700±400
Chromium	ug/g	22±3	25±4	24±4
Cobalt	ug/g	5.8±0.9	7.0±1	6.4±1
Copper	ug/g	4.5±1	5.2±1	5.3±1
Iron	ug/g	105000±10000	93200±9000	94900±9000
Lead	ug/g	5.0±0.8	6.9±1	6.4±1
Magnesium	ug/g	680±100	740±100	710±100
Manganese	ug/g	870±90	810±80	770±80
Molybdenum	ug/g	2.8±0.4	2.4±0.4	2.4±0.4
Nickel	ug/g	8.1±1	9.6±1	9.1±1
Phosphorus	ug/g	1900±200	1600±200	1500±200
Potassium	ug/g	640±100	690±100	630±90
Selenium	ug/g	0.7±0.2	0.8±0.3	0.7±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	80±30	90±40	90±40
Strontium	ug/g	46±7	51±5	48±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.4±0.1	0.4±0.1	0.4±0.1
Titanium	ug/g	230±20	270±30	260±30
Uranium	ug/g	1.3±0.3	1.5±0.4	1.5±0.4
Vanadium	ug/g	60±6	68±7	67±7
Zinc	ug/g	60±6	66±7	65±6
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.54±0.1	0.52±0.1	0.55±0.1

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SRC Group # 2019-2471

Mar 20, 2019

CanNorth, Canada North Environmental Services Limited

10399 NAOMLK-1 02/22/2019 11:30 NAOMLK-1_201902_SED_0-2 *SEDIMENT*
10400 NAOMLK-2 02/22/2019 13:10 NAOMLK-2_201902_SED_0-2 *SEDIMENT*
10401 NAOMLK-3 02/22/2019 14:00 NAOMLK-3_201902_SED_0-2 *SEDIMENT*

Analyte	Units	10399	10400	10401
Lab Section 4 (Radiochemistry)				
Polonium-210	Bq/g	0.64±0.1	0.49±0.07	0.47±0.07
Radium-226	Bq/g	0.07±0.04	0.07±0.04	0.06±0.04
Thorium-230	Bq/g	0.02±0.02	<0.02	0.03±0.02
Lab Section 6 (SPTP)				
Organic carbon	%	25.1±2	26.1±3	26.5±3
Moisture	%	96.81±10	96.11±10	97.43±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	0.75±0.1	0.82±0.1	1.3±0.1
Fine Sand by laser diffraction	vol %	48.2±5	46.6±5	50.3±5
Silt by laser diffraction	vol %	44.0±4	45.5±4	42.3±4
Clay by laser diffraction	vol %	7.1±0.7	7.1±0.7	6.1±0.6
LOI	wt %	46.15	47.68	47.79

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 11.1 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-2471

Mar 20, 2019

CanNorth, Canada North Environmental Services Limited

10402 NAOMLK-4 02/22/2019 14:45 NAOMLK-4_201902_SED_0-2 *SEDIMENT*
10403 NAOMLK-5 09/22/2019 15:25 NAOMLK-5_201902_SED_0-2 *SEDIMENT*

Analyte	Units	10402	10403
Lab Section 2 (ICP)			
Aluminum	ug/g	9300±900	8700±900
Antimony	ug/g	0.2±0.2	<0.2
Arsenic	ug/g	10±1	11±1
Barium	ug/g	140±10	160±20
Beryllium	ug/g	0.7±0.1	0.6±0.1
Boron	ug/g	28±4	27±4
Cadmium	ug/g	0.4±0.1	0.3±0.1
Calcium	ug/g	3800±400	3800±400
Chromium	ug/g	26±4	23±3
Cobalt	ug/g	6.2±0.9	5.6±0.8
Copper	ug/g	4.8±1	4.5±1
Iron	ug/g	95600±10000	105000±10000
Lead	ug/g	5.6±0.8	5.0±0.8
Magnesium	ug/g	700±100	680±100
Manganese	ug/g	810±80	910±90
Molybdenum	ug/g	2.2±0.3	2.2±0.3
Nickel	ug/g	9.6±1	8.2±1
Phosphorus	ug/g	1600±200	2000±200
Potassium	ug/g	600±90	640±100
Selenium	ug/g	0.7±0.2	0.6±0.2
Silver	ug/g	<0.1	<0.1
Sodium	ug/g	80±30	80±30
Strontium	ug/g	49±7	48±7
Thallium	ug/g	<0.2	<0.2
Tin	ug/g	0.4±0.1	0.3±0.1
Titanium	ug/g	250±20	250±20
Uranium	ug/g	1.4±0.4	1.3±0.3
Vanadium	ug/g	65±6	63±6
Zinc	ug/g	62±6	58±6
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/g	0.73±0.2	0.65±0.2
Polonium-210	Bq/g	0.60±0.09	0.64±0.1
Radium-226	Bq/g	0.08±0.04	0.08±0.04
Thorium-230	Bq/g	0.03±0.02	<0.02

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SRC Group # 2019-2471

Mar 20, 2019

CanNorth, Canada North Environmental Services Limited

10402 NAOMLK-4 02/22/2019 14:45 NAOMLK-4_201902_SED_0-2 *SEDIMENT*
10403 NAOMLK-5 09/22/2019 15:25 NAOMLK-5_201902_SED_0-2 *SEDIMENT*

Analyte	Units	10402	10403
Lab Section 6 (SPTP)			
Organic carbon	%	25.9±2	25.3±2
Moisture	%	96.53±10	96.06±10
Gravel	vol %	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	2.4±0.2	1.1±0.1
Fine Sand by laser diffraction	vol %	51.5±5	49.2±5
Silt by laser diffraction	vol %	40.2±4	43.2±4
Clay by laser diffraction	vol %	5.9±0.6	6.6±0.7
LOI	wt %	47.45	46.94

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 11.1 °C upon receipt.

Results are reported on a dry basis.

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Mar 20, 2019

This report was generated for samples included in SRC Group # 2019-2471

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	ug/g	23600	24100
Arsenic	ug/g	17.0	16.8
Barium	ug/g	99.0	103
Beryllium	ug/g	0.563	0.557
Cadmium	ug/g	0.292	0.247
Calcium	ug/g	5900	6930
Chromium	ug/g	36.5	41.9
Cobalt	ug/g	12.7	14.1
Copper	ug/g	43.6	42.2
Iron	ug/g	37600	39200
Lead	ug/g	13.7	14.1
Lead-210	Bq/L	21.8	17.4
Lead-210	Bq	1.92	1.58
Magnesium	ug/g	7400	7860
Manganese	ug/g	1200	1310
Molybdenum	ug/g	0.701	0.592
Nickel	ug/g	20.5	20.0
Organic carbon	%	5.24	5.15
Particle Size 15 um	um	14.4	14.6
Phosphorus	ug/g	762	793
Polonium-210	Bq/L	21.0	18.0
Polonium-210	Bq	1.92	1.68
Potassium	ug/g	1700	1780
Radium-226	Bq/L	21.4	21.5
Radium-226	Bq	0.043	0.042
Selenium	ug/g	0.423	0.320
Silver	ug/g	0.314	0.261
Sodium	ug/g	893	918
Strontium	ug/g	27.3	27.2
Thorium-230	Bq/L	20.5	22.2
Thorium-232	Bq	0.188	0.197

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QC Analysis	Units	Target Value	Obtained Value
Tin	ug/g	1.52	1.51
Titanium	ug/g	1990	1550
Uranium	ug/g	1.25	1.25
Vanadium	ug/g	66.5	71.6
Zinc	ug/g	74.8	78.2

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Silver	ug/g	10399	<0.1	<0.1	
Aluminum	ug/g	10399	8300	8500	
Arsenic	ug/g	10399	11	11	
Boron	ug/g	10399	27	26	
Barium	ug/g	10399	150	150	
Beryllium	ug/g	10399	0.7	0.6	
Organic carbon	%	10403	25.3	25.4	
Calcium	ug/g	10399	3700	3700	
Cadmium	ug/g	10399	0.4	0.4	
Clay by laser diffraction	vol %	10399	7.06	7.02	
Cobalt	ug/g	10399	5.8	5.7	
Coarse Sand by laser diffraction	vol %	10399	0.75	0.79	
Chromium	ug/g	10399	22	23	
Copper	ug/g	10399	4.5	4.4	
Iron	ug/g	10399	105000	107000	
Fine Sand by laser diffraction	vol %	10399	48.2	49.1	
Gravel	vol %	10399	<0.01	<0.01	
Potassium	ug/g	10399	640	640	
Magnesium	ug/g	10399	680	670	
Manganese	ug/g	10399	870	880	
Molybdenum	ug/g	10399	2.8	2.1	*(1)
Sodium	ug/g	10399	80	80	
Nickel	ug/g	10399	8.1	8.4	
Phosphorus	ug/g	10399	1900	1900	
Lead	ug/g	10399	5.0	4.9	
Lead-210	Bq/g	4799	4.7	4.2	
Polonium-210	Bq/g	4799	3.6	3.2	
Radium-226	Bq/g	10747	0.04	0.03	
Antimony	ug/g	10399	<0.2	0.2	
Selenium	ug/g	10399	0.7	0.6	
Silt by laser diffraction	vol %	10399	44.0	43.1	
Tin	ug/g	10399	0.4	0.4	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Strontium	ug/g	10399	46	47
Thorium-230	Bq/g	10760	<0.01	0.01
Titanium	ug/g	10399	230	240
Thallium	ug/g	10399	<0.2	<0.2
Uranium	ug/g	10399	1.3	1.3
Vanadium	ug/g	10399	60	60
Zinc	ug/g	10399	60	60

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Lead-210	84
Polonium-210	90
Thorium-230	100

*(1) The duplicate results for Molybdenum were outside the laboratory's specified limits. The data was reviewed and all other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-14801

Nov 15, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-15-2019

Client P.O.: 3008_19FALL_SED Rook I
Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor
Results from Lab Section 6 authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2019-14801

Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-15-2019

Client P.O.: 3008_19FALL_SED Rook I Environmental Baseline Studies

59688 PATTLKNE3-3 09/28/2019 11:30 3008_QAQC_01_20190923_SED_0-2 *SOIL*
59689 PATTLKNE3-4 09/28/2019 12:50 3008_QAQC_02_20190923_SED_0-2 *SOIL*
59690 FORRLK3-1 09/29/2019 09:30 FORRLK3-1_20190923_SED_0-2 *SOIL*

Analyte	Units	59688	59689	59690
Lab Section 2				
Aluminum	ug/g	3740±400	2730±300	1350±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	3.1±0.5	3.3±0.5	1.8±0.4
Barium	ug/g	83±8	92±9	24±4
Beryllium	ug/g	0.3±0.1	0.2±0.1	<0.1
Boron	ug/g	15±4	10±2	4±1
Cadmium	ug/g	0.1±0.1	0.1±0.1	<0.1
Calcium	ug/g	1600±200	1300±100	610±90
Cesium	ug/g	0.1±0.1	<0.1	<0.1
Chromium	ug/g	8.2±2	6.8±0.7	2.6±1
Cobalt	ug/g	2.8±0.7	2.2±0.6	1.1±0.4
Copper	ug/g	3.3±1	2.2±1	0.9±0.5
Iron	ug/g	55800±8000	60600±6000	4090±400
Lead	ug/g	4.1±0.6	3.2±0.5	1.7±0.4
Magnesium	ug/g	490±70	380±60	270±40
Manganese	ug/g	500±80	780±100	130±10
Molybdenum	ug/g	1.2±0.3	1.0±0.1	0.4±0.2
Nickel	ug/g	5.0±0.8	3.8±0.4	1.7±0.4
Phosphorus	ug/g	510±50	630±60	180±40
Potassium	ug/g	420±60	330±30	250±40
Selenium	ug/g	0.4±0.2	0.2±0.1	0.1±0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	50±20	40±20	40±20
Strontium	ug/g	36±5	33±5	20±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.1±0.1	<0.1
Titanium	ug/g	140±10	110±10	81±8
Uranium	ug/g	0.5±0.2	0.4±0.2	0.1±0.1
Vanadium	ug/g	14±1	10±1	3.0±0.4
Zinc	ug/g	30±4	24±4	8.0±2

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Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

59688 PATTLKNE3-3 09/28/2019 11:30 3008_QAQC_01_20190923_SED_0-2 *SOIL*
59689 PATTLKNE3-4 09/28/2019 12:50 3008_QAQC_02_20190923_SED_0-2 *SOIL*
59690 FORRLK3-1 09/29/2019 09:30 FORRLK3-1_20190923_SED_0-2 *SOIL*

Analyte	Units	59688	59689	59690
Lab Section 4				
Lead-210	Bq/g	0.27±0.06	0.19±0.06	0.07±0.05
Polonium-210	Bq/g	0.26±0.04	0.22±0.03	0.08±0.03
Radium-226	Bq/g	0.04±0.03	0.06±0.04	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02
Lab Section 6				
Organic carbon	%	8.27±0.8	5.89±0.6	2.47±0.2
Moisture	%	90.14±9	86.18±9	71.54±7
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	3.1±0.3	3.4±0.3	41.1±4
Fine Sand by laser diffraction	vol %	22.1±2	20.8±2	29.0±3
Silt by laser diffraction	vol %	67.6±7	67.8±7	26.1±3
Clay by laser diffraction	vol %	7.3±0.7	8.0±0.8	3.7±0.4
LOI	wt %	18.79	14.52	5.54

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 59688
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 59689
This sample was reanalyzed for Lab Section 2 (ICP), Lead 210 and Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was -2.8 °C upon receipt.

Results are reported on a dry basis.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-14801

Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

59691	**FORRLK3-2 09/29/2019 12:20 FORRLK3-2_20190923_SED_0-2 *SOIL***
59692	**FORRLK3-3 09/29/2019 13:30 FORRLK3-3_20190923_SED_0-2 *SOIL***
59693	**FORRLK3-4 09/29/2019 10:00 FORRLK3-4_20190923_SED_0-2 *SOIL***

Analyte	Units	59691	59692	59693
Lab Section 2				
Aluminum	ug/g	2070±200	900±90	1900±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.7±0.4	0.8±0.5	3.1±0.5
Barium	ug/g	30±4	13±2	35±5
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	6±1	2±1	6±1
Cadmium	ug/g	<0.1	<0.1	<0.1
Calcium	ug/g	990±100	290±40	970±100
Cesium	ug/g	<0.1	<0.1	<0.1
Chromium	ug/g	4.9±2	1.5±0.7	3.8±1
Cobalt	ug/g	1.2±0.4	0.3±0.2	1.0±0.3
Copper	ug/g	1.2±0.6	<0.5	1.5±0.8
Iron	ug/g	4730±500	1980±200	7000±700
Lead	ug/g	2.6±0.4	1.2±0.3	2.7±0.4
Magnesium	ug/g	420±60	160±40	410±60
Manganese	ug/g	120±10	77±8	230±20
Molybdenum	ug/g	0.2±0.2	<0.1	0.4±0.2
Nickel	ug/g	2.5±0.4	0.5±0.3	2.3±0.3
Phosphorus	ug/g	250±40	90±30	370±60
Potassium	ug/g	420±60	200±30	380±60
Selenium	ug/g	0.1±0.1	<0.1	0.2±0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	60±20	40±20	50±20
Strontium	ug/g	24±4	20±3	26±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.1±0.1	<0.1	<0.1
Titanium	ug/g	140±10	61±6	110±10
Uranium	ug/g	0.3±0.2	<0.1	0.2±0.2
Vanadium	ug/g	4.3±0.6	1.2±0.3	4.2±0.6
Zinc	ug/g	8.7±2	2.2±1	8.3±2
Lab Section 4				
Lead-210	Bq/g	0.12±0.05	0.07±0.05	0.15±0.06
Polonium-210	Bq/g	0.12±0.03	0.05±0.02	0.20±0.03
Radium-226	Bq/g	<0.01	0.01±0.01	0.04±0.03
Thorium-230	Bq/g	<0.02	<0.02	<0.02

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
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SRC Group # 2019-14801

Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

59691	**FORRLK3-2 09/29/2019 12:20 FORRLK3-2_20190923_SED_0-2 *SOIL***
59692	**FORRLK3-3 09/29/2019 13:30 FORRLK3-3_20190923_SED_0-2 *SOIL***
59693	**FORRLK3-4 09/29/2019 10:00 FORRLK3-4_20190923_SED_0-2 *SOIL***

Analyte	Units	59691	59692	59693
Lab Section 6				
Organic carbon	%	3.18±0.3	0.76±0.1	3.66±0.4
Moisture	%	75.39±8	42.07±4	81.24±8
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	20.6±2	53.7±5	8.6±0.9
Fine Sand by laser diffraction	vol %	36.5±4	35.8±4	14.6±1
Silt by laser diffraction	vol %	39.0±4	8.8±0.9	70.8±7
Clay by laser diffraction	vol %	3.9±0.4	1.8±0.2	6.0±0.6
LOI	wt %	7.35	1.59	8.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was -2.8 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-14801

Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

59694	**FORRLK3-5 09/29/2019 11:00 FORRLK3-5_20190923_SED_0-2 *SOIL***
59695	**PATTLKN1-1 09/26/2019 10:00 PATTLKN1-1_20190923_SED_0-2 *SOIL***
59696	**PATTLKN1-2 09/26/2019 10:57 PATTLKN1-2_20190923_SED_0-2 *SOIL***

Analyte	Units	59694	59695	59696
Lab Section 2				
Aluminum	ug/g	3610±400	6800±700	8900±900
Antimony	ug/g	<0.2	<0.2	0.2±0.2
Arsenic	ug/g	3.9±0.6	36±4	18±2
Barium	ug/g	59±6	1600±200	630±60
Beryllium	ug/g	0.1±0.1	0.3±0.1	0.3±0.1
Boron	ug/g	12±3	19±5	23±3
Cadmium	ug/g	0.2±0.1	0.5±0.1	0.7±0.1
Calcium	ug/g	2000±200	3600±400	3900±400
Cesium	ug/g	0.2±0.1	0.5±0.2	0.7±0.2
Chromium	ug/g	8.2±2	9.9±2	13±2
Cobalt	ug/g	1.9±0.4	5.2±0.8	4.8±0.7
Copper	ug/g	3.0±1	7.7±2	10±2
Iron	ug/g	10700±1000	144000±10000	116000±10000
Lead	ug/g	4.7±0.7	11±1	16±2
Magnesium	ug/g	780±100	1300±100	1500±200
Manganese	ug/g	250±20	31400±3000	10500±1000
Molybdenum	ug/g	0.8±0.3	7.7±1	3.6±0.5
Nickel	ug/g	5.5±0.8	13±1	16±2
Phosphorus	ug/g	560±80	5500±600	4400±400
Potassium	ug/g	670±100	1200±100	1400±100
Selenium	ug/g	0.4±0.2	1.3±0.3	1.5±0.4
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	80±30	100±20	120±30
Strontium	ug/g	35±5	76±8	68±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.5±0.2	0.5±0.2
Titanium	ug/g	180±20	220±20	280±30
Uranium	ug/g	0.3±0.2	3.0±0.4	1.9±0.5
Vanadium	ug/g	8.6±1	16±2	21±2
Zinc	ug/g	21±3	57±6	70±7
Lab Section 4				
Lead-210	Bq/g	0.29±0.07	1.1±0.2	1.0±0.2
Polonium-210	Bq/g	0.28±0.04	0.95±0.1	0.86±0.1
Radium-226	Bq/g	0.02±0.02	0.10±0.02	0.13±0.03
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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59695	**PATTLKN1-1 09/26/2019 10:00 PATTLKN1-1_20190923_SED_0-2 *SOIL***
59696	**PATTLKN1-2 09/26/2019 10:57 PATTLKN1-2_20190923_SED_0-2 *SOIL***

Analyte	Units	59694	59695	59696
Lab Section 6				
Organic carbon	%	8.84±0.9	13.9±1	16.4±2
Moisture	%	91.65±9	95.59±10	95.25±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	0.86±0.1	0.17±0.04	<0.01
Fine Sand by laser diffraction	vol %	10.6±1	12.9±1	16.7±2
Silt by laser diffraction	vol %	80.2±8	75.0±8	73.6±7
Clay by laser diffraction	vol %	8.3±0.8	11.9±1	9.7±1
LOI	wt %	19.06	35.44	39.12

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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59697 PATTLKN1-3 09/26/2019 12:00 PATTLKN1-3_20190923_SED_0-2 *SOIL*
59698 PATTLKN1-4 09/26/2019 13:00 PATTLKN1-4_20190923_SED_0-2 *SOIL*
59699 PATTLKN1-5 09/26/2019 13:30 PATTLKN1-5_20190923_SED_0-2 *SOIL*

Analyte	Units	59697	59698	59699
Lab Section 2				
Aluminum	ug/g	9100±900	8100±800	7200±700
Antimony	ug/g	0.3±0.2	<0.2	<0.2
Arsenic	ug/g	9.3±1	27±3	26±3
Barium	ug/g	630±60	640±60	1270±100
Beryllium	ug/g	0.4±0.1	0.3±0.1	0.3±0.1
Boron	ug/g	25±4	21±3	19±5
Cadmium	ug/g	0.7±0.1	0.5±0.1	0.5±0.1
Calcium	ug/g	3600±400	3800±400	3800±400
Cesium	ug/g	0.6±0.2	0.6±0.2	0.6±0.2
Chromium	ug/g	12±2	12±2	10±2
Cobalt	ug/g	5.5±0.8	3.7±0.9	5.2±0.8
Copper	ug/g	11±2	9.2±2	8.7±2
Iron	ug/g	102000±10000	118000±10000	130000±10000
Lead	ug/g	12±1	12±1	12±1
Magnesium	ug/g	1600±200	1400±100	1400±100
Manganese	ug/g	15000±2000	5800±600	24100±2000
Molybdenum	ug/g	2.5±0.4	4.5±0.7	6.8±1
Nickel	ug/g	16±2	14±1	13±1
Phosphorus	ug/g	3800±400	5500±600	4900±500
Potassium	ug/g	1300±100	1300±100	1200±100
Selenium	ug/g	1.4±0.4	1.4±0.4	1.3±0.3
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	130±30	110±30	110±30
Strontium	ug/g	68±7	71±7	72±7
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.4±0.2	0.5±0.2	0.4±0.2
Titanium	ug/g	280±30	260±30	230±20
Uranium	ug/g	1.7±0.4	2.8±0.4	2.4±0.4
Vanadium	ug/g	21±2	20±2	18±2
Zinc	ug/g	76±8	58±6	60±6
Lab Section 4				
Lead-210	Bq/g	0.60±0.2	0.94±0.1	0.80±0.1
Polonium-210	Bq/g	0.61±0.09	0.84±0.1	0.79±0.1
Radium-226	Bq/g	0.15±0.04	0.18±0.04	0.24±0.04
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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59698	**PATTLKN1-4 09/26/2019 13:00 PATTLKN1-4_20190923_SED_0-2 *SOIL***
59699	**PATTLKN1-5 09/26/2019 13:30 PATTLKN1-5_20190923_SED_0-2 *SOIL***

Analyte	Units	59697	59698	59699
Lab Section 6				
Organic carbon	%	15.4±2	15.2±2	14.0±1
Moisture	%	95.27±10	95.13±10	95.18±10
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	0.38±0.06	<0.01	0.21±0.03
Fine Sand by laser diffraction	vol %	14.7±1	15.5±2	13.0±1
Silt by laser diffraction	vol %	75.3±8	75.0±8	76.3±8
Clay by laser diffraction	vol %	9.6±1	9.5±1	10.5±1
LOI	wt %	36.39	36.02	34.79

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was -2.8 °C upon receipt.

Results are reported on a dry basis.

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59700	**PATTLKNE3-1 09/28/2019 09:45 PATTLKNE3-1_20190923_SED_0-2 *SOIL***
59701	**PATTLKNE3-2 09/28/2019 10:30 PATTLKNE3-2_20190923_SED_0-2 *SOIL***
59702	**PATTLKNE3-3 09/28/2019 11:00 PATTLKNE3-3_20190923_SED_0-2 *SOIL***

Analyte	Units	59700	59701	59702
Lab Section 2				
Aluminum	ug/g	3010±300	3350±300	3520±400
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	3.0±0.4	4.9±0.7	4.1±0.6
Barium	ug/g	82±8	160±20	130±10
Beryllium	ug/g	0.3±0.1	0.2±0.1	0.3±0.1
Boron	ug/g	11±3	13±3	13±3
Cadmium	ug/g	0.1±0.1	0.1±0.1	0.1±0.1
Calcium	ug/g	1300±100	1900±200	1900±200
Cesium	ug/g	0.1±0.1	0.1±0.1	0.1±0.1
Chromium	ug/g	6.9±2	7.3±2	8.4±2
Cobalt	ug/g	2.4±0.6	2.4±0.6	2.9±0.7
Copper	ug/g	2.4±1	2.9±1	3.1±1
Iron	ug/g	55100±6000	82700±8000	73500±10000
Lead	ug/g	3.4±0.5	3.6±0.5	3.9±0.6
Magnesium	ug/g	400±60	500±80	520±80
Manganese	ug/g	590±60	1530±200	1300±200
Molybdenum	ug/g	0.9±0.4	1.3±0.3	1.3±0.3
Nickel	ug/g	3.8±0.6	4.5±0.7	4.8±0.7
Phosphorus	ug/g	530±80	1100±100	850±80
Potassium	ug/g	300±40	470±70	370±60
Selenium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	20±10	50±20	<10
Strontium	ug/g	32±5	40±6	40±6
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Titanium	ug/g	140±10	130±10	150±20
Uranium	ug/g	0.4±0.2	0.6±0.2	0.5±0.2
Vanadium	ug/g	11±1	13±1	13±1
Zinc	ug/g	25±4	25±4	28±4
Lab Section 4				
Lead-210	Bq/g	0.22±0.06	0.33±0.07	0.30±0.07
Polonium-210	Bq/g	0.24±0.04	0.34±0.05	0.30±0.04
Radium-226	Bq/g	0.07±0.04	0.05±0.03	0.05±0.03
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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59701	**PATTLKNE3-2 09/28/2019 10:30 PATTLKNE3-2_20190923_SED_0-2 *SOIL***
59702	**PATTLKNE3-3 09/28/2019 11:00 PATTLKNE3-3_20190923_SED_0-2 *SOIL***

Analyte	Units	59700	59701	59702
Lab Section 6				
Organic carbon	%	6.71±0.7	9.74±1	8.40±0.8
Moisture	%	86.62±9	91.41±9	89.98±9
Gravel	vol %	<0.01	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	16.9±2	1.5±0.2	0.80±0.1
Fine Sand by laser diffraction	vol %	27.9±3	17.2±2	17.0±2
Silt by laser diffraction	vol %	48.1±5	73.4±7	73.5±7
Clay by laser diffraction	vol %	7.0±0.7	8.0±0.8	8.7±0.9
LOI	wt %	16.01	22.54	19.76

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 59702
This sample was reanalyzed for Lab Section 2 (ICP), Lead 210 and Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was -2.8 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-14801

Nov 15, 2019

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59703 PATTLKNE3-4 09/28/2019 12:20 PATTLKNE3-4_20190923_SED_0-2 *SOIL*
59704 PATTLKNE3-5 09/28/2019 13:50 PATTLKNE3-5_20190923_SED_0-2 *SOIL*

Analyte	Units	59703	59704
Lab Section 2			
Aluminum	ug/g	3050±300	3460±300
Antimony	ug/g	<0.2	<0.2
Arsenic	ug/g	2.8±0.4	3.4±0.5
Barium	ug/g	72±7	93±9
Beryllium	ug/g	0.2±0.1	0.3±0.1
Boron	ug/g	10±2	13±3
Cadmium	ug/g	0.1±0.1	0.1±0.1
Calcium	ug/g	1300±100	1700±200
Cesium	ug/g	0.1±0.1	0.1±0.1
Chromium	ug/g	5.9±1	9.3±2
Cobalt	ug/g	3.2±0.8	2.9±0.7
Copper	ug/g	2.6±1	3.3±1
Iron	ug/g	56500±6000	62700±6000
Lead	ug/g	3.1±0.5	4.5±0.7
Magnesium	ug/g	400±60	480±70
Manganese	ug/g	560±80	650±60
Molybdenum	ug/g	0.9±0.4	1.4±0.4
Nickel	ug/g	3.2±0.5	5.8±0.9
Phosphorus	ug/g	430±40	620±90
Potassium	ug/g	300±40	280±40
Selenium	ug/g	0.3±0.2	0.4±0.2
Silver	ug/g	<0.1	<0.1
Sodium	ug/g	20±10	<10
Strontium	ug/g	32±5	36±5
Thallium	ug/g	<0.2	<0.2
Tin	ug/g	0.1±0.1	0.2±0.1
Titanium	ug/g	140±10	140±10
Uranium	ug/g	0.4±0.2	0.5±0.2
Vanadium	ug/g	12±1	14±1
Zinc	ug/g	26±4	30±4
Lab Section 4			
Lead-210	Bq/g	0.16±0.06	0.38±0.07
Polonium-210	Bq/g	0.17±0.04	0.28±0.04
Radium-226	Bq/g	0.05±0.03	0.04±0.03
Thorium-230	Bq/g	<0.02	<0.02

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SRC Group # 2019-14801

Nov 15, 2019

CanNorth, Canada North Environmental Services Limited

59703 PATTLKNE3-4 09/28/2019 12:20 PATTLKNE3-4_20190923_SED_0-2 *SOIL*
59704 PATTLKNE3-5 09/28/2019 13:50 PATTLKNE3-5_20190923_SED_0-2 *SOIL*

Analyte	Units	59703	59704
Lab Section 6			
Organic carbon	%	5.61±0.6	7.82±0.8
Moisture	%	84.45±8	90.03±9
Gravel	vol %	<0.01	<0.01
Coarse Sand by laser diffraction	vol %	25.8±2	1.8±0.2
Fine Sand by laser diffraction	vol %	33.5±3	21.4±2
Silt by laser diffraction	vol %	35.6±4	68.5±7
Clay by laser diffraction	vol %	5.1±0.5	8.3±0.8
LOI	wt %	13.95	18.55

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 59703
This sample was reanalyzed for Lab Section 2 (ICP), Lead 210 and Polonium 210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was -2.8 °C upon receipt.

Results are reported on a dry basis.

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Nov 14, 2019

This report was generated for samples included in SRC Group # 2019-14801

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	ug/g	23600	23400
Aluminum	ug/g	23600	24000
Arsenic	ug/g	17.0	17.8
Arsenic	ug/g	17.0	17.7
Barium	ug/g	99.0	108
Barium	ug/g	99.0	99.6
Beryllium	ug/g	0.634	0.565
Beryllium	ug/g	0.634	0.577
Cadmium	ug/g	0.244	0.244
Cadmium	ug/g	0.244	0.257
Calcium	ug/g	6400	5300
Calcium	ug/g	6400	5340
Chromium	ug/g	41.4	37.1
Chromium	ug/g	41.4	38.0
Cobalt	ug/g	13.7	12.2
Cobalt	ug/g	13.7	12.2
Copper	ug/g	43.6	47.4
Copper	ug/g	43.6	47.1
Iron	ug/g	37600	39700
Iron	ug/g	37600	38500
Lead	ug/g	14.3	14.2
Lead	ug/g	14.3	14.0
Lead-210	Bq/L	19.7	18.8
Lead-210	Bq	0.750	0.880
Lead-210	Bq/L	19.7	20.2
Lead-210	Bq	7.47	7.25
Lead-210	Bq/L	19.7	19.8
Lead-210	Bq	0.750	0.783
Magnesium	ug/g	7400	7160
Magnesium	ug/g	7400	7230
Manganese	ug/g	1230	1260

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Toll-free: 1-800-240-8808
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Nov 14, 2019

This report was generated for samples included in SRC Group # 2019-14801

QC Analysis	Units	Target Value	Obtained Value
Manganese	ug/g	1230	1300
Molybdenum	ug/g	0.766	0.887
Molybdenum	ug/g	0.766	0.873
Nickel	ug/g	20.5	22.4
Nickel	ug/g	20.5	21.8
Organic carbon	%	4.98	4.97
Phosphorus	ug/g	830	783
Phosphorus	ug/g	830	773
Polonium-210	Bq/L	18.8	19.1
Polonium-210	Bq	0.750	0.664
Polonium-210	Bq/L	18.8	20.5
Polonium-210	Bq	0.750	0.715
Potassium	ug/g	1700	1300
Potassium	ug/g	1700	1350
Radium-226	Bq/L	16.8	16.6
Radium-226	Bq	0.427	0.420
Radium-226	Bq	0.427	0.450
Radium-226	Bq/L	16.8	18.0
Selenium	ug/g	0.420	0.409
Selenium	ug/g	0.420	0.418
Silver	ug/g	0.233	0.236
Silver	ug/g	0.233	0.239
Sodium	ug/g	893	676
Sodium	ug/g	893	693
Strontium	ug/g	27.3	29.0
Strontium	ug/g	27.3	28.4
Thorium-230	Bq/L	19.9	17.0
Thorium-232	Bq	0.195	0.163
Tin	ug/g	1.52	1.60
Tin	ug/g	1.52	1.66
Titanium	ug/g	1990	2370
Titanium	ug/g	1990	2400
Uranium	ug/g	1.20	1.11
Uranium	ug/g	1.20	1.14
Vanadium	ug/g	71.2	68.2
Vanadium	ug/g	71.2	69.6
Zinc	ug/g	81.5	77.8
Zinc	ug/g	81.5	77.2

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

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This report was generated for samples included in SRC Group # 2019-14801

Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Silver	ug/g	59688	<0.1	<0.1	
Silver	ug/g	59697	<0.1	0.1	
Aluminum	ug/g	59688	3740	3750	
Aluminum	ug/g	59697	9100	8500	
Arsenic	ug/g	59688	3.1	3.1	
Arsenic	ug/g	59697	9.3	8.9	
Boron	ug/g	59688	15	15	
Boron	ug/g	59697	25	23	
Barium	ug/g	59688	83	85	
Barium	ug/g	59697	630	600	
Beryllium	ug/g	59688	0.3	0.3	
Beryllium	ug/g	59697	0.4	0.3	
Organic carbon	%	59704	7.82	7.79	
Calcium	ug/g	59688	1600	1600	
Calcium	ug/g	59697	3600	3500	
Cadmium	ug/g	59688	0.1	0.1	
Cadmium	ug/g	59697	0.7	0.7	
Clay by laser diffraction	vol %	59688	7.3	8.2	
Cobalt	ug/g	59688	2.8	2.8	
Cobalt	ug/g	59697	5.5	5.3	
Coarse Sand by laser diffraction	vol %	59688	3.1	1.2	*(1)
Chromium	ug/g	59688	8.2	7.9	
Chromium	ug/g	59697	12	12	
Cesium	ug/g	59688	0.1	0.1	
Cesium	ug/g	59697	0.6	0.6	
Copper	ug/g	59688	3.3	3.3	
Copper	ug/g	59697	11	10	
Iron	ug/g	59688	55800	54900	
Iron	ug/g	59697	102000	96800	
Fine Sand by laser diffraction	vol %	59688	22.1	23.5	
Gravel	vol %	59688	<0.01	<0.01	
Potassium	ug/g	59688	420	430	
Potassium	ug/g	59697	1300	1300	
Magnesium	ug/g	59688	490	490	
Magnesium	ug/g	59697	1600	1400	
Manganese	ug/g	59688	500	500	
Manganese	ug/g	59697	15000	13900	
Molybdenum	ug/g	59688	1.2	1.2	
Molybdenum	ug/g	59697	2.5	2.4	
Sodium	ug/g	59688	50	50	
Sodium	ug/g	59697	130	120	
Nickel	ug/g	59688	5.0	5.0	
Nickel	ug/g	59697	16	15	
Phosphorus	ug/g	59688	510	530	
Phosphorus	ug/g	59697	3800	3600	
Lead	ug/g	59688	4.1	4.0	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead	ug/g	59697	12	12
Lead-210	Bq/g	56458	<0.004	<0.004
Lead-210	Bq/g	56577	0.78	0.71
Lead-210	Bq/g	56587	1.1	1.1
Lead-210	Bq/g	59690	0.05	0.09
Polonium-210	Bq/g	56587	0.97	0.91
Polonium-210	Bq/g	59690	0.08	0.08
Radium-226	Bq/g	59689	0.06	0.07
Radium-226	Bq/g	63055	0.05	<0.01
Antimony	ug/g	59688	<0.2	<0.2
Antimony	ug/g	59697	0.3	0.2
Selenium	ug/g	59688	0.4	0.4
Selenium	ug/g	59697	1.4	1.2
Silt by laser diffraction	vol %	59688	67.6	67.1
Tin	ug/g	59688	0.2	0.2
Tin	ug/g	59697	0.4	0.4
Strontium	ug/g	59688	36	36
Strontium	ug/g	59697	68	63
Thorium-230	Bq/g	59688	<0.02	<0.02
Titanium	ug/g	59688	140	160
Titanium	ug/g	59697	280	260
Thallium	ug/g	59688	<0.2	<0.2
Thallium	ug/g	59697	<0.2	<0.2
Uranium	ug/g	59688	0.5	0.5
Uranium	ug/g	59697	1.7	1.6
Vanadium	ug/g	59688	14	14
Vanadium	ug/g	59697	21	20
Zinc	ug/g	59688	30	30
Zinc	ug/g	59697	76	73

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Thorium-230	82

*(1) The duplicate result for Coarse Sand by laser diffraction was outside the laboratory's specified limits. The data was reviewed and all other quality control measures in the batch were within limits.

Overall, there were no other indications of problems with the analysis and the results were considered

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acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2018-11337

Nov 13, 2018

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Sep-12-2018

Client P.O.: 3008 Rock I Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2018-11337

Nov 13, 2018

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Sep-12-2018

Client P.O.: 3008 Rock I Environmental Baseline Studies

36271 LLOYLKI-1 08/09/2018 LLOYLK-1_201807_SED *SEDIMENT*
36272 LLOYLKI-2 08/10/2018 LLOYLK-2_201807_SED *SEDIMENT*
36273 LLOYLKI-3 08/10/2018 LLOYLK-3_201807_SED *SEDIMENT*

Analyte	Units	36271	36272	36273
Lab Section 2 (ICP)				
Aluminum	ug/g	3360±300	3500±400	2480±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.8±0.1	0.8±0.1	0.7±0.1
Barium	ug/g	36±5	30±4	22±3
Beryllium	ug/g	0.1±0.1	0.1±0.1	<0.1
Boron	ug/g	4±1	3±1	1±1
Cadmium	ug/g	0.2±0.1	<0.1	<0.1
Calcium	ug/g	600±90	470±70	390±60
Chromium	ug/g	4.4±1	4.1±1	2.4±1
Cobalt	ug/g	0.3±0.2	0.2±0.2	<0.2
Copper	ug/g	0.9±0.7	0.6±0.6	<0.5
Iron	ug/g	2670±300	3150±300	2100±200
Lead	ug/g	1.4±0.4	1.2±0.3	1.2±0.3
Magnesium	ug/g	490±70	520±80	340±50
Manganese	ug/g	42±6	43±6	31±5
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	1.5±0.4	1.6±0.4	0.9±0.1
Phosphorus	ug/g	80±30	80±30	50±20
Potassium	ug/g	870±100	640±100	480±70
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	0.2±0.1	<0.1	<0.1
Sodium	ug/g	170±40	80±30	70±30
Strontium	ug/g	24±4	22±3	23±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.3±0.1	<0.1	<0.1
Titanium	ug/g	180±20	220±20	180±20
Uranium	ug/g	0.2±0.1	0.2±0.1	0.1±0.1
Vanadium	ug/g	5.2±0.8	6.3±0.9	4.4±0.7
Zinc	ug/g	2.9±1	2.8±1	2.5±1
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.04	<0.04	<0.04

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SRC Group # 2018-11337

Nov 13, 2018

CanNorth, Canada North Environmental Services Limited

36271 LLOYLKI-1 08/09/2018 LLOYLK-1_201807_SED *SEDIMENT*
36272 LLOYLKI-2 08/10/2018 LLOYLK-2_201807_SED *SEDIMENT*
36273 LLOYLKI-3 08/10/2018 LLOYLK-3_201807_SED *SEDIMENT*

Analyte	Units	36271	36272	36273
Lab Section 4 (Radiochemistry)				
Polonium-210	Bq/g	0.02±0.01	0.01±0.01	0.01±0.01
Radium-226	Bq/g	0.02±0.02	0.01±0.01	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02
Lab Section 6 (SPTP)				
Organic carbon	%	1.85±0.2	1.51±0.2	0.93±0.1
Moisture	%	40.60±4	36.40±4	30.69±3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

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36274 LLOYLKI-4 08/11/2018 LLOYLK-4_201807_SED *SEDIMENT*
36275 LLOYLKI-5 08/11/2018 LLOYLK-5_201807_SED *SEDIMENT*

Analyte	Units	36274	36275
Lab Section 2 (ICP)			
Aluminum	ug/g	3240±300	2840±300
Antimony	ug/g	<0.2	<0.2
Arsenic	ug/g	0.9±0.1	0.6±0.1
Barium	ug/g	31±5	28±4
Beryllium	ug/g	0.1±0.1	<0.1
Boron	ug/g	4±1	3±1
Cadmium	ug/g	0.2±0.1	<0.1
Calcium	ug/g	480±70	430±60
Chromium	ug/g	4.3±1	2.9±1
Cobalt	ug/g	0.6±0.2	<0.2
Copper	ug/g	2.9±1	<0.5
Iron	ug/g	3200±300	1860±200
Lead	ug/g	1.4±0.4	1.1±0.3
Magnesium	ug/g	460±70	400±60
Manganese	ug/g	43±6	37±6
Molybdenum	ug/g	<0.1	<0.1
Nickel	ug/g	3.8±0.6	1.0±0.2
Phosphorus	ug/g	90±30	60±20
Potassium	ug/g	2400±200	1400±100
Selenium	ug/g	<0.1	<0.1
Silver	ug/g	0.2±0.1	0.1±0.1
Sodium	ug/g	1400±100	640±100
Strontium	ug/g	23±3	22±3
Thallium	ug/g	<0.2	<0.2
Tin	ug/g	0.3±0.1	<0.1
Titanium	ug/g	190±20	180±20
Uranium	ug/g	0.2±0.1	0.2±0.1
Vanadium	ug/g	5.6±0.8	4.5±0.7
Zinc	ug/g	3.0±1	2.3±1
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/g	<0.04	<0.04
Polonium-210	Bq/g	0.02±0.01	<0.01
Radium-226	Bq/g	0.02±0.02	0.01±0.01
Thorium-230	Bq/g	<0.02	<0.02

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SRC Group # 2018-11337

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36274 LLOYLKI-4 08/11/2018 LLOYLK-4_201807_SED *SEDIMENT*
36275 LLOYLKI-5 08/11/2018 LLOYLK-5_201807_SED *SEDIMENT*

Analyte	Units	36274	36275
Lab Section 6 (SPTP)			
Organic carbon	%	1.60±0.2	1.04±0.1
Moisture	%	41.30±4	34.38±3

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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Nov 13, 2018

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36276 LLOYLKI-1 08/09/2018 LLOYLK-1_201807_VRO *VEGETATION*
36277 LLOYLKI-1 08/09/2018 LLOYLK-1_201807_VSH *VEGETATION*
36278 LLOYLKI-2 08/10/2018 LLOYLK-2_201807_VRO *VEGETATION*

Analyte	Units	36276	36277	36278
Lab Section 2 (ICP)				
Aluminum	ug/g	54±5	7.6±2	85±8
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.28±0.1	0.07±0.06	0.30±0.1
Barium	ug/g	26±3	26±3	57±6
Beryllium	ug/g	<0.01	<0.01	0.01±0.01
Boron	ug/g	2±1	3±1	4±1
Cadmium	ug/g	0.03±0.02	<0.01	0.08±0.03
Chromium	ug/g	1.2±0.8	2.6±1	0.8±0.6
Cobalt	ug/g	0.24±0.04	0.11±0.03	0.56±0.08
Copper	ug/g	34±3	0.99±0.2	50±5
Iron	ug/g	4500±400	660±70	5100±500
Lead	ug/g	0.16±0.04	0.02±0.01	0.26±0.04
Manganese	ug/g	158±20	373±40	640±60
Mercury	ug/g	0.008±0.006	<0.005	0.014±0.008
Molybdenum	ug/g	0.2±0.1	0.4±0.2	0.2±0.1
Nickel	ug/g	1.2±0.2	1.7±0.2	1.0±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	18±2	11±1	51±5
Thallium	ug/g	<0.05	<0.05	0.09±0.07
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	1.5±0.2	0.29±0.1	2.0±0.3
Uranium	ug/g	0.06±0.02	<0.01	0.13±0.03
Vanadium	ug/g	0.3±0.2	<0.1	0.4±0.2
Zinc	ug/g	23±3	28±4	27±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.034±0.007	0.005±0.002	0.074±0.02
Polonium-210	Bq/g	0.024±0.004	0.004±0.002	0.064±0.01
Radium-226	Bq/g	0.005±0.003	0.004±0.002	0.008±0.004
Thorium-230	Bq/g	<0.002	<0.001	<0.001
Lab Section 6 (SPTP)				
Moisture	%	84.45±8	76.01±8	84.28±8
Ash	%	3.27	5.55	4.86

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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36279 LLOYLKI-2 08/10/2018 LLOYLK-2_201807_VSH *VEGETATION*
36280 LLOYLKI-3 08/10/2018 LLOYLK-3_201807_VRO *VEGETATION*
36281 LLOYLKI-3 08/10/2018 LLOYLK-3_201807_VSH *VEGETATION*

Analyte	Units	36279	36280	36281
Lab Section 2 (ICP)				
Aluminum	ug/g	9.1±2	240±20	12±2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.86±0.2	0.05±0.05
Barium	ug/g	41±4	21±2	22±2
Beryllium	ug/g	<0.01	0.02±0.01	<0.01
Boron	ug/g	3±1	3±1	4±1
Cadmium	ug/g	<0.01	0.04±0.02	<0.01
Chromium	ug/g	0.7±0.6	22±3	1.7±0.9
Cobalt	ug/g	0.04±0.02	0.49±0.07	0.08±0.02
Copper	ug/g	0.31±0.1	34±3	0.37±0.1
Iron	ug/g	270±30	7800±800	580±60
Lead	ug/g	0.01±0.01	0.45±0.07	0.02±0.01
Manganese	ug/g	760±80	126±10	293±30
Mercury	ug/g	<0.005	0.010±0.007	<0.005
Molybdenum	ug/g	0.2±0.1	0.2±0.1	0.4±0.2
Nickel	ug/g	0.38±0.2	8.3±0.8	0.69±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	38±4	18±2	15±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.32±0.1	8.4±0.8	0.34±0.1
Uranium	ug/g	<0.01	0.08±0.03	<0.01
Vanadium	ug/g	<0.1	1.0±0.2	<0.1
Zinc	ug/g	13±2	12±2	23±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.011±0.003	0.032±0.007	0.012±0.003
Polonium-210	Bq/g	0.006±0.002	0.028±0.004	0.005±0.001
Radium-226	Bq/g	0.006±0.002	0.006±0.003	0.002±0.001
Thorium-230	Bq/g	<0.001	<0.002	<0.0009
Lab Section 6 (SPTP)				
Moisture	%	72.31±7	84.78±8	77.82±8
Ash	%	5.25	8.09	4.71

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36280

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SRC Group # 2018-11337

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CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

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SRC Group # 2018-11337

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36282 LLOYLKI-4 08/11/2018 LLOYLK-4_201807_VRO *VEGETATION*
36283 LLOYLKI-4 08/11/2018 LLOYLK-4_201807_VSH *VEGETATION*
36284 LLOYLKI-5 08/11/2018 LLOYLK-5_201807_VRO *VEGETATION*

Analyte	Units	36282	36283	36284
Lab Section 2 (ICP)				
Aluminum	ug/g	94±9	10±2	95±10
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.35±0.1	<0.05	0.30±0.1
Barium	ug/g	54±5	36±4	65±6
Beryllium	ug/g	0.01±0.01	<0.01	0.01±0.01
Boron	ug/g	3±1	4±1	3±1
Cadmium	ug/g	0.06±0.03	<0.01	0.05±0.03
Chromium	ug/g	1.0±0.7	1.1±0.7	0.8±0.6
Cobalt	ug/g	0.55±0.08	0.03±0.02	0.46±0.07
Copper	ug/g	41±4	0.49±0.1	43±4
Iron	ug/g	5400±500	180±20	7200±700
Lead	ug/g	0.27±0.04	0.01±0.01	0.22±0.03
Manganese	ug/g	498±50	600±60	526±50
Mercury	ug/g	0.023±0.01	<0.005	0.028±0.01
Molybdenum	ug/g	0.2±0.1	0.4±0.2	0.3±0.2
Nickel	ug/g	1.0±0.2	0.68±0.2	0.95±0.2
Selenium	ug/g	0.05±0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	50±5	25±2	57±6
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	0.07±0.06	<0.05	<0.05
Titanium	ug/g	2.2±0.3	0.33±0.1	2.4±0.4
Uranium	ug/g	0.10±0.02	<0.01	0.10±0.02
Vanadium	ug/g	0.5±0.2	<0.1	0.4±0.2
Zinc	ug/g	23±3	24±4	26±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.18±0.03	0.010±0.003	0.13±0.02
Polonium-210	Bq/g	0.11±0.01	0.005±0.001	0.11±0.01
Radium-226	Bq/g	0.012±0.002	0.006±0.002	0.010±0.002
Thorium-230	Bq/g	<0.001	<0.001	<0.002
Lab Section 6 (SPTP)				
Moisture	%	84.24±8	70.50±7	83.91±8
Ash	%	5.39	5.69	8.91

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 36282

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SRC Group # 2018-11337

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This sample was reanalyzed for Radium 226. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 36284
This sample was reanalyzed for Radium 226. Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

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SRC Group # 2018-11337

Nov 13, 2018

CanNorth, Canada North Environmental Services Limited

36285 LLOYLKI-5 08/11/2018 LLOYLK-5_201807_VSH *VEGETATION*

Analyte	Units	36285
Lab Section 2 (ICP)		
Aluminum	ug/g	11±2
Antimony	ug/g	<0.1
Arsenic	ug/g	<0.05
Barium	ug/g	51±5
Beryllium	ug/g	<0.01
Boron	ug/g	5±1
Cadmium	ug/g	<0.01
Chromium	ug/g	1.8±0.9
Cobalt	ug/g	0.03±0.02
Copper	ug/g	0.83±0.2
Iron	ug/g	120±10
Lead	ug/g	0.01±0.01
Manganese	ug/g	1090±100
Mercury	ug/g	<0.005
Molybdenum	ug/g	1.2±0.3
Nickel	ug/g	0.82±0.2
Selenium	ug/g	<0.05
Silver	ug/g	<0.01
Strontium	ug/g	47±5
Thallium	ug/g	<0.05
Tin	ug/g	<0.05
Titanium	ug/g	0.37±0.1
Uranium	ug/g	<0.01
Vanadium	ug/g	<0.1
Zinc	ug/g	35±5
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/g	0.017±0.003
Polonium-210	Bq/g	0.006±0.002
Radium-226	Bq/g	0.007±0.002
Thorium-230	Bq/g	<0.001
Lab Section 6 (SPTP)		
Moisture	%	72.61±7
Ash	%	6.97

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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Nov 13, 2018

This report was generated for samples included in SRC Group # 2018-11337

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value	
Aluminum	ug/g	23600	23000	
Aluminum	ug/g	231	204	
Antimony	ug/g	0.0200	0.0188	
Arsenic	ug/g	17.0	16.0	
Arsenic	ug/g	0.170	0.165	
Barium	ug/g	99.0	93.4	
Barium	ug/g	115	100	
Beryllium	ug/g	0.563	0.538	
Boron	ug/g	26.3	24.1	
Cadmium	ug/g	0.244	0.252	
Cadmium	ug/g	0.0260	0.0238	
Calcium	ug/g	5900	5820	
Chromium	ug/g	36.5	34.1	
Chromium	ug/g	0.780	0.635	
Cobalt	ug/g	12.7	11.6	
Cobalt	ug/g	0.0960	0.0653	
Copper	ug/g	43.6	42.2	
Copper	ug/g	3.70	2.97	
Iron	ug/g	37600	37000	
Iron	ug/g	196	177	
Iron	ug/g	196	180	
Lead	ug/g	13.3	13.2	
Lead	ug/g	0.810	0.663	
Lead-210	Bq/L	19.2	22.5	
Lead-210	Bq	0.385	0.213	*(1)
Lead-210	Bq/L	21.8	19.8	
Lead-210	Bq	0.770	0.707	
Lead-210	Bq/L	21.8	23.7	
Lead-210	Bq	0.770	0.817	
Magnesium	ug/g	7400	6980	
Manganese	ug/g	1200	1240	

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QC Analysis	Units	Target Value	Obtained Value
Manganese	ug/g	89.0	82.0
Mercury	ug/g	0.0320	0.0239
Molybdenum	ug/g	0.766	0.688
Molybdenum	ug/g	0.0470	0.0388
Nickel	ug/g	20.5	18.7
Nickel	ug/g	0.600	0.548
Organic carbon	%	5.41	5.19
Phosphorus	ug/g	762	747
Polonium-210	Bq/L	21.0	20.8
Polonium-210	Bq	0.385	0.339
Polonium-210	Bq/L	21.0	22.9
Polonium-210	Bq	0.770	0.735
Potassium	ug/g	1700	1490
Radium-226	Bq/L	21.4	21.0
Radium-226	Bq	0.043	0.049
Radium-226	Bq/L	21.4	22.0
Radium-226	Bq	0.043	0.048
Selenium	ug/g	0.423	0.514
Selenium	ug/g	0.120	0.148
Silver	ug/g	0.314	0.251
Sodium	ug/g	893	722
Strontium	ug/g	27.3	25.8
Strontium	ug/g	53.0	47.5
Thorium-230	Bq/L	20.5	20.8
Thorium-230	Bq/L	20.5	23.1
Thorium-232	Bq	0.203	0.186
Thorium-232	Bq	0.203	0.194
Tin	ug/g	1.52	1.95
Titanium	ug/g	1990	2070
Uranium	ug/g	1.25	1.04
Uranium	ug/g	0.0120	0.00874
Vanadium	ug/g	66.5	64.5
Vanadium	ug/g	0.320	0.265
Zinc	ug/g	74.8	74.8
Zinc	ug/g	18.0	15.2

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	36271	0.2	0.2

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	36276	<0.01	<0.01
Aluminum	ug/g	36271	3360	3230
Aluminum	ug/g	36276	54	50
Arsenic	ug/g	36271	0.8	0.8
Arsenic	ug/g	36276	0.28	0.27
Boron	ug/g	36271	4	3
Boron	ug/g	36276	2	2
Barium	ug/g	36271	36	33
Barium	ug/g	36276	26	24
Beryllium	ug/g	36271	0.1	0.1
Beryllium	ug/g	36276	<0.01	<0.01
Organic carbon	%	36275	1.04	1.06
Calcium	ug/g	36271	600	620
Cadmium	ug/g	36271	0.2	0.2
Cadmium	ug/g	36276	0.03	0.03
Cobalt	ug/g	36271	0.3	<0.2
Cobalt	ug/g	36276	0.24	0.22
Chromium	ug/g	36271	4.4	3.4
Chromium	ug/g	36276	1.2	1.1
Copper	ug/g	36271	0.9	1.0
Copper	ug/g	36276	34	33
Iron	ug/g	36271	2670	2710
Iron	ug/g	36276	4500	4300
Mercury	ug/g	36276	0.008	0.008
Potassium	ug/g	36271	870	760
Magnesium	ug/g	36271	490	490
Manganese	ug/g	36271	42	46
Manganese	ug/g	36276	158	146
Molybdenum	ug/g	36271	<0.1	<0.1
Molybdenum	ug/g	36276	0.2	0.2
Moisture	%	36272	36.40	37.70
Sodium	ug/g	36271	170	140
Nickel	ug/g	36271	1.5	1.3
Nickel	ug/g	36276	1.2	1.2
Phosphorus	ug/g	36271	80	80
Lead	ug/g	36271	1.4	1.4
Lead	ug/g	36276	0.16	0.14
Lead-210	Bq/g	31826	0.29	0.32
Lead-210	Bq/g	36284	0.14	0.13
Lead-210	Bq/g	36285	0.018	0.017
Lead-210	Bq/g	44518	<0.02	<0.02
Polonium-210	Bq/g	36275	0.01	<0.01
Polonium-210	Bq/g	36284	0.10	0.11
Polonium-210	Bq/g	36285	0.007	0.005
Radium-226	Bq/g	36271	0.02	0.02
Radium-226	Bq/g	36280	0.006	0.006

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Nov 13, 2018

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Antimony	ug/g	36271	<0.2	<0.2
Antimony	ug/g	36276	<0.1	<0.1
Selenium	ug/g	36271	<0.1	<0.1
Selenium	ug/g	36276	<0.05	<0.05
Tin	ug/g	36271	0.3	<0.1
Tin	ug/g	36276	<0.05	<0.05
Strontium	ug/g	36271	24	24
Strontium	ug/g	36276	18	17
Thorium-230	Bq/g	31886	0.001	0.002
Thorium-230	Bq/g	36279	<0.001	<0.001
Titanium	ug/g	36271	180	220
Titanium	ug/g	36276	1.5	1.3
Thallium	ug/g	36271	<0.2	<0.2
Thallium	ug/g	36276	<0.05	<0.05
Uranium	ug/g	36271	0.2	0.2
Uranium	ug/g	36276	0.06	0.06
Vanadium	ug/g	36271	5.2	5.6
Vanadium	ug/g	36276	0.3	0.3
Zinc	ug/g	36271	2.9	3.1
Zinc	ug/g	36276	23	21

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Thorium-230	98

*(1) The Lead-210 result for the calibration check standard was outside the laboratory's specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-11582

Sep 23, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_MAC Rook I Environmental Baseline Studies

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All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor
Results from Lab Section 6 authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2019-11582

Sep 23, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
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Attn: Kelly Wells

Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_MAC Rook I Environmental Baseline Studies

45729	**BEETCK-1 07/28/2019 BEETCK-1_20190717_SED *SEDIMENT***
45730	**BEETCK-2 07/28/2019 BEETCK-2_20190717_SED *SEDIMENT***
45731	**BEETCK-3 07/28/2019 BEETCK-3_20190717_SED *SEDIMENT***

Analyte	Units	45729	45730	45731
Lab Section 2				
Aluminum	ug/g	790±80	700±70	1130±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.5±0.1	0.5±0.1	0.5±0.1
Barium	ug/g	17±2	16±2	23±3
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	<1	<1	2±1
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.2±0.1
Calcium	ug/g	160±40	200±30	300±40
Chromium	ug/g	<0.5	1.0±0.7	1.1±0.7
Cobalt	ug/g	<0.2	<0.2	0.3±0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	300±30	440±40	430±40
Lead	ug/g	1.2±0.3	1.2±0.3	1.2±0.3
Magnesium	ug/g	50±20	50±20	80±30
Manganese	ug/g	5.2±1	5.6±1	6.8±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.2±0.1	0.4±0.1	0.4±0.1
Phosphorus	ug/g	30±20	30±20	50±20
Potassium	ug/g	350±50	290±40	470±70
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	140±40	120±30	200±30
Strontium	ug/g	21±3	21±3	24±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	26±4	26±4	39±6
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	0.5±0.2	0.6±0.2	1.6±0.4
Zinc	ug/g	<0.5	0.6±0.6	0.6±0.6
Lab Section 4				
Lead-210	Bq/g	<0.04	<0.04	<0.04

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SRC Group # 2019-11582

Sep 23, 2019

CanNorth, Canada North Environmental Services Limited

45729 BEETCK-1 07/28/2019 BEETCK-1_20190717_SED *SEDIMENT*
45730 BEETCK-2 07/28/2019 BEETCK-2_20190717_SED *SEDIMENT*
45731 BEETCK-3 07/28/2019 BEETCK-3_20190717_SED *SEDIMENT*

Analyte	Units	45729	45730	45731
Lab Section 4				
Polonium-210	Bq/g	<0.01	<0.01	<0.01
Radium-226	Bq/g	<0.01	0.01±0.01	0.01±0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02
Lab Section 6				
Organic carbon	%	0.30±0.04	0.46±0.07	1.47±0.1
Moisture	%	25.22±2	28.18±3	30.75±3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-11582

Sep 23, 2019

CanNorth, Canada North Environmental Services Limited

45732 BEETCK-4 07/28/2019 BEETCK-4_20190717_SED *SEDIMENT*
45733 BEETCK-5 07/28/2019 BEETCK-5_20190717_SED *SEDIMENT*
45734 BROALK-1 07/21/2019 BROALK-1_20190717_SED *SEDIMENT*

Analyte	Units	45732	45733	45734
Lab Section 2				
Aluminum	ug/g	780±80	1300±100	880±90
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.9±0.1	0.5±0.1	0.6±0.1
Barium	ug/g	18±3	25±4	21±3
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	<1	2±1	3±1
Cadmium	ug/g	0.2±0.1	0.2±0.1	0.1±0.1
Calcium	ug/g	300±40	290±40	400±60
Chromium	ug/g	0.8±0.6	<0.5	<0.5
Cobalt	ug/g	<0.2	<0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	610±60	340±30	550±60
Lead	ug/g	1.2±0.3	1.3±0.3	1.3±0.3
Magnesium	ug/g	50±20	80±30	80±30
Manganese	ug/g	7.0±2	5.4±1	9.7±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.3±0.1	<0.1	<0.1
Phosphorus	ug/g	40±20	40±20	40±20
Potassium	ug/g	330±50	520±80	330±50
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	140±40	230±30	140±40
Strontium	ug/g	22±3	26±4	27±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	27±4	45±7	27±4
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	0.6±0.2	0.7±0.2	0.5±0.2
Zinc	ug/g	0.5±0.5	0.6±0.6	0.6±0.6
Lab Section 4				
Lead-210	Bq/g	<0.04	<0.04	0.04±0.04
Polonium-210	Bq/g	<0.01	<0.01	<0.01
Radium-226	Bq/g	<0.01	0.02±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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SRC Group # 2019-11582

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45732	**BEETCK-4 07/28/2019 BEETCK-4_20190717_SED *SEDIMENT***
45733	**BEETCK-5 07/28/2019 BEETCK-5_20190717_SED *SEDIMENT***
45734	**BROALK-1 07/21/2019 BROALK-1_20190717_SED *SEDIMENT***

Analyte	Units	45732	45733	45734
Lab Section 6				
Organic carbon	%	0.54±0.08	1.05±0.1	0.92±0.1
Moisture	%	26.88±3	25.62±2	24.31±2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45735 BROALK-2 07/21/2019 BROALK-2_20190717_SED *SEDIMENT*
45736 BROALK-3 07/22/2019 BROALK-3_20190717_SED *SEDIMENT*
45737 BROALK-4 07/22/2019 BROALK-4_20190717_SED *SEDIMENT*

Analyte	Units	45735	45736	45737
Lab Section 2				
Aluminum	ug/g	1060±100	1630±200	2280±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.5±0.1	0.5±0.1	0.5±0.1
Barium	ug/g	16±2	32±5	36±5
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	2±1	2±1	3±1
Cadmium	ug/g	<0.1	0.2±0.1	0.2±0.1
Calcium	ug/g	140±40	210±30	280±40
Chromium	ug/g	1.0±0.7	<0.5	1.4±0.8
Cobalt	ug/g	<0.2	0.3±0.2	0.4±0.2
Copper	ug/g	1.0±0.7	<0.5	1.3±0.8
Iron	ug/g	830±80	850±80	430±40
Lead	ug/g	1.2±0.3	1.3±0.3	1.7±0.4
Magnesium	ug/g	90±40	120±30	120±30
Manganese	ug/g	6.8±2	16±2	11±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.4±0.1	<0.1	0.4±0.1
Phosphorus	ug/g	50±20	70±20	50±20
Potassium	ug/g	370±60	720±100	840±100
Selenium	ug/g	<0.1	<0.1	0.3±0.2
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	130±30	150±40	100±20
Strontium	ug/g	22±3	17±2	22±3
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	37±6	90±9	150±20
Uranium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Vanadium	ug/g	1.0±0.2	1.5±0.4	2.2±0.3
Zinc	ug/g	1.1±0.7	2.6±1	1.4±0.8
Lab Section 4				
Lead-210	Bq/g	<0.04	<0.04	<0.04
Polonium-210	Bq/g	<0.01	0.01±0.01	0.01±0.01
Radium-226	Bq/g	0.02±0.02	0.01±0.01	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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45735	**BROALK-2 07/21/2019 BROALK-2_20190717_SED *SEDIMENT***
45736	**BROALK-3 07/22/2019 BROALK-3_20190717_SED *SEDIMENT***
45737	**BROALK-4 07/22/2019 BROALK-4_20190717_SED *SEDIMENT***

Analyte	Units	45735	45736	45737
Lab Section 6				
Organic carbon	%	0.22±0.03	0.48±0.07	1.43±0.1
Moisture	%	18.55±2	28.98±3	31.13±3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

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45738	**BROALK-5 07/22/2019 BROALK-5_20190717_SED *SEDIMENT***
45739	**CLEARV_NF-1 07/25/2019 CLEARV_NF-1_20190717_SED *SEDIMENT***
45740	**CLEARV_NF-2 07/25/2019 CLEARV_NF-2_20190717_SED *SEDIMENT***

Analyte	Units	45738	45739	45740
Lab Section 2				
Aluminum	ug/g	670±70	870±90	1060±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.4±0.1	0.7±0.1	0.7±0.1
Barium	ug/g	16±2	19±3	18±3
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	1±1	2±1	2±1
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.2±0.1
Calcium	ug/g	140±40	320±50	240±40
Chromium	ug/g	<0.5	<0.5	0.7±0.6
Cobalt	ug/g	<0.2	<0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	410±40	1960±200	1400±100
Lead	ug/g	0.9±0.3	1.3±0.3	1.3±0.3
Magnesium	ug/g	60±30	90±40	90±40
Manganese	ug/g	12±2	18±3	22±3
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.1	<0.1	<0.1
Phosphorus	ug/g	40±20	110±30	80±30
Potassium	ug/g	280±40	320±50	380±60
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	100±20	110±30	140±40
Strontium	ug/g	16±2	24±4	25±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	32±5	42±6	59±6
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	0.5±0.2	1.9±0.5	5.5±0.8
Zinc	ug/g	0.8±0.6	1.1±0.7	0.8±0.6
Lab Section 4				
Lead-210	Bq/g	<0.04	<0.04	<0.04
Polonium-210	Bq/g	0.01±0.01	0.02±0.01	<0.01
Radium-226	Bq/g	<0.01	<0.01	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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45738	**BROALK-5 07/22/2019 BROALK-5_20190717_SED *SEDIMENT***
45739	**CLEARV_NF-1 07/25/2019 CLEARV_NF-1_20190717_SED *SEDIMENT***
45740	**CLEARV_NF-2 07/25/2019 CLEARV_NF-2_20190717_SED *SEDIMENT***

Analyte	Units	45738	45739	45740
Lab Section 6				
Organic carbon	%	0.51±0.08	1.00±0.1	1.14±0.1
Moisture	%	28.20±3	32.94±3	43.90±4

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

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45741 CLEARV_NF-3 07/25/2019 CLEARV_NF-3_20190717_SED *SEDIMENT*
45742 CLEARV_NF-4 07/25/2019 CLEARV_NF-4_20190717_SED *SEDIMENT*
45743 CLEARV_NF-5 07/25/2019 CLEARV_NF-5_20190717_SED *SEDIMENT*

Analyte	Units	45741	45742	45743
Lab Section 2				
Aluminum	ug/g	1060±100	1520±200	1120±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	1.1±0.3	0.6±0.1	1.2±0.3
Barium	ug/g	19±3	19±3	21±3
Beryllium	ug/g	0.2±0.1	<0.1	0.2±0.1
Boron	ug/g	2±1	2±1	3±1
Cadmium	ug/g	0.1±0.1	0.2±0.1	0.1±0.1
Calcium	ug/g	560±80	300±40	540±80
Chromium	ug/g	1.7±0.9	<0.5	3.0±1
Cobalt	ug/g	0.3±0.2	<0.2	0.3±0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	3010±300	360±40	2980±300
Lead	ug/g	1.3±0.3	1.4±0.4	1.4±0.4
Magnesium	ug/g	90±40	110±30	120±30
Manganese	ug/g	18±3	7.6±2	28±4
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.5±0.1	<0.1	<0.1
Phosphorus	ug/g	100±20	70±20	140±40
Potassium	ug/g	280±40	460±70	260±40
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	100±20	130±30	80±30
Strontium	ug/g	24±4	28±4	25±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	58±6	55±6	68±7
Uranium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Vanadium	ug/g	13±1	1.2±0.3	13±1
Zinc	ug/g	1.9±1	0.8±0.6	2.3±1
Lab Section 4				
Lead-210	Bq/g	<0.04	<0.04	0.06±0.04
Polonium-210	Bq/g	0.02±0.01	<0.01	0.04±0.02
Radium-226	Bq/g	<0.01	0.02±0.02	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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45741	**CLEARV_NF-3 07/25/2019 CLEARV_NF-3_20190717_SED *SEDIMENT***
45742	**CLEARV_NF-4 07/25/2019 CLEARV_NF-4_20190717_SED *SEDIMENT***
45743	**CLEARV_NF-5 07/25/2019 CLEARV_NF-5_20190717_SED *SEDIMENT***

Analyte	Units	45741	45742	45743
Lab Section 6				
Organic carbon	%	2.33±0.2	0.75±0.1	3.02±0.3
Moisture	%	39.77±4	27.25±3	54.73±5

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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45744 JEDCK-1 07/26/2019 JEDCK-1_20190717_SED *SEDIMENT*
45745 JEDCK-2 07/26/2019 JEDCK-2_20190717_SED *SEDIMENT*
45746 JEDCK-3 07/26/2019 JEDCK-3_20190717_SED *SEDIMENT*

Analyte	Units	45744	45745	45746
Lab Section 2				
Aluminum	ug/g	950±100	1080±100	1500±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.6±0.1	0.6±0.1
Barium	ug/g	13±2	14±2	17±2
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	1±1	3±1	4±1
Cadmium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Calcium	ug/g	140±40	200±30	220±30
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.2	0.4±0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	330±30	430±40	580±60
Lead	ug/g	1.3±0.3	1.3±0.3	1.5±0.4
Magnesium	ug/g	80±30	100±20	140±40
Manganese	ug/g	6.4±2	8.1±2	8.2±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.1	0.2±0.1	<0.1
Phosphorus	ug/g	40±20	50±20	40±20
Potassium	ug/g	280±40	390±60	510±80
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	110±30	160±40	170±40
Strontium	ug/g	23±3	22±3	24±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	38±6	42±6	53±5
Uranium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Vanadium	ug/g	0.7±0.2	3.0±0.4	1.4±0.4
Zinc	ug/g	0.7±0.6	0.9±0.7	1.0±0.7
Lab Section 4				
Lead-210	Bq/g	<0.04	0.06±0.04	0.07±0.05
Polonium-210	Bq/g	<0.01	<0.01	<0.01
Radium-226	Bq/g	<0.01	<0.01	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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45744 JEDCK-1 07/26/2019 JEDCK-1_20190717_SED *SEDIMENT*
45745 JEDCK-2 07/26/2019 JEDCK-2_20190717_SED *SEDIMENT*
45746 JEDCK-3 07/26/2019 JEDCK-3_20190717_SED *SEDIMENT*

Analyte	Units	45744	45745	45746
Lab Section 6				
Organic carbon	%	0.17±0.04	0.18±0.04	0.12±0.03
Moisture	%	23.21±2	20.38±2	18.53±2

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45747	**JEDCK-4 07/26/2019 JEDCK-4_20190717_SED *SEDIMENT***
45748	**JEDCK-5 07/26/2019 JEDCK-5_20190717_SED *SEDIMENT***
45749	**PATTCK-1 07/30/2019 PATTCK-1_20190717_SED *SEDIMENT***

Analyte	Units	45747	45748	45749
Lab Section 2				
Aluminum	ug/g	1080±100	1060±100	1530±200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.6±0.1	0.6±0.1
Barium	ug/g	17±2	16±2	28±4
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	1±1	4±1	2±1
Cadmium	ug/g	0.2±0.1	0.3±0.1	0.2±0.1
Calcium	ug/g	180±40	190±50	320±50
Chromium	ug/g	<0.5	<0.5	0.8±0.6
Cobalt	ug/g	<0.2	<0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	360±40	420±40	530±50
Lead	ug/g	1.4±0.4	1.4±0.4	1.4±0.4
Magnesium	ug/g	90±40	90±40	140±40
Manganese	ug/g	5.3±1	5.5±1	13±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.1	<0.1	0.2±0.1
Phosphorus	ug/g	40±20	40±20	40±20
Potassium	ug/g	370±60	420±60	650±100
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	140±40	160±40	220±30
Strontium	ug/g	24±4	23±3	25±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	45±7	40±6	88±9
Uranium	ug/g	0.2±0.1	0.3±0.2	0.2±0.1
Vanadium	ug/g	1.0±0.2	0.8±0.3	1.1±0.3
Zinc	ug/g	1.0±0.7	1.0±0.7	0.7±0.6
Lab Section 4				
Lead-210	Bq/g	<0.04	0.05±0.04	<0.04
Polonium-210	Bq/g	<0.01	0.01±0.01	<0.01
Radium-226	Bq/g	<0.01	0.02±0.02	0.02±0.02
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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45747	**JEDCK-4 07/26/2019 JEDCK-4_20190717_SED *SEDIMENT***
45748	**JEDCK-5 07/26/2019 JEDCK-5_20190717_SED *SEDIMENT***
45749	**PATTCK-1 07/30/2019 PATTCK-1_20190717_SED *SEDIMENT***

Analyte	Units	45747	45748	45749
Lab Section 6				
Organic carbon	%	0.26±0.04	0.21±0.03	0.45±0.07
Moisture	%	20.63±2	17.70±2	22.01±2

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SASKATCHEWAN RESEARCH COUNCIL
Environmental Analytical Laboratories
143-111 Research Drive, Saskatoon, SK Canada S7N 3R2
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Toll-free: 1-800-240-8808
E: analytical@src.sk.ca
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SRC Group # 2019-11582

Sep 23, 2019

CanNorth, Canada North Environmental Services Limited

45750 PATTCK-2 07/30/2019 PATTCK-2_20190717_SED *SEDIMENT*
45751 PATTCK-3 07/30/2019 PATTCK-3_20190717_SED *SEDIMENT*
45752 PATTCK-4 07/30/2019 PATTCK-4_20190717_SED *SEDIMENT*

Analyte	Units	45750	45751	45752
Lab Section 2				
Aluminum	ug/g	1230±100	1280±100	1230±100
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.6±0.1	0.5±0.1	0.4±0.1
Barium	ug/g	24±4	22±3	24±4
Beryllium	ug/g	<0.1	<0.1	<0.1
Boron	ug/g	<1	<1	2±1
Cadmium	ug/g	0.2±0.1	0.1±0.1	0.1±0.1
Calcium	ug/g	260±40	340±50	430±60
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.2	<0.2	<0.2
Copper	ug/g	<0.5	<0.5	<0.5
Iron	ug/g	400±40	560±60	490±50
Lead	ug/g	1.4±0.4	1.2±0.3	1.2±0.3
Magnesium	ug/g	110±30	150±40	140±40
Manganese	ug/g	9.9±2	12±2	11±2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.1	<0.1	<0.1
Phosphorus	ug/g	40±20	40±20	30±20
Potassium	ug/g	540±80	460±70	580±90
Selenium	ug/g	<0.1	<0.1	<0.1
Silver	ug/g	<0.1	<0.1	<0.1
Sodium	ug/g	190±50	150±40	200±30
Strontium	ug/g	25±4	23±3	24±4
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	63±6	76±8	47±7
Uranium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Vanadium	ug/g	0.8±0.3	1.1±0.3	0.8±0.3
Zinc	ug/g	0.7±0.6	0.7±0.6	0.8±0.6
Lab Section 4				
Lead-210	Bq/g	0.06±0.04	<0.04	<0.04
Polonium-210	Bq/g	<0.01	<0.01	<0.01
Radium-226	Bq/g	<0.01	<0.01	<0.01
Thorium-230	Bq/g	<0.02	<0.02	<0.02

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CanNorth, Canada North Environmental Services Limited

45750 PATTCK-2 07/30/2019 PATTCK-2_20190717_SED *SEDIMENT*
45751 PATTCK-3 07/30/2019 PATTCK-3_20190717_SED *SEDIMENT*
45752 PATTCK-4 07/30/2019 PATTCK-4_20190717_SED *SEDIMENT*

Analyte	Units	45750	45751	45752
Lab Section 6				
Organic carbon	%	0.45±0.07	0.58±0.09	0.73±0.1
Moisture	%	23.70±2	24.44±2	24.91±2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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CanNorth, Canada North Environmental Services Limited

45753 PATTCK-5 07/30/2019 PATTCK-5_20190717_SED *SEDIMENT*

Analyte	Units	45753
Lab Section 2		
Aluminum	ug/g	1470±100
Antimony	ug/g	<0.2
Arsenic	ug/g	0.5±0.1
Barium	ug/g	28±4
Beryllium	ug/g	<0.1
Boron	ug/g	2±1
Cadmium	ug/g	0.2±0.1
Calcium	ug/g	370±60
Chromium	ug/g	<0.5
Cobalt	ug/g	0.3±0.2
Copper	ug/g	<0.5
Iron	ug/g	530±50
Lead	ug/g	1.4±0.4
Magnesium	ug/g	160±40
Manganese	ug/g	13±2
Molybdenum	ug/g	<0.1
Nickel	ug/g	<0.1
Phosphorus	ug/g	40±20
Potassium	ug/g	610±90
Selenium	ug/g	<0.1
Silver	ug/g	<0.1
Sodium	ug/g	200±30
Strontium	ug/g	27±4
Thallium	ug/g	<0.2
Tin	ug/g	<0.1
Titanium	ug/g	74±7
Uranium	ug/g	0.2±0.1
Vanadium	ug/g	1.0±0.2
Zinc	ug/g	0.9±0.7
Lab Section 4		
Lead-210	Bq/g	<0.04
Polonium-210	Bq/g	0.01±0.01
Radium-226	Bq/g	0.02±0.02
Thorium-230	Bq/g	<0.02

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CanNorth, Canada North Environmental Services Limited

45753 PATTCK-5 07/30/2019 PATTCK-5_20190717_SED *SEDIMENT*

Analyte	Units	45753
Lab Section 6		
Organic carbon	%	0.56±0.08
Moisture	%	25.52±2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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This report was generated for samples included in SRC Group # 2019-11582

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value
Aluminum	ug/g	23600	24700
Aluminum	ug/g	23600	26600
Arsenic	ug/g	17.0	16.7
Arsenic	ug/g	17.0	17.8
Barium	ug/g	99.0	104
Barium	ug/g	99.0	109
Beryllium	ug/g	0.563	0.658
Cadmium	ug/g	0.292	0.296
Cadmium	ug/g	0.292	0.304
Calcium	ug/g	6400	6510
Calcium	ug/g	6400	6830
Chromium	ug/g	36.5	39.6
Chromium	ug/g	36.5	41.4
Cobalt	ug/g	12.7	13.9
Cobalt	ug/g	12.7	13.6
Copper	ug/g	43.6	44.3
Copper	ug/g	43.6	46.5
Iron	ug/g	37600	38400
Iron	ug/g	37600	39700
Lead	ug/g	13.7	14.2
Lead	ug/g	13.7	14.8
Lead-210	Bq/L	21.6	20.2
Lead-210	Bq	0.385	0.475
Lead-210	Bq/L	21.6	20.1
Lead-210	Bq	0.770	0.791
Lead-210	Bq/L	21.6	18.4
Lead-210	Bq	0.770	0.711
Magnesium	ug/g	7400	7580
Magnesium	ug/g	7400	7950
Manganese	ug/g	1200	1340
Manganese	ug/g	1200	1360

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QC Analysis	Units	Target Value	Obtained Value
Molybdenum	ug/g	0.701	0.636
Molybdenum	ug/g	0.701	0.532
Nickel	ug/g	20.5	20.9
Nickel	ug/g	20.5	21.4
Organic carbon	%	4.98	4.89
Phosphorus	ug/g	762	780
Phosphorus	ug/g	762	838
Polonium-210	Bq/L	18.8	20.8
Polonium-210	Bq	1.92	2.06
Polonium-210	Bq/L	18.8	20.4
Polonium-210	Bq	0.385	0.428
Polonium-210	Bq/L	18.8	21.2
Polonium-210	Bq	0.770	0.856
Potassium	ug/g	1700	1730
Potassium	ug/g	1700	1840
Radium-226	Bq/L	18.4	18.6
Radium-226	Bq	0.043	0.037
Radium-226	Bq/L	18.4	16.5
Radium-226	Bq	0.427	0.373
Radium-226	Bq/L	18.4	16.8
Radium-226	Bq	2.13	2.13
Selenium	ug/g	0.423	0.355
Selenium	ug/g	0.423	0.372
Silver	ug/g	0.200	0.237
Silver	ug/g	0.200	0.242
Sodium	ug/g	893	872
Sodium	ug/g	893	936
Strontium	ug/g	27.3	27.2
Strontium	ug/g	27.3	29.0
Thorium-230	Bq/L	19.9	21.2
Thorium-232	Bq	0.203	0.177
Thorium-232	Bq	0.203	0.192
Tin	ug/g	1.52	1.52
Tin	ug/g	1.52	1.53
Titanium	ug/g	1990	1610
Titanium	ug/g	1990	1640
Uranium	ug/g	1.25	1.29
Uranium	ug/g	1.25	1.48
Vanadium	ug/g	66.5	68.9
Vanadium	ug/g	66.5	72.8
Zinc	ug/g	77.9	80.1
Zinc	ug/g	77.9	82.5

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Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	45729	<0.1	<0.1
Silver	ug/g	45733	<0.1	<0.1
Aluminum	ug/g	45729	790	810
Aluminum	ug/g	45733	1300	1370
Arsenic	ug/g	45729	0.5	0.6
Arsenic	ug/g	45733	0.5	0.5
Boron	ug/g	45729	<1	<1
Boron	ug/g	45733	2	2
Barium	ug/g	45729	17	17
Barium	ug/g	45733	25	26
Beryllium	ug/g	45729	<0.1	<0.1
Beryllium	ug/g	45733	<0.1	<0.1
Organic carbon	%	45753	0.56	0.54
Calcium	ug/g	45729	160	180
Calcium	ug/g	45733	290	280
Cadmium	ug/g	45729	0.2	0.2
Cadmium	ug/g	45733	0.2	0.2
Cobalt	ug/g	45729	<0.2	0.3
Cobalt	ug/g	45733	<0.2	<0.2
Chromium	ug/g	45729	<0.5	1.2
Chromium	ug/g	45733	<0.5	<0.5
Copper	ug/g	45729	<0.5	<0.5
Copper	ug/g	45733	<0.5	<0.5
Iron	ug/g	45729	300	310
Iron	ug/g	45733	340	330
Potassium	ug/g	45729	350	360
Potassium	ug/g	45733	520	570
Magnesium	ug/g	45729	50	50
Magnesium	ug/g	45733	80	80
Manganese	ug/g	45729	5.2	4.6
Manganese	ug/g	45733	5.4	5.2
Molybdenum	ug/g	45729	<0.1	<0.1
Molybdenum	ug/g	45733	<0.1	<0.1
Sodium	ug/g	45729	140	140
Sodium	ug/g	45733	230	250
Nickel	ug/g	45729	0.2	0.5
Nickel	ug/g	45733	<0.1	<0.1
Phosphorus	ug/g	45729	30	30
Phosphorus	ug/g	45733	40	40

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead	ug/g	45729	1.2	1.3
Lead	ug/g	45733	1.3	1.3
Lead-210	Bq/g	45729	<0.04	<0.04
Polonium-210	Bq/g	45729	<0.01	<0.01
Radium-226	Bq/g	45729	0.02	<0.01
Radium-226	Bq/g	45739	<0.01	<0.01
Radium-226	Bq/g	45749	0.02	0.02
Radium-226	Bq/g	47213	0.02	0.01
Radium-226	Bq/g	50525	0.07	0.09
Antimony	ug/g	45729	<0.2	<0.2
Antimony	ug/g	45733	<0.2	<0.2
Selenium	ug/g	45729	<0.1	<0.1
Selenium	ug/g	45733	<0.1	<0.1
Tin	ug/g	45729	<0.1	<0.1
Tin	ug/g	45733	<0.1	<0.1
Strontium	ug/g	45729	21	24
Strontium	ug/g	45733	26	26
Thorium-230	Bq/g	45729	<0.02	<0.02
Thorium-230	Bq/g	45739	<0.02	<0.02
Titanium	ug/g	45729	26	28
Titanium	ug/g	45733	45	45
Thallium	ug/g	45729	<0.2	<0.2
Thallium	ug/g	45733	<0.2	<0.2
Uranium	ug/g	45729	0.2	0.2
Uranium	ug/g	45733	0.2	0.2
Vanadium	ug/g	45729	0.5	0.5
Vanadium	ug/g	45733	0.7	0.7
Zinc	ug/g	45729	<0.5	<0.5
Zinc	ug/g	45733	0.6	0.7

All quality control results were within the specified limits and considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-11579

Oct 18, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_MAC Rook I Environmental Baseline Studies

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All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor
Results from Lab Section 6 authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_MAC Rook I Environmental Baseline Studies

45647	**BEETCK-1 07/28/2019 BEETCK-1_20190717_VRO *VEGETATION***
45648	**BEETCK-1 07/28/2019 BEETCK-1_20190717_VSH *VEGETATION***
45649	**BEETCK-2 07/28/2019 BEETCK-2_20190717_VRO *VEGETATION***

Analyte	Units	45647	45648	45649
Lab Section 2				
Aluminum	ug/g	420±40	6.6±2	270±30
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.56±0.1	<0.05	0.71±0.2
Barium	ug/g	21±2	31±3	30±3
Beryllium	ug/g	0.03±0.01	<0.01	0.02±0.01
Boron	ug/g	3±1	4±1	2±1
Cadmium	ug/g	0.03±0.02	<0.01	0.04±0.02
Chromium	ug/g	46±10	0.8±0.6	65±20
Cobalt	ug/g	0.67±0.1	0.02±0.01	0.74±0.1
Copper	ug/g	1.2±0.2	0.36±0.1	0.59±0.1
Iron	ug/g	3900±400	99±10	6600±700
Lead	ug/g	0.56±0.08	0.02±0.01	0.43±0.06
Manganese	ug/g	99±10	550±60	47±5
Mercury	ug/g	0.010±0.007	<0.005	0.009±0.007
Molybdenum	ug/g	0.8±0.3	0.3±0.2	0.3±0.2
Nickel	ug/g	18±2	0.34±0.1	27±3
Selenium	ug/g	0.08±0.06	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	15±2	14±1	16±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	12±1	0.16±0.07	8.4±0.8
Uranium	ug/g	0.14±0.04	<0.01	0.06±0.02
Vanadium	ug/g	2.1±0.3	<0.1	1.6±0.4
Zinc	ug/g	8.8±2	27±4	5.6±1
Lab Section 4				
Lead-210	Bq/g	0.11±0.02	0.010±0.002	0.033±0.007
Polonium-210	Bq/g	0.11±0.01	0.0057±0.0008	0.039±0.006
Radium-226	Bq/g	0.004±0.003	0.002±0.001	0.004±0.003
Thorium-230	Bq/g	<0.004	<0.001	<0.005

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45647	**BEETCK-1 07/28/2019 BEETCK-1_20190717_VRO *VEGETATION***
45648	**BEETCK-1 07/28/2019 BEETCK-1_20190717_VSH *VEGETATION***
45649	**BEETCK-2 07/28/2019 BEETCK-2_20190717_VRO *VEGETATION***

Analyte	Units	45647	45648	45649
Lab Section 6				
Moisture	%	79.59±8	72.32±7	81.27±8
Ash	%	18.71	5.84	24.60

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-11579

Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

45650 BEETCK-2 07/28/2019 BEETCK-2_20190717_VSH *VEGETATION*
45651 BEETCK-3 07/28/2019 BEETCK-3_20190717_VRO *VEGETATION*
45652 BEETCK-3 07/28/2019 BEETCK-3_20190717_VSH *VEGETATION*

Analyte	Units	45650	45651	45652
Lab Section 2				
Aluminum	ug/g	5.8±1	530±50	5.6±1
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.30±0.1	<0.05
Barium	ug/g	39±4	13±1	23±2
Beryllium	ug/g	<0.01	0.03±0.01	<0.01
Boron	ug/g	4±1	2±1	4±1
Cadmium	ug/g	<0.01	0.05±0.03	<0.01
Chromium	ug/g	1.2±0.8	20±10	1.2±0.8
Cobalt	ug/g	0.02±0.01	0.36±0.05	0.02±0.01
Copper	ug/g	0.32±0.1	0.88±0.2	0.27±0.1
Iron	ug/g	88±9	2200±200	100±10
Lead	ug/g	<0.01	0.59±0.09	0.01±0.01
Manganese	ug/g	346±30	26±3	149±10
Mercury	ug/g	<0.005	0.014±0.008	<0.005
Molybdenum	ug/g	0.5±0.2	0.3±0.2	0.1±0.1
Nickel	ug/g	0.51±0.1	7.7±0.8	0.51±0.1
Selenium	ug/g	<0.05	0.09±0.07	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	16±2	14±1	16±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.10±0.05	16±2	0.13±0.06
Uranium	ug/g	<0.01	0.07±0.02	<0.01
Vanadium	ug/g	<0.1	1.8±0.4	<0.1
Zinc	ug/g	22±3	3.8±1	17±2
Lab Section 4				
Lead-210	Bq/g	0.004±0.001	0.10±0.02	0.007±0.002
Polonium-210	Bq/g	0.0039±0.001	0.12±0.01	0.0031±0.0008
Radium-226	Bq/g	0.002±0.001	0.003±0.002	0.001±0.0009
Thorium-230	Bq/g	<0.001	0.002±0.002	<0.001
Lab Section 6				
Moisture	%	74.22±7	85.34±8	72.51±7
Ash	%	6.03	8.92	6.32

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45651

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SRC Group # 2019-11579

Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45653 BEETCK-4 07/28/2019 BEETCK-4_20190717_VRO *VEGETATION*
45654 BEETCK-4 07/28/2019 BEETCK-4_20190717_VSH *VEGETATION*
45655 BEETCK-5 07/28/2019 BEETCK-5_20190717_VRO *VEGETATION*

Analyte	Units	45653	45654	45655
Lab Section 2				
Aluminum	ug/g	680±70	17±2	1000±100
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.54±0.1	<0.05	0.45±0.1
Barium	ug/g	25±2	32±3	48±5
Beryllium	ug/g	0.04±0.01	<0.01	0.05±0.01
Boron	ug/g	2±1	4±1	3±1
Cadmium	ug/g	0.05±0.03	<0.01	0.06±0.03
Chromium	ug/g	58±10	1.9±1	21±10
Cobalt	ug/g	0.73±0.1	0.03±0.02	0.42±0.06
Copper	ug/g	1.1±0.2	0.28±0.1	0.87±0.2
Iron	ug/g	5300±500	320±30	4700±500
Lead	ug/g	0.62±0.09	0.01±0.01	0.79±0.1
Manganese	ug/g	45±4	204±20	71±7
Mercury	ug/g	0.014±0.008	<0.005	0.043±0.01
Molybdenum	ug/g	0.5±0.2	0.1±0.1	0.5±0.2
Nickel	ug/g	22±2	0.83±0.2	8.3±0.8
Selenium	ug/g	0.07±0.06	<0.05	0.13±0.08
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	19±2	17±2	43±4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	0.05±0.05	<0.05	<0.05
Titanium	ug/g	19±2	0.21±0.08	19±2
Uranium	ug/g	0.09±0.03	<0.01	0.08±0.03
Vanadium	ug/g	4.0±0.6	<0.1	2.1±0.3
Zinc	ug/g	10±2	23±3	8.8±2
Lab Section 4				
Lead-210	Bq/g	0.041±0.01	0.010±0.002	0.070±0.02
Polonium-210	Bq/g	0.046±0.007	0.0050±0.0008	0.070±0.01
Radium-226	Bq/g	0.003±0.003	0.001±0.001	0.004±0.003
Thorium-230	Bq/g	<0.004	<0.002	<0.003
Lab Section 6				
Moisture	%	79.92±8	71.33±7	81.39±8
Ash	%	20.54	7.51	13.54

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 0.6 °C upon receipt.

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Oct 18, 2019

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Results are reported on a dry basis.

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45656	**BEETCK-5 07/28/2019 BEETCK-5_20190717_VSH *VEGETATION***
45657	**BROALK-1 07/21/2019 BROALK-1_20190717_VRO *VEGETATION***
45658	**BROALK-1 07/21/2019 BROALK-1_20190717_VSH *VEGETATION***

Analyte	Units	45656	45657	45658
Lab Section 2				
Aluminum	ug/g	16±2	72±7	12±2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.60±0.2	<0.05
Barium	ug/g	34±3	24±2	53±5
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	4±1	2±1	7±1
Cadmium	ug/g	<0.01	0.02±0.02	<0.01
Chromium	ug/g	1.1±0.7	70±20	3.5±1
Cobalt	ug/g	0.03±0.02	0.80±0.1	0.05±0.02
Copper	ug/g	0.32±0.1	0.81±0.2	0.63±0.2
Iron	ug/g	170±20	3300±300	230±20
Lead	ug/g	0.01±0.01	0.18±0.04	0.04±0.02
Manganese	ug/g	281±30	130±10	368±40
Mercury	ug/g	<0.005	<0.005	<0.005
Molybdenum	ug/g	0.2±0.1	0.4±0.2	1.0±0.2
Nickel	ug/g	0.48±0.2	29±3	1.5±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	15±2	19±2	30±3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.22±0.08	1.2±0.2	0.37±0.1
Uranium	ug/g	<0.01	0.01±0.01	<0.01
Vanadium	ug/g	<0.1	0.6±0.2	<0.1
Zinc	ug/g	28±4	8.5±2	16±2
Lab Section 4				
Lead-210	Bq/g	0.012±0.003	0.020±0.006	0.005±0.002
Polonium-210	Bq/g	0.0064±0.001	0.020±0.003	0.0029±0.0007
Radium-226	Bq/g	0.004±0.002	0.001±0.001	0.003±0.002
Thorium-230	Bq/g	<0.001	<0.002	<0.002
Lab Section 6				
Moisture	%	71.25±7	77.81±8	74.56±7
Ash	%	6.32	12.79	7.59

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45658

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This sample was reanalyzed for Chromium and Nickel. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45659 BROALK-2 07/21/2019 BROALK-2_20190717_VRO *VEGETATION*
45660 BROALK-2 07/21/2019 BROALK-2_20190717_VSH *VEGETATION*
45661 BROALK-3 07/22/2019 BROALK-3_20190717_VRO *VEGETATION*

Analyte	Units	45659	45660	45661
Lab Section 2				
Aluminum	ug/g	300±30	10±2	170±20
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.33±0.1	0.05±0.05	1.7±0.2
Barium	ug/g	25±2	46±5	42±4
Beryllium	ug/g	0.02±0.01	<0.01	0.01±0.01
Boron	ug/g	3±1	4±1	3±1
Cadmium	ug/g	0.02±0.02	<0.01	0.03±0.02
Chromium	ug/g	240±100	12±2	150±80
Cobalt	ug/g	2.6±0.3	0.13±0.03	1.7±0.2
Copper	ug/g	0.84±0.2	0.32±0.1	0.70±0.2
Iron	ug/g	6800±700	530±50	3900±400
Lead	ug/g	0.49±0.07	0.02±0.01	0.36±0.05
Manganese	ug/g	176±20	453±40	156±20
Mercury	ug/g	<0.005	<0.005	<0.005
Molybdenum	ug/g	0.3±0.2	0.6±0.2	0.3±0.2
Nickel	ug/g	100±10	4.8±0.7	68±7
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	11±1	11±1	12±1
Thallium	ug/g	<0.05	<0.05	0.06±0.06
Tin	ug/g	0.06±0.06	<0.05	<0.05
Titanium	ug/g	3.1±0.5	0.28±0.1	5.0±0.5
Uranium	ug/g	0.03±0.02	<0.01	0.03±0.02
Vanadium	ug/g	1.3±0.3	<0.1	1.1±0.3
Zinc	ug/g	21±3	18±3	17±2
Lab Section 4				
Lead-210	Bq/g	<0.004	0.006±0.002	0.007±0.005
Polonium-210	Bq/g	0.007±0.003	0.0010±0.0004	0.009±0.003
Radium-226	Bq/g	0.008±0.006	0.013±0.003	0.010±0.007
Thorium-230	Bq/g	<0.005	<0.002	<0.006
Lab Section 6				
Moisture	%	82.19±8	72.42±7	76.92±8
Ash	%	23.22	8.00	30.73

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Note for Sample # 45660

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This sample was reanalyzed for Chromium, Cobalt and Nickel. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45661
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45662 BROALK-3 07/22/2019 BROALK-3_20190717_VSH *VEGETATION*
45663 BROALK-4 07/22/2019 BROALK-4_20190717_VRO *VEGETATION*
45664 BROALK-4 07/22/2019 BROALK-4_20190717_VSH *VEGETATION*

Analyte	Units	45662	45663	45664
Lab Section 2				
Aluminum	ug/g	9.0±2	620±60	9.4±2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.11±0.07	0.71±0.2	0.06±0.06
Barium	ug/g	34±3	31±3	50±5
Beryllium	ug/g	<0.01	0.03±0.01	<0.01
Boron	ug/g	4±1	2±1	7±1
Cadmium	ug/g	<0.01	0.11±0.03	<0.01
Chromium	ug/g	1.5±0.8	46±10	1.1±0.7
Cobalt	ug/g	0.03±0.02	0.83±0.1	0.03±0.02
Copper	ug/g	0.20±0.1	2.6±0.4	0.83±0.2
Iron	ug/g	360±40	1500±200	150±20
Lead	ug/g	0.02±0.01	0.58±0.09	0.02±0.01
Manganese	ug/g	346±30	89±9	178±20
Mercury	ug/g	<0.005	0.022±0.01	0.007±0.006
Molybdenum	ug/g	0.5±0.2	0.5±0.2	0.7±0.2
Nickel	ug/g	0.65±0.2	17±2	0.54±0.1
Selenium	ug/g	<0.05	0.44±0.1	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	18±2	16±2	48±5
Thallium	ug/g	<0.05	0.08±0.06	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.23±0.09	14±1	0.24±0.09
Uranium	ug/g	<0.01	0.08±0.03	<0.01
Vanadium	ug/g	<0.1	1.6±0.4	<0.1
Zinc	ug/g	19±3	5.7±1	14±2
Lab Section 4				
Lead-210	Bq/g	0.005±0.002	0.011±0.005	0.011±0.003
Polonium-210	Bq/g	0.0027±0.0007	0.007±0.003	0.0047±0.0007
Radium-226	Bq/g	0.010±0.002	0.007±0.006	0.0007±0.0006
Thorium-230	Bq/g	<0.0006	<0.006	<0.0008
Lab Section 6				
Moisture	%	66.80±7	74.04±7	75.12±8
Ash	%	2.96	27.88	4.28

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45662

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This sample was reanalyzed for Radium-226. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45663
This sample was reanalyzed for Cadmium, Copper, Mercury, Selenium, Titanium and Uranium. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45664
This sample was reanalyzed for Polonium-210 and Lead-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45665	**BROALK-5 07/22/2019 BROALK-5_20190717_VRO *VEGETATION***
45666	**BROALK-5 07/22/2019 BROALK-5_20190717_VSH *VEGETATION***
45667	**CLEARV_NF-1 07/25/2019 CLEARV_NF-1_20190717_VRO *VEGETATION***

Analyte	Units	45665	45666	45667
Lab Section 2				
Aluminum	ug/g	110±10	6.0±2	450±40
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	1.4±0.2	0.07±0.06	2.4±0.4
Barium	ug/g	24±2	37±4	28±3
Beryllium	ug/g	0.01±0.01	<0.01	0.07±0.01
Boron	ug/g	2±1	4±1	3±1
Cadmium	ug/g	0.04±0.02	<0.01	0.04±0.02
Chromium	ug/g	210±100	<0.5	79±20
Cobalt	ug/g	2.3±0.2	0.02±0.01	0.80±0.1
Copper	ug/g	0.80±0.2	0.14±0.08	0.81±0.2
Iron	ug/g	3600±400	110±10	9200±900
Lead	ug/g	0.36±0.05	<0.01	0.70±0.1
Manganese	ug/g	258±20	404±40	50±5
Mercury	ug/g	<0.005	<0.005	0.008±0.006
Molybdenum	ug/g	0.5±0.2	0.7±0.2	0.9±0.3
Nickel	ug/g	87±9	0.20±0.1	34±3
Selenium	ug/g	<0.05	<0.05	0.06±0.06
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	8.4±0.8	12±1	23±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	3.6±0.5	0.20±0.08	20±2
Uranium	ug/g	0.02±0.01	<0.01	0.10±0.02
Vanadium	ug/g	1.3±0.3	<0.1	8.9±1
Zinc	ug/g	14±2	19±3	24±4
Lab Section 4				
Lead-210	Bq/g	0.016±0.006	0.004±0.001	0.054±0.01
Polonium-210	Bq/g	0.016±0.004	0.0026±0.0006	0.053±0.008
Radium-226	Bq/g	0.006±0.005	0.0072±0.001	<0.0008
Thorium-230	Bq/g	<0.006	<0.0007	<0.002
Lab Section 6				
Moisture	%	76.56±8	67.12±7	68.18±7
Ash	%	30.30	3.30	7.82

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 0.6 °C upon receipt.

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45668 CLEARV_NF-1 07/25/2019 CLEARV_NF-1_20190717_VSH *VEGETATION*
45669 CLEARV_NF-2 07/25/2019 CLEARV_NF-2_20190717_VRO *VEGETATION*
45670 CLEARV_NF-2 07/25/2019 CLEARV_NF-2_20190717_VSH *VEGETATION*

Analyte	Units	45668	45669	45670
Lab Section 2				
Aluminum	ug/g	18±3	400±40	36±5
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.08±0.06	0.81±0.2	0.09±0.07
Barium	ug/g	30±3	15±2	35±4
Beryllium	ug/g	<0.01	0.09±0.02	<0.01
Boron	ug/g	9±1	2±1	4±1
Cadmium	ug/g	<0.01	0.02±0.02	<0.01
Chromium	ug/g	2.2±1	230±100	2.5±1
Cobalt	ug/g	0.04±0.02	2.6±0.3	0.06±0.02
Copper	ug/g	0.37±0.1	2.6±0.4	0.36±0.1
Iron	ug/g	270±30	4300±400	640±60
Lead	ug/g	0.03±0.02	0.70±0.1	0.04±0.02
Manganese	ug/g	233±20	60±9	226±20
Mercury	ug/g	<0.005	0.007±0.006	<0.005
Molybdenum	ug/g	0.4±0.2	0.5±0.2	0.5±0.2
Nickel	ug/g	0.88±0.2	90±9	0.99±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	24±2	15±2	17±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	0.10±0.07	<0.05
Titanium	ug/g	0.31±0.1	18±2	0.98±0.2
Uranium	ug/g	0.01±0.01	0.11±0.03	0.01±0.01
Vanadium	ug/g	<0.1	11±3	0.3±0.2
Zinc	ug/g	19±3	4.2±1	14±2
Lab Section 4				
Lead-210	Bq/g	0.007±0.002	0.029±0.007	0.010±0.002
Polonium-210	Bq/g	0.0049±0.0007	0.026±0.004	0.0059±0.0009
Radium-226	Bq/g	0.004±0.002	0.004±0.004	0.004±0.002
Thorium-230	Bq/g	<0.001	<0.008	<0.001
Lab Section 6				
Moisture	%	73.00±7	75.05±8	75.38±8
Ash	%	6.38	40.57	5.48

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 0.6 °C upon receipt.

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Results are reported on a dry basis.

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45671 CLEARV_NF-3 07/25/2019 CLEARV_NF-3_20190717_VRO *VEGETATION*
45672 CLEARV_NF-3 07/25/2019 CLEARV_NF-3_20190717_VSH *VEGETATION*
45673 CLEARV_NF-4 07/25/2019 CLEARV_NF-4_20190717_VRO *VEGETATION*

Analyte	Units	45671	45672	45673
Lab Section 2				
Aluminum	ug/g	460±50	37±6	1100±100
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	8.0±0.8	0.13±0.08	0.24±0.1
Barium	ug/g	28±3	29±3	11±1
Beryllium	ug/g	0.37±0.06	<0.01	0.06±0.01
Boron	ug/g	3±1	5±1	2±1
Cadmium	ug/g	0.03±0.02	<0.01	0.03±0.02
Chromium	ug/g	38±10	2.8±1	81±20
Cobalt	ug/g	0.69±0.1	0.08±0.02	1.3±0.1
Copper	ug/g	1.1±0.2	0.33±0.1	1.2±0.2
Iron	ug/g	14100±1000	590±60	1000±100
Lead	ug/g	0.80±0.1	0.04±0.02	0.64±0.1
Manganese	ug/g	72±7	186±20	15±2
Mercury	ug/g	0.008±0.006	<0.005	0.006±0.006
Molybdenum	ug/g	1.2±0.3	1.4±0.4	0.2±0.1
Nickel	ug/g	14±1	1.3±0.2	37±4
Selenium	ug/g	0.06±0.06	<0.05	0.26±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	18±2	16±2	20±2
Thallium	ug/g	<0.05	<0.05	0.06±0.06
Tin	ug/g	0.08±0.06	<0.05	<0.05
Titanium	ug/g	49±5	1.3±0.2	18±2
Uranium	ug/g	0.27±0.04	0.01±0.01	0.10±0.02
Vanadium	ug/g	32±5	0.5±0.2	2.5±0.4
Zinc	ug/g	16±2	17±2	4.6±1
Lab Section 4				
Lead-210	Bq/g	0.022±0.006	0.007±0.002	0.010±0.005
Polonium-210	Bq/g	0.024±0.004	0.0056±0.0008	0.007±0.003
Radium-226	Bq/g	0.003±0.002	0.004±0.002	<0.004
Thorium-230	Bq/g	<0.001	<0.001	<0.007
Lab Section 6				
Moisture	%	71.81±7	76.99±8	69.11±7
Ash	%	5.70	5.02	35.48

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45672

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This sample was reanalyzed for Molybdenum. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45673
This sample was reanalyzed for Aluminum and Selenium. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45674 CLEARV_NF-4 07/25/2019 CLEARV_NF-4_20190717_VSH *VEGETATION*
45675 CLEARV_NF-5 07/25/2019 CLEARV_NF-5_20190717_VRO *VEGETATION*
45676 CLEARV_NF-5 07/25/2019 CLEARV_NF-5_20190717_VSH *VEGETATION*

Analyte	Units	45674	45675	45676
Lab Section 2				
Aluminum	ug/g	13±2	390±40	19±3
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	2.8±0.4	0.08±0.06
Barium	ug/g	16±2	12±1	32±3
Beryllium	ug/g	<0.01	0.30±0.04	<0.01
Boron	ug/g	4±1	2±1	5±1
Cadmium	ug/g	<0.01	0.02±0.02	<0.01
Chromium	ug/g	0.9±0.7	82±20	1.6±0.9
Cobalt	ug/g	0.04±0.02	1.3±0.1	0.08±0.02
Copper	ug/g	0.40±0.1	1.3±0.2	0.39±0.1
Iron	ug/g	150±20	5400±500	270±30
Lead	ug/g	0.01±0.01	0.53±0.08	0.02±0.01
Manganese	ug/g	54±5	38±4	229±20
Mercury	ug/g	<0.005	<0.005	<0.005
Molybdenum	ug/g	<0.1	0.4±0.2	0.5±0.2
Nickel	ug/g	0.59±0.1	35±4	0.68±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	16±2	14±1	17±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	0.10±0.07	<0.05
Titanium	ug/g	0.44±0.1	76±8	0.54±0.1
Uranium	ug/g	<0.01	0.30±0.04	<0.01
Vanadium	ug/g	<0.1	36±5	0.2±0.1
Zinc	ug/g	9.6±2	1.9±1	5.9±1
Lab Section 4				
Lead-210	Bq/g	0.006±0.002	0.010±0.005	0.004±0.001
Polonium-210	Bq/g	0.0035±0.0009	0.014±0.004	0.0036±0.0009
Radium-226	Bq/g	0.0029±0.002	<0.004	0.004±0.002
Thorium-230	Bq/g	<0.0009	<0.007	<0.001
Lab Section 6				
Moisture	%	72.54±7	73.08±7	73.18±7
Ash	%	4.35	36.40	5.01

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45677 JEDCK-1 07/26/2019 JEDCK-1_20190717_VRO *VEGETATION*
45678 JEDCK-1 07/26/2019 JEDCK-1_20190717_VSH *VEGETATION*
45679 JEDCK-2 07/26/2019 JEDCK-2_20190717_VRO *VEGETATION*

Analyte	Units	45677	45678	45679
Lab Section 2				
Aluminum	ug/g	680±70	28±4	320±30
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.39±0.1	0.06±0.06	6.0±0.6
Barium	ug/g	29±3	37±4	12±1
Beryllium	ug/g	0.06±0.01	<0.01	0.12±0.03
Boron	ug/g	2±1	4±1	2±1
Cadmium	ug/g	0.12±0.03	<0.01	0.07±0.03
Chromium	ug/g	120±80	1.1±0.7	29±10
Cobalt	ug/g	2.5±0.2	0.30±0.04	3.7±0.4
Copper	ug/g	1.2±0.2	0.37±0.1	2.1±0.3
Iron	ug/g	3000±300	410±40	6900±700
Lead	ug/g	0.40±0.06	0.02±0.01	0.29±0.04
Manganese	ug/g	49±5	171±20	140±10
Mercury	ug/g	0.009±0.007	<0.005	<0.005
Molybdenum	ug/g	0.3±0.2	0.2±0.1	3.5±0.5
Nickel	ug/g	57±6	0.96±0.2	12±1
Selenium	ug/g	0.05±0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	14±1	24±2	12±1
Thallium	ug/g	0.06±0.06	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	0.05±0.05
Titanium	ug/g	9.4±0.9	0.34±0.1	6.3±0.6
Uranium	ug/g	0.10±0.02	<0.01	0.18±0.04
Vanadium	ug/g	3.1±0.5	0.2±0.1	9.7±1
Zinc	ug/g	18±3	28±4	24±4
Lab Section 4				
Lead-210	Bq/g	0.024±0.006	0.008±0.002	0.014±0.006
Polonium-210	Bq/g	0.025±0.004	0.0035±0.0009	0.019±0.005
Radium-226	Bq/g	0.006±0.004	0.007±0.002	0.004±0.003
Thorium-230	Bq/g	<0.003	<0.001	<0.002
Lab Section 6				
Moisture	%	79.95±8	74.52±7	85.56±8
Ash	%	15.51	6.61	11.19

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45680 JEDCK-2 07/26/2019 JEDCK-2_20190717_VSH *VEGETATION*
45681 JEDCK-3 07/26/2019 JEDCK-3_20190717_VRO *VEGETATION*
45682 JEDCK-3 07/26/2019 JEDCK-3_20190717_VSH *VEGETATION*

Analyte	Units	45680	45681	45682
Lab Section 2				
Aluminum	ug/g	15±2	380±40	19±3
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.12±0.08	1.1±0.2	0.06±0.06
Barium	ug/g	25±2	22±2	48±5
Beryllium	ug/g	<0.01	0.05±0.01	<0.01
Boron	ug/g	6±1	2±1	4±1
Cadmium	ug/g	<0.01	0.12±0.03	<0.01
Chromium	ug/g	1.3±0.8	16±9	1.8±0.9
Cobalt	ug/g	0.15±0.04	0.92±0.1	0.10±0.02
Copper	ug/g	0.75±0.2	0.87±0.2	0.51±0.1
Iron	ug/g	290±30	5300±500	330±30
Lead	ug/g	0.02±0.01	0.34±0.05	0.04±0.02
Manganese	ug/g	610±60	46±5	230±20
Mercury	ug/g	<0.005	0.008±0.006	<0.005
Molybdenum	ug/g	1.8±0.4	0.5±0.2	0.6±0.2
Nickel	ug/g	0.81±0.2	6.8±0.7	0.90±0.2
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	27±3	14±1	30±3
Thallium	ug/g	<0.05	0.09±0.07	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.24±0.09	6.6±0.7	0.35±0.1
Uranium	ug/g	<0.01	0.12±0.03	<0.01
Vanadium	ug/g	0.1±0.1	4.8±0.7	0.2±0.1
Zinc	ug/g	17±2	26±4	22±3
Lab Section 4				
Lead-210	Bq/g	0.009±0.002	0.034±0.007	0.004±0.001
Polonium-210	Bq/g	0.0039±0.001	0.037±0.006	0.0030±0.0008
Radium-226	Bq/g	0.006±0.003	<0.002	0.008±0.002
Thorium-230	Bq/g	<0.002	<0.004	<0.002
Lab Section 6				
Moisture	%	73.85±7	83.61±8	76.31±8
Ash	%	7.69	18.26	7.74

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The temperature of the cooler was 0.6 °C upon receipt.

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45683 JEDCK-4 07/26/2019 JEDCK-4_20190717_VRO *VEGETATION*
45684 JEDCK-4 07/26/2019 JEDCK-4_20190717_VSH *VEGETATION*
45685 JEDCK-5 07/26/2019 JEDCK-5_20190717_VRO *VEGETATION*

Analyte	Units	45683	45684	45685
Lab Section 2				
Aluminum	ug/g	870±90	13±2	170±20
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.58±0.1	<0.05	1.6±0.2
Barium	ug/g	30±3	44±4	13±1
Beryllium	ug/g	0.10±0.02	<0.01	0.03±0.01
Boron	ug/g	2±1	4±1	2±1
Cadmium	ug/g	0.08±0.03	<0.01	0.19±0.05
Chromium	ug/g	100±70	1.8±0.9	7.7±2
Cobalt	ug/g	1.6±0.2	0.11±0.03	1.1±0.1
Copper	ug/g	2.0±0.3	0.24±0.1	0.87±0.2
Iron	ug/g	3200±300	180±20	8400±800
Lead	ug/g	0.74±0.1	0.02±0.01	0.23±0.03
Manganese	ug/g	39±4	277±30	199±20
Mercury	ug/g	0.017±0.009	<0.005	0.006±0.006
Molybdenum	ug/g	0.4±0.2	0.4±0.2	0.3±0.2
Nickel	ug/g	42±4	0.79±0.2	3.0±0.4
Selenium	ug/g	0.10±0.07	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	25±2	25±2	9.4±0.9
Thallium	ug/g	<0.05	<0.05	0.17±0.09
Tin	ug/g	0.07±0.06	<0.05	<0.05
Titanium	ug/g	14±1	0.21±0.08	2.8±0.4
Uranium	ug/g	0.17±0.04	<0.01	0.04±0.02
Vanadium	ug/g	4.4±0.7	<0.1	3.4±0.5
Zinc	ug/g	8.7±2	17±2	32±5
Lab Section 4				
Lead-210	Bq/g	0.045±0.01	0.004±0.001	0.028±0.007
Polonium-210	Bq/g	0.039±0.006	0.0026±0.0006	0.027±0.004
Radium-226	Bq/g	0.004±0.004	0.008±0.002	0.002±0.001
Thorium-230	Bq/g	<0.006	<0.001	<0.001
Lab Section 6				
Moisture	%	79.13±8	72.32±7	81.28±8
Ash	%	28.12	5.78	5.71

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45683

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This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45685
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45686	**JEDCK-5 07/26/2019 JEDCK-5_20190717_VSH *VEGETATION***
45687	**PATTCK-1 07/30/2019 PATTCK-1_20190717_VRO *VEGETATION***
45688	**PATTCK-1 07/30/2019 PATTCK-1_20190717_VSH *VEGETATION***

Analyte	Units	45686	45687	45688
Lab Section 2				
Aluminum	ug/g	8.4±2	74±7	5.8±1
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.18±0.09	<0.05
Barium	ug/g	43±4	15±2	33±3
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	7±1	3±1	4±1
Cadmium	ug/g	<0.01	0.01±0.01	<0.01
Chromium	ug/g	0.6±0.6	16±9	7.1±2
Cobalt	ug/g	0.04±0.02	0.32±0.05	0.07±0.02
Copper	ug/g	0.74±0.2	0.63±0.2	0.24±0.1
Iron	ug/g	130±10	2400±200	78±8
Lead	ug/g	0.02±0.01	0.16±0.04	0.02±0.01
Manganese	ug/g	292±30	88±9	122±10
Mercury	ug/g	<0.005	<0.005	<0.005
Molybdenum	ug/g	1.1±0.3	0.2±0.1	0.4±0.2
Nickel	ug/g	0.33±0.1	6.2±0.6	2.8±0.4
Selenium	ug/g	<0.05	<0.05	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	32±3	15±2	22±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.16±0.07	2.0±0.3	0.26±0.09
Uranium	ug/g	<0.01	0.25±0.04	0.02±0.01
Vanadium	ug/g	<0.1	0.3±0.2	<0.1
Zinc	ug/g	23±3	26±4	17±2
Lab Section 4				
Lead-210	Bq/g	0.010±0.002	0.007±0.002	0.004±0.001
Polonium-210	Bq/g	0.0032±0.0008	0.007±0.003	0.0014±0.0006
Radium-226	Bq/g	0.005±0.001	0.0005±0.0005	0.003±0.002
Thorium-230	Bq/g	<0.001	<0.001	<0.001
Lab Section 6				
Moisture	%	65.80±6	84.22±8	74.00±7
Ash	%	5.14	4.05	5.18

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45686

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This sample was reanalyzed for Lead-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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SRC Group # 2019-11579

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45689 PATTCK-2 07/30/2019 PATTCK-2_20190717_VRO *VEGETATION*
45690 PATTCK-2 07/30/2019 PATTCK-2_20190717_VSH *VEGETATION*
45691 PATTCK-3 07/30/2019 PATTCK-3_20190717_VRO *VEGETATION*

Analyte	Units	45689	45690	45691
Lab Section 2				
Aluminum	ug/g	200±20	11±2	320±30
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.65±0.2	<0.05	0.49±0.1
Barium	ug/g	19±2	52±5	23±2
Beryllium	ug/g	0.02±0.01	<0.01	0.03±0.01
Boron	ug/g	4±1	8±1	3±1
Cadmium	ug/g	0.06±0.03	<0.01	0.03±0.02
Chromium	ug/g	23±10	3.8±1	28±10
Cobalt	ug/g	0.47±0.07	0.04±0.02	0.46±0.07
Copper	ug/g	1.9±0.3	0.79±0.2	0.88±0.2
Iron	ug/g	4500±400	110±10	3800±400
Lead	ug/g	1.9±0.2	0.03±0.02	0.56±0.08
Manganese	ug/g	106±10	351±40	117±10
Mercury	ug/g	0.007±0.006	<0.005	0.008±0.006
Molybdenum	ug/g	1.6±0.4	1.4±0.4	0.4±0.2
Nickel	ug/g	11±1	1.5±0.2	11±1
Selenium	ug/g	0.07±0.06	<0.05	0.06±0.06
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	30±3	52±5	19±2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	0.06±0.06	<0.05	<0.05
Titanium	ug/g	8.3±0.8	0.35±0.1	9.7±1
Uranium	ug/g	0.21±0.03	0.05±0.02	0.14±0.04
Vanadium	ug/g	1.1±0.3	<0.1	1.0±0.2
Zinc	ug/g	26±4	16±2	10±2
Lab Section 4				
Lead-210	Bq/g	0.052±0.01	0.005±0.002	0.025±0.006
Polonium-210	Bq/g	0.035±0.005	0.0025±0.0006	0.028±0.004
Radium-226	Bq/g	0.002±0.001	0.003±0.002	0.006±0.004
Thorium-230	Bq/g	<0.001	<0.001	<0.004
Lab Section 6				
Moisture	%	85.08±8	77.89±8	82.78±8
Ash	%	5.08	6.26	20.94

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45690

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SRC Group # 2019-11579

Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Lead-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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CanNorth, Canada North Environmental Services Limited

45692 PATTCK-3 07/30/2019 PATTCK-3_20190717_VSH *VEGETATION*
45693 PATTCK-4 07/30/2019 PATTCK-4_20190717_VRO *VEGETATION*
45694 PATTCK-4 07/30/2019 PATTCK-4_20190717_VSH *VEGETATION*

Analyte	Units	45692	45693	45694
Lab Section 2				
Aluminum	ug/g	9.4±2	1000±100	15±2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.72±0.2	<0.05
Barium	ug/g	32±3	30±3	30±3
Beryllium	ug/g	<0.01	0.06±0.01	<0.01
Boron	ug/g	6±1	6±1	5±1
Cadmium	ug/g	<0.01	0.06±0.03	<0.01
Chromium	ug/g	3.0±1	82±20	4.5±1
Cobalt	ug/g	0.04±0.02	1.1±0.1	0.05±0.02
Copper	ug/g	0.31±0.1	1.3±0.2	0.31±0.1
Iron	ug/g	120±10	3100±300	120±10
Lead	ug/g	0.01±0.01	2.1±0.2	0.02±0.01
Manganese	ug/g	233±20	82±8	306±30
Mercury	ug/g	<0.005	0.013±0.008	<0.005
Molybdenum	ug/g	0.5±0.2	0.6±0.2	0.5±0.2
Nickel	ug/g	1.2±0.2	36±4	1.7±0.2
Selenium	ug/g	<0.05	0.26±0.1	<0.05
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	23±2	41±4	26±3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	0.06±0.06	<0.05
Titanium	ug/g	0.29±0.1	34±3	0.56±0.1
Uranium	ug/g	0.10±0.02	0.62±0.09	0.11±0.03
Vanadium	ug/g	<0.1	3.5±0.5	<0.1
Zinc	ug/g	18±3	6.2±2	12±2
Lab Section 4				
Lead-210	Bq/g	0.005±0.002	0.16±0.02	0.006±0.002
Polonium-210	Bq/g	0.0026±0.0006	0.14±0.01	0.0028±0.0007
Radium-226	Bq/g	0.003±0.002	0.004±0.003	0.001±0.0009
Thorium-230	Bq/g	<0.001	<0.004	<0.001
Lab Section 6				
Moisture	%	78.75±8	82.40±8	75.53±8
Ash	%	6.70	17.77	6.53

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45693

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SRC Group # 2019-11579

Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

This sample was reanalyzed for Lead-210 and Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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Oct 18, 2019

CanNorth, Canada North Environmental Services Limited

45695 PATTCK-5 07/30/2019 PATTCK-5_20190717_VRO *VEGETATION*
45696 PATTCK-5 07/30/2019 PATTCK-5_20190717_VSH *VEGETATION*

Analyte	Units	45695	45696
Lab Section 2			
Aluminum	ug/g	670±70	15±2
Antimony	ug/g	<0.1	<0.1
Arsenic	ug/g	0.53±0.1	<0.05
Barium	ug/g	35±4	36±4
Beryllium	ug/g	0.04±0.01	<0.01
Boron	ug/g	5±1	8±1
Cadmium	ug/g	0.03±0.02	<0.01
Chromium	ug/g	180±90	3.9±1
Cobalt	ug/g	1.9±0.2	0.05±0.02
Copper	ug/g	1.0±0.2	0.21±0.1
Iron	ug/g	4500±400	130±10
Lead	ug/g	0.81±0.1	0.02±0.01
Manganese	ug/g	93±9	272±30
Mercury	ug/g	0.010±0.007	<0.005
Molybdenum	ug/g	0.4±0.2	0.3±0.2
Nickel	ug/g	74±7	1.4±0.2
Selenium	ug/g	0.10±0.07	<0.05
Silver	ug/g	<0.01	<0.01
Strontium	ug/g	43±4	31±3
Thallium	ug/g	<0.05	<0.05
Tin	ug/g	<0.05	<0.05
Titanium	ug/g	20±2	0.57±0.1
Uranium	ug/g	0.38±0.06	0.10±0.02
Vanadium	ug/g	1.8±0.4	<0.1
Zinc	ug/g	6.4±2	13±2
Lab Section 4			
Lead-210	Bq/g	0.031±0.007	0.005±0.002
Polonium-210	Bq/g	0.036±0.005	0.0028±0.0007
Radium-226	Bq/g	<0.003	0.004±0.002
Thorium-230	Bq/g	<0.006	<0.001
Lab Section 6			
Moisture	%	80.60±8	74.40±7
Ash	%	27.83	6.92

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 0.6 °C upon receipt.

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Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value	
Aluminum	ug/g	231	178	
Aluminum	ug/g	249	219	
Antimony	ug/g	0.0214	0.0180	
Antimony	ug/g	0.0200	0.0213	
Arsenic	ug/g	0.170	0.169	
Arsenic	ug/g	0.170	0.163	
Barium	ug/g	115	98.9	
Barium	ug/g	115	117	
Boron	ug/g	26.3	22.8	
Boron	ug/g	29.0	27.5	
Cadmium	ug/g	0.0260	0.0223	
Cadmium	ug/g	0.0260	0.0254	
Chromium	ug/g	0.780	0.565	
Chromium	ug/g	0.780	0.747	
Cobalt	ug/g	0.0960	0.0676	
Cobalt	ug/g	0.0960	0.0869	
Copper	ug/g	3.40	2.82	
Copper	ug/g	3.40	3.31	
Iron	ug/g	196	161	
Iron	ug/g	196	189	
Lead	ug/g	0.810	0.675	
Lead	ug/g	0.810	0.846	
Lead-210	Bq/L	21.6	20.7	
Lead-210	Bq/L	21.6	20.5	
Lead-210	Bq	7.70	7.71	
Lead-210	Bq/L	21.6	21.5	
Lead-210	Bq	0.750	0.758	
Lead-210	Bq/L	21.6	22.7	
Lead-210	Bq	1.87	1.78	
Lead-210	Bq/L	21.6	23.4	
Lead-210	Bq	7.47	9.24	*(1)

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QC Analysis	Units	Target Value	Obtained Value	
Lead-210	Bq/L	19.7	17.2	
Lead-210	Bq	0.750	0.829	
Lead-210	Bq/L	19.7	21.7	
Lead-210	Bq	0.750	0.743	
Manganese	ug/g	89.0	75.5	
Manganese	ug/g	98.0	90.3	
Mercury	ug/g	0.0306	0.0278	
Mercury	ug/g	0.0320	0.0279	
Molybdenum	ug/g	0.0470	0.0358	
Molybdenum	ug/g	0.0460	0.0430	
Nickel	ug/g	0.600	0.480	
Nickel	ug/g	0.610	0.575	
Polonium-210	Bq/L	18.8	21.2	
Polonium-210	Bq	0.770	0.856	
Polonium-210	Bq/L	18.8	20.2	
Polonium-210	Bq	0.385	0.410	
Polonium-210	Bq/L	18.8	19.0	
Polonium-210	Bq	0.770	0.698	
Polonium-210	Bq/L	18.8	20.3	
Polonium-210	Bq	1.87	1.67	
Polonium-210	Bq/L	18.8	19.2	
Polonium-210	Bq	0.075	0.068	
Radium-226	Bq/L	18.4	19.3	
Radium-226	Bq	2.13	2.12	
Radium-226	Bq/L	18.4	16.9	
Radium-226	Bq	0.427	0.406	
Radium-226	Bq/L	21.4	15.5	*(2)
Radium-226	Bq	0.427	0.416	
Selenium	ug/g	0.120	0.111	
Selenium	ug/g	0.120	0.134	
Strontium	ug/g	53.0	44.1	
Strontium	ug/g	53.0	51.7	
Thorium-230	Bq/L	19.9	20.6	
Thorium-232	Bq	0.203	0.213	
Uranium	ug/g	0.0120	0.00809	
Uranium	ug/g	0.0110	0.0100	
Vanadium	ug/g	0.320	0.239	
Vanadium	ug/g	0.320	0.325	
Zinc	ug/g	17.0	14.1	
Zinc	ug/g	18.0	17.1	

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Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	45647	<0.01	<0.01
Silver	ug/g	45659	<0.01	<0.01
Silver	ug/g	45669	<0.01	<0.01
Silver	ug/g	45679	<0.01	<0.01
Silver	ug/g	45689	<0.01	<0.01
Aluminum	ug/g	45647	420	440
Aluminum	ug/g	45659	300	300
Aluminum	ug/g	45669	400	380
Aluminum	ug/g	45679	320	310
Aluminum	ug/g	45689	200	180
Arsenic	ug/g	45647	0.56	0.58
Arsenic	ug/g	45659	0.33	0.33
Arsenic	ug/g	45669	0.81	0.82
Arsenic	ug/g	45679	6.0	5.9
Arsenic	ug/g	45689	0.65	0.59
Boron	ug/g	45647	3	3
Boron	ug/g	45659	3	3
Boron	ug/g	45669	2	2
Boron	ug/g	45679	2	2
Boron	ug/g	45689	4	4
Barium	ug/g	45647	21	23
Barium	ug/g	45659	25	24
Barium	ug/g	45669	15	14
Barium	ug/g	45679	12	12
Barium	ug/g	45689	19	19
Beryllium	ug/g	45647	0.03	0.03
Beryllium	ug/g	45659	0.02	0.02
Beryllium	ug/g	45669	0.09	0.08
Beryllium	ug/g	45679	0.12	0.12
Beryllium	ug/g	45689	0.02	0.02
Cadmium	ug/g	45647	0.03	0.04
Cadmium	ug/g	45659	0.02	0.02
Cadmium	ug/g	45669	0.02	0.01
Cadmium	ug/g	45679	0.07	0.07
Cadmium	ug/g	45689	0.06	0.06
Cobalt	ug/g	45647	0.67	0.57
Cobalt	ug/g	45659	2.6	2.4
Cobalt	ug/g	45669	2.6	2.6
Cobalt	ug/g	45679	3.7	3.7

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Cobalt	ug/g	45689	0.47	0.40
Chromium	ug/g	45647	46	37
Chromium	ug/g	45659	240	220
Chromium	ug/g	45669	230	240
Chromium	ug/g	45679	29	37
Chromium	ug/g	45689	23	14
Copper	ug/g	45647	1.2	1.2
Copper	ug/g	45659	0.84	0.79
Copper	ug/g	45669	2.6	2.7
Copper	ug/g	45679	2.1	2.2
Copper	ug/g	45689	1.9	1.9
Iron	ug/g	45647	3900	4100
Iron	ug/g	45659	6800	6500
Iron	ug/g	45669	4300	4100
Iron	ug/g	45679	6900	7100
Iron	ug/g	45689	4500	4200
Iron	ug/g	52998	<50	<50
Mercury	ug/g	45647	0.010	0.010
Mercury	ug/g	45659	<0.005	<0.005
Mercury	ug/g	45669	0.007	0.006
Mercury	ug/g	45679	<0.005	<0.005
Mercury	ug/g	45689	0.007	0.006
Manganese	ug/g	45647	99	99
Manganese	ug/g	45659	176	164
Manganese	ug/g	45669	52	49
Manganese	ug/g	45679	140	144
Manganese	ug/g	45689	106	114
Molybdenum	ug/g	45647	0.8	0.8
Molybdenum	ug/g	45659	0.3	0.3
Molybdenum	ug/g	45669	0.5	0.5
Molybdenum	ug/g	45679	3.5	3.5
Molybdenum	ug/g	45689	1.6	1.6
Nickel	ug/g	45647	18	14
Nickel	ug/g	45659	100	94
Nickel	ug/g	45669	90	95
Nickel	ug/g	45679	12	15
Nickel	ug/g	45689	11	11
Lead	ug/g	45647	0.56	0.56
Lead	ug/g	45659	0.49	0.52
Lead	ug/g	45669	0.70	0.70
Lead	ug/g	45679	0.29	0.28
Lead	ug/g	45689	1.9	1.7
Lead-210	Bq/g	45647	0.12	0.099
Lead-210	Bq/g	45659	<0.0009	0.001
Lead-210	Bq/g	45667	0.050	0.058
Lead-210	Bq/g	45695	0.029	0.032

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Lead-210	Bq/g	49955	0.02	<0.02
Lead-210	Bq/g	50486	<0.02	<0.02
Lead-210	Bq/g	50702	<0.02	<0.02
Lead-210	Bq/g	56645	<0.02	<0.02
Polonium-210	Bq/g	45647	0.11	0.11
Polonium-210	Bq/g	45659	0.008	0.005
Polonium-210	Bq/g	45667	0.056	0.050
Polonium-210	Bq/g	45695	0.034	0.037
Radium-226	Bq/g	45660	0.011	0.014
Radium-226	Bq/g	45661	0.006	0.015
Radium-226	Bq/g	45680	0.007	0.005
Radium-226	Bq/g	45683	0.006	<0.003
Radium-226	Bq/g	45686	0.004	0.006
Radium-226	Bq/g	56243	0.4	0.5
Radium-226	Bq/g	56643	<0.005	<0.005
Radium-226	Bq/g	57311	0.01	0.007
Antimony	ug/g	45647	<0.1	<0.1
Antimony	ug/g	45659	<0.1	<0.1
Antimony	ug/g	45669	<0.1	<0.1
Antimony	ug/g	45679	<0.1	<0.1
Antimony	ug/g	45689	<0.1	<0.1
Selenium	ug/g	45647	0.08	0.09
Selenium	ug/g	45659	<0.05	<0.05
Selenium	ug/g	45669	<0.05	<0.05
Selenium	ug/g	45679	<0.05	<0.05
Selenium	ug/g	45689	0.07	0.06
Tin	ug/g	45647	<0.05	<0.05
Tin	ug/g	45659	0.06	0.05
Tin	ug/g	45669	0.10	0.10
Tin	ug/g	45679	0.05	0.06
Tin	ug/g	45689	0.06	0.06
Strontium	ug/g	45647	15	15
Strontium	ug/g	45659	11	11
Strontium	ug/g	45669	15	14
Strontium	ug/g	45679	12	12
Strontium	ug/g	45689	30	30
Thorium-230	Bq/g	45658	<0.002	<0.002
Thorium-230	Bq/g	45661	<0.006	<0.006
Thorium-230	Bq/g	45669	<0.008	<0.008
Thorium-230	Bq/g	45673	<0.007	<0.007
Thorium-230	Bq/g	45680	<0.002	<0.002
Titanium	ug/g	45647	12	13
Titanium	ug/g	45659	3.1	3.3
Titanium	ug/g	45669	18	18
Titanium	ug/g	45679	6.3	6.1
Titanium	ug/g	45689	8.3	6.7

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This report was generated for samples included in SRC Group # 2019-11579

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Thallium	ug/g	45647	<0.05	<0.05
Thallium	ug/g	45659	<0.05	<0.05
Thallium	ug/g	45669	<0.05	<0.05
Thallium	ug/g	45679	<0.05	<0.05
Thallium	ug/g	45689	<0.05	<0.05
Uranium	ug/g	45647	0.14	0.15
Uranium	ug/g	45659	0.03	0.03
Uranium	ug/g	45669	0.11	0.11
Uranium	ug/g	45679	0.18	0.17
Uranium	ug/g	45689	0.21	0.19
Vanadium	ug/g	45647	2.1	2.2
Vanadium	ug/g	45659	1.3	1.2
Vanadium	ug/g	45669	11	11
Vanadium	ug/g	45679	9.7	9.4
Vanadium	ug/g	45689	1.1	0.9
Zinc	ug/g	45647	8.8	9.3
Zinc	ug/g	45659	21	22
Zinc	ug/g	45669	4.2	3.8
Zinc	ug/g	45679	24	25
Zinc	ug/g	45689	26	25

Spikes and/or Surrogates:

Samples spiked with a known quantity of the analyte of interest or a surrogate which is a known quantity of a compound which behaves in a similar manner to the analyte of interest, are used to assess problems with the sample processing or sample matrix. The recovery must be within clearly defined limits when the quantity of spike is comparable to the sample concentration.

Spike Analysis	Percent Recovery
Radium-226	95
Radium-226	90

*(1) The Lead-210 result for the calibration check standard was just outside the laboratory's specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(2) The Radium-226 result for the quality control sample was just outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2018-13628

Feb 25, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Oct-30-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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Attn: Kelly Wells

Date Samples Received: Oct-30-2018

Client P.O.: 3008 Rook I Environmental Baseline Studies

44747 BEETLK 10/08/2018 BEETLK_201810_FBO_LW_01 *FISH BONES*
44748 BEETLK 10/08/2018 BEETLK_201810_FBO_LW_02 *FISH BONES*
44749 BEETLK 10/08/2018 BEETLK_201810_FBO_LW_03 *FISH BONES*

Analyte	Units	44747	44748	44749
Lab Section 2 (ICP)				
Aluminum	ug/g	2±2	4±3	2±2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.1±0.1	<0.1	<0.1
Barium	ug/g	12±1	14±1	12±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.20±0.05	0.24±0.05	0.22±0.05
Copper	ug/g	0.6±0.2	0.4±0.2	0.4±0.2
Iron	ug/g	19±6	20±5	13±5
Lead	ug/g	<0.05	0.06±0.06	<0.05
Manganese	ug/g	27±3	30±3	27±3
Mercury	ug/g	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.7±0.2	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	330±30	380±40	320±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.1±0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	62±9	76±10	72±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.004	<0.004
Polonium-210	Bq/g	0.008±0.003	0.014±0.004	0.005±0.002
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.005	<0.005	<0.004

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44747	**BEETLK 10/08/2018 BEETLK_201810_FBO_LW_01 *FISH BONES***
44748	**BEETLK 10/08/2018 BEETLK_201810_FBO_LW_02 *FISH BONES***
44749	**BEETLK 10/08/2018 BEETLK_201810_FBO_LW_03 *FISH BONES***

Analyte	Units	44747	44748	44749
Lab Section 6 (SPTP)				
Moisture	%	47.90±5	53.90±5	48.64±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44748
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

Results are reported on a dry basis.

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44750	**BEETLK 10/08/2018 BEETLK_201810_FBO_LW_04 *FISH BONES***
44751	**BEETLK 10/08/2018 BEETLK_201810_FBO_LW_05 *FISH BONES***
44752	**BEETLK 10/09/2018 BEETLK_201810_FBO_NP_01 *FISH BONES***

Analyte	Units	44750	44751	44752
Lab Section 2 (ICP)				
Aluminum	ug/g	3±3	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	11±1	8.7±1	12±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.16±0.05	0.19±0.05	0.17±0.05
Copper	ug/g	0.4±0.2	0.6±0.2	1.0±0.2
Iron	ug/g	16±5	16±5	10±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	47±5	56±6	25±2
Mercury	ug/g	<0.05	0.08±0.06	0.06±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.7±0.2	0.4±0.2	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	250±20	230±20	180±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.2±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	55±8	54±8	100±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	0.006±0.004	<0.005
Polonium-210	Bq/g	0.008±0.003	0.005±0.002	0.015±0.004
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.004	<0.004	<0.005
Lab Section 6 (SPTP)				
Moisture	%	52.90±5	54.79±5	59.72±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44752
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty

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44753 BEETLK 10/09/2018 BEETLK_201810_FBO_NP_02 *FISH BONES*
44757 BROALK 10/11/2018 BROALK_201810_FBO_LW_01 *FISH BONES*
44758 BROALK 10/11/2018 BROALK_201810_FBO_LW_02 *FISH BONES*

Analyte	Units	44753	44757	44758
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	3±3	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.1±0.1	<0.1	0.3±0.1
Barium	ug/g	4.9±0.7	13±1	7.8±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.10±0.05	0.27±0.05	0.19±0.05
Copper	ug/g	1.2±0.3	0.2±0.1	0.4±0.2
Iron	ug/g	9±4	11±4	7±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	20±2	25±2	25±2
Mercury	ug/g	0.08±0.06	<0.05	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.6±0.2	0.1±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	84±8	500±50	330±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.2±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	120±10	72±10	68±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.004	<0.004
Polonium-210	Bq/g	0.006±0.002	0.004±0.002	<0.001
Radium-226	Bq/g	<0.003	<0.003	<0.002
Thorium-230	Bq/g	<0.006	<0.006	<0.004
Lab Section 6 (SPTP)				
Moisture	%	62.85±6	56.38±6	48.97±5

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Results are reported on a dry basis.

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44759 BROALK 10/11/2018 BROALK_201810_FBO_LW_03 *FISH BONES*
44760 BROALK 10/11/2018 BROALK_201810_FBO_LW_04 *FISH BONES*
44761 BROALK 10/11/2018 BROALK_201810_FBO_LW_05 *FISH BONES*

Analyte	Units	44759	44760	44761
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	3±3	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.1±0.1	<0.1	0.3±0.1
Barium	ug/g	8.5±1	13±1	6.8±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.24±0.05	0.32±0.05	0.17±0.05
Copper	ug/g	0.4±0.2	0.4±0.2	0.3±0.2
Iron	ug/g	14±5	16±5	6±3
Lead	ug/g	<0.05	0.08±0.06	<0.05
Manganese	ug/g	23±2	44±4	16±2
Mercury	ug/g	0.09±0.07	0.07±0.06	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.5±0.2	<0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	370±40	630±60	290±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.3±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	69±10	93±10	83±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.002±0.001	0.008±0.003	<0.001
Radium-226	Bq/g	<0.002	<0.003	<0.002
Thorium-230	Bq/g	<0.005	<0.006	<0.004
Lab Section 6 (SPTP)				
Moisture	%	57.74±6	63.37±6	54.01±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44760
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty

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44762 BROALK 10/11/2018 BROALK_201810_FBO_NP_01 *FISH BONES*
44763 BROALK 10/11/2018 BROALK_201810_FBO_NP_02 *FISH BONES*
44764 BROALK 10/11/2018 BROALK_201810_FBO_NP_03 *FISH BONES*

Analyte	Units	44762	44763	44764
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.2±0.1
Barium	ug/g	17±2	10±1	25±2
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.25±0.05	0.17±0.05	0.24±0.05
Copper	ug/g	0.5±0.2	0.6±0.2	1.1±0.3
Iron	ug/g	6±3	7±4	18±6
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	44±4	44±4	93±9
Mercury	ug/g	<0.05	<0.05	0.07±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	230±20	130±10	200±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	0.3±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	140±10	96±10	78±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.004
Polonium-210	Bq/g	0.001±0.001	<0.001	0.001±0.001
Radium-226	Bq/g	<0.002	<0.003	<0.003
Thorium-230	Bq/g	<0.005	<0.006	<0.005
Lab Section 6 (SPTP)				
Moisture	%	53.89±5	57.96±6	50.21±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44764
Note: Revised result for Strontium, Cobalt and Zinc. 02/15/19 CL

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44765 BROALK 10/11/2018 BROALK_201810_FBO_NP_04 *FISH BONES*
44766 BROALK 10/11/2018 BROALK_201810_FBO_NP_05 *FISH BONES*
44767 CLEARV 08/04/2018 CLEARV_201807_FBO_NP_01 *FISH BONES*

Analyte	Units	44765	44766	44767
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	0.1±0.1	0.1±0.1
Barium	ug/g	13±1	11±1	18±2
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	1±1	<1	<1
Cobalt	ug/g	0.22±0.05	0.18±0.05	0.24±0.05
Copper	ug/g	0.5±0.2	1.1±0.3	0.6±0.2
Iron	ug/g	15±5	8±4	9±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	62±6	52±5	74±7
Mercury	ug/g	<0.05	0.06±0.06	0.28±0.1
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.4±0.2	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	220±20	160±20	250±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.2±0.1	<0.1	0.1±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	130±10	140±10	130±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.005
Polonium-210	Bq/g	0.002±0.001	0.002±0.001	<0.001
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.004	<0.004	<0.004
Lab Section 6 (SPTP)				
Moisture	%	59.28±6	61.50±6	62.90±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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44768 CLEARV 08/04/2018 CLEARV_201807_FBO_NP_02 *FISH BONES*
44769 CLEARV 08/04/2018 CLEARV_201807_FBO_NP_03 *FISH BONES*
44770 CLEARV 08/04/2018 CLEARV_201807_FBO_NP_04 *FISH BONES*

Analyte	Units	44768	44769	44770
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	18±2	20±2	18±2
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.26±0.05	0.27±0.05	0.28±0.05
Copper	ug/g	0.7±0.2	1.0±0.2	1.0±0.2
Iron	ug/g	12±5	12±5	7±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	83±8	63±6	65±6
Mercury	ug/g	<0.05	0.09±0.07	0.14±0.08
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	280±30	260±30	250±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	0.1±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	0.5±0.3	<0.2	<0.2
Zinc	ug/g	130±10	170±20	140±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.005
Polonium-210	Bq/g	0.004±0.002	0.003±0.002	0.003±0.002
Radium-226	Bq/g	<0.002	<0.002	<0.003
Thorium-230	Bq/g	<0.005	<0.005	<0.006
Lab Section 6 (SPTP)				
Moisture	%	60.52±6	58.28±6	61.31±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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CanNorth, Canada North Environmental Services Limited

44771	**CLEARV 08/04/2018 CLEARV_201807_FBO_NP_05 *FISH BONES***
44772	**FORRLK 10/10/2018 FORRLK_201810_FBO_LW_01 *FISH BONES***
44773	**FORRLK 10/10/2018 FORRLK_201810_FBO_LW_02 *FISH BONES***

Analyte	Units	44771	44772	44773
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	5±4	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.1±0.1
Barium	ug/g	14±1	14±1	13±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.20±0.05	0.25±0.05	0.24±0.05
Copper	ug/g	1.1±0.3	0.7±0.2	0.8±0.3
Iron	ug/g	17±6	10±4	6±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	43±4	24±2	55±6
Mercury	ug/g	0.62±0.2	0.11±0.07	0.13±0.08
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.8±0.3	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	170±20	330±30	270±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	0.2±0.1
Uranium	ug/g	<0.05	0.06±0.06	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	120±10	91±10	69±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.006	<0.005	<0.006
Polonium-210	Bq/g	0.002±0.002	0.002±0.001	0.004±0.002
Radium-226	Bq/g	<0.003	<0.002	<0.003
Thorium-230	Bq/g	<0.005	<0.005	<0.006
Lab Section 6 (SPTP)				
Moisture	%	68.57±7	57.37±6	64.64±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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44774 FORRLK 10/10/2018 FORRLK_201810_FBO_LW_03 *FISH BONES*
44775 FORRLK 10/10/2018 FORRLK_201810_FBO_LW_04 *FISH BONES*
44776 FORRLK 10/10/2018 FORRLK_201810_FBO_LW_05 *FISH BONES*

Analyte	Units	44774	44775	44776
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	2±2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.2±0.1
Barium	ug/g	7.5±1	16±2	13±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.28±0.05	0.30±0.05	0.24±0.05
Copper	ug/g	0.3±0.2	0.3±0.2	0.5±0.2
Iron	ug/g	10±4	14±5	9±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	26±3	53±5	48±5
Mercury	ug/g	0.12±0.08	0.06±0.06	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.5±0.2	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	300±30	360±40	300±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	78±10	79±10	71±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	0.005±0.004	<0.004	<0.004
Polonium-210	Bq/g	0.002±0.001	0.006±0.002	0.006±0.002
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.005	<0.004	<0.004
Lab Section 6 (SPTP)				
Moisture	%	53.94±5	52.76±5	54.28±5

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44777	**FORRLK 10/10/2018 FORRLK_201810_FBO_NP_01 *FISH BONES***
44778	**FORRLK 10/10/2018 FORRLK_201810_FBO_NP_02 *FISH BONES***
44779	**FORRLK 10/11/2018 FORRLK_201810_FBO_NP_03 *FISH BONES***

Analyte	Units	44777	44778	44779
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	14±1	14±1	10±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.21±0.05	0.20±0.05	0.30±0.05
Copper	ug/g	1.5±0.4	0.8±0.3	0.6±0.2
Iron	ug/g	7±4	6±3	10±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	37±4	31±3	34±3
Mercury	ug/g	0.06±0.06	0.07±0.06	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	170±20	170±20	180±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.1±0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	200±20	100±10	140±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.006
Polonium-210	Bq/g	0.002±0.001	0.003±0.002	0.005±0.002
Radium-226	Bq/g	<0.003	<0.002	<0.003
Thorium-230	Bq/g	<0.005	<0.005	<0.006
Lab Section 6 (SPTP)				
Moisture	%	58.30±6	57.64±6	64.21±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44779
Note: Revised result for Iron. 2/15/2019 CL

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Results are reported on a dry basis.

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44780	**FORRLK 10/12/2018 FORRLK_201810_FBO_NP_04 *FISH BONES***
44781	**LLOYLKI 08/10/2018 LLOYLKI_201807_FBO_LW_01 *FISH BONES***
44782	**LLOYLKI 08/10/2018 LLOYLKI_201807_FBO_LW_02 *FISH BONES***

Analyte	Units	44780	44781	44782
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	0.2±0.1	0.1±0.1
Barium	ug/g	13±1	4.3±0.6	2.0±0.3
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.29±0.05	0.13±0.05	0.07±0.05
Copper	ug/g	0.3±0.2	0.3±0.2	0.2±0.1
Iron	ug/g	2±2	4±3	4±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	51±5	13±2	5.2±0.8
Mercury	ug/g	<0.05	0.06±0.06	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.1±0.1	0.1±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	220±20	180±20	98±10
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	88±10	48±7	24±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.003	<0.004
Polonium-210	Bq/g	0.003±0.002	0.001±0.0009	<0.001
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.004	<0.003	<0.004
Lab Section 6 (SPTP)				
Moisture	%	44.33±4	42.69±4	54.64±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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CanNorth, Canada North Environmental Services Limited

44783	**LLOYLKI 08/10/2018 LLOYLKI_201807_FBO_LW_03 *FISH BONES***
44784	**LLOYLKI 08/11/2018 LLOYLKI_201807_FBO_LW_04 *FISH BONES***
44785	**LLOYLKI 08/11/2018 LLOYLKI_201807_FBO_LW_05 *FISH BONES***

Analyte	Units	44783	44784	44785
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.1±0.1
Barium	ug/g	8.6±1	6.6±1	9.9±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.30±0.05	0.33±0.05	0.27±0.05
Copper	ug/g	0.5±0.2	0.4±0.2	0.4±0.2
Iron	ug/g	10±4	7±4	5±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	21±2	27±3	54±5
Mercury	ug/g	0.07±0.06	0.12±0.08	0.08±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.2±0.1	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	470±50	420±40	370±40
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	0.2±0.2	0.2±0.2
Zinc	ug/g	76±10	62±9	78±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.002±0.001	0.002±0.001	0.001±0.0009
Radium-226	Bq/g	<0.002	<0.003	<0.002
Thorium-230	Bq/g	<0.005	<0.005	<0.004
Lab Section 6 (SPTP)				
Moisture	%	60.65±6	60.19±6	46.30±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44783
Note: Revised result for Copper. 02/15/19 CL

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CanNorth, Canada North Environmental Services Limited

44786	**LLOYLKI 08/12/2018 LLOYLKI_201807_FBO_NP_01 *FISH BONES***
44787	**LLOYLKI 08/12/2018 LLOYLKI_201807_FBO_NP_02 *FISH BONES***
44788	**LLOYLKI 08/12/2018 LLOYLKI_201807_FBO_NP_03 *FISH BONES***

Analyte	Units	44786	44787	44788
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	11±1	9.1±1	9.7±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.29±0.05	0.24±0.05	0.26±0.05
Copper	ug/g	0.5±0.2	0.6±0.2	0.5±0.2
Iron	ug/g	12±5	4±3	5±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	48±5	49±5	28±3
Mercury	ug/g	0.48±0.1	0.07±0.06	0.27±0.1
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.2±0.1	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	180±20	210±20	190±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.1±0.1	<0.1	0.1±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	110±10	110±10	99±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.006	<0.004	<0.005
Polonium-210	Bq/g	0.003±0.002	0.003±0.002	0.002±0.001
Radium-226	Bq/g	<0.004	<0.002	<0.004
Thorium-230	Bq/g	<0.008	<0.004	<0.005
Lab Section 6 (SPTP)				
Moisture	%	64.27±6	54.35±5	59.25±6

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44789 LLOYLKI 08/12/2018 LLOYLKI_201807_FBO_NP_04 *FISH BONES*
44790 LLOYLKI 08/12/2018 LLOYLKI_201807_FBO_NP_05 *FISH BONES*
44791 NAOMLK 10/06/2018 NAOMLK_201810_FBO_LW_01 *FISH BONES*

Analyte	Units	44789	44790	44791
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.1±0.1
Barium	ug/g	12±1	9.6±1	9.3±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.32±0.05	0.27±0.05	0.21±0.05
Copper	ug/g	0.5±0.2	0.5±0.2	0.4±0.2
Iron	ug/g	6±3	6±3	9±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	74±7	29±3	16±2
Mercury	ug/g	0.29±0.1	0.46±0.1	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	220±20	200±20	310±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.2±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	130±10	72±10	49±7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.007±0.003	<0.001	0.004±0.002
Radium-226	Bq/g	<0.003	<0.003	<0.002
Thorium-230	Bq/g	<0.005	<0.006	<0.004
Lab Section 6 (SPTP)				
Moisture	%	59.45±6	57.48±6	53.70±5

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44792 NAOMLK 10/06/2018 NAOMLK_201810_FBO_LW_02 *FISH BONES*
44793 NAOMLK 10/06/2018 NAOMLK_201810_FBO_LW_03 *FISH BONES*
44794 NAOMLK 10/06/2018 NAOMLK_201810_FBO_LW_04 *FISH BONES*

Analyte	Units	44792	44793	44794
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	2±2	2±2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	7.0±1	9.1±1	12±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	1±1	<1
Cobalt	ug/g	0.25±0.05	0.28±0.05	0.38±0.05
Copper	ug/g	0.5±0.2	0.2±0.1	0.4±0.2
Iron	ug/g	14±5	12±5	12±5
Lead	ug/g	0.13±0.08	<0.05	<0.05
Manganese	ug/g	20±2	19±3	24±2
Mercury	ug/g	<0.05	<0.05	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.3±0.2	0.2±0.1
Silver	ug/g	<0.05	<0.05	0.11±0.07
Strontium	ug/g	260±30	390±40	420±40
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	0.5±0.3
Zinc	ug/g	61±9	97±10	74±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	0.005±0.004	<0.004
Polonium-210	Bq/g	0.005±0.002	0.005±0.002	0.005±0.002
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.005	<0.004	<0.004
Lab Section 6 (SPTP)				
Moisture	%	55.50±6	45.12±4	51.54±5

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44795	**NAOMLK 10/06/2018 NAOMLK_201810_FBO_LW_05 *FISH BONES***
44796	**NAOMLK 10/06/2018 NAOMLK_201810_FBO_NP_01 *FISH BONES***
44797	**NAOMLK 10/06/2018 NAOMLK_201810_FBO_NP_02 *FISH BONES***

Analyte	Units	44795	44796	44797
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	0.3±0.1	<0.1
Barium	ug/g	6.9±1	20±2	13±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.33±0.05	0.31±0.05	0.25±0.05
Copper	ug/g	0.5±0.2	0.8±0.3	1.3±0.3
Iron	ug/g	9±4	15±5	8±4
Lead	ug/g	0.16±0.09	0.15±0.08	0.14±0.08
Manganese	ug/g	28±3	41±4	52±5
Mercury	ug/g	<0.05	0.14±0.08	0.07±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	330±30	190±20	200±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	0.3±0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	66±10	130±10	180±20
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.005
Polonium-210	Bq/g	0.004±0.002	0.002±0.001	0.009±0.003
Radium-226	Bq/g	<0.002	<0.002	<0.003
Thorium-230	Bq/g	<0.005	<0.005	<0.005
Lab Section 6 (SPTP)				
Moisture	%	54.30±5	55.64±6	60.10±6

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Note for Sample # 44797
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty

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44798 NAOMLK 10/08/2018 NAOMLK_201810_FBO_NP_03 *FISH BONES*
44799 NAOMLK 10/06/2018 NAOMLK_201810_FBO_NP_04 *FISH BONES*
44800 PATTLK 10/12/2018 PATTLK_201810_FBO_LW_01 *FISH BONES*

Analyte	Units	44798	44799	44800
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.1±0.1
Barium	ug/g	21±2	17±2	14±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.32±0.05	0.28±0.05	0.29±0.05
Copper	ug/g	1.0±0.2	0.8±0.3	0.5±0.2
Iron	ug/g	14±5	8±4	12±5
Lead	ug/g	0.13±0.08	0.14±0.08	0.15±0.08
Manganese	ug/g	96±10	47±5	36±4
Mercury	ug/g	0.26±0.1	0.28±0.1	0.16±0.09
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.2±0.1	0.5±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	270±30	210±20	310±30
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	0.2±0.2	<0.2	<0.2
Zinc	ug/g	100±10	220±20	75±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.006
Polonium-210	Bq/g	0.006±0.002	0.003±0.002	0.005±0.003
Radium-226	Bq/g	<0.003	<0.003	<0.003
Thorium-230	Bq/g	<0.005	<0.006	<0.006
Lab Section 6 (SPTP)				
Moisture	%	63.36±6	60.06±6	69.28±7

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44801 PATTLK 10/12/2018 PATTLK_201810_FBO_LW_02 *FISH BONES*
44802 PATTLK 10/11/2018 PATTLK_201810_FBO_LW_03 *FISH BONES*
44803 PATTLK 10/12/2018 PATTLK_201810_FBO_LW_04 *FISH BONES*

Analyte	Units	44801	44802	44803
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	0.2±0.1	0.2±0.1
Barium	ug/g	14±1	9.5±1	16±2
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.28±0.05	0.36±0.05	0.17±0.05
Copper	ug/g	0.6±0.2	0.3±0.2	0.6±0.2
Iron	ug/g	12±5	10±4	13±5
Lead	ug/g	0.13±0.08	0.14±0.08	<0.05
Manganese	ug/g	44±4	33±3	56±6
Mercury	ug/g	0.06±0.06	0.14±0.08	0.11±0.07
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.2±0.1	0.4±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	320±30	360±40	180±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.3±0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	0.06±0.06
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	75±10	73±10	62±9
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.004	<0.006
Polonium-210	Bq/g	0.005±0.002	0.002±0.001	0.004±0.002
Radium-226	Bq/g	<0.003	<0.002	<0.002
Thorium-230	Bq/g	<0.005	<0.005	<0.004
Lab Section 6 (SPTP)				
Moisture	%	58.01±6	54.04±5	64.72±6

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44804 PATTLK 10/12/2018 PATTLK_201810_FBO_LW_05 *FISH BONES*
44805 PATTLK 10/10/2018 PATTLK_201810_FBO_NP_01 *FISH BONES*
44806 PATTLK 10/12/2018 PATTLK_201810_FBO_NP_02 *FISH BONES*

Analyte	Units	44804	44805	44806
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.1±0.1	<0.1	<0.1
Barium	ug/g	16±2	11±1	9.4±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.33±0.05	0.34±0.05	0.28±0.05
Copper	ug/g	0.3±0.2	0.6±0.2	0.6±0.2
Iron	ug/g	8±4	4±3	10±4
Lead	ug/g	0.16±0.09	0.16±0.09	0.14±0.08
Manganese	ug/g	43±4	49±5	36±4
Mercury	ug/g	<0.05	<0.05	0.14±0.08
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.3±0.2	0.3±0.2	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	350±40	210±20	170±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	70±10	130±10	120±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.004
Polonium-210	Bq/g	0.005±0.002	0.002±0.001	0.002±0.001
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.004	<0.005	0.006±0.006
Lab Section 6 (SPTP)				
Moisture	%	50.09±5	57.57±6	53.37±5

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44807 PATTLK 10/11/2018 PATTLK_201810_FBO_NP_03 *FISH BONES*
44808 PATTLK 10/10/2018 PATTLK_201810_FBO_NP_04 *FISH BONES*
44809 PATTLK 10/10/2018 PATTLK_201810_FBO_NP_05 *FISH BONES*

Analyte	Units	44807	44808	44809
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	13±1	7.8±1	12±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.31±0.05	0.24±0.05	0.39±0.05
Copper	ug/g	0.5±0.2	0.9±0.3	0.4±0.2
Iron	ug/g	8±4	12±5	5±3
Lead	ug/g	0.14±0.08	0.13±0.08	0.13±0.08
Manganese	ug/g	52±5	56±6	55±6
Mercury	ug/g	0.07±0.06	0.06±0.06	<0.05
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.4±0.2	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	180±20	120±10	200±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	140±10	110±10	130±10
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.004
Polonium-210	Bq/g	0.001±0.001	0.004±0.002	0.001±0.001
Radium-226	Bq/g	<0.003	<0.003	<0.002
Thorium-230	Bq/g	<0.005	<0.006	<0.004
Lab Section 6 (SPTP)				
Moisture	%	54.64±5	63.44±6	47.70±5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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44810 BEETLK 10/08/2018 BEETLK_201810_FFL_LW_01 *FISH FLESH*
44811 BEETLK 10/08/2018 BEETLK_201810_FFL_LW_02 *FISH FLESH*
44812 BEETLK 10/08/2018 BEETLK_201810_FFL_LW_03 *FISH FLESH*

Analyte	Units	44810	44811	44812
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.18±0.05	0.09±0.05	0.13±0.05
Barium	ug/g	0.12±0.05	0.09±0.05	0.06±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.02±0.01	<0.01
Copper	ug/g	1.0±0.2	0.80±0.2	0.85±0.2
Iron	ug/g	18±6	25±6	22±6
Lead	ug/g	0.01±0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.4±0.2	0.4±0.2
Mercury	ug/g	0.13±0.02	0.087±0.02	0.13±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.86±0.2	1.5±0.2	0.84±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.1±0.3	1.7±0.4	1.0±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	18±3	17±2	14±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.003
Polonium-210	Bq/g	0.004±0.002	0.024±0.004	0.003±0.001
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0004
Lab Section 6 (SPTP)				
Moisture	%	75.40±8	76.35±8	71.38±7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44811
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty

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44813 BEETLK 10/08/2018 BEETLK_201810_FFL_LW_04 *FISH FLESH*
44814 BEETLK 10/08/2018 BEETLK_201810_FFL_LW_05 *FISH FLESH*
44815 BEETLK 10/09/2018 BEETLK_201810_FFL_NP_01 *FISH FLESH*

Analyte	Units	44813	44814	44815
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	<0.05	0.16±0.05	0.05±0.05
Barium	ug/g	<0.05	<0.05	0.26±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	0.88±0.2	1.4±0.2	0.92±0.2
Iron	ug/g	10±4	14±5	5±3
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.2±0.1	0.4±0.2	0.7±0.2
Mercury	ug/g	0.078±0.02	0.18±0.03	0.17±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	1.2±0.2	0.75±0.2	0.81±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.7±0.2	1.0±0.2	3.2±0.5
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	14±2	16±2	22±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.004±0.002	0.002±0.001	0.018±0.003
Radium-226	Bq/g	<0.0002	<0.0002	<0.0003
Thorium-230	Bq/g	<0.0004	<0.0005	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	71.67±7	76.41±8	78.13±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44815
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty

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44816 BEETLK 10/09/2018 BEETLK_201810_FFL_NP_02 *FISH FLESH*
44820 BROALK 10/11/2018 BROALK_201810_FFL_LW_01 *FISH FLESH*
44821 BROALK 10/11/2018 BROALK_201810_FFL_LW_02 *FISH FLESH*

Analyte	Units	44816	44820	44821
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.08±0.05	0.06±0.05	0.46±0.05
Barium	ug/g	0.07±0.05	0.19±0.05	0.07±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.02±0.01	0.01±0.01
Copper	ug/g	1.9±0.3	0.84±0.2	1.0±0.2
Iron	ug/g	8±4	24±6	11±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.3±0.2	0.5±0.2	0.4±0.2
Mercury	ug/g	0.19±0.03	0.23±0.03	0.081±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.66±0.2	2.0±0.3	0.48±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.2±0.3	5.1±0.8	2.4±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	29±4	23±3	20±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.013±0.003	0.003±0.002	0.002±0.001
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	78.60±8	78.89±8	76.36±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44820
This sample was reanalyzed for Barium and Strontium. Reanalysis confirms original results are within the expected measurement uncertainty.

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44822 BROALK 10/11/2018 BROALK_201810_FFL_LW_03 *FISH FLESH*
44823 BROALK 10/11/2018 BROALK_201810_FFL_LW_04 *FISH FLESH*
44824 BROALK 10/11/2018 BROALK_201810_FFL_LW_05 *FISH FLESH*

Analyte	Units	44822	44823	44824
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.47±0.05	0.11±0.05	0.20±0.05
Barium	ug/g	0.05±0.05	0.15±0.05	0.15±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	0.02±0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.02±0.01	0.03±0.01	<0.01
Copper	ug/g	1.2±0.2	1.9±0.3	0.84±0.2
Iron	ug/g	26±6	72±10	11±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.5±0.2	0.7±0.2	0.3±0.2
Mercury	ug/g	0.26±0.04	0.35±0.05	0.092±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.90±0.2	1.7±0.2	0.46±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	2.3±0.3	4.6±0.7	6.4±1
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	39±6	37±6	25±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.006	0.006±0.004
Polonium-210	Bq/g	0.001±0.0009	0.006±0.002	0.002±0.001
Radium-226	Bq/g	<0.0003	<0.0004	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0009	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	77.86±8	83.89±8	77.29±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44823
This sample was reanalyzed for Barium and Strontium. Reanalysis confirms original results are within the expected measurement uncertainty.

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44825 BROALK 10/11/2018 BROALK_201810_FFL_NP_01 *FISH FLESH*
44826 BROALK 10/11/2018 BROALK_201810_FFL_NP_02 *FISH FLESH*
44827 BROALK 10/11/2018 BROALK_201810_FFL_NP_03 *FISH FLESH*

Analyte	Units	44825	44826	44827
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.10±0.05	0.08±0.05	0.08±0.05
Barium	ug/g	0.10±0.05	0.12±0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.01±0.01	<0.01
Copper	ug/g	1.0±0.2	0.70±0.2	0.87±0.2
Iron	ug/g	8±4	12±5	7±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.8±0.3	0.3±0.2
Mercury	ug/g	0.17±0.02	0.20±0.03	0.48±0.07
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.74±0.2	0.58±0.1	0.63±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.2±0.3	1.6±0.4	0.5±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	28±4	26±4	21±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.011±0.003	0.002±0.001	0.004±0.002
Radium-226	Bq/g	<0.0002	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0005	<0.0005	<0.0004
Lab Section 6 (SPTP)				
Moisture	%	77.20±8	77.69±8	75.94±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44825
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44828	**BROALK 10/11/2018 BROALK_201810_FFL_NP_04 *FISH FLESH***
44829	**BROALK 10/11/2018 BROALK_201810_FFL_NP_05 *FISH FLESH***
44830	**CLEARV 08/04/2018 CLEARV_201807_FFL_NP_01 *FISH FLESH***

Analyte	Units	44828	44829	44830
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.06±0.05	0.10±0.05	0.17±0.05
Barium	ug/g	<0.05	0.18±0.05	0.10±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	0.83±0.2	1.0±0.2	0.65±0.2
Iron	ug/g	5±3	6±3	10±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.3±0.2	0.7±0.2	0.6±0.2
Mercury	ug/g	0.13±0.02	0.16±0.02	1.1±0.2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.50±0.1	0.72±0.2	0.48±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.2±0.3	2.5±0.4	1.0±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	20±3	21±3	23±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.005
Polonium-210	Bq/g	0.005±0.002	0.013±0.003	0.005±0.002
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0005	<0.0005	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	78.09±8	77.30±8	78.68±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44829
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44831	**CLEARV 08/04/2018 CLEARV_201807_FFL_NP_02 *FISH FLESH***
44832	**CLEARV 08/04/2018 CLEARV_201807_FFL_NP_03 *FISH FLESH***
44833	**CLEARV 08/04/2018 CLEARV_201807_FFL_NP_04 *FISH FLESH***

Analyte	Units	44831	44832	44833
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.10±0.05	0.13±0.05	0.09±0.05
Barium	ug/g	0.07±0.05	0.06±0.05	0.06±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	0.93±0.2	0.76±0.2	1.1±0.2
Iron	ug/g	6±3	7±4	13±5
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.5±0.2	0.5±0.2	0.5±0.2
Mercury	ug/g	0.26±0.04	0.48±0.07	0.66±0.2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.46±0.1	0.44±0.1	0.48±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.4±0.4	0.7±0.2	0.9±0.3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	30±4	36±5	70±7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.005
Polonium-210	Bq/g	0.010±0.002	0.008±0.003	0.004±0.002
Radium-226	Bq/g	<0.0003	<0.0004	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0007	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	75.65±8	79.33±8	78.38±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44831
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44834 CLEARV 08/04/2018 CLEARV_201807_FFL_NP_05 *FISH FLESH*
44835 FORRLK 10/10/2018 FORRLK_201810_FFL_LW_01 *FISH FLESH*
44836 FORRLK 10/10/2018 FORRLK_201810_FFL_LW_02 *FISH FLESH*

Analyte	Units	44834	44835	44836
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.06±0.05	0.09±0.05	0.24±0.05
Barium	ug/g	0.22±0.05	<0.05	0.08±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	0.01±0.01
Copper	ug/g	0.79±0.2	1.8±0.3	1.1±0.2
Iron	ug/g	12±5	13±5	11±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	1.1±0.3	0.3±0.2	0.3±0.2
Mercury	ug/g	1.6±0.2	0.43±0.06	0.29±0.04
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.64±0.2	1.8±0.3	0.58±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	2.6±0.4	0.9±0.3	1.0±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	31±5	21±3	19±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.004	<0.004
Polonium-210	Bq/g	0.004±0.002	<0.0008	0.002±0.001
Radium-226	Bq/g	<0.0003	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0006	<0.0005	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	80.14±8	76.24±8	74.18±7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a dry basis.

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44837 FORRLK 10/10/2018 FORRLK_201810_FFL_LW_03 *FISH FLESH*
44838 FORRLK 10/10/2018 FORRLK_201810_FFL_LW_04 *FISH FLESH*
44839 FORRLK 10/10/2018 FORRLK_201810_FFL_LW_05 *FISH FLESH*

Analyte	Units	44837	44838	44839
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.08±0.05	<0.05	0.10±0.05
Barium	ug/g	<0.05	0.04±0.03	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.02±0.01	<0.01
Copper	ug/g	0.79±0.2	0.85±0.2	1.2±0.2
Iron	ug/g	12±5	22±6	11±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.3±0.2	0.7±0.2	0.5±0.2
Mercury	ug/g	0.34±0.05	0.21±0.03	0.21±0.03
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.81±0.2	1.2±0.2	1.2±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.9±0.3	1.2±0.2	1.1±0.3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	18±3	37±6	21±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.005
Polonium-210	Bq/g	0.006±0.002	0.002±0.001	0.003±0.002
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0006	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	74.77±7	78.57±8	79.72±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44838
Note: Revised result for Barium and Strontium. 2/25/2019 SB

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44840 FORRLK 10/10/2018 FORRLK_201810_FFL_NP_01 *FISH FLESH*
44841 FORRLK 10/10/2018 FORRLK_201810_FFL_NP_02 *FISH FLESH*
44842 FORRLK 10/11/2018 FORRLK_201810_FFL_NP_03 *FISH FLESH*

Analyte	Units	44840	44841	44842
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.08±0.05	0.08±0.05	0.11±0.05
Barium	ug/g	0.07±0.05	0.24±0.05	0.23±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	1.6±0.2	1.4±0.2	1.1±0.2
Iron	ug/g	16±5	18±6	9±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.6±0.2	0.8±0.3	1.0±0.2
Mercury	ug/g	0.38±0.06	0.19±0.03	0.26±0.04
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.70±0.2	0.68±0.2	0.71±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.9±0.3	2.4±0.4	2.4±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	49±7	82±8	38±6
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.012±0.003	0.014±0.004	0.012±0.003
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0006	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	79.00±8	79.23±8	77.18±8

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44843 FORRLK 10/12/2018 FORRLK_201810_FFL_NP_04 *FISH FLESH*
44844 LLOYLKI 08/10/2018 LLOYLKI_201807_FFL_LW_01 *FISH FLESH*
44845 LLOYLKI 08/10/2018 LLOYLKI_201807_FFL_LW_02 *FISH FLESH*

Analyte	Units	44843	44844	44845
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.12±0.05	0.06±0.05	0.10±0.05
Barium	ug/g	0.15±0.05	<0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.01±0.01	0.01±0.01
Copper	ug/g	1.2±0.2	0.67±0.2	0.89±0.2
Iron	ug/g	11±4	6±3	10±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.8±0.3	0.3±0.2	0.4±0.2
Mercury	ug/g	0.30±0.04	0.54±0.1	0.12±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.75±0.2	0.51±0.1	0.45±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.6±0.4	1.0±0.2	1.5±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	0.07±0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	82±8	17±2	17±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.015±0.004	<0.0008	0.002±0.001
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0005	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	76.54±8	73.85±7	75.68±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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44846	**LLOYLKI 08/10/2018 LLOYLKI_201807_FFL_LW_03 *FISH FLESH***
44847	**LLOYLKI 08/11/2018 LLOYLKI_201807_FFL_LW_04 *FISH FLESH***
44848	**LLOYLKI 09/11/2018 LLOYLKI_201807_FFL_LW_05 *FISH FLESH***

Analyte	Units	44846	44847	44848
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.06±0.05	0.08±0.05	0.19±0.05
Barium	ug/g	<0.05	<0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	0.04±0.01	0.02±0.01
Copper	ug/g	0.88±0.2	0.71±0.2	1.3±0.2
Iron	ug/g	10±4	11±4	33±8
Lead	ug/g	0.04±0.02	<0.01	<0.01
Manganese	ug/g	0.3±0.2	0.2±0.1	0.3±0.2
Mercury	ug/g	0.23±0.03	0.44±0.07	0.44±0.07
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.68±0.2	0.52±0.1	0.60±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.6±0.4	1.5±0.4	0.9±0.3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	22±3	24±4	20±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	<0.0008	<0.0009	0.0008±0.0008
Radium-226	Bq/g	<0.0002	<0.0003	<0.0002
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	74.31±7	78.02±8	73.54±7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44848
Note: Revised result for Copper. 02/15/19 CL

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44849	**LLOYLKI 08/12/2018 LLOYLKI_201807_FFL_NP_01 *FISH FLESH***
44850	**LLOYLKI 08/12/2018 LLOYLKI_201807_FFL_NP_02 *FISH FLESH***
44851	**LLOYLKI 08/12/2018 LLOYLKI_201807_FFL_NP_03 *FISH FLESH***

Analyte	Units	44849	44850	44851
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.06±0.05	<0.05	0.07±0.05
Barium	ug/g	0.05±0.05	0.12±0.05	0.15±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	<0.01	<0.01
Copper	ug/g	0.68±0.2	1.2±0.2	0.86±0.2
Iron	ug/g	16±5	6±3	6±3
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.5±0.2	0.8±0.3	0.7±0.2
Mercury	ug/g	1.6±0.2	0.32±0.05	1.1±0.2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.74±0.2	0.65±0.2	0.61±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.5±0.2	2.1±0.3	2.6±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.06±0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	24±4	34±5	34±5
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.004	<0.004
Polonium-210	Bq/g	0.007±0.003	0.009±0.002	0.005±0.002
Radium-226	Bq/g	<0.0003	<0.0003	<0.0004
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0008
Lab Section 6 (SPTP)				
Moisture	%	78.51±8	77.66±8	76.62±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44850
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44852	**LLOYLKI 08/12/2018 LLOYLKI_201807_FFL_NP_04 *FISH FLESH***
44853	**LLOYLKI 08/12/2018 LLOYLKI_201807_FFL_NP_05 *FISH FLESH***
44854	**NAOMLK 10/06/2018 NAOMLK_201810_FFL_LW_01 *FISH FLESH***

Analyte	Units	44852	44853	44854
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.05±0.05	0.06±0.05	0.14±0.05
Barium	ug/g	0.21±0.05	<0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	<0.01	<0.01
Copper	ug/g	0.66±0.2	0.82±0.2	0.99±0.2
Iron	ug/g	9±4	7±4	18±6
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	1.4±0.4	0.4±0.2	0.4±0.2
Mercury	ug/g	1.6±0.2	2.3±0.3	0.13±0.02
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.63±0.2	0.64±0.2	0.54±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	3.3±0.5	0.7±0.2	1.4±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	47±7	21±3	16±2
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.004
Polonium-210	Bq/g	0.025±0.004	0.002±0.001	0.002±0.001
Radium-226	Bq/g	<0.0004	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0007	<0.0005	<0.0004
Lab Section 6 (SPTP)				
Moisture	%	78.71±8	78.45±8	74.71±7

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44852
This sample was reanalyzed for Polonium-210, Barium and Strontium.
Reanalysis confirms original results are within the expected measurement

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44855 NAOMLK 10/06/2018 NAOMLK_201810_FFL_LW_02 *FISH FLESH*
44856 NAOMLK 10/06/2018 NAOMLK_201810_FFL_LW_03 *FISH FLESH*
44857 NAOMLK 10/06/2018 NAOMLK_201810_FFL_LW_04 *FISH FLESH*

Analyte	Units	44855	44856	44857
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.17±0.05	0.10±0.05	0.14±0.05
Barium	ug/g	<0.05	0.10±0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	0.01±0.01	0.01±0.01
Copper	ug/g	0.76±0.2	2.0±0.3	0.81±0.2
Iron	ug/g	15±5	28±7	14±5
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.3±0.2	0.3±0.2
Mercury	ug/g	0.24±0.04	0.12±0.02	0.18±0.03
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.82±0.2	0.83±0.2	0.64±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.1±0.3	0.8±0.3	1.6±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	18±3	18±3	23±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.001±0.0009	0.005±0.002	0.003±0.002
Radium-226	Bq/g	<0.0003	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0006	<0.0005	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	76.82±8	72.51±7	77.04±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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44858 NAOMLK 10/06/2018 NAOMLK_201810_FFL_LW_05 *FISH FLESH*
44859 NAOMLK 10/06/2018 NAOMLK_201810_FFL_NP_01 *FISH FLESH*
44860 NAOMLK 10/06/2018 NAOMLK_201810_FFL_NP_02 *FISH FLESH*

Analyte	Units	44858	44859	44860
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.16±0.05	0.12±0.05	0.09±0.05
Barium	ug/g	<0.05	0.08±0.05	0.11±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	0.01±0.01	<0.01
Copper	ug/g	0.86±0.2	2.1±0.3	1.2±0.2
Iron	ug/g	12±5	24±6	9±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.3±0.2	0.4±0.2	0.9±0.3
Mercury	ug/g	0.25±0.04	0.57±0.1	0.25±0.04
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.58±0.1	0.57±0.1	0.50±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.6±0.4	1.0±0.2	1.6±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	0.05±0.05
Titanium	ug/g	0.06±0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	20±3	45±7	47±7
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.005	<0.004
Polonium-210	Bq/g	0.006±0.002	0.006±0.002	0.027±0.004
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0005	<0.0007	<0.0006
Lab Section 6 (SPTP)				
Moisture	%	77.36±8	80.35±8	77.47±8

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Note for Sample # 44860
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44861 NAOMLK 10/08/2018 NAOMLK_201810_FFL_NP_03 *FISH FLESH*
44862 NAOMLK 10/06/2018 NAOMLK_201810_FFL_NP_04 *FISH FLESH*
44863 PATTLK 10/12/2018 PATTLK_201810_FFL_LW_01 *FISH FLESH*

Analyte	Units	44861	44862	44863
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.16±0.05	0.14±0.05	0.13±0.05
Barium	ug/g	0.12±0.05	0.05±0.05	0.20±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.02±0.01	<0.01	<0.01
Copper	ug/g	1.9±0.3	1.4±0.2	0.94±0.2
Iron	ug/g	29±7	12±5	11±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.6±0.2	0.4±0.2	0.4±0.2
Mercury	ug/g	0.89±0.2	1.2±0.2	0.49±0.07
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.55±0.1	0.44±0.1	0.92±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.5±0.4	0.8±0.3	2.6±0.4
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	0.06±0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	32±5	31±5	24±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.005	<0.005	<0.005
Polonium-210	Bq/g	0.021±0.003	0.008±0.003	0.002±0.001
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0006	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	78.37±8	79.55±8	78.37±8

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44864 PATTLK 10/12/2018 PATTLK_201810_FFL_LW_02 *FISH FLESH*
44865 PATTLK 10/11/2018 PATTLK_201810_FFL_LW_03 *FISH FLESH*
44866 PATTLK 10/12/2018 PATTLK_201810_FFL_LW_04 *FISH FLESH*

Analyte	Units	44864	44865	44866
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.19±0.05	0.49±0.05	0.08±0.05
Barium	ug/g	0.08±0.05	<0.05	0.10±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	0.05±0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	0.01±0.01	0.02±0.01	0.01±0.01
Copper	ug/g	1.0±0.2	1.5±0.2	1.3±0.2
Iron	ug/g	16±5	27±7	15±5
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.5±0.2	0.4±0.2	0.6±0.2
Mercury	ug/g	0.19±0.03	0.58±0.1	0.24±0.04
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	0.16±0.05	<0.05	<0.05
Selenium	ug/g	0.83±0.2	0.73±0.2	2.0±0.3
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.8±0.4	1.3±0.3	2.1±0.3
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	0.07±0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	30±4	90±9	22±3
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.005
Polonium-210	Bq/g	0.004±0.002	0.002±0.001	0.008±0.003
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0006	<0.0007
Lab Section 6 (SPTP)				
Moisture	%	76.15±8	77.66±8	78.99±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44866
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44867 PATTLK 10/12/2018 PATTLK_201810_FFL_LW_05 *FISH FLESH*
44868 PATTLK 10/10/2018 PATTLK_201810_FFL_NP_01 *FISH FLESH*
44869 PATTLK 10/12/2018 PATTLK_201810_FFL_NP_02 *FISH FLESH*

Analyte	Units	44867	44868	44869
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.17±0.05	0.05±0.05	0.14±0.05
Barium	ug/g	0.07±0.05	0.15±0.05	<0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	0.01±0.01	<0.01
Copper	ug/g	0.86±0.2	1.3±0.2	0.75±0.2
Iron	ug/g	15±5	11±4	7±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.8±0.3	0.3±0.2
Mercury	ug/g	0.14±0.02	0.19±0.03	0.65±0.2
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	1.1±0.2	0.85±0.2	0.77±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.8±0.4	2.1±0.3	0.6±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	38±6	46±7	29±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.002±0.001	0.010±0.002	0.002±0.001
Radium-226	Bq/g	<0.0002	<0.0003	<0.0002
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	74.23±7	76.57±8	75.72±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 44868
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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44870 PATTLK 10/11/2018 PATTLK_201810_FFL_NP_03 *FISH FLESH*
44871 PATTLK 10/10/2018 PATTLK_201810_FFL_NP_04 *FISH FLESH*
44872 PATTLK 10/10/2018 PATTLK_201810_FFL_NP_05 *FISH FLESH*

Analyte	Units	44870	44871	44872
Lab Section 2 (ICP)				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.1	<0.1	<0.1
Arsenic	ug/g	0.07±0.05	0.07±0.05	0.08±0.05
Barium	ug/g	0.06±0.05	0.07±0.05	0.05±0.05
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.5	<0.5	<0.5
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	1.1±0.2	1.3±0.2	0.88±0.2
Iron	ug/g	8±4	9±4	6±3
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.5±0.2	0.5±0.2	0.6±0.2
Mercury	ug/g	0.65±0.2	0.17±0.02	0.38±0.06
Molybdenum	ug/g	<0.1	<0.1	<0.1
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.87±0.2	0.88±0.2	0.82±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	1.0±0.2	1.3±0.3	1.0±0.2
Thallium	ug/g	<0.05	<0.05	<0.05
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.05	<0.05	<0.05
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	37±6	45±7	28±4
Lab Section 4 (Radiochemistry)				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.008±0.003	0.018±0.003	0.009±0.002
Radium-226	Bq/g	<0.0003	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0006	<0.0005	<0.0005
Lab Section 6 (SPTP)				
Moisture	%	77.68±8	76.50±8	76.97±8

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Note for Sample # 44871
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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Jan 18, 2019

This report was generated for samples included in SRC Group # 2018-13628

Quality Control Report

Kelly Wells
CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4

Reference Materials and Standards:

A reference material of known concentration is used whenever possible as either a control sample or control standard and analyzed with each batch of samples. These "QC" results are used to assess the performance of the method and must be within clearly defined limits; otherwise corrective action is required.

QC Analysis	Units	Target Value	Obtained Value	
Aluminum	ug/g	1280	1440	
Aluminum	ug/g	1280	1440	
Aluminum	ug/g	1280	1430	
Aluminum	ug/g	1280	1430	
Aluminum	ug/g	1280	1490	
Arsenic	ug/g	6.87	7.30	
Arsenic	ug/g	6.87	6.94	
Arsenic	ug/g	6.87	6.40	
Arsenic	ug/g	6.87	7.43	
Arsenic	ug/g	6.87	7.14	
Cadmium	ug/g	0.299	0.321	
Cadmium	ug/g	0.299	0.311	
Cadmium	ug/g	0.299	0.298	
Cadmium	ug/g	0.299	0.303	
Cadmium	ug/g	0.299	0.309	
Chromium	ug/g	1.57	1.78	
Chromium	ug/g	1.57	1.68	
Chromium	ug/g	1.57	1.72	
Chromium	ug/g	1.57	1.60	
Chromium	ug/g	1.57	1.71	
Copper	ug/g	13.8	17.9	*(1)
Copper	ug/g	13.8	14.5	
Copper	ug/g	13.8	15.1	
Copper	ug/g	13.8	15.3	
Copper	ug/g	13.8	14.3	
Iron	ug/g	312	324	
Iron	ug/g	312	341	
Iron	ug/g	312	331	
Iron	ug/g	312	348	
Iron	ug/g	312	340	
Lead	ug/g	0.404	0.440	

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QC Analysis	Units	Target Value	Obtained Value	
Lead	ug/g	0.404	0.392	
Lead	ug/g	0.404	0.419	
Lead	ug/g	0.404	0.406	
Lead	ug/g	0.404	0.403	
Lead-210	Bq/L	21.8	34.3	*(2)
Lead-210	Bq	0.385	0.379	
Lead-210	Bq/L	21.8	19.7	
Lead-210	Bq	7.70	7.50	
Lead-210	Bq/L	21.8	22.3	
Lead-210	Bq	1.92	2.10	
Lead-210	Bq/L	21.8	22.0	
Lead-210	Bq	0.770	0.726	
Lead-210	Bq/L	21.8	17.0	
Lead-210	Bq	7.70	6.47	
Lead-210	Bq/L	21.8	18.9	
Lead-210	Bq	0.385	0.352	
Lead-210	Bq/L	21.8	18.9	
Lead-210	Bq	1.92	1.84	
Manganese	ug/g	2.70	2.83	
Manganese	ug/g	2.70	2.67	
Manganese	ug/g	2.70	2.98	
Manganese	ug/g	2.70	2.86	
Manganese	ug/g	2.70	2.78	
Mercury	ug/g	0.364	0.375	
Mercury	ug/g	0.364	0.366	
Mercury	ug/g	0.364	0.318	
Mercury	ug/g	0.364	0.341	
Mercury	ug/g	0.364	0.359	
Nickel	ug/g	1.20	1.32	
Nickel	ug/g	1.20	1.21	
Nickel	ug/g	1.20	1.12	
Nickel	ug/g	1.20	1.37	
Nickel	ug/g	1.20	1.36	
Polonium-210	Bq/L	21.0	19.7	
Polonium-210	Bq	0.385	0.398	
Polonium-210	Bq/L	21.0	25.4	
Polonium-210	Bq	0.077	0.079	
Polonium-210	Bq/L	21.0	25.9	
Polonium-210	Bq	1.92	1.82	
Polonium-210	Bq/L	21.0	24.4	
Polonium-210	Bq	0.770	0.824	
Polonium-210	Bq/L	21.0	20.7	
Polonium-210	Bq	0.077	0.076	
Polonium-210	Bq/L	21.0	20.2	
Polonium-210	Bq	0.385	0.372	

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QC Analysis	Units	Target Value	Obtained Value
Polonium-210	Bq/L	21.0	19.1
Polonium-210	Bq	1.92	1.86
Polonium-210	Bq/L	21.0	21.7
Polonium-210	Bq	0.770	0.786
Radium-226	Bq/L	21.4	19.4
Radium-226	Bq	0.043	0.041
Radium-226	Bq/L	21.4	21.2
Radium-226	Bq	0.427	0.419
Radium-226	Bq/L	21.4	21.1
Radium-226	Bq	2.13	2.11
Radium-226	Bq/L	21.4	19.7
Radium-226	Bq	0.427	0.473
Radium-226	Bq/L	21.4	23.6
Radium-226	Bq	2.13	2.32
Selenium	ug/g	3.74	4.04
Selenium	ug/g	3.45	3.67
Selenium	ug/g	3.45	3.28
Selenium	ug/g	3.45	3.82
Selenium	ug/g	3.45	3.77
Silver	ug/g	0.0215	0.0195
Silver	ug/g	0.0234	0.0234
Silver	ug/g	0.0234	0.0186
Silver	ug/g	0.0234	0.0239
Silver	ug/g	0.0234	0.0224
Thorium-230	Bq/L	20.5	21.6
Thorium-230	Bq/L	20.5	21.5
Thorium-232	Bq	0.203	0.193
Thorium-232	Bq	0.203	0.195
Zinc	ug/g	47.8	49.4
Zinc	ug/g	47.8	48.7
Zinc	ug/g	47.8	51.6
Zinc	ug/g	47.8	48.7
Zinc	ug/g	47.8	50.0

Duplicates:

Duplicates are used to assess problems with precision and help ensure that samples within a given batch were processed appropriately. The difference between duplicates must be within strict limits, otherwise corrective action is required. Please note, the duplicate(s) in this report are duplicates analyzed within a given batch of test samples and may not be from this specific group of samples.

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	44747	<0.05	<0.05
Silver	ug/g	44760	<0.05	<0.05
Silver	ug/g	44769	<0.05	<0.05

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Silver	ug/g	44778	<0.05	<0.05
Silver	ug/g	44785	<0.05	<0.05
Silver	ug/g	44794	0.11	<0.05
Silver	ug/g	44803	<0.05	<0.05
Silver	ug/g	44812	<0.01	<0.01
Silver	ug/g	44824	<0.01	<0.01
Silver	ug/g	44833	<0.01	<0.01
Silver	ug/g	44842	<0.01	<0.01
Silver	ug/g	44850	<0.01	<0.01
Silver	ug/g	44860	<0.01	<0.01
Silver	ug/g	44869	<0.01	<0.01
Aluminum	ug/g	44747	2	3
Aluminum	ug/g	44760	3	2
Aluminum	ug/g	44769	<2	<2
Aluminum	ug/g	44778	<2	<2
Aluminum	ug/g	44785	<2	<2
Aluminum	ug/g	44794	2	3
Aluminum	ug/g	44803	<2	<2
Aluminum	ug/g	44812	<2	<2
Aluminum	ug/g	44824	<2	<2
Aluminum	ug/g	44833	<2	<2
Aluminum	ug/g	44842	<2	<2
Aluminum	ug/g	44850	<2	<2
Aluminum	ug/g	44860	<2	<2
Aluminum	ug/g	44869	<2	<2
Arsenic	ug/g	44747	0.1	0.2
Arsenic	ug/g	44760	<0.1	<0.1
Arsenic	ug/g	44769	<0.1	<0.1
Arsenic	ug/g	44778	<0.1	<0.1
Arsenic	ug/g	44785	0.1	<0.1
Arsenic	ug/g	44794	<0.1	<0.1
Arsenic	ug/g	44803	0.2	0.6
Arsenic	ug/g	44812	0.13	0.13
Arsenic	ug/g	44824	0.20	0.21
Arsenic	ug/g	44833	0.09	0.08
Arsenic	ug/g	44842	0.11	0.11
Arsenic	ug/g	44850	<0.05	<0.05
Arsenic	ug/g	44860	0.09	0.08
Arsenic	ug/g	44869	0.14	0.12
Boron	ug/g	44747	<2	<2
Boron	ug/g	44760	<2	<2
Boron	ug/g	44769	<2	<2
Boron	ug/g	44778	<2	<2
Boron	ug/g	44785	<2	<2
Boron	ug/g	44794	<2	<2
Boron	ug/g	44803	<2	<2

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Boron	ug/g	44812	<1	<1
Boron	ug/g	44824	<1	<1
Boron	ug/g	44833	<1	<1
Boron	ug/g	44842	<1	<1
Boron	ug/g	44850	<1	<1
Boron	ug/g	44860	<1	<1
Boron	ug/g	44869	<1	<1
Barium	ug/g	44747	12	11
Barium	ug/g	44760	13	11
Barium	ug/g	44769	20	22
Barium	ug/g	44778	14	12
Barium	ug/g	44785	9.9	12
Barium	ug/g	44794	12	12
Barium	ug/g	44803	16	16
Barium	ug/g	44812	0.06	0.27
Barium	ug/g	44824	0.15	0.19
Barium	ug/g	44833	0.06	0.12
Barium	ug/g	44842	0.23	0.18
Barium	ug/g	44850	0.12	0.15
Barium	ug/g	44860	0.11	0.19
Barium	ug/g	44869	<0.05	0.23
Beryllium	ug/g	44747	<0.05	<0.05
Beryllium	ug/g	44760	<0.05	<0.05
Beryllium	ug/g	44769	<0.05	<0.05
Beryllium	ug/g	44778	<0.05	<0.05
Beryllium	ug/g	44785	<0.05	<0.05
Beryllium	ug/g	44794	<0.05	<0.05
Beryllium	ug/g	44803	<0.05	<0.05
Beryllium	ug/g	44812	<0.01	<0.01
Beryllium	ug/g	44824	<0.01	<0.01
Beryllium	ug/g	44833	<0.01	<0.01
Beryllium	ug/g	44842	<0.01	<0.01
Beryllium	ug/g	44850	<0.01	<0.01
Beryllium	ug/g	44860	<0.01	<0.01
Beryllium	ug/g	44869	<0.01	<0.01
Cadmium	ug/g	44747	<0.05	<0.05
Cadmium	ug/g	44760	<0.05	<0.05
Cadmium	ug/g	44769	<0.05	<0.05
Cadmium	ug/g	44778	<0.05	<0.05
Cadmium	ug/g	44785	<0.05	<0.05
Cadmium	ug/g	44794	<0.05	<0.05
Cadmium	ug/g	44803	<0.05	<0.05
Cadmium	ug/g	44812	<0.01	<0.01
Cadmium	ug/g	44824	<0.01	<0.01
Cadmium	ug/g	44833	<0.01	<0.01
Cadmium	ug/g	44842	<0.01	<0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Cadmium	ug/g	44850	<0.01	<0.01	
Cadmium	ug/g	44860	<0.01	<0.01	
Cadmium	ug/g	44869	<0.01	<0.01	
Cobalt	ug/g	44747	0.20	0.17	
Cobalt	ug/g	44760	0.32	0.28	
Cobalt	ug/g	44769	0.27	0.32	
Cobalt	ug/g	44778	0.20	0.26	
Cobalt	ug/g	44785	0.27	0.32	
Cobalt	ug/g	44794	0.38	0.34	
Cobalt	ug/g	44803	0.25	0.17	
Cobalt	ug/g	44812	<0.01	<0.01	
Cobalt	ug/g	44824	<0.01	0.01	
Cobalt	ug/g	44833	<0.01	<0.01	
Cobalt	ug/g	44842	<0.01	0.01	
Cobalt	ug/g	44850	<0.01	<0.01	
Cobalt	ug/g	44860	<0.01	<0.01	
Cobalt	ug/g	44869	<0.01	<0.01	
Chromium	ug/g	44747	<1	<1	
Chromium	ug/g	44760	<1	<1	
Chromium	ug/g	44769	<1	<1	
Chromium	ug/g	44778	<1	<1	
Chromium	ug/g	44785	<1	<1	
Chromium	ug/g	44794	<1	<1	
Chromium	ug/g	44803	<1	<1	
Chromium	ug/g	44812	<0.5	<0.5	
Chromium	ug/g	44824	<0.5	<0.5	
Chromium	ug/g	44833	<0.5	<0.5	
Chromium	ug/g	44842	<0.5	<0.5	
Chromium	ug/g	44850	<0.5	<0.5	
Chromium	ug/g	44860	<0.5	<0.5	
Chromium	ug/g	44869	<0.5	<0.5	
Copper	ug/g	44747	0.6	0.5	
Copper	ug/g	44760	0.4	0.4	
Copper	ug/g	44769	1.0	0.9	
Copper	ug/g	44778	0.8	0.9	
Copper	ug/g	44785	0.4	0.2	
Copper	ug/g	44794	0.4	0.3	
Copper	ug/g	44803	1.1	0.6	
Copper	ug/g	44812	0.85	1.1	
Copper	ug/g	44824	0.84	1.0	
Copper	ug/g	44833	1.1	0.96	
Copper	ug/g	44842	1.1	1.1	
Copper	ug/g	44850	1.2	1.5	*(3)
Copper	ug/g	44860	1.2	1.4	
Copper	ug/g	44869	0.75	0.77	
Iron	ug/g	44747	19	17	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Iron	ug/g	44760	16	26	
Iron	ug/g	44769	12	10	
Iron	ug/g	44778	6	6	
Iron	ug/g	44785	5	5	
Iron	ug/g	44794	12	11	
Iron	ug/g	44803	22	13	
Iron	ug/g	44812	22	23	
Iron	ug/g	44824	11	12	
Iron	ug/g	44833	13	11	
Iron	ug/g	44842	9	9	
Iron	ug/g	44850	6	6	
Iron	ug/g	44860	9	11	
Iron	ug/g	44869	7	8	
Mercury	ug/g	44747	<0.05	<0.05	
Mercury	ug/g	44760	0.07	0.09	
Mercury	ug/g	44769	0.09	0.09	
Mercury	ug/g	44778	0.07	0.06	
Mercury	ug/g	44785	0.08	0.07	
Mercury	ug/g	44794	<0.05	<0.05	
Mercury	ug/g	44803	0.11	0.06	
Mercury	ug/g	44812	0.13	0.078	*(4)
Mercury	ug/g	44824	0.092	0.094	
Mercury	ug/g	44833	0.67	0.67	
Mercury	ug/g	44833	0.66	0.66	
Mercury	ug/g	44842	0.27	0.24	
Mercury	ug/g	44842	0.26	0.26	
Mercury	ug/g	44850	0.32	0.30	
Mercury	ug/g	44860	0.25	0.24	
Mercury	ug/g	44869	0.65	0.75	
Manganese	ug/g	44747	27	24	
Manganese	ug/g	44760	44	38	
Manganese	ug/g	44769	63	67	
Manganese	ug/g	44778	31	39	
Manganese	ug/g	44785	54	58	
Manganese	ug/g	44794	24	26	
Manganese	ug/g	44803	56	54	
Manganese	ug/g	44812	0.4	0.3	
Manganese	ug/g	44824	0.3	0.5	
Manganese	ug/g	44833	0.5	0.8	
Manganese	ug/g	44842	1.0	0.9	
Manganese	ug/g	44850	0.8	0.8	
Manganese	ug/g	44860	0.9	0.9	
Manganese	ug/g	44869	0.3	1.2	*(5)
Molybdenum	ug/g	44747	<0.2	<0.2	
Molybdenum	ug/g	44760	<0.2	<0.2	
Molybdenum	ug/g	44769	<0.2	<0.2	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result
Molybdenum	ug/g	44778	<0.2	<0.2
Molybdenum	ug/g	44785	<0.2	<0.2
Molybdenum	ug/g	44794	<0.2	<0.2
Molybdenum	ug/g	44803	<0.2	<0.2
Molybdenum	ug/g	44812	<0.1	<0.1
Molybdenum	ug/g	44824	<0.1	<0.1
Molybdenum	ug/g	44833	<0.1	<0.1
Molybdenum	ug/g	44842	<0.1	<0.1
Molybdenum	ug/g	44850	<0.1	<0.1
Molybdenum	ug/g	44860	<0.1	<0.1
Molybdenum	ug/g	44869	<0.1	<0.1
Moisture	%	44747	49.67	47.90
Moisture	%	44775	58.17	52.76
Moisture	%	44785	46.30	43.69
Moisture	%	44795	54.30	54.91
Moisture	%	44800	69.28	63.73
Moisture	%	44827	75.94	75.26
Moisture	%	44843	76.54	76.38
Moisture	%	44855	76.82	76.92
Moisture	%	44861	78.37	79.61
Moisture	%	44866	78.99	78.40
Nickel	ug/g	44747	<0.1	<0.1
Nickel	ug/g	44760	<0.1	<0.1
Nickel	ug/g	44769	<0.1	<0.1
Nickel	ug/g	44778	<0.1	<0.1
Nickel	ug/g	44785	<0.1	<0.1
Nickel	ug/g	44794	<0.1	<0.1
Nickel	ug/g	44803	<0.1	<0.1
Nickel	ug/g	44812	<0.05	<0.05
Nickel	ug/g	44824	<0.05	<0.05
Nickel	ug/g	44833	<0.05	<0.05
Nickel	ug/g	44842	<0.05	<0.05
Nickel	ug/g	44850	<0.05	<0.05
Nickel	ug/g	44860	<0.05	<0.05
Nickel	ug/g	44869	<0.05	<0.05
Lead	ug/g	44747	<0.05	<0.05
Lead	ug/g	44760	0.08	0.05
Lead	ug/g	44769	<0.05	<0.05
Lead	ug/g	44778	<0.05	<0.05
Lead	ug/g	44785	<0.05	<0.05
Lead	ug/g	44794	0.22	<0.05
Lead	ug/g	44803	<0.05	<0.05
Lead	ug/g	44812	<0.01	<0.01
Lead	ug/g	44824	<0.01	<0.01
Lead	ug/g	44833	<0.01	<0.01
Lead	ug/g	44842	<0.01	<0.01

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Lead	ug/g	44850	<0.01	<0.01	
Lead	ug/g	44860	<0.01	0.09	*(6)
Lead	ug/g	44869	<0.01	<0.01	
Lead-210	Bq/g	44764	<0.004	<0.004	
Lead-210	Bq/g	44809	<0.004	<0.004	
Lead-210	Bq/g	44827	<0.004	<0.004	
Lead-210	Bq/g	44843	<0.004	<0.004	
Lead-210	Bq/g	44872	<0.004	<0.004	
Lead-210	Bq/g	50385	<0.02	<0.02	
Lead-210	Bq/g	51635	<0.02	<0.02	
Polonium-210	Bq/g	44764	0.002	<0.001	
Polonium-210	Bq/g	44809	<0.001	0.003	
Polonium-210	Bq/g	44827	0.004	0.004	
Polonium-210	Bq/g	44843	0.012	0.018	
Polonium-210	Bq/g	44872	0.007	0.011	
Polonium-210	Bq/g	46913	<0.0002	<0.0002	
Radium-226	Bq/g	44274	0.0003	0.0004	
Radium-226	Bq/g	44764	<0.003	<0.003	
Radium-226	Bq/g	44779	<0.003	<0.003	
Radium-226	Bq/g	44788	<0.004	<0.004	
Radium-226	Bq/g	44790	<0.003	<0.003	
Radium-226	Bq/g	44798	<0.003	<0.003	
Radium-226	Bq/g	44806	<0.002	<0.002	
Radium-226	Bq/g	44826	<0.0002	<0.0002	
Radium-226	Bq/g	44842	<0.0003	<0.0003	
Radium-226	Bq/g	44851	<0.0004	<0.0004	
Radium-226	Bq/g	44859	<0.0003	<0.0003	
Radium-226	Bq/g	44869	<0.0002	<0.0002	
Radium-226	Bq/g	44872	<0.0002	<0.0002	
Radium-226	Bq/g	46853	0.0012	0.0015	
Radium-226	Bq/g	48172	0.04	0.04	
Antimony	ug/g	44747	<0.2	<0.2	
Antimony	ug/g	44760	<0.2	<0.2	
Antimony	ug/g	44769	<0.2	<0.2	
Antimony	ug/g	44778	<0.2	<0.2	
Antimony	ug/g	44785	<0.2	<0.2	
Antimony	ug/g	44794	<0.2	<0.2	
Antimony	ug/g	44803	<0.2	<0.2	
Antimony	ug/g	44812	<0.1	<0.1	
Antimony	ug/g	44824	<0.1	<0.1	
Antimony	ug/g	44833	<0.1	<0.1	
Antimony	ug/g	44842	<0.1	<0.1	
Antimony	ug/g	44850	<0.1	<0.1	
Antimony	ug/g	44860	<0.1	<0.1	
Antimony	ug/g	44869	<0.1	<0.1	
Selenium	ug/g	44747	0.3	0.4	

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Selenium	ug/g	44760	0.5	0.6	
Selenium	ug/g	44769	0.2	0.2	
Selenium	ug/g	44778	0.2	0.2	
Selenium	ug/g	44785	0.2	0.2	
Selenium	ug/g	44794	0.2	0.2	
Selenium	ug/g	44803	0.6	0.4	
Selenium	ug/g	44812	0.84	0.53	
Selenium	ug/g	44824	0.46	0.47	
Selenium	ug/g	44833	0.48	0.47	
Selenium	ug/g	44842	0.71	0.70	
Selenium	ug/g	44850	0.65	0.70	
Selenium	ug/g	44860	0.50	0.52	
Selenium	ug/g	44869	0.77	0.87	
Tin	ug/g	44747	<0.1	<0.1	
Tin	ug/g	44760	<0.1	<0.1	
Tin	ug/g	44769	<0.1	<0.1	
Tin	ug/g	44778	<0.1	<0.1	
Tin	ug/g	44785	<0.1	<0.1	
Tin	ug/g	44794	<0.1	<0.1	
Tin	ug/g	44803	<0.1	<0.1	
Tin	ug/g	44812	<0.05	<0.05	
Tin	ug/g	44824	<0.05	<0.05	
Tin	ug/g	44833	<0.05	<0.05	
Tin	ug/g	44842	<0.05	<0.05	
Tin	ug/g	44850	<0.05	<0.05	
Tin	ug/g	44860	0.05	0.26	
Tin	ug/g	44869	<0.05	<0.05	
Strontium	ug/g	44747	330	320	
Strontium	ug/g	44760	630	520	
Strontium	ug/g	44769	260	310	
Strontium	ug/g	44778	170	160	
Strontium	ug/g	44785	370	420	
Strontium	ug/g	44794	420	400	
Strontium	ug/g	44803	180	200	
Strontium	ug/g	44812	1.0	0.6	
Strontium	ug/g	44824	2.8	6.4	*(7)
Strontium	ug/g	44833	0.9	1.6	*(8)
Strontium	ug/g	44842	2.4	2.2	
Strontium	ug/g	44850	2.1	2.7	
Strontium	ug/g	44860	1.6	1.7	
Strontium	ug/g	44869	0.6	3.5	*(9)
Thorium-230	Bq/g	44764	<0.005	<0.005	
Thorium-230	Bq/g	44779	<0.006	<0.006	
Thorium-230	Bq/g	44790	<0.006	<0.006	
Thorium-230	Bq/g	44799	<0.006	<0.006	
Thorium-230	Bq/g	44806	0.01	<0.005	

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Jan 18, 2019

This report was generated for samples included in SRC Group # 2018-13628

Duplicate Analysis	Units	Sample ID	First Result	Second Result
Thorium-230	Bq/g	44827	<0.0004	<0.0004
Thorium-230	Bq/g	44842	<0.0006	<0.0006
Thorium-230	Bq/g	44851	<0.0008	<0.0008
Thorium-230	Bq/g	44869	<0.0005	<0.0005
Thorium-230	Bq/g	44870	<0.0006	<0.0006
Thorium-230	Bq/g	44872	<0.0005	<0.0005
Thorium-230	Bq/g	47788	<0.005	<0.005
Titanium	ug/g	44747	0.1	0.2
Titanium	ug/g	44760	0.3	<0.1
Titanium	ug/g	44769	<0.1	<0.1
Titanium	ug/g	44778	<0.1	0.1
Titanium	ug/g	44785	<0.1	<0.1
Titanium	ug/g	44794	<0.1	<0.1
Titanium	ug/g	44803	<0.1	<0.1
Titanium	ug/g	44812	<0.05	<0.05
Titanium	ug/g	44824	<0.05	<0.05
Titanium	ug/g	44833	<0.05	<0.05
Titanium	ug/g	44842	<0.05	<0.05
Titanium	ug/g	44850	<0.05	<0.05
Titanium	ug/g	44860	<0.05	<0.05
Titanium	ug/g	44869	<0.05	<0.05
Thallium	ug/g	44747	<0.1	<0.1
Thallium	ug/g	44760	<0.1	<0.1
Thallium	ug/g	44769	<0.1	<0.1
Thallium	ug/g	44778	<0.1	<0.1
Thallium	ug/g	44785	<0.1	<0.1
Thallium	ug/g	44794	<0.1	<0.1
Thallium	ug/g	44803	<0.1	<0.1
Thallium	ug/g	44812	<0.05	<0.05
Thallium	ug/g	44824	<0.05	<0.05
Thallium	ug/g	44833	<0.05	<0.05
Thallium	ug/g	44842	<0.05	<0.05
Thallium	ug/g	44850	<0.05	<0.05
Thallium	ug/g	44860	<0.05	<0.05
Thallium	ug/g	44869	<0.05	<0.05
Uranium	ug/g	44747	<0.05	<0.05
Uranium	ug/g	44760	<0.05	<0.05
Uranium	ug/g	44769	<0.05	<0.05
Uranium	ug/g	44778	<0.05	<0.05
Uranium	ug/g	44785	<0.05	<0.05
Uranium	ug/g	44794	<0.05	<0.05
Uranium	ug/g	44803	0.10	0.06
Uranium	ug/g	44812	<0.005	<0.005
Uranium	ug/g	44824	<0.005	<0.005
Uranium	ug/g	44833	<0.005	<0.005
Uranium	ug/g	44842	<0.005	<0.005

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Duplicate Analysis	Units	Sample ID	First Result	Second Result	
Uranium	ug/g	44850	<0.005	<0.005	
Uranium	ug/g	44860	<0.005	<0.005	
Uranium	ug/g	44869	<0.005	<0.005	
Vanadium	ug/g	44747	<0.2	<0.2	
Vanadium	ug/g	44760	<0.2	<0.2	
Vanadium	ug/g	44769	<0.2	<0.2	
Vanadium	ug/g	44778	<0.2	<0.2	
Vanadium	ug/g	44785	0.2	0.2	
Vanadium	ug/g	44794	0.5	0.5	
Vanadium	ug/g	44803	<0.2	<0.2	
Vanadium	ug/g	44812	<0.1	<0.1	
Vanadium	ug/g	44824	<0.1	<0.1	
Vanadium	ug/g	44833	<0.1	<0.1	
Vanadium	ug/g	44842	<0.1	<0.1	
Vanadium	ug/g	44850	<0.1	<0.1	
Vanadium	ug/g	44860	<0.1	<0.1	
Vanadium	ug/g	44869	<0.1	<0.1	
Zinc	ug/g	44747	62	66	
Zinc	ug/g	44760	93	83	
Zinc	ug/g	44769	170	130	*(10)
Zinc	ug/g	44778	100	91	
Zinc	ug/g	44785	78	77	
Zinc	ug/g	44794	74	85	
Zinc	ug/g	44803	79	62	
Zinc	ug/g	44812	21	14	*(11)
Zinc	ug/g	44824	25	26	
Zinc	ug/g	44833	70	56	
Zinc	ug/g	44842	38	39	
Zinc	ug/g	44850	34	44	*(12)
Zinc	ug/g	44860	47	60	
Zinc	ug/g	44869	45	29	*(13)

*(1) (2) The Copper and Lead-210 results for the quality control samples were outside the specified limits. The data was reviewed and additional quality control measures in the same batch were within specified limits.

*(3) (10) (12) The duplicate results for Copper and Zinc were outside the laboratory's specified limits. The data was reviewed and all other quality control measures in the batch were within specified limits.

*(4) - (9) (11) (13) The duplicate results for Mercury, Manganese, Lead, Strontium and Zinc were outside the laboratory's specified limits. The data was reviewed and the sample was reanalyzed. All other quality control measures in the batch were within specified limits.

Overall, there were no other indications of problems with the analysis and the results were considered acceptable.

Roxane Ortmann - Quality Assurance Supervisor

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SRC Group # 2019-11570

Oct 03, 2019

CanNorth
Canada North Environmental Services Limited
211 Wheeler Street
Saskatoon, SK S7P 0A4
Attn: Kelly Wells

Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_FISH Rook I Environmental Baseline Studies

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All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor
Results from Lab Section 6 authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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Date Samples Received: Aug-15-2019

Client P.O.: 3008_19SUMM_FISH Rook I Environmental Baseline Studies

45699	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_01 *FISH BONES***
45700	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_02 *FISH BONES***
45701	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_03 *FISH BONES***

Analyte	Units	45699	45700	45701
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	0.2±0.1	0.2±0.1	<0.1
Barium	ug/g	16±2	8.0±1	12±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.18±0.05	0.10±0.05	0.15±0.05
Copper	ug/g	0.4±0.2	0.7±0.2	0.5±0.2
Iron	ug/g	4±3	5±3	6±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	47±5	28±3	45±4
Mercury	ug/g	0.12±0.08	0.22±0.1	0.14±0.08
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.2±0.1	0.3±0.2	0.2±0.1
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	190±20	98±10	170±20
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.2±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	100±10	130±10	96±10
Lab Section 4				
Lead-210	Bq/g	<0.004	<0.006	<0.005
Polonium-210	Bq/g	0.001±0.001	0.002±0.001	0.007±0.004
Radium-226	Bq/g	<0.003	<0.003	<0.002
Thorium-230	Bq/g	<0.006	<0.006	<0.004

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45699	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_01 *FISH BONES***
45700	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_02 *FISH BONES***
45701	**BEETLK 07/30/2019 BEETLK_20190717_FBO_NP_03 *FISH BONES***

Analyte	Units	45699	45700	45701
Lab Section 6				
Moisture	%	55.86±6	66.01±7	60.99±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45701
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45702	**FORRLK 07/20/2019 FORRLK_20190717_FBO_NP_01 *FISH BONES***
45703	**HODGLK 07/21/2019 HODGLK_20190717_FBO_LW_01 *FISH BONES***
45704	**HODGLK 07/21/2019 HODGLK_20190717_FBO_LW_02 *FISH BONES***

Analyte	Units	45702	45703	45704
Lab Section 2				
Aluminum	ug/g	<2	<2	5±4
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	0.2±0.1	<0.1
Barium	ug/g	15±2	6.9±1	11±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.25±0.05	0.16±0.05	0.20±0.05
Copper	ug/g	0.6±0.2	0.4±0.2	0.6±0.2
Iron	ug/g	10±4	17±6	34±8
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	42±4	19±3	60±6
Mercury	ug/g	0.17±0.09	0.09±0.07	0.06±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.5±0.2	1.2±0.3
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	240±20	700±70	850±80
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.2±0.1	<0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	140±10	79±10	73±10
Lab Section 4				
Lead-210	Bq/g	<0.005	<0.004	<0.005
Polonium-210	Bq/g	0.007±0.003	0.003±0.002	0.008±0.003
Radium-226	Bq/g	<0.003	<0.002	<0.002
Thorium-230	Bq/g	<0.006	<0.004	<0.005
Lab Section 6				
Moisture	%	61.13±6	56.29±6	58.43±6

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The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45705	**HODGLK 07/21/2019 HODGLK_20190717_FBO_LW_03 *FISH BONES***
45706	**HODGLK 07/21/2019 HODGLK_20190717_FBO_LW_04 *FISH BONES***
45707	**HODGLK 07/21/2019 HODGLK_20190717_FBO_LW_05 *FISH BONES***

Analyte	Units	45705	45706	45707
Lab Section 2				
Aluminum	ug/g	3±3	3±3	6±4
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	7.9±1	9.1±1	7.7±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.14±0.05	0.14±0.05	0.15±0.05
Copper	ug/g	0.7±0.2	0.4±0.2	0.5±0.2
Iron	ug/g	15±5	25±6	13±5
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	30±3	35±4	23±2
Mercury	ug/g	0.06±0.06	0.09±0.07	0.08±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	1.4±0.4	1.1±0.3	0.8±0.3
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	700±70	600±60	710±70
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	0.2±0.1	0.1±0.1	<0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	50±8	52±8	62±9
Lab Section 4				
Lead-210	Bq/g	<0.004	<0.005	0.01±0.006
Polonium-210	Bq/g	0.007±0.002	0.006±0.002	0.009±0.003
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.003	<0.003	<0.005
Lab Section 6				
Moisture	%	55.48±6	58.30±6	59.15±6

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45708	**HODGLK 07/20/2019 HODGLK_20190717_FBO_NP_01 *FISH BONES***
45709	**HODGLK 07/20/2019 HODGLK_20190717_FBO_NP_02 *FISH BONES***
45710	**HODGLK 07/20/2019 HODGLK_20190717_FBO_NP_03 *FISH BONES***

Analyte	Units	45708	45709	45710
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	<0.1
Barium	ug/g	6.0±0.9	10±1	9.5±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.12±0.05	0.19±0.05	0.21±0.05
Copper	ug/g	1.3±0.3	0.3±0.2	0.4±0.2
Iron	ug/g	10±4	5±3	4±3
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	18±3	28±3	34±3
Mercury	ug/g	0.31±0.1	0.07±0.06	0.06±0.06
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.8±0.3	0.3±0.2	0.4±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	260±30	490±50	480±50
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.2±0.1	0.1±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	72±10	86±10	110±10
Lab Section 4				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.001±0.001	0.001±0.001	0.003±0.002
Radium-226	Bq/g	<0.002	<0.003	<0.002
Thorium-230	Bq/g	<0.005	<0.006	<0.005
Lab Section 6				
Moisture	%	53.55±5	47.26±5	56.41±6

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45711 HODGLK 07/20/2019 HODGLK_20190717_FBO_NP_04 *FISH BONES*
45712 HODGLK 07/20/2019 HODGLK_20190717_FBO_NP_05 *FISH BONES*
45713 NAOMLK 07/25/2019 NAOMLK_20190717_FBO_NP_01 *FISH BONES*

Analyte	Units	45711	45712	45713
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	<0.1	<0.1	0.1±0.1
Barium	ug/g	15±2	7.5±1	9.3±1
Beryllium	ug/g	<0.05	<0.05	<0.05
Boron	ug/g	<2	<2	<2
Cadmium	ug/g	<0.05	<0.05	<0.05
Chromium	ug/g	<1	<1	<1
Cobalt	ug/g	0.22±0.05	0.15±0.05	0.12±0.05
Copper	ug/g	0.7±0.2	0.6±0.2	0.6±0.2
Iron	ug/g	8±4	9±4	11±4
Lead	ug/g	<0.05	<0.05	<0.05
Manganese	ug/g	39±4	22±2	34±3
Mercury	ug/g	0.27±0.1	0.96±0.2	0.36±0.1
Molybdenum	ug/g	<0.2	<0.2	<0.2
Nickel	ug/g	<0.1	<0.1	<0.1
Selenium	ug/g	0.4±0.2	0.8±0.3	0.3±0.2
Silver	ug/g	<0.05	<0.05	<0.05
Strontium	ug/g	530±50	370±40	140±10
Thallium	ug/g	<0.1	<0.1	<0.1
Tin	ug/g	<0.1	<0.1	<0.1
Titanium	ug/g	<0.1	0.1±0.1	0.2±0.1
Uranium	ug/g	<0.05	<0.05	<0.05
Vanadium	ug/g	<0.2	<0.2	<0.2
Zinc	ug/g	150±20	100±10	69±10
Lab Section 4				
Lead-210	Bq/g	<0.005	<0.005	<0.006
Polonium-210	Bq/g	0.005±0.002	0.004±0.002	0.009±0.003
Radium-226	Bq/g	<0.002	<0.002	<0.002
Thorium-230	Bq/g	<0.005	<0.004	<0.004
Lab Section 6				
Moisture	%	57.09±6	58.35±6	64.16±6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45712
This sample was reanalyzed for Mercury. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45714 BEETLK 07/30/2019 BEETLK_20190717_FFL_NP_01 *FISH FLESH*
45715 BEETLK 07/30/2019 BEETLK_20190717_FFL_NP_02 *FISH FLESH*
45716 BEETLK 07/30/2019 BEETLK_20190717_FFL_NP_03 *FISH FLESH*

Analyte	Units	45714	45715	45716
Lab Section 2				
Aluminum	ug/g	<2	<2	3±3
Antimony	ug/g	<0.01	<0.01	<0.01
Arsenic	ug/g	0.10±0.02	0.09±0.01	0.08±0.01
Barium	ug/g	0.07±0.02	0.05±0.02	0.07±0.02
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.05	<0.05	0.18±0.09
Cobalt	ug/g	<0.01	<0.01	<0.01
Copper	ug/g	0.61±0.2	0.89±0.2	1.2±0.2
Iron	ug/g	6±3	8±4	10±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.4±0.2	0.3±0.2
Mercury	ug/g	1.2±0.2	0.59±0.1	0.49±0.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.50±0.08	0.44±0.07	0.50±0.08
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.93±0.2	0.86±0.2	0.96±0.2
Thallium	ug/g	<0.005	<0.005	<0.005
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.2	<0.2	<0.2
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	61±6	29±4	42±6
Lab Section 4				
Lead-210	Bq/g	<0.004	<0.005	<0.004
Polonium-210	Bq/g	0.004±0.002	0.005±0.002	0.016±0.004
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0005	<0.0006	<0.0006
Lab Section 6				
Moisture	%	78.24±8	78.92±8	77.41±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45716
This sample was reanalyzed for Chromium and Polonium-210. Reanalysis confirms original results are within the expected measurement

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uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45717 FORRLK 07/20/2019 FORRLK_20190717_FFL_NP_01 *FISH FLESH*
45718 HODGLK 07/21/2019 HODGLK_20190717_FFL_LW_01 *FISH FLESH*
45719 HODGLK 07/21/2019 HODGLK_20190717_FFL_LW_02 *FISH FLESH*

Analyte	Units	45717	45718	45719
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.01	<0.01	<0.01
Arsenic	ug/g	0.11±0.03	0.11±0.03	0.07±0.01
Barium	ug/g	0.07±0.02	0.03±0.02	0.11±0.02
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	0.01±0.01
Chromium	ug/g	<0.05	<0.05	<0.05
Cobalt	ug/g	0.01±0.01	0.01±0.01	0.03±0.01
Copper	ug/g	0.92±0.2	0.91±0.2	1.0±0.2
Iron	ug/g	8±4	9±4	23±6
Lead	ug/g	0.03±0.02	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.3±0.2	1.0±0.2
Mercury	ug/g	0.85±0.2	0.39±0.1	0.23±0.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	0.79±0.1	1.2±0.1	3.0±0.3
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	0.86±0.2	3.4±0.5	6.8±0.7
Thallium	ug/g	<0.005	0.011±0.007	0.008±0.006
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.2	<0.2	<0.2
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	47±7	34±5	31±5
Lab Section 4				
Lead-210	Bq/g	<0.005	<0.004	<0.005
Polonium-210	Bq/g	0.011±0.003	0.001±0.0008	0.021±0.003
Radium-226	Bq/g	<0.0003	<0.0003	<0.0003
Thorium-230	Bq/g	<0.0006	<0.0005	<0.0006
Lab Section 6				
Moisture	%	79.68±8	76.38±8	78.51±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45717
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

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The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

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45720 HODGLK 07/21/2019 HODGLK_20190717_FFL_LW_03 *FISH FLESH*
45721 HODGLK 07/21/2019 HODGLK_20190717_FFL_LW_04 *FISH FLESH*
45722 HODGLK 07/21/2019 HODGLK_20190717_FFL_LW_05 *FISH FLESH*

Analyte	Units	45720	45721	45722
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.01	<0.01	<0.01
Arsenic	ug/g	0.10±0.02	0.06±0.01	0.10±0.02
Barium	ug/g	0.05±0.02	0.03±0.02	0.04±0.02
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	0.03±0.01	<0.01	0.05±0.01
Chromium	ug/g	<0.05	<0.05	<0.05
Cobalt	ug/g	0.04±0.01	0.03±0.01	0.03±0.01
Copper	ug/g	0.97±0.2	0.89±0.2	1.7±0.2
Iron	ug/g	28±7	19±6	24±6
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.7±0.2	0.6±0.2	0.7±0.2
Mercury	ug/g	0.20±0.1	0.51±0.1	0.28±0.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	3.4±0.3	2.8±0.3	1.8±0.2
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	3.4±0.5	3.9±0.6	2.6±0.4
Thallium	ug/g	0.010±0.007	0.009±0.007	0.012±0.008
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.2	<0.2	<0.2
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	19±3	22±3	21±3
Lab Section 4				
Lead-210	Bq/g	<0.005	<0.005	<0.005
Polonium-210	Bq/g	0.018±0.003	0.003±0.002	0.004±0.002
Radium-226	Bq/g	<0.0002	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0005	<0.0005	<0.0005
Lab Section 6				
Moisture	%	78.41±8	78.42±8	79.30±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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Results are reported on a dry basis.

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45723 HODGLK 07/20/2019 HODGLK_20190717_FFL_NP_01 *FISH FLESH*
45724 HODGLK 07/20/2019 HODGLK_20190717_FFL_NP_02 *FISH FLESH*
45725 HODGLK 07/20/2019 HODGLK_20190717_FFL_NP_03 *FISH FLESH*

Analyte	Units	45723	45724	45725
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.01	<0.01	<0.01
Arsenic	ug/g	0.08±0.01	0.09±0.01	0.14±0.04
Barium	ug/g	0.06±0.02	0.09±0.02	0.10±0.02
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	<0.05	0.24±0.1	0.14±0.08
Cobalt	ug/g	<0.01	0.01±0.01	<0.01
Copper	ug/g	0.88±0.2	0.84±0.2	1.0±0.2
Iron	ug/g	8±4	13±5	8±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.4±0.2	0.5±0.2	0.6±0.2
Mercury	ug/g	0.91±0.2	1.2±0.2	0.43±0.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	1.8±0.2	1.6±0.2	1.3±0.1
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	3.3±0.5	2.7±0.4	3.3±0.5
Thallium	ug/g	0.012±0.008	0.012±0.008	0.012±0.008
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.2	<0.2	<0.2
Uranium	ug/g	<0.005	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	27±4	20±3	35±5
Lab Section 4				
Lead-210	Bq/g	<0.004	<0.004	<0.004
Polonium-210	Bq/g	0.007±0.003	0.005±0.002	0.007±0.002
Radium-226	Bq/g	<0.0003	<0.0002	<0.0002
Thorium-230	Bq/g	<0.0007	<0.0005	<0.0005
Lab Section 6				
Moisture	%	77.56±8	77.01±8	76.05±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45724
This sample was reanalyzed for Chromium. Reanalysis confirms original results are within the expected measurement uncertainty.

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45726 HODGLK 07/20/2019 HODGLK_20190717_FFL_NP_04 *FISH FLESH*
45727 HODGLK 07/20/2019 HODGLK_20190717_FFL_NP_05 *FISH FLESH*
45728 NAOMLK 07/25/2019 NAOMLK_20190717_FFL_NP_01 *FISH FLESH*

Analyte	Units	45726	45727	45728
Lab Section 2				
Aluminum	ug/g	<2	<2	<2
Antimony	ug/g	<0.01	<0.01	<0.01
Arsenic	ug/g	0.10±0.02	0.14±0.04	0.11±0.03
Barium	ug/g	0.22±0.06	0.06±0.02	0.06±0.02
Beryllium	ug/g	<0.01	<0.01	<0.01
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	<0.01	<0.01	<0.01
Chromium	ug/g	0.08±0.06	<0.05	<0.05
Cobalt	ug/g	0.02±0.01	<0.01	<0.01
Copper	ug/g	2.2±0.3	0.97±0.2	0.76±0.2
Iron	ug/g	27±7	8±4	9±4
Lead	ug/g	<0.01	<0.01	<0.01
Manganese	ug/g	0.6±0.2	0.3±0.2	0.4±0.2
Mercury	ug/g	1.6±0.2	4.4±0.7	0.73±0.2
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	<0.05	<0.05	<0.05
Selenium	ug/g	1.1±0.1	1.7±0.2	0.49±0.07
Silver	ug/g	<0.01	<0.01	<0.01
Strontium	ug/g	5.8±0.6	2.6±0.4	1.0±0.2
Thallium	ug/g	0.009±0.007	0.012±0.008	0.008±0.006
Tin	ug/g	<0.05	<0.05	<0.05
Titanium	ug/g	<0.2	<0.2	<0.2
Uranium	ug/g	0.007±0.006	<0.005	<0.005
Vanadium	ug/g	<0.1	<0.1	<0.1
Zinc	ug/g	36±5	34±5	30±4
Lab Section 4				
Lead-210	Bq/g	<0.005	<0.004	<0.005
Polonium-210	Bq/g	0.009±0.003	0.002±0.001	0.020±0.003
Radium-226	Bq/g	<0.0003	<0.0004	<0.0003
Thorium-230	Bq/g	<0.0007	<0.0007	<0.0006
Lab Section 6				
Moisture	%	79.79±8	78.06±8	80.27±8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 45726
This sample was reanalyzed for Barium, Strontium, and Polonium-210.
Reanalysis confirms original results are within the expected measurement

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uncertainty.

Note for Sample # 45727
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 45728
This sample was reanalyzed for Polonium-210. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 0.6 °C upon receipt.

Results are reported on a dry basis.

APPENDIX C

DETAILED DATA TABLES

APPENDIX C: DETAILED DATA TABLES
LIST OF TABLES

Appendix C, Table 1

Sampling Station Coordinates and Sampling Dates for the Components of the Aquatic Environment Sampling Program Conducted in the Aquatic Study Area, 2018, 2019, and 2020

Survey Type	2018			2019				2020				Survey Area	Station	Easting	Northing	Station Depth (m)
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall					
Water Chemistry and Limnology (and Plankton, where applicable)	May 25, 2018	August 5, 2018	-	-	-	-	-	-	-	-	-	Broach Lake Area 1	-	595616	6399318	5.3
	-	-	September 23, 2018	February 24, 2019	May 24, 2019	July 18, 2019	September 25, 2019	March 19, 2020	June 2, 2020	July 22, 2020	September 19, 2020	Broach Lake Area 2[a]	-	598291	6397872	84.0
	-	August 11, 2018	September 21, 2018	February 23, 2019	May 24, 2019	July 19, 2019	September 24, 2019	March 17, 2020	June 3, 2020	July 24, 2020	September 20, 2020	Hodge Lake Area 1[a]	-	595278	6407955	38.0
	May 22, 2018	August 3, 2018	September 29, 2018	February 21, 2019	May 27, 2019	July 23, 2019	September 27, 2019	March 23, 2020	June 5, 2020	July 27, 2020	September 22, 2020	Jed Creek	-	607820	6396401	0.5
	May 22, 2018	August 3, 2018	September 29, 2018	February 20, 2019	May 28, 2019	July 27, 2019	September 30, 2019	March 23, 2020	June 6, 2020	July 27, 2020	September 24, 2020	Patterson Lake North Arm - East Basin Area	-	605548	6395581	20.0
	May 22, 2018	August 2, 2018	September 29, 2018	February 20, 2019	May 27, 2019	July 27, 2019	September 30, 2019	March 20, 2020	June 6, 2020	July 27, 2020	September 24, 2020	Patterson Lake North Arm - West Basin Are	-	601405	6393702	28.1
	May 22, 2018	August 2, 2018	September 29, 2018	February 21, 2019	May 27, 2019	July 27, 2019	September 30, 2019	March 20, 2020	June 6, 2020	July 28, 2020	September 25, 2020	Patterson Lake South Arm Area 1	-	602009	6389965	46.0
	May 23, 2018	August 3, 2018	October 10, 2018	February 20, 2019	May 25, 2019	July 30, 2019	September 26, 2019	March 21, 2020	June 7, 2020	July 25, 2020	September 25, 2020	Forrest Lake Area 1	-	605664	6390518	1.0
	May 23, 2018	August 3, 2018	October 1, 2018	February 20, 2019	May 29, 2019	July 29, 2019	October 2, 2019	March 22, 2020	June 8, 2020	July 25, 2020	September 23, 2020	Forrest Lake Area 2[a]	-	605809	6387523	22.2
	May 23, 2018	August 3, 2018	October 2, 2018	February 23, 2019	May 26, 2019	July 29, 2019	October 1, 2019	March 22, 2020	June 8, 2020	July 26, 2020	September 23, 2020	Beet Lake Area 1[a]	-	611774	6391467	31.5
	May 21, 2018	August 3, 2018	September 29, 2018	February 23, 2019	May 26, 2019	July 28, 2019	October 1, 2019	March 21, 2020	June 8, 2020	July 26, 2020	September 23, 2020	Beet Creek	-	613276	6390623	0.5
	May 21, 2018	August 3, 2018	September 25, 2018	February 22, 2019	May 26, 2019	July 28, 2019	October 1, 2019	March 21, 2020	June 7, 2020	July 26, 2020	September 23, 2020	Naomi Lake[a]	-	614068	6392179	5.7
	May 21, 2018	August 3, 2018	September 29, 2018	February 23, 2019	May 26, 2019	July 28, 2019	October 1, 2019	March 21, 2020	June 8, 2020	July 26, 2020	September 23, 2020	Clearwater River Area 1	-	616446	6390527	0.5
	-	August 4, 2018	-	-	-	-	-	-	-	-	-	Clearwater River Midfield 1	-	626659	6379963	0.4
	-	August 4, 2018	-	-	-	-	-	-	-	-	-	Clearwater River Midfield 2	-	626385	6379402	0.6
	-	-	-	-	May 17, 2019	-	-	-	-	-	-	Clearwater River Midfield 3	-	626719	6380370	0.5
	-	August 4, 2018	-	-	-	-	-	-	-	-	-	Mirror River	-	626852	6379585	0.7
	May 27, 2018	August 9, 2018	September 26, 2018	February 21, 2019	May 25, 2019	July 22, 2019	September 20, 2019	March 18, 2020	June 4, 2020	July 23, 2020	September 21, 2020	Lloyd Lake Inlet	-	625181	6360326	5.5
	May 27, 2018	August 9, 2018	September 26, 2018	February 21, 2019	May 25, 2019	July 22, 2019	September 19, 2019	March 18, 2020	June 4, 2020	July 23, 2020	September 21, 2020	Lloyd Lake Outlet	-	634260	6356781	0.5
	May 29, 2018	August 13, 2018	October 3, 2018	February 25, 2019	May 30, 2019	August 1, 2019	October 3, 2019	March 25, 2020	June 7, 2020	July 29, 2020	September 26, 2020	Warner Rapids	-	623077	6307920	0.4
	-	-	-	February 24, 2019	May 25, 2019	July 23, 2019	September 25, 2019	March 24, 2020	June 5, 2020	July 25, 2020	September 22, 2020	Lake D	-	600696	6385800	4.0
	May 24, 2018	-	-	-	May 28, 2019	July 26, 2019	September 28, 2019	-	June 5, 2020	July 27, 2020	September 22, 2020	Lake G Area 1	-	607274	6393857	0.6
	-	August 7, 2018	September 28, 2018	February 22, 2019	-	-	-	March 23, 2020	-	-	-	Lake G Area 2	-	607351	6393305	7.4
	May 24, 2018	-	-	-	May 28, 2019	July 26, 2019	September 30, 2019	-	June 5, 2020	July 27, 2020	September 22, 2020	Lake H Area 1	-	608558	6394931	0.6
	-	August 6, 2018	September 27, 2018	February 22, 2019	-	-	-	March 23, 2020	-	-	-	Lake H Area 2	-	609830	6395025	2.2
	-	-	-	February 25, 2019	May 25, 2019	July 23, 2019	September 24, 2019	March 17, 2020	June 3, 2020	July 24, 2020	September 20, 2020	Lake J	-	595102	6393249	2.7
Aquatic Macrophyte Chemistry	-	-	-	-	-	July 21, 2019	-	-	-	-	-	Broach Lake	1	595141	6399666	0.22
	-	-	-	-	-	July 21, 2019	-	-	-	-	-	Broach Lake	2	600434	6398462	0.12
	-	-	-	-	-	July 22, 2019	-	-	-	-	-	Broach Lake	3	595082	6397356	0.18
	-	-	-	-	-	July 22, 2019	-	-	-	-	-	Broach Lake	4	594642	6399658	0.30
	-	-	-	-	-	July 22, 2019	-	-	-	-	-	Broach Lake	5	594860	6399630	0.22
	-	-	-	-	-	July 26, 2019	-	-	-	-	-	Jed Creek	1	607985	6396379	0.30
	-	-	-	-	-	July 26, 2019	-	-	-	-	-	Jed Creek	2	607965	6396376	0.28
	-	-	-	-	-	July 26, 2019	-	-	-	-	-	Jed Creek	3	607939	6396364	0.16
	-	-	-	-	-	July 26, 2019	-	-	-	-	-	Jed Creek	4	607904	6396366	0.12
	-	-	-	-	-	July 26, 2019	-	-	-	-	-	Jed Creek	5	607863	6396386	0.10
	-	-	-	-	-	July 28, 2019	-	-	-	-	-	Beet Creek	1	613389	6390555	-
	-	-	-	-	-	July 28, 2019	-	-	-	-	-	Beet Creek	2	613340	6390548	-
	-	-	-	-	-	July 28, 2019	-	-	-	-	-	Beet Creek	3	613282	6390586	-
	-	-	-	-	-	July 28, 2019	-	-	-	-	-	Beet Creek	4	613286	6390675	-
	-	-	-	-	-	July 28, 2019	-	-	-	-	-	Beet Creek	5	613210	6390728	-
	-	-	-	-	-	July 24, 2019	-	-	-	-	-	Clearwater River Near-field	1	615259	6390777	-
	-	-	-	-	-	July 24, 2019	-	-	-	-	-	Clearwater River Near-field	2	615317	6390771	-
	-	-	-	-	-	July 24, 2019	-	-	-	-	-	Clearwater River Near-field	3	615510	6390764	-
	-	-	-	-	-	July 24, 2019	-	-	-	-	-	Clearwater River Near-field	4	615496	6390694	-
	-	-	-	-	-	July 24, 2019	-	-	-	-	-	Clearwater River Near-field	5	615567	6390756	-

Appendix C, Table 1

Sampling Station Coordinates and Sampling Dates for the Components of the Aquatic Environment Sampling Program Conducted in the Aquatic Study Area, 2018, 2019, and 2020

Survey Type	2018			2019				2020				Survey Area	Station	Easting	Northing	Station Depth (m)
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall					
Aquatic Macrophyte Chemistry	-	August 9, 2018	-	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	1	625622	6360830	0.27
	-	August 10, 2018	-	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	2	626172	6360561	0.05
	-	August 10, 2018	-	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	3	626661	6360356	0.30
	-	August 11, 2018	-	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	4	626224	6360543	0.10
	-	August 11, 2018	-	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	5	626127	6360604	0.05
	-	-	-	-	-	July 30, 2019	-	-	-	-	-	Patterson Creek	1	605110	6390545	0.08
	-	-	-	-	-	July 30, 2019	-	-	-	-	-	Patterson Creek	2	605181	6390556	0.12
	-	-	-	-	-	July 30, 2019	-	-	-	-	-	Patterson Creek	3	605250	6390573	0.08
	-	-	-	-	-	July 30, 2019	-	-	-	-	-	Patterson Creek	4	605277	6390551	0.15
	-	-	-	-	-	July 30, 2019	-	-	-	-	-	Patterson Creek	5	605285	6390488	0.25
Sediment and Benthic Invertebrates	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Broach Lake Area 1	1	595624	6399271	5.4
	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Broach Lake Area 1	2	595649	6399226	6.1
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Broach Lake Area 1	3	595661	6399173	6.3
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Broach Lake Area 1	4	595694	6399151	5.7
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Broach Lake Area 1	5	595268	6399123	5.8
Sediment and Benthic Invertebrates	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Hodge Lake Area 2	1	593776	6408523	7.8
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Hodge Lake Area 2	2	593702	6408552	7.8
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Hodge Lake Area 2	3	593855	6408562	8.0
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Hodge Lake Area 2	4	593794	6408666	7.8
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Hodge Lake Area 2	5	593691	6408635	7.9
Sediment[b]	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	1	607695	6395072	14.7
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	2	607724	6395091	14.6
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	3	607486	6394660	11.2
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	4	607499	6394642	11.3
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	5	607479	6394631	10.0
Benthic Invertebrates[b]	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	1	607492	6394397	5.3
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	2	607518	6394389	5.6
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	3	607547	6394376	5.8
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	4	607578	6394364	5.9
	-	-	October 2, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - East Basin Area	5	607616	6394380	6.3
Sediment and Benthic Invertebrates[c]	-	-	-	-	-	-	September 28, 2019	-	-	-	-	Patterson Lake North Arm - East Basin Area	1	607493	6394396	5.7
	-	-	-	-	-	-	September 28, 2019	-	-	-	-	Patterson Lake North Arm - East Basin Area	2	607519	6394390	6.0
	-	-	-	-	-	-	September 28, 2019	-	-	-	-	Patterson Lake North Arm - East Basin Area	3	607546	6394380	6.1
	-	-	-	-	-	-	September 28, 2019	-	-	-	-	Patterson Lake North Arm - East Basin Area	4	607580	6394366	6.3
	-	-	-	-	-	-	September 28, 2019	-	-	-	-	Patterson Lake North Arm - East Basin Area	5	607619	6394381	7.0
Sediment[b]	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	1	601412	6393710	30.3
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	2	601430	6393763	30.5
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	3	601455	6393807	29.5
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	4	601512	6393836	30.7
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	5	601539	6393799	29.4
Benthic Invertebrates[b]	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	1	602125	6393054	6.9
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	2	602082	6393024	6.3
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	3	602037	6392995	6.5
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	4	602001	6392957	6.0
	-	-	September 22, 2018	-	-	-	-	-	-	-	-	Patterson Lake North Arm - West Basin Are	5	601958	6392921	6.2

Appendix C, Table 1

Sampling Station Coordinates and Sampling Dates for the Components of the Aquatic Environment Sampling Program Conducted in the Aquatic Study Area, 2018, 2019, and 2020

Survey Type	2018			2019				2020				Survey Area	Station	Easting	Northing	Station Depth (m)
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall					
Sediment and Benthic Invertebrates[c]	-	-	-	-	-	-	September 26, 2019	-	-	-	-	Patterson Lake North Arm - West Basin Are	1	601412	6393712	30.0
	-	-	-	-	-	-	September 26, 2019	-	-	-	-	Patterson Lake North Arm - West Basin Are	2	601431	6393764	30.5
	-	-	-	-	-	-	September 26, 2019	-	-	-	-	Patterson Lake North Arm - West Basin Are	3	601454	6393809	29.2
	-	-	-	-	-	-	September 26, 2019	-	-	-	-	Patterson Lake North Arm - West Basin Are	4	601510	6393835	32.6
	-	-	-	-	-	-	September 26, 2019	-	-	-	-	Patterson Lake North Arm - West Basin Are	5	601539	6393802	30.5
Sediment and Benthic Invertebrates	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Patterson Lake South Arm Area 2	1	604287	6390882	5.5
	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Patterson Lake South Arm Area 2	2	604437	6391227	5.8
	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Patterson Lake South Arm Area 2	3	604185	6390862	6.0
	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Patterson Lake South Arm Area 2	4	604125	6390850	5.6
	-	-	September 23, 2018	-	-	-	-	-	-	-	-	Patterson Lake South Arm Area 2	5	604480	6391184	5.2
Sediment and Benthic Invertebrates	-	-	September 26, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 1	1	605659	6390511	0.9
	-	-	September 26, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 1	2	605697	6390523	1.1
	-	-	September 26, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 1	3	605715	6390505	1.1
	-	-	September 26, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 1	4	605687	6390487	1.1
	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 1	5	605744	6390482	1.2
Sediment[b]	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 3	1	605463	6387847	28.0
	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 3	2	605618	6387997	23.2
	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 3	3	605651	6388036	21.0
	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 3	4	605534	6387909	27.4
	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 3	5	605611	6387939	25.8
Benthic Invertebrates[b]	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 4	1	605302	6388007	6.0
	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 4	2	605370	6388055	6.0
	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 4	3	605431	6388100	6.3
	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 4	4	605489	6388144	6.8
	-	-	September 29, 2018	-	-	-	-	-	-	-	-	Forrest Lake Area 4	5	605564	6388213	6.8
Sediment and Benthic Invertebrates[c]	-	-	-	-	-	-	September 29, 2019	-	-	-	-	Forrest Lake Area 3	1	605464	6387847	27.1
	-	-	-	-	-	-	September 29, 2019	-	-	-	-	Forrest Lake Area 3	2	605619	6387996	21.8
	-	-	-	-	-	-	September 29, 2019	-	-	-	-	Forrest Lake Area 3	3	605649	6388034	20.2
	-	-	-	-	-	-	September 29, 2019	-	-	-	-	Forrest Lake Area 3	4	605534	6387911	25.6
	-	-	-	-	-	-	September 29, 2019	-	-	-	-	Forrest Lake Area 3	5	605610	6387938	24.5
Sediment and Benthic Invertebrates	-	-	September 30, 2018	-	-	-	-	-	-	-	-	Beet Lake Area 2	1	609199	6390843	7.6
	-	-	October 1, 2018	-	-	-	-	-	-	-	-	Beet Lake Area 2	2	609188	6390820	7.7
	-	-	October 1, 2018	-	-	-	-	-	-	-	-	Beet Lake Area 2	3	609181	6390790	7.8
	-	-	October 1, 2018	-	-	-	-	-	-	-	-	Beet Lake Area 2	4	609174	6390588	6.5
	-	-	October 1, 2018	-	-	-	-	-	-	-	-	Beet Lake Area 2	5	609181	6390659	7.5
Sediment and Benthic Invertebrates	-	-	-	February 22, 2019	-	-	-	-	-	-	-	Naomi Lake	1	614078	6392177	5.6
	-	-	-	February 22, 2019	-	-	-	-	-	-	-	Naomi Lake	2	614078	6392153	5.5
	-	-	-	February 22, 2019	-	-	-	-	-	-	-	Naomi Lake	3	614072	6392129	5.6
	-	-	-	February 22, 2019	-	-	-	-	-	-	-	Naomi Lake	4	614079	6392107	5.0
	-	-	-	February 22, 2019	-	-	-	-	-	-	-	Naomi Lake	5	614076	6392079	6.0
Sediment and Benthic Invertebrates	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Clearwater River Area 2	1	615338	6390792	0.7
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Clearwater River Area 2	2	615361	6390797	0.7
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Clearwater River Area 2	3	615381	6390788	0.8
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Clearwater River Area 2	4	615407	6390801	0.6
	-	-	September 24, 2018	-	-	-	-	-	-	-	-	Clearwater River Area 2	5	615450	6390838	0.4

Appendix C, Table 1

Sampling Station Coordinates and Sampling Dates for the Components of the Aquatic Environment Sampling Program Conducted in the Aquatic Study Area, 2018, 2019, and 2020

Survey Type	2018			2019				2020				Survey Area	Station	Easting	Northing	Station Depth (m)
	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall					
Sediment and Benthic Invertebrates	-	-	September 25, 2018	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	1	625186	6360325	5.5
	-	-	September 25, 2018	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	2	625254	6360245	5.7
	-	-	September 25, 2018	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	3	625303	6360146	5.8
	-	-	September 25, 2018	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	4	625392	6360101	5.8
	-	-	September 25, 2018	-	-	-	-	-	-	-	-	Lloyd Lake Inlet	5	625509	6360034	5.8
Sediment and Benthic Invertebrates	-	-	September 28, 2018	-	-	-	-	-	-	-	-	Lake G Area 2	1	607388	6393328	1.9
	-	-	September 28, 2018	-	-	-	-	-	-	-	-	Lake G Area 2	2	607379	6393281	1.9
	-	-	September 28, 2018	-	-	-	-	-	-	-	-	Lake G Area 2	3	607366	6393230	2.0
	-	-	September 28, 2018	-	-	-	-	-	-	-	-	Lake G Area 2	4	607398	6393186	2.0
	-	-	September 28, 2018	-	-	-	-	-	-	-	-	Lake G Area 2	5	607410	6393145	1.7
Sediment and Benthic Invertebrates	-	-	September 27, 2018	-	-	-	-	-	-	-	-	Lake H Area 2	1	609856	6394989	4.8
	-	-	September 27, 2018	-	-	-	-	-	-	-	-	Lake H Area 2	2	609860	6395048	6.1
	-	-	September 27, 2018	-	-	-	-	-	-	-	-	Lake H Area 2	3	609807	6395044	5.1
	-	-	September 27, 2018	-	-	-	-	-	-	-	-	Lake H Area 2	4	609767	6394996	5.3
	-	-	September 27, 2018	-	-	-	-	-	-	-	-	Lake H Area 2	5	609842	6394950	5.0

Note: Universal transverse mercator (UTM) coordinates are in NAD83 zone 12.

a) Phytoplankton and zooplankton samples were also collected at these locations during the 2018 fall survey.

b) At these locations, sediment chemistry and benthic invertebrate community samples were not co-located. Sediment characterization samples were collected at the benthic invertebrate sampling locations.

c) These areas were re-sampled for benthic invertebrates and sediment chemistry concurrently in 2019.

Appendix C, Table 2

Field Water Quality Measurements from the Aquatic Study Area, May 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 1							
25-May-18	5.3	5.3	0	11.8	9.97	37.5	6.76
			1	10.5	9.94	37.8	6.74
			2	10.2	10.22	37.7	6.73
			3	8.6	10.51	37.9	6.73
			4	7.9	10.31	37.7	6.75
			5	7.0	10.58	37.9	6.73
Jed Creek							
22-May-18	0.4	0.4	0	16.7	9.25	24.1	6.53
Patterson Lake North Arm - East Basin Area 1							
22-May-18	2.5	20.3	0	14.0	10.82	31.8	7.80
			1	13.9	10.82	31.8	7.87
			2	13.7	10.92	31.8	7.85
			3	10.0	11.86	31.9	7.66
			4	7.8	11.60	31.9	7.39
			5	7.4	11.46	32.0	7.26
			6	6.9	11.13	32.0	7.14
			7	6.8	11.05	32.0	7.08
			8	6.7	10.96	32.1	7.03
			9	6.6	10.83	32.1	6.99
			10	6.5	10.78	32.1	6.96
			11	6.4	10.70	32.1	6.93
			12	6.2	10.72	32.1	6.90
			13	6.0	10.65	32.1	6.88
			14	5.9	10.64	32.1	6.87
			15	5.7	10.57	32.2	6.85
			16	5.3	10.45	32.2	6.82
			17	5.3	10.40	32.3	6.80
			18	5.1	10.31	32.4	6.78
			19	5.0	10.15	32.5	6.75
			20	4.9	9.51	33.3	6.66
Patterson Lake North Arm - West Basin Area 1							
22-May-18	6.3	28.2	0	8.6	11.16	38.9	7.50
			1	8.4	11.25	39.0	7.35
			2	8.3	11.33	39.1	7.28
			3	7.7	11.39	39.0	7.27
			4	6.4	11.51	38.8	7.26
			5	4.9	11.63	38.7	7.24
			6	4.7	11.64	38.8	7.22
			7	4.5	11.6	38.8	7.20
			8	4.5	11.58	38.9	7.19
			9	4.4	11.56	38.9	7.18
			10	4.4	11.53	38.9	7.17
			11	4.3	11.50	38.9	7.16

Appendix C, Table 2

Field Water Quality Measurements from the Aquatic Study Area, May 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
22-May-18	6.3	28.2	12	4.3	11.49	38.9	7.15
			13	4.3	11.47	38.9	7.14
			14	4.3	11.43	38.9	7.13
			15	4.3	11.35	38.9	7.11
			16	4.2	11.28	38.9	7.09
			17	4.2	11.27	38.9	7.08
			18	4.2	11.25	38.9	7.07
			19	4.1	11.21	38.9	7.06
			20	4.1	11.19	38.9	7.05
			21	4.1	11.18	38.9	7.04
			22	4.1	11.18	38.9	7.04
			23	4.1	11.16	38.9	7.04
			24	4.0	11.12	38.9	7.03
			25	4.0	11.12	38.9	7.02
			26	4.1	11.12	38.9	7.02
			27	4.1	11.13	38.9	7.02
			28	4.1	11.13	38.9	7.02
Patterson Lake South Arm Area 1							
22-May-18	6.0	46.5	0	8.9	11.12	40.0	7.35
			1	8.7	11.19	40.1	7.32
			2	7.7	11.30	40.1	7.30
			3	6.5	11.44	40.0	7.26
			4	5.5	11.56	40.1	7.26
			5	5.1	11.49	40.1	7.22
			6	4.9	11.39	40.1	7.18
			7	4.7	11.32	40.1	7.15
			8	4.6	11.27	40.1	7.13
			9	4.6	11.28	40.2	7.11
			10	4.5	11.21	40.2	7.10
			11	4.5	11.18	40.2	7.09
			12	4.4	11.12	40.2	7.08
			13	4.4	11.08	40.2	7.07
			14	4.3	11.04	40.2	7.05
			15	4.3	11.02	40.2	7.04
			16	4.3	11.01	40.2	7.03
			17	4.3	11.00	40.2	7.03
			18	4.3	11.00	40.2	7.03
			19	4.3	10.98	40.2	7.02
			20	4.3	10.97	40.2	7.02
			21	4.3	10.97	40.2	7.01
			22	4.3	10.97	40.2	7.01
			23	4.3	10.96	40.2	7.00
			24	4.2	10.98	40.3	7.01

Appendix C, Table 2

Field Water Quality Measurements from the Aquatic Study Area, May 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
22-May-18	6.0	46.5	25	4.2	10.99	40.3	7.01
			26	4.2	10.99	40.3	7.01
			27	4.2	10.99	40.3	7.01
			28	4.1	10.99	40.3	7.01
			29	4.1	10.98	40.3	7.02
			30	4.1	10.97	40.3	7.02
			31	4.1	10.97	40.3	7.01
			32	4.1	10.96	40.3	7.01
			33	4.0	10.95	40.3	7.01
			34	4.0	10.95	40.3	7.01
			35	4.0	10.94	40.3	7.00
			36	4.0	10.93	40.3	7.00
			37	4.0	10.92	40.3	7.00
			38	4.0	10.91	40.3	6.99
			39	4.0	10.89	40.3	6.99
			40	4.0	10.88	40.3	6.98
			41	4.0	10.88	40.3	6.98
			42	4.0	10.87	40.3	6.98
			43	4.0	10.86	40.3	6.98
			44	4.0	10.85	40.3	6.97
			45	3.9	10.83	40.4	6.97
			46	3.9	10.07	44.2	6.92
Forrest Lake Area 1							
23-May-18	1.2	1.2	0	16.6	9.89	42.9	7.45
			0.5	14.5	10.37	41.5	7.43
			1	13.8	10.69	41.0	7.40
Forrest Lake Area 2							
23-May-18	8.8	22.5	0	10.6	11.12	48.5	7.35
			1	8.2	11.49	48.6	7.25
			2	8.0	11.54	48.7	7.24
			3	7.2	11.72	48.9	7.20
			4	6.9	11.77	48.9	7.20
			5	6.5	11.78	48.9	7.12
			6	6.0	11.85	48.8	7.18
			7	5.7	11.89	48.7	7.16
			8	5.6	11.94	48.7	7.16
			9	5.6	11.96	48.6	7.17
			10	5.0	12.05	48.4	7.18
			11	4.9	12.08	48.5	7.16
			12	4.8	12.08	48.5	7.16
			13	4.8	12.07	48.5	7.16
			14	4.5	12.08	48.7	7.15
			15	4.4	12.09	49.0	7.15

Appendix C, Table 2

Field Water Quality Measurements from the Aquatic Study Area, May 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Forrest Lake Area 2							
23-May-18	8.8	22.5	16	4.4	12.07	49.1	7.14
			17	4.3	12.02	49.2	7.14
			18	4.2	12.01	49.3	7.13
			19	4.1	11.95	49.3	7.12
			20	4.0	11.91	49.3	7.11
			21	4.0	11.84	49.3	7.10
			22	4.0	11.81	49.3	7.09
Beet Lake Area 1							
23-May-18	5.0	31.1	0	13.5	11.42	44.1	7.70
			1	13.4	11.45	44.1	7.66
			2	12.2	11.62	44.1	7.65
			3	12.4	11.73	44.0	7.66
			4	11.9	11.90	44.0	7.66
			5	8.7	12.61	44.0	7.63
			6	7.3	12.65	44.1	7.55
			7	6.9	12.64	44.3	7.44
			8	6.8	12.56	44.3	7.40
			9	6.5	12.41	44.3	7.35
			10	6.2	12.16	44.4	7.27
			11	6.1	11.98	44.4	7.20
			12	5.9	11.80	44.5	7.15
			13	5.7	11.69	44.5	7.11
			14	5.5	11.55	44.5	7.06
			15	5.5	11.52	44.5	7.04
			16	5.4	11.44	44.6	7.02
			17	5.3	11.40	44.6	7.00
			18	5.1	11.47	44.6	6.99
			19	4.9	11.41	44.7	6.97
			20	4.8	11.35	44.7	6.95
			21	4.7	11.29	44.7	6.94
			22	4.6	11.22	44.7	6.93
			23	4.6	11.21	44.7	6.91
			24	4.6	11.18	44.7	6.91
			25	4.6	11.12	44.7	6.90
			26	4.6	11.08	44.7	6.90
			27	4.6	11.10	44.7	6.89
			28	4.5	10.96	44.9	6.88
			29	4.5	10.85	45.0	6.87
			30	4.5	10.80	45.0	6.86
			31	4.5	10.65	45.2	6.77
Beet Creek							
21-May-18	0.9	0.9	0	15.8	10.65	41.8	7.43

Appendix C, Table 2

Field Water Quality Measurements from the Aquatic Study Area, May 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Naomi Lake							
21-May-18	1.5	5.5	0	17.6	9.78	22.8	7.43
			1	15.8	9.72	23.1	7.45
			2	15.1	9.25	23.3	7.27
			3	14.6	9.40	22.8	7.17
			4	11.9	9.50	23.0	7.08
			5	10.0	8.40	24.0	6.91
Clearwater River Area 1							
21-May-18	1.0	1.0	0	18.0	9.35	37.5	7.33
			0.5	18.0	9.36	37.6	7.27
Lloyd Lake Inlet							
27-May-18	2.0	5.5	0	16.0	8.42	28.6	6.80
			1	15.8	8.56	28.8	6.80
			2	14.3	9.27	29.7	6.83
			3	14.2	9.34	29.7	6.65
			4	14.1	9.25	29.7	6.51
			5	14.1	9.30	29.7	6.50
Lloyd Lake Outlet							
27-May-18	0.5	0.5	0	16.0	8.98	28.5	6.60
Warner Rapids							
29-May-18	0.5	0.5	0	15.0	8.15	28.1	5.87
Lake G Area 1							
24-May-18	0.6	0.6	0	20.2	8.77	33.2	7.28
Lake H Area 1							
24-May-18	0.6	0.6	0	20.9	9.90	37.0	8.05
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 1							
05-Aug-18	5.2	5.2	0	18.9	9.00	38.6	7.95
			1	18.9	9.00	38.6	7.94
			2	18.8	9.00	38.6	7.95
			3	18.8	8.99	38.6	7.94
			4	18.7	8.99	38.6	7.94
			5	18.5	9.01	38.7	7.92
Hodge Lake Area 1							
11-Aug-18	8.0	35	0	19.3	8.90	27.3	7.59
			1	19.3	8.92	27.3	7.54
			2	19.3	8.91	27.3	7.51
			3	19.3	8.90	27.3	7.51
			4	19.3	8.89	27.3	7.52
			5	19.3	8.89	27.3	7.53
			6	19.3	8.88	27.3	7.52
			7	19.3	8.87	27.3	7.51
			8	19.3	8.88	27.3	7.49
			9	17.6	9.32	27.1	7.50
			10	13.9	10.48	27.1	7.49
			11	10.7	11.34	27.1	7.43
			12	9.2	11.54	27.2	7.42
			13	7.9	11.48	27.2	7.36
			14	7.5	11.28	27.2	7.26
			15	7.1	11.10	27.3	7.21
			16	6.6	10.78	27.3	7.14
			17	6.3	10.54	27.3	7.05
			18	6.2	10.37	27.4	7.00
			19	6.2	10.15	27.4	6.94
			20	6.0	9.83	27.4	6.85
			21	5.9	9.58	27.5	6.79
			22	5.8	9.46	27.5	6.72
			23	5.7	9.38	27.5	6.66
			24	5.7	9.30	27.5	6.60
			25	5.7	9.26	27.5	6.53
			26	5.7	9.24	27.6	6.46
			27	5.6	9.08	27.6	6.36
			28	5.6	9.01	27.6	6.32
			29	5.6	8.92	27.6	6.29
			30	5.6	8.85	27.7	6.24
			31	5.6	8.75	27.7	6.20
			32	5.6	8.73	27.7	6.15
			33	5.6	8.69	27.7	6.11
			34	5.6	8.68	27.7	6.09

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Jed Creek							
03-Aug-18	0.5	0.5	0	19.6	8.58	26.8	7.33
Patterson Lake North Arm - East Basin Area 1							
03-Aug-18	5.7	20.5	0	20.6	9.08	31.9	8.12
			1	20.3	9.11	31.9	8.13
			2	20.2	9.12	31.8	8.14
			3	20.1	9.11	31.8	8.14
			4	20.1	9.08	31.8	8.13
			5	19.2	9.24	31.7	8.13
			6	17.9	9.46	31.6	8.14
			7	17.2	9.13	31.6	8.05
			8	16.8	9.16	31.5	7.99
			9	16.6	8.75	31.5	7.91
			10	16.3	8.27	31.5	7.83
			11	15.5	7.05	31.7	7.60
			12	13.7	5.44	31.7	7.30
			13	11.4	4.57	32.0	7.09
			14	10.3	3.79	32.3	6.93
			15	9.6	3.43	32.5	6.80
			16	9.0	2.91	32.9	6.70
			17	8.7	2.35	33.4	6.64
			18	8.4	1.90	33.9	6.57
			19	8.3	1.83	33.9	6.55
			20	8.0	1.27	34.9	6.52
Patterson Lake North Arm - West Basin Area 1							
02-Aug-18	9.8	30.2	0	19.9	8.94	38.5	7.92
			1	19.6	8.97	38.5	7.91
			2	19.4	8.99	38.5	7.91
			3	19.2	9.00	38.5	7.91
			4	19.1	9.01	38.5	7.97
			5	18.9	9.03	38.4	7.93
			6	18.0	9.22	38.3	7.96
			7	17.9	9.24	38.2	7.99
			8	17.8	9.27	38.2	8.02
			9	16.9	9.38	38.3	8.03
			10	15.2	10.08	38.1	8.06
			11	13.7	10.68	38.0	8.08
			12	10.2	11.72	37.7	8.04
			13	8.8	11.74	37.8	8.01
			14	7.7	11.75	37.9	7.96
			15	7.3	11.65	37.7	7.92
			16	6.8	11.20	37.7	7.87

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
02-Aug-18	9.8	30.2	17	6.3	10.99	37.8	7.81
			18	6.1	10.65	37.8	7.73
			19	6.1	10.53	37.8	7.68
			20	5.9	10.34	37.8	7.61
			21	5.9	10.23	37.8	7.57
			22	5.8	10.16	37.8	7.53
			23	5.7	10.06	37.8	7.49
			24	5.7	10.03	37.8	7.45
			25	5.7	9.92	37.8	7.42
			26	5.6	9.83	37.8	7.38
			27	5.5	9.68	37.8	7.35
			28	5.5	9.55	37.8	7.30
			29	5.5	9.40	37.9	7.26
			29.7	5.4	9.23	39.8	7.13
Patterson Lake South Arm Area 1							
02-Aug-18	8.0	46.3	0	19.8	8.97	39.3	7.89
			1	19.3	8.99	39.2	7.89
			2	19.3	9.00	39.2	7.88
			3	19.2	9.00	39.2	7.86
			4	19.1	9.01	39.2	7.90
			5	19.0	9.01	39.2	7.89
			6	18.7	9.13	39.2	7.92
			7	18.3	9.23	39.1	7.95
			8	17.7	9.26	39.0	7.97
			9	17.4	9.32	39.0	7.97
			10	17.1	9.32	39.0	7.98
			11	16.6	9.33	39.0	7.96
			12	15.6	9.57	39.0	7.92
			13	12.5	10.70	38.9	7.82
			14	9.4	10.68	39.1	7.73
			15	8.7	10.49	38.9	7.65
			16	8.1	10.37	39.0	7.58
			17	7.7	10.08	39.0	7.52
			18	7.5	10.04	38.9	7.47
			19	7.4	9.96	38.9	7.44
			20	7.2	9.80	39.0	7.40
			21	7.0	9.74	38.9	7.37
			22	6.8	9.66	39.0	7.33
			23	6.7	9.53	39.0	7.30
			24	6.6	9.34	39.0	7.25

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
02-Aug-18	8.0	46.3	25	6.4	9.27	39.0	7.19
			26	6.4	9.19	39.0	7.17
			27	6.3	9.16	39.0	7.16
			28	6.3	9.13	39.0	7.14
			29	6.2	9.12	39.0	7.12
			30	6.1	9.04	39.0	7.11
			32	6.0	8.89	39.0	7.08
			33	5.9	8.60	39.0	7.06
			34	5.8	8.52	39.0	7.03
			35	5.8	8.49	39.0	7.02
			36	5.7	8.34	39.0	7.00
			37	5.7	8.18	39.0	6.97
			38	5.7	8.07	39.0	6.95
			39	5.7	8.03	39.0	6.94
			40	5.6	7.99	39.0	6.93
			41	5.6	7.88	39.0	6.92
			42	5.6	7.73	39.0	6.91
			43	5.6	7.55	39.0	6.90
			44	5.6	7.47	39.1	6.88
			45	5.5	7.09	39.5	6.87
			46	5.5	6.92	39.8	6.84
Forrest Lake Area 1							
03-Aug-18	1.2	1.2	0	22.4	9.15	39.3	7.89
			0.5	22.4	9.15	39.3	7.90
			1	22.4	9.23	39.3	7.90
Forrest Lake Area 2							
03-Aug-18	16.0	23.0	0	20.1	9.05	48.1	7.95
			1	19.5	9.06	48.1	7.95
			2	19.3	9.08	48.1	7.95
			3	19.2	9.08	48.0	7.94
			4	19.1	9.07	48.0	7.94
			5	18.9	9.06	47.9	7.94
			6	18.9	9.06	47.9	7.94
			7	18.9	9.05	47.9	7.94
			8	18.9	9.04	47.9	7.94
			9	18.8	9.02	47.8	7.93
			10	18.5	9.05	47.9	7.93
			11	16.9	9.36	47.7	7.94
			12	15.0	9.96	47.9	7.95
			13	14.2	10.24	47.7	7.95
			14	11.3	11.11	48.6	7.96
			15	10.3	11.44	47.4	7.94
			16	9.6	11.57	47.6	7.93
			17	8.8	11.67	47.4	7.92

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Forrest Lake Area 2							
03-Aug-18	16.0	23.0	18	8.2	11.68	47.4	7.91
			19	7.8	11.61	47.5	7.90
			20	7.5	11.65	47.4	7.89
			21	7.2	11.57	47.5	7.87
			22	6.9	11.48	47.4	7.85
Beet Lake Area 1							
03-Aug-18	7.1	31.0	0	21.1	8.92	44.2	8.09
			1	20.8	8.93	44.2	8.08
			2	20.6	8.96	44.2	8.10
			3	20.3	8.99	44.1	8.10
			4	20.0	9.01	44.1	8.11
			5	19.7	9.05	44.1	8.12
			6	18.5	9.32	44.0	8.16
			7	18.0	9.40	43.8	8.16
			8	17.6	9.44	43.8	8.18
			9	16.8	9.46	43.7	8.16
			10	15.7	9.50	43.7	8.12
			11	13.2	9.79	43.6	8.05
			12	10.7	9.81	44.0	7.97
			13	9.1	9.54	43.8	7.90
			14	8.2	9.09	43.9	7.84
			15	7.7	8.62	44.0	7.77
			16	7.4	8.05	44.0	7.68
			17	6.9	7.91	44.1	7.59
			18	6.9	7.84	44.0	7.50
			19	6.6	7.20	44.2	7.45
			20	6.4	7.05	44.2	7.34
			21	6.3	6.68	44.4	7.26
			22	6.2	6.53	44.5	7.21
			23	6.0	6.41	44.5	7.18
			24	5.9	6.15	44.5	7.15
			25	5.8	5.70	44.9	7.09
			26	5.8	5.40	45.1	7.05
			27	5.7	4.56	45.9	6.99
			28	5.6	4.35	46.2	6.95
			29	5.5	3.45	47.5	6.90
			30	5.5	3.17	47.7	6.87
			31	5.5	2.93	48.9	6.83
Beet Creek							
03-Aug-18	0.8	0.8	0	24.3	8.94	44.9	8.22

Appendix C, Table 3

Field Water Quality Measurements from the Aquatic Study Area, August 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Naomi Lake							
03-Aug-18	2.5	5.0	0	23.3	8.62	27.0	7.57
			1	21.7	8.74	27.4	7.60
			2	20.8	8.74	27.2	7.63
			3	19.2	8.42	27.4	7.59
			4	17.6	7.54	27.5	7.49
Clearwater River Area 1							
03-Aug-18	1.0	1.0	0	24.1	9.45	39.0	8.34
Clearwater River Midfield 1							
04-Aug-18	0.4	0.4	0	20.8	7.78	32.4	7.34
Clearwater River Midfield 2							
04-Aug-18	0.6	0.6	0	20.4	7.66	29.5	7.17
Mirror River							
04-Aug-18	0.7	0.7	0	20.3	7.67	27.9	7.06
Lloyd Lake Inlet							
09-Aug-18	2.9	5.4	0	20.9	8.63	31.3	7.83
			1	20.6	8.63	31.4	7.80
			2	20.4	8.6	31.4	7.77
			3	20.4	8.44	31.3	7.73
			4	20.4	8.39	31.2	7.69
			5	20.4	8.23	30.7	7.61
			5.2	20.3	8.00	30.7	7.26
Lloyd Lake Outlet							
09-Aug-18	0.5	0.5	0	21.5	8.57	32.5	7.63
Warner Rapids							
13-Aug-18	0.5	0.5	0	17.5	8.97	32.5	7.39
Lake G Area 2							
07-Aug-18	1.1	2.3	0	20.9	8.94	39.1	8.32
			0.5	20.9	8.96	39.1	8.34
			1	20.9	8.95	39.1	8.31
			1.5	20.8	8.91	39.2	8.30
			2	20.8	8.80	39.1	8.25
Lake H Area 2							
06-Aug-18	2.5	7.9	0	20.1	8.31	38.8	7.78
			1	20.1	8.30	38.8	7.78
			2	20.1	8.28	38.8	7.78
			3	20.1	8.28	38.8	7.76
			4	20.1	8.26	38.8	7.73
			5	20.0	8.26	38.8	7.70
			6	20.0	8.25	38.8	7.72
			7	19.8	8.24	38.8	7.73
			7.6	19.6	8.25	38.8	7.59
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
23-Sep-18	7.0	84.0	0	8.7	10.69	37.9	7.48
			1	8.7	10.68	37.9	7.44
			2	8.7	10.67	37.9	7.43
			3	8.7	10.66	37.9	7.44
			4	8.7	10.65	37.9	7.35
			5	8.7	10.65	37.9	7.35
			6	8.7	10.63	37.9	7.35
			7	8.7	10.61	37.9	7.37
			8	8.7	10.60	37.9	7.37
			9	8.7	10.59	37.9	7.38
			10	8.7	10.58	37.9	7.38
			11	8.7	10.57	37.9	7.37
			12	8.7	10.55	37.9	7.41
			13	8.7	10.53	38.0	7.37
			14	8.7	10.51	37.9	7.38
			15	8.7	10.49	37.9	7.36
			16	8.7	10.46	38.0	7.37
			17	7.9	10.20	38.0	7.31
			18	7.7	10.12	38.0	7.24
			19	7.1	10.00	38.1	7.16
			20	6.4	10.11	38.1	7.08
			21	6.1	9.95	38.1	7.05
			22	6.0	9.89	38.1	6.99
			23	5.8	9.77	38.1	6.96
			24	5.5	9.45	38.2	6.94
			25	5.3	9.33	38.2	6.90
			26	5.1	9.05	38.2	6.79
			27	5.1	9.03	38.3	6.79
			28	5.0	9.04	38.2	6.78
			29	5.0	9.05	38.2	6.78
			30	4.9	9.07	38.2	6.78
			31	4.9	9.06	38.2	6.77
			32	4.8	8.97	38.3	6.77
			33	4.7	8.88	38.3	6.76
			34	4.7	8.83	38.3	6.76
			35	4.6	9.00	38.2	6.76
			36	4.6	9.07	38.3	6.76
			37	4.6	9.08	38.3	6.75
			38	4.6	9.04	38.3	6.76
			39	4.6	8.97	38.3	6.75
			40	4.6	8.87	38.3	6.75
			41	4.6	8.86	38.3	6.74
			42	4.6	8.82	38.3	6.75

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
23-Sep-18	7.0	84.0	43	4.6	8.75	38.3	6.73
			44	4.6	8.70	38.3	6.74
			45	4.6	8.68	38.3	6.73
			46	4.6	8.66	38.3	6.72
			47	4.6	8.65	38.3	6.72
			48	4.6	8.64	38.3	6.71
			49	4.6	8.58	38.4	6.70
			50	4.6	8.55	38.4	6.70
			51	4.5	8.47	38.4	6.70
			52	4.5	8.44	38.4	6.69
			53	4.5	8.40	38.4	6.67
			54	4.5	8.34	38.4	6.66
			55	4.5	8.35	38.4	6.66
			56	4.5	8.32	38.4	6.64
			57	4.5	8.30	38.4	6.62
			58	4.5	8.22	38.5	6.60
			59	4.5	8.10	38.5	6.59
			60	4.4	8.06	38.6	6.59
			61	4.4	8.05	38.5	6.58
			62	4.4	8.05	38.6	6.57
			63	4.4	8.03	38.6	6.56
			64	4.4	7.99	38.6	6.54
			65	4.4	7.95	38.6	6.53
Hodge Lake Area 1							
21-Sep-18	7.0	38.0	0	8.6	10.82	26.7	7.33
			1	8.6	10.78	26.9	7.29
			2	8.6	10.78	26.9	7.27
			3	8.6	10.79	27.0	7.24
			4	8.6	10.79	27.0	7.21
			5	8.6	10.77	27.0	7.17
			6	8.6	10.76	27.0	7.20
			7	8.6	10.75	27.0	7.17
			8	8.6	10.74	27.0	7.16
			9	8.6	10.73	27.0	7.16
			10	8.6	10.72	27.0	7.12
			11	8.6	10.71	27.0	7.13
			12	8.6	10.70	27.0	7.13
			13	8.6	10.69	27.0	7.17
			14	8.6	10.68	27.0	7.15
			15	8.6	10.67	27.0	7.13
			16	8.6	10.66	27.0	7.13
			17	8.6	10.64	27.0	7.13
			18	8.6	10.62	27.0	7.12

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
21-Sep-18	7.0	38.0	19	7.0	9.44	27.4	6.78
			20	6.3	8.92	27.4	6.60
			21	6.1	8.59	27.5	6.48
			22	6.0	8.51	27.5	6.47
			23	6.0	8.48	27.5	6.45
			24	5.8	8.33	27.6	6.46
			25	5.7	7.82	27.8	6.40
			26	5.7	7.71	27.8	6.39
			27	5.7	7.62	27.9	6.35
			28	5.7	7.58	27.9	6.36
			29	5.7	7.54	27.9	6.34
			30	5.7	7.52	27.9	6.36
			31	5.7	7.50	27.9	6.33
			32	5.7	7.47	27.9	6.36
			33	5.7	7.46	27.9	6.35
			34	5.6	7.48	27.9	6.34
			35	5.6	7.46	28.0	6.32
			36	5.6	7.43	28.0	6.32
			37	5.6	7.30	28.1	6.31
Jed Creek							
29-Sep-18	0.5	0.5	0	3.8	11.58	25.5	7.35
Patterson Lake North Arm - East Basin Area 1							
29-Sep-18	-	20.0	0	6.1	11.10	31.3	7.32
			1	6.1	11.08	31.3	7.32
			2	6.1	11.09	31.3	7.30
			3	6.1	11.08	31.3	7.30
			4	6.1	11.07	31.3	7.27
			5	6.1	11.04	31.3	7.28
			6	6.2	11.02	31.3	7.27
			7	6.2	11.00	31.3	7.28
			8	6.2	11.00	31.3	7.30
			9	6.1	10.98	31.3	7.30
			10	6.1	10.99	31.3	7.31
			11	6.1	10.98	31.3	7.28
			12	6.1	10.96	31.3	7.26
			13	6.2	10.95	31.3	7.28
			14	6.2	10.95	31.3	7.27
			15	6.2	10.94	31.3	7.28
			16	6.2	10.91	31.3	7.30
			17	6.2	10.91	31.3	7.28
			18	6.2	10.89	31.3	7.28
			19	6.2	10.87	31.3	7.27

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
29-Sep-18	7.0	28.1	0	6.9	10.59	37.7	7.38
			1	6.9	10.58	37.7	7.35
			2	6.9	10.57	37.7	7.35
			3	6.9	10.56	37.7	7.35
			4	6.9	10.55	37.7	7.35
			5	6.9	10.53	37.7	7.35
			6	6.9	10.52	37.7	7.35
			7	6.9	10.50	37.7	7.35
			8	6.9	10.49	37.7	7.32
			9	6.9	10.47	37.7	7.33
			10	6.9	10.46	37.7	7.33
			11	6.9	10.45	37.7	7.33
			12	6.9	10.43	37.7	7.33
			13	6.9	10.40	37.7	7.33
			14	6.9	10.38	37.7	7.31
			15	6.9	10.24	37.7	7.31
			16	6.8	10.20	37.7	7.31
			17	6.8	10.10	37.7	7.28
			18	6.8	10.05	37.7	7.25
			19	6.8	10.15	37.7	7.28
			20	6.8	10.25	37.7	7.28
			21	6.8	10.10	37.7	7.27
			22	6.7	10.05	37.7	7.26
			23	6.7	10.00	37.7	7.20
			24	6.7	9.88	37.7	7.19
			25	6.6	9.83	37.7	7.17
			26	6.6	9.78	37.7	7.15
			27	6.6	9.73	37.7	7.15
			28	6.6	9.69	37.8	7.14
Patterson Lake South Arm Area 1							
29-Sep-18	6.0	46.0	0	7.2	10.48	38.6	7.35
			1	7.2	10.46	38.6	7.37
			2	7.2	10.45	38.6	7.37
			3	7.2	10.44	38.6	7.37
			4	7.2	10.42	38.6	7.37
			5	7.2	10.41	38.6	7.37
			6	7.2	10.40	38.6	7.37
			7	7.2	10.38	38.6	7.37
			8	7.2	10.37	38.6	7.36
			9	7.2	10.36	38.6	7.36
			10	7.2	10.35	38.6	7.36
			11	7.2	10.34	38.6	7.36
			12	7.2	10.33	38.6	7.36

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
29-Sep-18	6.0	46.0	13	7.2	10.33	38.6	7.36
			14	7.2	10.30	38.6	7.37
			15	7.2	10.29	38.6	7.36
			16	7.2	10.28	38.6	7.36
			17	7.2	10.27	38.6	7.36
			18	7.2	10.26	38.6	7.35
			19	7.2	10.25	38.6	7.36
			20	7.2	10.24	38.6	7.37
			21	7.2	10.20	38.7	7.36
			22	7.1	10.10	38.7	7.35
			23	7.1	10.05	38.7	7.35
			24	7.0	9.92	38.7	7.32
			25	7.0	9.90	38.7	7.30
			26	7.0	9.83	38.7	7.28
			27	7.0	9.80	38.7	7.27
			28	7.0	9.74	38.7	7.25
			29	7.0	9.70	38.7	7.25
			30	7.0	9.68	38.7	7.25
			31	7.0	9.65	38.7	7.23
			32	7.0	9.56	38.7	7.22
			33	7.0	9.50	38.7	7.21
			34	7.0	9.42	38.7	7.20
			35	7.0	9.37	38.7	7.18
			36	7.0	9.31	38.7	7.16
			37	7.0	9.29	38.7	7.15
			38	7.0	9.26	38.7	7.13
			39	7.0	9.25	38.7	7.12
			40	6.9	9.23	38.7	7.11
			41	6.9	9.00	38.7	7.08
			42	6.6	8.76	38.8	7.05
			43	6.2	8.00	38.8	6.90
			44	5.9	6.33	39.3	6.78
			45	5.9	5.80	39.3	6.94
Forrest Lake Area 1							
10-Oct-18	1.0	1.0	0	3.2	12.94	42.8	8.26
			0.5	2.9	12.80	43.2	8.20
			1	3.4	12.74	43.2	8.23
Forrest Lake Area 2							
1-Oct-18	11.0	22.2	0	6.5	11.11	47.1	7.52
			1	6.5	11.11	47.1	7.50
			2	6.6	11.10	47.1	7.51
			3	6.6	11.09	47.1	7.49
			4	6.6	11.08	47.1	7.49

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Forrest Lake Area 2							
1-Oct-18	11.0	22.2	5	6.6	11.07	47.1	7.48
			6	6.6	11.06	47.1	7.49
			7	6.6	11.04	47.1	7.49
			8	6.6	11.04	47.1	7.50
			9	6.6	11.03	47.1	7.51
			10	6.6	11.02	47.1	7.50
			11	6.6	11.01	47.1	7.48
			12	6.6	10.99	47.1	7.49
			13	6.6	10.99	47.1	7.48
			14	6.6	10.98	47.1	7.49
			15	6.6	10.97	47.1	7.50
			16	6.6	10.96	47.1	7.50
			17	6.6	10.95	47.1	7.50
			18	6.6	10.93	47.1	7.50
			19	6.6	10.92	47.1	7.50
			20	6.6	10.91	47.1	7.49
			21	6.6	10.91	47.1	7.49
			22	6.6	10.90	47.1	7.50
Beet Lake Area 1							
2-Oct-18	5.0	31.5	0	5.7	11.38	43.6	7.45
			1	5.8	11.37	43.6	7.43
			2	5.8	11.35	43.6	7.42
			3	5.8	11.34	43.6	7.40
			4	5.8	11.34	43.6	7.38
			5	5.8	11.32	43.6	7.38
			6	5.8	11.31	43.6	7.38
			7	5.8	11.30	43.6	7.38
			8	5.8	11.29	43.6	7.38
			9	5.8	11.28	43.6	7.39
			10	5.8	10.27	43.6	7.40
			11	5.8	11.26	43.6	7.39
			12	5.8	11.25	43.6	7.39
			13	5.8	11.24	43.6	7.39
			14	5.8	11.24	43.6	7.38
			15	5.8	11.23	43.6	7.38
			16	5.8	11.22	43.7	7.38
			17	5.8	11.21	43.7	7.38
			18	5.8	11.20	43.7	7.38
			19	5.8	11.20	43.7	7.38
			20	5.8	11.19	43.7	7.38
			21	5.8	11.16	43.7	7.38
			22	5.8	11.15	43.7	7.38
			23	5.7	11.15	43.7	7.38

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
2-Oct-18	5.0	31.5	24	5.7	11.15	43.7	7.37
			25	5.6	11.14	43.7	7.37
			26	5.6	11.13	43.7	7.36
			27	5.6	11.12	43.7	7.35
			28	5.6	11.11	43.7	7.35
			29	5.6	11.11	43.7	7.34
			30	5.5	11.11	43.7	7.34
			31	5.5	10.48	43.9	7.35
Beet Creek							
29-Sep-18	0.5	0.5	0	1.3	11.88	45.5	7.35
Naomi Lake							
25-Sep-18	2.1	5.7	0	5.1	11.90	25.7	7.34
			1	5.1	11.93	25.6	7.33
			2	5.1	11.91	25.6	7.29
			3	5.1	11.88	25.6	7.25
			4	5.1	11.87	25.6	7.23
			5	5.1	11.88	25.6	7.28
			5.6	5.1	9.25	27.3	7.38
Clearwater River Area 1							
29-Sep-18	0.5	0.5	0	1.3	11.22	36.7	7.47
Lloyd Lake Inlet							
20-Sep-18	3.0	5.5	0	6.9	11.34	29.9	7.15
			1	6.9	11.32	29.9	7.09
			2	6.9	11.31	29.9	7.09
			3	6.9	11.30	29.9	7.09
			4	6.9	11.29	29.9	7.08
			5	6.9	10.75	29.9	7.09
Lloyd Lake Outlet							
26-Sep-18			0	6.4	11.51	30.2	7.4
Warner Rapids							
3-Oct-18	0.4	0.4	0	2.5	12.53	29.0	7.29
Lake G Area 2							
28-Sep-18	1.6	2.2	0	2.8	12.26	37.6	7.61
			0.5	2.9	12.26	37.6	7.59
			1	2.9	12.24	37.6	7.56
			1.5	2.9	12.22	37.6	7.55
			2	3.3	6.97	38.8	7.04
Lake H Area 2							
27-Sep-18	2.8	7.4	0	4.9	12.25	38.1	7.64
			1	4.9	12.22	38.1	7.57
			2	4.9	12.22	38.1	7.51
			3	4.9	12.20	38.1	7.50

Appendix C, Table 4

Field Water Quality Measurements from the Aquatic Study Area, September/October 2018

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lake H Area 2							
27-Sep-18	2.8	7.4	4	4.9	12.19	38.1	7.49
			5	4.9	12.19	38.1	7.48
			6	4.8	12.19	38.1	7.50
			7	4.8	12.17	38.1	7.49
			7.3	4.8	11.65	38.1	7.31
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2								
24-Feb-19	0.21	0.76	80	0	0.2	14.87	49.8	7.07
				Ice/Water Interface	0.2	14.77	49.0	7.11
				1	1.1	13.37	44.9	7.17
				2	1.7	12.51	41.7	7.18
				3	2.0	11.65	39.4	7.18
				4	2.2	11.38	38.9	7.18
				5	2.2	11.33	39.0	7.17
				6	2.3	11.28	39.1	7.16
				7	2.3	11.22	39.1	7.15
				8	2.4	11.17	39.2	7.13
				9	2.4	11.13	39.3	7.12
				10	2.5	11.06	39.3	7.13
				11	2.5	11.00	39.3	7.11
				12	2.5	10.86	39.6	7.07
				13	2.5	10.76	39.9	7.04
				14	2.5	10.71	39.7	7.05
				15	2.6	10.70	39.6	7.05
				16	2.6	10.68	39.5	7.04
				17	2.6	10.66	39.5	7.03
				18	2.7	10.63	39.5	7.03
				19	2.7	10.57	39.4	7.03
				20	2.7	10.56	39.3	7.03
				21	2.7	10.56	39.2	7.02
				22	2.8	10.57	39.2	7.03
				23	2.8	10.56	39.2	7.03
				24	2.8	10.55	39.1	7.03
				25	2.9	10.57	39.0	7.03
				26	2.9	10.60	39.0	7.04
				27	2.9	10.59	39.0	7.05
				28	3.0	10.58	39.0	7.04
				29	3.0	10.58	38.9	7.05
				30	3.0	10.55	38.9	7.05
				31	3.0	10.52	38.9	7.05
				32	3.1	10.46	39.0	7.05
				33	3.1	10.35	39.0	7.04
				34	3.1	10.34	39.0	7.04
				35	3.1	10.37	39.0	7.03
				36	3.2	10.33	39.0	7.03
				37	3.2	10.28	39.0	7.02
				38	3.2	10.28	38.9	7.03
				39	3.2	10.27	39.0	7.02
				40	3.3	10.20	39.0	7.02
				41	3.3	10.17	38.9	7.03
				42	3.3	10.12	39.0	7.01
				43	3.3	10.00	39.0	7.00
				44	3.4	9.93	39.0	6.99

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2								
24-Feb-19	0.21	0.76	80	45	3.4	9.93	39.0	6.99
				46	3.4	9.91	39.0	6.99
				47	3.4	9.86	39.0	6.99
				48	3.4	9.79	39.1	6.99
				49	3.4	9.70	39.1	6.96
				50	3.4	9.59	39.1	6.94
				51	3.4	9.51	39.2	6.94
				52	3.4	9.44	39.2	6.92
				53	3.4	9.36	39.3	6.92
				54	3.4	9.27	39.3	6.88
				55	3.4	9.20	39.3	6.87
				56	3.4	9.09	39.4	6.86
				57	3.4	9.01	39.4	6.86
				58	3.5	8.92	39.4	6.86
				59	3.5	8.85	39.5	6.85
				60	3.5	8.72	39.5	6.84
				61	3.5	8.62	39.6	6.83
				62	3.5	8.49	39.6	6.81
				63	3.5	8.42	39.6	6.80
				64	3.5	8.26	39.7	6.79
				65	3.5	8.06	39.9	6.77
				66	3.5	7.80	39.9	6.76
Hodge Lake Area 1								
23-Feb-19	0.23	0.72	37.6	0	0.1	14.15	33.1	7.05
				Ice/Water Interface	0.2	14.21	32.8	7.02
				1	1.2	12.47	28.8	7.08
				2	1.4	12.16	28.1	7.06
				3	1.5	12.10	28.1	7.02
				4	1.5	12.08	28.1	7.01
				5	1.5	12.06	28.1	7.00
				6	1.6	12.02	28.1	6.97
				7	1.6	12.02	28.2	6.95
				8	1.7	12.03	28.3	6.93
				9	1.7	11.98	28.2	6.93
				10	1.8	11.94	28.1	6.92
				11	1.8	11.90	28.2	6.92
				12	1.9	11.86	28.2	6.90
				13	1.9	11.82	28.3	6.90
				14	2.0	11.77	28.3	6.87
				15	2.0	11.71	28.4	6.86
				16	2.1	11.63	28.4	6.83
				17	2.1	11.60	28.4	6.84
				18	2.1	11.51	28.4	6.81
				19	2.1	11.29	28.6	6.77
				20	2.1	11.12	29.1	6.75
				21	2.2	10.96	29.1	6.72

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1								
23-Feb-19	0.23	0.72	37.6	22	2.2	10.91	28.9	6.70
				23	2.3	10.90	28.7	6.71
				24	2.3	10.87	28.5	6.70
				25	2.3	10.81	28.6	6.69
				26	2.4	10.61	28.7	6.67
				27	2.4	10.15	28.8	6.62
				28	2.4	9.95	29.0	6.59
				29	2.4	9.79	28.9	6.56
				30	2.5	9.65	29.0	6.54
				31	2.5	9.42	29.1	6.52
				32	2.5	9.22	29.2	6.49
				33	2.5	8.84	29.5	6.45
				34	2.5	8.63	29.8	6.43
				35	2.6	8.45	30.0	6.41
				36	2.6	8.20	30.2	6.38
				37	2.6	7.41	30.3	6.32
				38	2.6	6.89	30.4	6.28
Jed Creek								
21-Feb-19	0.28	0.02	0.68	0	0.1	10.37	33.6	6.42
				0.5	0.1	10.30	34.0	6.33
Patterson Lake North Arm - East Basin Area 1								
20-Feb-19	0.28	0.62	21.4	0	0.2	13.73	36.7	6.73
				Ice/Water Interface	0.7	13.31	34.4	6.77
				1	1.1	13.03	33.7	6.78
				2	1.3	12.70	33.8	6.76
				3	1.4	12.50	33.9	6.75
				4	1.4	12.43	33.9	6.73
				5	1.4	12.32	33.9	6.72
				6	1.5	12.23	34.0	6.73
				7	1.5	12.11	34.0	6.70
				8	1.5	12.00	34.0	6.69
				9	1.5	11.99	34.2	6.69
				10	1.5	11.86	34.0	6.66
				11	1.6	11.79	34.1	6.65
				12	1.6	11.66	34.1	6.63
				13	1.6	11.57	34.2	6.62
				14	1.6	11.62	34.4	6.63
				15	1.7	11.09	34.2	6.61
				16	1.8	10.48	34.3	6.59
				17	1.9	9.32	34.9	6.53
				18	2.1	7.20	36.4	6.45
				19	2.5	1.72	40.1	6.36
Patterson Lake North Arm - West Basin Area 1								
20-Feb-19	0.32	0.66	29.34	0	0.1	14.34	47.2	7.05
				Ice/Water Interface	0.1	14.48	47.3	7.06

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1								
20-Feb-19	0.32	0.66	29.34	1	0.5	13.16	45.5	7.09
				2	1.0	12.24	42.9	7.12
				3	1.6	11.34	41.1	7.14
				4	2.0	10.66	39.7	7.11
				5	2.0	10.57	39.7	7.12
				6	2.0	10.48	39.8	7.11
				7	2.0	10.47	39.8	7.12
				8	2.1	10.43	39.7	7.17
				9	2.1	10.36	39.6	7.16
				10	2.2	10.32	39.4	7.15
				11	2.2	10.27	39.3	7.12
				12	2.2	10.22	39.3	7.14
				13	2.3	10.18	39.2	7.12
				14	2.3	10.12	39.2	7.13
				15	2.3	10.09	39.1	7.12
				16	2.3	10.06	39.1	7.11
				17	2.4	9.98	39.3	7.07
				18	2.4	9.90	39.3	7.08
				19	2.4	9.91	39.1	7.07
				20	2.5	9.93	39.0	7.08
				21	2.5	9.93	38.8	7.11
				22	2.5	9.91	38.8	7.08
				23	2.6	9.89	38.8	7.07
				24	2.6	9.82	38.8	7.07
				25	2.6	9.74	38.8	7.07
				26	2.6	9.66	38.9	7.07
				27	2.7	9.55	38.9	7.05
				28	2.7	9.40	38.9	7.04
				28.5	2.7	8.64	40.4	6.95
Patterson Lake South Arm Area 1								
21-Feb-19	0.3	0.71	46.3	0	0.2	14.37	46.3	7.10
				Ice/Water Interface	0.2	14.56	46.8	7.08
				1	0.9	13.46	42.9	7.15
				2	1.4	12.55	40.9	7.18
				3	1.5	12.10	40.3	7.16
				4	1.7	11.98	40.4	7.14
				5	1.8	11.87	40.4	7.12
				6	1.9	11.76	40.5	7.11
				7	1.9	11.62	40.7	7.07
				8	1.9	11.54	40.8	7.05
				9	2.0	11.43	41.0	7.02
				10	2.0	11.36	41.2	7.01
				11	2.0	11.29	41.1	6.99
				12	2.0	11.24	41.2	6.98
				13	2.1	11.17	41.3	6.97
				14	2.1	11.10	41.2	6.96

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1								
21-Feb-19	0.3	0.71	46.3	15	2.1	11.04	41.1	6.95
				16	2.1	10.99	41.3	6.94
				17	2.1	10.96	41.1	6.93
				18	2.1	10.92	41.0	6.93
				19	2.2	10.90	40.9	6.92
				20	2.2	10.88	40.6	6.92
				21	2.2	10.87	40.2	6.92
				22	2.2	10.85	40.2	6.92
				23	2.3	10.82	40.1	6.92
				24	2.3	10.76	40.1	6.92
				25	2.3	10.72	40.0	6.92
				26	2.3	10.69	40.0	6.91
				27	2.3	10.61	40.1	6.91
				28	2.4	10.49	40.1	6.90
				29	2.4	10.35	40.2	6.89
				30	2.4	10.23	40.1	6.87
				31	2.4	9.94	40.3	6.85
				32	2.4	9.82	40.2	6.83
				33	2.5	9.77	40.2	6.82
				34	2.5	9.68	40.2	6.80
				35	2.5	9.35	40.3	6.78
				36	2.5	9.15	40.4	6.77
				37	2.6	9.21	40.3	6.76
				38	2.7	9.04	40.4	6.75
				39	2.7	8.17	40.7	6.71
				40	2.8	7.27	41.0	6.67
				41	2.9	5.88	41.5	6.56
				42	3.0	4.64	42.0	6.52
				43	3.1	3.06	42.8	6.43
				44	3.1	2.26	43.9	6.39
				45	3.3	0.57	56.7	6.51
Forrest Lake Area 1								
20-Feb-19	0.3	0.60	1.2	0	0.1	13.71	45.4	6.69
				0.5	0.1	12.38	45.8	6.51
				1	0.2	8.87	54.4	6.38
Forrest Lake Area 2								
20-Feb-19	0.3	0.72	22.5	0	0.3	14.06	53.9	7.23
				1	0.5	13.54	51.2	7.20
				2	0.8	13.03	49.6	7.14
				3	0.9	12.73	49.0	7.15
				4	1.0	12.53	48.7	7.08
				5	1.1	12.49	49.0	7.09
				6	1.2	12.80	51.0	7.07
				7	1.3	12.66	50.6	7.00
				8	1.3	12.60	50.4	7.00
				9	1.3	12.52	50.3	6.97

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Forrest Lake Area 2								
20-Feb-19	0.3	0.72	22.5	10	1.3	12.47	50.3	6.95
				11	1.4	12.41	50.1	6.90
				12	1.4	12.39	50.2	6.93
				13	1.4	12.34	50.1	6.86
				14	1.4	12.30	50.2	6.82
				15	1.5	12.27	50.2	6.80
				16	1.5	12.25	50.3	6.79
				17	1.5	12.18	50.2	6.80
				18	1.6	12.11	50.1	6.77
				19	1.7	12.01	50.4	6.75
				20	1.9	11.56	49.5	6.73
				21	2.3	10.99	49.0	6.74
				22	2.7	10.04	49.4	6.77
Beet Lake Area 1								
23-Feb-19	0.2	0.65	31.6	0	0.8	12.26	47.6	7.02
				1	1.2	12.80	46.3	7.18
				2	1.2	12.69	46.3	7.14
				3	1.2	12.63	46.4	7.09
				4	1.3	12.47	46.5	7.09
				5	1.3	12.43	46.6	7.02
				6	1.3	12.34	46.6	6.89
				7	1.3	12.29	46.7	6.84
				8	1.4	12.28	46.8	6.81
				9	1.4	12.22	46.9	6.73
				10	1.4	12.21	47.0	6.67
				11	1.4	12.15	46.9	6.62
				12	1.4	12.08	46.8	6.61
				13	1.4	12.00	46.8	6.57
				14	1.5	11.72	46.7	6.52
				15	1.5	11.27	46.6	6.49
				16	1.6	10.78	46.6	6.43
				17	1.7	10.18	46.8	6.35
				18	1.7	9.54	46.7	6.36
				19	1.7	9.10	46.8	6.39
				20	1.8	8.82	46.8	6.35
				21	1.8	8.19	46.8	6.35
				22	1.9	7.77	46.9	6.31
				23	1.9	7.20	46.9	6.32
				24	2.0	6.49	47.1	6.28
				25	2.0	6.33	47.3	6.27
				26	2.1	5.20	47.3	6.27
				27	2.1	4.37	48.3	6.30
				28	2.2	3.23	49.9	6.30
				29	2.6	1.22	58.3	6.40
				30	2.8	0.91	66.7	6.46

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Creek								
23-Feb-19	0.1	0.07	0.4	0	0.2	13.44	50.9	7.37
Naomi Lake								
22-Feb-19	0.2	0.70	5.4	0	0.2	9.70	28.5	7.80
				1	1.7	7.84	28.9	6.59
				2	2.5	8.12	28.0	6.35
				3	3.4	7.96	28.3	6.31
				4	4.0	6.51	29.5	6.24
				5	4.1	4.93	59.4	7.48
Clearwater River Area 1								
23-Feb-19	0.2	0.70	0.4	0	0.5	9.40	42.6	6.38
Lloyd Lake Inlet								
21-Feb-19	0.3	0.65	5.25	0	0.0	6.46	34.1	6.13
				1	0.2	6.46	34.2	6.07
				2	1.7	8.15	37.6	6.32
				3	2.1	8.18	38.4	6.31
				4	2.2	7.97	37.6	6.34
				5	2.2	7.15	46.0	6.37
Lloyd Lake Outlet								
21-Feb-19	0.3	0.35	3.5	0	0.3	6.85	35.4	6.01
				1	0.6	7.00	35.7	6.01
				2	0.9	6.87	36.0	6.03
				3	0.9	6.69	36.2	6.02
Warner Rapids								
25-Feb-19	0.5	0.65	0.8	0	0.0	9.99	36.9	5.76
Lake D								
24-Feb-19	0.25	0.60	4	0	2.3	7.90	57.0	7.14
				1	2.8	6.67	56.0	6.82
				2	4.2	4.91	60.2	6.58
				3	2.7	4.06	60.1	6.50
				4	2.7	3.05	61.0	6.59
Lake G Area 2								
22-Feb-19	0.21	0.61	2.18	0	0.1	6.77	35.2	6.71
				0.5	0.5	4.49	35.0	6.69
				1	3.0	1.28	42.1	6.74
				1.5	5.1	0.35	115.8	6.18
Lake H Area 2								
22-Feb-19	0.38	0.62	8.53	0	0.4	6.67	35.0	6.88
				Ice/Water Interface	0.3	5.88	34.5	6.82
				1	2.1	4.78	32.6	6.75
				2	3.7	3.39	33.1	6.64
				3	4.1	1.72	34.1	6.57
				4	4.3	1.82	35.7	6.54
				5	4.4	0.70	39.1	6.56
				6	4.5	0.62	41.8	6.57
				7	4.6	0.50	47.3	6.63
Lake H Area 2								
22-Feb-19	0.38	0.62	8.53	8	4.8	0.34	63.1	6.73

Appendix C, Table 5

Field Water Quality Measurements from the Aquatic Study Area, February 2019

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lake J								
25-Feb-19	0.2	0.50	2.7	0	1.2	6.76	12.0	5.85
				0.5	3.3	2.74	12.2	5.71
				1	3.8	1.79	12.9	5.71
				1.5	3.8	1.40	12.7	5.71
				2	4.1	0.81	13.0	5.78
SEQG[a]								
						6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
24-May-19	7.16	78.7	0	6.1	12.75	36.2	6.01
			1	5.8	12.80	36.2	6.30
			2	5.6	12.81	36.3	6.52
			3	5.1	12.83	36.4	6.57
			4	4.7	12.79	37.2	6.59
			5	4.7	12.78	37.0	6.59
			6	4.6	12.75	37.4	6.60
			7	4.5	12.66	38.1	6.60
			8	4.4	12.59	38.2	6.60
			9	4.3	12.57	38.3	6.60
			10	4.3	12.53	38.4	6.59
			11	4.2	12.45	38.7	6.58
			12	4.1	12.37	38.8	6.60
			13	4.1	12.35	38.9	6.60
			14	4.1	12.33	38.9	6.63
			15	4.1	12.31	38.8	6.61
			16	4.1	12.29	38.8	6.59
			17	4.1	12.27	38.8	6.62
			18	4.1	12.27	38.8	6.66
			19	4.1	12.27	38.8	6.68
			20	4.0	12.24	38.8	6.71
			21	4.0	12.23	38.9	6.72
			22	4.0	12.21	38.9	6.72
			23	4.0	12.21	38.9	6.74
			24	4.0	12.22	38.9	6.72
			25	4.0	12.21	38.9	6.74
			26	4.0	12.17	39.0	6.77
			27	4.0	12.16	39.0	6.82
			28	4.0	12.15	39.0	6.81
			29	4.0	12.15	39.0	6.81
			30	4.0	12.14	39.0	6.80
			31	4.0	12.13	39.0	6.83
			32	4.0	12.13	39.0	6.82
			33	4.0	12.12	39.0	6.82
			34	4.0	12.12	39.0	6.80
			35	4.0	12.11	39.0	6.85
			36	4.0	12.11	39.0	6.81
			37	4.0	12.11	39.0	6.81
			38	4.0	12.10	39.1	6.87
			39	4.0	12.10	39.0	6.84
			40	4.0	12.10	39.0	6.84
			41	4.0	12.10	39.1	6.86
			42	4.0	12.10	39.1	6.87

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
24-May-19	7.16	78.7	43	4.0	12.09	39.1	6.85
			44	4.0	12.09	39.1	6.85
			45	3.9	12.09	39.1	6.87
			46	3.9	12.08	39.1	6.86
			47	3.9	12.08	39.1	6.85
			48	3.9	12.07	39.1	6.88
			49	3.9	12.06	39.1	6.85
			50	3.9	12.03	39.1	6.88
			51	3.9	12.00	39.2	6.89
			52	3.9	11.96	39.2	6.88
			53	3.9	11.90	39.2	6.87
			54	3.9	11.85	39.2	6.86
			55	3.9	11.79	39.2	6.88
			56	3.9	11.72	39.2	6.86
			57	3.8	11.62	39.2	6.87
			58	3.8	11.58	39.2	6.86
			59	3.8	11.52	39.2	6.85
			60	3.8	11.46	39.3	6.87
			61	3.8	11.18	39.3	6.83
			62	3.8	10.92	39.4	6.81
			63	3.7	10.60	39.5	6.77
			64	3.7	10.23	39.6	6.75
			65	3.7	9.66	39.7	6.71
			66	3.7	9.56	39.7	6.64
			67	3.6	7.59	40.8	6.57
			68	3.6	7.03	41.0	6.49
			69	3.6	6.71	41.1	6.47
			70	3.6	5.96	41.1	6.43
			71	3.6	5.48	41.2	6.42
			72	3.6	5.19	42.3	6.40
			73	3.6	4.51	43.0	6.41
			74	3.6	3.39	44.2	6.40
			75	3.6	1.91	46.3	6.43
			76	3.6	0.70	52.0	6.48
Hodge Lake Area 1							
24-May-19	6.40	39.0	0	6.5	12.08	26.7	6.91
			1	6.2	12.07	26.8	6.89
			2	5.8	12.13	26.8	6.87
			3	5.1	12.14	26.8	6.87
			4	4.9	12.15	26.8	6.85
			5	4.8	12.15	26.8	6.83
			6	4.8	12.14	26.8	6.82
			7	4.8	12.13	26.8	6.81

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
24-May-19	6.40	39.0	8	4.7	12.10	26.8	6.82
			9	4.7	12.11	27.0	6.81
			10	4.6	12.11	27.1	6.80
			11	4.6	12.11	27.1	6.81
			12	4.6	12.10	27.1	6.81
			13	4.5	12.10	27.1	6.81
			14	4.5	12.10	27.2	6.80
			15	4.5	12.10	27.2	6.79
			16	4.5	12.10	27.2	6.80
			17	4.5	12.10	27.2	6.80
			18	4.4	12.10	27.3	6.80
			19	4.4	12.09	27.3	6.81
			20	4.4	12.09	27.3	6.79
			21	4.4	12.09	27.3	6.76
			22	4.4	12.09	27.3	6.77
			23	4.4	12.09	27.3	6.79
			24	4.4	12.08	27.3	6.77
			25	4.4	12.08	27.3	6.78
			26	4.4	12.07	27.3	6.78
			27	4.3	12.06	27.4	6.78
			28	4.3	12.05	27.4	6.78
			29	4.3	12.05	27.4	6.78
			30	4.3	12.05	27.4	6.79
			31	4.3	12.04	27.4	6.77
			32	4.3	12.04	27.5	6.77
			33	4.3	12.03	27.5	6.75
			34	4.3	12.03	27.5	6.75
			35	4.3	12.02	27.5	6.75
			36	4.3	12.01	27.5	6.75
			37	4.2	11.98	27.5	6.74
			38	4.2	11.71	27.8	6.71
			38.5	4.2	11.60	27.8	6.71
Jed Creek							
27-May-19	0.50	0.5	0	16.7	10.20	25.0	7.39
Patterson Lake North Arm - East Basin Area 1							
28-May-19	3.75	20.9	0	12.8	10.81	31.1	7.53
			1	12.3	10.86	31.0	7.54
			2	12.1	10.91	31.0	7.54
			3	12.0	10.90	31.0	7.53
			4	11.9	10.88	31.0	7.52
			5	11.3	10.95	31.0	7.48
			6	11.1	10.98	31.1	7.44
			6.5	8.5	11.13	30.8	7.14

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1							
28-May-19	3.75	20.9	7	6.8	11.04	30.8	7.05
			7.5	6.7	11.06	31.0	6.94
			8	6.2	11.00	30.9	6.91
			9	5.7	10.83	31.1	6.85
			10	5.3	10.67	31.2	6.81
			11	5.2	10.82	31.1	6.80
			12	5.1	10.89	31.1	6.79
			13	4.9	10.71	31.3	6.77
			14	4.8	10.47	31.6	6.74
			15	4.7	10.40	31.6	6.73
			16	4.7	10.35	31.6	6.71
			17	4.6	10.29	31.7	6.70
			18	4.6	10.21	31.8	6.69
			19	4.4	9.92	32.2	6.66
			20	4.3	9.42	32.8	6.62
Patterson Lake North Arm - West Basin Area 1							
27-May-19	7.30	29.6	0	6.7	11.98	37.3	7.40
			1	6.6	11.99	37.3	7.39
			2	6.5	11.98	37.3	7.39
			3	6.5	11.98	37.3	7.38
			4	6.3	11.98	37.3	7.39
			5	5.9	12.00	37.3	7.37
			6	5.9	11.96	37.4	7.37
			7	5.8	11.96	37.4	7.36
			8	5.7	11.96	37.5	7.38
			9	5.6	11.98	37.7	7.35
			10	5.5	11.98	37.8	7.35
			11	5.4	11.98	37.9	7.35
			12	5.2	11.94	37.7	7.34
			13	5.2	11.91	37.6	7.34
			14	4.9	11.90	37.8	7.32
			15	4.9	11.91	37.8	7.31
			16	4.9	11.90	37.9	7.30
			17	4.7	11.94	38.2	7.29
			18	4.7	11.93	38.3	7.29
			19	4.6	11.92	38.3	7.28
			20	4.6	11.91	38.3	7.28
			21	4.6	11.89	38.4	7.28
			22	4.6	11.88	38.4	7.27
			23	4.6	11.86	38.4	7.27
			24	4.5	11.83	38.5	7.27
			25	4.4	11.77	38.6	7.26
			26	4.4	11.75	38.6	7.24

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
27-May-19	7.30	29.6	27	4.3	11.71	38.6	7.24
			28	4.3	11.68	38.6	7.23
			29	4.3	11.63	38.7	7.22
			29.4	4.3	11.37	38.7	7.37
Patterson Lake South Arm Area 1							
27-May-19	6.80	46.8	0	7.7	11.70	37.7	7.37
			1	7.4	11.74	37.7	7.37
			2	7.2	11.75	37.8	7.37
			3	7.1	11.78	37.9	7.35
			4	7.1	11.77	37.9	7.35
			5	7.0	11.74	37.9	7.36
			6	7.0	11.73	37.9	7.35
			7	6.9	11.72	38.0	7.34
			8	6.9	11.72	38.0	7.33
			9	6.6	11.72	38.2	7.32
			10	6.5	11.75	38.3	7.31
			11	6.5	11.74	38.3	7.31
			12	6.5	11.74	38.3	7.31
			13	6.4	11.74	38.3	7.31
			14	6.2	11.72	38.2	7.30
			15	6.1	11.73	38.3	7.28
			16	6.0	11.73	38.4	7.27
			17	6.0	11.74	38.4	7.26
			18	6.0	11.73	38.4	7.26
			19	6.0	11.73	38.4	7.25
			20	6.0	11.73	38.4	7.24
			21	5.7	11.71	38.8	7.26
			22	5.6	11.67	39.2	7.25
			23	4.9	11.59	39.7	7.20
			24	4.8	11.58	39.8	7.18
			25	4.8	11.56	40.0	7.16
			26	4.7	11.56	40.0	7.16
			27	4.7	11.55	40.0	7.14
			28	4.7	11.54	40.0	7.13
			29	4.7	11.54	40.1	7.13
			30	4.6	11.53	40.1	7.13
			31	4.5	11.53	40.2	7.13
			32	4.4	11.49	40.3	7.12
			33	4.3	11.46	40.4	7.10
			34	4.2	11.43	40.5	7.08
			35	4.2	11.36	40.6	7.07
			36	4.1	11.31	40.6	7.06
			37	4.1	11.31	40.6	7.05

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
27-May-19	6.80	46.8	38	4.1	11.30	40.6	7.03
			39	4.1	11.28	40.7	7.03
			40	4.0	11.11	41.1	7.02
			41	4.0	10.95	41.6	7.00
			42	4.0	10.87	41.8	7.00
			43	4.0	10.84	41.8	6.98
			44	4.0	10.80	42.4	6.98
			45	4.0	10.63	42.8	6.99
			46	4.0	10.45	43.8	6.99
			46.5	4.0	10.03	43.1	7.44
Forrest Lake Area 1							
25-May-19	1.19	1.19	0	11.6	10.36	39.9	7.37
			0.5	11.6	10.21	39.9	7.39
			1	11.6	10.26	39.9	7.36
Forrest Lake Area 2							
29-May-19	7.20	23.3	0	8.2	11.91	46.7	7.55
			1	8.2	11.90	46.7	7.54
			2	6.8	12.04	46.5	7.55
			3	6.2	12.15	46.6	7.54
			4	5.8	12.19	46.7	7.53
			5	5.6	12.20	46.7	7.53
			6	5.5	12.19	46.9	7.52
			7	5.3	12.18	47.0	7.52
			8	5.3	12.18	47.0	7.52
			9	4.9	12.14	47.3	7.50
			10	4.7	12.16	47.3	7.49
			11	4.9	12.16	47.3	7.48
			12	4.5	12.13	47.3	7.48
			13	4.5	12.12	47.4	7.47
			14	4.4	12.09	47.4	7.47
			15	4.3	12.08	47.5	7.46
			16	4.2	12.07	47.5	7.45
			17	4.2	12.06	47.6	7.45
			18	4.1	12.04	47.6	7.44
			19	4.1	12.03	47.6	7.43
			20	4.1	12.01	47.6	7.43
			21	4.1	11.98	47.6	7.43
			22	4.1	11.94	47.6	7.43
			23	4.1	11.67	47.6	7.31
Beet Lake Area 1							
26-May-19	4.50	31.3	0	9.6	11.48	43.0	7.52
			1	9.3	11.51	43.0	7.52
			2	8.8	11.60	43.1	7.50

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
26-May-19	4.50	31.3	3	8.5	11.64	43.1	7.48
			4	8.2	11.68	43.2	7.48
			5	8.2	11.67	43.2	7.48
			6	8.1	11.64	43.1	7.48
			7	8.0	11.62	43.1	7.45
			8	7.9	11.61	43.2	7.45
			9	7.4	11.66	43.2	7.42
			10	6.8	11.67	43.2	7.40
			11	6.8	11.64	43.2	7.37
			12	6.6	11.66	43.2	7.34
			13	6.4	11.66	43.2	7.32
			14	6.2	11.61	43.3	7.30
			15	6.1	11.57	43.3	7.28
			16	6.0	11.54	43.4	7.27
			17	6.0	11.52	43.4	7.25
			18	5.9	11.51	43.4	7.24
			19	5.8	11.45	43.4	7.23
			20	5.7	11.40	43.5	7.22
			21	5.5	11.34	43.5	7.20
			22	5.2	11.25	43.6	7.18
			23	5.0	11.13	43.7	7.14
			24	4.9	11.09	43.8	7.11
			25	4.7	10.92	44.0	7.07
			26	4.5	10.79	44.1	7.03
			27	4.5	10.74	44.1	7.02
			28	4.4	10.61	44.2	6.99
			29	4.4	10.56	44.3	6.98
			30	4.4	10.53	44.4	6.96
			30.5	4.4	10.38	44.3	7.33
Beet Creek							
26-May-19	0.56	0.56	0	10.4	11.21	42.8	7.47
Naomi Lake							
26-May-19	1.95	5.1	0	13.9	10.08	23.3	7.43
			1	13.8	10.08	23.4	7.45
			2	13.6	10.07	23.3	7.43
			3	12.8	10.00	23.6	7.40
			4	12.0	9.79	23.7	7.39
			5	10.3	8.81	24.3	7.11
Clearwater River Area 1							
26-May-19	0.98	0.98	0	12.2	10.44	38.3	7.43
Lloyd Lake Inlet							
25-May-19	2.40	5.3	0	9.6	10.95	31.6	7.14
			1	9.6	10.96	31.6	7.13

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lloyd Lake Inlet							
25-May-19	2.40	5.3	2	9.3	10.92	31.7	7.11
			3	9.1	10.87	31.7	7.06
			4	9.0	10.88	31.7	7.04
			4.8	8.1	10.77	31.9	6.99
Lloyd Lake Outlet							
25-May-19	1.70	1.70	0	13.6	10.27	28.8	7.34
			0.5	13.6	10.29	28.9	7.34
			1	13.6	10.27	28.8	7.34
			1.5	13.6	10.29	28.8	7.34
Warner Rapids							
30-May-19	0.26	0.26	0	16.1	8.34	30.6	7.30
Lake D							
25-May-19	3.25	3.85	0	15.1	8.67	41.1	7.64
			0.5	15.1	8.74	41.1	7.71
			1	15.1	8.66	41.1	7.72
			1.5	15.0	8.80	41.0	7.75
			2	15.0	8.75	41.0	7.79
			2.5	14.9	8.76	41.0	7.81
			3	14.9	8.88	40.9	7.83
			3.5	14.8	8.87	40.8	7.85
Lake G Area 1							
28-May-19	0.57	0.57	0	17.9	9.48	36.8	7.51
Lake H Area 2							
28-May-19	2.20	8.30	0	16.3	9.79	38.4	8.16
			1	16.1	9.61	38.4	8.18
			2	15.3	9.52	38.4	8.22
			3	15.3	9.59	38.5	8.23
			4	15.2	9.58	38.5	8.26
			5	15.1	9.68	38.3	8.27
			6	14.0	9.30	38.4	7.82
			7	13.7	9.03	38.3	7.66
			8	12.4	7.03	56.5	6.93
Lake J							
25-May-19	1.92	1.92	0	14.5	8.20	7.0	6.36
			0.5	14.6	8.12	7.0	6.44
			1	14.5	8.08	7.0	6.47
			1.5	14.5	8.33	6.9	6.49
			1.8	14.5	8.33	6.9	6.51

Appendix C, Table 6

Field Water Quality Measurements from the Aquatic Study Area, May 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Broach Lake Area 2							
18-Jul-19	7.60	78.3	0	17.0	9.74	39.4	6.02
			1	16.9	9.74	39.3	6.57
			2	16.9	9.78	39.3	6.75
			3	16.8	9.79	39.3	6.86
			4	16.1	10.08	39.2	6.94
			5	16.0	10.10	39.2	6.98
			6	15.6	10.17	39.2	7.09
			7	15.4	10.23	39.2	7.17
			8	14.8	10.48	39.1	7.28
			9	13.9	10.85	39.1	7.47
			10	13.2	11.06	39.0	7.52
			11	11.6	11.44	39.0	7.51
			12	11.0	11.60	38.9	7.48
			13	9.9	11.98	38.9	7.47
			14	9.3	12.13	38.9	7.42
			15	9.1	12.14	38.9	7.26
			16	8.7	12.17	38.9	7.18
			17	8.0	11.96	38.9	6.92
			18	7.3	11.52	39.0	6.74
			19	6.7	11.15	39.1	6.64
			20	6.4	10.93	39.1	6.54
			21	6.3	10.86	39.2	6.43
			22	6.0	10.70	39.3	6.39
			23	5.8	10.65	39.3	6.35
			24	5.5	10.37	39.4	6.34
			25	5.4	10.37	39.5	6.31
			26	5.3	10.40	39.5	6.30
			27	5.3	10.31	39.6	6.26
			28	5.2	10.33	39.6	6.27
			29	5.1	10.24	39.7	6.27
			30	5.0	10.19	39.7	6.30
			31	5.0	10.18	39.7	-
			32	5.0	10.16	39.8	-
			33	4.9	10.16	39.8	-
			34	4.9	10.18	39.8	-
			35	4.9	10.20	39.8	-
			36	4.8	10.20	39.8	-
			37	4.8	10.23	39.8	-
			38	4.8	10.27	39.8	-
			39	4.8	10.26	39.9	-
			40	4.7	10.30	39.8	-
			41	4.7	10.30	39.9	-
			42	4.7	10.30	39.9	-

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Broach Lake Area 2							
18-Jul-19	7.60	78.3	43	4.7	10.33	39.9	-
			44	4.7	10.33	39.9	-
			45	4.7	10.31	39.9	-
			46	4.6	10.30	39.9	-
			47	4.6	10.28	39.9	-
			48	4.6	10.29	39.9	-
			49	4.6	10.31	39.9	-
			50	4.6	10.32	39.9	-
			51	4.6	10.33	39.9	-
			52	4.6	10.33	39.9	-
			53	4.6	10.32	39.9	-
			54	4.6	10.31	40.0	-
			55	4.5	10.30	40.0	-
			56	4.5	10.29	40.0	-
			57	4.5	10.27	40.0	-
			58	4.5	10.25	40.0	-
			59	4.5	10.24	40.0	-
			60	4.5	10.23	40.0	-
			61	4.5	10.17	40.0	-
			62	4.5	10.16	40.0	-
			63	4.5	10.14	40.1	-
			64	4.5	10.13	40.1	-
			65	4.5	10.08	40.1	-
			66	4.5	10.05	40.1	-
			67	4.5	10.03	40.1	-
			68	4.5	10.02	40.1	-
			69	4.5	10.02	40.2	-
			70	4.5	9.96	40.2	-
			71	4.5	9.92	40.2	-
			72	4.5	9.90	40.2	-
			73	4.5	9.88	40.2	-
			74	4.5	9.87	40.3	-
			75	4.5	9.86	40.3	-
			76	4.5	9.83	40.3	-
			77	4.5	9.78	40.4	-
			78	4.5	7.67	45.8	-
Hodge Lake Area 1							
19-Jul-19	9.03	37.81	0	17.9	9.21	28.3	6.65
			1	17.9	9.22	28.3	6.67
			2	17.8	9.23	28.3	6.70
			3	17.6	9.27	28.2	6.70
			4	17.4	9.30	28.2	6.72
			5	17.3	9.32	28.2	6.74

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Hodge Lake Area 1							
19-Jul-19	9.03	37.81	6	17.3	9.36	28.2	6.75
			7	15.5	9.92	28.1	6.79
			8	14.3	10.18	28.0	6.80
			9	13.6	10.37	28.0	6.82
			10	12.1	10.90	27.9	6.82
			11	10.1	11.41	27.9	6.77
			12	9.2	11.49	27.9	6.76
			13	8.7	11.45	28.0	6.71
			14	8.2	11.33	28.0	6.67
			15	8.0	11.19	28.0	6.58
			16	7.7	11.20	28.0	6.52
			17	7.5	10.73	28.1	6.38
			18	7.3	10.52	28.1	6.34
			19	7.1	10.42	28.2	6.30
			20	7.0	10.32	28.2	6.20
			21	6.8	10.22	28.2	6.15
			22	6.7	10.10	28.3	6.12
			23	6.6	9.98	28.3	6.10
			24	6.5	9.88	28.3	6.06
			25	6.5	9.83	28.3	6.05
			26	6.4	9.74	28.4	6.05
			27	6.4	9.75	28.4	6.03
			28	6.4	9.61	28.4	6.03
			29	6.3	9.53	28.4	6.02
			30	6.3	9.50	28.4	6.01
			31	6.3	9.42	28.5	-
			32	6.3	9.47	28.5	-
			33	6.3	9.44	28.5	-
			34	6.3	9.43	28.5	-
			35	6.2	9.39	28.5	-
			36	6.2	9.34	28.5	-
			37	6.2	9.28	28.5	-
Jed Creek							
23-Jul-19	0.41	0.41	0	25.7	8.12	23.8	7.00
Patterson Lake North Arm - East Basin Area 1							
27-Jul-19	4.75	21.8	0	20.5	7.97	29.3	7.44
			1	20.5	7.71	29.1	7.59
			2	20.3	7.79	29.5	7.62
			3	20.3	7.70	29.5	7.60
			4	20.3	7.72	29.2	7.59
			5	20.3	7.67	29.3	7.57
			6	20.2	7.75	29.3	7.51
			7	18.5	8.25	29.0	7.39

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Patterson Lake North Arm East Basin Area 1							
27-Jul-19	4.75	21.8	8	17.8	7.27	28.8	7.16
			9	16.3	8.04	28.4	7.02
			10	14.7	8.07	28.5	6.54
			11	14.0	7.32	28.4	6.18
			12	13.3	6.28	28.2	6.02
			13	12.4	5.87	28.2	5.90
			14	12.3	5.44	28.1	5.85
			15	10.9	4.58	28.4	5.73
			16	10.9	3.56	29.2	5.69
			17	10.4	3.18	29.5	5.68
			18	9.9	2.38	30.2	5.66
			19	9.9	1.92	30.8	5.64
			20	9.5	0.73	31.5	5.64
			21	9.4	0.13	66.5	5.82
			21.5	9.2	0.12	70.1	6.45
Patterson Lake North Arm - West Basin Area 1							
27-Jul-19	8.00	28.88	0	19.7	8.96	39.8	7.33
			1	19.1	9.00	39.6	7.39
			2	19.0	9.01	39.6	7.40
			3	18.9	9.01	39.6	7.45
			4	18.8	9.01	39.6	7.45
			5	18.8	9.01	39.6	7.46
			6	18.8	9.02	39.6	7.48
			7	18.8	9.02	39.6	7.39
			8	18.7	9.01	39.6	7.41
			9	17.9	9.28	39.5	7.45
			10	14.3	10.45	39.1	7.30
			11	10.9	11.30	38.9	7.12
			12	10.0	11.56	38.7	7.04
			13	9.1	11.59	38.8	6.98
			14	8.5	11.60	38.8	6.92
			15	7.9	11.44	38.8	6.76
			16	7.4	11.23	38.9	6.73
			17	7.1	10.94	38.9	6.58
			18	6.9	10.78	38.9	6.52
			19	6.7	10.61	38.9	6.47
			20	6.5	10.44	39.0	6.41
			21	6.5	10.36	39.0	6.36
			22	6.3	10.18	39.0	6.32
			23	6.3	10.14	39.0	6.30
			24	6.3	10.10	39.0	6.30
			25	6.2	10.02	39.0	6.29
			26	6.2	10.01	39.1	6.30

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Patterson Lake North Arm - West Basin Area 1							
27-Jul-19	8.00	28.88	27	6.2	10.00	39.1	6.31
			28	6.2	9.98	39.1	6.35
			28.5	6.1	9.23	41.1	6.35
Patterson Lake South Arm Area 1							
27-Jul-19	8.00	46.9	0	19.5	8.99	40.3	7.41
			1	19.3	9.05	40.3	7.45
			2	18.7	9.19	40.2	7.45
			3	18.6	9.18	40.2	7.48
			4	18.6	9.18	40.2	7.45
			5	18.5	9.19	40.2	7.43
			6	18.4	9.22	40.2	7.47
			7	18.4	9.24	40.2	7.52
			8	18.3	9.22	40.2	7.51
			9	18.3	9.22	40.2	7.47
			10	17.0	9.46	39.9	7.48
			11	14.6	10.20	39.9	7.53
			12	13.9	10.34	39.8	7.50
			13	11.9	10.54	39.9	7.42
			14	10.9	10.77	39.8	7.28
			15	9.6	10.87	39.8	7.12
			16	9.3	10.72	39.8	6.95
			17	9.1	10.74	39.8	6.92
			18	8.7	10.62	39.9	6.86
			19	8.4	10.40	39.9	6.77
			20	8.2	10.16	39.9	6.69
			21	8.0	9.80	40.0	6.65
			22	7.8	9.65	40.1	6.60
			23	7.7	9.52	40.1	6.56
			24	7.5	9.45	40.1	6.52
			25	7.4	9.45	40.1	6.52
			26	7.2	9.52	40.2	6.50
			27	7.0	9.50	40.2	6.49
			28	6.9	9.44	40.2	6.46
			29	6.8	9.40	40.2	6.45
			30	6.7	9.32	40.2	6.46
			31	6.6	9.16	40.3	-
			32	6.6	9.10	40.3	-
			33	6.4	9.06	40.3	-
			34	6.4	9.04	40.3	-
			35	6.3	8.92	40.3	-
			36	6.3	8.83	40.3	-
			37	6.2	8.77	40.3	-
			38	6.2	8.72	40.3	-

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Patterson Lake South Arm Area 1							
27-Jul-19	8.00	46.9	40	6.2	8.59	40.3	-
			41	6.2	8.58	40.3	-
			42	6.2	8.54	40.3	-
			43	6.1	8.48	40.4	-
			44	6.1	8.45	40.4	-
			45	6.1	8.34	40.4	-
			46	6.1	8.15	40.5	-
			46.5	6.1	7.15	41.8	-
Forrest Lake Area 1							
30-Jul-19	1.00	1	0	18.9	9.41	40.1	7.65
			0.5	18.9	9.50	40.1	7.67
Forrest Lake Area 2							
29-Jul-19	9.00	22.5	0	17.2	9.25	49.0	7.47
			1	17.2	9.26	49.0	7.49
			2	17.2	9.26	49.0	7.50
			3	17.1	9.26	49.0	7.48
			4	17.1	9.26	49.0	7.50
			5	17.1	9.26	49.0	7.51
			6	17.0	9.26	49.0	7.53
			7	16.9	9.29	49.0	7.50
			8	16.7	9.36	48.9	7.53
			9	16.4	9.49	48.9	7.54
			10	16.3	9.52	49.0	7.53
			11	16.1	9.59	49.0	7.51
			12	15.1	9.94	48.9	7.51
			13	10.9	11.20	48.4	7.49
			14	9.2	11.62	48.4	7.45
			15	8.5	11.74	48.4	7.40
			16	8.4	11.73	48.4	7.38
			17	7.8	11.81	48.4	7.34
			18	7.5	11.83	48.4	7.31
			19	7.1	11.86	48.4	7.27
			20	6.9	11.81	48.5	7.23
			21	6.8	11.68	48.4	7.18
			22	6.7	11.75	48.4	7.15
Beet Lake Area 1							
29-Jul-19	6.00	31.1	0	18.7	8.93	45.3	7.59
			1	18.7	8.95	45.3	7.64
			2	18.7	8.95	45.3	7.61
			3	18.7	8.94	45.3	7.60
			4	18.7	8.94	45.3	7.64
			5	18.6	8.93	45.3	7.62
			6	18.6	8.93	45.3	7.63

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Beet Lake Area 1							
29-Jul-19	6.00	31.1	7	18.6	8.92	45.3	7.62
			8	18.6	8.92	45.3	7.61
			9	18.4	8.94	45.3	7.61
			10	14.7	9.87	44.9	7.67
			11	13.4	10.25	44.7	7.59
			12	11.8	10.56	44.6	7.41
			13	10.5	10.32	44.6	7.23
			14	9.9	9.71	44.7	6.87
			15	9.4	9.22	44.8	6.79
			16	8.9	8.85	44.9	6.70
			17	8.1	7.99	45.1	6.63
			18	7.8	7.59	45.2	6.53
			19	7.6	7.15	45.3	6.41
			20	7.4	6.86	45.4	6.36
			21	7.3	6.68	45.4	6.33
			22	7.1	6.40	45.4	6.28
			23	7.0	6.09	45.4	6.27
			24	6.8	5.49	45.7	6.23
			25	6.7	5.01	46.2	6.19
			26	6.7	4.85	46.2	6.18
			27	6.7	4.80	46.4	6.16
			28	6.7	4.46	46.7	6.17
			29	6.6	3.73	47.5	6.15
			30	6.6	3.49	47.8	6.12
			31	6.6	3.41	47.8	-
Beet Creek							
28-Jul-19	0.50	0.5	0	17.9	10.27	43.6	6.99
Naomi Lake							
28-Jul-19	1.50	5.1	0	18.7	6.83	29.1	6.85
			1	18.7	6.65	29.2	6.99
			2	18.7	6.62	29.2	6.81
			3	18.7	6.61	29.2	6.66
			4	18.6	6.41	29.2	6.55
			5	18.1	6.44	29.4	6.40
Clearwater River Area 1							
28-Jul-19	0.50	0.5	0	17.1	9.43	39.2	7.38
Lloyd Lake Inlet							
22-Jul-19	4.08	5.51	0	21.7	7.68	32.9	7.10
			1	21.1	7.76	32.9	7.07
			2	20.6	7.97	33.2	7.08
			3	20.4	7.97	33.1	6.92
			4	20.2	7.86	33.1	6.77
			5	20.1	7.84	33.2	6.69

Appendix C, Table 7

Field Water Quality Measurements from the Aquatic Study Area, July 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH[a] (pH units)
Lloyd Lake Outlet							
22-Jul-19	0.50	0.5	0	21.1	7.89	33.7	6.24
Warner Rapids							
01-Aug-19	0.20	0.2	0	18.6	7.33	32.8	7.56
Lake D							
23-Jul-19	3.00	3.7	0	23.8	8.55	41.7	7.82
			0.5	23.8	8.13	41.8	7.88
			1	23.4	7.89	41.8	8.00
			1.5	23.1	7.96	41.6	8.08
			2	22.7	7.62	41.9	8.02
			2.5	22.5	7.53	41.9	7.91
			3	22.2	7.28	41.9	7.73
			3.5	22.1	7.46	42.7	7.51
Lake G Area 1							
26-Jul-19	0.79	0.79	0	22.7	7.78	37.3	7.56
Lake H Area 1							
26-Jul-19	0.62	0.62	0	22.5	7.75	37.1	7.50
Lake J							
23-Jul-19	2.0	2.0	0	23.3	8.25	5.2	5.78
			0.5	23.2	8.55	5.1	5.76
			1	23.2	8.66	5.1	5.85
			1.5	22.8	9.04	5.1	5.85
			1.95	22.7	9.54	5.1	5.92
SEQG[b]							
					6.5 to 9.5[c]		6.5 to 9.0[d]

Shaded cells indicate exceedances over guidelines.

a) pH could only be recorded up to a depth of 30 m because the YSI with the 100-m long cable was not functioning properly.

b) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

c) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

d) pH guideline: 6.5 to 9.0.

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
25-Sep-19	8.2	80	0	12.4	9.97	38.0	7.57
			1	12.5	9.82	38.0	7.67
			2	12.5	9.83	38.0	7.69
			3	12.5	9.84	38.0	7.70
			4	12.5	9.83	38.0	7.70
			5	12.5	9.81	38.0	7.69
			6	12.5	9.82	38.0	7.69
			7	12.5	9.81	38.0	7.68
			8	12.5	9.81	38.0	7.68
			9	12.5	9.80	38.0	7.67
			10	12.5	9.80	38.0	7.67
			11	12.5	9.80	38.0	7.66
			12	12.5	9.80	38.0	7.66
			13	12.5	9.80	38.0	7.65
			14	12.5	9.80	38.0	7.65
			15	12.5	9.80	38.0	7.65
			16	10.9	10.26	38.1	7.47
			17	9.9	10.73	38.2	7.35
			18	8.6	11.15	38.1	7.32
			19	8.0	10.76	38.3	7.21
			20	7.7	10.53	38.3	7.10
			21	7.0	10.13	38.4	7.00
			22	6.6	9.77	38.5	6.91
			23	6.4	9.60	38.5	6.87
			24	6.2	9.41	38.6	6.83
			25	6.0	9.30	38.6	6.81
			26	5.8	9.31	38.7	6.80
			27	5.7	9.18	38.8	6.77
			28	5.6	9.15	38.8	6.76
			29	5.5	9.12	38.8	6.74
			30	5.4	9.08	38.9	6.74
			31	5.4	9.04	38.9	6.73
			32	5.4	9.00	38.9	6.72
			33	5.4	8.95	38.9	6.71
			34	5.3	8.91	38.9	6.71
			35	5.3	8.86	39.0	6.70
			36	5.2	8.79	39.0	6.69
			37	5.1	8.75	39.0	6.68
			38	5.1	8.74	39.0	6.68
			39	5.1	8.77	39.0	6.68
			40	5.0	8.83	39.1	6.68
			41	4.9	8.85	39.1	6.68
			42	4.9	8.84	39.1	6.67

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
25-Sep-19	8.2	80	43	4.9	8.82	39.1	6.67
			44	4.9	8.83	39.1	6.67
			45	4.9	8.86	39.1	6.67
			46	4.9	8.86	39.1	6.67
			47	4.9	8.85	39.2	6.67
			48	4.8	8.84	39.2	6.67
			49	4.8	8.85	39.2	6.67
			50	4.8	8.82	39.2	6.67
			51	4.8	8.79	39.2	6.66
			52	4.8	8.77	39.3	6.66
			53	4.8	8.71	39.3	6.65
			54	4.7	8.66	39.3	6.65
			55	4.7	8.61	39.4	6.64
			56	4.7	8.57	39.4	6.64
			57	4.7	8.57	39.4	6.64
			58	4.7	8.56	39.4	6.63
			59	4.7	8.54	39.4	6.63
			60	4.7	8.53	39.4	6.63
			61	4.7	8.51	39.4	6.63
			62	4.7	8.51	39.4	6.63
			63	4.7	8.48	39.4	6.63
			64	4.7	8.43	39.4	6.62
			65	4.7	8.42	39.4	6.62
			66	4.7	8.41	39.5	6.62
			67	4.7	8.39	39.5	6.61
			68	4.7	8.38	39.4	6.61
			69	4.7	8.38	39.5	6.61
			70	4.7	8.35	39.5	6.61
			71	4.6	8.27	39.5	6.60
			72	4.6	8.22	39.6	6.60
			73	4.6	8.17	39.6	6.59
			74	4.6	8.09	39.6	6.59
			75	4.6	8.06	39.7	6.58
			76	4.6	8.04	39.7	6.58
			77	4.6	8.00	39.8	6.58
			78	4.6	7.91	39.9	6.57
			79	4.6	7.85	40.0	6.57
Hodge Lake Area 1							
24-Sep-19	6.8	38	0	12.5	9.95	27.1	7.33
			1	12.5	9.93	27.1	7.30
			2	12.5	9.95	27.1	7.29
			3	12.5	9.95	27.1	7.27
			4	12.5	9.97	27.1	7.22

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
24-Sep-19	6.8	38	5	12.5	9.97	27.1	7.19
			6	12.5	9.92	27.1	7.16
			7	12.5	9.91	27.1	7.14
			8	12.5	9.90	27.1	7.12
			9	12.5	9.90	27.1	7.10
			10	12.5	9.90	27.1	7.08
			11	12.5	9.89	27.1	7.07
			12	12.5	9.89	27.1	7.05
			13	12.5	9.90	27.1	7.03
			14	12.4	9.89	27.0	7.02
			15	12.4	9.89	27.0	7.01
			16	11.5	9.72	27.1	6.82
			17	9.0	9.41	27.6	6.50
			18	7.5	9.36	27.7	6.37
			19	7.3	9.14	27.8	6.34
			20	7.2	9.04	27.8	6.33
			21	7.1	8.77	27.9	6.31
			22	7.0	8.65	27.9	6.29
			23	6.8	8.26	28.1	6.25
			24	6.8	8.07	28.1	6.23
			25	6.7	8.03	28.2	6.23
			26	6.7	7.89	28.2	6.21
			27	6.6	7.80	28.3	6.20
			28	6.6	7.75	28.3	6.20
			29	6.6	7.71	28.3	6.19
			30	6.6	7.61	28.4	6.18
			31	6.6	7.45	28.5	6.17
			32	6.5	7.22	28.6	6.15
			33	6.5	6.97	28.7	6.14
			34	6.4	6.86	28.7	6.13
			35	6.4	6.77	28.8	6.12
			36	6.4	6.67	28.9	6.12
			37	6.4	6.58	28.9	6.11
Jed Creek							
27-Sep-19	0.4	0.4	0	9.7	10.90	23.2	7.15
Patterson Lake North Arm - East Basin Area 1							
30-Sep-19	3.5	21.5	0	9.8	10.21	31.2	7.46
			1	9.8	10.18	31.2	7.45
			2	9.8	10.18	31.2	7.37
			3	9.8	10.20	31.2	7.31
			4	9.8	10.15	31.2	7.25
			5	9.8	10.14	31.2	7.21
			6	9.7	10.14	31.2	7.18

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1							
30-Sep-19	3.5	21.5	7	9.7	10.13	31.2	7.15
			8	9.7	10.11	31.2	7.13
			9	9.7	10.11	31.2	7.12
			10	9.7	10.11	31.2	7.11
			11	9.6	10.11	31.2	7.09
			12	9.6	10.11	31.2	7.08
			13	9.6	10.11	31.2	7.06
			14	9.6	10.12	31.3	7.05
			15	9.6	10.12	31.3	7.05
			16	9.6	10.14	31.3	7.05
			17	9.5	10.18	31.3	7.06
			18	9.5	10.20	31.2	7.06
			19	9.4	10.24	31.3	7.07
			20	9.3	10.27	31.2	7.06
			21	9.2	10.14	31.4	7.02
Patterson Lake North Arm - West Basin Area 1							
30-Sep-19	7.4	29	0	10.4	10.24	38.0	7.57
			1	10.4	10.32	37.9	7.58
			2	10.4	10.30	37.9	7.57
			3	10.4	10.26	38.0	7.53
			4	10.4	10.27	38.0	7.50
			5	10.4	10.27	38.0	7.47
			6	10.4	10.29	38.0	7.41
			7	10.4	10.22	38.0	7.37
			8	10.4	10.21	38.0	7.33
			9	10.4	10.20	38.0	7.32
			10	10.4	10.20	38.0	7.31
			11	10.4	10.21	38.0	7.29
			12	10.4	10.21	38.0	7.28
			13	10.4	10.20	38.0	7.28
			14	10.4	10.20	38.0	7.27
			15	10.4	10.20	38.0	7.26
			16	10.4	10.19	38.0	7.25
			17	10.4	10.18	38.0	7.25
			18	9.9	9.92	38.0	7.08
			19	7.4	9.03	38.3	6.76
			20	7.0	8.83	38.4	6.68
			21	6.6	8.61	38.4	6.62
			22	6.5	8.48	38.5	6.59
			23	6.4	8.29	38.5	6.57
			24	6.4	8.23	38.6	6.56
			25	6.4	8.18	38.6	6.55
			26	6.4	8.16	38.6	6.54

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
30-Sep-19	7.4	29	27	6.3	8.13	38.6	6.53
			28	6.3	8.11	38.6	6.53
Patterson Lake South Arm Area 1							
30-Sep-19	7.8	47	0	10.5	10.22	38.8	7.54
			1	10.5	10.18	38.8	7.54
			2	10.5	10.14	38.8	7.54
			3	10.5	10.15	38.8	7.54
			4	10.5	10.13	38.8	7.53
			5	10.5	10.12	38.8	7.50
			6	10.5	10.09	38.8	7.49
			7	10.5	10.09	38.8	7.48
			8	10.5	10.08	38.8	7.43
			9	10.5	10.07	38.8	7.38
			10	10.5	10.06	38.8	7.35
			11	10.5	10.05	38.8	7.30
			12	10.5	10.05	38.8	7.27
			13	10.5	10.05	38.8	7.25
			14	10.5	10.05	38.8	7.24
			15	10.5	10.05	38.8	7.22
			16	10.5	10.05	38.8	7.21
			17	10.5	10.05	38.8	7.20
			18	10.5	10.04	38.8	7.19
			19	10.5	10.03	38.8	7.18
			20	10.5	10.00	38.8	7.16
			21	10.5	9.99	38.8	7.16
			22	10.5	9.99	38.8	7.15
			23	10.2	9.45	39.0	7.01
			24	9.0	8.65	39.1	6.81
			25	7.9	7.61	39.4	6.53
			26	7.8	7.58	39.4	6.50
			27	7.6	7.53	39.4	6.49
			28	7.4	7.37	39.5	6.47
			29	7.3	7.43	39.5	6.47
			30	7.2	7.52	39.5	6.47
			31	7.1	7.47	39.6	6.46
			32	6.9	7.36	39.6	6.45
			33	6.8	7.31	39.7	6.44
			34	6.8	7.21	39.7	6.43
			35	6.7	7.13	39.8	6.43
			36	6.6	6.92	39.9	6.41
			37	6.5	6.54	40.0	6.39
			38	6.5	6.31	40.1	6.37
			39	6.4	6.19	40.1	6.36

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
30-Sep-19	7.8	47	40	6.4	6.03	40.1	6.36
			41	6.4	5.88	40.2	6.35
			42	6.4	5.79	40.3	6.34
			43	6.3	5.02	40.8	6.32
			44	6.3	4.95	40.8	6.31
			45	6.3	4.90	40.9	6.31
			46	6.3	4.77	41.7	6.31
Forrest Lake Area 1							
26-Sep-19	1.2	1.2	0	8.2	9.57	39.3	6.88
			0.5	8.2	9.51	39.2	6.94
			1	8.2	9.41	39.2	6.98
Forrest Lake Area 2							
02-Oct-19	7.0	23	0	9.5	10.58	47.2	7.77
			1	9.6	10.51	47.2	7.72
			2	9.6	10.54	47.2	7.68
			3	9.6	10.52	47.2	7.66
			4	9.6	10.51	47.2	7.64
			5	9.6	10.49	47.2	7.62
			6	9.6	10.51	47.2	7.60
			7	9.6	10.50	47.2	7.59
			8	9.6	10.48	47.2	7.58
			9	9.6	10.47	47.2	7.57
			10	9.6	10.47	47.2	7.56
			11	9.6	10.47	47.2	7.56
			12	9.6	10.48	47.2	7.55
			13	9.6	10.48	47.2	7.56
			14	9.6	10.48	47.2	7.55
			15	9.6	10.49	47.2	7.55
			16	9.6	10.49	47.2	7.55
			17	9.6	10.49	47.2	7.55
			18	9.6	10.50	47.2	7.54
			19	9.6	10.50	47.2	7.54
			20	9.6	10.50	47.2	7.54
			21	9.6	10.51	47.2	7.54
			22	9.5	10.50	47.2	7.52
Beet Lake Area 1							
01-Oct-19	4.0	32	0	9.6	9.90	43.5	7.67
			1	9.6	9.85	43.5	7.57
			2	9.6	9.79	43.6	7.53
			3	9.6	9.80	43.6	7.51
			4	9.6	9.77	43.6	7.48
			5	9.6	9.76	43.6	7.46
			6	9.6	9.76	43.6	7.44

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
01-Oct-19	4.0	32	7	9.6	9.75	43.6	7.41
			8	9.6	9.75	43.7	7.40
			9	9.6	9.75	43.7	7.37
			10	9.6	9.74	43.7	7.32
			11	9.6	9.74	43.7	7.29
			12	9.6	9.74	43.9	7.26
			13	9.6	9.74	43.7	7.24
			14	9.6	9.74	43.7	7.24
			15	9.6	9.74	43.7	7.23
			16	9.6	9.75	43.7	7.23
			17	9.6	9.76	43.7	7.22
			18	9.6	9.76	43.7	7.22
			19	9.6	9.76	43.7	7.22
			20	9.6	9.76	43.7	7.22
			21	9.6	9.77	43.7	7.21
			22	9.6	9.78	43.7	7.21
			23	9.6	9.78	43.7	7.21
			24	9.6	9.78	43.7	7.20
			25	9.6	9.78	43.7	7.20
			26	9.6	9.79	43.7	7.19
			27	9.5	9.80	43.7	7.19
			28	9.5	9.80	43.7	7.19
			29	9.5	9.85	43.7	7.18
			30	9.4	9.86	43.6	7.19
			31	9.3	9.89	43.6	7.18
Beet Creek							
01-Oct-19	0.6	0.6	0	6.8	10.70	42.9	7.20
Naomi Lake							
01-Oct-19	1.9	5.7	0	5.4	10.94	22.1	7.09
			1	5.4	10.85	22.1	7.09
			2	5.4	10.85	22.1	7.07
			3	5.4	10.83	22.1	7.05
			4	5.4	10.89	22.1	7.04
			5	5.4	10.82	22.1	7.03
			5.5	5.4	10.76	22.1	6.96
Clearwater River Area 1							
01-Oct-19	0.8	0.8	0	3.8	11.17	34.2	6.99
Lloyd Lake Inlet							
20-Sep-19	2.33	5.76	0	13.7	8.97	28.9	6.97
			1	13.6	8.95	29.0	7.00
			2	13.5	8.91	29.0	7.02
			3	13.4	8.91	29.1	7.01
			4	13.4	8.94	29.1	7.02

Appendix C, Table 8

Field Water Quality Measurements from the Aquatic Study Area, September/October 2019

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lloyd Lake Inlet							
20-Sep-19	2.33	5.76	5	12.7	8.84	28.7	6.97
Lloyd Lake Outlet							
19-Sep-19	0.39	0.39	0	13.5	9.36	29.8	7.07
Warner Rapids							
03-Oct-19	0.3	0.3	0	5.9	11.94	27.9	7.24
Lake D							
25-Sep-19	3.5	3.8	0	11.3	9.15	45.1	7.55
			1	11.4	9.13	44.2	7.52
			2	11.4	9.08	45.0	7.50
			3	11.4	9.06	45.2	7.49
			3.5	11.4	8.93	45.4	7.44
Lake G Area 1							
28-Sep-19	0.9	0.9	0	6.8	11.02	38.4	7.10
Lake H Area 1							
30-Sep-19	0.3	0.3	0	3.9	12.01	38.2	7.16
Lake J							
24-Sep-19	2.4	2.4	0	10.7	9.98	6.4	6.75
			1	10.9	10.10	6.4	6.62
			2	10.9	10.05	6.4	6.59
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2								
19-Mar-20	0.3	0.75	79.2	0	0.1	13.61	43.8	7.01
				1	0.3	13.82	44.8	6.91
				2	0.9	13.48	42.3	6.79
				3	1.5	12.67	40.4	6.71
				4	1.7	12.17	39.7	6.62
				5	1.9	11.85	39.4	6.53
				6	2.0	11.69	39.3	6.45
				7	2.1	11.51	39.1	6.39
				8	2.1	11.38	39.2	6.33
				9	2.2	11.32	39.2	6.29
				10	2.2	11.27	39.3	6.27
				11	2.2	11.24	39.3	6.25
				12	2.3	11.21	39.3	6.23
				13	2.3	11.05	39.8	6.22
				14	2.3	10.95	39.7	6.20
				15	2.3	10.83	39.5	6.19
				16	2.4	10.73	39.5	6.17
				17	2.4	10.69	39.6	6.16
				18	2.4	10.66	39.5	6.15
				19	2.5	10.72	39.4	6.15
				20	2.5	10.78	39.3	6.15
				21	2.5	10.80	39.1	6.16
				22	2.6	10.89	39.0	6.16
				23	2.6	10.91	39.0	6.17
				24	2.6	10.89	39.0	6.17
				25	2.7	10.91	38.9	6.17
				26	2.7	10.94	38.9	6.18
				27	2.8	10.92	38.9	6.19
				28	2.8	10.89	38.9	6.19
				29	2.8	10.83	38.9	6.19
				30	2.9	10.81	38.9	6.19
				31	2.9	10.82	38.8	6.20
				32	3.0	10.85	38.8	6.21
				33	3.0	10.86	38.8	6.21
				34	3.0	10.87	38.7	6.22
				35	3.1	10.88	38.7	6.23
				36	3.1	10.85	38.7	6.24
				37	3.1	10.84	38.7	6.24
				38	3.2	10.84	38.7	6.25
				39	3.2	10.83	38.7	6.25
				40	3.2	10.79	38.7	6.26
				41	3.2	10.67	38.7	6.26
				42	3.2	10.76	38.7	6.26

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2								
19-Mar-20	0.3	0.75	79.2	43	3.2	10.73	38.8	6.26
				44	3.3	10.73	38.7	6.26
				45	3.3	10.74	38.7	6.26
				46	3.3	10.70	38.8	6.26
				47	3.3	10.48	38.9	6.25
				48	3.3	10.29	39.0	6.24
				49	3.3	10.17	39.0	6.22
				50	3.3	10.07	39.1	6.21
				51	3.3	9.92	39.1	6.19
				52	3.3	9.84	39.2	6.17
				53	3.3	9.75	39.2	6.16
				54	3.3	9.68	39.2	6.14
				55	3.4	9.60	39.3	6.13
				56	3.4	9.53	39.3	6.12
				57	3.4	9.39	39.3	6.10
				58	3.4	9.37	39.3	6.09
				59	3.4	9.30	39.4	6.08
				60	3.4	9.19	39.5	6.07
				61	3.4	9.02	39.5	6.05
				62	3.4	8.89	39.7	6.03
				63	3.4	8.67	39.7	6.02
				64	3.4	8.30	39.8	5.99
				65	3.4	8.12	39.8	5.96
				66	3.4	7.96	39.9	5.95
				67	3.4	7.82	40.0	5.93
				68	3.4	7.70	40.0	5.92
				69	3.5	7.32	40.1	5.90
				70	3.5	7.12	40.3	5.89
				71	3.5	6.70	40.4	5.87
				72	3.5	6.00	40.6	5.84
				73	3.5	5.38	40.9	5.81
				74	3.5	4.19	41.2	5.76
				75	3.5	3.60	41.5	5.73
				76	3.5	3.19	41.7	5.71
				77	3.6	2.29	42.3	5.69
Hodge Lake Area 1								
17-Mar-20	0.3	0.7	38.5	0	-0.1	13.82	32.5	7.20
				1	1.0	12.68	28.3	7.09
				2	1.7	12.44	28.1	7.00
				3	2.0	12.13	28.0	6.84
				4	2.1	12.05	27.9	6.72
				5	2.1	12.00	27.9	6.58
				6	2.1	11.95	27.9	6.46

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1								
17-Mar-20	0.3	0.7	38.5	7	2.2	11.91	27.9	6.34
				8	2.2	11.85	27.8	6.24
				9	2.3	11.80	27.8	6.15
				10	2.3	11.76	27.8	6.08
				11	2.3	11.73	27.8	6.03
				12	2.4	11.67	27.9	5.94
				13	2.4	11.65	27.9	5.92
				14	2.4	11.63	27.9	5.89
				15	2.5	11.60	27.8	5.87
				16	2.5	11.58	27.8	5.83
				17	2.5	11.52	27.9	5.75
				18	2.5	11.47	28.0	5.73
				19	2.6	11.40	28.1	5.68
				20	2.6	11.30	28.3	5.66
				21	2.6	11.18	28.5	5.65
				22	2.6	11.06	28.2	5.62
				23	2.7	10.40	28.7	5.56
				24	2.7	10.65	28.7	5.51
				25	2.7	10.50	28.8	5.48
				26	2.8	10.25	28.8	5.46
				27	2.8	10.09	28.8	5.43
				28	2.8	9.92	29.0	5.41
				29	2.8	9.64	29.0	5.38
				30	2.9	9.40	29.0	5.34
				31	2.9	9.17	29.1	5.31
				32	2.9	8.92	29.1	5.28
				33	2.9	8.75	29.2	5.26
				34	2.9	8.36	29.3	5.22
				35	3.0	8.22	29.3	5.21
				36	3.0	8.06	29.4	5.20
				37	3.0	7.77	29.6	5.17
				38	3.0	7.22	30.0	5.14
Jed Creek								
23-Mar-20	0.2	0.01	0.5	0	0.1	10.74	32.4	6.70
Patterson Lake North Arm - East Basin Area 1								
23-Mar-20	0.2	0.7	20.5	0	0.0	12.36	34.5	7.19
				1	1.4	11.36	33.1	6.96
				2	1.9	10.87	33.0	6.82
				3	1.9	10.72	33.1	6.81
				4	2.1	10.46	33.2	6.73
				5	2.1	10.26	33.2	6.69
				6	2.1	10.15	33.2	6.63
				7	2.1	9.96	33.2	6.56

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1								
23-Mar-20	0.2	0.7	20.5	8	2.2	9.84	33.2	6.48
				9	2.2	9.68	33.2	6.43
				10	2.2	9.56	33.2	6.39
				11	2.2	9.50	33.3	6.34
				12	2.2	9.53	33.4	6.32
				13	2.2	9.45	33.3	6.27
				14	2.3	9.26	33.2	6.24
				15	2.3	9.07	33.7	6.22
				16	2.4	8.61	33.8	6.20
				17	2.4	8.24	33.8	6.18
				18	2.5	7.58	34.1	6.15
				19	2.6	6.54	34.3	6.11
Patterson Lake North Arm - West Basin Area 1								
20-Mar-20	0.3	0.8	29.6	0	0.5	13.20	38.8	7.15
				1	0.3	13.10	38.5	7.13
				2	1.0	12.62	40.6	7.13
				3	1.5	12.00	39.4	7.13
				4	1.7	11.67	39.0	7.12
				5	1.7	11.53	39.1	7.11
				6	1.8	11.46	39.1	7.08
				7	1.8	11.39	39.1	7.05
				8	1.9	11.32	39.1	7.03
				9	1.9	11.28	39.1	7.01
				10	1.9	11.23	39.1	6.98
				11	2.0	11.17	39.1	6.96
				12	2.0	11.13	39.1	6.94
				13	2.0	11.08	39.2	6.90
				14	2.0	11.02	39.1	6.86
				15	2.1	10.99	39.1	6.83
				16	2.1	10.95	39.2	6.80
				17	2.1	10.89	39.2	6.78
				18	2.2	10.84	39.0	6.76
				19	2.3	10.83	38.8	6.75
				20	2.4	10.83	38.7	6.73
				21	2.4	10.85	38.6	6.72
				22	2.5	10.86	38.5	6.74
				23	2.6	10.87	38.5	6.73
				24	2.7	10.72	38.6	6.72
				25	2.7	10.48	38.6	6.74
				26	2.8	10.38	38.6	6.72
				27	2.8	10.32	38.6	6.69
				28	2.9	10.17	38.6	6.69
				29	2.9	9.66	38.7	6.67

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1								
20-Mar-20	0.3	0.75	47.1	0	0.7	12.86	44.5	7.60
				1	0.5	13.41	44.4	7.47
				2	1.2	12.98	41.6	7.33
				3	1.7	12.28	40.4	7.23
				4	1.8	11.92	40.1	7.15
				5	2.0	11.58	40.0	7.05
				6	2.1	11.37	40.1	6.98
				7	2.2	11.19	40.6	6.88
				8	2.3	10.97	40.5	6.73
				9	2.3	10.90	40.6	6.66
				10	2.3	10.81	40.6	6.60
				11	2.4	10.71	40.6	6.55
				12	2.4	10.60	40.9	6.49
				13	2.4	10.51	40.9	6.44
				14	2.4	10.44	40.7	6.40
				15	2.4	10.36	40.5	6.36
				16	2.5	10.32	40.3	6.32
				17	2.5	10.23	40.2	6.29
				18	2.5	10.17	40.2	6.26
				19	2.5	10.07	40.2	6.24
				20	2.5	9.96	40.1	6.21
				21	2.5	9.90	40.1	6.19
				22	2.5	9.81	40.1	6.17
				23	2.6	9.75	40.1	6.15
				24	2.6	9.65	40.1	6.13
				25	2.6	9.55	40.1	6.11
				26	2.6	9.47	40.2	6.09
				27	2.6	9.40	40.2	6.08
				28	2.6	9.23	40.2	6.06
				29	2.6	9.15	40.2	6.05
				30	2.6	9.09	40.1	6.04
				31	2.6	9.00	40.1	6.03
				32	2.7	8.90	40.0	6.02
				33	2.7	8.80	40.0	6.01
				34	2.7	8.60	40.1	6.00
				35	2.7	8.42	40.1	5.99
				36	2.7	8.19	40.1	5.97
				37	2.8	7.97	40.1	5.96
				38	2.8	7.91	40.1	5.95
				39	2.9	7.20	40.3	5.93
				40	2.9	6.61	40.5	5.91
				41	3.0	5.85	40.7	5.90
				42	3.0	5.09	41.0	5.89

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake East South Arm Area 1								
20-Mar-20	0.3	0.75	47.1	43	3.1	4.02	41.6	5.88
				44	3.3	2.90	42.6	5.84
				45	3.4	1.40	43.9	5.83
Forrest Lake Area 1								
21-Mar-20	0.3	0.65	1.3	0	0.1	12.99	45.1	7.43
				0.5	0.2	13.03	45.1	7.32
				1	0.3	12.57	45.5	7.21
Forrest Lake Area 2								
22-Mar-20	0.45	0.7	23.5	0	1.7	13.05	53.8	7.67
				1	0.2	14.14	55.0	7.39
				2	0.6	13.59	52.3	7.09
				3	0.8	13.32	50.4	7.01
				4	1.2	12.76	49.6	6.94
				5	1.2	12.46	49.5	6.80
				6	1.3	12.26	49.4	6.74
				7	1.3	12.25	50.1	6.71
				8	1.4	12.28	50.5	6.68
				9	1.4	12.26	50.5	6.61
				10	1.4	12.20	50.4	6.58
				11	1.4	12.18	50.4	6.56
				12	1.5	12.16	50.5	6.55
				13	1.5	12.15	50.7	6.53
				14	1.5	12.18	50.9	6.52
				15	1.5	12.19	50.9	6.52
				16	1.5	12.16	50.9	6.51
				17	1.5	12.14	50.9	6.50
				18	1.5	12.12	50.9	6.49
				19	1.5	12.09	50.9	6.49
				20	1.5	12.04	50.7	6.48
				21	1.6	11.93	50.6	6.47
				22	1.8	10.81	49.1	6.45
Beet Lake Area 1								
22-Mar-20	0.3	0.75	31.5	0	0.3	12.25	47.4	7.33
				1	1	11.99	46.2	7.21
				2	1.2	11.84	46.2	7.12
				3	1.3	11.72	46.2	7.05
				4	1.3	11.65	46.3	6.99
				5	1.3	11.58	46.5	6.55
				6	1.3	11.51	46.5	6.89
				7	1.3	11.46	46.5	6.86
				8	1.4	11.41	46.5	6.79
				9	1.4	11.35	46.6	6.75
				10	1.4	11.3	46.5	6.73

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1								
22-Mar-20	0.3	0.75	31.5	11	1.4	11.26	46.5	6.69
				12	1.4	11.19	46.6	6.66
				13	1.4	11.11	46.6	6.65
				14	1.5	11.02	46.5	6.61
				15	1.5	10.87	46.4	6.59
				16	1.6	10.58	46.3	6.57
				17	1.6	10.37	46.2	6.54
				18	1.6	9.92	46.1	6.51
				19	1.7	9.3	46.1	6.46
				20	1.8	8.94	46.2	6.43
				21	1.8	8.52	46.2	6.41
				22	1.9	7.79	46.3	6.38
				23	2	7.14	46.5	6.35
				24	2	6.47	46.6	6.32
				25	2.1	5.93	46.8	6.30
				26	2.1	5.26	46.9	6.27
				27	2.2	3.87	47.3	6.23
				28	2.4	1.92	50.2	6.21
				29	2.7	0.73	60.6	6.23
				30	2.9	0.49	66.6	6.25
Beet Creek								
21-Mar-20	0	0.01	0.5	0	0.3	12.09	50.3	7.05
Naomi Lake								
21-Mar-20	0.2	0.85	5.65	0	1.0	7.79	26.0	6.65
				1	1.0	6.71	24.9	6.22
				2	1.5	6.97	25.2	6.00
				3	1.9	6.93	25.8	5.81
				4	2.1	6.74	26.2	5.70
				5	2.7	4.41	28.2	5.55
Clearwater River Area 1								
21-Mar-20	0	0.02	0.5	0	0.2	6.22	28.2	5.70
Lloyd Lake Inlet								
18-Mar-20	0.3	0.9	5.4	0	-0.1	6.11	31.8	6.47
				1	-0.1	5.73	31.1	6.30
				2	1.7	6.43	37.3	6.22
				3	2.3	6.84	40.4	6.23
				4	2.5	6.65	40.6	6.21
				5	2.6	6.49	41.3	6.18
Lloyd Lake Outlet								
18-Mar-20	0.3	0.55	2.7	0	0.1	5.60	31.7	5.62
				1	0.2	5.37	31.6	5.42
				2	1.1	5.59	34.6	5.35

Appendix C, Table 9

Field Water Quality Measurements from the Aquatic Study Area, March 2020

Date	Snow Depth (m)	Ice Thickness (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Warner Rapids								
25-Mar-20	0.2	0.65	0.5	0	0.0	11.33	33.5	6.89
Lake D								
24-Mar-20	0.3	0.90	4.1	0	0.8	8.43	54.0	7.11
				1	2.9	1.23	63.4	6.51
				2	3.7	0.73	64.7	6.37
				3	4.3	0.46	84.0	6.08
Lake G Area 2								
23-Mar-20	0.3	0.7	1.7	0	0.1	9.71	87.2	6.74
				0.5	0.6	6.38	84.1	6.24
				1	1.0	1.34	87.4	6.17
				1.5	2.7	1.00	120.0	6.17
Lake H Area 2								
23-Mar-20	0.5	0.7	7.4	0	1.0	5.26	55.3	6.63
				1	2.3	3.05	56.5	6.31
				2	3.7	0.99	60.6	6.01
				3	4.2	0.50	63.4	5.86
				4	4.3	0.38	66.3	5.78
				5	4.4	0.33	73.9	5.68
				6	4.7	0.29	96.8	5.59
				7	4.8	0.24	117.0	5.71
Lake J								
17-Mar-20	0.25	0.55	2.25	0	0.8	8.55	11.1	7.80
				1	0.9	7.97	10.9	7.59
				2	3.2	3.00	12.3	6.40
SEQG[a]								
						6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
02-Jun-20	7.5	80	0	4.4	12.09	42.2	6.90
			1	4.4	12.07	42.1	7.00
			2	4.4	12.07	42.1	7.00
			3	4.4	12.05	41.9	7.04
			4	4.3	12.03	41.9	7.05
			5	4.3	12.02	41.9	7.04
			6	4.3	12.01	41.7	7.04
			7	4.3	12.00	41.8	7.04
			8	4.3	12.00	41.8	7.04
			9	4.2	11.99	41.7	7.04
			10	4.2	11.98	41.7	7.04
			11	4.2	11.97	41.8	7.06
			12	4.2	11.96	41.8	7.05
			13	4.2	11.96	41.7	7.05
			14	4.2	11.95	41.5	7.05
			15	4.2	11.94	41.4	7.06
			16	4.2	11.95	41.5	7.05
			17	4.2	11.96	41.3	7.05
			18	4.2	11.96	40.9	7.08
			19	4.1	11.92	41.0	7.10
			20	4.1	11.91	41.1	7.14
			21	4.1	11.96	41.1	7.14
			22	4.1	11.88	41.1	7.14
			23	4.1	11.87	41.1	7.14
			24	4.1	11.88	41.2	7.14
			25	4.1	11.89	41.2	7.14
			26	4.1	11.89	41.2	7.14
			27	4.1	11.92	40.8	7.17
			28	4.1	11.92	40.9	7.17
			29	4.1	11.92	40.8	7.17
			30	4.1	11.91	40.9	7.17
			31	4.1	11.92	40.9	7.17
			32	4.1	11.91	40.8	7.17
			33	4.1	11.90	40.8	7.17
			34	4.1	11.90	40.8	7.17
			35	4.1	11.90	40.8	7.17
			36	4.1	11.89	40.8	7.17
			37	4.1	11.89	40.8	7.17
			38	4.1	11.89	40.8	7.17
			39	4.1	11.89	40.8	7.17
			40	4.1	11.88	40.8	7.17
			41	4.1	11.88	40.8	7.17
			42	4.1	11.88	40.8	7.17

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
02-Jun-20	7.5	80	43	4.1	11.88	40.8	7.17
			44	4.1	11.88	40.8	7.17
			45	4.1	11.88	40.8	7.17
			46	4.1	11.88	40.8	7.17
			47	4.1	11.88	40.8	7.17
			48	4.1	11.88	40.8	7.17
			49	4.1	11.88	40.8	7.17
			50	4.1	11.87	40.8	7.17
			51	4.1	11.87	40.8	7.17
			52	4.1	11.87	40.8	7.17
			53	4.1	11.87	40.8	7.17
			54	4.1	11.86	40.9	7.17
			55	4.1	11.85	40.9	7.17
			56	4.1	11.84	40.9	7.17
			57	4.1	11.84	40.9	7.17
			58	4.1	11.84	41.0	7.17
			59	4.1	11.84	41.0	7.17
			60	4.1	11.83	41.0	7.17
			61	4.1	11.83	41.0	7.17
			62	4.1	11.83	41.0	7.16
			63	4.1	11.83	41.0	7.16
			64	4.1	11.82	41.1	7.16
			65	4.1	11.82	41.1	7.16
			66	4.1	11.82	41.1	7.16
			67	4.1	11.82	41.1	7.16
			68	4.1	11.81	41.1	7.15
			69	4.1	11.81	41.3	7.15
			70	4.1	11.81	41.3	7.15
			71	4.1	11.81	41.3	7.15
			72	4.1	11.81	41.3	7.15
			73	4.1	11.81	41.3	7.15
			74	4.1	11.81	41.3	7.15
			75	4.1	11.81	41.3	7.15
			76	4.1	11.80	41.4	7.15
			77	4.1	11.80	41.4	7.15
			78	4.1	11.80	41.5	7.15
			79	4.1	10.46	42.0	7.24
Hodge Lake Area 1							
17-Mar-20	4.6	37.5	0	6.6	11.68	27.0	7.01
			1	6.4	11.68	27.7	7.01
			2	5.7	11.68	29.6	6.99
			3	5.5	11.67	29.6	6.97
			4	5.3	11.67	29.9	6.95

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
17-Mar-20	4.6	37.5	5	5.3	11.65	29.9	6.94
			6	5.2	11.62	29.9	6.93
			7	5.2	11.60	29.5	6.92
			8	5.2	11.60	29.9	6.91
			9	5.2	11.59	28.5	6.91
			10	5.2	11.57	28.6	6.90
			11	5.2	11.56	28.7	6.91
			12	5.1	11.55	28.8	6.91
			13	5.1	11.55	28.8	6.90
			14	5.1	11.53	28.9	6.90
			15	5.1	11.53	28.9	6.89
			16	5.1	11.51	29.1	6.90
			17	5.1	11.51	29.1	6.89
			18	5.1	11.50	29.2	6.89
			19	5.1	11.49	29.2	6.88
			20	5.1	11.49	29.3	6.88
			21	5.1	11.48	29.3	6.89
			22	5.1	11.47	29.3	6.89
			23	5.1	11.46	29.4	6.89
			24	5.1	11.46	29.4	6.89
			25	5.1	11.45	29.4	6.88
			26	5.1	11.44	29.5	6.88
			27	5.1	11.44	29.5	6.88
			28	5.1	11.44	29.4	6.88
			29	5.1	11.44	29.6	6.88
			30	5.1	11.44	29.6	6.88
			31	5.1	11.44	29.6	6.88
			32	5.1	11.43	29.6	6.88
			33	5.0	11.43	29.6	6.88
			34	5.0	11.39	29.6	6.88
			35	4.9	11.38	29.7	6.86
			36	4.8	11.36	29.7	6.85
			37	4.7	11.32	29.6	6.85
Jed Creek							
05-Jun-20	0.5	0.5	0	13.6	10.24	19.7	6.67
Patterson Lake North Arm - East Basin Area 1							
06-Jun-20	4.2	20.5	0	10.3	11.37	29.5	7.53
			1	10.3	11.36	29.5	7.53
			2	10.3	11.35	29.5	7.53
			3	10.3	11.34	29.5	7.53
			4	10.3	11.33	29.5	7.53
			5	10.3	11.32	29.5	7.53
			6	10.3	11.31	29.5	7.53

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1							
06-Jun-20	4.2	20.5	7	10.3	11.30	29.5	7.53
			8	10.3	11.29	29.5	7.53
			9	10.3	11.28	29.5	7.53
			10	7.8	10.91	30.4	7.14
			11	7.2	10.77	30.9	7.06
			12	6.8	10.66	31.0	7.00
			13	6.2	10.60	31.2	6.95
			14	6.0	10.61	31.3	6.93
			15	6.0	10.59	31.3	6.92
			16	5.9	10.51	31.4	6.89
			17	5.8	10.48	31.4	6.88
			18	5.8	10.37	31.4	6.86
			19	5.5	9.99	31.4	6.81
			20	5.4	9.64	31.6	6.77
Patterson Lake North Arm - West Basin Area 1							
06-Jun-20	5	28.5	0	6.4	11.76	37.6	7.33
			1	6.4	11.76	37.6	7.34
			2	6.4	11.75	37.6	7.33
			3	6.4	11.75	37.6	7.33
			4	6.4	11.75	37.7	7.33
			5	6.4	11.73	38.2	7.33
			6	6.4	11.72	38.3	7.34
			7	6.4	11.71	38.3	7.34
			8	6.3	11.71	38.3	7.34
			9	6.3	11.70	38.3	7.34
			10	6.3	11.70	38.3	7.34
			11	6.1	11.68	38.2	7.34
			12	6.0	11.68	38.2	7.32
			13	5.9	11.67	38.2	7.31
			14	5.6	11.64	38.2	7.28
			15	5.5	11.63	38.2	7.27
			16	5.4	11.60	38.3	7.25
			17	5.4	11.56	38.2	7.25
			18	5.1	1143.00	38.3	7.22
			19	4.9	11.38	38.3	7.19
			20	4.8	11.33	38.4	7.17
			21	4.7	11.30	38.4	7.16
			22	4.6	11.26	38.4	7.15
			23	4.5	11.23	38.4	7.14
			24	4.5	11.21	38.5	7.13
			25	4.5	11.21	38.5	7.13
			26	4.5	11.19	38.5	7.13
			27	4.4	11.17	38.5	7.13

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
06-Jun-20	5	28.5	28	4.4	11.16	38.5	7.12
Patterson Lake South Arm Area 1							
06-Jun-20	5	46.5	0	7.6	11.63	38.9	7.27
			1	7.5	11.62	38.9	7.25
			2	7.5	11.61	38.9	7.24
			3	7.5	11.61	38.9	7.22
			4	7.5	11.60	38.9	7.25
			5	7.5	11.60	38.9	7.24
			6	7.3	11.57	38.9	7.25
			7	6.8	11.54	39.0	7.22
			8	6.6	11.52	39.0	7.16
			9	6.4	11.56	38.9	7.08
			10	6.0	11.58	39.0	7.07
			11	6.0	11.57	38.9	7.05
			12	5.9	11.55	39.0	7.04
			13	5.7	11.50	39.0	7.02
			14	5.5	11.45	39.0	7.00
			15	5.4	11.39	39.0	6.98
			16	5.2	11.30	39.0	6.95
			17	5.2	11.26	39.0	6.95
			18	5.1	11.23	39.0	6.95
			19	5.0	11.21	39.1	6.94
			20	5.0	11.20	39.1	6.94
			21	5.0	11.19	39.1	6.94
			22	4.9	11.17	39.1	6.93
			23	4.9	11.17	39.1	6.92
			24	4.9	11.16	39.1	6.92
			25	4.9	11.15	39.1	6.92
			26	4.8	11.14	39.1	6.92
			27	4.7	11.12	39.2	6.92
			28	4.7	11.09	39.2	6.91
			29	4.6	11.08	39.2	6.91
			30	4.6	11.05	39.3	6.90
			31	4.5	11.03	39.3	6.90
			32	4.5	11.00	39.3	6.89
			33	4.5	10.97	39.3	6.88
			34	4.5	10.98	39.2	6.87
			35	4.5	11.06	39.2	6.88
			36	4.5	11.07	39.2	6.90
			37	4.5	11.06	39.2	6.89
			38	4.5	11.04	39.2	6.89
			39	4.4	11.00	39.2	6.88
			40	4.4	10.94	39.2	6.87

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
06-Jun-20	5	46.5	41	4.4	10.92	39.2	6.87
			42	4.4	10.91	39.3	6.86
			43	4.4	10.88	39.3	6.86
			44	4.4	10.81	39.5	6.85
			45	4.4	10.75	39.9	6.85
			46	4.4	10.70	40.1	6.86
Forrest Lake Area 1							
07-Jun-20	1.2	1.2	0	7.3	11.17	40.0	7.35
			0.5	7.3	11.17	40.0	7.36
			1	7.2	11.15	41.2	7.16
Forrest Lake Area 2							
08-Jun-20	11.3	23.6	0	4.8	11.89	47.7	7.37
			1	4.8	11.88	47.7	7.40
			2	4.8	11.88	48.0	7.41
			3	4.8	11.87	48.6	7.41
			4	4.8	11.86	48.9	7.41
			5	4.8	11.86	48.9	7.41
			6	4.8	11.85	49.1	7.41
			7	4.8	11.84	49.1	7.40
			8	4.8	11.83	49.1	7.40
			9	4.8	11.82	49.1	7.39
			10	4.8	11.81	49.2	7.39
			11	4.8	11.81	49.2	7.39
			12	4.8	11.80	49.2	7.37
			13	4.8	11.79	49.2	7.37
			14	4.8	11.79	49.2	7.37
			15	4.8	11.78	49.2	7.37
			16	4.8	11.77	49.2	7.37
			17	4.8	11.77	49.2	7.37
			18	4.8	11.76	49.2	7.36
			19	4.8	11.76	49.2	7.36
			20	4.8	11.75	49.2	7.36
			21	4.8	11.74	49.2	7.36
			22	4.8	11.74	49.2	7.36
			23	4.8	11.39	49.4	7.32
Beet Lake Area 1							
08-Jun-20	4.5	31.9	0	7.4	11.41	42.6	7.39
			1	7.4	11.4	42.6	7.39
			2	7.4	11.39	43.3	7.38
			3	7.4	11.38	43.8	7.39
			4	7.4	11.38	43.9	7.38
			5	7.4	11.37	43.9	7.39
			6	7.4	11.36	43.9	7.38

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
08-Jun-20	4.5	31.9	7	7.4	11.35	43.9	7.39
			8	7.3	11.35	43.9	7.38
			9	7.3	11.34	44	7.38
			10	7.3	11.34	44	7.38
			11	7.3	11.3	43.9	7.37
			12	7	11.32	44	7.35
			13	6.4	11.36	44.2	7.30
			14	6.4	11.3	44.1	7.27
			15	6.2	11.31	44.1	7.21
			16	6.1	11.29	44.3	7.22
			17	5.9	11.28	44.3	7.20
			18	5.9	11.28	44.4	7.18
			19	5.8	11.24	44.4	7.17
			20	5.7	11.21	44.4	7.15
			21	5.6	11.18	44.5	7.13
			22	5.5	11.16	44.5	7.13
			23	5.5	11.14	44.5	7.10
			24	5.5	11.13	44.6	7.10
			25	5.5	11.12	44.6	7.09
			26	5.5	11.1	44.6	7.05
			27	5.4	11.07	44.7	7.03
			28	5.4	11.02	44.7	7.03
			29	5.3	10.96	44.8	7.04
			30	5.3	10.93	44.8	7.01
			31	5.2	10.88	44.8	7.02
Beet Creek							
08-Jun-20	0.5	0.5	0	7.0	11.22	39.8	7.35
Naomi Lake							
07-Jun-20	1.6	5.7	0	12.0	9.72	17.5	6.75
			1	12.0	9.69	17.6	6.76
			2	12.0	9.67	17.6	6.77
			3	12.0	9.66	18.6	6.79
			4	12.0	9.66	18.8	6.78
			5	12.0	8.87	18.8	6.68
Clearwater River Area 1							
08-Jun-20	0.5	0.5	0	8.5	10.67	33.6	7.16
Lloyd Lake Inlet							
04-Jun-20	2.4	5.5	0	11.7	9.60	25.3	6.82
			1	11.6	9.60	25.3	6.82
			2	11.2	9.80	25.6	6.84
			3	9.4	9.86	27.3	6.81
			4	9.4	9.79	27.4	6.80
			5	9.3	9.67	27.6	6.72

Appendix C, Table 10

Field Water Quality Measurements from the Aquatic Study Area, June 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lloyd Lake Outlet							
04-Jun-20	0.5	0.5	0	12.1	9.92	25.4	6.94
Warner Rapids							
07-Jun-20	0.4	0.4	0	12.0	9.59	24.0	6.92
Lake D							
05-Jun-20	2.9	4	0	14.0	10.56	41.4	8.27
			1	14.0	10.56	41.4	8.28
			2	14.0	10.53	42.6	8.26
			3	13.9	10.48	43.8	8.15
Lake G Area 1							
05-Jun-20	0.4	0.4	0	15.3	9.22	33.0	7.14
Lake H Area 1							
05-Jun-20	0.3	0.3	0	16.3	9.70	35.5	7.34
Lake J							
03-Jun-20	1.3	1.3	0	14.1	10.03	6.4	6.81
			0.5	14.0	9.85	6.4	6.72
			1	14.0	10.00	6.4	6.72
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
22-Jul-20	9.3	80.3	0	16.7	9.37	37.9	7.44
			1	16.6	9.38	37.9	7.48
			2	16.5	9.40	37.9	7.47
			3	16.3	9.43	39.9	7.46
			4	16.1	9.49	37.8	7.49
			5	15.8	9.57	37.9	7.51
			6	15.6	9.64	37.9	7.51
			7	15.4	9.64	37.9	7.50
			8	15.2	9.69	37.9	7.51
			9	15.1	9.73	37.9	7.52
			10	13.8	10.40	38.0	7.59
			11	10.7	12.00	38.2	7.86
			12	9.3	12.37	38.1	8.04
			13	8.6	12.44	38.1	7.86
			14	8.0	12.41	38.1	7.81
			15	7.7	12.40	38.1	7.73
			16	7.2	12.28	38.2	7.61
			17	6.6	12.07	38.2	7.51
			18	6.5	11.94	38.2	7.35
			19	6.3	11.92	38.2	7.36
			20	6.1	11.74	38.3	7.34
			21	5.9	11.33	38.3	7.23
			22	5.7	11.09	38.4	7.17
			23	5.5	10.85	38.4	7.12
			24	5.4	10.70	38.5	7.09
			25	5.3	10.54	38.5	7.07
			26	5.2	10.44	38.5	7.05
			27	5.1	10.38	38.5	7.06
			28	5.1	10.33	38.5	7.06
			29	5.0	10.30	38.5	7.02
			30	5.0	10.23	38.6	7.01
			31	4.9	10.18	38.6	7.00
			32	4.9	10.16	38.6	6.99
			33	4.9	10.16	38.6	7.02
			34	4.9	10.19	38.6	7.02
			35	4.8	10.10	38.6	7.02
			36	4.8	10.12	38.6	7.04
			37	4.8	10.13	38.6	7.04
			38	4.7	10.16	38.6	7.03
			39	4.7	10.22	38.6	7.04
			40	4.6	10.23	38.6	7.03
			41	4.6	10.25	38.6	7.04
			42	4.6	10.25	38.6	7.04

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
22-Jul-20	9.3	80.3	43	4.6	10.26	38.6	7.04
			44	4.6	10.25	38.6	7.04
			45	4.5	10.24	38.6	7.02
			46	4.5	10.23	38.7	7.02
			47	4.5	10.22	38.7	7.02
			48	4.5	10.21	38.7	7.03
			49	4.5	10.19	38.7	7.00
			50	4.5	10.13	38.7	7.05
			51	4.5	10.11	38.7	6.99
			52	4.5	10.10	38.7	6.98
			53	4.5	10.10	38.7	6.97
			54	4.5	10.10	38.7	6.97
			55	4.5	10.08	38.7	6.97
			56	4.5	10.08	38.7	6.96
			57	4.4	10.07	38.7	6.96
			58	4.4	10.04	38.8	6.96
			59	4.4	10.03	38.7	6.95
			60	4.4	10.01	38.8	6.94
			61	4.4	10.00	38.8	6.93
			62	4.4	9.99	38.8	6.93
			63	4.4	9.99	38.8	6.93
			64	4.4	9.97	38.8	6.93
			65	4.4	9.96	38.8	6.93
			66	4.4	9.96	38.8	6.92
			67	4.4	9.91	38.8	6.92
			68	4.4	9.88	38.8	6.91
			69	4.4	9.82	38.9	6.90
			70	4.4	9.81	38.9	6.90
			71	4.4	9.81	38.9	6.90
			72	4.4	9.82	38.9	6.90
			73	4.4	9.82	38.9	6.90
			74	4.4	9.81	38.9	6.89
			75	4.4	9.78	39.0	6.89
			76	4.4	9.77	39.0	6.89
			77	4.4	9.68	39.2	6.88
			78	4.4	9.44	39.7	6.87
			79	4.4	9.25	40.3	6.87
			80	4.4	8.30	40.8	6.99
Hodge Lake Area 1							
24-Jul-20	7	38	0	17.7	9.18	26.4	7.08
			1	17.7	9.19	26.4	7.16
			2	17.7	9.18	26.4	7.17
			3	17.6	9.19	26.4	7.21

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
24-Jul-20	7	38	4	17.5	9.20	26.3	7.25
			5	17.5	9.18	26.3	7.29
			6	16.9	9.13	26.1	7.17
			7	15.5	9.53	26.4	7.03
			8	15.1	9.59	26.4	6.93
			9	14.1	9.81	26.5	6.82
			10	12.2	10.38	26.8	6.77
			11	11.2	10.63	26.8	6.71
			12	9.1	10.97	26.9	6.68
			13	8.1	10.89	27.0	6.60
			14	7.8	10.79	27.0	6.54
			15	7.5	10.73	27.1	6.50
			16	7.2	10.54	27.1	6.47
			17	7.0	10.46	27.2	6.44
			18	6.8	10.27	27.2	6.39
			19	6.7	10.29	27.2	6.37
			20	6.6	10.26	27.2	6.35
			21	6.6	10.17	27.2	6.34
			22	6.5	10.08	27.2	6.35
			23	6.4	10.00	27.3	6.34
			24	6.4	9.97	27.3	6.33
			25	6.4	9.96	27.3	6.33
			26	6.3	9.93	27.3	6.34
			27	6.3	9.91	27.3	6.32
			28	6.3	9.88	27.3	6.31
			29	6.3	9.78	27.3	6.28
			30	6.3	9.78	27.4	6.27
			31	6.3	9.72	27.4	6.27
			32	6.2	9.69	27.4	6.26
			33	6.2	9.67	27.4	6.26
			34	6.2	9.60	27.5	6.26
			35	6.2	9.56	27.5	6.23
			36	6.2	9.45	27.6	6.22
			37	6.2	9.40	27.6	6.21
Jed Creek							
27-Jul-20	0.5	0.5	0	19.5	8.39	22.9	6.66
Patterson Lake North Arm - East Basin Area 1							
27-Jul-20	5.1	21	0	20.0	9.12	29.4	7.47
			1	18.8	9.23	29.2	7.52
			2	18.7	9.21	29.2	7.51
			3	18.6	9.20	29.2	7.48
			4	18.6	9.19	29.2	7.44
			5	18.3	9.11	29.3	7.43

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1							
27-Jul-20	5.1	21	6	16.8	8.59	29.3	7.15
			7	16.4	8.73	29.3	7.13
			8	16.0	8.65	29.3	7.05
			9	15.8	8.54	29.3	7.08
			10	15.4	8.17	29.5	6.91
			11	14.9	7.75	29.6	6.83
			12	14.2	7.25	29.8	6.13
			13	13.1	6.66	30.0	6.62
			14	11.6	6.01	30.3	6.50
			15	10.5	5.26	30.8	6.40
			16	10.0	5.20	30.8	6.34
			17	9.6	4.95	31.1	6.30
			18	9.5	4.88	31.2	6.27
			19	9.2	4.14	31.8	6.25
			20	9.1	3.77	32.0	6.22
Patterson Lake North Arm - West Basin Area 1							
27-Jul-20	8.3	29.8	0	19.5	9.32	37.6	7.60
			1	18.2	9.40	37.6	7.58
			2	18.0	9.42	37.5	7.61
			3	17.8	9.45	37.4	7.67
			4	17.8	9.45	37.5	7.70
			5	17.7	9.45	37.5	7.71
			6	17.7	9.46	37.5	7.67
			7	17.0	9.70	37.5	7.75
			8	15.8	9.79	37.4	7.66
			9	15.1	9.80	37.5	7.61
			10	14.4	9.91	37.4	7.52
			11	12.2	10.41	37.6	7.32
			12	10.9	10.77	37.4	7.25
			13	9.5	11.10	37.7	7.22
			14	8.6	11.23	37.5	7.18
			15	7.6	11.21	37.5	7.12
			16	7.1	11.08	37.4	7.06
			17	7.0	11.00	37.4	7.04
			18	6.6	10.68	37.5	6.94
			19	6.2	10.36	37.6	6.91
			20	6.1	10.33	37.5	6.88
			21	6.1	10.31	37.5	6.86
			22	6.0	10.19	37.6	6.85
			23	5.9	10.15	37.6	6.82
			24	5.9	10.14	37.6	6.78
			25	5.9	10.11	37.6	6.76
			26	5.8	10.10	37.6	6.75

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - West Basin Area 1							
27-Jul-20	8.3	29.8	27	5.8	10.08	37.6	6.73
			28	5.8	10.07	37.6	6.73
			29	5.8	10.02	37.6	6.69
Patterson Lake South Arm Area 1							
28-Jul-20	8.5	47.1	0	18.8	9.31	38.5	7.61
			1	18.6	9.33	38.4	7.62
			2	18.5	9.35	38.4	7.65
			3	18.5	9.36	38.4	7.65
			4	18.4	9.38	38.4	7.66
			5	18.3	9.38	38.4	7.66
			6	18.2	9.40	38.4	7.66
			7	18.1	9.42	38.4	7.66
			8	16.9	9.57	38.5	7.69
			9	15.6	9.82	38.6	7.65
			10	15.0	9.83	38.5	7.57
			11	14.4	9.92	38.5	7.50
			12	12.8	10.25	38.8	7.41
			13	9.9	11.00	38.7	7.26
			14	9.3	11.02	38.8	7.13
			15	7.8	10.97	39.1	7.06
			16	7.3	10.70	39.0	6.93
			17	7.0	10.46	39.0	6.85
			18	6.7	10.25	38.9	6.81
			19	6.5	10.05	39.0	6.79
			20	6.4	9.98	39.0	6.72
			21	6.3	9.97	39.0	6.71
			22	6.2	9.97	39.0	6.71
			23	6.2	9.94	39.0	6.68
			24	6.1	9.92	39.0	6.69
			25	6.0	9.88	39.0	6.66
			26	5.9	9.86	39.0	6.64
			27	5.9	9.78	39.0	6.64
			28	5.9	9.73	39.0	6.60
			29	5.8	9.66	39.1	6.59
			30	5.7	9.62	39.1	6.57
			31	5.7	9.60	39.1	6.58
			32	5.7	9.64	39.0	6.57
			33	5.6	9.58	39.1	6.55
			34	5.5	9.53	39.1	6.55
			35	5.5	9.47	39.1	6.54
			36	5.5	9.45	39.0	6.54
			37	5.4	9.41	39.1	6.53
			38	5.9	9.35	39.1	6.49

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
28-Jul-20	8.5	47.1	39	5.9	9.28	39.1	6.49
			40	5.3	9.01	39.1	6.49
			41	5.3	8.85	39.2	6.49
			42	5.3	8.71	39.2	6.50
			43	5.3	8.69	39.2	6.49
			44	5.3	8.67	39.2	6.50
			45	5.3	8.66	39.2	6.50
			46	5.3	8.64	39.2	6.48
			47	5.3	8.63	39.2	6.47
Forrest Lake Area 1							
25-Jul-20	1.3	1.3	0	19.1	8.72	38.5	7.32
			0.5	19.1	8.75	38.5	7.26
			1	19.1	8.79	38.6	7.31
Forrest Lake Area 2							
25-Jul-20	10.3	24	0	16.7	9.50	47.2	7.58
			1	16.6	9.50	47.2	7.64
			2	16.7	9.51	47.2	7.64
			3	16.7	9.51	47.2	7.63
			4	16.6	9.52	47.2	7.65
			5	16.2	9.63	47.2	7.69
			6	15.9	9.73	47.2	7.72
			7	15.6	9.81	47.2	7.72
			8	15.3	9.89	47.2	7.72
			9	14.9	9.94	47.2	7.71
			10	14.6	10.02	47.2	7.70
			11	13.4	10.45	47.2	7.63
			12	10.0	11.59	47.3	7.55
			13	9.3	11.71	47.3	7.44
			14	8.6	11.83	47.2	7.39
			15	7.6	11.91	47.4	7.31
			16	7.3	11.89	47.4	7.27
			17	6.9	11.82	47.4	7.21
			18	6.7	11.77	47.4	7.18
			19	6.5	11.67	47.4	7.12
			20	6.3	11.57	47.4	7.08
			21	6.2	11.37	47.4	6.99
			22	6.1	11.32	47.4	6.98
			23	6.1	11.31	47.4	6.96
Beet Lake Area 1							
26-Jul-20	5.5	32	0	18.2	9.34	42.7	7.75
			1	18.2	9.34	42.7	7.76
			2	18.2	9.34	42.7	7.78
			3	18.2	9.34	42.7	7.75

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
26-Jul-20	5.5	32	4	18.1	9.35	42.7	7.76
			5	18.1	9.34	42.7	7.77
			6	18.1	9.36	42.7	7.79
			7	17.9	9.35	42.6	7.76
			8	16.1	9.32	42.7	7.56
			9	15.9	9.3	42.7	7.49
			10	15.6	9.33	42.6	7.45
			11	13.5	9.36	42.6	7.20
			12	11	9.64	42.7	6.67
			13	9.9	9.58	42.7	6.69
			14	8.9	9.45	42.8	6.63
			15	8.6	9.33	42.8	6.61
			16	8.1	8.96	42.9	6.56
			17	7.7	8.78	43	6.55
			18	7.4	8.3	43.2	6.49
			19	7.1	8.23	43.2	6.49
			20	6.9	8.25	43.3	6.49
			21	6.7	8.1	43.3	6.47
			22	6.6	8.15	43.3	6.49
			23	6.5	8.11	43.4	6.48
			24	6.4	7.68	43.6	6.45
			25	6.4	7.52	43.7	6.44
			26	6.4	7.43	43.8	6.44
			27	6.3	7.21	44	6.42
			28	6.2	6.85	44.3	6.40
			29	6.1	6.33	44.8	6.36
			30	6.1	5.96	45.1	6.33
			31	6.1	5.59	45.5	6.30
Beet Creek							
26-Jul-20	0.5	0.5	0	18.9	9.50	40.9	7.32
Naomi Lake							
26-Jul-20	1.8	5.6	0	18.8	8.50	20.1	6.69
			1	18.8	8.50	20.1	6.75
			2	18.7	8.47	20.1	6.75
			3	18.4	8.37	20.0	6.68
			4	17.2	7.42	20.7	6.48
			5	16.3	6.55	21.1	6.31
Clearwater River Area 1							
26-Jul-20	0.8	0.8	0	19.2	8.92	32.4	7.08
Lloyd Lake Inlet							
23-Jul-20	2.2	5.7	0	20.8	8.98	26.9	7.12
			1	20.6	9.00	26.9	7.10
			2	20.4	9.01	26.9	7.14

Appendix C, Table 11

Field Water Quality Measurements from the Aquatic Study Area, July 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lloyd Lake Inlet							
23-Jul-20	2.2	5.7	3	18.4	8.69	26.8	6.99
			4	18.3	8.56	26.8	6.93
			5	18.0	8.03	27.1	6.80
Lloyd Lake Outlet							
23-Jul-20	0.5	0.5	0	18.4	8.29	27.0	6.65
Warner Rapids							
29-Jul-20	0.5	0.5	0	20.6	7.62	28.1	6.69
Lake D							
25-Jul-20	2.9	4	0	19.5	9.11	41.8	7.79
			1	19.5	9.11	41.8	7.74
			2	19.4	9.07	41.8	7.74
			3	18.5	9.26	41.8	7.63
			3.5	18.3	8.72	42.0	7.40
Lake G Area 1							
27-Jul-20	0.5	0.5	0	20.3	8.48	34.5	7.22
Lake H Area 1							
27-Jul-20	0.5	0.5	0	20.2	9.10	35.7	7.70
Lake J							
24-Jul-20	1.6	1.8	0	19.4	8.75	6.7	6.41
			0.5	19.4	8.76	6.7	6.36
			1	19.4	8.77	6.7	6.33
			1.5	19.4	8.77	6.7	6.33
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
19-Sep-20	7.6	78.5	0	11.2	9.93	37.5	6.90
			1	11.0	9.94	37.5	6.90
			2	10.9	9.92	37.5	6.97
			3	10.8	9.91	37.5	7.01
			4	10.8	9.91	37.5	7.05
			5	10.8	9.90	37.5	7.04
			6	10.7	9.87	37.5	7.11
			7	10.7	9.87	37.5	7.15
			8	10.7	9.87	37.5	7.12
			9	10.7	9.85	37.5	7.18
			10	10.7	9.84	37.5	7.17
			11	10.6	9.81	37.5	7.15
			12	10.6	9.81	37.5	7.18
			13	10.6	9.80	37.5	7.22
			14	10.5	9.78	37.5	7.23
			15	10.5	9.76	37.5	7.25
			16	10.4	9.76	37.5	7.42
			17	10.4	9.76	37.5	7.37
			18	10.3	9.71	37.5	7.35
			19	9.5	9.64	37.9	7.11
			20	7.0	9.91	38.3	6.91
			21	6.5	10.01	38.4	6.90
			22	6.0	9.63	38.4	6.84
			23	5.7	9.28	38.5	6.80
			24	5.5	9.15	38.5	6.76
			25	5.4	9.08	38.4	6.76
			26	5.3	8.96	38.5	6.72
			27	5.1	8.91	38.5	6.74
			28	5.1	8.92	38.5	6.74
			29	5.0	8.89	38.5	6.74
			30	4.9	8.86	38.5	6.73
			31	4.8	8.85	38.5	6.73
			32	4.8	8.84	38.6	6.72
			33	4.8	8.81	38.6	6.71
			34	4.7	8.75	38.6	6.72
			35	4.7	8.71	38.6	6.72
			36	4.7	8.69	38.6	6.70
			37	4.7	8.69	38.6	6.71
			38	4.6	8.74	38.6	6.71
			39	4.6	8.73	38.6	6.71
			40	4.6	8.70	38.6	6.71
			41	4.6	8.67	38.6	6.70
			42	4.6	8.68	38.6	6.71

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Broach Lake Area 2							
19-Sep-20	7.6	78.5	43	4.6	8.68	38.6	6.70
			44	4.6	8.69	38.6	6.70
			45	4.6	8.64	38.7	6.70
			46	4.5	8.64	38.7	6.70
			47	4.5	8.64	38.7	6.70
			48	4.5	8.63	38.7	6.70
			49	4.5	8.61	38.7	6.71
			50	4.5	8.59	38.7	6.70
			51	4.5	8.55	38.7	6.70
			52	4.5	8.52	38.8	6.69
			53	4.5	8.47	38.8	6.69
			54	4.5	8.46	38.8	6.69
			55	4.5	8.43	38.8	6.68
			56	4.5	8.36	38.8	6.68
			57	4.5	8.33	38.8	6.68
			58	4.5	8.24	38.9	6.67
			59	4.5	8.19	38.9	6.66
			60	4.5	8.10	38.9	6.66
			61	4.5	8.03	39.0	6.65
			62	4.5	7.97	39.0	6.65
			63	4.5	7.90	39.0	6.64
			64	4.5	7.87	39.0	6.67
			65	4.5	7.83	39.0	6.64
			66	4.5	7.80	39.0	6.63
			67	4.5	7.78	39.1	6.64
			68	4.5	7.67	39.1	6.62
			69	4.5	7.64	39.1	6.63
			70	4.5	7.63	39.1	6.62
			71	4.5	7.62	39.1	6.62
			72	4.5	7.60	39.2	6.61
			73	4.5	7.58	39.2	6.61
			74	4.5	7.59	39.2	6.62
			75	4.5	7.56	39.2	6.61
			76	4.5	7.56	39.2	6.61
			77	4.5	7.47	39.3	6.61
			78	4.5	6.87	42.3	6.70
Hodge Lake Area 1							
20-Sep-20	4.2	37	0	10.8	10.21	25.8	7.16
			1	10.8	10.19	25.8	7.19
			2	10.8	10.18	25.8	7.19
			3	10.8	10.17	25.8	7.20
			4	10.8	10.17	25.8	7.20
			5	10.8	10.13	25.8	7.18

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Hodge Lake Area 1							
20-Sep-20	4.2	37	6	10.7	10.10	25.8	7.18
			7	10.6	10.04	25.8	7.16
			8	10.5	9.91	25.8	7.09
			9	10.4	9.86	25.8	7.08
			10	10.4	9.84	25.8	7.07
			11	10.3	9.87	25.9	7.07
			12	10.3	9.85	25.9	7.05
			13	10.3	9.83	25.9	7.06
			14	10.3	9.81	25.9	7.05
			15	10.3	9.82	25.9	7.05
			16	10.3	9.80	25.9	7.05
			17	10.2	9.72	25.9	7.01
			18	9.6	9.39	26.3	6.84
			19	8.2	8.65	27.0	6.54
			20	7.3	8.35	27.3	6.49
			21	6.9	8.27	27.4	6.50
			22	6.8	8.20	27.5	6.46
			23	6.7	8.06	27.6	6.43
			24	6.6	8.04	27.6	6.38
			25	6.5	7.87	27.7	6.38
			26	6.5	7.93	27.6	6.36
			27	6.4	7.85	27.7	6.35
			28	6.4	7.57	27.8	6.32
			29	6.4	7.49	27.9	6.32
			30	6.4	7.62	27.8	6.32
			31	6.4	7.64	27.9	6.35
			32	6.3	7.47	28.0	6.33
			33	6.3	7.26	28.2	6.31
			34	6.3	7.07	28.3	6.30
			35	6.2	6.83	28.4	6.29
			36	6.2	6.73	28.5	6.28
Jed Creek							
22-Sep-20	0.5	0.5	0	10.0	10.20	26.2	6.33
Patterson Lake North Arm - East Basin Area 1							
24-Sep-20	3.1	20.5	0	10.7	10.30	28.7	7.05
			1	10.7	10.30	28.7	7.03
			2	10.7	10.28	28.7	7.02
			3	10.7	10.27	28.7	7.00
			4	10.7	10.27	28.7	7.03
			5	10.7	10.27	28.7	7.04
			6	10.7	10.26	28.7	7.04
			7	10.7	10.24	28.7	7.06
			8	10.7	10.23	28.8	7.06

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake North Arm - East Basin Area 1							
24-Sep-20	3.1	20.5	9	10.7	10.21	28.8	7.06
			10	10.7	10.18	28.7	7.05
			11	10.6	10.13	28.8	7.03
			12	10.6	10.10	28.8	7.01
			13	10.5	10.07	28.9	7.00
			14	10.5	9.99	28.9	6.99
			15	10.2	9.62	29.0	6.90
			16	10.2	9.50	29.1	6.85
			17	10.0	9.36	29.1	6.83
			18	10.0	9.30	29.2	6.83
			19	9.9	9.08	29.2	6.80
			20	9.8	8.37	30.1	6.69
Patterson Lake North Arm - West Basin Area 1							
24-Sep-20	5.25	27.5	0	10.8	10.31	36.9	7.19
			1	10.8	10.30	36.9	7.19
			2	10.8	10.28	36.9	7.19
			3	10.8	10.27	36.9	7.22
			4	10.8	10.26	36.9	7.20
			5	10.8	10.26	36.9	7.21
			6	10.8	10.25	36.9	7.23
			7	10.8	10.24	36.9	7.25
			8	10.8	10.23	36.9	7.24
			9	10.8	10.21	36.9	7.26
			10	10.8	10.20	36.9	7.26
			11	10.8	10.20	36.9	7.27
			12	10.7	10.18	36.9	7.27
			13	10.7	10.16	36.9	7.26
			14	10.7	10.15	36.9	7.26
			15	10.7	10.14	36.9	7.26
			16	9.1	9.31	37.1	6.92
			17	8.4	9.05	37.2	6.79
			18	7.5	8.70	37.3	6.68
			19	6.9	8.61	37.5	6.64
			20	6.8	8.55	37.5	6.63
			21	6.7	8.52	37.5	6.63
			22	6.6	8.48	37.5	6.61
			23	6.4	8.41	37.5	6.60
			24	6.3	8.35	37.5	6.59
			25	6.3	8.28	37.5	6.58
			26	6.3	8.24	37.6	6.59
			27	6.2	8.19	37.6	6.58

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
25-Sep-20	6.2	46	0	10.9	10.25	37.8	7.27
			1	10.9	10.23	37.8	7.26
			2	10.9	10.23	37.8	7.26
			3	10.9	10.21	37.8	7.26
			4	10.9	10.19	37.8	7.24
			5	10.9	10.18	37.9	7.26
			6	10.9	10.17	37.9	7.26
			7	10.9	10.17	37.9	7.26
			8	10.9	10.17	37.9	7.27
			9	10.9	10.16	37.9	7.26
			10	10.9	10.15	37.9	7.27
			11	10.9	10.13	37.9	7.28
			12	10.9	10.11	37.9	7.29
			13	10.9	10.10	37.9	7.28
			14	10.9	10.09	37.9	7.27
			15	10.9	10.09	37.9	7.29
			16	10.9	10.11	37.9	7.30
			17	10.8	10.07	38.0	7.28
			18	10.3	9.60	38.1	7.11
			19	10.2	9.56	38.0	7.09
			20	10.1	9.45	38.1	7.05
			21	9.6	9.09	38.3	6.96
			22	8.8	8.45	38.6	6.78
			23	8.5	8.22	38.6	6.73
			24	8.2	8.08	38.7	6.72
			25	7.5	7.86	38.9	6.65
			26	6.9	7.81	38.9	6.62
			27	6.8	7.78	38.9	6.62
			28	6.6	7.73	38.9	6.61
			29	6.5	7.75	38.9	6.61
			30	6.3	7.74	39.0	6.61
			31	6.2	7.70	39.0	6.61
			32	6.1	7.65	39.0	6.59
			33	6.0	7.58	39.1	6.58
			34	5.9	7.47	39.1	6.56
			35	5.9	7.37	39.2	6.44
			36	5.8	7.25	39.2	6.40
			37	5.7	6.79	39.2	6.36
			38	5.7	6.59	39.3	6.36
			39	5.7	6.53	39.4	6.35
			40	5.7	6.41	39.4	6.34
			41	5.7	6.32	39.3	6.34
			42	5.6	6.11	36.5	6.33
			43	5.6	6.05	39.4	6.32

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Patterson Lake South Arm Area 1							
25-Sep-20	6.2	46	44	5.6	5.96	39.4	6.31
			45	5.6	5.80	39.5	6.30
			46	5.6	5.49	39.8	6.29
Forrest Lake Area 1							
25-Sep-20	1.4	1.4	0	10.4	9.68	37.7	7.04
			0.5	10.4	9.67	37.7	7.05
			1	10.4	9.67	37.7	7.03
Forrest Lake Area 2							
23-Sep-20	7.75	22.5	0	10.8	10.43	46.7	7.42
			1	10.8	10.42	46.7	7.42
			2	10.8	10.41	46.7	7.40
			3	10.8	10.40	46.7	7.40
			4	10.8	10.39	46.7	7.40
			5	10.8	10.39	46.7	7.40
			6	10.8	10.38	46.7	7.41
			7	10.8	10.37	46.7	7.41
			8	10.8	10.35	46.7	7.42
			9	10.8	10.33	46.7	7.42
			10	10.8	10.33	46.7	7.42
			11	10.8	10.33	46.7	7.42
			12	10.8	10.32	46.7	7.42
			13	10.8	10.31	46.7	7.42
			14	10.8	10.28	46.7	7.42
			15	10.8	10.27	46.7	7.41
			16	10.7	10.26	46.7	7.41
			17	10.7	10.27	46.7	7.42
			18	10.7	10.26	46.7	7.41
			19	10.7	10.23	46.7	7.41
			20	10.5	10.18	46.7	7.37
			21	8.5	10.18	47.0	7.10
			22	7.5	10.19	47.2	7.04
Beet Lake Area 1							
26-Jul-20	5.5	32	0	10.8	10.21	42.2	7.28
			1	10.8	10.2	42.3	7.26
			2	10.8	10.19	42.3	7.26
			3	10.8	10.19	42.3	7.27
			4	10.8	10.17	42.3	7.26
			5	10.8	10.16	42.2	7.25
			6	10.8	10.14	42.2	7.27
			7	10.8	10.14	42.3	7.26
			8	10.8	10.13	42.3	7.26
			9	10.8	10.12	42.2	7.26
			10	10.8	10.11	42.3	7.25

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Beet Lake Area 1							
26-Jul-20	5.5	32	11	10.7	10.06	42.2	7.24
			12	10.8	10.06	42.3	7.25
			13	10.7	10.03	42.3	7.26
			14	10.7	9.98	42.3	7.25
			15	10.7	9.94	42.3	7.19
			16	10.5	9.78	42.3	7.16
			17	10.4	9.49	42.3	7.06
			18	10.3	9.4	42.3	7.02
			19	10.3	9.37	42.4	7.01
			20	10.3	9.32	42.4	7.00
			21	10.3	9.27	42.3	7.00
			22	10.2	9.21	42.4	7.00
			23	10.2	9.16	42.4	7.00
			24	10.2	9.07	42.5	6.99
			25	10.2	9.04	42.5	6.99
			26	10.2	9	42.5	6.98
			27	10.1	8.91	42.5	6.96
			28	10.1	8.84	42.6	6.95
			29	9.9	8.23	43.1	6.84
			30	9.8	8.03	43.1	6.81
			31	9.7	7.42	43.8	6.74
			32	9.7	6.96	44.3	6.87
Beet Creek							
23-Sep-20	0.5	0.5	0	11.2	10.36	41.7	7.12
Naomi Lake							
23-Sep-20	1.3	5.8	0	10.0	10.01	18.2	6.27
			1	10.2	9.99	18.1	6.26
			2	10.0	9.92	18.1	6.26
			3	10.0	9.87	18.1	6.24
			4	10.0	9.85	18.1	6.22
			5	9.2	9.67	18.6	6.24
			5.5	9.2	9.35	18.7	6.24
Clearwater River Area 1							
23-Sep-20	0.5	0.5	0	11.4	10.08	32.3	6.98
Lloyd Lake Inlet							
21-Sep-20	1.75	5.7	0	10.9	9.87	23.7	6.93
			1	10.9	9.84	23.7	6.91
			2	10.9	9.80	23.6	6.90
			3	10.9	9.77	23.6	6.88
			4	10.9	9.68	23.4	6.85
			5	10.9	9.43	23.3	6.79

Appendix C, Table 12

Field Water Quality Measurements from the Aquatic Study Area, September 2020

Date	Secchi Depth (m)	Station Depth (m)	Sampling Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH (pH units)
Lloyd Lake Outlet							
21-Sep-20	0.5	0.5	0	10.2	10.22	23.9	6.94
Warner Rapids							
26-Sep-20	0.5	0.5	0	9.7	10.09	26.0	6.76
Lake D							
22-Sep-20	2.78	4.3	0	10.0	10.55	39.5	7.52
			1	10.0	10.55	39.5	7.54
			2	10.0	10.54	39.5	7.54
			3	10.0	10.54	39.5	7.55
			4	9.9	10.43	39.5	7.47
Lake G Area 1							
22-Sep-20	0.5	0.5	0	10.1	9.02	40.3	6.20
Lake H Area 1							
22-Sep-20	0.5	0.5	0	10.3	10.60	39.9	7.12
Lake J							
20-Sep-20	2.25	2.7	0	10.0	9.63	10.5	6.31
			1	10.0	9.62	10.5	6.31
			2	9.6	9.24	10.7	6.28
			2.5	8.7	8.60	10.9	6.19
SEQG[a]							
					6.5 to 9.5[b]		6.5 to 9.0[c]

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Dissolved oxygen guideline: 6.5 mg/L for all biota in general conditions; 8.3 mg/L for mid May to the end of June to protect mayfly emergence; 9.5 mg/L for areas and times where larval fish develop within gravel beds.

c) pH guideline: 6.5 to 9.0.

Appendix C, Table 13

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2018

Parameter	Broach Lake Area 1				Broach Lake Area 2		Hodge Lake Area 1				Jed Creek					Patterson Lake North Arm - East Basin Area 1					Patterson Lake North Arm - West Basin Area 1					SEQG[a]
	Composite				Composite		Composite				Surface					Composite					Composite					
	N=2				N=1		N=2				N=3					N=3					N=3					
	N<RDL	Mean	Max	Min	N<RDL	Mean	N<RDL	Mean	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	
Inorganic Ions																										
Bicarbonate (as HCO3)	-	**24**	27	21	-	**17**	-	**13**	16	10	-	**15**	2	17	13	-	**16**	4.0	20	12	-	**25**	2.9	27	22	-
Calcium	-	**3.5**	3.6	3.4	-	**3.8**	-	**2.8**	2.9	2.7	-	**2.4**	0.29	2.6	2.1	-	**3.0**	0.15	3.1	2.8	-	**3.6**	0.21	3.8	3.4	-
Carbonate (as CO3)	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Chloride	-	**0.4**	0.4	0.4	-	**0.4**	-	**2**	2	2	-	**0.3**	0.06	0.4	0.3	-	**0.4**	0	0.4	0.4	-	**0.6**	0.1	0.6	0.5	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.2**	1.2	1.2	-	**1.3**	-	**0.7**	0.7	0.7	-	**0.7**	0.1	0.8	0.7	-	**1**	0.06	1	0.9	-	**1.3**	0.058	1.3	1.2	-
Potassium	-	**0.6**	0.6	0.5	-	**0.6**	-	**0.3**	0.3	0.3	-	**0.4**	0.06	0.5	0.4	-	**0.5**	-	0.5	0.5	-	**0.6**	0	0.6	0.6	-
Sodium	-	**1.6**	1.6	1.5	-	**1.6**	-	**1**	1	1	-	**1.1**	0.12	1.2	1.0	-	**1.3**	-	1.3	1.3	-	**1.4**	0	1.4	1.4	-
Sulphate	-	**1.9**	1.9	1.9	-	**2.1**	-	**1.1**	1.1	1.0	-	**1.2**	0	1.2	1.2	-	**1.2**	0.058	1.3	1.2	-	**1.6**	0.058	1.6	1.5	128[b]
Metals																										
Aluminum	-	**0.0037**	0.0058	0.0016	1	**0.0003**	-	**0.0021**	0.0022	0.0020	-	**0.020**	0.0055	0.026	0.016	-	**0.0054**	0.0038	0.0098	0.0027	-	**0.0066**	0.0082	0.016	0.0015	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.3**	0.5	0.1	-	**0.2**	1	**0.1**	0.2	< 0.1	-	**0.2**	0	0.2	0.2	-	**0.1**	0	0.1	0.1	-	**0.1**	0	0.1	0.1	5
Barium	-	**0.014**	0.014	0.014	-	**0.016**	-	**0.0071**	0.0073	0.0068	-	**0.0090**	0.00080	0.0098	0.0082	-	**0.0098**	0.0013	0.011	0.0084	-	**0.0094**	0.000058	0.0095	0.0094	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Boron	2	**0.005**	< 0.01	< 0.01	1	**0.005**	-	**0.01**	0.01	0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	1	**0.000005**	2	**0.000005**	< 0.00001	< 0.00001	1	**0.00001**	0.000003	0.00001	< 0.00001	2	**0.00001**	0.000003	0.00001	< 0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	0.00004[d]
Chromium	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0003**	2	**0.0003**	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	0.00006	0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.06**	0.06	0.05	-	**0.07**	-	**0.035**	0.04	0.03	-	**0.04**	0	0.04	0.04	-	**0.05**	0.006	0.05	0.04	-	**0.05**	0.006	0.06	0.05	0.12
Iron	-	**0.031**	0.036	0.026	-	**0.028**	-	**0.02**	0.03	0.012	-	**0.39**	0.13	0.51	0.25	-	**0.32**	0.22	0.57	0.16	-	**0.02**	0.009	0.03	0.012	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Manganese	-	**0.012**	0.016	0.0079	-	**0.036**	-	**0.01**	0.015	0.005	-	**0.009**	0.004	0.013	0.006	-	**0.060**	0.061	0.13	0.021	-	**0.0197**	0.009	0.03	0.01	-
Mercury (ng/L)	-	**3**	3	2	1	**0.5**	1	**1**	2	< 1	1	**1**	0.8	2	< 1	1	**3**	2	4	< 1	1	**2**	1	3	< 1	26
Molybdenum	1	**0.00008**	0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00007**	0.00003	0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00008**	0.00003	0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Selenium	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	1	**0.00003**	2	**0.00003**	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.035**	0.035	0.035	-	**0.036**	-	**0.061**	0.061	0.060	-	**0.026**	0.0021	0.028	0.024	-	**0.027**	0	0.027	0.027	-	**0.030**	0.00058	0.030	0.029	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.0004**	0.0007	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	1	**0.0003**	0.0005	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-	**0.0003**	0.0001	0.0004	0.0003	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	-	**0.0002**	0.0001	0.0003	0.0002	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0007**	0.0012	< 0.0005	-	**0.0027**	1	**0.002**	0.0028	< 0.0005	2	**0.0006**	0.0007	0.0014	< 0.0005	2	**0.0007**	0.0007	0.0015	< 0.0005	2	**0.0005**	0.0004	0.001	< 0.0005	0.03
Nutrients																										
Ammonia (as N)	1	**0.01**	0.02	< 0.01	1	**0.005**	1	**0.02**	0.03	< 0.01	2	**0.01**	0.01	0.03	< 0.01	1	**0.02**	0.01	0.02	< 0.01	2	**0.01**	0.009	0.02	< 0.01	0.141 to 57.3[h]
Carbon, Organic dissolved	-	**1.9**	1.9	1.9	-	**1.8**	-	**2.2**	2.2	2.2	-	**4.7**	0.23	5.0	4.6	-	**2.8**	0.058	2.9	2.8	-	**2.2**	0.15	2.4	2.1	-
Carbon, Total Organic	-	**1.7**	1.7	1.6	-	**1.6**	-	**2.0**	2.0	2.0	-	**4.5**	0.30	4.8	4.2	-	**2.6**	0.058	2.7	2.6	-	**1.9**	0.06	2.0	1.9	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	-	**0.04**	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	2	**0.01**	0.009	0.02	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3
Nitrate (NO3)	2	**0.013**	< 0.04	< 0.01	-	**0.04**	2	**0.005**	< 0.01	< 0.01	3	**0.01**	-	< 0.04	< 0.01	2	**0.03**	0.05	0.09	< 0.01	3	**0.01**	-	< 0.04	< 0.01	13
Nitrate+Nitrite (as N) calc.[i]	1	**0.005**	< 0.01	< 0.01	-	**-**	-	**-**	-	-	1	**0.005**	-	< 0.01	< 0.01	-	**0.02**	-	0.02	0.02	1	**0.005**	-	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.22**	0.24	0.19	-	**0.13**	-	**0.14**	< 0.15	< 0.13	-	**0.21**	0.036	0.25	0.18	-	**0.23**	0.035	0.27	0.20	-	**0.13**	0.026	0.16	0.11	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	2	**0.007**	0.003	0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																										
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as CaCO3)	-	**20**	22	17	-	**14**	-	**11**	13	8	-	**12**	1.5	14	11	-	**13**	3.1	16	10	-	**21**	2.3	22	18	-
Hardness, Total	-	**14**	14	13	-	**15**	-	**10**	10	10	-	**9**	1	10	8	-	**12**	0.58	12	11	-	**14**	1.0	15	13	-
pH (pH units)	-	**7.43**	7.49	7.36	-	**7.52**	-	**7.13**	7.25	7.01	-	**7.22**	0.146	7.37	7.08	-	**7.4**	0.23	7.53	7.1	-	**7.47**	0.185	7.59	7.26	6.5 to 9.0
Solids, Total dissolved	-	**42**	43	41	-	**30**	-	**33**	38	28	-	**44**	9.0	54	38	-	**36**	3.1	39	33	-	**43**	4.2	46	38	-
Solids, Total suspended	-	**2**	2	2	1	**0.5**	1	**1**	2	< 1	2	**1**	0.9	2	< 1	-	**2**	1	3	1	2	**1**	0.9	2	< 1	-
Specific Conductivity (µS/cm)	-	**31**	31	31	-	**31**	-	**20**	20	20	-	**18**	2.0	20	16	-	**24**	1.0	25	23	-	**30**	0.58	31	30	-
Sum of ions	-	**33**	36	30	-	**27**	-	**21**	24	18	-	**21**	2.5	24	19	-	**24**	3.5	27	20	-	**34**	2.9	36	31	-
Turbidity (NTU)	-	**0.4**	0.5	0.2	-	**0.3**	-	**0.4**	0.4	0.3	-	**1**	0.7	1.6	0.3	-	**1**	0.1	1.1	0.9	-	**0.3**	0.1	0.4	0.2	-
Radionuclides																										
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	1	**0.01**	2	**0.01**	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	1	**0.003**	2	**0.003**	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	-
Radium-226 (Bq/L)	1	**0.004**	0.005	< 0.005	1	**0.003**	1	**0.004**	0.005	< 0.005	2	**0.005**	0.004	0.01	< 0.005	1	**0.007**	0.004	0.009	< 0.005	3	**0.003**	-	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 13

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2018

Parameter	Patterson Lake South Arm Area 1					Forrest Lake Area 1					Forrest Lake Area 2					Beet Lake Area 1					Beet Creek					SEQG[a]
	Composite					Composite					Composite					Composite					Surface					
	N=3					N=3					N=3					N=3					N=3					
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	
Inorganic Ions																										
Bicarbonate (as HCO3)	-	**28**	1.2	29	27	-	**27**	5.0	32	22	-	**30**	3.5	34	28	-	**27**	1.7	29	26	-	**29**	2.9	32	27	-
Calcium	-	**3.7**	0.21	3.9	3.5	-	**3.7**	0.06	3.8	3.7	-	**4.1**	0.30	4.4	3.8	-	**4.0**	0.25	4.3	3.8	-	**4.0**	0.29	4.2	3.7	-
Carbonate (as CO3)	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Chloride	-	**0.6**	0.06	0.6	0.5	-	**0.6**	0.06	0.7	0.6	-	**0.7**	0.2	0.9	0.6	-	**0.6**	0.06	0.7	0.6	-	**0.6**	0.06	0.7	0.6	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.3**	0.058	1.4	1.3	-	**1.3**	0.058	1.4	1.3	-	**1.5**	0.12	1.6	1.4	-	**1.5**	0.12	1.6	1.4	-	**1.5**	0.10	1.6	1.4	-
Potassium	-	**0.6**	0.06	0.6	0.5	-	**0.6**	0.06	0.6	0.5	-	**0.7**	0.2	0.8	0.5	-	**0.7**	0.1	0.8	0.6	-	**0.7**	0.06	0.7	0.6	-
Sodium	-	**1.4**	0.058	1.5	1.4	-	**1.5**	0.10	1.6	1.4	-	**1.8**	0.35	2.0	1.4	-	**1.7**	0	1.7	1.7	-	**1.7**	0	1.7	1.7	-
Sulphate	-	**1.6**	0	1.6	1.6	-	**1.6**	0.058	1.6	1.5	-	**1.7**	0.10	1.8	1.6	-	**1.6**	0.058	1.7	1.6	-	**1.6**	0.058	1.7	1.6	128[b]
Metals																										
Aluminum	-	**0.0039**	0.0037	0.0082	0.0014	-	**0.0076**	0.0039	0.012	0.0048	-	**0.0038**	0.00091	0.0048	0.0030	-	**0.0032**	0.0014	0.0044	0.0016	-	**0.0066**	0.00035	0.0068	0.0062	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0	0.1	0.1	-	**0.1**	0	0.1	0.1	-	**0.1**	0.06	0.2	0.1	-	**0.1**	0.06	0.2	0.1	-	**0.1**	0	0.1	0.1	5
Barium	-	**0.0096**	0.00064	0.010	0.0089	-	**0.0090**	0.00082	0.0099	0.0083	-	**0.0084**	0.0013	0.0099	0.0075	-	**0.01**	0.0005	0.01	0.0091	-	**0.0087**	0.00062	0.0092	0.0080	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Boron	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	2	**0.007**	0.003	0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	3	**0.000005**	-	< 0.00001	< 0.00001	1	**0.000008**	0.000003	0.00001	< 0.00001	1	**0.000008**	0.000003	0.00001	< 0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	0.00004[d]
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.06**	0.006	0.06	0.05	-	**0.05**	0.006	0.06	0.05	-	**0.06**	0.01	0.07	0.05	-	**0.07**	0.01	0.08	0.06	-	**0.07**	0.01	0.08	0.06	0.12
Iron	-	**0.017**	0.0051	0.021	0.011	-	**0.040**	0.014	0.054	0.027	-	**0.019**	0.0075	0.027	0.012	-	**0.079**	0.022	0.095	0.054	-	**0.081**	0.034	0.11	0.044	0.3
Lead	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Manganese	-	**0.019**	0.013	0.03	0.0051	-	**0.0083**	0.00031	0.0086	0.0080	-	**0.007**	0.002	0.008	0.0041	-	**0.023**	0.0017	0.025	0.022	-	**0.013**	0.0062	0.020	0.0077	-
Mercury (ng/L)	1	**3**	2	5	< 1	2	**0.7**	0.3	1	< 1	3	**0.5**	-	< 1	< 1	2	**1**	0.9	2	< 1	2	**0.7**	0.3	1	< 1	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00007**	0.00003	0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00007**	0.00003	0.0001	< 0.0001	31[g]
Nickel	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.030**	0	0.030	0.030	-	**0.031**	0.0012	0.032	0.030	-	**0.031**	0.00058	0.032	0.031	-	**0.031**	0	0.031	0.031	-	**0.030**	0.0010	0.031	0.029	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0002**	0.0002	0.0004	< 0.0002	-
Uranium (µg/L)	1	**0.1**	0.08	0.2	< 0.1	1	**0.08**	0.03	0.1	< 0.1	2	**0.07**	0.03	0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	15
Vanadium	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.001**	0.0009	0.002	< 0.0005	2	**0.0005**	0.0005	0.0011	< 0.0005	2	**0.0005**	0.0005	0.0011	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0005**	0.0005	0.0011	< 0.0005	0.03
Nutrients																										
Ammonia (as N)	2	**0.01**	0.009	0.02	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	2	**0.007**	0.003	0.01	< 0.01	2	**0.02**	0.03	0.05	< 0.01	0.141 to 57.3[h]
Carbon, Organic dissolved	-	**2.1**	0	2.1	2.1	-	**2.4**	0.15	2.6	2.3	-	**1.7**	0.49	2.3	1.4	-	**2.0**	0.12	2.1	1.9	-	**2.4**	0	2.4	2.4	-
Carbon, Total Organic	-	**1.9**	0.058	1.9	1.8	-	**2.3**	0.12	2.4	2.2	-	**1.6**	0.67	2.4	1.2	-	**1.9**	0.21	2.1	1.7	-	**2.2**	0.10	2.3	2.1	-
Nitrate (as N)	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3
Nitrate (NO3)	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	13
Nitrate+Nitrite (as N) calc.[i]	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.13**	0.036	0.17	0.10	-	**0.18**	0.025	0.20	0.15	-	**0.13**	0.021	0.15	0.11	-	**0.18**	0.021	0.20	0.16	-	**0.21**	0.040	0.23	0.16	-
Phosphorus, Total	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																										
Alkalinity, Phenolphthalein	3	**0.5**	0	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as CaCO3)	-	**23**	1.2	24	22	-	**22**	4.0	26	18	-	**25**	2.9	28	23	-	**22**	1.7	24	21	-	**23**	2.3	26	22	-
Hardness, Total	-	**15**	0.58	15	14	-	**14**	0.58	15	14	-	**17**	1.5	18	15	-	**16**	1.0	17	15	-	**16**	1.2	17	15	-
pH (pH units)	-	**7.51**	0.144	7.62	7.35	-	**7.40**	0.135	7.53	7.26	-	**7.48**	0.159	7.66	7.37	-	**7.51**	0.181	7.68	7.32	-	**7.51**	0.172	7.67	7.33	6.5 to 9.0
Solids, Total dissolved	-	**41**	4.5	45	36	-	**38**	7.0	45	31	-	**39**	7.2	44	31	-	**47**	6.4	54	42	-	**46**	4.0	50	42	-
Solids, Total suspended	2	**1**	0.9	2	< 1	1	**1**	0.8	2	< 1	2	**1**	0.9	2	< 1	1	**2**	0.9	2	< 1	-	**2**	0	2	2	-
Specific Conductivity (µS/cm)	-	**31**	0.58	32	31	-	**34**	2.3	37	33	-	**39**	1.7	40	37	-	**37**	0.58	37	36	-	**35**	1.2	36	34	-
Sum of ions	-	**37**	1.2	38	36	-	**37**	5.5	42	31	-	**40**	4.2	45	37	-	**37**	1.5	39	36	-	**39**	2.6	42	37	-
Turbidity (NTU)	-	**0.3**	0.1	0.4	0.2	-	**0.4**	0.06	0.4	0.3	-	**0.3**	0.1	0.4	0.2	-	**0.6**	0.2	0.7	0.4	-	**0.5**	0.2	0.6	0.3	-
Radionuclides																										
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	2	**0.013**	0.0058	0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.004**	-	0.006	< 0.005	2	**0.004**	0.002	0.006	< 0.005	3	**0.003**	-	< 0.005	< 0.005	1	**0.007**	0.004	0.01	< 0.005	2	**0.004**	0.002	0.006	< 0.005	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 13

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2018

Parameter	Naomi Lake					Clearwater River Area 1					Clearwater River Midfield 1		Clearwater River Midfield 2		Mirror River		Lloyd Lake Inlet					Lloyd Lake Outlet					SEQG[a]
	Composite					Surface					Surface		Surface		Surface		Composite					Surface					
	N=3					N=3					N=1		N=1		N=1		N=3					N=3					
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	N<RDL	Mean	N<RDL	Mean	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	
Inorganic Ions																											
Bicarbonate (as HCO3)	-	**15**	0.58	16	15	-	**27**	4.4	30	22	-	**26**	-	21	-	**13**	-	**15**	2.9	17	12	-	**17**	1.0	18	16	-
Calcium	-	**2.6**	0.32	2.8	2.2	-	**3.5**	0.12	3.6	3.4	-	**3**	-	2.8	-	**2.6**	-	**2.8**	0.17	2.9	2.6	-	**2.8**	0.32	3.0	2.4	-
Carbonate (as CO3)	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	1	0.5	1	**0.5**	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Chloride	-	**0.6**	0.06	0.6	0.5	-	**0.6**	0.06	0.7	0.6	-	**0.4**	-	0.7	-	**0.9**	-	**0.8**	0.06	0.8	0.7	-	**0.7**	0.1	0.8	0.6	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	1	0.5	1	**0.5**	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Magnesium	-	**0.7**	0.1	0.8	0.6	-	**1.2**	0.058	1.3	1.2	-	**1.1**	-	0.9	-	**0.8**	-	**1**	0.06	1	0.9	-	**1**	0.06	1	0.9	-
Potassium	-	**0.5**	0.1	0.5	0.4	-	**0.6**	0	0.6	0.6	-	**0.5**	-	0.4	-	**0.3**	-	**0.5**	0.06	0.6	0.5	-	**0.5**	0.06	0.6	0.5	-
Sodium	-	**1.1**	0.058	1.1	1.0	-	**1.5**	0	1.5	1.5	-	**1.4**	-	1.2	-	**1.2**	-	**1.4**	0.058	1.4	1.3	-	**1.4**	0.058	1.4	1.3	-
Sulphate	-	**0.7**	0.06	0.8	0.7	-	**1.3**	0	1.3	1.3	-	**1.1**	-	0.9	-	**0.8**	-	**1.1**	0.058	1.1	1.0	-	**1.0**	0.058	1.1	1.0	128[b]
Metals																											
Aluminum	-	**0.019**	0.0090	0.029	0.013	-	**0.02**	0.008	0.026	0.01	-	**0.0097**	-	0.016	-	**0.015**	-	**0.020**	0.025	0.048	0.0048	-	**0.007**	0.003	0.01	0.0052	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	0.0001	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	-	0.2	0.2	-	**0.2**	0.06	0.2	0.1	-	**0.2**	-	0.2	-	**0.2**	-	**0.2**	0.06	0.2	0.1	-	**0.2**	0.06	0.2	0.1	5
Barium	-	**0.0071**	0.0013	0.0085	0.0061	-	**0.0077**	0.00078	0.0082	0.0068	-	**0.0074**	-	0.0057	-	**0.0046**	-	**0.0052**	0.00058	0.0059	0.0049	-	**0.005**	0.0006	0.0061	0.005	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Boron	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	0.005	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	2	**0.000007**	0.000003	0.00001	< 0.00001	2	**0.000007**	0.000003	0.00001	< 0.00001	-	**0.00002**	1	0.000005	1	**0.000005**	1	**0.000008**	0.000003	0.00001	< 0.00001	2	**0.000007**	0.000003	0.00001	< 0.00001	0.00004[d]
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	1	0.0003	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0005**	1	0.0001	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.03**	0.006	0.04	0.03	-	**0.06**	0	0.06	0.06	-	**0.05**	-	0.04	-	**0.04**	-	**0.05**	0.006	0.06	0.05	-	**0.05**	0.006	0.06	0.05	0.12
Iron	-	**0.75**	0.46	1.26	0.35	-	**0.28**	0.12	0.42	0.18	-	**0.31**	-	0.66	-	**0.74**	-	**0.31**	0.053	0.37	0.27	-	**0.30**	0.038	0.34	0.27	0.3
Lead	2	**0.0001**	0.0001	0.0003	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	0	< 0.0001	< 0.0001	0.001[d]
Manganese	-	**0.039**	0.026	0.068	0.018	-	**0.017**	0.0031	0.02	0.014	-	**0.019**	-	0.025	-	**0.024**	-	**0.024**	0.0065	0.031	0.018	-	**0.025**	0.009	0.034	0.016	-
Mercury (ng/L)	-	**4**	2	6	2	2	**0.7**	0.3	1	< 1	1	**0.5**	1	0.5	1	**0.5**	1	**4**	3	7	< 1	2	**1**	0.9	2	< 1	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.0001**	0.00009	0.0002	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0002**	-	0.0001	1	**0.00008**	0.00003	0.0001	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	1	0.00003	1	**0.00003**	3	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.024**	0.0029	0.027	0.022	-	**0.028**	0.0010	0.029	0.027	-	**0.027**	-	0.026	-	**0.025**	-	**0.024**	0.00058	0.024	0.023	-	**0.023**	0.0015	0.025	0.022	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	0.0001	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	2	**0.0006**	0.001	0.0017	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	0.00005	1	**0.00005**	2	**0.0005**	0.0008	0.0015	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	-	**0.0003**	0.0002	0.0005	0.0002	1	**0.0004**	0.0003	0.0007	< 0.0002	-	**0.0003**	-	0.0004	-	**0.0006**	2	**0.0001**	0.00006	0.0002	< 0.0002	2	**0.0001**	0.00006	0.0002	< 0.0002	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	1	0.05	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	15
Vanadium	-	**0.0002**	0.00006	0.0003	0.0002	-	**0.0001**	0.00006	0.0002	0.0001	-	**0.0001**	-	0.0002	-	**0.0002**	2	**0.00007**	0.00003	0.0001	< 0.0001	2	**0.00007**	0.00003	0.0001	< 0.0001	0.12[e]
Zinc	2	**0.001**	0.002	0.0037	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	-	**0.0038**	1	0.000	1	**0.0003**	2	**0.0004**	0.0002	0.0006	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.03
Nutrients																											
Ammonia (as N)	2	**0.01**	0.009	0.02	< 0.01	2	**0.007**	0.003	0.01	< 0.01	1	**0.005**	1	0.005	1	**0.005**	1	**0.02**	0.02	0.04	< 0.01	2	**0.01**	0.009	0.02	< 0.01	0.141 to 57.3[h]
Carbon, Organic dissolved	-	**6.4**	0.47	6.9	6.0	-	**3.4**	0.17	3.5	3.2	-	**3.8**	-	4.3	-	**4.4**	-	**4.6**	0.35	4.9	4.2	-	**4.6**	0.15	4.8	4.5	-
Carbon, Total Organic	-	**6.2**	0.35	6.5	5.8	-	**3.2**	0.35	3.5	2.8	-	**3.7**	-	4.2	-	**4.4**	-	**4.2**	0.30	4.5	3.9	-	**4.4**	0.23	4.7	4.3	-
Nitrate (as N)	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	0.005	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	3
Nitrate (NO3)	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	1	**0.005**	1	0.005	1	**0.005**	3	**0.01**	-	< 0.04	< 0.01	3	**0.01**	-	< 0.04	< 0.01	13
Nitrate+Nitrite (as N) calc.[i]	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	-	**-**	-	-	-	**-**	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.32**	0.071	0.40	0.26	-	**0.30**	0.050	0.35	0.25	-	**0.29**	-	0.28	-	**0.34**	-	**0.29**	0.040	0.33	0.25	-	**0.31**	0.055	0.35	0.25	-
Phosphorus, Total	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	0.02	-	**0.02**	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																											
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	1	0.5	1	**0.5**	3	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as CaCO3)	-	**12**	0.58	13	12	-	**22**	3.8	25	18	-	**21**	-	17	-	**11**	-	**13**	2.3	14	10	-	**14**	1.0	15	13	-
Hardness, Total	-	**9**	1	10	8	-	**13**	0.58	14	13	-	**12**	-	11	-	**10**	-	**11**	0.58	11	10	-	**11**	1.0	12	10	-
pH (pH units)	-	**7.21**	0.175	7.38	7.03	-	**7.38**	0.125	7.52	7.28	-	**7.17**	-	7.03	-	**7.06**	-	**7.33**	0.140	7.47	7.19	-	**7.34**	0.125	7.47	7.22	6.5 to 9.0
Solids, Total dissolved	-	**39**	6.7	45	32	-	**44**	3.6	47	40	-	**42**	-	38	-	**39**	-	**46**	4.6	50	41	-	**41**	4.6	46	37	-
Solids, Total suspended	-	**3**	2	4	1	-	**3**	1	4	2	-	**2**	-	5	-	**5**	-	**2**	0	2	2	1	**2**	1	3	< 1	-
Specific Conductivity (µS/cm)	-	**18**	2	20	16	-	**30**	1.7	31	28	-	**24**	-	21	-	**20**	-	**23**	1.0	24	22	-	**23**	2.0	25	21	-
Sum of ions	-	**21**	0.58	22	21	-	**36**	4.4	39	31	-	**34**	-	28	-	**20**	-	**23**	2.6	25	20	-	**24**	0.58	25	24	-
Turbidity (NTU)	-	**2**	0.8	2.4	0.8	-	**1**	0.7	1.7	0.3	-	**0.3**	-	0.4	-	**0.7**	-	**1**	0.3	1.4	0.8	-	**1**	0.6	1.4	0.4	-
Radionuclides																											
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	1	**0.01**	1	0.01	1	**0.01**	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	3	**0.003**	-	< 0.005	< 0.005	2	**0.005**	0.004	0.009	< 0.005	1	**0.003**	1	0.003	1	**0.003**	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.004**	0.002	0.006	< 0.005	2	**0.004**	0.003	0.008	< 0.005	1	**0.003**	-	0.009	1	**0.003**	3	**0.003**	-	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	0.005	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 13

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2018

Parameter	Warner Rapids					Lake G Area 1		Lake G Area 2				Lake H Area 1		Lake H Area 2				SEQG[a]
	N=3					N=1		N=2				N=1		N=2				
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	N<RDL	Mean	Max	Min	N<RDL	Mean	N<RDL	Mean	Max	Min	
Inorganic Ions																		
Bicarbonate (as HCO3)	-	**14**	2.9	17	12	-	**32**	-	**30**	32	27	-	**32**	-	**28**	33	23	-
Calcium	-	**2.6**	0.45	3.1	2.2	-	**2.5**	-	**3.4**	3.4	3.4	-	**3**	-	**3.4**	3.5	3.3	-
Carbonate (as CO3)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Chloride	-	**0.6**	0.1	0.7	0.5	-	**0.1**	2	**0.05**	< 0.1	< 0.1	-	**0.2**	-	**0.2**	0.2	0.2	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Magnesium	-	**1**	0.1	1.1	0.9	-	**1.3**	-	**1.7**	1.7	1.6	-	**1.3**	-	**1.5**	1.5	1.5	-
Potassium	-	**0.5**	0.06	0.6	0.5	-	**0.5**	-	**0.6**	0.6	0.5	-	**0.8**	-	**0.8**	0.8	0.8	-
Sodium	-	**1.4**	0.058	1.4	1.3	-	**1.6**	-	**1.8**	1.8	1.8	-	**1.7**	-	**1.9**	1.9	1.8	-
Sulphate	-	**1.1**	0.058	1.1	1.0	-	**1.3**	-	**1.2**	1.2	1.1	-	**0.4**	-	**0.3**	0.3	0.2	128[b]
Metals																		
Aluminum	-	**0.016**	0.0079	0.023	0.0075	-	**0.01**	-	**0.0055**	0.0063	0.0047	-	**0.014**	-	**0.0111**	0.015	0.0072	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	0.06	0.2	0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	-	**0.2**	-	**0.2**	0.2	0.2	5
Barium	-	**0.0047**	0.00055	0.0053	0.0043	-	**0.0074**	-	**0.0077**	0.0079	0.0075	-	**0.0011**	-	**0.00105**	0.0011	0.001	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	-
Boron	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.008**	0.01	< 0.01	1.5
Cadmium	2	**0.000007**	0.000003	0.00001	< 0.00001	-	**0.00001**	1	**0.000008**	0.00001	< 0.00001	1	**0.000005**	1	**0.000008**	0.00001	< 0.00001	0.00004[d]
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0003**	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.006	0.06	0.05	-	**0.05**	-	**0.06**	0.06	0.05	-	**0.06**	-	**0.07**	0.07	0.06	0.12
Iron	-	**0.50**	0.031	0.53	0.47	-	**0.5**	-	**0.26**	0.26	0.26	-	**0.14**	-	**0.088**	0.12	0.056	0.3
Lead	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.0001**	0.0002	< 0.0001	0.001[d]
Manganese	-	**0.021**	0.0061	0.028	0.017	-	**0.015**	-	**0.016**	0.024	0.0073	-	**0.013**	-	**0.017**	0.021	0.012	-
Mercury (ng/L)	2	**1**	0.9	2	< 1	-	**2**	1	**2**	3	< 1	-	**2**	1	**4**	8	< 1	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	-	**0.0001**	0.00006	0.0002	0.0001	-	**0.0001**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	2	**0.00003**	< 0.00005	< 0.00005	1	**0.00003**	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.020**	0.0017	0.022	0.019	-	**0.019**	-	**0.023**	0.024	0.022	-	**0.01**	-	**0.012**	0.012	0.012	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.0002**	0.0003	< 0.0001	1	**0.00005**	1	**0.001**	0.0021	< 0.0001	-
Titanium	-	**0.0004**	0.0003	0.0007	0.0002	-	**0.0003**	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0004**	0.0006	< 0.0002	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	15
Vanadium	-	**0.0003**	0.00006	0.0003	0.0002	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0007**	0.0006	0.0014	< 0.0005	-	**0.0021**	2	**0.0003**	< 0.0005	< 0.0005	-	**0.0008**	1	**0.0007**	0.0011	< 0.0005	0.03
Nutrients																		
Ammonia (as N)	2	**0.01**	0.01	0.03	< 0.01	1	**0.005**	1	**0.02**	0.03	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	0.141 to 57.3[h]
Carbon, Organic dissolved	-	**5.7**	0.61	6.4	5.3	-	**6.6**	-	**8.1**	8.2	8	-	**7.8**	-	**8.2**	8.8	7.6	-
Carbon, Total Organic	-	**5.6**	0.64	6.3	5.2	-	**6.2**	-	**7.9**	8.2	7.5	-	**6.8**	-	**7.8**	8.0	7.5	-
Nitrate (as N)	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO3)	3	**0.01**	-	< 0.04	< 0.01	1	**0.02**	2	**0.005**	< 0.01	< 0.01	1	**0.02**	2	**0.005**	< 0.01	< 0.01	13
Nitrate+Nitrite (as N) calc.[i]	1	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	**-**	-	-	1	**0.005**	-	**-**	-	-	-
Nitrogen, Total Kjeldahl	-	**0.37**	0.27	0.68	0.21	-	**0.85**	-	**0.96**	1.0	0.91	-	**0.75**	-	**0.73**	0.79	0.67	-
Phosphorus, Total	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	**0.01**	0.01	0.01	1	**0.005**	1	**0.01**	0.02	< 0.01	-
Physical Properties																		
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as CaCO3)	-	**11**	2.3	14	10	-	**26**	-	**24**	26	22	-	**26**	-	**23**	27	19	-
Hardness, Total	-	**10**	1.5	12	9	-	**12**	-	**15**	15	15	-	**13**	-	**14.5**	15	14	-
pH (pH units)	-	**7.33**	0.140	7.46	7.18	-	**7.38**	-	**7.37**	7.58	7.16	-	**7.57**	-	**7.47**	7.56	7.37	6.5 to 9.0
Solids, Total dissolved	-	**43**	1.2	44	42	-	**84**	-	**59**	67	50	-	**44**	-	**47**	59	35	-
Solids, Total suspended	1	**2**	2	4	< 1	-	**4**	-	**5**	6	3	-	**4**	-	**2.5**	3	2	-
Specific Conductivity (µS/cm)	-	**23**	1.7	25	22	-	**26**	-	**32**	33	30	-	**30**	-	**32**	32	32	-
Sum of ions	-	**21**	2.6	24	19	-	**39**	-	**39**	41	36	-	**39**	-	**36**	41	31	-
Turbidity (NTU)	-	**1.3**	0.21	1.5	1.1	-	**2.1**	-	**1.7**	2.3	1.1	-	**1.2**	-	**1**	1.3	0.7	-
Radionuclides																		
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	1	**0.01**	2	**0.01**	< 0.02	< 0.02	1	**0.01**	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	3	**0.003**	-	< 0.005	< 0.005	1	**0.003**	1	**0.004**	0.006	< 0.005	-	**0.005**	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	1	**0.006**	0.003	0.009	< 0.005	-	**0.009**	1	**0.004**	0.006	< 0.005	1	**0.003**	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Note: SD = standard deviation; Min = Minimum; Max = Maximum; <RDL = number of values less than the reported detection limit (RDL); calc. = calculation.

Note: SD was not calculated if N<3.

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs. This includes stations where N = 1.

Shaded cells indicate exceedances over guidelines.

Means are **bolded** for ease of data comparison.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

i) N=1 for Nitrate+Nitrite (as N) calc.

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Broach Lake Area 2												SEQG[a]
	Above Thermocline				Below Thermocline				Composite				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**23**	17	28	-	**23**	20	26	-	**27**	21	32	-
Calcium	-	**3.8**	3.8	3.8	-	**4.0**	3.9	4.0	-	**4.2**	4.2	4.2	-
Calcium, dissolved	-	**3.8**	3.8	3.8	-	**4.0**	3.9	4.0	-	**4.4**	4.2	4.5	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.4**	0.4	0.4	-	**0.4**	0.4	0.4	-	**0.4**	0.4	0.4	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.3**	1.2	1.3	-	**1.3**	1.2	1.3	-	**1.4**	1.3	1.4	-
Magnesium, dissolved	-	**1.3**	1.2	1.3	-	**1.3**	1.3	1.3	-	**1.4**	1.3	1.4	-
Potassium	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-
Potassium, dissolved	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-	**0.7**	0.6	0.7	-
Sodium	-	**1.6**	1.6	1.6	-	**1.6**	1.6	1.6	-	**1.7**	1.6	1.7	-
Sodium, dissolved	-	**1.6**	1.5	1.6	-	**1.6**	1.6	1.6	-	**1.7**	1.6	1.8	-
Sulphate	-	**1.9**	1.8	1.9	-	**2.0**	1.9	2.0	-	**1.9**	1.8	2.0	128[b]
Metals													
Aluminum	-	**0.0021**	0.0019	0.0023	-	**0.0019**	0.0013	0.0024	-	**0.001**	0.0008	0.0021	0.005 to 0.1[c]
Aluminum, dissolved	1	**0.001**	< 0.0005	0.0024	-	**0.0009**	0.0008	0.0009	-	**0.001**	0.0007	0.0019	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	-	**0.2**	0.2	0.2	5
Arsenic, dissolved (µg/L)	-	**0.2**	0.2	0.2	-	**0.1**	0.1	0.1	-	**0.2**	0.2	0.2	5
Barium	-	**0.014**	0.014	0.014	-	**0.016**	0.015	0.016	-	**0.033**	0.024	0.041	-
Barium, dissolved	-	**0.014**	0.014	0.014	-	**0.015**	0.015	0.015	-	**0.032**	0.022	0.041	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	1	**0.008**	< 0.01	0.01	1.5
Boron, dissolved	1	**0.008**	< 0.01	0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	1	**0.0004**	< 0.0002	0.0006	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0007**	< 0.0002	0.0012	0.002[d]
Fluoride	-	**0.07**	0.05	0.08	-	**0.07**	0.05	0.08	-	**0.05**	0.05	0.05	0.12
Iron	-	**0.012**	0.0088	0.016	-	**0.014**	0.0094	0.019	-	**0.10**	0.087	0.12	0.3
Iron, dissolved	-	**0.0031**	0.0022	0.0039	-	**0.0010**	0.0007	0.0012	-	**0.019**	0.014	0.024	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.9**	2.9	2.9	-	**3**	3	3	-	**3.2**	3.1	3.2	-
Lithium, dissolved (µg/L)	-	**2.9**	2.9	2.9	-	**3.0**	2.9	3.0	-	**3.2**	3.1	3.2	-
Manganese	-	**0.0045**	0.0032	0.0057	-	**0.021**	0.011	0.03	-	**0.88**	0.31	1.44	-
Manganese, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	-	**0.83**	0.18	1.47	-
Mercury (ng/L)	1	**3**	< 1	6	1	**2**	< 1	4	-	**3**	2	4	26
Molybdenum	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	1	**0.0001**	< 0.0001	0.0002	31[g]
Molybdenum, dissolved	-	**0.0001**	0.0001	0.0001	-	**0.0001**	0.0001	0.0001	-	**0.0002**	0.0001	0.0002	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.54**	0.53	0.54	-	**0.55**	0.54	0.56	-	**0.56**	0.54	0.57	-
Rubidium, dissolved (µg/L)	-	**0.54**	0.53	0.54	-	**0.53**	0.49	0.56	-	**0.58**	0.58	0.58	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.036**	0.036	0.036	-	**0.037**	0.036	0.037	-	**0.040**	0.039	0.040	-
Strontium, dissolved	-	**0.036**	0.036	0.036	-	**0.037**	0.036	0.038	-	**0.040**	0.038	0.042	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	1	**0.0002**	< 0.0001	0.0003	1	**0.00008**	< 0.0001	0.0001	1	**0.0006**	< 0.0001	0.0011	-
Tin, dissolved	1	**0.0001**	< 0.0001	0.0002	1	**0.0003**	< 0.0001	0.0006	1	**0.0004**	< 0.0001	0.0008	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	1	**0.0004**	< 0.0002	0.0006	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0007**	< 0.0005	0.0012	1	**0.0007**	< 0.0005	0.0012	1	**0.001**	< 0.0005	0.0024	0.03
Zinc, dissolved	-	**0.001**	0.001	0.0016	-	**0.0014**	0.0012	0.0015	-	**0.002**	0.001	0.0028	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-	**0.1**	0.09	0.18	0.291 to 190[h]
Ammonia (as N), dissolved	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.02	0.02	-	**0.1**	0.06	0.16	0.291 to 190[h]
Carbon, Organic dissolved	-	**2.2**	1.9	2.5	-	**1.9**	1.6	2.2	-	**1.9**	1.7	2.1	-
Carbon, Total Organic	-	**1.6**	1.5	1.6	-	**1.5**	1.4	1.6	-	**1.7**	1.5	1.8	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	-	**0.05**	0.03	0.06	1	**0.04**	< 0.01	0.07	3
Nitrate (as N), dissolved	2	**0.005**	< 0.01	< 0.01	-	**0.04**	0.03	0.04	-	**0.05**	0.02	0.08	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	-	**0.20**	0.13	0.26	1	**0.2**	< 0.04	0.31	13
Nitrate (NO_3), dissolved	2	**0.02**	< 0.04	< 0.04	-	**0.16**	0.13	0.18	-	**0.2**	0.09	0.35	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	-	**0.05**	0.03	0.06	1	**0.04**	< 0.01	0.07	-
Nitrite+Nitrate-nitrogen, dissolv	2	**0.005**	< 0.01	< 0.01	-	**0.04**	0.03	0.04	-	**0.05**	0.02	0.08	-
Nitrogen, Total Kjeldahl	-	**0.26**	0.12	0.39	-	**0.2**	0.08	0.22	-	**0.29**	0.25	0.33	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**19**	14	23	-	**19**	16	21	-	**22**	17	26	-
Apparent color (CU)	1	**0.8**	< 1	1	1	**1**	< 1	2	1	**1**	< 1	2	-
Hardness, Total	-	**15**	14	15	-	**15**	15	15	-	**16**	16	16	-
pH (pH units)	-	**7.45**	7.38	7.51	-	**7.34**	7.28	7.39	-	**7.16**	7.00	7.32	6.5 to 9.0
Solids, Total dissolved	-	**39**	38	39	-	**39**	35	43	-	**49**	48	49	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Specific Conductivity (µS/cm)	-	**32**	32	32	-	**34**	32	35	-	**40**	37	42	-
Sum of ions	-	**32**	27	37	-	**33**	30	36	-	**37**	32	42	-
Turbidity (NTTU)	-	**0.3**	0.3	0.3	-	**0.3**	0.3	0.3	-	**1.2**	1.0	1.3	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	1	**0.004**	< 0.005	0.006	2	**0.003**	< 0.005	< 0.005	1	**0.004**	< 0.005	0.005	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Hodge Lake Area 1												SEQG[a]
	Above Thermocline				Below Thermocline				Composite				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**12**	11	13	-	**14**	12	15	-	**15**	15	15	-
Calcium	-	**3.0**	2.9	3.0	-	**3**	3	3	-	**3**	3	3	-
Calcium, dissolved	-	**3.0**	2.9	3.0	-	**3.0**	2.9	3.1	-	**3.1**	3.0	3.2	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**1.9**	1.8	2.0	-	**1.9**	1.8	2.0	-	**2.1**	2.0	2.1	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**0.7**	0.6	0.7	-	**0.7**	0.7	0.7	-	**0.7**	0.7	0.7	-
Magnesium, dissolved	-	**0.7**	0.6	0.7	-	**0.7**	0.7	0.7	-	**0.7**	0.7	0.7	-
Potassium	-	**0.4**	0.3	0.4	-	**0.4**	0.3	0.4	-	**0.3**	0.2	0.3	-
Potassium, dissolved	-	**0.4**	0.3	0.4	-	**0.4**	0.3	0.4	-	**0.4**	0.3	0.4	-
Sodium	-	**1**	1	1	-	**1**	1	1	-	**1**	1	1	-
Sodium, dissolved	-	**1.0**	0.9	1.0	-	**1**	1	1	-	**1**	1	1	-
Sulphate	-	**1**	1	1	-	**1**	1.0	1.1	-	**1.1**	1.1	1.1	128[b]
Metals													
Aluminum	-	**0.0035**	0.0033	0.0037	-	**0.0024**	0.0012	0.0036	-	**0.0026**	0.0012	0.004	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0022**	0.0011	0.0033	-	**0.0019**	0.0012	0.0026	-	**0.001**	0.0009	0.0015	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.1	0.1	1	**0.08**	< 0.1	0.1	1	**0.08**	< 0.1	0.1	5
Arsenic, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-	**0.1**	0.1	0.1	5
Barium	-	**0.0065**	0.0064	0.0066	-	**0.007**	0.007	0.0073	-	**0.0070**	0.0068	0.0071	-
Barium, dissolved	-	**0.0065**	0.0063	0.0066	-	**0.0069**	0.0069	0.0069	-	**0.0071**	0.0066	0.0075	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	-	**0.01**	0.01	0.01	-	**0.01**	0.01	0.01	-	**0.01**	0.01	0.01	1.5
Boron, dissolved	-	**0.01**	0.01	0.01	1	**0.008**	< 0.01	0.01	-	**0.01**	0.01	0.01	1.5
Cadmium	1	**8E-06**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.04**	0.02	0.05	-	**0.04**	0.02	0.05	-	**0.03**	0.02	0.03	0.12
Iron	-	**0.0067**	0.0046	0.0087	-	**0.018**	0.0083	0.028	-	**0.019**	0.014	0.024	0.3
Iron, dissolved	-	**0.001**	0.001	0.0011	-	**0.005**	0.002	0.0075	-	**0.0029**	0.0026	0.0031	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**1.8**	1.7	1.8	-	**1.8**	1.8	1.8	-	**1.9**	1.8	1.9	-
Lithium, dissolved (µg/L)	-	**1.8**	1.7	1.8	-	**1.8**	1.8	1.8	-	**1.9**	1.8	1.9	-
Manganese	-	**0.0024**	0.0022	0.0026	-	**0.0099**	0.0038	0.016	-	**0.009**	0.0088	0.01	-
Manganese, dissolved	2	**0.00025**	< 0.0005	< 0.0005	1	**0.004**	< 0.0005	0.0085	-	**0.002**	0.0005	0.0041	-
Mercury (ng/L)	1	**1**	< 1	2	1	**1**	< 1	2	-	**3**	2	3	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.64**	0.61	0.67	-	**0.67**	0.65	0.69	-	**0.64**	0.62	0.66	-
Rubidium, dissolved (µg/L)	-	**0.64**	0.63	0.64	-	**0.67**	0.66	0.67	-	**0.63**	0.58	0.67	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.062**	0.061	0.062	-	**0.062**	0.061	0.063	-	**0.061**	0.061	0.061	-
Strontium, dissolved	-	**0.06**	0.06	0.06	-	**0.062**	0.062	0.062	-	**0.062**	0.061	0.063	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-	**0.003**	0.0009	0.006	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-	**0.001**	0.0005	0.0023	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.001**	< 0.0005	0.0021	-	**0.0020**	0.0015	0.0024	1	**0.0007**	< 0.0005	0.0012	0.03
Zinc, dissolved	1	**0.001**	< 0.0005	0.0019	-	**0.0015**	0.0014	0.0016	-	**0.001**	0.0006	0.0017	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	0.291 to 190[h]
Ammonia (as N), dissolved	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.04	1	**0.01**	< 0.01	0.02	0.291 to 190[h]
Carbon, Organic dissolved	-	**2.6**	2.3	2.8	-	**2.4**	2.3	2.4	-	**2.2**	2.1	2.3	-
Carbon, Total Organic	-	**2.0**	1.8	2.1	-	**1.9**	1.8	2.0	-	**2.0**	1.9	2.0	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.04	3
Nitrate (as N), dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.04	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	1	**0.1**	< 0.04	0.18	13
Nitrate (NO_3), dissolved	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	1	**0.1**	< 0.04	0.18	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.04	-
Nitrite+Nitrate-nitrogen, dissolv	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.04	-
Nitrogen, Total Kjeldahl	-	**0.12**	0.07	0.16	-	**0.13**	0.12	0.14	-	**0.13**	0.13	0.13	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**10**	9	11	-	**11**	10	12	-	**12**	12	12	-
Apparent color (CU)	-	**2**	2	2	-	**2**	2	2	-	**4**	2	5	-
Hardness, Total	-	**10**	10	10	-	**10**	10	10	-	**10**	10	10	-
pH (pH units)	-	**7.14**	7.06	7.22	-	**7.07**	7.03	7.10	-	**6.97**	6.87	7.07	6.5 to 9.0
Solids, Total dissolved	-	**32**	27	36	-	**30**	27	32	-	**38**	37	38	-
Solids, Total suspended	1	**0.8**	< 1	1	1	**0.8**	< 1	1	1	**0.8**	< 1	1	-
Specific Conductivity (µS/cm)	-	**21**	21	21	-	**22**	21	22	-	**22**	22	22	-
Sum of ions	-	**20**	19	21	-	**22**	20	23	-	**23**	23	23	-
Turbidity (NTTU)	-	**0.4**	0.3	0.4	-	**0.4**	0.4	0.4	-	**0.4**	0.3	0.4	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	1	**0.004**	< 0.005	0.006	1	**0.005**	< 0.005	0.008	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Jed Creek					Patterson Lake North Arm - East Basin Area 1								SEQG[a]
	Surface					Above Thermocline				Below Thermocline				
	N = 4					N = 2				N = 2				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions														
Bicarbonate (as HCO_3)	-	**15**	5	8	20	-	**20**	20	20	-	**23**	17	29	-
Calcium	-	**2.8**	0.33	2.6	3.3	-	**3.3**	3.2	3.3	-	**3.3**	3.2	3.3	-
Calcium, dissolved	-	**2.9**	0.50	2.6	3.6	-	**3.2**	3.2	3.2	-	**3.2**	3.2	3.2	-
Carbonate (as CO_3)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.3**	0.05	0.3	0.4	-	**0.4**	0.4	0.4	-	**0.4**	0.4	0.4	120
Hydroxide (as OH)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**0.8**	0.1	0.7	1.0	-	**1.1**	1.0	1.1	-	**1.0**	1.0	1.0	-
Magnesium, dissolved	-	**0.9**	0.17	0.7	1.1	-	**1.1**	1.0	1.1	-	**1.0**	1.0	1.0	-
Potassium	-	**0.5**	0.10	0.4	0.6	-	**0.5**	0.5	0.5	-	**0.6**	0.5	0.6	-
Potassium, dissolved	-	**0.5**	0.08	0.4	0.6	-	**0.6**	0.6	0.6	-	**0.5**	0.5	0.5	-
Sodium	-	**1.2**	0.13	1.1	1.4	-	**1.4**	1.3	1.4	-	**1.3**	1.3	1.3	-
Sodium, dissolved	-	**1.2**	0.22	1.0	1.5	-	**1.4**	1.3	1.4	-	**1.3**	1.3	1.3	-
Sulphate	-	**1.3**	0.22	1.1	1.6	-	**1.2**	1.2	1.2	-	**1.2**	1.1	1.2	128[b]
Metals														
Aluminum	-	**0.022**	0.0083	0.015	0.034	-	**0.0033**	0.0028	0.0038	-	**0.0029**	0.0024	0.0033	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.018**	0.0079	0.011	0.029	-	**0.001**	0.001	0.0013	-	**0.0017**	0.0015	0.0018	0.005 to 0.1[c]
Antimony	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	0.06	0.1	0.2	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.05	0.1	0.2	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Barium	-	**0.009**	0.002	0.008	0.012	-	**0.0084**	0.0075	0.0092	-	**0.01**	0.01	0.011	-
Barium, dissolved	-	**0.0094**	0.0025	0.0076	0.013	-	**0.0080**	0.0071	0.0088	-	**0.01**	0.0097	0.011	-
Beryllium	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	3	**6E-06**	0.000003	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	3	**6E-06**	0.000003	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	3	**0.0003**	0.0003	< 0.0002	0.0007	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0005**	< 0.0002	0.0008	0.002[d]
Fluoride	-	**0.04**	0.01	0.03	0.06	-	**0.05**	0.04	0.06	-	**0.05**	0.04	0.06	0.12
Iron	-	**0.41**	0.13	0.27	0.58	-	**0.086**	0.042	0.13	-	**0.26**	0.22	0.30	0.3
Iron, dissolved	-	**0.25**	0.067	0.16	0.32	-	**0.024**	0.0098	0.038	-	**0.15**	0.092	0.21	0.3
Lead	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**1.8**	0.29	1.5	2.2	-	**2.2**	2.1	2.2	-	**2.2**	2.1	2.2	-
Lithium, dissolved (µg/L)	-	**1.8**	0.29	1.5	2.2	-	**2.3**	2.2	2.3	-	**2.2**	2.1	2.3	-
Manganese	-	**0.011**	0.0028	0.0088	0.015	-	**0.017**	0.016	0.017	-	**0.041**	0.024	0.057	-
Manganese, dissolved	-	**0.007**	0.002	0.0048	0.009	1	**0.0007**	< 0.0005	0.0012	-	**0.034**	0.0008	0.068	-
Mercury (ng/L)	-	**2**	0.6	1	2	-	**3**	2	4	-	**5**	2	7	26
Molybdenum	2	**0.00008**	3E-05	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	3	**6E-05**	0.00003	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00008**	3E-05	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00008**	3E-05	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	0.025[d]
Rubidium (µg/L)	-	**0.6**	0.05	0.6	0.7	-	**0.6**	0.60	0.66	-	**0.62**	0.61	0.62	-
Rubidium, dissolved (µg/L)	-	**0.62**	0.049	0.56	0.66	-	**0.68**	0.66	0.69	-	**0.60**	0.57	0.62	-
Selenium	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.027**	0.0029	0.025	0.031	-	**0.028**	0.027	0.028	-	**0.028**	0.027	0.028	-
Strontium, dissolved	-	**0.027**	0.0041	0.024	0.033	-	**0.028**	0.028	0.028	-	**0.028**	0.027	0.028	-
Tellurium (µg/L)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0003	1	**0.0006**	< 0.0001	0.0011	-
Tin, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	1	**0.0002**	< 0.0001	0.0003	-
Titanium	-	**0.0004**	6E-05	0.0003	0.0004	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	-	**0.0003**	1E-04	0.0002	0.0004	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	-	**0.0002**	0	0.0002	0.0002	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	-	**0.0002**	6E-05	0.0001	0.0002	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0009**	0.0008	< 0.0005	0.002	-	**0.001**	0.0009	0.0016	-	**0.0015**	0.0011	0.0018	0.03
Zinc, dissolved	-	**0.001**	0.0005	0.0006	0.0018	-	**0.0012**	0.0012	0.0012	-	**0.0021**	0.0018	0.0024	0.03
Zirconium	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients														
Ammonia (as N)	3	**0.009**	0.008	< 0.01	0.02	1	**0.01**	< 0.01	0.02	-	**0.05**	0.04	0.05	0.291 to 190[h]
Ammonia (as N), dissolved	2	**0.01**	0.009	< 0.01	0.02	1	**0.01**	< 0.01	0.02	-	**0.04**	0.03	0.05	0.291 to 190[h]
Carbon, Organic dissolved	-	**4.5**	1.5	3.5	6.7	-	**3.3**	3.0	3.6	-	**2.9**	2.7	3.0	-
Carbon, Total Organic	-	**4.2**	1.5	3.2	6.4	-	**2.7**	2.6	2.8	-	**2.6**	2.5	2.6	-
Nitrate (as N)	3	**0.02**	0.03	< 0.01	0.07	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	2	**0.02**	0.03	< 0.01	0.07	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO_3)	3	**0.09**	0.1	< 0.04	0.31	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	2	**0.10**	0.1	< 0.04	0.31	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	3	**0.02**	0.03	< 0.01	0.07	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolv	2	**0.02**	0.03	< 0.01	0.07	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.21**	0.019	0.18	0.22	-	**0.20**	0.18	0.21	-	**0.25**	0.23	0.27	-
Phosphorus, Total	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	-
Phosphorus, Total dissolved	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties														
Alkalinity, Phenolphthalein	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**12**	4	7	16	-	**16**	16	16	-	**19**	14	24	-
Apparent color (CU)	-	**26**	15	17	48	-	**3**	2	4	-	**4**	3	4	-
Hardness, Total	-	**10**	1	9	12	-	**13**	12	13	-	**12**	12	12	-
pH (pH units)	-	**7.05**	0.220	6.72	7.16	-	**7.32**	7.32	7.32	-	**7.19**	7.17	7.21	6.5 to 9.0
Solids, Total dissolved	-	**41**	9.2	34	54	-	**26**	17	34	-	**31**	29	33	-
Solids, Total suspended	1	**1**	0.6	< 1	2	-	**2**	1	2	-	**2**	2	2	-
Specific Conductivity (µS/cm)	-	**21**	4.3	17	27	-	**26**	26	26	-	**26**	26	26	-
Sum of ions	-	**22**	5.8	15	29	-	**28**	28	28	-	**31**	25	37	-
Turbidity (NTTU)	-	**1**	1	0.6	2.8	-	**0.8**	0.7	0.8	-	**1.6**	1.0	2.2	-
Radionuclides														
Lead-210 (Bq/L)	4	**0.01**	-	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	3	**0.003**	0.002	< 0.005	0.006	2	**0.003**	< 0.005	< 0.005	1	**0.006**	< 0.005	0.009	0.11
Thorium-230 (Bq/L)	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Patterson Lake North Arm - East Basin Area 1				Patterson Lake North Arm - West Basin Area 1								SEQG[a]
	Composite				Above Thermocline				Below Thermocline				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**25**	22	27	-	**22**	17	27	-	**27**	26	27	-
Calcium	-	**3.6**	3.2	4.0	-	**3.9**	3.8	3.9	-	**3.9**	3.9	3.9	-
Calcium, dissolved	-	**3.5**	2.9	4.1	-	**3.9**	3.8	3.9	-	**3.9**	3.8	3.9	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.5**	0.4	0.6	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.2**	1.0	1.4	-	**1.4**	1.3	1.4	-	**1.4**	1.3	1.4	-
Magnesium, dissolved	-	**1.2**	1.0	1.4	-	**1.4**	1.3	1.4	-	**1.4**	1.4	1.4	-
Potassium	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-
Potassium, dissolved	-	**0.6**	0.6	0.6	-	**0.5**	0.5	0.5	-	**0.6**	0.6	0.6	-
Sodium	-	**1.4**	1.3	1.5	-	**1.5**	1.4	1.5	-	**1.5**	1.4	1.5	-
Sodium, dissolved	-	**1.5**	1.4	1.6	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Sulphate	-	**1.4**	1.2	1.6	-	**1.5**	1.5	1.5	-	**1.6**	1.4	1.7	128[b]
Metals													
Aluminum	-	**0.003**	0.0006	0.005	-	**0.0024**	0.0016	0.0031	-	**0.002**	0.0008	0.0022	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.001**	0.0008	0.0021	-	**0.0018**	0.0013	0.0022	-	**0.0015**	0.0011	0.0018	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	0.1	0.2	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Barium	-	**0.009**	0.0088	0.01	-	**0.0086**	0.0086	0.0086	-	**0.010**	0.0098	0.011	-
Barium, dissolved	-	**0.009**	0.0083	0.01	-	**0.0085**	0.0084	0.0085	-	**0.010**	0.0097	0.01	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	1	**0.000008**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0004**	< 0.0002	0.0006	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.04	0.05	-	**0.06**	0.05	0.07	-	**0.06**	0.05	0.07	0.12
Iron	-	**0.084**	0.0085	0.16	-	**0.0094**	0.0068	0.012	-	**0.01**	0.01	0.014	0.3
Iron, dissolved	-	**0.027**	0.0055	0.049	-	**0.002**	0.002	0.0023	-	**0.0032**	0.0019	0.0044	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.3**	2.0	2.6	-	**2.6**	2.5	2.6	-	**2.6**	2.6	2.6	-
Lithium, dissolved (µg/L)	-	**2.4**	2.1	2.6	-	**2.6**	2.6	2.6	-	**2.6**	2.5	2.6	-
Manganese	-	**0.013**	0.0024	0.023	-	**0.0050**	0.0043	0.0056	-	**0.02**	0.009	0.023	-
Manganese, dissolved	1	**0.001**	< 0.0005	0.0018	2	**0.00025**	< 0.0005	< 0.0005	1	**0.002**	< 0.0005	0.0037	-
Mercury (ng/L)	1	**1**	< 1	2	1	**2**	< 1	3	1	**1**	< 1	2	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.61**	0.60	0.62	-	**0.59**	0.57	0.60	-	**0.60**	0.57	0.62	-
Rubidium, dissolved (µg/L)	-	**0.61**	0.61	0.61	-	**0.60**	0.59	0.61	-	**0.57**	0.54	0.60	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.03**	0.028	0.032	-	**0.03**	0.03	0.03	-	**0.031**	0.031	0.031	-
Strontium, dissolved	-	**0.03**	0.028	0.032	-	**0.03**	0.03	0.03	-	**0.031**	0.030	0.031	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0001**	< 0.0001	0.0002	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0004**	< 0.0005	0.0006	-	**0.0008**	0.0007	0.0009	-	**0.0009**	0.0008	0.001	0.03
Zinc, dissolved	-	**0.0008**	0.0006	0.001	-	**0.002**	0.001	0.002	-	**0.001**	0.0008	0.0014	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	-	**0.02**	0.02	0.02	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	0.291 to 190[h]
Ammonia (as N), dissolved	-	**0.03**	0.02	0.03	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	0.291 to 190[h]
Carbon, Organic dissolved	-	**2.6**	2.3	2.8	-	**2.9**	2.5	3.3	-	**2.4**	2.1	2.6	-
Carbon, Total Organic	-	**2.4**	2.2	2.6	-	**2.4**	1.9	2.8	-	**1.9**	1.7	2.0	-
Nitrate (as N)	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	1	**0.01**	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO_3)	1	**0.08**	< 0.04	0.13	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	1	**0.06**	< 0.04	0.09	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolv	1	**0.01**	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.20**	0.18	0.21	-	**0.18**	0.16	0.20	-	**0.13**	0.13	0.13	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**20**	18	22	-	**18**	14	22	-	**22**	21	22	-
Apparent color (CU)	-	**3**	2	4	2	**0.5**	< 1	< 1	-	**1**	1	1	-
Hardness, Total	-	**14**	12	16	-	**15**	15	15	-	**15**	15	15	-
pH (pH units)	-	**7.21**	7.20	7.22	-	**7.47**	7.42	7.52	-	**7.37**	7.31	7.42	6.5 to 9.0
Solids, Total dissolved	-	**41**	30	52	-	**31**	29	32	-	**35**	33	37	-
Solids, Total suspended	1	**0.8**	< 1	1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Specific Conductivity (µS/cm)	-	**30**	25	34	-	**32**	32	32	-	**32**	32	32	-
Sum of ions	-	**34**	30	37	-	**31**	26	36	-	**36**	35	36	-
Turbidity (NTTU)	-	**0.7**	0.2	1.1	-	**0.4**	0.3	0.4	-	**0.4**	0.4	0.4	-
Radionuclides													
Lead-210 (Bq/L)	1	**0.02**	< 0.02	0.03	2	**0.01**	< 0.02	< 0.02	1	**0.02**	< 0.02	0.03	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	-	**0.007**	0.007	0.007	-	**0.006**	0.005	0.007	1	**0.004**	< 0.005	0.006	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Patterson Lake North Arm - West Basin Area 1				Patterson Lake South Arm Area 1								SEQG[a]
	Composite				Above Thermocline				Below Thermocline				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**21**	18	24	-	**28**	27	29	-	**30**	29	30	-
Calcium	-	**3.6**	3.3	3.9	-	**4.0**	3.9	4.0	-	**4.1**	4.0	4.1	-
Calcium, dissolved	-	**3.7**	3.5	3.9	-	**4.0**	3.9	4.0	-	**4.0**	3.9	4.1	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.5**	0.4	0.5	-	**0.6**	0.5	0.6	-	**0.6**	0.5	0.6	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.3**	1.1	1.4	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Magnesium, dissolved	-	**1.3**	1.1	1.4	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Potassium	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-
Potassium, dissolved	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-
Sodium	-	**1.4**	1.4	1.4	-	**1.5**	1.4	1.5	-	**1.5**	1.4	1.5	-
Sodium, dissolved	-	**1.4**	1.4	1.4	-	**1.5**	1.4	1.5	-	**1.5**	1.4	1.5	-
Sulphate	-	**1.5**	1.3	1.6	-	**1.5**	1.5	1.5	-	**1.6**	1.5	1.6	128[b]
Metals													
Aluminum	-	**0.002**	0.0008	0.0025	-	**0.001**	0.001	0.0014	-	**0.002**	0.001	0.0024	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.001**	0.0008	0.0018	-	**0.0018**	0.0014	0.0022	-	**0.002**	0.0008	0.0034	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Barium	-	**0.011**	0.0098	0.012	-	**0.0087**	0.0086	0.0087	-	**0.01**	0.01	0.012	-
Barium, dissolved	-	**0.011**	0.0091	0.013	-	**0.0084**	0.0084	0.0084	-	**0.010**	0.0098	0.011	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.04**	0.04	0.04	-	**0.06**	0.05	0.07	-	**0.06**	0.05	0.07	0.12
Iron	-	**0.24**	0.018	0.47	-	**0.013**	0.012	0.014	-	**0.015**	0.013	0.017	0.3
Iron, dissolved	-	**0.21**	0.0015	0.42	-	**0.0040**	0.0032	0.0048	-	**0.0019**	0.0016	0.0022	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.5**	2.1	2.8	-	**2.6**	2.5	2.6	-	**2.6**	2.6	2.6	-
Lithium, dissolved (µg/L)	-	**2.5**	2.1	2.8	-	**2.6**	2.5	2.6	-	**2.6**	2.6	2.6	-
Manganese	-	**0.069**	0.027	0.11	-	**0.007**	0.0052	0.008	-	**0.020**	0.014	0.026	-
Manganese, dissolved	-	**0.069**	0.0076	0.13	1	**0.0005**	< 0.0005	0.0007	2	**0.00025**	< 0.0005	< 0.0005	-
Mercury (ng/L)	-	**3**	2	4	1	**2**	< 1	3	1	**1**	< 1	2	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.64**	0.62	0.65	-	**0.52**	0.52	0.52	-	**0.55**	0.53	0.56	-
Rubidium, dissolved (µg/L)	-	**0.60**	0.53	0.66	-	**0.54**	0.54	0.54	-	**0.63**	0.60	0.66	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.03**	0.029	0.03	-	**0.03**	0.029	0.03	-	**0.03**	0.03	0.031	-
Strontium, dissolved	-	**0.03**	0.029	0.03	-	**0.03**	0.029	0.03	-	**0.03**	0.03	0.031	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0005**	< 0.0001	0.001	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0003	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	-	**0.0022**	0.0016	0.0028	-	**0.001**	0.0008	0.0011	-	**0.0010**	0.0007	0.0012	0.03
Zinc, dissolved	-	**0.0012**	0.0012	0.0012	-	**0.001**	0.0008	0.0011	-	**0.0019**	0.0013	0.0024	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	1	**0.06**	< 0.01	0.12	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	0.291 to 190[h]
Ammonia (as N), dissolved	1	**0.08**	< 0.01	0.16	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.01	0.02	0.291 to 190[h]
Carbon, Organic dissolved	-	**3**	2	3	-	**2.5**	2.2	2.8	-	**2.2**	2.0	2.4	-
Carbon, Total Organic	-	**2.3**	1.8	2.8	-	**1.9**	1.8	2.0	-	**1.7**	1.6	1.8	-
Nitrate (as N)	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	1	**0.02**	< 0.01	0.04	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO_3)	1	**0.08**	< 0.04	0.13	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	1	**0.1**	< 0.04	0.18	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolv	1	**0.02**	< 0.01	0.04	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.2**	0.1	0.34	-	**0.1**	0.1	0.18	-	**0.1**	0.1	0.12	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**18**	15	20	-	**23**	22	24	-	**25**	24	25	-
Apparent color (CU)	1	**5**	< 1	9	1	**0.8**	< 1	1	2	**0.5**	< 1	< 1	-
Hardness, Total	-	**14**	13	15	-	**16**	15	16	-	**16**	16	16	-
pH (pH units)	-	**7.19**	6.96	7.41	-	**7.47**	7.42	7.52	-	**7.37**	7.32	7.41	6.5 to 9.0
Solids, Total dissolved	-	**36**	32	39	-	**35**	32	38	-	**36**	33	38	-
Solids, Total suspended	1	**1**	< 1	2	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Specific Conductivity (µS/cm)	-	**31**	29	33	-	**32**	32	32	-	**33**	33	33	-
Sum of ions	-	**30**	26	33	-	**37**	36	38	-	**40**	39	40	-
Turbidity (NTTU)	-	**1.4**	0.6	2.1	-	**0.4**	0.3	0.4	-	**0.4**	0.3	0.4	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	1	**0.006**	< 0.005	0.009	1	**0.005**	< 0.005	0.007	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Patterson Lake South Arm Area 1				Forrest Lake Area 1					Forrest Lake Area 2				SEQG[a]
	Composite				Composite					Above Thermocline				
	N = 2				N = 4					N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions														
Bicarbonate (as HCO_3)	-	**23**	15	30	-	**28**	0.96	27	29	-	**28**	27	29	-
Calcium	-	**4.0**	3.9	4.0	-	**4.1**	0.22	3.9	4.4	-	**4.6**	4.5	4.6	-
Calcium, dissolved	-	**4.2**	4.0	4.3	-	**4.3**	0.44	4.0	4.9	-	**4.6**	4.6	4.6	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.6**	0.6	0.6	-	**0.6**	0.05	0.5	0.6	-	**0.7**	0.7	0.7	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.4**	1.4	1.4	-	**1.5**	0.10	1.4	1.6	-	**1.8**	1.7	1.8	-
Magnesium, dissolved	-	**1.5**	1.4	1.5	-	**1.5**	0.14	1.4	1.7	-	**1.8**	1.7	1.8	-
Potassium	-	**0.6**	0.6	0.6	-	**0.6**	0	0.6	0.6	-	**0.9**	0.9	0.9	-
Potassium, dissolved	-	**0.6**	0.6	0.6	-	**0.6**	0.05	0.6	0.7	-	**0.9**	0.8	0.9	-
Sodium	-	**1.5**	1.5	1.5	-	**1.5**	0.050	1.5	1.6	-	**2**	2	2	-
Sodium, dissolved	-	**1.5**	1.4	1.5	-	**1.6**	0.150	1.5	1.8	-	**2.0**	1.9	2.0	-
Sulphate	-	**1.7**	1.6	1.7	-	**1.6**	0.050	1.6	1.7	-	**1.8**	1.8	1.8	128[b]
Metals														
Aluminum	-	**0.001**	0.0009	0.001	-	**0.0070**	0.0031	0.0039	0.011	1	**0.0006**	< 0.0005	0.001	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.001**	0.0007	0.0012	-	**0.0065**	0.0031	0.0019	0.0089	-	**0.001**	0.0009	0.0011	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.05	0.1	0.2	-	**0.2**	0.2	0.2	5
Arsenic, dissolved (µg/L)	-	**0.2**	0.1	0.2	1	**0.1**	0.06	< 0.1	0.2	-	**0.2**	0.1	0.2	5
Barium	-	**0.010**	0.0097	0.01	-	**0.0095**	0.0018	0.0077	0.012	-	**0.0076**	0.0075	0.0076	-
Barium, dissolved	-	**0.010**	0.0093	0.01	-	**0.0094**	0.0018	0.0083	0.012	-	**0.0075**	0.0074	0.0076	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	3	**0.006**	0.003	< 0.01	0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	3	**6E-06**	0.000003	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0004**	0.0007	< 0.0002	0.0014	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.04	0.05	-	**0.06**	0.02	0.04	0.08	-	**0.08**	0.06	0.1	0.12
Iron	-	**0.020**	0.015	0.024	-	**0.047**	0.011	0.033	0.060	-	**0.01**	0.01	0.011	0.3
Iron, dissolved	-	**0.0039**	0.0023	0.0054	-	**0.027**	0.0091	0.017	0.038	-	**0.0036**	0.0024	0.0047	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.7**	2.6	2.8	-	**2.8**	0.12	2.7	2.9	-	**3.6**	3.4	3.7	-
Lithium, dissolved (µg/L)	-	**2.8**	2.7	2.8	-	**2.8**	0.19	2.7	3.1	-	**3.5**	3.4	3.5	-
Manganese	-	**0.025**	0.013	0.037	-	**0.0082**	0.0049	0.0035	0.015	-	**0.003**	0.0024	0.004	-
Manganese, dissolved	1	**0.005**	< 0.0005	0.0093	-	**0.006**	0.002	0.004	0.0081	1	**0.0007**	< 0.0005	0.0011	-
Mercury (ng/L)	-	**2**	1	3	1	**2**	0.8	< 1	2	-	**3**	2	4	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00008**	3E-05	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	3	**6E-05**	0.00003	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.58**	0.54	0.61	-	**0.62**	0.046	0.57	0.67	-	**0.60**	0.59	0.60	-
Rubidium, dissolved (µg/L)	-	**0.62**	0.60	0.64	-	**0.63**	0.075	0.55	0.71	-	**0.62**	0.61	0.63	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.03**	0.03	0.031	-	**0.03**	0.002	0.03	0.034	-	**0.03**	0.03	0.031	-
Strontium, dissolved	-	**0.03**	0.03	0.031	-	**0.03**	0.003	0.03	0.036	-	**0.03**	0.03	0.031	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0004**	< 0.0001	0.0008	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0002**	6E-05	< 0.0002	0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	3	**0.06**	0.03	< 0.1	0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	-	**0.001**	0.0006	0.0019	-	**0.001**	0.0006	0.0007	0.0018	-	**0.002**	0.001	0.0026	0.03
Zinc, dissolved	-	**0.0014**	0.0012	0.0016	-	**0.001**	0.0004	0.0009	0.0017	-	**0.0015**	0.0013	0.0017	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients														
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	3	**0.009**	0.008	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	0.291 to 190[h]
Ammonia (as N), dissolved	1	**0.01**	< 0.01	0.02	2	**0.01**	0.01	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	0.291 to 190[h]
Carbon, Organic dissolved	-	**2.2**	2.2	2.2	-	**2.6**	0.17	2.3	2.7	-	**1.6**	1.2	2.0	-
Carbon, Total Organic	-	**1.9**	1.8	2.0	-	**2.2**	0.17	2.0	2.4	-	**1.2**	1.1	1.3	-
Nitrate (as N)	1	**0.04**	< 0.01	0.07	3	**0.009**	0.008	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	1	**0.03**	< 0.01	0.05	3	**0.009**	0.008	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO_3)	1	**0.2**	< 0.04	0.31	3	**0.04**	0.04	< 0.04	0.09	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	1	**0.1**	< 0.04	0.22	3	**0.04**	0.04	< 0.04	0.09	2	**0.02**	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	1	**0.04**	< 0.01	0.07	3	**0.009**	0.008	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolv	1	**0.03**	< 0.01	0.05	3	**0.009**	0.008	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.13**	0.11	0.15	-	**0.18**	0.025	0.17	0.22	-	**0.13**	0.12	0.14	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties														
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**19**	12	25	-	**23**	0.96	22	24	-	**23**	22	24	-
Apparent color (CU)	1	**0.8**	< 1	1	-	**4**	2	2	6	2	**0.5**	< 1	< 1	-
Hardness, Total	-	**16**	15	16	-	**16**	1.3	15	18	-	**19**	18	19	-
pH (pH units)	-	**7.30**	7.17	7.42	-	**7.37**	0.139	7.17	7.48	-	**7.51**	7.50	7.52	6.5 to 9.0
Solids, Total dissolved	-	**34**	33	35	-	**44**	10	34	57	-	**52**	46	58	-
Solids, Total suspended	1	**0.8**	< 1	1	3	**0.6**	0.3	< 1	1	2	**0.5**	< 1	< 1	-
Specific Conductivity (µS/cm)	-	**35**	34	35	-	**35**	2.4	33	38	-	**42**	41	42	-
Sum of ions	-	**33**	25	40	-	**38**	1.7	36	40	-	**40**	39	41	-
Turbidity (NTTU)	-	**0.3**	0.2	0.4	-	**0.6**	0.2	0.3	0.8	-	**0.3**	0.2	0.4	-
Radionuclides														
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	4	**0.01**	-	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	3	**0.003**	0.002	< 0.005	0.006	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	1	**0.004**	< 0.005	0.006	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Forrest Lake Area 2								Beet Lake Area 1				SEQG[a]
	Below Thermocline				Composite				Above Thermocline		Below Thermocline		
	N = 2				N = 2				N = 1		N = 1		
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	N<RDL	Mean	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**30**	27	33	-	**31**	29	32	-	**24**	-	**29**	-
Calcium	-	**4.6**	4.5	4.6	-	**4.5**	4.4	4.5	-	**4.3**	-	**4.4**	-
Calcium, dissolved	-	**4.6**	4.6	4.6	-	**4.7**	4.5	4.8	-	**4.3**	-	**4.4**	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	1	**0.5**	-
Chloride	-	**0.8**	0.7	0.8	-	**0.8**	0.8	0.8	-	**0.6**	-	**0.6**	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	1	**0.5**	-
Magnesium	-	**1.7**	1.7	1.7	-	**1.7**	1.7	1.7	-	**1.6**	-	**1.7**	-
Magnesium, dissolved	-	**1.7**	1.7	1.7	-	**1.8**	1.7	1.8	-	**1.6**	-	**1.6**	-
Potassium	-	**0.8**	0.8	0.8	-	**0.8**	0.8	0.8	-	**0.7**	-	**0.7**	-
Potassium, dissolved	-	**0.9**	0.8	0.9	-	**0.9**	0.9	0.9	-	**0.7**	-	**0.7**	-
Sodium	-	**2**	2	2	-	**2**	2	2	-	**1.8**	-	**1.7**	-
Sodium, dissolved	-	**2**	2	2	-	**2.0**	1.9	2.1	-	**1.7**	-	**1.7**	-
Sulphate	-	**1.8**	1.8	1.8	-	**1.7**	1.6	1.7	-	**1.7**	-	**1.7**	128[b]
Metals													
Aluminum	-	**0.001**	0.001	0.0015	-	**0.0014**	0.0011	0.0017	-	**0.0016**	-	**0.0015**	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0009**	0.0009	0.0009	1	**0.0009**	< 0.0005	0.0016	-	**0.0016**	-	**0.0006**	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Arsenic (µg/L)	-	**0.2**	0.2	0.2	-	**0.2**	0.2	0.2	-	**0.1**	-	**0.1**	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	-	**0.2**	0.2	0.2	-	**0.1**	-	**0.1**	5
Barium	-	**0.0079**	0.0078	0.0079	-	**0.0080**	0.0075	0.0085	-	**0.0077**	-	**0.01**	-
Barium, dissolved	-	**0.0075**	0.0073	0.0077	-	**0.0064**	0.0059	0.0068	-	**0.0078**	-	**0.0094**	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	1	**0.000005**	1	**0.000005**	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	1	**0.000005**	1	**0.000005**	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	1	**0.05**	1	**0.05**	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	1	**0.05**	1	**0.05**	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0003**	1	**0.0003**	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0003**	1	**0.0003**	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0002**	< 0.0002	0.0002	1	**0.0001**	1	**0.0001**	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.002[d]
Fluoride	-	**0.08**	0.06	0.1	-	**0.07**	0.07	0.07	-	**0.09**	-	**0.08**	0.12
Iron	-	**0.011**	0.0099	0.013	-	**0.0086**	0.0052	0.012	-	**0.011**	-	**0.1**	0.3
Iron, dissolved	-	**0.002**	0.001	0.0024	1	**0.0010**	< 0.0005	0.0017	-	**0.011**	-	**0.016**	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001[d]
Lithium (µg/L)	-	**3.6**	3.4	3.7	-	**3.4**	3.4	3.4	-	**3**	-	**3**	-
Lithium, dissolved (µg/L)	-	**3.5**	3.4	3.6	-	**3.4**	3.2	3.5	-	**3.1**	-	**3**	-
Manganese	-	**0.005**	0.004	0.0057	-	**0.002**	0.0009	0.0027	-	**0.0057**	-	**0.046**	-
Manganese, dissolved	2	**0.00025**	< 0.0005	< 0.0005	2	**0.00025**	< 0.0005	< 0.0005	-	**0.0047**	-	**0.0041**	-
Mercury (ng/L)		**3**	2	3	1	**1**	< 1	2	-	**3**	-	**3**	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0003**	< 0.0001	0.0005	1	**0.00005**	1	**0.00005**	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.025[d]
Rubidium (µg/L)	-	**0.55**	0.54	0.56	-	**0.60**	0.56	0.63	-	**0.6**	-	**0.58**	-
Rubidium, dissolved (µg/L)	-	**0.61**	0.56	0.66	-	**0.57**	0.49	0.64	-	**0.59**	-	**0.61**	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	1	**0.00003**	1	**0.00003**	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	1	**0.00003**	1	**0.00003**	0.00025
Strontium	-	**0.031**	0.031	0.031	-	**0.031**	0.031	0.031	-	**0.03**	-	**0.032**	-
Strontium, dissolved	-	**0.03**	0.03	0.031	-	**0.03**	0.029	0.03	-	**0.031**	-	**0.032**	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	1	**0.5**	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	1	**0.5**	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.0008
Tin	1	**0.0001**	< 0.0001	0.0002	2	**0.00005**	< 0.0001	< 0.0001	-	**0.0002**	-	**0.0002**	-
Tin, dissolved	1	**0.0001**	< 0.0001	0.0002	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	-	**0.0001**	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	1	**0.05**	1	**0.05**	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	1	**0.05**	1	**0.05**	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.12[e]
Zinc	-	**0.001**	0.0008	0.0016	-	**0.0008**	0.0007	0.0009	-	**0.0011**	-	**0.0009**	0.03
Zinc, dissolved	-	**0.0017**	0.0012	0.0021	1	**0.0005**	< 0.0005	0.0008	-	**0.0015**	-	**0.0008**	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	1	**0.0005**	1	**0.0005**	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	1	**0.0005**	1	**0.0005**	-
Nutrients													
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	0.291 to 190[h]
Ammonia (as N), dissolved	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.01	0.02	-	**0.01**	-	**0.07**	0.291 to 190[h]
Carbon, Organic dissolved	-	**1.7**	1.4	1.9	-	**1.5**	1.4	1.5	-	**2.8**	-	**2.4**	-
Carbon, Total Organic	-	**1.2**	1.1	1.3	-	**1.3**	1.2	1.3	-	**1.9**	-	**1.7**	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	1	**0.005**	1	**0.005**	3
Nitrate (as N), dissolved	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	1	**0.005**	1	**0.005**	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	1	**0.06**	< 0.04	0.09	1	**0.02**	1	**0.02**	13
Nitrate (NO_3), dissolved	2	**0.02**	< 0.04	< 0.04	1	**0.06**	< 0.04	0.09	1	**0.02**	1	**0.02**	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	1	**0.005**	1	**0.005**	-
Nitrite+Nitrate-nitrogen, dissolv	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	1	**0.005**	1	**0.005**	-
Nitrogen, Total Kjeldahl	-	**0.15**	0.14	0.16	-	**0.08**	0.06	0.1	-	**0.14**	-	**0.28**	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-
Physical Properties													
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	1	**0.5**	-
Alkalinity, Total (as $CaCO_3$)	-	**25**	22	27	-	**25**	24	26	-	**20**	-	**24**	-
Apparent color (CU)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-	**2**	-	**1**	-
Hardness, Total	-	**18**	18	18	-	**18**	18	18	-	**17**	-	**18**	-
pH (pH units)	-	**7.49**	7.48	7.50	-	**7.41**	7.35	7.46	-	**7.46**	-	**7.2**	6.5 to 9.0
Solids, Total dissolved	-	**53**	50	55	-	**46**	40	52	-	**40**	-	**42**	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**0.5**	-	**2**	-
Specific Conductivity (µS/cm)	-	**42**	42	42	-	**43**	43	43	-	**38**	-	**38**	-
Sum of ions	-	**42**	38	45	-	**42**	40	44	-	**35**	-	**40**	-
Turbidity (NTTU)	-	**0.3**	0.3	0.3	-	**0.3**	0.2	0.3	-	**0.4**	-	**0.8**	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	1	**0.02**	< 0.02	0.02	1	**0.01**	-	**0.02**	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	1	**0.003**	1	**0.003**	-
Radium-226 (Bq/L)	1	**0.005**	< 0.005	0.007	2	**0.003**	< 0.005	< 0.005	-	**0.006**	1	**0.003**	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Beet Lake Area 1					Beet Creek					Naomi Lake					SEQG[a]
	Composite					Surface					Composite					
	N = 3					N = 4					N = 4					
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	
Inorganic Ions																
Bicarbonate (as HCO_3)	-	**30**	2.5	27	32	-	**30**	3.6	27	35	-	**17**	7.4	8	26	-
Calcium	-	**4.3**	0.12	4.2	4.4	-	**4.4**	0.26	4.2	4.8	-	**2.8**	0.33	2.5	3.2	-
Calcium, dissolved	-	**4.2**	0.47	3.7	4.6	-	**4.5**	0.39	4.1	5.0	-	**2.9**	0.29	2.6	3.2	-
Carbonate (as CO_3)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Chloride	-	**0.6**	0.06	0.6	0.7	-	**0.7**	0.06	0.6	0.7	-	**0.6**	0.06	0.5	0.6	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.6**	0.058	1.5	1.6	-	**1.6**	0.05	1.6	1.7	-	**0.8**	0.1	0.6	0.9	-
Magnesium, dissolved	-	**1.5**	0.23	1.2	1.6	-	**1.6**	0.05	1.6	1.7	-	**0.7**	0.1	0.6	0.9	-
Potassium	-	**0.7**	0	0.7	0.7	-	**0.7**	0	0.7	0.7	-	**0.5**	0.05	0.4	0.5	-
Potassium, dissolved	-	**0.7**	0.1	0.6	0.8	-	**0.7**	0.10	0.6	0.8	-	**0.5**	0.05	0.4	0.5	-
Sodium	-	**1.7**	0	1.7	1.7	-	**1.8**	0.10	1.7	1.9	-	**1**	0.1	0.9	1.2	-
Sodium, dissolved	-	**1.7**	0.15	1.5	1.8	-	**1.8**	0.15	1.7	2.0	-	**1**	0.1	0.9	1.1	-
Sulphate	-	**1.6**	0.058	1.5	1.6	-	**1.6**	0.13	1.5	1.8	-	**0.7**	0.1	0.6	0.8	128[b]
Metals																
Aluminum	-	**0.0024**	0.0014	0.0012	0.0039	-	**0.0072**	0.0035	0.0022	0.0098	-	**0.024**	0.011	0.0093	0.034	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.002**	0.001	0.0007	0.0029	-	**0.0067**	0.0041	0.0013	0.0099	-	**0.020**	0.012	0.0047	0.033	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	1	**0.1**	0.08	< 0.1	0.2	-	**0.1**	0.05	0.1	0.2	-	**0.2**	0	0.2	0.2	5
Arsenic, dissolved (µg/L)	-	**0.1**	0	0.1	0.1	-	**0.1**	0	0.1	0.1	-	**0.2**	0.06	0.1	0.2	5
Barium	-	**0.0094**	0.00042	0.0089	0.0097	-	**0.0091**	0.0013	0.0082	0.011	-	**0.008**	0.001	0.007	0.01	-
Barium, dissolved	-	**0.0089**	0.00074	0.0081	0.0095	-	**0.0090**	0.0014	0.0077	0.011	-	**0.0079**	0.0021	0.0065	0.011	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	3	**0.000005**	-	< 0.00001	< 0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	2	**8E-06**	3E-06	< 0.00001	0.00001	0.00004[d]
Cadmium, dissolved	3	**0.000005**	-	< 0.00001	< 0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	3	**6E-06**	0.000003	< 0.00001	0.00001	0.00004[d]
Cesium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	3	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0005**	0.0008	< 0.0002	0.0014	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0003**	0.0004	< 0.0002	0.0008	0.002[d]
Copper, dissolved	2	**0.0004**	0.0006	< 0.0002	0.0011	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.06**	0.006	0.06	0.07	-	**0.07**	0.01	0.06	0.08	-	**0.04**	0.02	0.02	0.06	0.12
Iron	-	**0.078**	0.057	0.013	0.12	-	**0.072**	0.039	0.022	0.11	-	**0.77**	0.16	0.63	0.96	0.3
Iron, dissolved	-	**0.016**	0.012	0.0026	0.027	-	**0.039**	0.029	0.0087	0.066	-	**0.53**	0.23	0.28	0.76	0.3
Lead	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**3.1**	0.17	3.0	3.3	-	**3.1**	0.18	2.9	3.3	-	**1.3**	0.17	1.1	1.5	-
Lithium, dissolved (µg/L)	-	**3.1**	0.12	3.0	3.2	-	**3.2**	0.17	3.0	3.4	-	**1.3**	0.17	1.1	1.5	-
Manganese	-	**0.022**	0.018	0.0022	0.036	-	**0.01**	0.009	0.002	0.023	-	**0.056**	0.037	0.021	0.099	-
Manganese, dissolved	2	**0.005**	0.009	< 0.0005	0.015	-	**0.005**	0.004	0.0008	0.0098	-	**0.031**	0.044	0.0023	0.096	-
Mercury (ng/L)	1	**2**	0.9	< 1	2	1	**1**	0.8	< 1	2	1	**2**	1	< 1	4	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.0001**	0.00009	< 0.0001	0.0002	3	**0.0001**	0.0002	< 0.0001	0.0004	3	**6E-05**	0.00003	< 0.0001	0.0001	0.025[d]
Nickel, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**6E-05**	0.00003	< 0.0001	0.0001	0.025[d]
Rubidium (µg/L)	-	**0.58**	0.029	0.56	0.61	-	**0.60**	0.062	0.53	0.68	-	**0.82**	0.12	0.74	0.99	-
Rubidium, dissolved (µg/L)	-	**0.59**	0.045	0.54	0.63	-	**0.63**	0.055	0.59	0.71	-	**0.82**	0.062	0.73	0.88	-
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	3	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.031**	0	0.031	0.031	-	**0.03**	0.002	0.03	0.034	-	**0.03**	0.003	0.024	0.03	-
Strontium, dissolved	-	**0.031**	0.00058	0.031	0.032	-	**0.03**	0.002	0.03	0.035	-	**0.026**	0.0032	0.023	0.029	-
Tellurium (µg/L)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00007**	0.00003	< 0.0001	0.0001	3	**0.00006**	0.00003	< 0.0001	0.0001	3	**0.0001**	0.0002	< 0.0001	0.0004	-
Tin, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0005**	0.0002	0.0003	0.0007	-
Titanium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0004**	0.0002	< 0.0002	0.0006	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Vanadium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0002**	1E-04	0.0001	0.0003	0.12[e]
Vanadium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0002**	0.0001	< 0.0001	0.0003	0.12[e]
Zinc	-	**0.001**	0.0005	0.0006	0.0015	-	**0.001**	0.001	0.0007	0.003	-	**0.001**	0.0003	0.0007	0.0014	0.03
Zinc, dissolved	1	**0.001**	0.001	< 0.0005	0.0027	-	**0.002**	0.0009	0.0006	0.0026	-	**0.001**	0.0004	0.0009	0.0018	0.03
Zirconium	3	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	3	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Nutrients																
Ammonia (as N)	2	**0.01**	0.009	< 0.01	0.02	3	**0.01**	0.02	< 0.01	0.04	4	**0.005**	-	< 0.01	< 0.01	0.291 to 190[h]
Ammonia (as N), dissolved	-	**0.07**	0.08	0.01	0.16	2	**0.02**	0.01	< 0.01	0.03	3	**0.009**	0.008	< 0.01	0.02	0.291 to 190[h]
Carbon, Organic dissolved	-	**2.0**	0.06	2.0	2.1	-	**2.9**	0.25	2.5	3.0	-	**6.6**	0.83	5.7	7.4	-
Carbon, Total Organic	-	**1.9**	0.17	1.8	2.1	-	**2.7**	0.45	2.3	3.3	-	**6.2**	0.90	5.3	7.2	-
Nitrate (as N)	2	**0.01**	0.01	< 0.01	0.03	3	**0.06**	0.1	< 0.01	0.22	3	**0.031**	0.053	< 0.01	0.11	3
Nitrate (as N), dissolved	2	**0.02**	0.02	< 0.01	0.04	3	**0.01**	0.02	< 0.01	0.04	3	**0.034**	0.058	< 0.01	0.12	3
Nitrate (NO_3)	2	**0.06**	0.06	< 0.04	0.13	3	**0.3**	0.5	< 0.04	0.97	3	**0.1**	0.2	< 0.04	0.49	13
Nitrate (NO_3), dissolved	2	**0.07**	0.09	< 0.04	0.18	3	**0.06**	0.08	< 0.04	0.18	3	**0.1**	0.3	< 0.04	0.53	13
Nitrate+Nitrite (as N) calc.	2	**0.01**	0.01	< 0.01	0.03	3	**0.06**	0.1	< 0.01	0.22	3	**0.03**	0.05	< 0.01	0.11	-
Nitrite+Nitrate-nitrogen, dissolv	2	**0.02**	0.02	< 0.01	0.04	3	**0.01**	0.02	< 0.01	0.04	3	**0.03**	0.06	< 0.01	0.12	-
Nitrogen, Total Kjeldahl	-	**0.22**	0.095	0.13	0.32	-	**0.18**	0.036	0.13	0.21	-	**0.27**	0.087	0.21	0.40	-
Phosphorus, Total	3	**0.005**	0	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.006**	0.003	< 0.01	0.01	-
Phosphorus, Total dissolved	3	**0.005**	0	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**24**	2.1	22	26	-	**25**	3.1	22	29	-	**14**	6	7	21	-
Apparent color (CU)	-	**2**	0.6	1	2	-	**6**	3	3	9	-	**32**	11	17	42	-
Hardness, Total	-	**18**	0.58	17	18	-	**18**	0.96	17	19	-	**10**	2	9	12	-
pH (pH units)	-	**7.37**	0.186	7.17	7.54	-	**7.35**	0.142	7.15	7.48	-	**6.99**	0.263	6.60	7.15	6.5 to 9.0
Solids, Total dissolved	-	**45**	5.6	39	50	-	**47**	3.9	42	51	-	**37**	8.5	24	43	-
Solids, Total suspended	3	**0.5**	-	< 1	< 1	2	**0.8**	0.3	< 1	1	-	**3**	0.6	2	3	-
Specific Conductivity (µS/cm)	-	**38**	0.58	38	39	-	**38**	2.6	36	42	-	**20**	3.7	16	24	-
Sum of ions	-	**40**	2.5	38	43	-	**41**	3.5	38	46	-	**23**	7.4	14	32	-
Turbidity (NTTU)	-	**0.70**	0.46	0.20	1.1	-	**0.6**	0.3	0.2	0.9	-	**2.2**	0.94	1.1	3.1	-
Radionuclides																
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	4	**0.01**	-	< 0.02	< 0.02	4	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	3	**0.0025**	-	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	3	**0.004**	0.002	< 0.005	0.007	-
Radium-226 (Bq/L)	3	**0.0025**	-	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	2	**0.005**	0.003	< 0.005	0.008	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Clearwater River Area 1					Clearwater River Mid-field Area 3		Lloyd Lake Inlet					SEQG[a]
	Surface					Surface		Composite					
	N = 4					N = 1		N = 4					
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	N<RDL	Mean	SD	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**24**	6.1	18	32	-	**18**	-	**16**	1.3	15	18	-
Calcium	-	**3.8**	0.24	3.5	4.1	-	**3**	-	**3.2**	0.16	3.0	3.4	-
Calcium, dissolved	-	**3.9**	0.34	3.6	4.4	-	**3**	-	**3.2**	0.33	3.0	3.7	-
Carbonate (as CO_3)	4	**0.5**	-	< 1	< 1	1	**0.5**	4	**0.5**	-	< 1	< 1	-
Chloride	-	**0.6**	0.08	0.5	0.7	-	**0.4**	-	**0.8**	0.1	0.7	0.9	120
Hydroxide (as OH)	4	**0.5**	-	< 1	< 1	1	**0.5**	4	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.3**	0.12	1.2	1.4	-	**1**	-	**1.1**	0.05	1.0	1.1	-
Magnesium, dissolved	-	**1.3**	0.096	1.2	1.4	-	**1**	-	**1.1**	0.05	1.0	1.1	-
Potassium	-	**0.6**	0	0.6	0.6	-	**0.6**	-	**0.6**	0	0.6	0.6	-
Potassium, dissolved	-	**0.7**	0.06	0.6	0.7	-	**0.6**	-	**0.5**	0.10	0.4	0.6	-
Sodium	-	**1.5**	0.096	1.4	1.6	-	**1.3**	-	**1.5**	0.058	1.4	1.5	-
Sodium, dissolved	-	**1.5**	0.096	1.4	1.6	-	**1.3**	-	**1.5**	0.10	1.4	1.6	-
Sulphate	-	**1.3**	0.10	1.2	1.4	-	**1.1**	-	**1**	0.2	0.9	1.3	128[b]
Metals													
Aluminum	-	**0.018**	0.0068	0.012	0.027	-	**0.0081**	-	**0.0083**	0.0048	0.0025	0.014	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.011**	0.0048	0.0079	0.018	-	**0.0054**	-	**0.0062**	0.0039	0.0021	0.011	0.005 to 0.1[c]
Antimony	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.05	0.1	0.2	1	**0.05**	1	**0.1**	0.06	< 0.1	0.2	5
Arsenic, dissolved (µg/L)	-	**0.2**	0.06	0.1	0.2	-	**0.1**	-	**0.1**	0	0.1	0.1	5
Barium	-	**0.0090**	0.0020	0.0078	0.012	-	**0.0057**	-	**0.0054**	0.0021	0.0024	0.0071	-
Barium, dissolved	-	**0.0083**	0.0025	0.0067	0.012	-	**0.0055**	-	**0.0056**	0.0014	0.0041	0.0074	-
Beryllium	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	4	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	4	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	4	**0.000005**	-	< 0.00001	< 0.00001	1	**0.000005**	3	**6E-06**	0.000003	< 0.00001	0.00001	0.00004[d]
Cadmium, dissolved	3	**0.000006**	0.000003	< 0.00001	0.00001	1	**0.000005**	4	**0.000005**	-	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	4	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	4	**0.05**	-	< 0.1	< 0.1	-
Chromium	4	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	4	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	0.00005	< 0.0002	0.0002	1	**0.0001**	3	**0.0002**	0.0003	< 0.0002	0.0006	0.002[d]
Copper, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0003**	0.0005	< 0.0002	0.001	0.002[d]
Fluoride	-	**0.05**	0.02	0.04	0.08	-	**0.03**	-	**0.05**	0.01	0.04	0.07	0.12
Iron	-	**0.34**	0.17	0.20	0.56	-	**0.26**	-	**0.35**	0.20	0.10	0.58	0.3
Iron, dissolved	-	**0.19**	0.17	0.095	0.44	-	**0.21**	-	**0.20**	0.14	0.053	0.38	0.3
Lead	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.5**	0.39	2.0	2.9	-	**2.1**	-	**2**	0.5	1	2	-
Lithium, dissolved (µg/L)	-	**2.4**	0.33	2.1	2.8	-	**2**	-	**1.9**	0.17	1.7	2.1	-
Manganese	-	**0.03**	0.02	0.01	0.053	-	**0.0098**	-	**0.028**	0.015	0.0097	0.045	-
Manganese, dissolved	-	**0.018**	0.024	0.0041	0.054	-	**0.0005**	-	**0.013**	0.013	0.0014	0.029	-
Mercury (ng/L)	1	**2**	0.8	< 1	2	-	**2**	-	**3**	1	2	4	26
Molybdenum	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	3	**9E-05**	0.00008	< 0.0001	0.0002	1	**0.00005**	2	**0.00008**	3E-05	< 0.0001	0.0001	0.025[d]
Nickel, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00008**	3E-05	< 0.0001	0.0001	0.025[d]
Rubidium (µg/L)	-	**0.68**	0.13	0.56	0.87	-	**0.52**	-	**0.51**	0.13	0.32	0.59	-
Rubidium, dissolved (µg/L)	-	**0.69**	0.16	0.55	0.91	-	**0.5**	-	**0.63**	0.055	0.55	0.68	-
Selenium	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	4	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	4	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.030**	0.0013	0.028	0.031	-	**0.023**	-	**0.022**	0.0064	0.012	0.026	-
Strontium, dissolved	-	**0.029**	0.0030	0.025	0.032	-	**0.023**	-	**0.025**	0.0020	0.024	0.028	-
Tellurium (µg/L)	4	**0.5**	-	< 1	< 1	1	**0.5**	4	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	4	**0.5**	-	< 1	< 1	1	**0.5**	4	**0.5**	-	< 1	< 1	-
Thallium	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.001**	0.002	< 0.0001	0.0042	-
Tin, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.001**	0.002	< 0.0001	0.0039	-
Titanium	-	**0.0005**	0.0002	0.0003	0.0007	1	**0.0001**	2	**0.0002**	0.0001	< 0.0002	0.0004	-
Titanium, dissolved	2	**0.0002**	0.0002	< 0.0002	0.0005	-	**0.0002**	4	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	4	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	4	**0.05**	-	< 0.1	< 0.1	15
Vanadium	-	**0.0002**	0.00006	0.0001	0.0002	-	**0.0001**	2	**0.00008**	3E-05	< 0.0001	0.0001	0.12[e]
Vanadium, dissolved	3	**0.00009**	0.00008	< 0.0001	0.0002	1	**0.00005**	4	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0007**	0.0004	< 0.0005	0.0013	-	**0.0007**	1	**0.002**	0.001	< 0.0005	0.0028	0.03
Zinc, dissolved	1	**0.0009**	0.0005	< 0.0005	0.0014	-	**0.0017**	-	**0.002**	0.001	0.0005	0.0031	0.03
Zirconium	4	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	4	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	4	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	4	**0.0005**	-	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	3	**0.02**	0.03	< 0.01	0.06	-	**0.02**	3	**0.009**	0.008	< 0.01	0.02	0.291 to 190[h]
Ammonia (as N), dissolved	2	**0.02**	0.02	< 0.01	0.04	1	**0.005**	3	**0.01**	0.02	< 0.01	0.04	0.291 to 190[h]
Carbon, Organic dissolved	-	**4.0**	1.1	2.8	5.5	-	**2.7**	-	**4.4**	1.3	3.4	6.3	-
Carbon, Total Organic	-	**3.7**	1.0	2.6	5.1	-	**2.6**	-	**4.1**	1.4	3.1	6.2	-
Nitrate (as N)	3	**0.02**	0.02	< 0.01	0.05	1	**0.005**	3	**0.02**	0.03	< 0.01	0.07	3
Nitrate (as N), dissolved	3	**0.02**	0.03	< 0.01	0.06	1	**0.005**	3	**0.03**	0.04	< 0.01	0.09	3
Nitrate (NO_3)	3	**0.07**	0.1	< 0.04	0.22	1	**0.02**	3	**0.09**	0.1	< 0.04	0.31	13
Nitrate (NO_3), dissolved	3	**0.08**	0.1	< 0.04	0.26	1	**0.02**	3	**0**	0.2	< 0.04	0.4	13
Nitrate+Nitrite (as N) calc.	3	**0.02**	0.02	< 0.01	0.05	1	**0.005**	3	**0.02**	0.03	< 0.01	0.07	-
Nitrite+Nitrate-nitrogen, dissolv	3	**0.02**	0.03	< 0.01	0.06	1	**0.005**	3	**0.03**	0.04	< 0.01	0.09	-
Nitrogen, Total Kjeldahl	-	**0.26**	0.038	0.22	0.31	-	**0.22**	-	**0.27**	0.050	0.23	0.34	-
Phosphorus, Total	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	2	**0.01**	0.01	< 0.01	0.03	-
Phosphorus, Total dissolved	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	3	**0.009**	0.008	< 0.01	0.02	-
Physical Properties													
Alkalinity, Phenolphthalein	4	**0.5**	-	< 1	< 1	1	**0.5**	4	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**20**	4.9	15	26	-	**15**	-	**13**	1.3	12	15	-
Apparent color (CU)	-	**15**	9	8	28	-	**11**	-	**17**	12	7	34	-
Hardness, Total	-	**15**	0.50	14	15	-	**12**	-	**12**	0.5	12	13	-
pH (pH units)	-	**7.20**	0.340	6.69	7.40	-	**7.27**	-	**7.12**	0.247	6.75	7.26	6.5 to 9.0
Solids, Total dissolved	-	**47**	13	32	58	-	**38**	-	**38**	4.2	34	44	-
Solids, Total suspended	1	**2**	2	< 1	5	1	**0.5**	-	**2**	1	1	4	-
Specific Conductivity (µS/cm)	-	**32**	2.4	28	33	-	**25**	-	**26**	2.6	23	29	-
Sum of ions	-	**33**	6.1	27	41	-	**25**	-	**25**	1.3	23	26	-
Turbidity (NTTU)	-	**1**	0.8	0.8	2.7	-	**1.2**	-	**1.3**	0.41	1.0	1.9	-
Radionuclides													
Lead-210 (Bq/L)	4	**0.01**	-	< 0.02	< 0.02	1	**0.01**	3	**0.02**	0.01	< 0.02	0.03	-
Polonium-210 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	1	**0.003**	4	**0.003**	-	< 0.005	< 0.005	-
Radium-226 (Bq/L)	3	**0.003**	0.002	< 0.005	0.006	1	**0.003**	2	**0.006**	0.004	< 0.005	0.01	0.11
Thorium-230 (Bq/L)	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	4	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Lloyd Lake Outlet					Warner Rapids					Lake D					SEQG[a]
	Surface					Surface					Composite					
	N = 4					N = 4					N = 4					
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	
Inorganic Ions																
Bicarbonate (as HCO_3)	-	**19**	7.1	12	28	-	**19**	8.1	10	29	-	**34**	3.9	30	39	-
Calcium	-	**3.1**	0.19	2.8	3.2	-	**3.1**	0.19	2.8	3.2	-	**5.9**	1.1	5.0	7.4	-
Calcium, dissolved	-	**3.1**	0.21	2.9	3.4	-	**3.1**	0.22	2.9	3.4	-	**6.1**	1.4	5.0	8.2	-
Carbonate (as CO_3)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Chloride	-	**0.8**	0.1	0.7	0.9	-	**0.6**	0.1	0.5	0.7	2	**0.1**	0.1	< 0.1	0.3	120
Hydroxide (as OH)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.1**	0.096	1.0	1.2	-	**1.1**	0.082	1.0	1.2	-	**1.5**	0.17	1.3	1.7	-
Magnesium, dissolved	-	**1.1**	0.058	1.0	1.1	-	**1.1**	0.082	1.0	1.2	-	**1.5**	0.19	1.4	1.8	-
Potassium	-	**0.6**	0.058	0.5	0.6	-	**0.7**	0.1	0.6	0.8	-	**0.4**	0.08	0.3	0.5	-
Potassium, dissolved	-	**0.5**	0.08	0.4	0.6	-	**0.7**	0.1	0.6	0.8	-	**0.5**	0.1	0.4	0.6	-
Sodium	-	**1.4**	0.096	1.3	1.5	-	**1.5**	0.096	1.4	1.6	-	**1.5**	0.14	1.4	1.7	-
Sodium, dissolved	-	**1.4**	0.096	1.3	1.5	-	**1.5**	0.1	1.4	1.6	-	**1.5**	0.14	1.4	1.7	-
Sulfate	-	**1.0**	0.14	0.9	1.2	-	**1**	0.2	0.9	1.4	-	**1.0**	0.1	0.8	1.0	128[b]
Metals																
Aluminum	-	**0.0087**	0.0037	0.0043	0.013	-	**0.022**	0.010	0.011	0.031	-	**0.0039**	0.0020	0.0016	0.0064	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0054**	0.0025	0.0026	0.0084	-	**0.01**	0.006	0.007	0.02	-	**0.0034**	0.0017	0.0017	0.0049	0.005 to 0.1[c]
Antimony	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.05	0.1	0.2	-	**0.2**	0.06	0.1	0.2	-	**0.1**	0	0.1	0.1	5
Arsenic, dissolved (µg/L)	1	**0.1**	0.06	< 0.1	0.2	-	**0.1**	0.05	0.1	0.2	-	**0.1**	0	0.1	0.1	5
Barium	-	**0.0057**	0.0014	0.0044	0.0074	-	**0.0057**	0.0017	0.0046	0.0082	-	**0.0068**	0.0029	0.0043	0.011	-
Barium, dissolved	-	**0.0054**	0.0013	0.0044	0.0073	-	**0.0050**	0.0012	0.0041	0.0067	-	**0.0068**	0.0036	0.0040	0.012	-
Beryllium	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	3	**0.000006**	0.000003	< 0.00001	0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	3	**0.000006**	0.000003	< 0.00001	0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Chromium	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00006**	0.00003	< 0.0001	0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0002**	0.0002	< 0.0002	0.0005	3	**0.0001**	0.00005	< 0.0002	0.0002	0.002[d]
Copper, dissolved	3	**0.0002**	0.0001	< 0.0002	0.0003	3	**0.0002**	0.0001	< 0.0002	0.0003	4	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.02	0.03	0.07	-	**0.05**	0.01	0.04	0.07	-	**0.04**	0.01	0.03	0.06	0.12
Iron	-	**0.40**	0.24	0.17	0.74	-	**0.64**	0.25	0.41	0.96	-	**0.46**	0.75	0.047	1.58	0.3
Iron, dissolved	-	**0.16**	0.078	0.062	0.23	-	**0.36**	0.075	0.28	0.46	-	**0.46**	0.79	0.029	1.64	0.3
Lead	4	**0.00005**	-	< 0.0001	< 0.0001	3	**6E-05**	0.00003	< 0.0001	0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**1.8**	0.05	1.8	1.9	-	**1.5**	0.13	1.3	1.6	-	**1.7**	0.05	1.6	1.7	-
Lithium, dissolved (µg/L)	-	**1.9**	0.058	1.8	1.9	-	**1.5**	0.17	1.2	1.6	-	**1.7**	0.096	1.6	1.8	-
Manganese	-	**0.028**	0.0075	0.022	0.039	-	**0.038**	0.018	0.025	0.065	-	**0.06**	0.09	0.01	0.2	-
Manganese, dissolved	-	**0.010**	0.02	0.001	0.035	-	**0.01**	0.004	0.011	0.02	-	**0.08**	0.1	0.0009	0.3	-
Mercury (ng/L)	1	**2**	0.9	< 1	2	-	**2**	0.5	1	2	1	**2**	2	< 1	5	26
Molybdenum	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**6E-05**	0.00003	< 0.0001	0.0001	31[g]
Nickel	2	**0.00008**	3E-05	< 0.0001	0.0001	-	**0.0008**	0.001	0.0001	0.0028	3	**0.0001**	0.0001	< 0.0001	0.0003	0.025[d]
Nickel, dissolved	3	**6E-05**	0.00003	< 0.0001	0.0001	-	**0.001**	0.003	0.0001	0.0054	4	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.57**	0.057	0.52	0.65	-	**0.82**	0.066	0.72	0.86		**0.41**	0.073	0.34	0.51	-
Rubidium, dissolved (µg/L)	-	**0.60**	0.032	0.57	0.63	-	**0.80**	0.037	0.75	0.83		**0.39**	0.068	0.35	0.49	-
Selenium	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.024**	0.0016	0.022	0.026	-	**0.02**	0.002	0.02	0.023		**0.017**	0.0017	0.015	0.019	-
Strontium, dissolved	-	**0.024**	0.0021	0.022	0.027	-	**0.02**	0.002	0.02	0.024		**0.018**	0.0033	0.014	0.022	-
Tellurium (µg/L)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Thallium	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	3	**0.0005**	0.0008	< 0.0001	0.0017	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.0001**	0.0001	< 0.0001	0.0003	-
Tin, dissolved	3	**0.002**	0.004	< 0.0001	0.0081	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.0001**	0.0002	< 0.0001	0.0004	-
Titanium	2	**0.0002**	0.0002	< 0.0002	0.0004	-	**0.0004**	0.0003	0.0002	0.0008	4	**0.0001**	-	< 0.0002	< 0.0002	-
Titanium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0002**	0.00006	< 0.0002	0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Vanadium	1	**9E-05**	0.00003	< 0.0001	0.0001	-	**0.0003**	0.0001	0.0002	0.0005	2	**0.0001**	7E-05	< 0.0001	0.0002	0.12[e]
Vanadium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0002**	0	0.0002	0.0002	3	**6E-05**	0.00003	< 0.0001	0.0001	0.12[e]
Zinc	1	**0.0009**	0.0006	< 0.0005	0.0016	-	**0.0022**	0.0010	0.0012	0.0032	-	**0.001**	0.0004	0.0006	0.0016	0.03
Zinc, dissolved	1	**0.002**	0.002	< 0.0005	0.0036	-	**0.002**	0.001	0.001	0.0039	-	**0.001**	0.0005	0.0009	0.002	0.03
Zirconium	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Nutrients																
Ammonia (as N)	3	**0.02**	0.02	< 0.01	0.05	2	**0.03**	0.04	< 0.01	0.09	1	**0.2**	0.3	< 0.01	0.57	0.291 to 190[h]
Ammonia (as N), dissolved	3	**0.02**	0.03	< 0.01	0.06	2	**0.02**	0.02	< 0.01	0.05	1	**0.2**	0.3	< 0.01	0.65	0.291 to 190[h]
Carbon, Organic dissolved	-	**4.4**	1.4	3.5	6.5	-	**5.4**	1.4	4.5	7.4	-	**7.0**	0.60	6.3	7.7	-
Carbon, Total Organic	-	**4.1**	1.4	3.3	6.2	-	**5.4**	1.5	4.2	7.5	-	**5.9**	0.54	5.3	6.4	-
Nitrate (as N)	3	**0.02**	0.04	< 0.01	0.08	3	**0.02**	0.04	< 0.01	0.08	3	**0.009**	0.008	< 0.01	0.02	3
Nitrate (as N), dissolved	3	**0.02**	0.03	< 0.01	0.07	3	**0.02**	0.04	< 0.01	0.08	3	**0.01**	0.02	< 0.01	0.04	3
Nitrate (NO_3)	3	**0.1**	0.2	< 0.04	0.35	3	**0.1**	0.2	< 0.04	0.35	3	**0.04**	0.04	< 0.04	0.09	13
Nitrate (NO_3), dissolved	3	**0.09**	0.1	< 0.04	0.31	3	**0.1**	0.2	< 0.04	0.35	3	**0.06**	0.08	< 0.04	0.18	13
Nitrate+Nitrite (as N) calc.	3	**0.02**	0.04	< 0.01	0.08	3	**0.02**	0.04	< 0.01	0.08	3	**0.009**	0.008	< 0.01	0.02	-
Nitrite+Nitrate-nitrogen, dissol	3	**0.02**	0.03	< 0.01	0.07	3	**0.02**	0.04	< 0.01	0.08	3	**0.01**	0.02	< 0.01	0.04	-
Nitrogen, Total Kjeldahl	-	**0.30**	0.11	0.22	0.46	-	**0.29**	0.086	0.19	0.36	-	**0.89**	0.36	0.58	1.3	-
Phosphorus, Total	3	**0.006**	0.003	< 0.01	0.01	3	**0.006**	0.003	< 0.01	0.01	4	**0.005**	-	< 0.01	< 0.01	-
Phosphorus, Total dissolved	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																
Alkalinity, Phenolphthalein	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**16**	5.8	10	23	-	**15**	7	8	24	-	**28**	3.1	25	32	-
Apparent color (CU)	-	**17**	9.4	9.0	29	-	**26**	13	18	45	-	**12**	9.4	6	26	-
Hardness, Total	-	**12**	0.82	11	13	-	**12**	0.82	11	13	-	**21**	3.1	18	25	-
pH (pH units)	-	**7.30**	0.0597	7.24	7.38	-	**7.14**	0.262	6.75	7.28	-	**7.37**	0.222	7.04	7.52	6.5 to 9.0
Solids, Total dissolved	-	**31**	4.2	26	36	-	**41**	11	30	54	-	**57**	13	40	72	-
Solids, Total suspended	-	**2**	0.6	1	2	-	**3.8**	5	1	11	-	**3**	0.6	2	3	-
Specific Conductivity (µS/cm)	-	**26**	1.7	24	28	-	**26**	3.4	22	30	-	**43**	9.8	35	57	-
Sum of ions	-	**27**	6.8	20	35	-	**27**	8.5	17	37	-	**44**	5.4	40	52	-
Turbidity (NTTU)	-	**1**	0.4	0.9	1.8	-	**2.7**	2.2	1.2	6.0	-	**2**	2	1	5	-
Radionuclides																
Lead-210 (Bq/L)	4	**0.01**	-	< 0.02	< 0.02	3	**0.02**	0.01	< 0.02	0.03	4	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	3	**0.003**	0.001	< 0.005	0.005	2	**0.004**	0.002	< 0.005	0.007	-
Radium-226 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	3	**0.003**	0.001	< 0.005	0.005	0.11
Thorium-230 (Bq/L)	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Lake G Area 1 Surface N = 3					Lake G Area 2 Composite N = 1		Lake H Area 1 Surface N = 2				SEQG[a]
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	N<RDL	Mean	Min	Max	
Inorganic Ions												
Bicarbonate (as HCO_3)	-	**26**	6.7	20	33	-	**38**	-	**32**	30	34	-
Calcium	-	**3.6**	0.26	3.4	3.9	-	**5.8**	-	**3.7**	3.6	3.8	-
Calcium, dissolved	-	**3.5**	0.23	3.4	3.8	-	**6**	-	**3.6**	3.4	3.7	-
Carbonate (as CO_3)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Chloride	-	**0.1**	0	0.1	0.1	-	**0.1**	-	**0.2**	0.2	0.2	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.7**	0.12	1.6	1.8	-	**2.4**	-	**1.6**	1.5	1.6	-
Magnesium, dissolved	-	**1.7**	0.12	1.6	1.8	-	**2.4**	-	**1.5**	1.4	1.6	-
Potassium	-	**0.6**	0	0.6	0.6	-	**0.8**	-	**0.9**	0.8	0.9	-
Potassium, dissolved	-	**0.6**	0	0.6	0.6	-	**0.9**	-	**0.9**	0.8	0.9	-
Sodium	-	**1.7**	0.15	1.6	1.9	-	**2.3**	-	**1.9**	1.8	2.0	-
Sodium, dissolved	-	**1.7**	0.10	1.6	1.8	-	**2.4**	-	**1.8**	1.7	1.9	-
Sulphate	-	**1.1**	0.058	1.1	1.2	-	**1.2**	-	**0.3**	0.3	0.3	128[b]
Metals												
Aluminum	-	**0.0051**	0.0011	0.0043	0.0063	-	**0.0044**	-	**0.02**	0.01	0.021	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0037**	0.0013	0.0029	0.0052	-	**0.0037**	-	**0.0054**	0.0024	0.0083	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	2	**0.07**	0.03	< 0.1	0.1	-	**0.1**	-	**0.2**	0.1	0.2	5
Arsenic, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	-	**0.1**	-	**0.2**	0.2	0.2	5
Barium	-	**0.0068**	0.0012	0.0055	0.0078	-	**0.019**	-	**0.0013**	0.0011	0.0015	-
Barium, dissolved	-	**0.006**	0.0009	0.005	0.0068	-	**0.018**	-	**0.0008**	0.0006	0.0009	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.008**	< 0.01	0.01	1.5
Boron, dissolved	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.008**	< 0.01	0.01	1.5
Cadmium	2	**0.000007**	0.000003	< 0.00001	0.00001	-	**0.00001**	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000007**	0.000003	< 0.00001	0.00001	1	**0.000005**	2	**0.000005**	< 0.00001	< 0.00001	0.00004[d]
Cesium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	-
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0003**	0.0003	< 0.0002	0.0007	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.06**	0.02	0.04	0.08	-	**0.06**	-	**0.07**	0.05	0.08	0.12
Iron	-	**0.30**	0.13	0.15	0.40	-	**2.44**	-	**0.1**	0.08	0.14	0.3
Iron, dissolved	-	**0.16**	0.081	0.078	0.24	-	**2.18**	-	**0.02**	0.005	0.033	0.3
Lead	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.5**	0.12	2.4	2.6	-	**3.1**	-	**3.3**	3.2	3.3	-
Lithium, dissolved (µg/L)	-	**2.5**	0.15	2.3	2.6	-	**3.2**	-	**3.2**	2.9	3.4	-
Manganese	-	**0.018**	0.015	0.0074	0.035	-	**0.27**	-	**0.021**	0.019	0.022	-
Manganese, dissolved	-	**0.0070**	0.0037	0.0036	0.011	-	**0.26**	1	**0.0005**	< 0.0005	0.0007	-
Mercury (ng/L)	-	**2**	0.6	1	2	-	**5**	1	**1**	< 1	2	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**0.51**	0.081	0.44	0.60	-	**0.72**	-	**1.4**	1.3	1.4	-
Rubidium, dissolved (µg/L)	-	**0.46**	0.031	0.43	0.49	-	**0.77**	-	**1.3**	1.1	1.5	-
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.02**	0.002	0.02	0.024	-	**0.035**	-	**0.014**	0.013	0.014	-
Strontium, dissolved	-	**0.021**	0.0029	0.019	0.024	-	**0.036**	-	**0.013**	0.011	0.014	-
Tellurium (µg/L)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0004**	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0005**	2	**0.00005**	< 0.0001	< 0.0001	-
Titanium	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0002**	< 0.0002	0.0002	-
Titanium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	2	**0.05**	< 0.1	< 0.1	15
Vanadium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	-	**0.0032**	0.0022	0.0014	0.0056	-	**0.0009**	-	**0.0015**	0.0013	0.0017	0.03
Zinc, dissolved	-	**0.0030**	0.0016	0.0014	0.0045	-	**0.0011**	1	**0.0007**	< 0.0005	0.0011	0.03
Zirconium	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	2	**0.0005**	< 0.001	< 0.001	-
Nutrients												
Ammonia (as N)	-	**0.1**	0.1	0.03	0.25	-	**0.51**	1	**0.008**	< 0.01	0.01	0.291 to 190[h]
Ammonia (as N), dissolved	1	**0.1**	0.1	< 0.01	0.26	-	**0.45**	1	**0.02**	< 0.01	0.03	0.291 to 190[h]
Carbon, Organic dissolved	-	**7.5**	1.0	6.4	8.4	-	**10**	-	**8.7**	7.4	9.9	-
Carbon, Total Organic	-	**7.1**	1.1	6.1	8.2	-	**9.6**	-	**7.8**	7.0	8.6	-
Nitrate (as N)	2	**0.06**	0.10	< 0.01	0.18	-	**0.02**	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	2	**0.07**	0.1	< 0.01	0.2	-	**0.02**	2	**0.005**	< 0.01	< 0.01	3
Nitrate (NO_3)	2	**0.3**	0.5	< 0.04	0.8	-	**0.09**	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	2	**0.3**	0.5	< 0.04	0.89	-	**0.09**	2	**0.02**	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	2	**0.06**	0.1	< 0.01	0.18	-	**0.02**	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissol	2	**0.07**	0.1	< 0.01	0.2	-	**0.02**	2	**0.005**	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	-	**0.66**	0.056	0.60	0.71	-	**1.4**	-	**0.78**	0.61	0.95	-
Phosphorus, Total	1	**0.008**	0.003	< 0.01	0.01	-	**0.02**	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.007**	0.003	< 0.01	0.01	-	**0.01**	2	**0.005**	< 0.01	< 0.01	-
Physical Properties												
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	1	**0.5**	2	**0.5**	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**21**	5.6	16	27	-	**31**	-	**27**	25	28	-
Apparent color (CU)	-	**18**	5.0	13	23	-	**58**	-	**4**	4	4	-
Hardness, Total	-	**16**	1.2	15	17	-	**24**	-	**16**	15	16	-
pH (pH units)	-	**7.34**	0.0404	7.30	7.38	-	**7.3**	-	**7.45**	7.42	7.47	6.5 to 9.0
Solids, Total dissolved	-	**45**	11	37	58	-	**88**	-	**42**	40	44	-
Solids, Total suspended	-	**3**	2	2	5	1	**0.5**	2	**7**	6	7	-
Specific Conductivity (µS/cm)	-	**34**	2.3	33	37	-	**58**	-	**33**	32	34	-
Sum of ions	-	**35**	6.2	30	42	-	**51**	-	**41**	39	42	-
Turbidity (NTTU)	-	**1.6**	0.50	1.1	2.1	-	**3**	-	**2.0**	1.5	2.5	-
Radionuclides												
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	1	**0.01**	1	**0.02**	< 0.02	0.03	-
Polonium-210 (Bq/L)	1	**0.006**	0.003	< 0.005	0.008	1	**0.003**	-	**0.007**	0.006	0.007	-
Radium-226 (Bq/L)	2	**0.004**	0.003	< 0.005	0.007	-	**0.005**	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 14

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2019

Parameter	Lake H Area 2 Composite N = 2				Lake J Composite N = 4					SEQG[a]
	N<RDL	Mean	Min	Max	N<RDL	Mean	SD	Min	Max	
Inorganic Ions										
Bicarbonate (as HCO_3)	-	**37**	33	41	-	**5**	0.5	4	5	-
Calcium	-	**4.5**	3.6	5.4	-	**0.4**	0.2	0.3	0.7	-
Calcium, dissolved	-	**4.6**	3.6	5.5	-	**0.5**	0.2	0.4	0.8	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Chloride	-	**0.2**	0.2	0.2	1	**0.09**	0.03	< 0.1	0.1	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.8**	1.5	2.1	1	**0.1**	0.08	< 0.1	0.2	-
Magnesium, dissolved	-	**1.8**	1.5	2.1	-	**0.2**	0.06	0.1	0.2	-
Potassium	-	**1.0**	0.8	1.2	-	**0.3**	0.08	0.2	0.4	-
Potassium, dissolved	-	**1.0**	0.8	1.2	-	**0.3**	0.05	0.3	0.4	-
Sodium	-	**2.1**	1.8	2.4	-	**0.7**	0.1	0.6	0.8	-
Sodium, dissolved	-	**2.1**	1.8	2.4	-	**0.7**	0.1	0.6	0.8	-
Sulphate	-	**0.3**	0.2	0.3	-	**0.7**	0.06	0.6	0.7	128[b]
Metals										
Aluminum	-	**0.0060**	0.0034	0.0085	-	**0.01**	0.005	0.0093	0.02	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.004**	0.0012	0.006	-	**0.0074**	0.0010	0.0059	0.0083	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	0.2	0.2	-	**0.2**	0	0.2	0.2	5
Arsenic, dissolved (µg/L)	-	**0.2**	0.1	0.2	-	**0.2**	0.05	0.1	0.2	5
Barium	-	**0.002**	0.001	0.0029	-	**0.0040**	0.0020	0.0029	0.0069	-
Barium, dissolved	-	**0.002**	0.0008	0.0022	-	**0.0035**	0.0020	0.0023	0.0064	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	1	**0.008**	< 0.01	0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	-	**0.01**	0.01	0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	0.00004[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	0.00004[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0002**	0.0002	< 0.0002	0.0005	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.06**	0.04	0.07	-	**0.02**	0.01	0.01	0.04	0.12
Iron	-	**0.78**	0.18	1.38	-	**0.075**	0.064	0.033	0.17	0.3
Iron, dissolved	-	**0.14**	0.12	0.15	-	**0.032**	0.040	0.0078	0.091	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**3.7**	3.3	4.0	-	**0.1**	0	0.1	0.1	-
Lithium, dissolved (µg/L)	-	**3.8**	3.4	4.1	2	**0.08**	0.03	< 0.1	0.1	-
Manganese	-	**0.073**	0.016	0.13	-	**0.0075**	0.0070	0.0033	0.018	-
Manganese, dissolved	-	**0.07**	0.0007	0.13	-	**0.0062**	0.0085	0.0013	0.019	-
Mercury (ng/L)	-	**4**	2	5	-	**3**	3	1	7	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	-	**1.6**	1.2	1.9	-	**0.66**	0.095	0.54	0.76	-
Rubidium, dissolved (µg/L)	-	**1.5**	1.2	1.8	-	**0.63**	0.14	0.47	0.80	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.015**	0.012	0.018	-	**0.0045**	0.0013	0.0036	0.0064	-
Strontium, dissolved	-	**0.015**	0.012	0.018	-	**0.004**	0.002	0.003	0.0065	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	1	**0.0004**	< 0.0001	0.0008	3	**0.0002**	0.0003	< 0.0001	0.0006	-
Tin, dissolved	1	**0.0004**	< 0.0001	0.0008	3	**0.00009**	0.00008	< 0.0001	0.0002	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0002**	0.0001	< 0.0002	0.0003	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0001**	0.00006	< 0.0001	0.0002	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	-	**0.0016**	0.0012	0.0019	-	**0.001**	0.0004	0.001	0.0017	0.03
Zinc, dissolved	-	**0.002**	0.001	0.0021	-	**0.0016**	0.00051	0.0011	0.0023	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Nutrients										
Ammonia (as N)	1	**0.2**	< 0.01	0.43	3	**0.04**	0.06	< 0.01	0.13	0.291 to 190[h]
Ammonia (as N), dissolved	1	**0.2**	< 0.01	0.42	2	**0.05**	0.08	< 0.01	0.16	0.291 to 190[h]
Carbon, Organic dissolved	-	**7.8**	6.6	9.0	-	**7.0**	1.1	5.6	8.4	-
Carbon, Total Organic	-	**7.6**	6.4	8.7	-	**6.3**	1.0	5.2	7.4	-
Nitrate (as N)	1	**0.01**	< 0.01	0.02	3	**0.009**	0.008	< 0.01	0.02	3
Nitrate (as N), dissolved	1	**0.01**	< 0.01	0.02	3	**0.01**	0.01	< 0.01	0.03	3
Nitrate (NO_3)	1	**0.06**	< 0.04	0.09	3	**0.04**	0.04	< 0.04	0.09	13
Nitrate (NO_3), dissolved	1	**0.06**	< 0.04	0.09	3	**0.05**	0.06	< 0.04	0.13	13
Nitrate+Nitrite (as N) calc.	1	**0.01**	< 0.01	0.02	3	**0.009**	0.008	< 0.01	0.02	-
Nitrite+Nitrate-nitrogen, dissol	1	**0.01**	< 0.01	0.02	3	**0.01**	0.01	< 0.01	0.03	-
Nitrogen, Total Kjeldahl	-	**0.82**	0.54	1.1	-	**0.76**	0.17	0.57	0.95	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.01**	0.007	< 0.01	0.02	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-
Physical Properties										
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Alkalinity, Total (as $CaCO_3$)	-	**31**	27	34	-	**4**	0.5	3	4	-
Apparent color (CU)	-	**4**	3	5	-	**5**	1.0	4	6	-
Hardness, Total	-	**19**	15	22	1	**1**	0.8	< 1	2	-
pH (pH units)	-	**7.42**	7.37	7.47	-	**6.25**	0.183	5.98	6.38	6.5 to 9.0
Solids, Total dissolved	-	**48**	42	54	1	**16**	11	<5	29	-
Solids, Total suspended	2	**8.5**	3	14	-	**3**	0.8	2	4	-
Specific Conductivity (µS/cm)	-	**44**	34	53	2	**2**	3	< 1	6	-
Sum of ions	-	**47**	41	53	-	**7**	0.8	6	8	-
Turbidity (NTTU)	-	**3.2**	1.5	4.8	-	**1**	0.4	0.7	1.5	-
Radionuclides										
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	3	**0.02**	0.01	< 0.02	0.03	-
Polonium-210 (Bq/L)	1	**0.006**	< 0.005	0.01	-	**0.008**	0.002	0.006	0.01	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	3	**0.003**	0.002	< 0.005	0.006	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Note: N = number of samples; N<RDL = number of samples less than the reporting detection limit (RDL); SD = standard deviation; Min = Minimum; Max = Maximum.

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs. This includes stations where N = 1.

Note: SD was not calculated if N<3.

Shaded cells indicate exceedances over guidelines.

Means are **bolded** for ease of data comparison.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness, where the guideline is 128 mg/L at hardness = 0 mg/L to 30 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Broach Lake Area 2												SEQG[a]
	Above Thermocline				Below Thermocline				Composite				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**22**	20	24	-	**20**	20	20	-	**26**	21	30	-
Calcium	-	**3.7**	3.6	3.7	-	**3.8**	3.7	3.8	-	**3.8**	3.7	3.9	-
Calcium, dissolved	-	**3.8**	3.7	3.8	-	**3.9**	3.9	3.9	-	**4**	3.7	4.3	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.4**	0.4	0.4	-	**0.4**	0.4	0.4	-	**0.5**	0.4	0.5	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.2**	1.2	1.2	-	**1.3**	1.2	1.3	-	**1.3**	1.2	1.3	-
Magnesium, dissolved	-	**1.3**	1.2	1.3	-	**1.4**	1.3	1.4	-	**1.3**	1.2	1.4	-
Potassium	-	**0.6**	0.5	0.6	-	**0.6**	0.5	0.6	-	**0.5**	0.5	0.5	-
Potassium, dissolved	-	**0.6**	0.6	0.6	-	**0.6**	0.6	0.6	-	**0.6**	0.5	0.6	-
Sodium	-	**1.6**	1.5	1.6	-	**1.6**	1.6	1.6	-	**1.6**	1.6	1.6	-
Sodium, dissolved	-	**1.5**	1.5	1.5	-	**1.6**	1.6	1.6	-	**1.6**	1.5	1.6	-
Sulphate	-	**1.9**	1.8	1.9	-	**1.9**	1.9	1.9	-	**1.9**	1.9	1.9	128[b]
Metals													
Aluminum	-	**0.0021**	0.0017	0.0025	-	**0.0016**	0.0009	0.0022	-	**0.0008**	0.0007	0.0008	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0023**	0.0018	0.0028	-	**0.0021**	0.0017	0.0025	1	**0.0004**	< 0.0005	0.0006	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	-	**0.1**	0.1	0.1	5
Arsenic, dissolved (µg/L)	1	**0.08**	< 0.1	0.1	-	**0.2**	0.1	0.3	1	**0.08**	< 0.1	0.1	5
Barium	-	**0.015**	0.014	0.015	-	**0.016**	0.016	0.016	-	**0.017**	0.016	0.017	-
Barium, dissolved	-	**0.014**	0.014	0.014	-	**0.015**	0.015	0.015	-	**0.016**	0.015	0.017	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	-	**0.00001**	0.00001	0.00001	1	**0.000008**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.04**	0.04	0.04	-	**0.04**	0.03	0.04	-	**0.05**	0.04	0.05	0.12
Iron	-	**0.015**	0.012	0.018	-	**0.012**	0.011	0.013	-	**0.019**	0.015	0.023	0.3
Iron, dissolved	-	**0.0024**	0.0014	0.0033	-	**0.0013**	0.001	0.0015	-	**0.0015**	0.0008	0.0022	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**3**	2.9	3	-	**3.1**	3	3.1	-	**3.3**	3.1	3.4	-
Lithium, dissolved (µg/L)	-	**3**	2.8	3.1	-	**3**	3	3	-	**3.2**	3.1	3.2	-
Manganese	-	**0.0067**	0.0054	0.008	-	**0.014**	0.011	0.016	-	**0.021**	0.02	0.022	-
Manganese, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0013**	< 0.0005	0.0024	-
Mercury (ng/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	26
Molybdenum	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	31[g]
Molybdenum, dissolved	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.51**	0.5	0.51	-	**0.52**	0.51	0.52	-	**0.54**	0.51	0.56	-
Rubidium, dissolved	-	**0.51**	0.5	0.52	-	**0.51**	0.5	0.51	-	**0.54**	0.53	0.54	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.036**	0.036	0.036	-	**0.037**	0.037	0.037	-	**0.04**	0.038	0.041	-
Strontium, dissolved	-	**0.036**	0.036	0.036	-	**0.037**	0.036	0.037	-	**0.039**	0.037	0.04	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	1	**0.00078**	< 0.0005	0.0013	0.03
Zinc, dissolved	2	**0.0003**	< 0.0005	< 0.0005	-	**0.0011**	0.0008	0.0014	-	**0.0012**	0.0008	0.0016	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.02	0.02	2	**0.005**	< 0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	1	**0.02**	< 0.01	0.03	-	**0.03**	0.01	0.04	-	**0.02**	0.01	0.02	6.02 to 190[h]
Carbon, Organic dissolved	-	**1.7**	1.6	1.7	-	**1.6**	1.5	1.7	-	**1.9**	1.8	1.9	-
Carbon, Total Organic	-	**1.7**	1.6	1.7	-	**1.6**	1.6	1.6	-	**1.7**	1.6	1.7	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.02	0.02	-	**0.04**	0.01	0.06	3
Nitrate (as N), dissolved	1	**0.01**	< 0.01	0.02	-	**0.04**	0.03	0.05	-	**0.05**	0.02	0.07	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	-	**0.09**	0.09	0.09	-	**0.15**	0.04	0.26	13
Nitrate (NO_3), dissolved	1	**0.06**	< 0.04	0.09	-	**0.18**	0.13	0.22	-	**0.2**	0.09	0.31	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.02	0.02	-	**0.04**	0.01	0.06	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.01**	< 0.01	0.02	-	**0.04**	0.03	0.05	-	**0.05**	0.02	0.07	
Nitrogen, Total Kjeldahl	-	**0.14**	0.13	0.15	-	**0.17**	0.15	0.19	-	**0.2**	0.17	0.22	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Apparent color (CU)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**7.38**	7.3	7.45	-	**7.28**	7.21	7.34	-	**7.19**	7	7.37	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**31**	30	32	-	**32**	31	32	-	**35**	34	35	-
Sum of ions	-	**31**	29	33	-	**30**	30	30	-	**35**	31	39	-
Alkalinity, Total (as CaCO3)	-	**18**	16	20	-	**16**	16	16	-	**21**	17	25	-
Solids, Total dissolved	-	**30**	20	39	-	**33**	23	42	-	**47**	39	55	-
Hardness, Total	-	**14**	14	14	-	**15**	14	15	-	**15**	14	15	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Turbidity (NTU)	-	**0.5**	0.4	0.5	-	**0.5**	0.4	0.6	-	**0.4**	0.3	0.4	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	1	**0.004**	< 0.005	0.006	1	**0.004**	< 0.005	0.006	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Hodge Lake Area 1												SEQG[a]
	Above Thermocline				Below Thermocline				Composite				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**13**	10	15	-	**14**	11	17	-	**14**	12	15	-
Calcium	-	**2.8**	2.7	2.8	-	**2.8**	2.7	2.9	-	**2.9**	2.8	2.9	-
Calcium, dissolved	-	**2.8**	2.8	2.8	-	**2.9**	2.8	2.9	-	**3.1**	2.8	3.3	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**1.9**	1.8	1.9	-	**2**	1.9	2	-	**2**	1.9	2	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**0.6**	0.6	0.7	-	**0.6**	0.6	0.7	-	**0.6**	0.6	0.7	-
Magnesium, dissolved	-	**0.6**	0.6	0.7	-	**0.7**	0.7	0.7	-	**0.6**	0.6	0.7	-
Potassium	-	**0.3**	0.3	0.3	-	**0.3**	0.3	0.3	-	**0.4**	0.3	0.4	-
Potassium, dissolved	-	**0.3**	0.3	0.3	-	**0.4**	0.4	0.4	-	**0.4**	0.3	0.4	-
Sodium	-	**0.9**	0.9	0.9	-	**0.95**	0.9	1	-	**0.95**	0.9	1	-
Sodium, dissolved	-	**0.9**	0.9	0.9	-	**0.95**	0.9	1	-	**0.95**	0.9	1	-
Sulphate	-	**1**	1	1	-	**1**	1	1	-	**1**	1	1	128[b]
Metals													
Aluminum	-	**0.0075**	0.007	0.0079	-	**0.0038**	0.0023	0.0053	-	**0.0026**	0.0019	0.0033	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0031**	0.0023	0.0038	-	**0.0018**	0.0006	0.0029	-	**0.0007**	0.0006	0.0008	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	5
Arsenic, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	5
Barium	-	**0.0066**	0.0065	0.0067	-	**0.007**	0.0068	0.0071	-	**0.0075**	0.0073	0.0078	-
Barium, dissolved	-	**0.0064**	0.0063	0.0065	-	**0.0067**	0.0064	0.0069	-	**0.0074**	0.007	0.0077	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	1	**0.008**	< 0.01	0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-	**0.01**	0.01	0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.02**	0.02	0.02	-	**0.02**	0.02	0.02	-	**0.03**	0.02	0.03	0.12
Iron	-	**0.013**	0.0084	0.018	-	**0.016**	0.015	0.017	-	**0.035**	0.031	0.039	0.3
Iron, dissolved	-	**0.0034**	0.0025	0.0042	-	**0.0033**	0.002	0.0045	-	**0.0051**	0.0045	0.0056	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0004	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	0.001[d]
Lithium (µg/L)	-	**1.8**	1.7	1.8	-	**1.8**	1.7	1.9	-	**2**	1.9	2	-
Lithium, dissolved (µg/L)	-	**1.8**	1.7	1.8	-	**1.8**	1.7	1.8	-	**1.9**	1.8	1.9	-
Manganese	-	**0.0029**	0.0026	0.0031	-	**0.0048**	0.0033	0.0062	-	**0.026**	0.015	0.037	-
Manganese, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	-	**0.015**	0.0019	0.029	-
Mercury (ng/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	1	**1**	< 1	2	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0003	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.66**	0.65	0.67	-	**0.64**	0.62	0.66	-	**0.63**	0.6	0.65	-
Rubidium, dissolved	-	**0.62**	0.6	0.63	-	**0.64**	0.64	0.64	-	**0.64**	0.63	0.65	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.06**	0.059	0.06	-	**0.061**	0.06	0.062	-	**0.064**	0.064	0.064	-
Strontium, dissolved	-	**0.059**	0.058	0.06	-	**0.06**	0.058	0.062	-	**0.065**	0.063	0.066	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0003	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	1	**0.0003**	< 0.0001	0.0006	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	2	**0.0003**	< 0.0005	< 0.0005	-	**0.00085**	0.0007	0.001	-	**0.0007**	0.0006	0.0007	0.03
Zinc, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	1	**0.00073**	< 0.0005	0.0012	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	1	**0.01**	< 0.01	0.02	1	**0.008**	< 0.01	0.01	2	**0.005**	< 0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	1	**0.02**	< 0.01	0.03	1	**0.02**	< 0.01	0.03	-	**0.02**	0.02	0.02	6.02 to 190[h]
Carbon, Organic dissolved	-	**2.6**	2.3	2.8	-	**2.3**	2.2	2.3	-	**2.4**	2.3	2.5	-
Carbon, Total Organic	-	**2.3**	2.2	2.3	-	**2.2**	2	2.3	-	**2.1**	2.1	2.1	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.03	3
Nitrate (as N), dissolved	1	**0.008**	< 0.01	0.01	1	**0.01**	< 0.01	0.02	-	**0.03**	0.01	0.04	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	1	**0.075**	< 0.04	0.13	13
Nitrate (NO_3), dissolved	1	**0.03**	< 0.04	0.04	1	**0.06**	< 0.04	0.09	-	**0.11**	0.04	0.18	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.02**	< 0.01	0.03	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.008**	< 0.01	0.01	1	**0.01**	< 0.01	0.02	-	**0.03**	0.01	0.04	
Nitrogen, Total Kjeldahl	-	**0.16**	0.14	0.18	-	**0.16**	0.14	0.18	-	**0.12**	0.09	0.14	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Apparent color (CU)	-	**4**	3	5	-	**3**	2	4	-	**2**	1	2	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**6.8**	6.62	6.98	-	**6.74**	6.49	6.98	-	**6.81**	6.64	6.98	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**20**	19	20	-	**20**	19	21	-	**22**	21	22	-
Sum of ions	-	**20**	17	22	-	**22**	18	25	-	**21**	20	22	-
Alkalinity, Total (as CaCO3)	-	**10**	8	12	-	**12**	9	14	-	**11**	10	12	-
Solids, Total dissolved	-	**18**	14	22	-	**22**	18	25	-	**34**	30	37	-
Hardness, Total	-	**10**	9	10	-	**10**	9	10	-	**10**	9	10	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Turbidity (NTU)	-	**0.5**	0.4	0.5	-	**0.6**	0.6	0.6	-	**0.5**	0.4	0.5	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.006	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	1	**0.006**	< 0.005	0.01	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Jed Creek					Patterson Lake North Arm - East Basin Area 1								SEQG[a]
	Surface					Above Thermocline				Below Thermocline				
	N = 4					N = 2				N = 2				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions														
Bicarbonate (as HCO_3)	-	**14**	4.6	7	17	-	**66**	17	115	-	**25**	18	32	-
Calcium	-	**2.5**	0.47	2	3.1	-	**2.9**	2.8	2.9	-	**3**	2.9	3	-
Calcium, dissolved	-	**2.6**	0.59	2	3.4	-	**2.9**	2.9	2.9	-	**3.4**	3	3.7	-
Carbonate (as CO_3)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.3**	0.1	0.2	0.4	-	**0.4**	0.3	0.4	-	**0.4**	0.3	0.4	120
Hydroxide (as OH)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**0.73**	0.19	0.6	1	-	**0.9**	0.9	0.9	-	**0.9**	0.9	0.9	-
Magnesium, dissolved	-	**0.75**	0.17	0.6	1	-	**0.9**	0.9	0.9	-	**0.9**	0.9	0.9	-
Potassium	-	**0.4**	0.05	0.4	0.5	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-
Potassium, dissolved	-	**0.4**	0.08	0.3	0.5	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-
Sodium	-	**1**	0.19	0.9	1.3	-	**1.2**	1.2	1.2	-	**1.2**	1.2	1.2	-
Sodium, dissolved	-	**1**	0.19	0.9	1.3	-	**1.2**	1.2	1.2	-	**1.2**	1.2	1.2	-
Sulphate	-	**1.1**	0.25	1	1.5	-	**1.2**	1.2	1.2	-	**1.2**	1.2	1.2	128[b]
Metals														
Aluminum	-	**0.039**	0.013	0.022	0.053	-	**0.006**	0.0058	0.0061	-	**0.0049**	0.0038	0.0059	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.033**	0.012	0.02	0.048	-	**0.0053**	0.004	0.0065	-	**0.0034**	0.002	0.0047	0.005 to 0.1[c]
Antimony	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	1	**0.09**	0.03	< 0.1	0.1	1	**0.08**	< 0.1	0.1	1	**0.08**	< 0.1	0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0	0.1	0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	5
Barium	-	**0.0095**	0.0019	0.0074	0.012	-	**0.0092**	0.0084	0.01	-	**0.012**	0.011	0.013	-
Barium, dissolved	-	**0.0094**	0.0019	0.0076	0.012	-	**0.009**	0.0082	0.0098	-	**0.011**	0.01	0.012	-
Beryllium	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	3	**0.000006**	0.000003	< 0.00001	0.00001	1	**0.000008**	< 0.00001	0.00001	1	**0.000008**	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	3	**0.000006**	0.000003	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	3	**0.0001**	0.00005	< 0.0002	0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.03**	0.01	0.02	0.04	-	**0.04**	0.03	0.04	-	**0.03**	0.02	0.03	0.12
Iron	-	**0.45**	0.16	0.27	0.64	-	**0.15**	0.077	0.22	-	**0.52**	0.25	0.79	0.3
Iron, dissolved	-	**0.27**	0.12	0.18	0.43	-	**0.069**	0.052	0.086	-	**0.26**	0.11	0.4	0.3
Lead	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0001**	< 0.0001	0.0002	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**1.7**	0.38	1.4	2.2	-	**2.1**	2.1	2.1	-	**2.1**	2	2.1	-
Lithium, dissolved (µg/L)	-	**1.7**	0.33	1.4	2.1	-	**2.1**	2	2.2	-	**2.1**	2	2.2	-
Manganese	-	**0.012**	0.0046	0.0068	0.017	-	**0.018**	0.017	0.018	-	**0.092**	0.023	0.16	-
Manganese, dissolved	-	**0.0066**	0.0033	0.0029	0.011	-	**0.0053**	0.0006	0.01	-	**0.056**	0.0014	0.11	-
Mercury (ng/L)	2	**1**	0.9	< 1	2	2	**0.5**	< 1	< 1	1	**1**	< 1	2	26
Molybdenum	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	1	**0.00009**	0.00003	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00008**	0.00003	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.64**	0.09	0.58	0.77	-	**0.62**	0.6	0.64	-	**0.64**	0.62	0.65	-
Rubidium, dissolved	-	**0.65**	0.064	0.59	0.74	-	**0.63**	0.62	0.63	-	**0.66**	0.64	0.67	-
Selenium	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.025**	0.0051	0.02	0.032	-	**0.028**	0.027	0.028	-	**0.028**	0.027	0.028	-
Strontium, dissolved	-	**0.025**	0.0046	0.02	0.031	-	**0.027**	0.027	0.027	-	**0.028**	0.027	0.028	-
Tellurium (µg/L)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Titanium	-	**0.0003**	0.00005	0.0003	0.0004	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	-	**0.0003**	0.00005	0.0003	0.0004	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.00064**	0.0004	< 0.0005	0.0012	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zinc, dissolved	1	**0.00066**	0.0003	< 0.0005	0.001	1	**0.0004**	< 0.0005	0.0006	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zirconium	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients														
Ammonia (as N)	2	**0.008**	0.003	< 0.01	0.01	1	**0.01**	< 0.01	0.02	-	**0.11**	0.02	0.19	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.02**	0.008	0.01	0.03	-	**0.02**	0.01	0.03	-	**0.095**	0.04	0.15	6.02 to 190[h]
Carbon, Organic dissolved	-	**6.3**	2.2	3.2	8.4	-	**3.4**	3.2	3.6	-	**3.6**	3.4	3.8	-
Carbon, Total Organic	-	**6.5**	2.3	3.4	8.8	-	**3.2**	3	3.3	-	**3**	2.9	3	-
Nitrate (as N)	3	**0.02**	0.02	< 0.01	0.05	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.01	0.03	3
Nitrate (as N), dissolved	2	**0.02**	0.03	< 0.01	0.06	-	**0.02**	0.01	0.02	-	**0.04**	0.02	0.05	3
Nitrate (NO_3)	3	**0.07**	0.1	< 0.04	0.22	2	**0.02**	< 0.04	< 0.04	-	**0.085**	0.04	0.13	13
Nitrate (NO_3), dissolved	2	**0.085**	0.12	< 0.04	0.26	-	**0.07**	0.04	0.09	-	**0.16**	0.09	0.22	13
Nitrate+Nitrite (as N) calc.	3	**0.02**	0.02	< 0.01	0.05	2	**0.005**	< 0.01	< 0.01	-	**0.02**	0.01	0.03	-
Nitrite+Nitrate-nitrogen, calc. dissolve	2	**0.02**	0.03	< 0.01	0.06	-	**0.02**	0.01	0.02	-	**0.04**	0.02	0.05	
Nitrogen, Total Kjeldahl	-	**0.24**	0.041	0.21	0.3	-	**0.21**	0.17	0.25	-	**0.29**	0.25	0.33	-
Phosphorus, Total	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	-
Phosphorus, Total dissolved	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties														
Apparent color (CU)	-	**49**	26	18	79	-	**7**	7	7	-	**12**	7	16	-
Alkalinity, Phenolphthalein	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**6.64**	0.143	6.46	6.81	-	**6.29**	5.46	7.12	-	**7.12**	7	7.23	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**18**	6.2	14	27	-	**24**	23	24	-	**25**	24	26	-
Sum of ions	-	**20**	5.2	12	23	-	**73**	24	122	-	**32**	25	39	-
Alkalinity, Total (as CaCO3)	-	**11**	3.6	6	14	-	**54**	14	94	-	**21**	15	26	-
Solids, Total dissolved	-	**36**	10	25	49	-	**35**	32	37	-	**34**	30	37	-
Hardness, Total	-	**9**	2.2	7	12	-	**11**	11	11	-	**11**	11	11	-
Solids, Total suspended	3	**0.6**	0.3	< 1	1	1	**1**	< 1	2	1	**1**	< 1	2	-
Turbidity (NTU)	-	**1.3**	0.59	0.6	2	-	**1.2**	1.1	1.2	-	**1.7**	1.1	2.2	-
Radionuclides														
Lead-210 (Bq/L)	4	**0.01**	-	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	1	**0.02**	< 0.02	0.03	-
Polonium-210 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	3	**0.004**	0.004	< 0.005	0.01	1	**0.005**	< 0.005	0.007	1	**0.006**	< 0.005	0.01	0.11
Thorium-230 (Bq/L)	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Patterson Lake North Arm - East Basin Area 1				Patterson Lake North Arm - West Basin Area 1								SEQG[a]
	Composite				Above Thermocline				Below Thermocline				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**24**	21	26	-	**73**	26	120	-	**63**	16	110	-
Calcium	-	**3**	2.8	3.2	-	**3.7**	3.6	3.7	-	**3.7**	3.7	3.7	-
Calcium, dissolved	-	**3.3**	2.9	3.6	-	**3.8**	3.7	3.8	-	**3.8**	3.8	3.8	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.5**	0.4	0.5	-	**0.6**	0.6	0.6	-	**0.6**	0.6	0.6	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.1**	1	1.1	-	**1.3**	1.3	1.3	-	**1.3**	1.3	1.3	-
Magnesium, dissolved	-	**1.1**	1	1.1	-	**1.4**	1.3	1.4	-	**1.4**	1.3	1.4	-
Potassium	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-	**0.6**	0.5	0.6	-
Potassium, dissolved	-	**0.5**	0.4	0.5	-	**0.5**	0.5	0.5	-	**0.6**	0.6	0.6	-
Sodium	-	**1.3**	1.2	1.3	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Sodium, dissolved	-	**1.3**	1.2	1.3	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Sulphate	-	**1.2**	1.1	1.2	-	**1.5**	1.4	1.5	-	**1.5**	1.4	1.5	128[b]
Metals													
Aluminum	-	**0.0042**	0.0036	0.0047	-	**0.002**	0.0019	0.002	-	**0.001**	0.0006	0.0014	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0025**	0.002	0.0029	-	**0.0011**	0.0008	0.0013	1	**0.0004**	< 0.0005	0.0006	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	1	**0.08**	< 0.1	0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	1	**0.08**	< 0.1	0.1	2	**0.05**	< 0.1	< 0.1	5
Barium	-	**0.0098**	0.0086	0.011	-	**0.0083**	0.0082	0.0084	-	**0.0099**	0.0097	0.01	-
Barium, dissolved	-	**0.0096**	0.0081	0.011	-	**0.0082**	0.0082	0.0082	-	**0.0096**	0.0092	0.01	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	1	**0.000008**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	1	**0.0002**	< 0.0002	0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.04**	0.03	0.04	-	**0.04**	0.04	0.04	-	**0.04**	0.03	0.04	0.12
Iron	-	**0.12**	0.096	0.14	-	**0.011**	0.0091	0.013	-	**0.012**	0.011	0.012	0.3
Iron, dissolved	-	**0.058**	0.056	0.059	-	**0.0046**	0.0031	0.006	-	**0.001**	0.0007	0.0013	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.1**	1.9	2.2	-	**2.6**	2.5	2.6	-	**2.6**	2.6	2.6	-
Lithium, dissolved (µg/L)	-	**2**	1.9	2.1	-	**2.6**	2.5	2.6	-	**2.5**	2.4	2.6	-
Manganese	-	**0.021**	0.016	0.025	-	**0.005**	0.004	0.006	-	**0.014**	0.013	0.015	-
Manganese, dissolved	-	**0.0073**	0.0026	0.012	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	-
Mercury (ng/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	1	**0.00008**	< 0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.65**	0.64	0.66	-	**0.6**	0.57	0.63	-	**0.61**	0.6	0.61	-
Rubidium, dissolved	-	**0.65**	0.64	0.66	-	**0.57**	0.56	0.57	-	**0.61**	0.6	0.61	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.029**	0.026	0.031	-	**0.03**	0.029	0.03	-	**0.031**	0.031	0.031	-
Strontium, dissolved	-	**0.028**	0.026	0.03	-	**0.03**	0.029	0.03	-	**0.031**	0.03	0.031	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.0004**	< 0.0005	0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zinc, dissolved	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0005**	< 0.0005	0.0007	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	1	**0.01**	< 0.01	0.02	1	**0.01**	< 0.01	0.02	2	**0.005**	< 0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	1	**0.02**	< 0.01	0.03	1	**0.01**	< 0.01	0.02	-	**0.02**	0.02	0.02	6.02 to 190[h]
Carbon, Organic dissolved	-	**3.4**	3.3	3.4	-	**2.1**	2	2.2	-	**1.9**	1.8	1.9	-
Carbon, Total Organic	-	**3.6**	3.5	3.6	-	**2**	1.9	2.1	-	**1.9**	1.8	1.9	-
Nitrate (as N)	1	**0.053**	< 0.01	0.1	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3
Nitrate (as N), dissolved	1	**0.058**	< 0.01	0.11	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	3
Nitrate (NO_3)	1	**0.23**	< 0.04	0.44	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	1	**0.26**	< 0.04	0.49	2	**0.02**	< 0.04	< 0.04	1	**0.06**	< 0.04	0.09	13
Nitrate+Nitrite (as N) calc.	1	**0.053**	< 0.01	0.1	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.058**	< 0.01	0.11	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	
Nitrogen, Total Kjeldahl	-	**0.24**	0.22	0.26	-	**0.16**	0.15	0.17	-	**0.14**	0.13	0.14	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Apparent color (CU)	-	**8**	6	9	-	**1**	1	1	-	**1**	1	1	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**6.98**	6.8	7.17	-	**6.44**	5.54	7.33	-	**6.4**	5.57	7.22	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**25**	22	27	-	**31**	30	32	-	**32**	31	32	-
Sum of ions	-	**31**	29	33	-	**82**	35	129	-	**72**	25	119	-
Alkalinity, Total (as CaCO3)	-	**19**	17	21	-	**60**	21	98	-	**52**	13	90	-
Solids, Total dissolved	-	**40**	35	45	-	**41**	39	43	-	**40**	37	42	-
Hardness, Total	-	**12**	11	12	-	**14**	14	14	-	**14**	14	14	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Turbidity (NTU)	-	**0.85**	0.5	1.2	-	**1.2**	0.4	1.9	-	**1.2**	0.5	1.9	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	2	**0.003**	< 0.005	< 0.005	1	**0.004**	< 0.005	0.005	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Patterson Lake North Arm - West Basin Area 1				Patterson Lake South Arm Area 1								SEQG[a]
	Composite				Above Thermocline				Below Thermocline				
	N = 2				N = 2				N = 2				
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**22**	22	22	-	**77**	28	126	-	**58**	21	95	-
Calcium	-	**3.7**	3.6	3.7	-	**3.8**	3.8	3.8	-	**3.9**	3.9	3.9	-
Calcium, dissolved	-	**3.9**	3.6	4.1	-	**3.8**	3.8	3.8	-	**4**	3.9	4	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-	**0.6**	0.6	0.6	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**1.3**	1.2	1.3	-	**1.3**	1.3	1.3	-	**1.4**	1.4	1.4	-
Magnesium, dissolved	-	**1.3**	1.2	1.4	-	**1.4**	1.3	1.4	-	**1.5**	1.4	1.5	-
Potassium	-	**0.5**	0.5	0.5	-	**0.6**	0.5	0.6	-	**0.6**	0.6	0.6	-
Potassium, dissolved	-	**0.6**	0.5	0.6	-	**0.6**	0.5	0.6	-	**0.6**	0.5	0.6	-
Sodium	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-
Sodium, dissolved	-	**1.4**	1.4	1.4	-	**1.4**	1.4	1.4	-	**1.5**	1.4	1.5	-
Sulphate	-	**1.4**	1.4	1.4	-	**1.5**	1.4	1.5	-	**1.6**	1.6	1.6	128[b]
Metals													
Aluminum	1	**0.0005**	< 0.0005	0.0008	-	**0.0016**	0.0015	0.0016	-	**0.0024**	0.001	0.0038	0.005 to 0.1[c]
Aluminum, dissolved	1	**0.00068**	< 0.0005	0.0011	1	**0.00073**	< 0.0005	0.0012	1	**0.00073**	< 0.0005	0.0012	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	1	**0.08**	< 0.1	0.1	-	**0.1**	0.1	0.1	1	**0.08**	< 0.1	0.1	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	1	**0.08**	< 0.1	0.1	2	**0.05**	< 0.1	< 0.1	5
Barium	-	**0.0097**	0.0097	0.0097	-	**0.0085**	0.0082	0.0088	-	**0.011**	0.01	0.011	-
Barium, dissolved	-	**0.013**	0.009	0.017	-	**0.0083**	0.0082	0.0084	-	**0.01**	0.0097	0.011	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	1	**0.000008**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	1	**0.0019**	< 0.0002	0.0036	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.04	0.05	-	**0.04**	0.04	0.04	-	**0.04**	0.03	0.04	0.12
Iron	-	**0.02**	0.019	0.02	-	**0.018**	0.016	0.02	-	**0.017**	0.017	0.017	0.3
Iron, dissolved	-	**0.005**	0.0017	0.0083	-	**0.0067**	0.0042	0.0093	-	**0.0022**	0.0021	0.0022	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	1	**0.0001**	< 0.0001	0.0002	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**2.7**	2.6	2.8	-	**2.6**	2.5	2.7	-	**2.7**	2.6	2.7	-
Lithium, dissolved (µg/L)	-	**2.6**	2.4	2.7	-	**2.6**	2.4	2.7	-	**2.6**	2.5	2.7	-
Manganese	-	**0.021**	0.0069	0.035	-	**0.0061**	0.0037	0.0084	-	**0.029**	0.023	0.034	-
Manganese, dissolved	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0012**	< 0.0005	0.0022	2	**0.0003**	< 0.0005	< 0.0005	-
Mercury (ng/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	1	**0.00008**	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	1	**0.00008**	< 0.0001	0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.62**	0.61	0.62	-	**0.58**	0.56	0.6	-	**0.58**	0.57	0.58	-
Rubidium, dissolved	-	**0.55**	0.53	0.58	-	**0.59**	0.56	0.62	-	**0.58**	0.55	0.61	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.032**	0.032	0.032	-	**0.032**	0.03	0.034	-	**0.031**	0.031	0.031	-
Strontium, dissolved	-	**0.032**	0.031	0.032	-	**0.03**	0.03	0.03	-	**0.031**	0.03	0.031	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zinc, dissolved	1	**0.0017**	< 0.0005	0.0032	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	1	**0.03**	< 0.01	0.05	2	**0.005**	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	6.02 to 190[h]
Ammonia (as N), dissolved	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	1	**0.01**	< 0.01	0.02	6.02 to 190[h]
Carbon, Organic dissolved	-	**2.5**	2.4	2.6	-	**2.2**	2	2.4	-	**1.9**	1.7	2	-
Carbon, Total Organic	-	**2.3**	1.9	2.7	-	**1.9**	1.9	1.9	-	**1.7**	1.5	1.8	-
Nitrate (as N)	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	3
Nitrate (as N), dissolved	1	**0.02**	< 0.01	0.03	1	**0.01**	< 0.01	0.02	-	**0.02**	0.01	0.02	3
Nitrate (NO_3)	1	**0.075**	< 0.04	0.13	2	**0.02**	< 0.04	< 0.04	1	**0.06**	< 0.04	0.09	13
Nitrate (NO_3), dissolved	1	**0.075**	< 0.04	0.13	1	**0.06**	< 0.04	0.09	-	**0.07**	0.04	0.09	13
Nitrate+Nitrite (as N) calc.	1	**0.02**	< 0.01	0.03	2	**0.005**	< 0.01	< 0.01	1	**0.01**	< 0.01	0.02	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.02**	< 0.01	0.03	1	**0.01**	< 0.01	0.02	-	**0.02**	0.01	0.02	
Nitrogen, Total Kjeldahl	-	**0.2**	0.19	0.2	-	**0.16**	0.14	0.18	-	**0.13**	0.11	0.14	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-
Physical Properties													
Apparent color (CU)	1	**0.8**	< 1	1	1	**0.8**	< 1	1	2	**0.5**	< 1	< 1	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**7.07**	7.06	7.09	-	**6.44**	5.52	7.35	-	**6.43**	5.65	7.2	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**33**	32	33	-	**31**	30	32	-	**33**	32	34	-
Sum of ions	-	**31**	31	31	-	**86**	37	135	-	**67**	30	104	-
Alkalinity, Total (as CaCO3)	-	**18**	18	18	-	**63**	23	103	-	**48**	17	78	-
Solids, Total dissolved	-	**47**	42	51	-	**33**	30	35	-	**36**	34	38	-
Hardness, Total	-	**14**	14	14	-	**15**	15	15	-	**15**	15	15	-
Solids, Total suspended	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	-
Turbidity (NTU)	-	**0.4**	0.2	0.6	-	**0.5**	0.4	0.6	-	**0.6**	0.6	0.6	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.006	-
Radium-226 (Bq/L)	-	**0.008**	0.007	0.008	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Patterson Lake South Arm Area 1				Forrest Lake Area 1					Forrest Lake Area 2		SEQG[a]
	Composite				Mid Depth					Above Thermocline		
	N = 2				N = 4					N = 1		
	N<RDL	Mean	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	
Inorganic Ions												
Bicarbonate (as HCO_3)	-	**33**	22	44	-	**23**	3.2	20	26	-	**28**	-
Calcium	-	**3.9**	3.8	4	-	**3.9**	0.33	3.5	4.3	-	**4.4**	-
Calcium, dissolved	-	**4.1**	3.8	4.4	-	**4.1**	0.5	3.8	4.8	-	**4.4**	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	1	**0.5**	-
Chloride	-	**0.6**	0.5	0.6	-	**0.6**	0.05	0.6	0.7	-	**0.8**	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	1	**0.5**	-
Magnesium	-	**1.4**	1.3	1.4	-	**1.5**	0.096	1.4	1.6	-	**1.7**	-
Magnesium, dissolved	-	**1.4**	1.3	1.5	-	**1.5**	0.1	1.4	1.6	-	**1.7**	-
Potassium	-	**0.6**	0.5	0.6	-	**0.6**	0	0.6	0.6	-	**0.8**	-
Potassium, dissolved	-	**0.6**	0.5	0.6	-	**0.6**	0.05	0.6	0.7	-	**0.8**	-
Sodium	-	**1.5**	1.4	1.5	-	**1.5**	0.096	1.4	1.6	-	**1.9**	-
Sodium, dissolved	-	**1.4**	1.4	1.4	-	**1.5**	0.096	1.4	1.6	-	**1.9**	-
Sulphate	-	**1.5**	1.5	1.5	-	**1.5**	0.13	1.4	1.7	-	**1.6**	128[b]
Metals												
Aluminum	-	**0.0013**	0.0006	0.002	-	**0.0051**	0.0028	0.0025	0.0084	-	**0.0017**	0.005 to 0.1[c]
Aluminum, dissolved	1	**0.0005**	< 0.0005	0.0007	-	**0.0023**	0.0021	0.0009	0.0054	-	**0.0005**	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Arsenic (µg/L)	1	**0.08**	< 0.1	0.1	1	**0.09**	0.03	< 0.1	0.1	-	**0.2**	5
Arsenic, dissolved (µg/L)	-	**0.1**	0.1	0.1	-	**0.1**	-	0.1	0.1	-	**0.2**	5
Barium	-	**0.011**	0.01	0.011	-	**0.0097**	0.001	0.0087	0.011	-	**0.0074**	-
Barium, dissolved	-	**0.0094**	0.0093	0.0095	-	**0.0091**	0.0013	0.0082	0.011	-	**0.0074**	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Boron	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	1	**0.000005**	0.00004 to 0.00005[d]
Cadmium, dissolved	2	**0.000005**	< 0.00001	< 0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	1	**0.000005**	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0002**	0.0001	< 0.0002	0.0003	1	**0.0001**	0.002[d]
Fluoride	-	**0.05**	0.04	0.05	-	**0.05**	0.01	0.04	0.06	-	**0.04**	0.12
Iron	-	**0.027**	0.023	0.031	-	**0.046**	0.027	0.018	0.079	-	**0.0079**	0.3
Iron, dissolved	-	**0.0035**	0.0033	0.0036	-	**0.012**	0.0068	0.0046	0.021	-	**0.0036**	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001[d]
Lithium (µg/L)	-	**2.8**	2.7	2.9	-	**2.9**	0.3	2.5	3.1	-	**3.6**	-
Lithium, dissolved (µg/L)	-	**2.8**	2.6	2.9	-	**2.8**	0.26	2.5	3.1	-	**3.6**	-
Manganese	-	**0.067**	0.042	0.091	-	**0.013**	0.012	0.002	0.03	-	**0.0023**	-
Manganese, dissolved	1	**0.00098**	< 0.0005	0.0017	-	**0.0032**	0.0018	0.0015	0.0057	-	**0.0006**	-
Mercury (ng/L)	2	**0.5**	< 1	< 1	2	**0.8**	0.3	< 1	1	-	**1**	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00006**	0.00003	< 0.0001	0.0001	1	**0.00005**	31[g]
Nickel	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.025[d]
Nickel, dissolved	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00006**	0.00003	< 0.0001	0.0001	1	**0.00005**	0.025[d]
Rubidium	-	**0.62**	0.58	0.65	-	**0.6**	0.033	0.58	0.65	-	**0.64**	-
Rubidium, dissolved	-	**0.59**	0.53	0.64	-	**0.6**	0.047	0.57	0.67	-	**0.59**	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	0.00025
Strontium	-	**0.033**	0.032	0.034	-	**0.032**	0.0026	0.03	0.036	-	**0.032**	-
Strontium, dissolved	-	**0.033**	0.032	0.034	-	**0.032**	0.0027	0.03	0.036	-	**0.031**	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	1	**0.5**	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	1	**0.5**	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Titanium	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	1	**0.05**	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.12[e]
Zinc	2	**0.0003**	< 0.0005	< 0.0005	2	**0.00063**	0.0004	< 0.0005	0.001	1	**0.0003**	0.03
Zinc, dissolved	2	**0.0003**	< 0.0005	< 0.0005	1	**0.0012**	0.001	< 0.0005	0.0025	1	**0.0003**	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	-
Nutrients												
Ammonia (as N)	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.03**	0.02	0.03	2	**0.01**	0.01	< 0.01	0.03	-	**0.02**	6.02 to 190[h]
Carbon, Organic dissolved	-	**2.2**	2.2	2.2	-	**2.3**	0.39	1.9	2.7	-	**1.3**	-
Carbon, Total Organic	-	**2.3**	2.1	2.4	-	**2.3**	0.37	1.9	2.7	-	**1.3**	-
Nitrate (as N)	1	**0.03**	< 0.01	0.05	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	3
Nitrate (as N), dissolved	-	**0.05**	0.02	0.07	2	**0.008**	0.003	< 0.01	0.01	-	**0.01**	3
Nitrate (NO_3)	1	**0.12**	< 0.04	0.22	4	**0.02**	-	< 0.04	< 0.04	1	**0.02**	13
Nitrate (NO_3), dissolved	-	**0.2**	0.09	0.31	2	**0.03**	0.01	< 0.04	0.04	-	**0.04**	13
Nitrate+Nitrite (as N) calc.	1	**0.03**	< 0.01	0.05	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-
Nitrite+Nitrate-nitrogen, calc. dissolve	-	**0.05**	0.02	0.07	2	**0.008**	0.003	< 0.01	0.01	-	**0.01**	
Nitrogen, Total Kjeldahl	-	**0.15**	0.11	0.18	-	**0.19**	0.05	0.12	0.23	-	**0.15**	-
Phosphorus, Total	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-
Physical Properties												
Apparent color (CU)	2	**0.5**	< 1	< 1	1	**4**	4	< 1	9	1	**0.5**	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	4	**0.5**	-	< 1	< 1	1	**0.5**	-
pH (pH units)	-	**7.12**	7.03	7.2	-	**7.29**	0.152	7.11	7.48	-	**7.55**	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**35**	34	35	-	**34**	3.5	30	38	-	**40**	-
Sum of ions	-	**43**	31	54	-	**33**	3.5	29	36	-	**39**	-
Alkalinity, Total (as CaCO3)	-	**27**	18	36	-	**19**	2.6	16	21	-	**23**	-
Solids, Total dissolved	-	**46**	37	54	-	**33**	11	22	49	-	**33**	-
Hardness, Total	-	**16**	15	16	-	**16**	1	15	17	-	**18**	-
Solids, Total suspended	2	**0.5**	< 1	< 1	3	**1**	2	< 1	4	1	**0.5**	-
Turbidity (NTU)	-	**0.5**	0.4	0.6	-	**0.85**	0.42	0.4	1.4	-	**1.3**	-
Radionuclides												
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	4	**0.01**	-	< 0.02	< 0.02	1	**0.01**	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	1	**0.003**	-
Radium-226 (Bq/L)	1	**0.006**	< 0.005	0.01	2	**0.004**	0.002	< 0.005	0.006	1	**0.003**	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Forrest Lake Area 2							Beet Lake Area 1				SEQG[a]
	Below Thermocline		Composite					Above Thermocline		Below Thermocline		
	N = 1		N = 3					N = 1		N = 1		
	N<RDL	Mean	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	N<RDL	Mean	
Inorganic Ions												
Bicarbonate (as HCO_3)	-	**28**	-	**34**	5.5	28	38	-	**24**	-	**26**	-
Calcium	-	**4.5**	-	**4.5**	0.17	4.4	4.7	-	**4.1**	-	**4.2**	-
Calcium, dissolved	-	**4.5**	-	**4.7**	0.36	4.4	5.1	-	**4.1**	-	**4.2**	-
Carbonate (as CO_3)	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
Chloride	-	**0.8**	-	**0.8**	0.1	0.7	0.9	-	**0.6**	-	**0.6**	120
Hydroxide (as OH)	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
Magnesium	-	**1.7**	-	**1.7**	0.12	1.6	1.8	-	**1.5**	-	**1.5**	-
Magnesium, dissolved	-	**1.7**	-	**1.8**	0.21	1.6	2	-	**1.5**	-	**1.5**	-
Potassium	-	**0.8**	-	**0.8**	0.06	0.8	0.9	-	**0.7**	-	**0.7**	-
Potassium, dissolved	-	**0.8**	-	**0.9**	0.06	0.8	0.9	-	**0.6**	-	**0.6**	-
Sodium	-	**2**	-	**1.9**	0.058	1.9	2	-	**1.7**	-	**1.7**	-
Sodium, dissolved	-	**2**	-	**1.9**	0.058	1.9	2	-	**1.7**	-	**1.7**	-
Sulphate	-	**1.6**	-	**1.7**	0.058	1.6	1.7	-	**1.4**	-	**1.5**	128[b]
Metals												
Aluminum	-	**0.0013**	-	**0.002**	0.0017	0.001	0.004	-	**0.0018**	-	**0.0012**	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.013**	1	**0.00068**	0.0004	< 0.0005	0.001	1	**0.0003**	-	**0.0008**	0.005 to 0.1[c]
Antimony	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Antimony, dissolved	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Arsenic (µg/L)	-	**0.1**	-	**0.1**	0.06	0.1	0.2	-	**0.1**	1	**0.05**	5
Arsenic, dissolved (µg/L)	-	**0.1**	-	**0.1**	0.06	0.1	0.2	1	**0.05**	1	**0.05**	5
Barium	-	**0.008**	-	**0.0082**	0.0008	0.0074	0.0089	-	**0.0079**	-	**0.0097**	-
Barium, dissolved	-	**0.008**	-	**0.008**	0.0008	0.0073	0.0088	-	**0.0077**	-	**0.0093**	-
Beryllium	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Beryllium, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Bismuth	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Bismuth, dissolved	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Boron	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.005**	1.5
Boron, dissolved	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.005**	1.5
Cadmium	1	**0.000005**	3	**0.000005**	-	< 0.00001	< 0.00001	1	**0.000005**	1	**0.000005**	0.00004 to 0.00005[d]
Cadmium, dissolved	1	**0.000005**	3	**0.000005**	-	< 0.00001	< 0.00001	-	**0.00001**	-	**0.00001**	0.00004 to 0.00005[d]
Cesium (µg/L)	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	1	**0.05**	-
Cesium, dissolved (µg/L)	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	1	**0.05**	-
Chromium	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	1	**0.0003**	0.001
Chromium, dissolved	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	1	**0.0003**	0.001
Cobalt	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.00078[e,f]
Cobalt, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.00078[e,f]
Copper	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.002[d]
Copper, dissolved	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.002[d]
Fluoride	-	**0.04**	-	**0.06**	0.02	0.05	0.08	-	**0.04**	-	**0.04**	0.12
Iron	-	**0.0007**	-	**0.013**	0.0026	0.01	0.015	-	**0.02**	-	**0.065**	0.3
Iron, dissolved	-	**0.014**	-	**0.0016**	0.0009	0.0007	0.0025	-	**0.0038**	-	**0.0091**	0.3
Lead	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001[d]
Lead, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001[d]
Lithium (µg/L)	-	**3.6**	-	**3.7**	0.23	3.4	3.8	-	**3.2**	-	**3.2**	-
Lithium, dissolved (µg/L)	-	**3.6**	-	**3.6**	0.25	3.3	3.8	-	**3.1**	-	**3.2**	-
Manganese	1	**0.0003**	-	**0.004**	0.0041	0.0013	0.0087	-	**0.0063**	-	**0.032**	-
Manganese, dissolved	-	**0.005**	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	-	**0.0009**	-
Mercury (ng/L)	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	26
Molybdenum	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	31[g]
Molybdenum, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	31[g]
Nickel	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.025[d]
Nickel, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.025[d]
Rubidium	-	**0.62**	-	**0.61**	0.01	0.6	0.62	-	**0.57**	-	**0.61**	ggg
Rubidium, dissolved	-	**0.61**	-	**0.61**	0.035	0.58	0.65	-	**0.58**	-	**0.6**	-
Selenium	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001
Selenium, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.001
Silver	1	**0.00003**	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	1	**0.00003**	0.00025
Silver, dissolved	1	**0.00003**	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	1	**0.00003**	0.00025
Strontium	-	**0.032**	-	**0.032**	0.0015	0.031	0.034	-	**0.031**	-	**0.032**	-
Strontium, dissolved	-	**0.032**	-	**0.033**	0.002	0.031	0.035	-	**0.03**	-	**0.031**	-
Tellurium (µg/L)	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
Tellurium, dissolved (µg/L)	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
Thallium	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.0008
Thallium, dissolved	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	0.0008
Tin	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Tin, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	-
Titanium	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Titanium, dissolved	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	1	**0.0001**	-
Uranium (µg/L)	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	1	**0.05**	15
Uranium, dissolved (µg/L)	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	1	**0.05**	15
Vanadium	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.12[e]
Vanadium, dissolved	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	1	**0.00005**	0.12[e]
Zinc	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	1	**0.0003**	0.03
Zinc, dissolved	1	**0.0003**	1	**0.00085**	0.0005	< 0.0005	0.0013	-	**0.0005**	1	**0.0003**	0.03
Zirconium	1	**0.0005**	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	1	**0.0005**	-
Zirconium, dissolved	1	**0.0005**	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	1	**0.0005**	-
Nutrients												
Ammonia (as N)	-	**0.02**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-	**0.04**	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.02**	1	**0.02**	0.009	< 0.01	0.02	1	**0.005**	-	**0.03**	6.02 to 190[h]
Carbon, Organic dissolved	-	**1.3**	-	**1.5**	0.25	1.3	1.8	-	**2.2**	-	**2**	-
Carbon, Total Organic	-	**1.3**	-	**1.3**	0.058	1.2	1.3	-	**2.2**	-	**2**	-
Nitrate (as N)	1	**0.005**	2	**0.007**	0.003	< 0.01	0.01	1	**0.005**	1	**0.005**	3
Nitrate (as N), dissolved	-	**0.02**	1	**0.02**	0.02	< 0.01	0.04	1	**0.005**	-	**0.02**	3
Nitrate (NO_3)	1	**0.02**	2	**0.03**	0.01	< 0.04	0.04	1	**0.02**	1	**0.02**	13
Nitrate (NO_3), dissolved	-	**0.09**	1	**0.097**	0.08	< 0.04	0.18	1	**0.02**	-	**0.09**	13
Nitrate+Nitrite (as N) calc.	1	**0.005**	2	**0.007**	0.003	< 0.01	0.01	1	**0.005**	1	**0.005**	-
Nitrite+Nitrate-nitrogen, calc. dissolve	-	**0.02**	1	**0.02**	0.02	< 0.01	0.04	1	**0.005**	-	**0.02**	
Nitrogen, Total Kjeldahl	-	**0.17**	-	**0.13**	0.025	0.11	0.16	-	**0.24**	-	**0.21**	-
Phosphorus, Total	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-
Phosphorus, Total dissolved	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-
Physical Properties												
Apparent color (CU)	1	**0.5**	3	**0.5**	-	< 1	< 1	-	**2**	-	**2**	-
Alkalinity, Phenolphthalein	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
pH (pH units)	-	**7.61**	-	**7.38**	0.163	7.19	7.49	-	**7.53**	-	**7.31**	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**42**	-	**42**	3	39	45	-	**36**	-	**38**	-
Sum of ions	-	**39**	-	**46**	5.9	39	50	-	**34**	-	**36**	-
Alkalinity, Total (as CaCO3)	-	**23**	-	**28**	4.4	23	31	-	**20**	-	**21**	-
Solids, Total dissolved	-	**30**	-	**49**	14	35	62	-	**22**	-	**26**	-
Hardness, Total	-	**18**	-	**18**	0.58	18	19	-	**16**	-	**17**	-
Solids, Total suspended	1	**0.5**	3	**0.5**	-	< 1	< 1	1	**0.5**	1	**0.5**	-
Turbidity (NTU)	-	**0.4**	-	**0.3**	0.1	0.2	0.4	-	**1.4**	-	**0.8**	-
Radionuclides												
Lead-210 (Bq/L)	1	**0.01**	3	**0.01**	-	< 0.02	< 0.02	1	**0.01**	1	**0.01**	-
Polonium-210 (Bq/L)	1	**0.003**	3	**0.003**	-	< 0.005	< 0.005	1	**0.003**	1	**0.003**	-
Radium-226 (Bq/L)	1	**0.003**	2	**0.005**	0.004	< 0.005	0.009	1	**0.003**	1	**0.003**	0.11
Thorium-230 (Bq/L)	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1	**0.005**	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Beet Lake Area 1					Beet Creek					Naomi Lake					SEQG[a]
	Composite					Surface					Composite					
	N = 3					N = 4					N = 3					
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	
Inorganic Ions																
Bicarbonate (as HCO_3)	-	**32**	4	27	34	-	**27**	3.3	22	30	-	**8**	5.3	2	12	-
Calcium	-	**4.2**	0.32	4	4.6	-	**4.2**	0.44	3.9	4.8	-	**2.2**	0.44	1.9	2.7	-
Calcium, dissolved	-	**4.3**	0.42	4	4.8	-	**4.3**	0.69	3.8	5.3	-	**2.3**	0.53	1.9	2.9	-
Carbonate (as CO_3)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Chloride	-	**0.7**	0.06	0.6	0.7	-	**0.7**	0.1	0.6	0.8	-	**0.4**	0.2	0.3	0.6	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.5**	0.058	1.5	1.6	-	**1.5**	0.13	1.4	1.7	-	**0.6**	0.1	0.5	0.7	-
Magnesium, dissolved	-	**1.6**	0.1	1.5	1.7	-	**1.6**	0.22	1.4	1.9	-	**0.6**	0.1	0.5	0.7	-
Potassium	-	**0.7**	0.06	0.6	0.7	-	**0.7**	0.05	0.6	0.7	-	**0.4**	0	0.4	0.4	-
Potassium, dissolved	-	**0.7**	0.1	0.6	0.8	-	**0.7**	0.1	0.6	0.8	-	**0.4**	0	0.4	0.4	-
Sodium	-	**1.7**	0.058	1.6	1.7	-	**1.7**	0.082	1.6	1.8	-	**0.87**	0.12	0.8	1	-
Sodium, dissolved	-	**1.7**	0.058	1.6	1.7	-	**1.7**	0.14	1.6	1.9	-	**0.87**	0.12	0.8	1	-
Sulphate	-	**1.5**	-	1.5	1.5	-	**1.5**	0.19	1.4	1.8	-	**0.6**	0.06	0.6	0.7	128[b]
Metals																
Aluminum	-	**0.0016**	0.0008	0.0009	0.0024	-	**0.0083**	0.0032	0.0045	0.011	-	**0.05**	0.0053	0.044	0.054	0.005 to 0.1[c]
Aluminum, dissolved	1	**0.0011**	0.0011	< 0.0005	0.0023	-	**0.006**	0.0035	0.0009	0.009	-	**0.043**	0.011	0.031	0.052	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	1	**0.1**	0.08	< 0.1	0.2	1	**0.1**	0.06	< 0.1	0.2	-	**0.2**	0.06	0.1	0.2	5
Arsenic, dissolved (µg/L)	1	**0.08**	0.03	< 0.1	0.1	1	**0.09**	0.03	< 0.1	0.1	-	**0.2**	0.06	0.1	0.2	5
Barium	-	**0.013**	0.0074	0.0086	0.022	-	**0.0092**	0.0016	0.0075	0.011	-	**0.0085**	0.0014	0.0073	0.01	-
Barium, dissolved	-	**0.013**	0.0072	0.0079	0.021	-	**0.0087**	0.0017	0.0072	0.011	-	**0.0082**	0.0017	0.0066	0.01	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	2	**0.000007**	0.000003	< 0.00001	0.00001	3	**0.000006**	0.000003	< 0.00001	0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	3	**0.000005**	-	< 0.00001	< 0.00001	2	**0.000008**	0.000003	< 0.00001	0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	-
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	3	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.05**	0.01	0.04	0.06	-	**0.05**	0.01	0.04	0.06	-	**0.02**	0.006	0.02	0.03	0.12
Iron	-	**0.34**	0.45	0.067	0.85	-	**0.12**	0.075	0.024	0.19	-	**0.943**	0.0751	0.87	1.02	0.3
Iron, dissolved	-	**0.067**	0.089	0.015	0.17	-	**0.062**	0.041	0.011	0.11	-	**0.61**	0.2	0.39	0.77	0.3
Lead	2	**0.00047**	0.0007	< 0.0001	0.0013	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**3.1**	0.17	2.9	3.2	-	**3.2**	0.25	2.9	3.5	-	**0.93**	0.15	0.8	1.1	-
Lithium, dissolved (µg/L)	-	**3**	0.25	2.8	3.3	-	**3.2**	0.21	2.9	3.4	-	**0.9**	0.1	0.8	1	-
Manganese	-	**0.38**	0.624	0.016	1.1	-	**0.012**	0.0045	0.006	0.016	-	**0.048**	0.027	0.032	0.079	-
Manganese, dissolved	-	**0.354**	0.611	0.0008	1.06	-	**0.0055**	0.0009	0.0046	0.0068	-	**0.038**	0.028	0.019	0.071	-
Mercury (ng/L)	3	**0.5**	-	< 1	< 1	2	**0.8**	0.3	< 1	1	1	**0.8**	0.3	< 1	1	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00008**	0.00003	< 0.0001	0.0001	0.025[d]
Nickel, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00008**	0.00003	< 0.0001	0.0001	0.025[d]
Rubidium	-	**0.64**	0.021	0.62	0.66	-	**0.65**	0.021	0.62	0.67	-	**0.89**	0.045	0.84	0.93	-
Rubidium, dissolved	-	**0.61**	0.055	0.56	0.67	-	**0.62**	0.075	0.56	0.73	-	**0.87**	0.044	0.82	0.9	-
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	3	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.033**	0.0026	0.031	0.036	-	**0.032**	0.0034	0.03	0.037	-	**0.022**	0.0044	0.019	0.027	-
Strontium, dissolved	-	**0.033**	0.0029	0.031	0.036	-	**0.032**	0.0036	0.029	0.037	-	**0.021**	0.0042	0.018	0.026	-
Tellurium (µg/L)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Tin, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0006**	0.0002	0.0005	0.0008	-
Titanium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0005**	0.0001	0.0004	0.0006	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	15
Vanadium	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	3	**0.0003**	-	< 0.0005	< 0.0005	2	**0.00055**	0.0004	< 0.0005	0.001	-	**0.0007**	0.0001	0.0006	0.0008	0.03
Zinc, dissolved	3	**0.0003**	-	< 0.0005	< 0.0005	3	**0.0003**	0.0002	< 0.0005	0.0006	-	**0.00087**	0.0003	0.0006	0.0012	0.03
Zirconium	3	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	3	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	3	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	3	**0.0005**	-	< 0.001	< 0.001	-
Nutrients																
Ammonia (as N)	2	**0.1**	0.17	< 0.01	0.3	3	**0.006**	0.003	< 0.01	0.01	2	**0.01**	0.009	< 0.01	0.02	6.02 to 190[h]
Ammonia (as N), dissolved	1	**0.1**	0.15	< 0.01	0.28	1	**0.01**	0.01	< 0.01	0.03	1	**0.02**	0.01	< 0.01	0.03	6.02 to 190[h]
Carbon, Organic dissolved	-	**2.1**	0.23	2	2.4	-	**3.3**	0.62	2.4	3.8	-	**9.4**	1.4	8.4	11	-
Carbon, Total Organic	-	**2**	0.058	2	2.1	-	**3.1**	0.73	2.4	4.1	-	**10**	1.5	9.1	12	-
Nitrate (as N)	2	**0.01**	0.01	< 0.01	0.03	4	**0.005**	-	< 0.01	< 0.01	2	**0.03**	0.05	< 0.01	0.09	3
Nitrate (as N), dissolved	1	**0.02**	0.02	< 0.01	0.05	3	**0.01**	0.01	< 0.01	0.03	2	**0.037**	0.055	< 0.01	0.1	3
Nitrate (NO_3)	2	**0.057**	0.064	< 0.04	0.13	4	**0.02**	-	< 0.04	< 0.04	2	**0.15**	0.22	< 0.04	0.4	13
Nitrate (NO_3), dissolved	1	**0.093**	0.11	< 0.04	0.22	3	**0.047**	0.055	< 0.04	0.13	2	**0.16**	0.24	< 0.04	0.44	13
Nitrate+Nitrite (as N) calc.	2	**0.01**	0.01	< 0.01	0.03	4	**0.005**	-	< 0.01	< 0.01	2	**0.03**	0.05	< 0.01	0.09	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.02**	0.02	< 0.01	0.05	3	**0.01**	0.01	< 0.01	0.03	2	**0.037**	0.055	< 0.01	0.1	
Nitrogen, Total Kjeldahl	-	**0.29**	0.097	0.18	0.37	-	**0.25**	0.066	0.18	0.33	-	**0.29**	0.02	0.27	0.31	-
Phosphorus, Total	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-
Phosphorus, Total dissolved	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-
Physical Properties																
Apparent color (CU)	-	**2**	1	1	3	-	**11**	9.5	1	24	-	**64**	15	55	81	-
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	3	**0.5**	-	< 1	< 1	-
pH (pH units)	-	**7.26**	0.257	6.97	7.46	-	**7.31**	0.19	7.04	7.47	-	**6.47**	0.155	6.32	6.63	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**39**	4.4	36	44	-	**37**	3.9	33	42	-	**16**	4	12	20	-
Sum of ions	-	**42**	4.4	37	45	-	**37**	4.1	32	42	-	**13**	5.6	7	18	-
Alkalinity, Total (as CaCO3)	-	**26**	3.5	22	28	-	**22**	2.9	18	25	-	**7**	4	2	10	-
Solids, Total dissolved	-	**40**	6	40	50	-	**38**	17	21	58	-	**42**	15	29	58	-
Hardness, Total	-	**17**	1.2	16	18	-	**17**	1.7	15	19	-	**8**	2	7	10	-
Solids, Total suspended	1	**1**	0.8	< 1	2	4	**0.5**	-	< 1	< 1	1	**0.8**	0.3	< 1	1	-
Turbidity (NTU)	-	**1.7**	1.4	0.9	3.3	-	**0.93**	0.48	0.3	1.3	-	**2**	0.6	1.4	2.6	-
Radionuclides																
Lead-210 (Bq/L)	3	**0.01**	-	< 0.02	< 0.02	3	**0.01**	0.005	< 0.02	0.02	3	**0.01**	-	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	3	**0.003**	-	< 0.005	< 0.005	4	**0.003**	-	< 0.005	< 0.005	2	**0.003**	0.001	< 0.005	0.005	-
Radium-226 (Bq/L)	3	**0.003**	-	< 0.005	< 0.005	3	**0.004**	0.004	< 0.005	0.01	2	**0.004**	0.003	< 0.005	0.008	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Naomi Lake				Clearwater River Area 1					Lloyd Lake Inlet				SEQG[a]
	Above Thermocline		Below Thermocline		Surface					Composite				
	N = 1		N = 1		N = 4					N = 2				
	N<RDL	Mean	N<RDL	Mean	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions														
Bicarbonate (as HCO_3)	-	**77**	-	96	-	**19**	6.5	13	28	-	**13**	8	17	-
Calcium	-	**2.3**	-	2.4	-	**3.1**	0.096	3	3.2	-	**2.7**	2	3.4	-
Calcium, dissolved	-	**2.3**	-	2.4	-	**3.2**	0.096	3.1	3.3	-	**3**	2.3	3.7	-
Carbonate (as CO_3)	1	**0.5**	1	0.5	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Chloride	-	**0.4**	-	0.4	-	**0.6**	0.06	0.5	0.6	-	**0.7**	0.6	0.8	120
Hydroxide (as OH)	1	**0.5**	1	0.5	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Magnesium	-	**0.6**	-	0.6	-	**1**	0.2	0.7	1.1	-	**1.1**	0.9	1.2	-
Magnesium, dissolved	-	**0.6**	-	0.6	-	**1.1**	0.17	0.8	1.2	-	**1**	0.8	1.2	-
Potassium	-	**0.4**	-	0.4	-	**0.6**	0.05	0.5	0.6	-	**0.5**	0.4	0.5	-
Potassium, dissolved	-	**0.4**	-	0.4	-	**0.6**	0.06	0.5	0.6	-	**0.5**	0.4	0.6	-
Sodium	-	**0.8**	-	0.8	-	**1.2**	0.15	1	1.3	-	**1.4**	1.2	1.5	-
Sodium, dissolved	-	**0.8**	-	0.8	-	**1.2**	0.15	1	1.3	-	**1.4**	1.2	1.5	-
Sulphate	-	**0.5**	-	0.5	-	**1.1**	0.17	0.8	1.2	-	**0.9**	0.7	1.1	128[b]
Metals														
Aluminum	-	**0.042**	-	0.038	-	**0.036**	0.012	0.027	0.053	-	**0.013**	0.011	0.014	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.032**	-	0.027	-	**0.023**	0.013	0.014	0.042	-	**0.0096**	0.0083	0.011	0.005 to 0.1[c]
Antimony	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Antimony, dissolved	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.2**	-	0.2	1	**0.1**	0.08	< 0.1	0.2	-	**0.2**	0.1	0.2	5
Arsenic, dissolved (µg/L)	-	**0.2**	-	0.2	1	**0.09**	0.03	< 0.1	0.1	-	**0.1**	0.1	0.1	5
Barium	-	**0.008**	-	0.0089	-	**0.0094**	0.0024	0.0078	0.013	-	**0.0067**	0.0056	0.0078	-
Barium, dissolved	-	**0.0074**	-	0.0085	-	**0.0083**	0.0025	0.0068	0.012	-	**0.0065**	0.0053	0.0076	-
Beryllium	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Beryllium, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	-
Bismuth	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Bismuth, dissolved	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	-
Boron	1	**0.005**	1	0.005	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Boron, dissolved	1	**0.005**	1	0.005	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	1.5
Cadmium	1	**0.000005**	-	0.00001	3	**0.000006**	0	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	1	**0.000005**	1	0.000005	3	**0.000006**	0	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	1	**0.05**	1	0.05	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	1	**0.05**	1	0.05	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	-
Chromium	1	**0.0003**	1	0.0003	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Chromium, dissolved	1	**0.0003**	1	0.0003	4	**0.0003**	-	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	0.001
Cobalt	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.00078[e,f]
Copper	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0004**	< 0.0002	0.0006	0.002[d]
Copper, dissolved	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0003**	< 0.0002	0.0004	0.002[d]
Fluoride	-	**0.02**	-	0.02	-	**0.03**	0.005	0.03	0.04	-	**0.05**	0.04	0.05	0.12
Iron	-	**0.75**	-	0.99	-	**0.635**	0.378	0.42	1.2	-	**0.54**	0.4	0.69	0.3
Iron, dissolved	-	**0.48**	-	0.53	-	**0.3**	0.21	0.18	0.61	-	**0.37**	0.25	0.48	0.3
Lead	1	**0.00005**	1	0.00005	2	**0.00008**	0	< 0.0001	0.0001	1	**0.00053**	< 0.0001	0.001	0.001[d]
Lead, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0003**	< 0.0001	0.0005	0.001[d]
Lithium (µg/L)	-	**1**	-	1	-	**2**	0.54	1.2	2.4	-	**1.7**	1.4	2	-
Lithium, dissolved (µg/L)	-	**1**	-	1	-	**2**	0.57	1.2	2.5	-	**1.8**	1.5	2	-
Manganese	-	**0.029**	-	0.068	-	**0.042**	0.023	0.022	0.074	-	**0.048**	0.016	0.08	-
Manganese, dissolved	-	**0.0061**	-	0.035	-	**0.023**	0.034	0.0042	0.073	-	**0.038**	0.0037	0.073	-
Mercury (ng/L)	-	**2**	-	1	2	**1**	0.7	< 1	2	1	**2**	< 1	3	26
Molybdenum	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[7]
Molybdenum, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	31[7]
Nickel	1	**0.00005**	-	0.0001	3	**0.00006**	0	< 0.0001	0.0001	-	**0.0001**	0.0001	0.0001	0.025[d]
Nickel, dissolved	1	**0.00005**	1	0.00005	3	**0.00006**	0	< 0.0001	0.0001	-	**0.0001**	0.0001	0.0001	0.025[d]
Rubidium	-	**0.91**	-	0.92	-	**0.76**	0.14	0.66	0.96	-	**0.64**	0.61	0.66	-
Rubidium, dissolved	-	**0.95**	-	0.92	-	**0.74**	0.12	0.63	0.9	-	**0.63**	0.6	0.66	-
Selenium	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Selenium, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.001
Silver	1	**0.00003**	1	0.00003	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Silver, dissolved	1	**0.00003**	1	0.00003	4	**0.00003**	-	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.023**	-	0.023	-	**0.028**	0.001	0.027	0.029	-	**0.025**	0.02	0.029	-
Strontium, dissolved	-	**0.023**	-	0.023	-	**0.027**	0.0014	0.026	0.029	-	**0.024**	0.02	0.028	-
Tellurium (µg/L)	1	**0.5**	1	0.5	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Tellurium, dissolved (µg/L)	1	**0.5**	1	0.5	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
Thallium	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	1	**0.0001**	1	0.0001	4	**0.0001**	-	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	0.0008
Tin	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0002**	< 0.0001	0.0003	-
Tin, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	1	**0.0001**	< 0.0001	0.0002	-
Titanium	-	**0.0006**	-	0.0005	-	**0.0005**	0.0001	0.0004	0.0006	1	**0.0002**	< 0.0002	0.0002	-
Titanium, dissolved	-	**0.0003**	-	0.0004	-	**0.0003**	0.0001	0.0002	0.0005	1	**0.0002**	< 0.0002	0.0002	-
Uranium (µg/L)	1	**0.05**	1	0.05	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	1	**0.05**	1	0.05	4	**0.05**	-	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	15
Vanadium	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	1	**0.00005**	1	0.00005	4	**0.00005**	-	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	0.12[e]
Zinc	-	**0.0007**	1	0.0003	1	**0.00071**	0.0005	< 0.0005	0.0013	1	**0.00083**	< 0.0005	0.0014	0.03
Zinc, dissolved	1	**0.0003**	1	0.0003	3	**0.00044**	0.0004	< 0.0005	0.001	-	**0.00095**	0.0005	0.0014	0.03
Zirconium	1	**0.0005**	1	0.0005	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Zirconium, dissolved	1	**0.0005**	1	0.0005	4	**0.0005**	-	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	-
Nutrients														
Ammonia (as N)	1	**0.005**	-	0.04	2	**0.02**	0.02	< 0.01	0.05	-	**0.02**	0.01	0.02	6.02 to 190[g]
Ammonia (as N), dissolved	-	**0.01**	-	0.06	1	**0.03**	0.03	< 0.01	0.08	-	**0.03**	0.02	0.04	6.02 to 190[g]
Carbon, Organic dissolved	-	**9.5**	-	9.2	-	**5.7**	1.3	4.4	7.4	-	**5.7**	4.9	6.5	-
Carbon, Total Organic	-	**9.2**	-	9.3	-	**5.6**	1.2	4.7	7.4	-	**5.9**	5.2	6.5	-
Nitrate (as N)	1	**0.005**	1	0.005	3	**0.02**	0.02	< 0.01	0.05	1	**0.04**	< 0.01	0.07	3
Nitrate (as N), dissolved	1	**0.005**	-	0.01	2	**0.03**	0.04	< 0.01	0.08	1	**0.04**	< 0.01	0.08	3
Nitrate (NO_3)	1	**0.02**	1	0.02	3	**0.07**	0.1	< 0.04	0.22	1	**0.17**	< 0.04	0.31	13
Nitrate (NO_3), dissolved	1	**0.02**	-	0.04	2	**0.11**	0.16	< 0.04	0.35	1	**0.19**	< 0.04	0.35	13
Nitrate+Nitrite (as N) calc.	1	**0.005**	1	0.005	3	**0.02**	0.02	< 0.01	0.05	1	**0.04**	< 0.01	0.07	-
Nitrite+Nitrate-nitrogen, calc. dissolve	1	**0.005**	-	0.01	2	**0.03**	0.04	< 0.01	0.08	1	**0.04**	< 0.01	0.08	
Nitrogen, Total Kjeldahl	-	**0.32**	-	0.35	-	**0.31**	0.051	0.25	0.36	-	**0.29**	0.27	0.3	-
Phosphorus, Total	1	**0.005**	1	0.005	4	**0.005**	-	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	-
Phosphorus, Total dissolved	1	**0.005**	1	0.005	4	**0.005**	-	< 0.01	< 0.01	1	**0.008**	< 0.01	0.01	-
Physical Properties														
Apparent color (CU)	-	**60**	-	62	-	**36**	13	25	54	-	**34**	29	38	-
Alkalinity, Phenolphthalein	1	**0.5**	1	0.5	4	**0.5**	-	< 1	< 1	2	**0.5**	< 1	< 1	-
pH (pH units)	-	**5.44**	-	5.41	-	**7**	0.463	6.31	7.32	-	**6.71**	6.5	6.92	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**14**	-	15	-	**25**	1.7	22	26	-	**23**	16	29	-
Sum of ions	-	**82**	-	101	-	**27**	6.8	20	36	-	**20**	14	26	-
Alkalinity, Total (as CaCO3)	-	**63**	-	79	-	**16**	5.3	11	23	-	**11**	7	14	-
Solids, Total dissolved	-	**30**	-	37	-	**39**	12	26	55	-	**43**	34	51	-
Hardness, Total	-	**8**	-	8	-	**12**	1	10	12	-	**11**	9	13	-
Solids, Total suspended	1	**0.5**	-	2	-	**2**	2	1	4	2	**0.5**	< 1	< 1	-
Turbidity (NTU)	-	**2.5**	-	4.6	-	**2.6**	0.71	1.7	3.4	-	**1.9**	1.8	2	-
Radionuclides														
Lead-210 (Bq/L)	1	**0.01**	-	0.05	4	**0.01**	-	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	1	**0.003**	1	0.003	4	**0.003**	-	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	-
Radium-226 (Bq/L)	1	**0.003**	1	0.003	4	**0.003**	-	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	1	**0.005**	1	0.005	4	**0.005**	-	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Lloyd Lake Inlet								Lloyd Lake Outlet							SEQG[a]
	Above Thermocline				Below Thermocline				Surface					Below Thermocline		
	N = 2				N = 2				N = 3					N = 1		
	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	
Inorganic Ions																
Bicarbonate (as HCO_3)	-	**27**	24	30	-	**15**	12	18	-	**45.3**	52.5	15	106	-	**15**	-
Calcium	-	**2.5**	2.3	2.6	-	**2.6**	2.5	2.6	-	**2.4**	0.23	2.3	2.7	-	**2.9**	-
Calcium, dissolved	-	**2.5**	2.3	2.6	-	**2.6**	2.5	2.6	-	**2.5**	0.2	2.3	2.7	-	**3.1**	-
Carbonate (as CO_3)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	-
Chloride	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-	**0.5**	-	0.5	0.5	-	**0.9**	120
Hydroxide (as OH)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	-
Magnesium	-	**0.9**	0.8	0.9	-	**0.9**	0.9	0.9	-	**0.8**	0.06	0.8	0.9	-	**1**	-
Magnesium, dissolved	-	**0.9**	0.8	0.9	-	**0.9**	0.9	0.9	-	**0.93**	0.12	0.8	1	-	**1**	-
Potassium	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-	**0.5**	0.06	0.4	0.5	-	**0.5**	-
Potassium, dissolved	-	**0.5**	0.5	0.5	-	**0.5**	0.5	0.5	-	**0.5**	0.06	0.4	0.5	-	**0.5**	-
Sodium	-	**1.2**	1.2	1.2	-	**1.2**	1.2	1.2	-	**1.2**	-	1.2	1.2	-	**1.3**	-
Sodium, dissolved	-	**1.2**	1.2	1.2	-	**1.2**	1.2	1.2	-	**1.2**	0.058	1.1	1.2	-	**1.3**	-
Sulphate	-	**0.8**	0.7	0.8	-	**0.8**	0.7	0.9	-	**0.8**	0.1	0.7	0.9	-	**1**	128[b]
Metals																
Aluminum	-	**0.011**	0.0086	0.013	-	**0.01**	0.009	0.011	-	**0.014**	0.001	0.013	0.015	-	**0.021**	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.011**	0.008	0.013	-	**0.0089**	0.0081	0.0096	-	**0.0093**	0.0006	0.0087	0.0098	-	**0.015**	0.005 to 0.1[c]
Antimony	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Antimony, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Arsenic (µg/L)	-	**0.2**	0.1	0.2	-	**0.1**	0.1	0.1	-	**0.1**	0.06	0.1	0.2	-	**0.1**	5
Arsenic, dissolved (µg/L)	1	**0.08**	< 0.1	0.1	-	**0.1**	0.1	0.1	1	**0.1**	0.08	< 0.1	0.2	-	**0.1**	5
Barium	-	**0.0061**	0.0058	0.0063	-	**0.0062**	0.0061	0.0063	-	**0.0061**	0.0004	0.0059	0.0066	-	**0.0069**	-
Barium, dissolved	-	**0.0058**	0.0056	0.006	-	**0.0058**	0.0056	0.006	-	**0.0054**	0.0003	0.0052	0.0057	-	**0.007**	-
Beryllium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Beryllium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Bismuth	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Bismuth, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	-
Boron	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1.5
Boron, dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	1.5
Cadmium	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000005**	< 0.00001	< 0.00001	2	**0.000007**	0.000003	< 0.00001	0.00001	1	**0.000005**	0.00004 to 0.00005[d]
Cadmium, dissolved	1	**0.000008**	< 0.00001	0.00001	2	**0.000005**	< 0.00001	< 0.00001	3	**0.000005**	-	< 0.00001	< 0.00001	1	**0.000005**	0.00004 to 0.00005[d]
Cesium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	-
Cesium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	-
Chromium	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	0.001
Chromium, dissolved	2	**0.0003**	< 0.0005	< 0.0005	2	**0.0003**	< 0.0005	< 0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	0.001
Cobalt	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.00078[e,f]
Cobalt, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.00078[e,f]
Copper	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0004**	0.002[d]
Copper, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0002**	0.0002	< 0.0002	0.0004	-	**0.0003**	0.002[d]
Fluoride	-	**0.03**	0.03	0.03	-	**0.03**	0.03	0.03	-	**0.03**	0.006	0.03	0.04	-	**0.04**	0.12
Iron	-	**0.48**	0.43	0.52	-	**0.51**	0.42	0.6	-	**0.56**	0.064	0.49	0.61	-	**0.97**	0.3
Iron, dissolved	-	**0.38**	0.29	0.46	-	**0.38**	0.29	0.47	-	**0.35**	0.035	0.31	0.37	-	**0.61**	0.3
Lead	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0015**	0.001[d]
Lead, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0004**	0.001[d]
Lithium (µg/L)	-	**1.7**	1.6	1.7	-	**1.8**	1.7	1.8	-	**1.6**	0.15	1.4	1.7	-	**1.7**	-
Lithium, dissolved (µg/L)	-	**1.7**	1.7	1.7	-	**1.8**	1.7	1.8	-	**1.6**	0.1	1.5	1.7	-	**1.6**	-
Manganese	-	**0.033**	0.019	0.046	-	**0.046**	0.021	0.07	-	**0.033**	0.012	0.02	0.044	-	**0.033**	-
Manganese, dissolved	-	**0.022**	0.0028	0.042	-	**0.031**	0.003	0.059	-	**0.009**	0.0095	0.0029	0.02	-	**0.032**	-
Mercury (ng/L)	-	**2**	1	2	-	**2**	1	2	1	**1**	0.8	< 1	2	-	**2**	26
Molybdenum	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	31[g]
Molybdenum, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	31[g]
Nickel	-	**0.0001**	0.0001	0.0001	1	**0.00008**	< 0.0001	0.0001	-	**0.0001**	-	0.0001	0.0001	-	**0.0002**	0.025[d]
Nickel, dissolved	1	**0.00008**	< 0.0001	0.0001	-	**0.0001**	0.0001	0.0001	1	**0.00008**	0.00003	< 0.0001	0.0001	-	**0.0001**	0.025[d]
Rubidium	-	**0.65**	0.59	0.7	-	**0.64**	0.6	0.67	-	**0.6**	0.082	0.53	0.69	-	**0.65**	-
Rubidium, dissolved	-	**0.62**	0.58	0.66	-	**0.65**	0.61	0.68	-	**0.62**	0.065	0.55	0.68	-	**0.65**	-
Selenium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001
Selenium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.001
Silver	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	0.00025
Silver, dissolved	2	**0.00003**	< 0.00005	< 0.00005	2	**0.00003**	< 0.00005	< 0.00005	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	0.00025
Strontium	-	**0.021**	0.02	0.022	-	**0.022**	0.021	0.022	-	**0.021**	0.0017	0.02	0.023	-	**0.026**	-
Strontium, dissolved	-	**0.021**	0.019	0.022	-	**0.021**	0.02	0.022	-	**0.02**	0.0015	0.019	0.022	-	**0.026**	-
Tellurium (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	-
Tellurium, dissolved (µg/L)	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	-
Thallium	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	0.0008
Thallium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	0.0008
Tin	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0002**	-
Tin, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	-
Titanium	1	**0.0002**	< 0.0002	0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	0.0001	< 0.0002	0.0002	-	**0.0005**	-
Titanium, dissolved	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	< 0.0002	< 0.0002	2	**0.0001**	0.0001	< 0.0002	0.0002	-	**0.0003**	-
Uranium (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	15
Uranium, dissolved (µg/L)	2	**0.05**	< 0.1	< 0.1	2	**0.05**	< 0.1	< 0.1	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	15
Vanadium	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.12[e]
Vanadium, dissolved	2	**0.00005**	< 0.0001	< 0.0001	2	**0.00005**	< 0.0001	< 0.0001	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	0.12[e]
Zinc	1	**0.0004**	< 0.0005	0.0005	1	**0.0004**	< 0.0005	0.0005	3	**0.0003**	-	< 0.0005	< 0.0005	-	**0.0028**	0.03
Zinc, dissolved	-	**0.0012**	0.001	0.0014	-	**0.0007**	0.0005	0.0009	2	**0.0004**	0.0002	< 0.0005	0.0006	-	**0.0011**	0.03
Zirconium	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	-
Zirconium, dissolved	2	**0.0005**	< 0.001	< 0.001	2	**0.0005**	< 0.001	< 0.001	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	-
Nutrients																
Ammonia (as N)	1	**0.01**	< 0.01	0.02	-	**0.02**	0.01	0.02	2	**0.01**	0.009	< 0.01	0.02	-	**0.03**	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.03**	0.01	0.04	1	**0.02**	< 0.01	0.03	1	**0.02**	0.01	< 0.01	0.03	-	**0.05**	6.02 to 190[h]
Carbon, Organic dissolved	-	**6**	5.6	6.4	-	**6**	5.2	6.8	-	**6.2**	0.64	5.5	6.6	-	**4.1**	-
Carbon, Total Organic	-	**6.1**	5.8	6.4	-	**5.7**	5.3	6.1	-	**6.9**	0.76	6.2	7.7	-	**4.4**	-
Nitrate (as N)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-	**0.04**	3
Nitrate (as N), dissolved	-	**0.01**	0.01	0.01	1	**0.01**	< 0.01	0.02	2	**0.007**	0.003	< 0.01	0.01	-	**0.05**	3
Nitrate (NO_3)	2	**0.02**	< 0.04	< 0.04	2	**0.02**	< 0.04	< 0.04	3	**0.02**	-	< 0.04	< 0.04	-	**0.18**	13
Nitrate (NO_3), dissolved	-	**0.04**	0.04	0.04	1	**0.06**	< 0.04	0.09	2	**0.03**	0.01	< 0.04	0.04	-	**0.22**	13
Nitrate+Nitrite (as N) calc.	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	-	**0.04**	-
Nitrite+Nitrate-nitrogen, calc. dissolve	-	**0.01**	0.01	0.01	1	**0.01**	< 0.01	0.02	2	**0.007**	0.003	< 0.01	0.01	-	**0.05**	
Nitrogen, Total Kjeldahl	-	**0.33**	0.26	0.4	-	**0.32**	0.26	0.37	-	**0.33**	0.07	0.28	0.41	-	**0.3**	-
Phosphorus, Total	1	**0.008**	< 0.01	0.01	1	**0.008**	< 0.01	0.01	2	**0.007**	0.003	< 0.01	0.01	1	**0.005**	-
Phosphorus, Total dissolved	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-
Physical Properties																
Apparent color (CU)	-	**36**	33	39	-	**35**	30	39	-	**39**	6	33	45	-	**31**	-
Alkalinity, Phenolphthalein	2	**0.5**	< 1	< 1	2	**0.5**	< 1	< 1	3	**0.5**	-	< 1	< 1	1	**0.5**	-
pH (pH units)	-	**6.4**	6.36	6.44	-	**6.86**	6.48	7.23	-	**6.47**	0.872	5.46	6.98	-	**6.39**	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**20**	19	21	-	**22**	21	22	-	**19**	1.5	18	21	-	**24**	-
Sum of ions	-	**33**	30	36	-	**21**	18	24	-	**51.3**	52.5	21	112	-	**23**	-
Alkalinity, Total (as CaCO3)	-	**23**	20	25	-	**13**	10	15	-	**37**	43	12	87	-	**12**	-
Solids, Total dissolved	-	**36**	31	40	-	**39**	32	45	-	**35**	5.1	29	39	-	**45**	-
Hardness, Total	-	**10**	9	10	-	**10**	10	10	-	**9**	0.6	9	10	-	**11**	-
Solids, Total suspended	2	**0.5**	< 1	< 1	1	**0.8**	< 1	1	1	**0.8**	0.3	< 1	1	1	**0.5**	-
Turbidity (NTU)	-	**1.6**	1.5	1.6	-	**1.8**	1.6	1.9	-	**2.3**	0.31	2	2.6	-	**1.7**	-
Radionuclides																
Lead-210 (Bq/L)	2	**0.01**	< 0.02	< 0.02	2	**0.01**	< 0.02	< 0.02	3	**0.01**	-	< 0.02	< 0.02	1	**0.01**	-
Polonium-210 (Bq/L)	2	**0.003**	< 0.005	< 0.005	2	**0.003**	< 0.005	< 0.005	3	**0.003**	-	< 0.005	< 0.005	1	**0.003**	-
Radium-226 (Bq/L)	1	**0.006**	< 0.005	0.009	1	**0.006**	< 0.005	0.009	3	**0.003**	-	< 0.005	< 0.005	1	**0.003**	0.11
Thorium-230 (Bq/L)	2	**0.005**	< 0.01	< 0.01	2	**0.005**	< 0.01	< 0.01	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Warner Rapids					Lake D					SEQG[a]
	Surface					Composite					
	N = 4					N = 4					
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	
Inorganic Ions											
Bicarbonate (as HCO_3)	-	**13**	2.4	10	15	-	**35**	4.4	29	38	-
Calcium	-	**2.7**	0.39	2.2	3	-	**5.5**	1	4.8	7	-
Calcium, dissolved	-	**3.2**	0.37	2.7	3.5	-	**5.8**	1.6	4.9	8.2	-
Carbonate (as CO_3)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Chloride	-	**0.4**	0.2	0.3	0.7	3	**0.09**	0.08	< 0.1	0.2	120
Hydroxide (as OH)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Magnesium	-	**0.98**	0.15	0.8	1.1	-	**1.3**	0.19	1.2	1.6	-
Magnesium, dissolved	-	**1**	0.14	0.8	1.1	-	**1.4**	0.27	1.2	1.8	-
Potassium	-	**0.5**	0.08	0.4	0.6	-	**0.4**	0.1	0.3	0.5	-
Potassium, dissolved	-	**0.5**	0.08	0.4	0.6	-	**0.4**	0.1	0.3	0.6	-
Sodium	-	**1.3**	0.1	1.2	1.4	-	**1.4**	0.15	1.3	1.6	-
Sodium, dissolved	-	**1.3**	0.096	1.2	1.4	-	**1.4**	0.2	1.3	1.7	-
Sulphate	-	**0.9**	0.14	0.8	1.1	-	**1**	0	1	1	128[b]
Metals											
Aluminum	-	**0.033**	0.0099	0.022	0.046	-	**0.0036**	0.0011	0.0023	0.0049	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.025**	0.0081	0.015	0.034	-	**0.002**	0.0003	0.0017	0.0024	0.005 to 0.1[c]
Antimony	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	**0.1**	0.05	0.1	0.2	2	**0.08**	0.03	< 0.1	0.1	5
Arsenic, dissolved (µg/L)	1	**0.1**	0.06	< 0.1	0.2	2	**0.08**	0.03	< 0.1	0.1	5
Barium	-	**0.0065**	0.0011	0.0057	0.0081	-	**0.0079**	0.0048	0.005	0.015	-
Barium, dissolved	-	**0.0062**	0.0008	0.0055	0.0073	-	**0.0078**	0.0055	0.0046	0.016	-
Beryllium	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	3	**0.000006**	0	< 0.00001	0.00001	4	**0.000005**	-	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	3	**0.000006**	0	< 0.00001	0.00001	3	**0.000006**	0	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	-
Chromium	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	4	**0.0003**	-	< 0.0005	< 0.0005	4	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00006**	0	< 0.0001	0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	**0.04**	0.005	0.03	0.04	-	**0.03**	0.008	0.02	0.04	0.12
Iron	-	**0.82**	0.239	0.56	1.14	-	**0.377**	0.493	0.04	1.09	0.3
Iron, dissolved	-	**0.52**	0.13	0.37	0.69	-	**0.333**	0.484	0.02	1.04	0.3
Lead	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	3	**0.00006**	0	< 0.0001	0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	**1.2**	0.19	1.1	1.5	-	**1.7**	0.17	1.5	1.9	-
Lithium, dissolved (µg/L)	-	**1.2**	0.19	1.1	1.5	-	**1.6**	0.22	1.4	1.9	-
Manganese	-	**0.026**	0.012	0.016	0.043	-	**0.057**	0.095	0.006	0.2	-
Manganese, dissolved	-	**0.017**	0.0096	0.01	0.031	1	**0.061**	0.12	< 0.0005	0.24	-
Mercury (ng/L)	2	**1**	0.7	< 1	2	3	**0.6**	0.3	< 1	1	26
Molybdenum	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	-	**0.0002**	0.0001	0.0001	0.0002	4	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	-	**0.0002**	0	0.0002	0.0002	4	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.84**	0.057	0.8	0.92	-	**0.41**	0.095	0.35	0.55	-
Rubidium, dissolved	-	**0.82**	0.039	0.77	0.86	-	**0.43**	0.094	0.37	0.57	-
Selenium	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	4	**0.00003**	-	< 0.00005	< 0.00005	4	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.02**	0.0033	0.017	0.024	-	**0.018**	0.004	0.016	0.024	-
Strontium, dissolved	-	**0.02**	0.0033	0.017	0.024	-	**0.019**	0.005	0.016	0.026	-
Tellurium (µg/L)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
Thallium	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	4	**0.0001**	-	< 0.0002	< 0.0002	4	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Tin, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	-	**0.0005**	0.0001	0.0003	0.0006	4	**0.0001**	-	< 0.0002	< 0.0002	-
Titanium, dissolved	-	**0.0004**	0.0001	0.0003	0.0005	4	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	4	**0.05**	-	< 0.1	< 0.1	4	**0.05**	-	< 0.1	< 0.1	15
Vanadium	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	4	**0.00005**	-	< 0.0001	< 0.0001	4	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	3	**0.0003**	0.0001	< 0.0005	0.0005	3	**0.00044**	0.0004	< 0.0005	0.001	0.03
Zinc, dissolved	2	**0.00068**	0.0005	< 0.0005	0.0013	2	**0.00055**	0.0004	< 0.0005	0.0011	0.03
Zirconium	4	**0.0005**	-	< 0.001	< 0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	3	**0.0006**	0.0002	< 0.001	0.001	4	**0.0005**	-	< 0.001	< 0.001	-
Nutrients											
Ammonia (as N)	2	**0.01**	0.007	< 0.01	0.02	-	**0.23**	0.41	0.02	0.84	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.03**	0.01	0.02	0.04	-	**0.27**	0.46	0.03	0.95	6.02 to 190[h]
Carbon, Organic dissolved	-	**8**	2.5	4.9	11	-	**6.6**	0.56	6.2	7.4	-
Carbon, Total Organic	-	**8**	2.5	5	11	-	**6.2**	0.21	6	6.4	-
Nitrate (as N)	3	**0.02**	0.03	< 0.01	0.06	2	**0.01**	0.007	< 0.01	0.02	3
Nitrate (as N), dissolved	2	**0.03**	0.04	< 0.01	0.09	1	**0.02**	0.01	< 0.01	0.03	3
Nitrate (NO_3)	3	**0.08**	0.12	< 0.04	0.26	2	**0.04**	0.03	< 0.04	0.09	13
Nitrate (NO_3), dissolved	2	**0.13**	0.18	< 0.04	0.4	1	**0.08**	0.058	< 0.04	0.13	13
Nitrate+Nitrite (as N) calc.	3	**0.02**	0.03	< 0.01	0.06	2	**0.01**	0.007	< 0.01	0.02	-
Nitrite+Nitrate-nitrogen, calc. dissolve	2	**0.03**	0.04	< 0.01	0.09	1	**0.02**	0.01	< 0.01	0.03	
Nitrogen, Total Kjeldahl	-	**0.31**	0.074	0.26	0.42	-	**0.88**	0.42	0.64	1.5	-
Phosphorus, Total	1	**0.009**	0.003	< 0.01	0.01	4	**0.005**	-	< 0.01	< 0.01	-
Phosphorus, Total dissolved	2	**0.008**	0.003	< 0.01	0.01	3	**0.009**	0.008	< 0.01	0.02	-
Physical Properties											
Apparent color (CU)	-	**54**	24	29	86	-	**14**	5.9	9	22	-
Alkalinity, Phenolphthalein	4	**0.5**	-	< 1	< 1	4	**0.5**	-	< 1	< 1	-
pH (pH units)	-	**6.82**	0.147	6.64	7	-	**7.13**	0.212	6.92	7.35	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**22**	4	18	27	-	**40**	11	32	57	-
Sum of ions	-	**20**	2.6	17	23	-	**45**	5.7	38	51	-
Alkalinity, Total (as CaCO3)	-	**11**	1.9	8	12	-	**28**	3.4	24	31	-
Solids, Total dissolved	-	**50**	9.9	42	64	-	**47**	15	32	66	-
Hardness, Total	-	**11**	1.5	9	12	-	**19**	3.4	17	24	-
Solids, Total suspended	2	**2**	1	< 1	3	1	**2**	2	< 1	4	-
Turbidity (NTU)	-	**2.3**	0.72	1.5	3.2	-	**1.5**	0.28	1.2	1.8	-
Radionuclides											
Lead-210 (Bq/L)	4	**0.01**	-	< 0.02	< 0.02	3	**0.02**	0.01	< 0.02	0.03	-
Polonium-210 (Bq/L)	4	**0.003**	-	< 0.005	< 0.005	2	**0.004**	0.002	< 0.005	0.007	-
Radium-226 (Bq/L)	3	**0.004**	0.002	< 0.005	0.007	4	**0.003**	-	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	4	**0.005**	-	< 0.01	< 0.01	4	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Lake G Area 1 Surface N = 3					Lake G Area 2 Mid Depth N = 1		Lake H Area 1 Surface N = 3					SEQG[a]
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	N<RDL	Mean	SD	Min	Max	
Inorganic Ions													
Bicarbonate (as HCO_3)	-	**29**	4	27	34	-	**50**	-	**30**	3.5	26	33	-
Calcium	-	**3.3**	0.17	3.1	3.4	-	**7.8**	-	**3.1**	0.12	3	3.2	-
Calcium, dissolved	-	**3.3**	0.21	3.1	3.5	-	**8.2**	-	**3.2**	0.058	3.2	3.3	-
Carbonate (as CO_3)	3	**0.5**	-	< 1	< 1	1	**0.5**	3	**0.5**	-	< 1	< 1	-
Chloride	3	**0.05**	-	< 0.1	< 0.1	-	**0.3**	-	**0.2**	0.06	0.1	0.2	120
Hydroxide (as OH)	3	**0.5**	-	< 1	< 1	1	**0.5**	3	**0.5**	-	< 1	< 1	-
Magnesium	-	**1.4**	0.12	1.3	1.5	-	**3.3**	-	**1.3**	0.058	1.3	1.4	-
Magnesium, dissolved	-	**1.5**	0.15	1.3	1.6	-	**3.4**	-	**1.4**	0.058	1.3	1.4	-
Potassium	-	**0.5**	0	0.5	0.5	-	**1.2**	-	**0.7**	0.06	0.7	0.8	-
Potassium, dissolved	-	**0.5**	0	0.5	0.5	-	**1.2**	-	**0.8**	0.06	0.7	0.8	-
Sodium	-	**1.4**	0.058	1.3	1.4	-	**3.9**	-	**1.6**	0.058	1.5	1.6	-
Sodium, dissolved	-	**1.4**	0	1.4	1.4	-	**3.7**	-	**1.6**	0.058	1.5	1.6	-
Sulphate	-	**0.93**	0.058	0.9	1	-	**3**	-	**0.3**	0.06	0.2	0.3	128[b]
Metals													
Aluminum	-	**0.0082**	0.0021	0.0059	0.01	-	**0.016**	-	**0.026**	0.015	0.015	0.043	0.005 to 0.1[c]
Aluminum, dissolved	-	**0.0042**	0.0004	0.0038	0.0045	-	**0.0099**	-	**0.0062**	0.0003	0.0058	0.0064	0.005 to 0.1[c]
Antimony	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	-
Antimony, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	-
Arsenic (µg/L)	3	**0.05**	-	< 0.1	< 0.1	-	**0.2**	1	**0.08**	0.03	< 0.1	0.1	5
Arsenic, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	-	**0.1**	-	**0.1**	0	0.1	0.1	5
Barium	-	**0.0075**	0.0004	0.0071	0.0078	-	**0.024**	-	**0.0019**	0.001	0.0011	0.003	-
Barium, dissolved	-	**0.0066**	0.0008	0.0057	0.0071	-	**0.022**	-	**0.0013**	0.0005	0.0009	0.0018	-
Beryllium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	-
Beryllium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	-
Bismuth	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	-
Bismuth, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	-
Boron	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1.5
Boron, dissolved	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	1.5
Cadmium	3	**0.000005**	-	< 0.00001	< 0.00001	-	**0.00001**	3	**0.000005**	-	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	2	**0.000007**	0	< 0.00001	0.00001	-	**0.00001**	2	**0.000007**	0	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	-
Chromium	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Chromium, dissolved	3	**0.0003**	-	< 0.0005	< 0.0005	1	**0.0003**	3	**0.0003**	-	< 0.0005	< 0.0005	0.001
Cobalt	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	3	**0.00005**	-	< 0.0001	< 0.0001	0.00078[e,f]
Copper	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0019**	3	**0.0001**	-	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0006**	2	**0.0002**	0.0002	< 0.0002	0.0004	0.002[d]
Fluoride	-	**0.03**	0.006	0.03	0.04	-	**0.07**	-	**0.03**	0.006	0.03	0.04	0.12
Iron	-	**0.5**	0.23	0.35	0.76	-	**1.72**	-	**0.19**	0.18	0.076	0.39	0.3
Iron, dissolved	-	**0.31**	0.21	0.18	0.55	-	**1.58**	-	**0.04**	0.052	0.0093	0.1	0.3
Lead	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00007**	0	< 0.0001	0.0001	0.001[d]
Lead, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	2	**0.00007**	0	< 0.0001	0.0001	0.001[d]
Lithium (µg/L)	-	**2.1**	0	2.1	2.1	-	**4.7**	-	**3**	0.15	2.9	3.2	-
Lithium, dissolved (µg/L)	-	**2**	0.058	2	2.1	-	**4.3**	-	**3**	0.15	2.8	3.1	-
Manganese	-	**0.018**	0.0092	0.013	0.029	-	**0.31**	-	**0.02**	0.0059	0.013	0.024	-
Manganese, dissolved	-	**0.0046**	0.0026	0.0026	0.0075	-	**0.32**	2	**0.0004**	0.0002	< 0.0005	0.0006	-
Mercury (ng/L)	1	**2**	0.9	< 1	2	-	**3**	2	**0.7**	0.3	< 1	1	26
Molybdenum	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	3	**0.00005**	-	< 0.0001	< 0.0001	31[g]
Nickel	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	3	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	-	**0.0001**	3	**0.00005**	-	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	**0.48**	0.06	0.42	0.54	-	**1.1**	-	**1.2**	0.058	1.2	1.3	-
Rubidium, dissolved	-	**0.42**	0.025	0.39	0.44	-	**1.1**	-	**1.2**	0	1.2	1.2	-
Selenium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Selenium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	0.001
Silver	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Silver, dissolved	3	**0.00003**	-	< 0.00005	< 0.00005	1	**0.00003**	3	**0.00003**	-	< 0.00005	< 0.00005	0.00025
Strontium	-	**0.021**	0.0012	0.02	0.022	-	**0.05**	-	**0.014**	0.0006	0.014	0.015	-
Strontium, dissolved	-	**0.021**	0.0006	0.02	0.021	-	**0.048**	-	**0.013**	0	0.013	0.013	-
Tellurium (µg/L)	3	**0.5**	-	< 1	< 1	1	**0.5**	3	**0.5**	-	< 1	< 1	-
Tellurium, dissolved (µg/L)	3	**0.5**	-	< 1	< 1	1	**0.5**	3	**0.5**	-	< 1	< 1	-
Thallium	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	1	**0.0001**	3	**0.0001**	-	< 0.0002	< 0.0002	0.0008
Tin	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	-
Tin, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	-
Titanium	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0003**	2	**0.0002**	0.0001	< 0.0002	0.0003	-
Titanium, dissolved	3	**0.0001**	-	< 0.0002	< 0.0002	-	**0.0003**	3	**0.0001**	-	< 0.0002	< 0.0002	-
Uranium (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	3	**0.05**	-	< 0.1	< 0.1	1	**0.05**	3	**0.05**	-	< 0.1	< 0.1	15
Vanadium	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	3	**0.00005**	-	< 0.0001	< 0.0001	1	**0.00005**	3	**0.00005**	-	< 0.0001	< 0.0001	0.12[e]
Zinc	1	**0.00075**	0.0005	< 0.0005	0.0013	-	**0.0034**	1	**0.0006**	0.0003	< 0.0005	0.0008	0.03
Zinc, dissolved	1	**0.00085**	0.0008	< 0.0005	0.0017	-	**0.0027**	1	**0.00082**	0.0006	< 0.0005	0.0015	0.03
Zirconium	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	3	**0.0005**	-	< 0.001	< 0.001	-
Zirconium, dissolved	3	**0.0005**	-	< 0.001	< 0.001	1	**0.0005**	3	**0.0005**	-	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	-	**0.03**	0.006	0.02	0.03	-	**0.65**	1	**0.01**	0.008	< 0.01	0.02	6.02 to 190[h]
Ammonia (as N), dissolved	-	**0.03**	0.02	0.02	0.05	-	**0.65**	-	**0.02**	0.01	0.01	0.03	6.02 to 190[h]
Carbon, Organic dissolved	-	**8.1**	0.83	7.2	8.8	-	**11**	-	**7.1**	0.12	7	7.2	-
Carbon, Total Organic	-	**9.1**	1.7	7.8	11	-	**11**	-	**7.2**	0.25	7	7.5	-
Nitrate (as N)	3	**0.005**	-	< 0.01	< 0.01	-	**0.23**	3	**0.005**	-	< 0.01	< 0.01	3
Nitrate (as N), dissolved	2	**0.007**	0.003	< 0.01	0.01	-	**0.26**	2	**0.007**	0.003	< 0.01	0.01	3
Nitrate (NO_3)	3	**0.02**	-	< 0.04	< 0.04	-	**1**	3	**0.02**	-	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	2	**0.03**	0.01	< 0.04	0.04	-	**1.2**	2	**0.03**	0.01	< 0.04	0.04	13
Nitrate+Nitrite (as N) calc.	3	**0.005**	-	< 0.01	< 0.01	-	**0.23**	3	**0.005**	-	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolve	2	**0.007**	0.003	< 0.01	0.01	-	**0.26**	2	**0.007**	0.003	< 0.01	0.01	
Nitrogen, Total Kjeldahl	-	**0.83**	0.29	0.52	1.1	-	**1.4**	-	**0.66**	0.12	0.55	0.78	-
Phosphorus, Total	-	**0.01**	0.006	0.01	0.02	-	**0.02**	3	**0.005**	-	< 0.01	< 0.01	-
Phosphorus, Total dissolved	3	**0.005**	-	< 0.01	< 0.01	-	**0.02**	3	**0.005**	-	< 0.01	< 0.01	-
Physical Properties													
Apparent color (CU)	-	**27**	3.1	24	30	-	**72**	-	**6**	1	5	7	-
Alkalinity, Phenolphthalein	3	**0.5**	-	< 1	< 1	1	**0.5**	3	**0.5**	-	< 1	< 1	-
pH (pH units)	-	**6.94**	0.21	6.72	7.14	-	**7.03**	-	**7.05**	0.197	6.93	7.28	6.5 to 9.0
Specific Conductivity (µS/cm)	-	**28**	0.58	27	28	-	**82**	-	**29**	0.58	29	30	-
Sum of ions	-	**37**	4.6	34	42	-	**71**	-	**37**	3.5	33	40	-
Alkalinity, Total (as CaCO3)	-	**24**	3.5	22	28	-	**41**	-	**24**	3.1	21	27	-
Solids, Total dissolved	-	**40**	6.2	33	45	-	**114**	-	**37**	7.6	28	42	-
Hardness, Total	-	**14**	1	13	15	-	**33**	-	**13**	0.58	13	14	-
Solids, Total suspended	-	**4**	3	2	7	-	**1**	-	**5**	4	1	8	-
Turbidity (NTU)	-	**3.9**	1.6	2.2	5.4	-	**1.9**	-	**2.7**	0.84	1.7	3.2	-
Radionuclides													
Lead-210 (Bq/L)	2	**0.02**	0.01	< 0.02	0.03	-	**0.02**	3	**0.01**	-	< 0.02	< 0.03	-
Polonium-210 (Bq/L)	-	**0.007**	0.002	0.005	0.009	1	**0.003**	2	**0.006**	0.004	< 0.005	0.01	-
Radium-226 (Bq/L)	2	**0.005**	0.004	< 0.005	0.01	1	**0.003**	2	**0.005**	0.004	< 0.005	0.009	0.11
Thorium-230 (Bq/L)	3	**0.005**	-	< 0.01	< 0.01	1	**0.005**	3	**0.005**	-	< 0.01	< 0.01	-

Appendix C, Table 15

Summary of Water Chemistry Results and Water Quality Guidelines from the Aquatic Study Area, 2020

Parameter	Lake H Area 2		Lake J								SEQG[a]
	Composite		Composite				Mid Depth				
	N = 1		N = 2				N = 2				
	N<RDL	Mean	N<RDL	Mean	Min	Max	N<RDL	Mean	Min	Max	
Inorganic Ions											
Bicarbonate (as HCO_3)	-	37	-	6	4	7	-	6.5	2	11	-
Calcium	-	5.4	-	0.5	0.4	0.6	-	0.4	0.4	0.4	-
Calcium, dissolved	-	5.9	-	0.6	0.6	0.7	-	0.4	0.4	0.4	-
Carbonate (as CO_3)	1	0.5	2	0.5	< 1	< 1	2	0.5	< 1	< 1	-
Chloride	-	0.3	1	0.1	< 0.1	0.2	2	0.05	< 0.1	< 0.1	120
Hydroxide (as OH)	1	0.5	2	0.5	< 1	< 1	2	0.5	< 1	< 1	-
Magnesium	-	2.1	-	0.2	0.2	0.2	-	0.1	0.1	0.1	-
Magnesium, dissolved	-	2.3	-	0.2	0.2	0.2	-	0.1	0.1	0.1	-
Potassium	-	1.2	-	0.4	0.3	0.4	-	0.3	0.3	0.3	-
Potassium, dissolved	-	1.2	-	0.4	0.4	0.4	-	0.3	0.2	0.3	-
Sodium	-	2.3	-	0.6	0.5	0.7	-	0.6	0.6	0.6	-
Sodium, dissolved	-	2.3	-	0.7	0.5	0.8	-	0.5	0.5	0.5	-
Sulphate	-	0.3	-	0.9	0.9	0.9	-	0.6	0.6	0.7	128[b]
Metals											
Aluminum	-	0.0065	-	0.017	0.0087	0.025	-	0.013	0.0099	0.016	0.005 to 0.1[c]
Aluminum, dissolved	-	0.003	-	0.013	0.0073	0.018	-	0.0075	0.0053	0.0096	0.005 to 0.1[c]
Antimony	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	-
Antimony, dissolved	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	-
Arsenic (µg/L)	-	0.2	-	0.2	0.2	0.2	-	0.1	0.1	0.1	5
Arsenic, dissolved (µg/L)	-	0.2	-	0.2	0.2	0.2	-	0.1	0.1	0.1	5
Barium	-	0.0034	-	0.0044	0.0044	0.0044	-	0.0026	0.0025	0.0027	-
Barium, dissolved	-	0.0029	-	0.0046	0.0042	0.0049	-	0.0021	0.0018	0.0023	-
Beryllium	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	-
Beryllium, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	-
Bismuth	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	-
Bismuth, dissolved	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	-
Boron	-	0.01	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	1.5
Boron, dissolved	-	0.01	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	1.5
Cadmium	1	0.000005	2	0.000005	< 0.00001	< 0.00001	1	0.000008	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	1	0.000005	1	0.000008	< 0.00001	0.00001	1	0.000008	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	1	0.05	2	0.05	< 0.1	< 0.1	2	0.05	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	1	0.05	2	0.05	< 0.1	< 0.1	2	0.05	< 0.1	< 0.1	-
Chromium	1	0.0003	2	0.0003	< 0.0005	< 0.0005	2	0.0003	< 0.0005	< 0.0005	0.001
Chromium, dissolved	1	0.0003	2	0.0003	< 0.0005	< 0.0005	2	0.0003	< 0.0005	< 0.0005	0.001
Cobalt	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.00078[e,f]
Copper	1	0.0001	1	0.0003	< 0.0002	0.0004	2	0.0001	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	0.002[d]
Fluoride	-	0.06	-	0.02	0.02	0.02	-	0.01	0.01	0.01	0.12
Iron	-	2.08	-	0.027	0.026	0.028	-	0.048	0.035	0.061	0.3
Iron, dissolved	-	1.67	-	0.021	0.017	0.024	-	0.019	0.012	0.026	0.3
Lead	1	0.00005	1	0.0003	< 0.0001	0.0006	2	0.00005	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	1	0.00005	1	0.0002	< 0.0001	0.0004	2	0.00005	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	-	4.3	1	0.08	< 0.1	0.1	2	0.05	< 0.1	< 0.1	-
Lithium, dissolved (µg/L)	-	4.1	1	0.08	< 0.1	0.1	2	0.05	< 0.1	< 0.1	-
Manganese	-	0.14	-	0.0043	0.0035	0.005	-	0.0032	0.0028	0.0035	-
Manganese, dissolved	-	0.15	-	0.0043	0.003	0.0055	-	0.0011	0.001	0.0011	-
Mercury (ng/L)	1	0.5	-	2	1	3	2	0.5	< 1	< 1	26
Molybdenum	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	31[g]
Nickel	1	0.00005	1	0.0002	< 0.0001	0.0004	2	0.00005	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.025[d]
Rubidium	-	1.9	-	0.95	0.8	1.1	-	0.58	0.5	0.66	-
Rubidium, dissolved	-	1.8	-	0.98	0.85	1.1	-	0.6	0.49	0.7	-
Selenium	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.001
Selenium, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.001
Silver	1	0.00003	2	0.00003	< 0.00005	< 0.00005	2	0.00003	< 0.00005	< 0.00005	0.00025
Silver, dissolved	1	0.00003	2	0.00003	< 0.00005	< 0.00005	2	0.00003	< 0.00005	< 0.00005	0.00025
Strontium	-	0.021	-	0.0052	0.0049	0.0055	-	0.0038	0.0037	0.0039	-
Strontium, dissolved	-	0.021	-	0.0055	0.0049	0.006	-	0.0036	0.0034	0.0038	-
Tellurium (µg/L)	1	0.5	2	0.5	< 1	< 1	2	0.5	< 1	< 1	-
Tellurium, dissolved (µg/L)	1	0.5	2	0.5	< 1	< 1	2	0.5	< 1	< 1	-
Thallium	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	0.0008
Tin	1	0.00005	1	0.00073	< 0.0001	0.0014	2	0.00005	< 0.0001	< 0.0001	-
Tin, dissolved	1	0.00005	1	0.00058	< 0.0001	0.0011	2	0.00005	< 0.0001	< 0.0001	-
Titanium	1	0.0001	1	0.0002	< 0.0002	0.0002	2	0.0001	< 0.0002	< 0.0002	-
Titanium, dissolved	1	0.0001	2	0.0001	< 0.0002	< 0.0002	2	0.0001	< 0.0002	< 0.0002	-
Uranium (µg/L)	1	0.05	2	0.05	< 0.1	< 0.1	2	0.05	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	1	0.05	2	0.05	< 0.1	< 0.1	2	0.05	< 0.1	< 0.1	15
Vanadium	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	1	0.00005	2	0.00005	< 0.0001	< 0.0001	2	0.00005	< 0.0001	< 0.0001	0.12[e]
Zinc	-	0.0005	-	0.0011	0.0009	0.0013	-	0.0008	0.0006	0.0009	0.03
Zinc, dissolved	-	0.001	-	0.0012	0.0008	0.0015	-	0.0007	0.0006	0.0007	0.03
Zirconium	1	0.0005	2	0.0005	< 0.001	< 0.001	2	0.0005	< 0.001	< 0.001	-
Zirconium, dissolved	1	0.0005	2	0.0005	< 0.001	< 0.001	2	0.0005	< 0.001	< 0.001	-
Nutrients											
Ammonia (as N)	-	0.6	-	0.28	0.14	0.41	1	0.008	< 0.01	0.01	6.02 to 190[h]
Ammonia (as N), dissolved	-	0.56	-	0.29	0.16	0.41	-	0.03	0.02	0.03	6.02 to 190[h]
Carbon, Organic dissolved	-	9.6	-	6.4	5.6	7.1	-	5.1	4.4	5.8	-
Carbon, Total Organic	-	9.5	-	6.2	5.9	6.4	-	5.3	4.8	5.7	-
Nitrate (as N)	1	0.005	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	3
Nitrate (as N), dissolved	-	0.02	1	0.008	< 0.01	0.01	-	0.02	0.01	0.03	3
Nitrate (NO_3)	1	0.02	2	0.02	< 0.04	< 0.04	2	0.02	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	-	0.09	1	0.03	< 0.04	0.04	-	0.085	0.04	0.13	13
Nitrate+Nitrite (as N) calc.	1	0.005	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolve	-	0.02	1	0.008	< 0.01	0.01	-	0.02	0.01	0.03	
Nitrogen, Total Kjeldahl	-	1.3	-	0.91	0.82	1	-	0.57	0.51	0.62	-
Phosphorus, Total	1	0.005	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	-
Phosphorus, Total dissolved	1	0.005	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	-
Physical Properties											
Apparent color (CU)	-	12	-	11	5	17	-	5	3	7	-
Alkalinity, Phenolphthalein	1	0.5	2	0.5	< 1	< 1	2	0.5	< 1	< 1	-
pH (pH units)	-	6.68	-	6.13	5.92	6.34	-	5.83	5.5	6.16	6.5 to 9.0
Specific Conductivity (µS/cm)	-	54	-	5	4	5	2	0.5	< 1	< 1	-
Sum of ions	-	49	-	9	7	10	-	8.5	4	13	-
Alkalinity, Total (as CaCO3)	-	30	-	5	3	6	-	6	2	9	-
Solids, Total dissolved	-	62	-	18	16	19	-	13	5	21	-
Hardness, Total	-	22	-	2	2	2	-	1	1	1	-
Solids, Total suspended	-	7	1	1	< 1	2	1	0.8	< 1	1	-
Turbidity (NTU)	-	4.6	-	1.6	1.1	2	-	1.5	1.3	1.7	-
Radionuclides											
Lead-210 (Bq/L)	1	0.01	2	0.01	< 0.02	< 0.02	1	0.02	< 0.02	0.03	-
Polonium-210 (Bq/L)	1	0.003	1	0.006	< 0.005	0.01	-	0.009	0.008	0.01	-
Radium-226 (Bq/L)	1	0.003	2	0.003	< 0.005	< 0.005	2	0.003	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	1	0.005	2	0.005	< 0.01	< 0.01	2	0.005	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Note: N = number of samples; N<RDL = number of samples less than the reporting detection limit (RDL); SD = standard deviation; Min = Minimum; Max = Maximum.

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs. This includes stations where N = 1.

Note; SD was not calculated if N<3.

Shaded cells indicate exceedances over guidelines.

Means are **bolded** for ease of data comparison.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 16

Detailed Water Chemistry Results from the Aquatic Study Area, May 2018

Parameter	Broach Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 1	Lake H Area 1	SEQG[a]
	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	
	25-May-18	22-May-18	22-May-18	22-May-18	22-May-18	23-May-18	23-May-18	23-May-18	21-May-18	21-May-18	21-May-18	27-May-18	27-May-18	29-May-18	24-May-18	24-May-18	
Inorganic Ions																	
Bicarbonate (as HCO3)	27	15	20	27	27	32	34	29	32	15	22	17	18	17	32	32	-
Calcium	3.4	2.1	2.8	3.4	3.5	3.7	4.1	3.8	3.7	2.2	3.4	2.6	2.4	2.2	2.5	3	-
Carbonate (as CO3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	0.4	0.4	0.6	0.6	0.7	0.9	0.7	0.7	0.6	0.7	0.8	0.8	0.7	0.1	0.2	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.2	0.7	0.9	1.2	1.3	1.3	1.6	1.4	1.4	0.6	1.2	0.9	0.9	0.9	1.3	1.3	-
Potassium	0.5	0.5	0.5	0.6	0.5	0.6	0.8	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.8	-
Sodium	1.6	1	1.3	1.4	1.4	1.6	2	1.7	1.7	1	1.5	1.3	1.3	1.3	1.6	1.7	-
Sulphate	1.9	1.2	1.3	1.6	1.6	1.6	1.8	1.6	1.6	0.7	1.3	1.1	1	1.1	1.3	0.4	128[b]
Metals																	
Aluminum	0.0058	0.026	0.0098	0.016	0.0082	0.012	0.0037	0.0044	0.0068	0.029	0.014	0.048	0.01	0.023	0.01	0.014	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	<0.1	0.2	5
Barium	0.014	0.0082	0.01	0.0095	0.01	0.0088	0.0075	0.01	0.0092	0.0085	0.0082	0.0059	0.0061	0.0053	0.0074	0.0011	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	<0.00001	0.00004[d]
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.06	0.04	0.05	0.05	0.06	0.06	0.07	0.06	0.06	0.03	0.06	0.05	0.05	0.05	0.05	0.06	0.12
Iron	0.036	0.51	0.22	0.019	0.021	0.054	0.018	0.095	0.09	1.26	0.25	0.37	0.34	0.51	0.5	0.14	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Manganese	0.016	0.013	0.03	0.028	0.03	0.0086	0.0078	0.025	0.012	0.068	0.016	0.031	0.034	0.028	0.015	0.013	-
Mercury	3	2	4	2	2	1	<1	2	1	6	1	3	2	2	2	2	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0002	0.0001	<0.0001	0.025[d]
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.035	0.024	0.027	0.03	0.03	0.03	0.031	0.031	0.03	0.022	0.028	0.023	0.022	0.019	0.019	0.01	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0003	0.0002	<0.0002	0.0007	0.0003	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0001	0.0001	0.0001	0.0003	<0.0001	<0.0001	0.12[e]
Zinc	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	0.0037	<0.0005	<0.0005	<0.0005	0.0014	0.0021	0.0008	0.03

Appendix C, Table 16

Detailed Water Chemistry Results from the Aquatic Study Area, May 2018

Parameter	Broach Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 1	Lake H Area 1	SEQG[a]
	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	
	25-May-18	22-May-18	22-May-18	22-May-18	22-May-18	23-May-18	23-May-18	23-May-18	21-May-18	21-May-18	21-May-18	27-May-18	27-May-18	29-May-18	24-May-18	24-May-18	
Nutrients																	
Ammonia (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.410 to 57.3[h]
Carbon, Organic dissolved	1.9	4.6	2.8	2.4	2.1	2.4	1.4	1.9	2.4	6	3.2	4.9	4.6	6.4	6.6	7.8	-
Carbon, Total Organic	1.6	4.2	2.6	1.9	1.9	2.2	1.3	1.7	2.1	5.8	2.8	4.5	4.3	6.3	6.2	6.8	-
Nitrate (as N)	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.24	0.18	0.2	0.11	0.12	0.18	0.11	0.2	0.16	0.31	0.29	0.33	0.35	0.68	0.85	0.75	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties																	
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	22	12	16	22	22	26	28	24	26	12	18	14	15	14	26	26	-
Hardness, Total	13	8	11	13	14	14	17	15	15	8	13	10	10	9	12	13	-
pH (pH units)	7.49	7.2	7.47	7.57	7.57	7.53	7.66	7.53	7.54	7.21	7.52	7.34	7.34	7.34	7.38	7.57	6.5 to 9.0
Solids, Total dissolved	41	38	35	38	36	45	43	42	42	32	45	47	40	44	84	44	-
Solids, Total suspended	2	2	2	<1	<1	1	<1	2	2	3	2	2	3	4	4	4	-
Specific Conductivity (µS/cm)	31	16	23	30	31	33	40	36	34	16	31	22	21	22	26	30	-
Sum of ions	36	21	27	36	36	42	45	39	42	21	31	24	25	24	39	39	-
Turbidity (NTU)	0.5	1	1.1	0.4	0.3	0.4	0.2	0.7	0.6	2.4	1.1	1.2	1.3	1.4	2.1	1.2	-
Radionuclides																	
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	-
Radium-226 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 17

Detailed Water Chemistry Results from the Aquatic Study Area, August 2018

Parameter	Broach Lake Area 1	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Clearwater River Midfield 1	Clearwater River Midfield 2	Mirror River	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 2	Lake H Area 2	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Composite	
	5-Aug-18	11-Aug-18	3-Aug-18	3-Aug-18	2-Aug-18	2-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	4-Aug-18	4-Aug-18	4-Aug-18	9-Aug-18	9-Aug-18	13-Aug-18	7-Aug-18	6-Aug-18	
Inorganic Ions																					
Bicarbonate (as HCO3)	21	10	13	17	22	27	22	28	26	27	15	29	26	21	13	17	16	12	27	23	-
Calcium	3.6	2.7	2.6	3	3.7	3.8	3.7	4.4	4	4.2	2.8	3.6	3	2.8	2.6	2.9	3	3.1	3.4	3.3	-
Carbonate (as CO3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	2	0.3	0.4	0.5	0.5	0.6	0.7	0.6	0.6	0.5	0.6	0.4	0.7	0.9	0.7	0.6	0.5	<0.1	0.2	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.2	0.7	0.7	1	1.3	1.3	1.3	1.6	1.6	1.5	0.8	1.3	1.1	0.9	0.8	1	1	1.1	1.6	1.5	-
Potassium	0.6	0.3	0.4	0.5	0.6	0.6	0.6	0.8	0.7	0.7	0.5	0.6	0.5	0.4	0.3	0.5	0.5	0.5	0.6	0.8	-
Sodium	1.5	1	1.2	1.3	1.4	1.5	1.5	2	1.7	1.7	1.1	1.5	1.4	1.2	1.2	1.4	1.4	1.4	1.8	1.8	-
Sulphate	1.9	1.1	1.2	1.2	1.5	1.6	1.5	1.7	1.7	1.6	0.7	1.3	1.1	0.9	0.8	1.1	1.1	1	1.1	0.2	128[b]
Metals																					
Aluminum	0.0016	0.002	0.016	0.0038	0.0023	0.0021	0.006	0.003	0.0036	0.0062	0.014	0.01	0.0097	0.016	0.015	0.0048	0.0052	0.0075	0.0047	0.015	0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.5	<0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	<0.1	0.2	5
Barium	0.014	0.0068	0.0098	0.011	0.0094	0.0089	0.0083	0.0077	0.0097	0.008	0.0066	0.0068	0.0074	0.0057	0.0046	0.0049	0.0051	0.0043	0.0079	0.0011	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Boron	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1.5
Cadmium	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	0.00001	0.00001	0.00004[d]
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.05	0.03	0.04	0.04	0.05	0.05	0.05	0.07	0.06	0.06	0.03	0.06	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.12
Iron	0.026	0.012	0.25	0.57	0.03	0.011	0.039	0.012	0.054	0.044	0.64	0.18	0.31	0.66	0.74	0.27	0.27	0.53	0.26	0.12	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.001[d]
Manganese	0.0079	0.005	0.006	0.13	0.021	0.0051	0.0082	0.0041	0.022	0.0077	0.032	0.014	0.019	0.025	0.024	0.024	0.026	0.017	0.024	0.021	-
Mercury	2	2	1	3	3	5	<1	<1	<1	<1	2	<1	<1	<1	<1	7	<1	<1	3	8	26
Molybdenum	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.025[d]
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.035	0.061	0.028	0.027	0.029	0.03	0.03	0.031	0.031	0.031	0.027	0.029	0.027	0.026	0.025	0.024	0.025	0.022	0.024	0.012	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0015	<0.0001	<0.0001	0.0003	0.0021	-
Titanium	0.0005	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0003	0.0004	0.0006	<0.0002	<0.0002	0.0002	<0.0002	0.0006	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	0.12[e]
Zinc	0.0012	<0.0005	0.0014	0.0015	0.001	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0038	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	0.03
Nutrients																					
Ammonia (as N)	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	0.141 to 8.47[h]
Carbon, Organic dissolved	1.9	2.2	5	2.9	2.1	2.1	2.6	1.5	2.1	2.4	6.9	3.5	3.8	4.3	4.4	4.6	4.8	5.4	8.2	7.6	-
Carbon, Total Organic	1.7	2	4.8	2.6	1.9	1.8	2.2	1.2	1.8	2.3	6.5	3.2	3.7	4.2	4.4	4.2	4.7	5.2	8.2	7.5	-
Nitrate (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO3)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	13
Nitrogen, Total Kjeldahl	0.19	0.15	0.25	0.27	0.16	0.17	0.2	0.12	0.17	0.23	0.4	0.25	0.29	0.28	0.34	0.3	0.34	0.21	1	0.67	-
Phosphorus, Total	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	0.01	0.02	-

Appendix C, Table 17

Detailed Water Chemistry Results from the Aquatic Study Area, August 2018

Parameter	Broach Lake Area 1	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Clearwater River Midfield 1	Clearwater River Midfield 2	Mirror River	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 2	Lake H Area 2	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Composite	
	5-Aug-18	11-Aug-18	3-Aug-18	3-Aug-18	2-Aug-18	2-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	4-Aug-18	4-Aug-18	4-Aug-18	9-Aug-18	9-Aug-18	13-Aug-18	7-Aug-18	6-Aug-18	
Physical Properties																					
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as CaCO3)	17	8	11	14	18	22	18	23	21	22	12	24	21	17	11	14	13	10	22	19	-
Hardness, Total	14	10	9	12	14	15	14	18	16	17	10	14	12	11	10	11	12	12	15	14	-
pH (pH units)	7.36	7.01	7.08	7.1	7.26	7.35	7.26	7.37	7.32	7.33	7.03	7.28	7.17	7.03	7.06	7.19	7.22	7.18	7.16	7.37	6.5 to 9.0
Solids, Total dissolved	43	28	39	33	46	41	37	44	44	46	41	40	42	38	39	41	37	42	50	35	-
Solids, Total suspended	2	2	<1	3	2	2	2	2	2	2	4	2	2	5	5	2	3	2	6	3	-
Specific Conductivity (µS/cm)	31	20	20	25	30	31	33	40	37	36	20	31	24	21	20	24	25	25	33	32	-
Sum of ions	30	18	19	24	31	36	31	39	36	37	21	38	34	28	20	25	24	20	36	31	-
Turbidity (NTU)	0.2	0.3	0.3	0.9	0.2	0.2	0.3	0.2	0.4	0.3	0.8	0.3	0.3	0.4	0.7	0.8	0.4	1.1	1.1	0.7	-
Radionuclides																					
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-
Radium-226 (Bq/L)	0.005	0.005	0.01	0.009	<0.005	0.006	0.006	<0.005	0.01	<0.005	<0.005	0.008	<0.005	0.009	<0.005	<0.005	<0.005	0.009	0.006	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 18

Detailed Water Chemistry Results from the Aquatic Study Area, September/October 2018

Parameter	Broach Lake Area 1	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 1	Lake H Area 1	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	
	23-Sep-18	21-Sep-18	29-Sep-18	29-Sep-18	29-Sep-18	29-Sep-18	2-Oct-18	1-Oct-18	2-Oct-18	29-Sep-18	25-Sep-18	29-Sep-18	26-Sep-18	26-Sep-18	3-Oct-18	28-Sep-18	27-Sep-18	
Inorganic Ions																		
Bicarbonate (as HCO3)	17	16	17	12	27	29	28	28	26	27	16	30	12	17	12	32	33	-
Calcium	3.8	2.9	2.6	3.1	3.8	3.9	3.8	3.8	4.3	4.2	2.7	3.4	2.9	2.9	2.6	3.4	3.5	-
Carbonate (as CO3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	2	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.7	0.6	<0.1	0.2	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.3	0.7	0.8	1	1.3	1.4	1.4	1.4	1.6	1.6	0.8	1.2	1	1	1	1.7	1.5	-
Potassium	0.6	0.3	0.4	0.5	0.6	0.6	0.5	0.5	0.8	0.7	0.4	0.6	0.5	0.5	0.5	0.5	0.8	-
Sodium	1.6	1	1.2	1.3	1.4	1.4	1.4	1.4	1.7	1.7	1.1	1.5	1.4	1.4	1.4	1.8	1.9	-
Sulphate	2.1	1	1.2	1.2	1.6	1.6	1.6	1.6	1.6	1.7	0.8	1.3	1	1	1.1	1.2	0.3	128[b]
Metals																		
Aluminum	<0.0005	0.0022	0.017	0.0027	0.0015	0.0014	0.0048	0.0048	0.0016	0.0068	0.013	0.026	0.0057	0.0062	0.018	0.0063	0.0072	0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	<0.1	0.2	5
Barium	0.016	0.0073	0.009	0.0084	0.0094	0.01	0.0099	0.0099	0.0091	0.0089	0.0061	0.0081	0.0049	0.005	0.0044	0.0075	0.001	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Boron	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.07	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.08	0.08	0.04	0.06	0.06	0.06	0.06	0.06	0.07	0.12
Iron	0.028	0.03	0.42	0.16	0.012	0.018	0.027	0.027	0.087	0.11	0.35	0.42	0.29	0.28	0.47	0.26	0.056	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Manganese	0.036	0.015	0.0079	0.021	0.01	0.021	0.008	0.008	0.022	0.02	0.018	0.02	0.018	0.016	0.018	0.0073	0.012	-
Mercury	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.025[d]
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.036	0.06	0.025	0.027	0.03	0.03	0.032	0.032	0.031	0.029	0.022	0.027	0.024	0.023	0.019	0.022	0.012	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0017	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.0002	0.0007	<0.0002	0.0002	0.0004	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	0.12[e]
Zinc	0.0027	0.0028	<0.0005	<0.0005	<0.0005	0.0006	0.0011	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	0.0005	<0.0005	<0.0005	0.03
Nutrients																		
Ammonia (as N)	<0.01	0.03	0.03	0.02	0.02	0.02	<0.01	<0.01	0.01	<0.01	0.02	0.01	0.02	0.02	0.03	0.03	<0.01	0.413 to 12.6[b]
Carbon, Organic dissolved	1.8	2.2	4.6	2.8	2.2	2.1	2.3	2.3	2.1	2.4	6.2	3.5	4.2	4.5	5.3	8	8.8	-
Carbon, Total Organic	1.6	2	4.5	2.7	2	1.9	2.4	2.4	2.1	2.2	6.2	3.5	3.9	4.3	5.2	7.5	8	-
Nitrate (as N)	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO3)	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	13
Nitrogen, Total Kjeldahl	0.13	0.13	0.2	0.23	0.12	0.1	0.15	0.15	0.16	0.23	0.26	0.35	0.25	0.25	0.22	0.91	0.79	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	-

Appendix C, Table 18

Detailed Water Chemistry Results from the Aquatic Study Area, September/October 2018

Parameter	Broach Lake Area 1	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake G Area 1	Lake H Area 1	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Surface Grab	Surface Grab	
	23-Sep-18	21-Sep-18	29-Sep-18	29-Sep-18	29-Sep-18	29-Sep-18	2-Oct-18	1-Oct-18	2-Oct-18	29-Sep-18	25-Sep-18	29-Sep-18	26-Sep-18	26-Sep-18	3-Oct-18	28-Sep-18	27-Sep-18	
Physical Properties																		
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as CaCO3)	14	13	14	10	22	24	23	23	21	22	13	25	10	14	10	26	27	-
Hardness, Total	15	10	10	12	15	15	15	15	17	17	10	13	11	11	10	15	15	-
pH (pH units)	7.52	7.25	7.37	7.53	7.59	7.62	7.4	7.4	7.68	7.67	7.38	7.34	7.47	7.47	7.46	7.58	7.56	6.5 to 9.0
Solids, Total dissolved	30	38	54	39	44	45	31	31	54	50	45	47	50	46	44	67	59	-
Solids, Total suspended	<1	<1	<1	1	<1	<1	<1	<1	<1	2	1	4	2	<1	<1	3	2	-
Specific Conductivity (µS/cm)	31	20	18	24	31	32	37	37	37	36	18	28	23	23	22	30	32	-
Sum of ions	27	24	24	20	36	38	37	37	37	38	22	39	20	24	19	41	41	-
Turbidity (NTU)	0.3	0.4	1.6	1.1	0.4	0.4	0.4	0.4	0.6	0.6	1.9	1.7	1.4	1.4	1.5	2.3	1.3	-
Radionuclides																		
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	0.006	<0.005	-
Radium-226 (Bq/L)	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	0.007	0.006	0.006	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 19

Detailed Water Chemistry Results from the Aquatic Study Area, February 2019

Parameter	Broach Lake Area 2	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	
	24-Feb-19	23-Feb-19	21-Feb-19	20-Feb-19	20-Feb-19	21-Feb-19	20-Feb-19	20-Feb-19	23-Feb-19	23-Feb-19	
Inorganic Ions											
Bicarbonate (as HCO_3)	21	15	20	27	18	15	29	32	27	27	-
Calcium	4.2	3	3.3	4	3.3	3.9	4.4	4.5	4.4	4.8	-
Calcium, dissolved	4.5	3.2	3.6	4.1	3.5	4.3	4.9	4.8	4.6	5	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	2.1	0.4	0.6	0.4	0.6	0.6	0.8	0.6	0.7	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.4	0.7	1	1.4	1.1	1.4	1.6	1.7	1.6	1.7	-
Magnesium, dissolved	1.4	0.7	1.1	1.4	1.1	1.5	1.7	1.8	1.6	1.7	-
Potassium	0.6	0.3	0.6	0.6	0.6	0.6	0.6	0.8	0.7	0.7	-
Potassium, dissolved	0.7	0.4	0.6	0.6	0.6	0.6	0.7	0.9	0.8	0.8	-
Sodium	1.7	1	1.4	1.5	1.4	1.5	1.6	2	1.7	1.9	-
Sodium, dissolved	1.8	1	1.5	1.6	1.4	1.5	1.8	2.1	1.8	2	-
Sulphate	2	1.1	1.6	1.6	1.3	1.6	1.7	1.7	1.5	1.8	128[b]
Metals											
Aluminum	0.0008	0.0012	0.02	0.0006	0.0025	0.001	0.0039	0.0011	0.0012	0.0022	0.005 to 0.1[c]
Aluminum, dissolved	0.0007	0.0009	0.018	0.0008	0.0018	0.0007	0.0019	<0.0005	0.0007	0.0013	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.2	<0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	5
Arsenic, dissolved (µg/L)	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	5
Barium	0.024	0.0071	0.012	0.01	0.012	0.01	0.012	0.0085	0.0095	0.011	-
Barium, dissolved	0.022	0.0075	0.013	0.01	0.013	0.01	0.012	0.0059	0.0095	0.011	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	<0.00001	<0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0014	0.0002	0.0014	<0.0002	0.002[d]
Copper, dissolved	0.0012	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0011	<0.0002	0.002[d]
Fluoride	0.05	0.03	0.04	0.05	0.04	0.05	0.06	0.07	0.07	0.07	0.12
Iron	0.087	0.014	0.36	0.0085	0.47	0.015	0.06	0.0052	0.013	0.022	0.3
Iron, dissolved	0.014	0.0031	0.24	0.0055	0.42	0.0054	0.038	<0.0005	0.0026	0.0087	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	3.1	1.8	2.2	2.6	2.1	2.6	2.9	3.4	3	3.2	-
Lithium, dissolved (µg/L)	3.2	1.8	2.2	2.6	2.1	2.7	3.1	3.5	3.2	3.4	-
Manganese	0.31	0.01	0.0094	0.0024	0.11	0.013	0.0035	0.0009	0.0022	0.002	-
Manganese, dissolved	0.18	0.0041	0.009	<0.0005	0.13	<0.0005	0.004	<0.0005	<0.0005	0.0008	-
Mercury (ng/L)	4	3	2	2	4	3	2	2	2	2	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0005	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0004	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.57	0.66	0.62	0.6	0.65	0.61	0.67	0.56	0.61	0.68	-
Rubidium, dissolved (µg/L)	0.58	0.67	0.66	0.61	0.66	0.64	0.71	0.64	0.59	0.71	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.04	0.061	0.031	0.032	0.029	0.031	0.034	0.031	0.031	0.034	-
Strontium, dissolved	0.042	0.063	0.033	0.032	0.029	0.031	0.036	0.03	0.032	0.035	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	0.0011	0.0009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	-
Tin, dissolved	0.0008	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Titanium, dissolved	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	<0.0005	<0.0005	0.0005	0.0006	0.0028	0.0006	0.0018	0.0009	0.0014	0.003	0.03
Zinc, dissolved	0.001	0.0006	0.0012	0.0006	0.0012	0.0012	0.0009	<0.0005	0.0013	0.0018	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients											
Ammonia (as N)	0.09	0.01	0.02	0.02	0.12	<0.01	0.02	<0.01	0.02	0.04	6.02 to 190[h]
Ammonia (as N), dissolved	0.06	0.02	0.02	0.02	0.16	0.02	0.03	0.01	0.01	0.03	6.02 to 190[h]
Carbon, Organic dissolved	2.1	2.3	3.5	2.3	3	2.2	2.6	1.5	2.1	2.5	-
Carbon, Total Organic	1.8	2	3.2	2.2	2.8	2	2.4	1.3	2.1	3.3	-
Nitrate (as N)	0.07	0.04	0.07	0.03	0.03	0.07	0.02	0.02	0.03	0.22	3
Nitrate (as N), dissolved	0.08	0.04	0.07	0.02	0.04	0.05	0.02	0.02	0.04	0.04	3
Nitrate (NO_3)	0.31	0.18	0.31	0.13	0.13	0.31	0.09	0.09	0.13	0.97	13
Nitrate (NO_3), dissolved	0.35	0.18	0.31	0.09	0.18	0.22	0.09	0.09	0.18	0.18	13
Nitrate+Nitrite (as N) calc.	0.07	0.04	0.07	0.03	0.03	0.07	0.02	0.02	0.03	0.22	-
Nitrite+Nitrate-nitrogen, dissolved	0.08	0.04	0.07	0.02	0.04	0.05	0.02	0.02	0.04	0.04	-
Nitrogen, Total Kjeldahl	0.25	0.13	0.18	0.18	0.34	0.15	0.17	0.1	0.32	0.13	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties											
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	17	12	16	22	15	12	24	26	22	22	-
Apparent color (CU)	2	5	21	2	9	1	2	<1	2	3	-
Hardness, Total	16	10	12	16	13	15	18	18	18	19	-
pH (pH units)	7	6.87	6.72	7.22	6.96	7.17	7.17	7.35	7.17	7.15	6.5 to 9.0
Solids, Total dissolved	49	38	54	52	39	35	46	52	50	51	-
Solids, Total suspended	<1	<1	<1	<1	2	1	<1	<1	<1	<1	-
Specific Conductivity (µS/cm)	37	22	27	34	29	35	38	43	39	42	-
Sum of ions	32	23	29	37	26	25	40	44	38	40	-
Turbidity (NTU)	1	0.3	0.6	0.2	2.1	0.2	0.3	0.2	0.2	0.2	-
Radionuclides											
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-
Radium-226 (Bq/L)	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Appendix C, Table 19

Detailed Water Chemistry Results from the Aquatic Study Area, February 2019

Parameter	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 2	Lake H Area 2	Lake J	SEQG[1]
	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Composite	Composite	Composite	
	22-Feb-19	23-Feb-19	21-Feb-19	21-Feb-19	25-Feb-19	24-Feb-19	22-Feb-19	22-Feb-19	25-Feb-19	
Inorganic Ions										
Bicarbonate (as HCO_3)	15	21	16	21	20	39	38	41	5	-
Calcium	3	4.1	3.4	3.2	3.2	7.4	5.8	5.4	0.7	-
Calcium, dissolved	3.2	4.4	3.7	3.4	3.4	8.2	6	5.5	0.8	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.6	0.7	0.9	0.9	0.7	<0.1	0.1	0.2	0.1	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	0.8	1.2	1.1	1	1.1	1.7	2.4	2.1	0.2	-
Magnesium, dissolved	0.7	1.3	1.1	1	1.1	1.8	2.4	2.1	0.2	-
Potassium	0.5	0.6	0.6	0.6	0.8	0.5	0.8	1.2	0.4	-
Potassium, dissolved	0.5	0.7	0.6	0.5	0.8	0.6	0.9	1.2	0.4	-
Sodium	1.1	1.5	1.5	1.5	1.6	1.7	2.3	2.4	0.8	-
Sodium, dissolved	1.1	1.6	1.6	1.5	1.6	1.7	2.4	2.4	0.8	-
Sulphate	0.8	1.2	1.3	1.2	1.4	0.8	1.2	0.2	0.7	128[b]
Metals										
Aluminum	0.034	0.02	0.0098	0.01	0.031	0.0016	0.0044	0.0034	0.0095	0.005 to 0.1[c]
Aluminum, dissolved	0.033	0.018	0.0074	0.0063	0.0099	0.0017	0.0037	0.0012	0.0078	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	5
Arsenic, dissolved	0.2	0.2	0.1	<0.1	0.1	0.1	0.1	0.2	0.2	5
Barium	0.01	0.012	0.0071	0.0074	0.0082	0.011	0.019	0.0029	0.0069	-
Barium, dissolved	0.011	0.012	0.0074	0.0073	0.0067	0.012	0.018	0.0022	0.0064	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	1.5
Boron, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	1.5
Cadmium	0.00001	<0.00001	<0.00001	0.00001	0.00001	<0.00001	0.00001	<0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004 to 0.00005[d]
Cesium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	0.0008	0.0002	0.0006	<0.0002	0.0005	0.0002	<0.0002	<0.0002	0.0005	0.002[d]
Copper, dissolved	<0.0002	<0.0002	0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.07	0.02	0.12
Iron	0.84	0.56	0.58	0.74	0.96	1.58	2.44	1.38	0.17	0.3
Iron, dissolved	0.69	0.44	0.38	0.23	0.34	1.64	2.18	0.15	0.091	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium	1.2	2	1.9	1.8	1.4	1.7	3.1	4	0.1	-
Lithium, dissolved	1.3	2.1	2	1.8	1.5	1.8	3.2	4.1	0.1	-
Manganese	0.099	0.053	0.032	0.039	0.065	0.2	0.27	0.13	0.018	-
Manganese, dissolved	0.096	0.054	0.029	0.035	0.011	0.3	0.26	0.13	0.019	-
Mercury	2	2	2	2	2	2	5	5	2	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	<0.0001	<0.0001	31[g]
Nickel	0.0001	0.0002	0.0001	0.0001	0.0028	0.0003	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	0.0001	<0.0001	0.0001	<0.0001	0.0054	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium	0.99	0.87	0.57	0.65	0.85	0.51	0.72	1.9	0.76	-
Rubidium, dissolved	0.88	0.91	0.68	0.63	0.82	0.49	0.77	1.8	0.8	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.027	0.031	0.026	0.026	0.023	0.019	0.035	0.018	0.0064	-
Strontium, dissolved	0.028	0.032	0.028	0.027	0.024	0.022	0.036	0.018	0.0065	-
Tellurium	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.0008	<0.0001	-
Tin, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	0.0008	<0.0001	-
Titanium	0.0007	0.0005	0.0004	0.0004	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	-
Titanium, dissolved	0.0006	0.0005	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	0.0003	0.0002	0.0001	0.0001	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Vanadium, dissolved	0.0003	0.0002	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.0009	0.0007	0.002	0.0005	0.0029	0.0006	0.0009	0.0019	0.0017	0.03
Zinc, dissolved	0.0013	0.0014	0.0026	0.0005	0.0039	0.0012	0.0011	0.001	0.0015	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients										
Ammonia (as N)	<0.01	0.06	0.02	0.05	0.03	0.57	0.51	0.43	0.13	6.02 to 190[h]
Ammonia (as N), dissolved	<0.01	0.04	0.04	0.06	0.05	0.65	0.45	0.42	0.16	6.02 to 190[h]
Carbon, Organic dissolved	7.2	5.5	3.9	3.5	4.5	7.1	10	9	7	-
Carbon, Total Organic	6.7	5.1	3.6	3.4	4.9	6.4	9.6	8.7	6.9	-
Nitrate (as N)	0.11	0.05	0.07	0.08	0.08	0.02	0.02	0.02	0.02	3
Nitrate (as N), dissolved	0.12	0.06	0.09	0.07	0.08	0.04	0.02	0.02	0.03	3
Nitrate (NO_3)	0.49	0.22	0.31	0.35	0.35	0.09	0.09	0.09	0.09	13
Nitrate (NO_3), dissolved	0.53	0.26	0.4	0.31	0.35	0.18	0.09	0.09	0.13	13
Nitrate+Nitrite (as N) calc.	0.11	0.05	0.07	0.08	0.08	0.02	0.02	0.02	0.02	-
Nitrite+Nitrate-nitrogen, dissolved	0.12	0.06	0.09	0.07	0.08	0.04	0.02	0.02	0.03	-
Nitrogen, Total Kjeldahl	0.25	0.25	0.23	0.22	0.36	1.3	1.4	1.1	0.86	-
Phosphorus, Total	0.01	<0.01	0.01	0.01	0.01	<0.01	0.02	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	-
Physical Properties										
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	12	17	13	17	16	32	31	34	4	-
Apparent color	42	28	16	20	20	26	58	5	6	-
Hardness, Total	11	15	13	12	12	25	24	22	2	-
pH	6.6	6.69	6.75	7.38	6.75	7.04	7.3	7.37	5.98	6.5 to 9.0
Solids, Total dissolved	43	58	37	30	54	72	88	54	29	-
Solids, Total suspended	3	<1	4	1	11	3	<1	14	3	-
Specific Conductivity	24	33	29	28	30	57	58	53	6	-
Sum of ions	22	30	25	30	29	52	51	53	8	-
Turbidity	1.1	0.8	1.1	1.6	6	5	3	4.8	0.7	-
Radionuclides										
Lead-210	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.006	-
Radium-226	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.11
Thorium-230	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 20

Detailed Water Chemistry Results from the Aquatic Study Area, May 2019

Parameter	Broach Lake Area 2	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1		Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2		Beet Lake Area 1	SEQG[a]
	Composite	Composite	Surface Grab	Above Thermocline	Below Thermocline	Composite	Composite	Mid-depth	Above Thermocline	Below Thermocline	Composite	
	24-May-19	24-May-19	27-May-19	28-May-19	28-May-19	27-May-19	27-May-19	25-May-19	29-May-19	29-May-19	26-May-19	
Inorganic Ions												
Bicarbonate (as HCO_3)	32	15	16	20	29	24	30	28	29	33	32	-
Calcium	4.2	3.0	2.6	3.2	3.2	3.9	4.0	4.1	4.6	4.6	4.4	-
Calcium, dissolved	4.2	3.0	2.6	3.2	3.2	3.9	4.0	4.1	4.6	4.6	4.4	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	2.0	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.6	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.3	0.7	0.8	1.0	1.0	1.4	1.4	1.4	1.7	1.7	1.6	-
Magnesium, dissolved	1.3	0.7	0.8	1.0	1.0	1.4	1.4	1.5	1.7	1.7	1.6	-
Potassium	0.6	0.2	0.5	0.5	0.6	0.6	0.6	0.6	0.9	0.8	0.7	-
Potassium, dissolved	0.6	0.3	0.5	0.6	0.5	0.6	0.6	0.6	0.8	0.8	0.8	-
Sodium	1.6	1.0	1.2	1.3	1.3	1.4	1.5	1.5	2.0	2.0	1.7	-
Sodium, dissolved	1.6	1.0	1.1	1.3	1.3	1.4	1.4	1.5	1.9	2.0	1.7	-
Sulphate	1.8	1.1	1.2	1.2	1.2	1.6	1.7	1.6	1.8	1.8	1.6	128[b]
Metals												
Aluminum	0.0021	0.004	0.019	0.0038	0.0033	0.0008	0.0009	0.0079	<0.0005	0.0015	0.0022	0.005 to 0.1[c]
Aluminum, dissolved	0.0019	0.0015	0.014	0.0013	0.0018	0.0008	0.0012	0.008	0.0009	0.0009	0.0029	0.005 to '0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	5
Arsenic, dissolved (µg/L)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5
Barium	0.041	0.0068	0.008	0.0092	0.01	0.0098	0.0097	0.0094	0.0075	0.0079	0.0097	-
Barium, dissolved	0.041	0.0066	0.0076	0.0088	0.0097	0.0091	0.0093	0.0091	0.0076	0.0073	0.0092	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.05	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.06	0.06	0.06	0.12
Iron	0.12	0.024	0.43	0.13	0.22	0.018	0.024	0.046	0.011	0.0099	0.12	0.3
Iron, dissolved	0.024	0.0026	0.27	0.038	0.092	0.0015	0.0023	0.017	0.0047	0.0024	0.027	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	3.2	1.9	1.8	2.2	2.2	2.8	2.8	2.9	3.7	3.7	3.3	-
Lithium, dissolved (µg/L)	3.1	1.9	1.8	2.3	2.3	2.8	2.8	2.8	3.5	3.6	3.2	-
Manganese	1.44	0.0088	0.011	0.017	0.024	0.027	0.037	0.015	0.004	0.0057	0.029	-
Manganese, dissolved	1.47	0.0005	0.0062	<0.0005	0.0008	0.0076	0.0093	0.0081	0.0011	<0.0005	0.015	-
Mercury (ng/L)	2	2	1	2	2	2	1	2	2	2	2	26
Molybdenum	0.0002	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.54	0.62	0.60	0.60	0.62	0.62	0.54	0.60	0.59	0.56	0.56	-
Rubidium, dissolved (µg/L)	0.58	0.58	0.60	0.66	0.57	0.53	0.60	0.55	0.61	0.56	0.54	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.039	0.061	0.025	0.027	0.027	0.03	0.03	0.03	0.03	0.031	0.031	-
Strontium, dissolved	0.038	0.061	0.024	0.028	0.027	0.03	0.03	0.031	0.03	0.03	0.031	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	0.006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Tin, dissolved	<0.0001	0.0023	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Titanium, dissolved	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.0024	0.0012	0.002	0.0016	0.0018	0.0016	0.0019	0.0017	0.0026	0.0016	0.0015	0.03
Zinc, dissolved	0.0028	0.0017	0.0013	0.0012	0.0024	0.0012	0.0016	0.0017	0.0017	0.0021	0.0027	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients												
Ammonia (as N)	0.18	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.588 to 39.7[h]
Ammonia (as N), dissolved	0.16	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.16	0.588 to 39.7[h]
Carbon, Organic dissolved	1.7	2.1	3.7	3.0	2.7	2.0	2.2	2.7	1.2	1.4	2.0	-
Carbon, Total Organic	1.5	1.9	3.5	2.6	2.5	1.8	1.8	2.0	1.1	1.1	1.8	-
Nitrate (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (as N), dissolved	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate (NO_3), dissolved	0.09	<0.04	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolved	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.33	0.13	0.22	0.18	0.23	0.1	0.11	0.22	0.12	0.14	0.21	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties												
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	26	12	13	16	24	20	25	23	24	27	26	-
Apparent color (CU)	<1	2	18	4	4	<1	<1	3	<1	<1	1	-
Hardness, Total	16	10	10	12	12	15	16	16	18	18	18	-
pH (pH units)	7.32	7.07	7.16	7.32	7.21	7.41	7.42	7.40	7.52	7.50	7.39	6.5 to 9.0
Solids, Total dissolved	48	37	40	17	29	32	33	57	58	55	46	-
Solids, Total suspended	<1	1	1	2	2	<1	<1	<1	<1	<1	<1	-
Specific Conductivity (µS/cm)	42	22	20	26	26	33	34	35	41	42	38	-
Sum of ions	42	23	23	28	37	33	40	38	41	45	43	-
Turbidity (NTU)	1.3	0.4	0.9	0.8	1.0	0.6	0.4	0.6	0.4	0.3	0.8	-
Radionuclides												
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	-
Radium-226 (Bq/L)	0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Appendix C, Table 20

Detailed Water Chemistry Results from the Aquatic Study Area, May 2019

Parameter	Beet Creek	Naomi Lake	Clearwater River Area 1	Clearwater River Area 3	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 2	Lake J	SEQG[a]
	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Mid-depth	Surface Grab	Composite	Surface Grab	Composite	Mid-depth	
	26-May-19	26-May-19	26-May-19	17-May-19	25-May-19	25-May-19	30-May-19	25-May-19	28-May-19	28-May-19	25-May-19	
Inorganic Ions												
Bicarbonate (as HCO_3)	29	26	32	18	18	28	29	32	33	33	5	-
Calcium	4.3	2.6	3.8	3.0	3.2	2.8	3.0	5	3.4	3.6	0.4	-
Calcium, dissolved	4.3	2.7	3.9	3.0	3.2	2.9	3.0	5	3.4	3.6	0.4	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.6	0.5	0.6	0.4	0.7	0.7	0.5	0.3	0.1	0.2	<0.1	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.6	0.7	1.4	1.0	1.1	1.0	1.1	1.3	1.6	1.5	0.1	-
Magnesium, dissolved	1.6	0.7	1.4	1.0	1.1	1.0	1.1	1.4	1.6	1.5	0.1	-
Potassium	0.7	0.5	0.6	0.6	0.6	0.6	0.6	0.4	0.6	0.8	0.2	-
Potassium, dissolved	0.7	0.4	0.7	0.6	0.6	0.6	0.6	0.4	0.6	0.8	0.3	-
Sodium	1.7	1.0	1.6	1.3	1.4	1.3	1.4	1.4	1.7	1.8	0.6	-
Sodium, dissolved	1.7	1.0	1.6	1.3	1.4	1.3	1.4	1.4	1.7	1.8	0.6	-
Sulfate	1.6	0.6	1.4	1.1	1.1	1.0	1.2	1.0	1.1	0.3	0.6	128[b]
Metals												
Aluminum	0.0092	0.025	0.014	0.0081	0.007	0.0074	0.014	0.0037	0.0047	0.0085	0.0093	0.005 to 0.1[c]
Aluminum, dissolved	0.0097	0.02	0.0079	0.0054	0.0041	0.0041	0.0074	0.0048	0.0029	0.006	0.0059	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.1	0.2	0.1	<0.1	0.1	0.1	0.1	0.1	<0.1	0.2	0.2	5
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	0.1	0.1	5
Barium	0.0089	0.007	0.0078	0.0057	0.0058	0.0048	0.0047	0.0043	0.0055	0.001	0.0031	-
Barium, dissolved	0.0087	0.0065	0.007	0.0055	0.0052	0.0044	0.0042	0.004	0.005	0.0008	0.0027	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	0.002[d]
Fluoride	0.06	0.02	0.05	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.01	0.12
Iron	0.095	0.96	0.2	0.26	0.31	0.35	0.41	0.17	0.40	0.18	0.059	0.3
Iron, dissolved	0.066	0.76	0.11	0.21	0.17	0.22	0.28	0.12	0.24	0.12	0.019	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	3.3	1.3	2.9	2.1	2.0	1.9	1.6	1.7	2.6	3.3	0.1	-
Lithium, dissolved (µg/L)	3.2	1.2	2.8	2.0	2.1	1.9	1.6	1.8	2.5	3.4	0.1	-
Manganese	0.0099	0.021	0.01	0.0098	0.045	0.022	0.032	0.01	0.012	0.016	0.0039	-
Manganese, dissolved	0.0068	0.0023	0.0041	0.0005	0.02	0.0019	0.02	0.0024	0.0064	0.0007	0.0025	-
Mercury (ng/L)	1	2	2	2	2	2	2	2	2	2	2	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.59	0.74	0.56	0.52	0.55	0.54	0.84	0.34	0.44	1.2	0.54	-
Rubidium, dissolved (µg/L)	0.60	0.73	0.55	0.50	0.64	0.57	0.78	0.36	0.43	1.2	0.47	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.03	0.024	0.029	0.023	0.024	0.022	0.021	0.015	0.02	0.012	0.0042	-
Strontium, dissolved	0.03	0.023	0.028	0.023	0.024	0.022	0.021	0.014	0.019	0.012	0.0038	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	0.0042	0.0017	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Tin, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	0.0039	0.0081	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	0.0005	0.0003	<0.0002	<0.0002	0.0003	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Titanium, dissolved	<0.0002	0.0004	<0.0002	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	0.0003	0.0001	0.0001	<0.0001	0.0001	0.0002	0.0001	<0.0001	<0.0001	0.0001	0.12[e]
Vanadium, dissolved	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.0012	0.0014	0.0013	0.0007	0.0012	0.0016	0.0032	0.0016	0.0027	0.0012	0.0017	0.03
Zinc, dissolved	0.0026	0.0018	0.0011	0.0017	0.0023	0.0028	0.002	0.0018	0.003	0.0021	0.0023	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients												
Ammonia (as N)	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.588 to 39.7[h]
Ammonia (as N), dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.588 to 39.7[h]
Carbon, Organic dissolved	3.0	5.7	2.8	2.7	3.4	3.8	4.6	6.7	6.4	6.6	6.8	-
Carbon, Total Organic	2.4	5.3	2.6	2.6	3.1	3.3	4.2	5.3	6.1	6.4	5.6	-
Nitrate (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (as N), dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate (NO_3), dissolved	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.21	0.21	0.25	0.22	0.28	0.30	0.19	0.59	0.60	0.54	0.67	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Appendix C, Table 20

Detailed Water Chemistry Results from the Aquatic Study Area, May 2019

Parameter	Beet Creek	Naomi Lake	Clearwater River Area 1	Clearwater River Area 3	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 2	Lake J	SEQG[a]
	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Mid-depth	Surface Grab	Composite	Surface Grab	Composite	Mid-depth	
	26-May-19	26-May-19	26-May-19	17-May-19	25-May-19	25-May-19	30-May-19	25-May-19	28-May-19	28-May-19	25-May-19	
Physical Properties												
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	24	21	26	15	15	23	24	26	27	27	4	-
Apparent color (CU)	8	30	8	11	9	10	18	7	17	3	4	-
Hardness, Total	17	9	15	12	12	11	12	18	15	15	1	-
pH (pH units)	7.39	7.15	7.39	7.27	7.23	7.24	7.27	7.46	7.33	7.47	6.35	6.5 to 9.0
Solids, Total dissolved	48	24	58	38	44	26	34	40	37	42	<5	-
Solids, Total suspended	<1	3	3	<1	1	2	1	2	2	3	3	-
Specific Conductivity (µS/cm)	38	18	33	25	27	24	27	35	33	34	1	-
Sum of ions	40	32	41	25	26	35	37	41	42	41	7	-
Turbidity (NTU)	0.6	1.8	1.3	1.2	1.2	0.9	1.2	1	1.1	1.5	1.5	-
Radionuclides												
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	0.008	-
Radium-226 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 21

Detailed Water Chemistry Results from the Aquatic Study Area, July/August 2019

Parameter	Broach Lake Area 2		Hodge Lake Area 1		Jed Creek	Patterson Lake North Arm - East Basin Area 1		Patterson Lake North Arm - West Basin Area 1		Patterson Lake South Arm Area 1		Forrest Lake Area 1	SEQG[a]
	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Surface Grab	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Composite	
	18-Jul-19	18-Jul-19	19-Jul-19	19-Jul-19	23-Jul-19	27-Jul-19	27-Jul-19	27-Jul-19	27-Jul-19	27-Jul-19	27-Jul-19	30-Jul-19	
Inorganic Ions													
Bicarbonate (as HCO_3)	17	20	11	12	8	20	17	17	26	27	30	27	-
Calcium	3.8	3.9	3.0	3.0	2.8	3.3	3.3	3.9	3.9	4.0	4.1	3.9	-
Calcium, dissolved	3.8	3.9	2.9	2.9	2.6	3.2	3.2	3.8	3.8	3.9	3.9	4.0	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	0.4	1.8	1.8	0.3	0.4	0.4	0.6	0.5	0.5	0.5	0.5	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.3	1.3	0.7	0.7	0.8	1.1	1.0	1.4	1.4	1.4	1.4	1.4	-
Magnesium, dissolved	1.3	1.3	0.7	0.7	0.8	1.1	1.0	1.4	1.4	1.4	1.4	1.4	-
Potassium	0.6	0.5	0.4	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	-
Potassium, dissolved	0.6	0.5	0.4	0.4	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.6	-
Sodium	1.6	1.6	1.0	1.0	1.2	1.4	1.3	1.5	1.5	1.5	1.5	1.5	-
Sodium, dissolved	1.6	1.6	1.0	1.0	1.2	1.4	1.3	1.4	1.4	1.5	1.5	1.5	-
Sulphate	1.9	2.0	1.0	1.0	1.2	1.2	1.1	1.5	1.4	1.5	1.5	1.6	128[b]
Metals													
Aluminum	0.0019	0.0013	0.0037	0.0012	0.015	0.0028	0.0024	0.0016	0.0008	0.001	0.001	0.0053	0.1[c]
Aluminum, dissolved	<0.0005	0.0008	0.0011	0.0012	0.011	0.001	0.0015	0.0013	0.0011	0.0014	0.0008	0.0071	0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.1	0.1	0.1	<0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	5
Arsenic, dissolved (µg/L)	0.2	0.1	<0.1	<0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	5
Barium	0.014	0.015	0.0066	0.007	0.0084	0.0075	0.011	0.0086	0.0098	0.0086	0.01	0.0077	-
Barium, dissolved	0.014	0.015	0.0066	0.0069	0.0079	0.0071	0.011	0.0084	0.0097	0.0084	0.0098	0.0083	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0008	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.08	0.08	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.12
Iron	0.0088	0.0094	0.0046	0.0083	0.27	0.042	0.3	0.0068	0.01	0.012	0.017	0.033	0.3
Iron, dissolved	0.0039	0.0007	0.0011	0.002	0.16	0.0098	0.21	0.0023	0.0044	0.0048	0.0016	0.029	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	2.9	3.0	1.8	1.8	1.7	2.1	2.1	2.6	2.6	2.6	2.6	2.7	-
Lithium, dissolved (µg/L)	2.9	3.0	1.8	1.8	1.8	2.2	2.1	2.6	2.6	2.6	2.6	2.7	-
Manganese	0.0032	0.011	0.0022	0.0038	0.0088	0.016	0.057	0.0043	0.009	0.0052	0.014	0.0072	-
Manganese, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	0.0048	0.0012	0.068	<0.0005	0.0037	0.0007	<0.0005	0.0065	-
Mercury (ng/L)	6	4	2	2	2	4	7	3	2	3	2	2	26
Molybdenum	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	31[g]
Molybdenum, dissolved	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.54	0.56	0.61	0.65	0.61	0.66	0.61	0.60	0.57	0.52	0.56	0.57	-
Rubidium, dissolved (µg/L)	0.53	0.49	0.63	0.66	0.56	0.69	0.62	0.61	0.54	0.54	0.66	0.68	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.036	0.036	0.062	0.061	0.026	0.028	0.028	0.03	0.031	0.03	0.03	0.03	-
Strontium, dissolved	0.036	0.036	0.06	0.062	0.026	0.028	0.028	0.03	0.03	0.03	0.03	0.031	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	0.0003	0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0011	<0.0001	0.0002	0.001	<0.0001	<0.0001	-
Tin, dissolved	0.0002	0.0006	<0.0001	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	<0.0001	0.0003	<0.0001	-
Titanium	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	-
Titanium, dissolved	0.0006	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.0012	0.0012	0.0021	0.0015	0.0008	0.0009	0.0011	0.0007	0.0008	0.0011	0.0007	0.0007	0.03
Zinc, dissolved	0.0016	0.0012	0.0019	0.0014	0.0018	0.0012	0.0018	0.002	0.0014	0.0008	0.0013	0.0014	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients													
Ammonia (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.291 to 39.5[h]
Ammonia (as N), dissolved	<0.01	0.02	<0.01	<0.01	<0.01	0.02	0.05	<0.01	<0.01	<0.01	0.02	<0.01	0.291 to 39.5[h]
Carbon, Organic dissolved	2.5	2.2	2.8	2.4	4.2	3.6	3.0	2.5	2.6	2.8	2.4	2.6	-
Carbon, Total Organic	1.6	1.6	2.1	2.0	3.8	2.8	2.6	2.8	2.0	2.0	1.8	2.2	-
Nitrate (as N)	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (as N), dissolved	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	0.26	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate (NO_3), dissolved	<0.04	0.13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolv	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.39	0.22	0.16	0.12	0.22	0.21	0.27	0.16	0.13	0.1	0.1	0.17	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	14	16	9	10	7	16	14	14	21	22	25	22	-
Apparent color (CU)	<1	<1	2	2	17	2	3	<1	1	<1	<1	3	-
Hardness, Total	15	15	10	10	10	13	12	15	15	16	16	15	-
pH (pH units)	7.38	7.28	7.06	7.03	7.16	7.32	7.17	7.42	7.31	7.42	7.32	7.44	6.5 to 9.0
Solids, Total dissolved	39	43	36	32	35	34	33	32	33	38	33	38	-
Solids, Total suspended	<1	<1	<1	<1	1	1	2	<1	<1	<1	<1	<1	-
Specific Conductivity (µS/cm)	32	35	21	21	19	26	26	32	32	32	33	33	-
Sum of ions	27	30	19	20	15	28	25	26	35	36	40	36	-
Turbidity (NTU)	0.3	0.3	0.3	0.4	0.9	0.7	2.2	0.3	0.4	0.3	0.4	0.5	-
Radionuclides													
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-
Radium-226 (Bq/L)	<0.005	<0.005	0.006	0.008	<0.005	<0.005	0.009	0.005	0.006	<0.005	0.007	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Appendix C, Table 21

Detailed Water Chemistry Results from the Aquatic Study Area, July/August 2019

Parameter	Forrest Lake Area 2		Beet Lake Area 1		Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 1	Lake J	SEQG[a]
	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	
	29-Jul-19	29-Jul-19	29-Jul-19	29-Jul-19	28-Jul-19	28-Jul-19	28-Jul-19	22-Jul-19	22-Jul-19	01-Aug-19	23-Jul-19	26-Jul-19	26-Jul-19	23-Jul-19	
Inorganic Ions															
Bicarbonate (as HCO_3)	27	27	24	29	28	17	18	15	15	15	30	24	30	4	-
Calcium	4.5	4.5	4.3	4.4	4.2	3.2	3.8	3.2	3.2	3.2	5.7	3.9	3.8	0.3	-
Calcium, dissolved	4.6	4.6	4.3	4.4	4.1	3.1	3.8	3.0	3.1	3.1	5.7	3.8	3.7	0.4	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.7	0.7	0.5	0.1	0.1	0.2	0.1	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.8	1.7	1.6	1.7	1.6	0.9	1.4	1.1	1.2	1.2	1.5	1.8	1.6	0.2	-
Magnesium, dissolved	1.8	1.7	1.6	1.6	1.6	0.9	1.4	1.1	1.1	1.2	1.5	1.8	1.6	0.2	-
Potassium	0.9	0.8	0.7	0.7	0.7	0.4	0.6	0.6	0.5	0.6	0.3	0.6	0.9	0.3	-
Potassium, dissolved	0.9	0.9	0.7	0.7	0.6	0.5	0.6	0.5	0.5	0.6	0.4	0.6	0.9	0.3	-
Sodium	2.0	2.0	1.8	1.7	1.7	1.2	1.6	1.5	1.4	1.5	1.5	1.9	2.0	0.7	-
Sodium, dissolved	2.0	2.0	1.7	1.7	1.7	1.1	1.5	1.4	1.4	1.4	1.5	1.8	1.9	0.7	-
Sulphate	1.8	1.8	1.7	1.7	1.6	0.6	1.2	1.0	0.9	1.1	1.0	1.1	0.3	0.7	128[b]
Metals															
Aluminum	0.001	0.001	0.0016	0.0015	0.0074	0.0093	0.012	0.0025	0.0043	0.011	0.004	0.0043	0.021	0.02	0.005 to 0.1[c]
Aluminum, dissolved	0.0011	0.0009	0.0016	0.0006	0.0057	0.0047	0.0079	0.0021	0.0026	0.007	0.0023	0.003	0.0083	0.0083	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.2	0.2	0.1	0.1	0.1	0.2	0.2	<0.1	0.1	0.1	0.1	0.1	0.2	0.2	5
Arsenic, dissolved (µg/L)	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	<0.1	0.2	0.2	5
Barium	0.0076	0.0078	0.0077	0.01	0.0083	0.0076	0.008	0.0024	0.0044	0.0046	0.0054	0.0078	0.0015	0.0029	-
Barium, dissolved	0.0074	0.0077	0.0078	0.0094	0.0077	0.0067	0.0075	0.0041	0.0045	0.0041	0.0049	0.0068	0.0009	0.0025	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	1.5
Boron, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.1	0.1	0.09	0.08	0.08	0.06	0.08	0.07	0.07	0.07	0.06	0.08	0.08	0.04	0.12
Iron	0.01	0.013	0.011	0.1	0.059	0.63	0.2	0.1	0.17	0.48	0.059	0.35	0.14	0.033	0.3
Iron, dissolved	0.0024	0.001	0.011	0.016	0.019	0.28	0.097	0.053	0.062	0.34	0.029	0.16	0.033	0.0078	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	3.4	3.4	3.0	3.0	3.0	1.5	2.6	1.0	1.8	1.5	1.7	2.6	3.3	0.1	-
Lithium, dissolved (µg/L)	3.4	3.4	3.1	3.0	3.1	1.5	2.6	1.9	1.9	1.5	1.7	2.6	3.4	<0.1	-
Manganese	0.0024	0.004	0.0057	0.046	0.0092	0.074	0.018	0.0097	0.026	0.03	0.019	0.035	0.022	0.0033	-
Manganese, dissolved	<0.0005	<0.0005	0.0047	0.0041	0.0019	0.01	0.0056	0.0014	0.0016	0.013	0.0009	0.011	0.0007	0.0013	-
Mercury (ng/L)	4	3	3	3	2	4	2	2	0	2	5	2	2	7	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.60	0.54	0.60	0.58	0.53	0.77	0.63	0.32	0.52	0.86	0.38	0.60	1.4	0.7	-
Rubidium, dissolved (µg/L)	0.63	0.66	0.59	0.61	0.59	0.82	0.67	0.55	0.58	0.83	0.35	0.49	1.5	0.66	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.031	0.031	0.03	0.032	0.03	0.03	0.03	0.012	0.024	0.023	0.018	0.024	0.014	0.0036	-
Strontium, dissolved	0.031	0.031	0.031	0.032	0.03	0.029	0.03	0.024	0.024	0.023	0.017	0.024	0.014	0.0033	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	0.0008	0.0002	0.0002	0.0002	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	0.0006	-
Tin, dissolved	0.0001	0.0002	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	0.0002	-
Titanium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0004	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	0.0003	-
Titanium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	0.0001	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.001	0.0008	0.0011	0.0009	0.0008	0.0008	0.0006	0.0028	0.0011	0.0012	0.001	0.0056	0.0017	0.001	0.03
Zinc, dissolved	0.0013	0.0012	0.0015	0.0008	0.0006	0.0014	0.0008	0.0031	0.0036	0.0016	0.002	0.0045	0.0011	0.0014	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients															
Ammonia (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	0.01	0.04	0.01	<0.01	0.291 to 39.5[h]
Ammonia (as N), dissolved	<0.01	<0.01	0.01	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	0.291 to 39.5[h]
Carbon, Organic dissolved	2.0	1.9	2.8	2.4	3.0	6.1	3.8	3.8	3.7	5.2	7.7	8.4	9.9	8.4	-
Carbon, Total Organic	1.3	1.3	1.9	1.7	2.3	5.6	3.5	3.6	3.6	4.9	6.3	8.2	8.6	7.4	-
Nitrate (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (as N), dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate (NO_3), dissolved	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.14	0.16	0.14	0.28	0.2	0.23	0.22	0.24	0.22	0.24	0.58	0.67	0.61	0.57	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	-
Physical Properties															
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	22	22	20	24	23	14	15	12	12	12	25	20	25	3	-
Apparent color (CU)	<1	<1	2	1	3	17	9	7	9	22	6	13	4	5	-
Hardness, Total	19	18	17	18	17	12	15	12	13	13	20	17	16	2	-
pH (pH units)	7.50	7.48	7.46	7.20	7.39	7.13	7.30	7.26	7.28	7.28	7.46	7.30	7.42	6.27	6.5 to 9.0
Solids, Total dissolved	46	50	40	42	45	39	41	37	32	30	60	58	44	20	-
Solids, Total suspended	<1	<1	<1	2	1	2	1	1	2	1	3	5	6	2	-
Specific Conductivity (µS/cm)	42	42	38	38	36	22	32	25	26	25	39	37	34	<1	-
Sum of ions	39	38	35	40	38	24	27	23	23	23	40	33	39	6	-
Turbidity (NTU)	0.2	0.3	0.4	0.8	0.6	2.9	1.1	1.0	1.4	1.5	1.2	2.1	1.5	1	-
Radionuclides															
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.008	0.007	0.008	-
Radium-226 (Bq/L)	0.006	0.007	0.006	<0.005	<0.005	0.007	<0.005	0.01	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 22

Detailed Water Chemistry Results from the Aquatic Study Area, September/October 2019

Parameter	Broach Lake Area 2		Hodge Lake Area 1		Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1		Patterson Lake South Arm Area 1		Forrest Lake Area 1	SEQG[a]
	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Surface Grab	Composite	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Mid-depth	
	25-Sep-19	25-Sep-19	24-Sep-19	24-Sep-19	27-Sep-19	30-Sep-19	30-Sep-19	30-Sep-19	30-Sep-19	30-Sep-19	26-Sep-19	
Inorganic Ions												
Bicarbonate (as HCO_3)	28	26	13	15	15	22	27	27	29	29	29	-
Calcium	3.8	4.0	2.9	3.0	2.6	3.2	3.8	3.9	3.9	4.0	4.0	-
Calcium, dissolved	3.8	4.0	3.0	3.1	2.6	2.9	3.9	3.9	4.0	4.1	4.0	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.4	0.4	2.0	2.0	0.3	0.4	0.6	0.6	0.6	0.6	0.6	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.2	1.2	0.6	0.7	0.7	1.0	1.3	1.3	1.4	1.4	1.4	-
Magnesium, dissolved	1.2	1.3	0.6	0.7	0.7	1.0	1.3	1.4	1.4	1.4	1.4	-
Potassium	0.6	0.6	0.3	0.4	0.4	0.5	0.6	0.5	0.5	0.6	0.6	-
Potassium, dissolved	0.6	0.6	0.3	0.3	0.4	0.6	0.5	0.6	0.5	0.6	0.6	-
Sodium	1.6	1.6	1.0	1.0	1.1	1.3	1.4	1.4	1.4	1.4	1.5	-
Sodium, dissolved	1.5	1.6	0.9	1.0	1.0	1.4	1.4	1.4	1.4	1.4	1.5	-
Sulphate	1.8	1.9	1.0	1.1	1.1	1.2	1.5	1.7	1.5	1.6	1.6	128[b]
Metals												
Aluminum	0.0023	0.0024	0.0033	0.0036	0.034	0.005	0.0031	0.0022	0.0014	0.0024	0.011	0.005 to 0.1[c]
Aluminum, dissolved	0.0024	0.0009	0.0033	0.0026	0.029	0.0021	0.0022	0.0018	0.0022	0.0034	0.0089	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	5
Arsenic, dissolved (µg/L)	0.2	0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5
Barium	0.014	0.016	0.0064	0.0073	0.0095	0.0088	0.0086	0.011	0.0087	0.012	0.0087	-
Barium, dissolved	0.014	0.015	0.0063	0.0069	0.009	0.0083	0.0085	0.01	0.0084	0.011	0.0083	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.05	0.05	0.02	0.02	0.03	0.04	0.05	0.05	0.05	0.05	0.05	0.12
Iron	0.016	0.019	0.0087	0.028	0.58	0.16	0.012	0.014	0.014	0.013	0.05	0.3
Iron, dissolved	0.0022	0.0012	0.001	0.0075	0.32	0.049	0.002	0.0019	0.0032	0.0022	0.022	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	2.9	3.0	1.7	1.8	1.5	2.0	2.5	2.6	2.5	2.6	2.7	-
Lithium, dissolved (µg/L)	2.9	2.9	1.7	1.8	1.5	2.1	2.6	2.5	2.5	2.6	2.7	-
Manganese	0.0057	0.03	0.0026	0.016	0.015	0.023	0.0056	0.023	0.008	0.026	0.0069	-
Manganese, dissolved	<0.0005	<0.0005	<0.0005	0.0085	0.0089	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	0.0042	-
Mercury (ng/L)	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.53	0.54	0.67	0.69	0.70	0.62	0.57	0.62	0.52	0.53	0.65	-
Rubidium, dissolved (µg/L)	0.54	0.56	0.64	0.67	0.66	0.61	0.59	0.60	0.54	0.60	0.59	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.036	0.037	0.061	0.063	0.025	0.028	0.03	0.031	0.029	0.031	0.03	-
Strontium, dissolved	0.036	0.038	0.06	0.062	0.025	0.028	0.03	0.031	0.029	0.031	0.03	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Tin, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	-
Titanium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	<0.0005	<0.0005	<0.0005	0.0024	<0.0005	<0.0005	0.0009	0.001	0.0008	0.0012	0.0007	0.03
Zinc, dissolved	0.001	0.0015	<0.0005	0.0016	0.0006	0.001	0.001	0.0008	0.0011	0.0024	0.001	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients												
Ammonia (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.865 to 26.6[h]
Ammonia (as N), dissolved	<0.01	0.02	<0.01	0.04	0.02	0.03	<0.01	<0.01	<0.01	0.01	0.01	0.865 to 26.6[h]
Carbon, Organic dissolved	1.9	1.6	2.3	2.3	6.7	2.8	3.3	2.1	2.2	2.0	2.3	-
Carbon, Total Organic	1.5	1.4	1.8	1.8	6.4	2.6	1.9	1.7	1.8	1.6	2.1	-
Nitrate (as N)	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (as N), dissolved	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	0.13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate (NO_3), dissolved	<0.04	0.18	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolv	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.12	0.08	0.07	0.14	0.21	0.21	0.2	0.13	0.18	0.12	0.17	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties												
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	23	21	11	12	12	18	22	22	24	24	24	-
Apparent color (CU)	1	2	2	2	48	4	<1	1	1	<1	6	-
Hardness, Total	14	15	10	10	9	12	15	15	15	16	16	-
pH (pH units)	7.51	7.39	7.22	7.10	7.16	7.20	7.52	7.42	7.52	7.41	7.48	6.5 to 9.0
Solids, Total dissolved	38	35	27	27	34	30	29	37	32	38	34	-
Solids, Total suspended	<1	<1	1	1	2	1	<1	<1	<1	<1	1	-
Specific Conductivity (µS/cm)	32	32	21	22	17	25	32	32	32	33	33	-
Sum of ions	37	36	21	23	21	30	36	36	38	39	39	-
Turbidity (NTU)	0.3	0.3	0.4	0.4	2.8	1.1	0.4	0.4	0.4	0.3	0.8	-
Radionuclides												
Lead-210 (Bq/L)	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.03	<0.02	<0.02	<0.02	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-
Radium-226 (Bq/L)	0.006	<0.005	<0.005	<0.005	<0.005	0.007	0.007	<0.005	0.009	<0.005	<0.005	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Appendix C, Table 22

Detailed Water Chemistry Results from the Aquatic Study Area, September/October 2019

Parameter	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 1	Lake J	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	
	02-Oct-19	01-Oct-19	01-Oct-19	01-Oct-19	01-Oct-19	20-Sep-19	19-Sep-19	03-Oct-19	25-Sep-19	28-Sep-19	30-Sep-19	24-Sep-19	
Inorganic Ions													
Bicarbonate (as HCO_3)	29	30	35	8	26	16	12	10	34	20	34	5	-
Calcium	4.4	4.2	4.4	2.5	3.5	3.0	3.1	2.8	5.4	3.5	3.6	0.3	-
Calcium, dissolved	4.5	3.7	4.4	2.6	3.6	3.0	3.1	2.9	5.4	3.4	3.4	0.4	-
Carbonate (as CO_3)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Chloride	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.6	<0.1	0.1	0.2	0.1	120
Hydroxide (as OH)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Magnesium	1.7	1.5	1.6	0.6	1.2	1.0	1.1	1.0	1.4	1.6	1.5	<0.1	-
Magnesium, dissolved	1.7	1.2	1.6	0.6	1.2	1.0	1.1	1.0	1.4	1.6	1.4	0.1	-
Potassium	0.8	0.7	0.7	0.5	0.6	0.6	0.5	0.6	0.4	0.6	0.8	0.3	-
Potassium, dissolved	0.9	0.6	0.6	0.5	0.6	0.4	0.4	0.6	0.4	0.6	0.8	0.3	-
Sodium	2.0	1.7	1.7	0.9	1.4	1.4	1.3	1.4	1.4	1.6	1.8	0.6	-
Sodium, dissolved	1.9	1.5	1.7	0.9	1.4	1.4	1.3	1.4	1.4	1.6	1.7	0.6	-
Sulphate	1.6	1.6	1.5	0.6	1.2	0.9	0.9	0.9	1.0	1.2	0.3	0.6	128[b]
Metals													
Aluminum	0.0017	0.0039	0.0098	0.028	0.027	0.014	0.013	0.03	0.0064	0.0063	0.01	0.015	0.005 to 0.1[c]
Aluminum, dissolved	0.0016	0.0013	0.0099	0.022	0.01	0.011	0.0084	0.02	0.0049	0.0052	0.0024	0.0074	0.005 to 0.1[c]
Antimony	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Antimony, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Arsenic (µg/L)	0.2	<0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	<0.1	0.1	0.2	5
Arsenic, dissolved (µg/L)	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	<0.1	0.2	0.2	5
Barium	0.0075	0.0089	0.0082	0.0078	0.008	0.0062	0.006	0.0054	0.0063	0.007	0.0011	0.003	-
Barium, dissolved	0.0068	0.0081	0.0084	0.0073	0.0067	0.0055	0.0052	0.0049	0.0061	0.0064	0.0006	0.0023	-
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Beryllium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Bismuth	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Bismuth, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Boron, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.5
Cadmium	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cadmium, dissolved	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004[d]
Cesium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Cesium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Chromium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Chromium, dissolved	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Cobalt, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00078[e,f]
Copper	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Copper, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002[d]
Fluoride	0.07	0.06	0.06	0.03	0.04	0.04	0.04	0.04	0.03	0.05	0.05	0.02	0.12
Iron	0.012	0.10	0.11	0.66	0.39	0.42	0.33	0.70	0.047	0.15	0.08	0.038	0.3
Iron, dissolved	0.0017	0.018	0.062	0.38	0.095	0.18	0.14	0.46	0.042	0.078	0.005	0.0095	0.3
Lead	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lead, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001[d]
Lithium (µg/L)	3.4	3.0	2.9	1.1	2.3	1.8	1.8	1.3	1.6	2.4	3.2	0.1	-
Lithium, dissolved (µg/L)	3.2	3.0	3.0	1.1	2.2	1.7	1.8	1.2	1.6	2.3	2.9	<0.1	-
Manganese	0.0027	0.036	0.023	0.028	0.024	0.025	0.025	0.025	0.01	0.0074	0.019	0.0047	-
Manganese, dissolved	<0.0005	<0.0005	0.0098	0.014	0.0071	0.0029	0.001	0.012	0.0092	0.0036	<0.0005	0.002	-
Mercury (ng/L)	<1	<1	<1	<1	<1	4	<1	1	<1	1	<1	1	26
Molybdenum	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Molybdenum, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	31[g]
Nickel	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Nickel, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.025[d]
Rubidium (µg/L)	0.63	0.56	0.61	0.77	0.67	0.59	0.57	0.72	0.40	0.50	1.30	0.63	-
Rubidium, dissolved (µg/L)	0.49	0.63	0.62	0.83	0.61	0.64	0.63	0.75	0.35	0.47	1.10	0.58	-
Selenium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Selenium, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Silver	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Silver, dissolved	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00025
Strontium	0.031	0.031	0.03	0.024	0.028	0.024	0.024	0.02	0.017	0.02	0.013	0.0037	-
Strontium, dissolved	0.029	0.031	0.032	0.023	0.025	0.024	0.024	0.02	0.017	0.019	0.011	0.003	-
Tellurium (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Tellurium, dissolved (µg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Thallium	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Thallium, dissolved	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Tin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Tin, dissolved	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-
Titanium	<0.0002	<0.0002	<0.0002	0.0003	0.0007	0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	-
Titanium, dissolved	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-
Uranium (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Uranium, dissolved (µg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	15
Vanadium	<0.0001	<0.0001	<0.0001	0.0002	0.0002	0.0001	0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.0002	0.12[e]
Vanadium, dissolved	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.12[e]
Zinc	0.0007	0.0006	0.0007	0.0007	<0.0005	<0.0005	<0.0005	0.0015	0.001	0.0014	0.0013	0.0011	0.03
Zinc, dissolved	0.0008	<0.0005	0.0012	0.0009	<0.0005	0.0005	<0.0005	0.001	0.0009	0.0014	<0.0005	0.0011	0.03
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Zirconium, dissolved	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nutrients													
Ammonia (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.19	0.25	<0.01	<0.01	0.865 to 26.6[h]
Ammonia (as N), dissolved	0.02	0.03	0.03	0.02	0.01	<0.01	<0.01	0.02	0.24	0.26	0.03	0.02	0.865 to 26.6[h]
Carbon, Organic dissolved	1.4	2.0	3.0	7.4	3.8	6.3	6.5	7.4	6.3	7.8	7.4	5.6	-
Carbon, Total Organic	1.2	1.8	2.7	7.2	3.5	6.2	6.2	7.5	5.6	7.1	7.0	5.2	-
Nitrate (as N)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.18	<0.01	<0.01	3
Nitrate (as N), dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2	<0.01	<0.01	3
Nitrate (NO_3)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.8	<0.04	<0.04	13
Nitrate (NO_3), dissolved	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.89	<0.04	<0.04	13
Nitrate+Nitrite (as N) calc.	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.18	<0.01	<0.01	-
Nitrite+Nitrate-nitrogen, dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2	<0.01	<0.01	-
Nitrogen, Total Kjeldahl	0.06	0.13	0.19	0.40	0.31	0.34	0.46	0.36	1.1	0.71	0.95	0.95	-
Phosphorus, Total	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.01	-
Phosphorus, Total dissolved	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Physical Properties													
Alkalinity, Phenolphthalein	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	24	25	29	7	21	13	10	8	28	16	28	4	-
Apparent color (CU)	<1	2	9	40	16	34	29	45	9	23	4	6	-
Hardness, Total	18	17	18	9	14	12	12	11	19	15	15	<1	-
pH (pH units)	7.46	7.54	7.48	7.09	7.40	7.24	7.28	7.27	7.52	7.38	7.47	6.38	6.5 to 9.0
Solids, Total dissolved	40	39	42	40	32	34	36	45	54	41	40	14	-
Solids, Total suspended	<1	<1	1	2	5	2	1	2	2	2	7	4	-
Specific Conductivity (µS/cm)	43	38	37	16	28	23	25	22	39	33	32	<1	-
Sum of ions	40	40	46	14	34	24	20	17	44	30	42	7	-
Turbidity (NTU)	0.3	1.1	0.9	3.1	2.7	1.9	1.8	2.1	1.1	1.6	2.5	1.5	-
Radionuclides													
Lead-210 (Bq/L)	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.03	0.03	-
Polonium-210 (Bq/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.008	0.006	0.01	-
Radium-226 (Bq/L)	<0.005	<0.005	<0.005	0.008	0.006	0.009	<0.005	<0.005	<0.005	0.007	<0.005	0.006	0.11
Thorium-230 (Bq/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 23

Detailed Water Chemistry Results from the Aquatic Study Area, March 2020

Parameter	Broach Lake Area 2	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Composite	Composite	Mid-depth	Composite	Composite	Surface Grab	
	19-Mar-2020	17-Mar-2020	23-Mar-2020	23-Mar-2020	20-Mar-2020	20-Mar-2020	21-Mar-2020	22-Mar-2020	22-Mar-2020	21-Mar-2020	
Inorganic Ions											
Bicarbonate (as HCO_3)	21	12	15	21	22	44	26	38	34	30	-
Calcium	3.9	2.9	3.1	3.2	3.7	4.0	4.3	4.7	4.6	4.8	-
Calcium, dissolved	4.3	3.3	3.4	3.6	4.1	4.4	4.8	5.1	4.8	5.3	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.5	2.0	0.4	0.5	0.6	0.6	0.7	0.9	0.7	0.8	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.3	0.7	1.0	1.1	1.3	1.4	1.6	1.8	1.6	1.7	-
Magnesium, dissolved	1.4	0.7	1.0	1.1	1.4	1.5	1.6	1.9	1.7	1.9	-
Potassium	0.5	0.4	0.5	0.5	0.5	0.6	0.6	0.9	0.7	0.7	-
Potassium, dissolved	0.6	0.4	0.5	0.5	0.6	0.6	0.7	0.9	0.8	0.8	-
Sodium	1.6	1.0	1.3	1.3	1.4	1.5	1.6	2.0	1.7	1.8	-
Sodium, dissolved	1.6	1.0	1.3	1.3	1.4	1.4	1.6	2.0	1.7	1.9	-
Sulphate	1.9	1.0	1.5	1.2	1.4	1.5	1.7	1.7	1.5	1.8	128[b]
Metals											
Aluminum	0.0008	0.0019	0.022	0.0047	< 0.0005	0.0020	0.0031	0.0010	0.0009	0.0045	0.005 to 0.1[c]
Aluminum, dissolved	0.0006	0.0006	0.020	0.0029	0.0011	0.0007	0.0011	0.0008	< 0.0005	0.0009	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.1	0.2	0.1	5
Arsenic, dissolved (µg/L)	0.1	< 0.1	0.1	0.1	0.1	0.1	0.1	0.1	< 0.1	0.1	5
Barium	0.017	0.0078	0.012	0.011	0.0097	0.011	0.011	0.0089	0.022	0.011	-
Barium, dissolved	0.017	0.0077	0.012	0.011	0.017	0.0095	0.011	0.0088	0.021	0.011	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0036	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.05	0.03	0.04	0.04	0.05	0.05	0.06	0.08	0.06	0.06	0.12
Iron	0.023	0.031	0.27	0.096	0.020	0.023	0.018	0.014	0.85	0.024	0.3
Iron, dissolved	0.0008	0.0056	0.19	0.059	0.0083	0.0036	0.011	0.0025	0.17	0.011	0.3
Lead	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0013	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.1	1.9	2.2	2.2	2.6	2.7	3.1	3.8	3.2	3.5	-
Lithium, dissolved (µg/L)	3.1	1.8	2.1	2.1	2.4	2.6	2.9	3.6	3.0	3.4	-
Manganese	0.020	0.037	0.0068	0.016	0.0069	0.091	0.0020	0.0013	1.10	0.0060	-
Manganese, dissolved	< 0.0005	0.029	0.0062	0.012	< 0.0005	0.0017	0.0015	< 0.0005	1.06	0.0055	-
Mercury (ng/L)	< 1	2	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1	26
Molybdenum	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.56	0.65	0.58	0.64	0.62	0.65	0.65	0.61	0.66	0.67	-
Rubidium, dissolved (µg/L)	0.53	0.65	0.66	0.66	0.53	0.64	0.67	0.65	0.67	0.73	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.041	0.064	0.032	0.031	0.032	0.034	0.036	0.034	0.036	0.037	-
Strontium, dissolved	0.040	0.066	0.031	0.030	0.032	0.034	0.036	0.035	0.036	0.037	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	0.0006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	0.0007	0.0006	0.0005	< 0.0005	< 0.0005	0.0010	< 0.0005	< 0.0005	0.0007	0.03
Zinc, dissolved	0.0008	0.0012	0.0009	< 0.0005	0.0032	< 0.0005	0.0025	0.0010	< 0.0005	< 0.0005	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients											
Ammonia (as N)	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	< 0.01	0.30	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	0.01	0.02	0.01	< 0.01	< 0.01	0.02	< 0.01	0.02	0.28	0.03	6.02 to 190[h]
Carbon, Organic dissolved	1.9	2.3	3.2	3.3	2.6	2.2	2.5	1.5	2.0	2.4	-
Carbon, Total Organic	1.7	2.1	3.4	3.6	2.7	2.4	2.5	1.3	2.0	2.4	-
Nitrate (as N)	0.06	0.03	0.05	0.10	0.03	0.05	< 0.01	0.01	0.03	< 0.01	3
Nitrate (as N), dissolved	0.07	0.04	0.06	0.11	0.03	0.07	< 0.01	0.04	0.05	0.03	3
Nitrate (NO3)	0.26	0.13	0.22	0.44	0.13	0.22	< 0.04	0.04	0.13	< 0.04	13
Nitrate (NO3), dissolved	0.31	0.18	0.26	0.49	0.13	0.31	< 0.04	0.18	0.22	0.13	13
Nitrate+Nitrite (as N) calc.	0.06	0.03	0.05	0.10	0.03	0.05	< 0.01	0.01	0.03	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolve	0.07	0.04	0.06	0.11	0.03	0.07	< 0.01	0.04	0.05	0.03	-
Nitrogen, Total Kjeldahl	0.22	0.09	0.23	0.22	0.20	0.11	0.12	0.16	0.37	0.22	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties											
Apparent color	< 1	1	18	6	1	< 1	< 1	< 1	3	1	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.00	6.64	6.64	6.80	7.06	7.03	7.11	7.19	6.97	7.04	6.5 to 9.0
Specific Conductivity	34	22	27	27	32	35	38	45	44	42	-
Sum of ions	31	20	23	29	31	54	36	50	45	42	-
Alkalinity, Total (as CaCO3)	17	10	12	17	18	36	21	31	28	25	-
Solids, Total dissolved	55	37	49	45	51	54	49	62	50	58	-
Hardness, Total	15	10	12	12	14	16	17	19	18	19	-
Solids, Total suspended	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2	< 1	-
Turbidity (NTU)	0.3	0.4	0.6	0.5	0.2	0.4	0.4	0.2	3.3	0.3	-
Radionuclides											
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-
Radium-226 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Appendix C, Table 23

Detailed Water Chemistry Results from the Aquatic Study Area, March 2020

Parameter	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 2	Lake H Area 2	Lake J	SEQG[a]
	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Composite	Composite	Composite	
	21-Mar-2020	21-Mar-2020	18-Mar-2020	18-Mar-2020	25-Mar-2020	24-Mar-2020	23-Mar-2020	23-Mar-2020	17-Mar-2020	
Inorganic Ions										
Bicarbonate (as HCO3)	12	13	17	15	15	38	50	37	7	-
Calcium	2.7	3.0	3.4	2.9	3.0	7.0	7.8	5.4	0.6	-
Calcium, dissolved	2.9	3.2	3.7	3.1	3.4	8.2	8.2	5.9	0.7	-
Carbonate (as CO3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.6	0.6	0.8	0.9	0.7	0.2	0.3	0.3	0.2	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	0.7	0.7	1.2	1.0	1.1	1.6	3.3	2.1	0.2	-
Magnesium, dissolved	0.7	0.8	1.2	1.0	1.1	1.8	3.4	2.3	0.2	-
Potassium	0.4	0.5	0.5	0.5	0.6	0.5	1.2	1.2	0.4	-
Potassium, dissolved	0.4	0.5	0.6	0.5	0.6	0.6	1.2	1.2	0.4	-
Sodium	1.0	1.0	1.5	1.3	1.4	1.6	3.9	2.3	0.7	-
Sodium, dissolved	1.0	1.0	1.5	1.3	1.4	1.7	3.7	2.3	0.8	-
Sulphate	0.6	0.8	1.1	1.0	1.1	1.0	3.0	0.3	0.9	128[b]
Metals										
Aluminum	0.054	0.053	0.014	0.021	0.022	0.0023	0.016	0.0065	0.0087	0.005 to 0.1[c]
Aluminum, dissolved	0.052	0.042	0.011	0.015	0.015	0.0019	0.0099	0.0030	0.0073	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	5
Arsenic, dissolved (µg/L)	0.2	< 0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	5
Barium	0.010	0.013	0.0078	0.0069	0.0065	0.015	0.024	0.0034	0.0044	-
Barium, dissolved	0.010	0.012	0.0076	0.0070	0.0064	0.016	0.022	0.0029	0.0049	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	1.5
Cadmium	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	0.00001	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	0.0006	0.0004	< 0.0002	< 0.0002	0.0019	< 0.0002	0.0004	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	0.0004	0.0003	< 0.0002	< 0.0002	0.0006	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.03	0.03	0.05	0.04	0.04	0.04	0.07	0.06	0.02	0.12
Iron	0.87	1.20	0.69	0.97	0.80	1.09	1.72	2.08	0.028	0.3
Iron, dissolved	0.77	0.61	0.48	0.61	0.48	1.04	1.58	1.67	0.017	0.3
Lead	< 0.0001	0.0001	0.0010	0.0015	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0006	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	0.0005	0.0004	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0004	0.001[d]
Lithium (µg/L)	1.1	1.2	2.0	1.7	1.5	1.9	4.7	4.3	0.1	-
Lithium, dissolved (µg/L)	1.0	1.2	2.0	1.6	1.5	1.9	4.3	4.1	0.1	-
Manganese	0.079	0.074	0.080	0.033	0.016	0.20	0.31	0.14	0.0050	-
Manganese, dissolved	0.071	0.073	0.073	0.032	0.010	0.24	0.32	0.15	0.0055	-
Mercury (ng/L)	< 1	< 1	3	2	< 1	< 1	3	< 1	3	26
Molybdenum	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	31[g]
Nickel	0.0001	0.0001	0.0001	0.0002	0.0001	< 0.0001	0.0001	< 0.0001	0.0004	0.025[d]
Nickel, dissolved	0.0001	0.0001	0.0001	0.0001	0.0002	< 0.0001	0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.89	0.96	0.66	0.65	0.92	0.55	1.1	1.9	0.80	-
Rubidium, dissolved (µg/L)	0.89	0.90	0.66	0.65	0.84	0.57	1.1	1.8	0.85	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.027	0.029	0.029	0.026	0.024	0.024	0.050	0.021	0.0055	-
Strontium, dissolved	0.026	0.029	0.028	0.026	0.024	0.026	0.048	0.021	0.0060	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	0.0003	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0014	-
Tin, dissolved	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0011	-
Titanium	0.0008	0.0006	0.0002	0.0005	0.0003	< 0.0002	0.0003	< 0.0002	< 0.0002	-
Titanium, dissolved	0.0006	0.0005	0.0002	0.0003	0.0003	< 0.0002	0.0003	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	0.0007	0.0013	0.0014	0.0028	< 0.0005	0.0010	0.0034	0.0005	0.0013	0.03
Zinc, dissolved	0.0008	0.0010	0.0014	0.0011	0.0009	0.0011	0.0027	0.0010	0.0015	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients										
Ammonia (as N)	< 0.01	0.05	0.02	0.03	0.01	0.84	0.65	0.60	0.14	6.02 to 190[h]
Ammonia (as N), dissolved	0.03	0.08	0.04	0.05	0.04	0.95	0.65	0.56	0.16	6.02 to 190[h]
Carbon, Organic dissolved	8.8	7.4	4.9	4.1	4.9	7.4	11	9.6	7.1	-
Carbon, Total Organic	9.1	7.4	5.2	4.4	5.0	6.3	11	9.5	6.4	-
Nitrate (as N)	0.09	0.05	0.07	0.04	0.06	0.02	0.23	< 0.01	< 0.01	3
Nitrate (as N), dissolved	0.10	0.08	0.08	0.05	0.09	0.03	0.26	0.02	0.01	3
Nitrate (NO3)	0.40	0.22	0.31	0.18	0.26	0.09	1.0	< 0.04	< 0.04	13
Nitrate (NO3), dissolved	0.44	0.35	0.35	0.22	0.40	0.13	1.2	0.09	0.04	13
Nitrate+Nitrite (as N) calc.	0.09	0.05	0.07	0.04	0.06	0.02	0.23	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolved	0.10	0.08	0.08	0.05	0.09	0.03	0.26	0.02	0.01	-
Nitrogen, Total Kjeldahl	0.29	0.36	0.27	0.30	0.27	1.5	1.4	1.3	0.82	-
Phosphorus, Total	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.02	0.02	< 0.01	< 0.01	-
Physical Properties										
Apparent color	55	54	29	31	29	22	72	12	5	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	6.32	6.31	6.50	6.39	6.64	6.92	7.03	6.68	5.92	6.5 to 9.0
Specific Conductivity	20	22	29	24	27	57	82	54	5	-
Sum of ions	18	20	26	23	23	51	71	49	10	-
Alkalinity, Total (as CaCO3)	10	11	14	12	12	31	41	30	6	-
Solids, Total dissolved	58	55	51	45	64	66	114	62	19	-
Hardness, Total	10	10	13	11	12	24	33	22	2	-
Solids, Total suspended	1	1	< 1	< 1	< 1	4	1	7	2	-
Turbidity (NTU)	1.4	1.7	1.8	1.7	2.4	1.6	1.9	4.6	1.1	-
Radionuclides										
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	-
Radium-226 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 24

Detailed Water Chemistry Results from the Aquatic Study Area, June 2020

Parameter	Broach Lake Area 2	Hodge Lake Area 1	Jed Creek	Patterson Lake North Arm - East Basin Area 1		Patterson Lake North Arm - West Basin Area 1	Patterson Lake South Arm Area 1	Forrest Lake Area 1	Forrest Lake Area 2	Beet Lake Area 1	SEQG[a]
	Composite	Composite	Surface Grab	Above Thermocline	Below Thermocline	Composite	Composite	Mid-depth	Composite	Composite	
	02-Jun-2020	03-Jun-2020	05-Jun-2020	06-Jun-2020	06-Jun-2020	06-Jun-2020	06-Jun-2020	07-Jun-2020	08-Jun-2020	08-Jun-2020	
Inorganic Ions											
Bicarbonate (as HCO_3)	30	15	17	17	18	22	22	26	28	27	-
Calcium	3.7	2.8	2.0	2.8	2.9	3.6	3.8	3.8	4.4	4.0	-
Calcium, dissolved	3.7	2.8	2.0	2.9	3.7	3.6	3.8	3.8	4.4	4.0	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.4	1.9	0.2	0.3	0.3	0.5	0.5	0.6	0.7	0.6	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.2	0.6	0.6	0.9	0.9	1.2	1.3	1.4	1.6	1.5	-
Magnesium, dissolved	1.2	0.6	0.6	0.9	0.9	1.2	1.3	1.4	1.6	1.5	-
Potassium	0.5	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.8	0.6	-
Potassium, dissolved	0.5	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.8	0.6	-
Sodium	1.6	0.9	0.9	1.2	1.2	1.4	1.4	1.5	1.9	1.6	-
Sodium, dissolved	1.5	0.9	0.9	1.2	1.2	1.4	1.4	1.5	1.9	1.6	-
Sulphate	1.9	1.0	1.0	1.2	1.2	1.4	1.5	1.5	1.6	1.5	128[b]
Metals											
Aluminum	0.0007	0.0033	0.040	0.0061	0.0059	0.0008	0.0006	0.0065	0.0010	0.0024	0.005 to 0.1[c]
Aluminum, dissolved	< 0.0005	0.0008	0.031	0.0065	0.0047	< 0.0005	< 0.0005	0.0009	< 0.0005	0.0008	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	< 0.1	0.1	0.1	0.1	0.1	< 0.1	0.1	0.2	0.1	5
Arsenic, dissolved (µg/L)	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.1	0.1	0.1	0.2	0.1	5
Barium	0.016	0.0073	0.0074	0.010	0.011	0.0097	0.010	0.0099	0.0082	0.0097	-
Barium, dissolved	0.015	0.0070	0.0076	0.0098	0.010	0.0090	0.0093	0.0085	0.0078	0.0091	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.04	0.02	0.02	0.04	0.03	0.04	0.04	0.04	0.05	0.04	0.12
Iron	0.015	0.039	0.49	0.22	0.25	0.019	0.031	0.079	0.015	0.092	0.3
Iron, dissolved	0.0022	0.0045	0.18	0.086	0.11	0.0017	0.0033	0.0046	0.0015	0.015	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.4	2.0	1.4	2.1	2.1	2.8	2.9	3.1	3.8	3.2	-
Lithium, dissolved (µg/L)	3.2	1.9	1.4	2.2	2.2	2.7	2.9	3.1	3.8	3.3	-
Manganese	0.022	0.015	0.017	0.018	0.023	0.035	0.042	0.030	0.0087	0.016	-
Manganese, dissolved	0.0024	0.0019	0.0029	0.0006	0.0014	< 0.0005	< 0.0005	0.0026	< 0.0005	0.0008	-
Mercury (ng/L)	< 1	< 1	2	< 1	< 1	< 1	< 1	1	< 1	< 1	26
Molybdenum	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.51	0.60	0.77	0.64	0.65	0.61	0.58	0.58	0.62	0.65	-
Rubidium, dissolved (µg/L)	0.54	0.63	0.74	0.63	0.64	0.58	0.53	0.57	0.58	0.56	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.038	0.064	0.020	0.028	0.028	0.032	0.032	0.032	0.032	0.032	-
Strontium, dissolved	0.037	0.063	0.020	0.027	0.028	0.031	0.032	0.031	0.033	0.031	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	0.0013	0.0006	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.03
Zinc, dissolved	0.0016	< 0.0005	0.0010	0.0006	< 0.0005	< 0.0005	< 0.0005	0.0005	0.0013	< 0.0005	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients											
Ammonia (as N)	< 0.01	< 0.01	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	0.02	0.02	0.02	0.01	0.04	< 0.01	0.03	0.01	0.02	0.02	6.02 to 190[h]
Carbon, Organic dissolved	1.8	2.5	6.6	3.6	3.4	2.4	2.2	1.9	1.8	2.4	-
Carbon, Total Organic	1.6	2.1	6.4	3.0	2.9	1.9	2.1	1.9	1.2	2.0	-
Nitrate (as N)	0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (as N), dissolved	0.02	0.01	0.01	0.01	0.05	< 0.01	0.02	0.01	0.02	0.01	3
Nitrate (NO3)	0.04	< 0.04	< 0.04	< 0.04	0.13	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	13
Nitrate (NO3), dissolved	0.09	0.04	0.04	0.04	0.22	< 0.04	0.09	0.04	0.09	0.04	13
Nitrate+Nitrite (as N) calc.	0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolve	0.02	0.01	0.01	0.01	0.05	< 0.01	0.02	0.01	0.02	0.01	-
Nitrogen, Total Kjeldahl	0.17	0.14	0.21	0.25	0.25	0.19	0.18	0.22	0.13	0.31	-
Phosphorus, Total	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties											
Apparent color	< 1	2	42	7	7	< 1	< 1	3	< 1	1	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.37	6.98	6.66	7.12	7.00	7.09	7.20	7.48	7.49	7.46	6.5 to 9.0
Specific Conductivity	35	21	14	24	26	33	34	35	42	37	-
Sum of ions	39	22	22	24	25	31	31	35	39	37	-
Alkalinity, Total (as CaCO3)	25	12	14	14	15	18	18	21	23	22	-
Solids, Total dissolved	39	30	36	37	30	42	37	22	50	40	-
Hardness, Total	14	9	7	11	11	14	15	15	18	16	-
Solids, Total suspended	< 1	< 1	1	< 1	< 1	< 1	< 1	4	< 1	1	-
Turbidity (NTU)	0.4	0.5	1.5	1.1	1.1	0.6	0.6	1.4	0.3	1.0	-
Radionuclides											
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-
Radium-226 (Bq/L)	0.006	0.01	0.01	0.007	0.01	0.008	0.01	0.006	0.009	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Appendix C, Table 24

Detailed Water Chemistry Results from the Aquatic Study Area, June 2020

Parameter	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet		Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 1	Lake J	SEQG[a]
	Surface Grab	Composite	Surface Grab	Above Thermocline	Below Thermocline	Mid-depth	Surface Grab	Composite	Surface Grab	Surface Grab	Mid-depth	
	08-Jun-2020	07-Jun-2020	08-Jun-2020	04-Jun-2020	04-Jun-2020	04-Jun-2020	07-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-20	03-Jun-2020	
Inorganic Ions												
Bicarbonate (as HCO_3)	27	10	28	24	18	15	13	33	27	30	2	-
Calcium	3.9	1.9	3.1	2.3	2.5	2.3	2.2	5.0	3.1	3.2	0.4	-
Calcium, dissolved	3.8	1.9	3.1	2.3	2.5	2.3	3.5	4.9	3.1	3.2	0.4	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.6	0.3	0.5	0.5	0.5	0.5	0.3	< 0.1	< 0.1	0.1	< 0.1	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.4	0.5	1.1	0.8	0.9	0.8	0.8	1.2	1.3	1.3	0.1	-
Magnesium, dissolved	1.4	0.5	1.1	0.8	0.9	0.8	0.8	1.2	1.3	1.3	0.1	-
Potassium	0.6	0.4	0.6	0.5	0.5	0.5	0.5	0.3	0.5	0.7	0.3	-
Potassium, dissolved	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.7	0.2	-
Sodium	1.6	0.8	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.6	0.6	-
Sodium, dissolved	1.6	0.8	1.3	1.2	1.2	1.2	1.2	1.3	1.4	1.5	0.5	-
Sulphate	1.4	0.6	1.2	0.8	0.9	0.9	0.9	1.0	0.9	0.3	0.6	128[b]
Metals												
Aluminum	0.011	0.044	0.031	0.013	0.011	0.015	0.034	0.0040	0.0059	0.020	0.0099	0.005 to 0.1[c]
Aluminum, dissolved	0.0063	0.031	0.016	0.013	0.0096	0.0098	0.028	0.0024	0.0038	0.0064	0.0053	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	< 0.1	0.1	0.1	5
Arsenic, dissolved (µg/L)	< 0.1	0.1	0.1	< 0.1	0.1	0.1	0.1	0.1	< 0.1	0.1	0.1	5
Barium	0.0099	0.0073	0.0085	0.0058	0.0063	0.0059	0.0057	0.0061	0.0078	0.0030	0.0025	-
Barium, dissolved	0.0087	0.0066	0.0073	0.0060	0.0060	0.0052	0.0056	0.0052	0.0071	0.0018	0.0023	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00001	0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0004	< 0.0002	< 0.0002	< 0.0002	0.0004	< 0.0002	0.002[d]
Fluoride	0.04	0.02	0.03	0.03	0.03	0.03	0.04	0.02	0.03	0.03	0.01	0.12
Iron	0.19	0.94	0.44	0.52	0.60	0.61	0.56	0.32	0.76	0.39	0.061	0.3
Iron, dissolved	0.071	0.39	0.18	0.46	0.47	0.37	0.37	0.25	0.55	0.10	0.026	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.2	0.9	2.4	1.7	1.8	1.7	1.2	1.7	2.1	3.2	< 0.1	-
Lithium, dissolved (µg/L)	3.2	0.9	2.5	1.7	1.8	1.7	1.2	1.7	2.1	3.1	< 0.1	-
Manganese	0.016	0.032	0.022	0.046	0.070	0.044	0.022	0.0083	0.013	0.022	0.0028	-
Manganese, dissolved	0.0046	0.019	0.0064	0.042	0.059	0.020	0.012	0.0012	0.0026	< 0.0005	0.0011	-
Mercury (ng/L)	1	1	2	1	1	1	1	1	2	1	< 1	26
Molybdenum	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.62	0.93	0.66	0.59	0.60	0.58	0.80	0.37	0.42	1.2	0.50	-
Rubidium, dissolved (µg/L)	0.59	0.90	0.63	0.58	0.61	0.62	0.82	0.39	0.42	1.2	0.49	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.031	0.019	0.027	0.020	0.021	0.020	0.017	0.016	0.020	0.015	0.0039	-
Strontium, dissolved	0.030	0.018	0.026	0.019	0.020	0.019	0.017	0.016	0.020	0.013	0.0038	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	0.0006	0.0006	0.0002	< 0.0002	< 0.0002	0.0006	< 0.0002	< 0.0002	0.0003	< 0.0002	-
Titanium, dissolved	< 0.0002	0.0004	0.0002	< 0.0002	< 0.0002	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	0.0006	0.0008	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007	0.0008	0.0006	0.03
Zinc, dissolved	0.0006	0.0012	< 0.0005	0.0014	0.0009	0.0006	0.0013	0.0006	0.0017	0.0015	0.0007	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients												
Ammonia (as N)	< 0.01	< 0.01	0.01	< 0.01	0.02	< 0.01	< 0.01	0.02	0.02	0.02	0.01	6.02 to 190[h]
Ammonia (as N), dissolved	0.01	0.02	0.02	0.01	0.03	< 0.01	0.02	0.04	0.03	0.01	0.03	6.02 to 190[h]
Carbon, Organic dissolved	3.3	8.4	4.4	5.6	5.2	5.5	8.2	6.4	7.2	7.2	4.4	-
Carbon, Total Organic	3.2	10	4.7	5.8	5.3	6.2	7.7	6.0	7.8	7.0	4.8	-
Nitrate (as N)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (as N), dissolved	< 0.01	< 0.01	< 0.01	0.01	0.02	< 0.01	< 0.01	0.03	< 0.01	< 0.01	0.03	3
Nitrate (NO_3)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.04	< 0.04	< 0.04	< 0.04	13
Nitrate (NO_3), dissolved	< 0.04	< 0.04	< 0.04	0.04	0.09	< 0.04	< 0.04	0.13	< 0.04	< 0.04	0.13	13
Nitrate+Nitrite (as N) calc.	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolve	< 0.01	< 0.01	< 0.01	0.01	0.02	< 0.01	< 0.01	0.03	< 0.01	< 0.01	0.03	-
Nitrogen, Total Kjeldahl	0.33	0.27	0.34	0.26	0.26	0.30	0.26	0.66	0.52	0.78	0.51	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties												
Apparent color	10	55	25	33	30	33	46	13	26	6	3	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.47	6.47	7.32	6.44	6.48	6.96	6.81	7.26	6.95	6.95	6.16	6.5 to 9.0
Specific Conductivity	35	17	26	19	21	19	18	36	27	30	< 1	-
Sum of ions	36	14	36	30	24	21	19	42	34	37	4	-
Alkalinity, Total (as CaCO3)	22	8	23	20	15	12	11	27	22	25	2	-
Solids, Total dissolved	45	29	35	40	45	39	44	51	42	42	5	-
Hardness, Total	15	7	12	9	10	9	9	17	13	13	1	-
Solids, Total suspended	< 1	1	4	< 1	1	1	< 1	1	2	8	1	-
Turbidity (NTU)	1.3	2.0	2.5	1.5	1.9	2.0	1.5	1.2	2.2	3.2	1.3	-
Radionuclides												
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	0.005	0.01	0.008	-
Radium-226 (Bq/L)	0.01	< 0.005	< 0.005	0.009	0.009	< 0.005	0.007	< 0.005	0.01	0.009	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 25

Detailed Water Chemistry Results from the Aquatic Study Area, July 2020

Parameter	Broach Lake Area 2		Hodge Lake Area 1		Jed Creek	Patterson Lake North Arm - East Basin Area 1		Patterson Lake North Arm - West Basin Area 1		Patterson Lake South Arm Area 1		Forrest Lake Area 1	Forrest Lake Area 2		SEQG[a]
	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Surface Grab	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Composite	Above Thermocline	Below Thermocline	
	22-Jul-2020	22-Jul-2020	24-Jul-2020	24-Jul-2020	27-Jul-2020	27-Jul-2020	27-Jul-2020	27-Jul-2020	27-Jul-2020	28-Jul-2020	28-Jul-2020	25-Jul-2020	25-Jul-2020	25-Jul-2020	
Inorganic Ions															
Bicarbonate (as HCO_3)	20	20	15	17	16	115	32	120	110	126	95	21	28	28	-
Calcium	3.7	3.8	2.8	2.9	2.4	2.9	3.0	3.7	3.7	3.8	3.9	3.8	4.4	4.5	-
Calcium, dissolved	3.7	3.9	2.8	2.9	2.5	2.9	3.0	3.7	3.8	3.8	3.9	3.8	4.4	4.5	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.4	0.4	1.9	2.0	0.2	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.8	0.8	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.2	1.3	0.6	0.7	0.7	0.9	0.9	1.3	1.3	1.3	1.4	1.4	1.7	1.7	-
Magnesium, dissolved	1.2	1.3	0.6	0.7	0.7	0.9	0.9	1.3	1.3	1.3	1.4	1.4	1.7	1.7	-
Potassium	0.5	0.5	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.8	0.8	-
Potassium, dissolved	0.6	0.6	0.3	0.4	0.3	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.8	0.8	-
Sodium	1.6	1.6	0.9	1.0	1.0	1.2	1.2	1.4	1.4	1.4	1.4	1.4	1.9	2.0	-
Sodium, dissolved	1.5	1.6	0.9	1.0	1.0	1.2	1.2	1.4	1.4	1.4	1.5	1.4	1.9	2.0	-
Sulphate	1.9	1.9	1.0	1.0	1.0	1.2	1.2	1.4	1.5	1.5	1.6	1.5	1.6	1.6	128[b]
Metals															
Aluminum	0.0025	0.0009	0.0079	0.0023	0.040	0.0058	0.0038	0.0019	0.0014	0.0016	0.0038	0.0084	0.0017	0.0013	0.005 to 0.1[c]
Aluminum, dissolved	0.0028	0.0025	0.0023	0.0006	0.034	0.0040	0.0020	0.0008	< 0.0005	< 0.0005	< 0.0005	0.0054	0.0005	0.013	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	0.1	0.2	0.1	5
Arsenic, dissolved (µg/L)	< 0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1	0.2	0.1	5
Barium	0.014	0.016	0.0065	0.0071	0.0095	0.0084	0.013	0.0082	0.0097	0.0082	0.010	0.0087	0.0074	0.0080	-
Barium, dissolved	0.014	0.015	0.0063	0.0069	0.0093	0.0082	0.012	0.0082	0.0092	0.0082	0.0097	0.0082	0.0074	0.0080	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00001	0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.04	0.03	0.02	0.02	0.02	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.12
Iron	0.012	0.011	0.0084	0.015	0.40	0.077	0.79	0.0091	0.012	0.016	0.017	0.056	0.0079	0.0007	0.3
Iron, dissolved	0.0033	0.0010	0.0025	0.0020	0.28	0.052	0.40	0.0060	0.0013	0.0042	0.0022	0.021	0.0036	0.014	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.0	3.1	1.8	1.9	1.7	2.1	2.0	2.6	2.6	2.7	2.7	2.7	3.6	3.6	-
Lithium, dissolved (µg/L)	3.1	3.0	1.8	1.8	1.7	2.0	2.0	2.6	2.6	2.7	2.7	2.7	3.6	3.6	-
Manganese	0.0054	0.011	0.0031	0.0062	0.0090	0.017	0.16	0.0040	0.015	0.0037	0.023	0.012	0.0023	< 0.0005	-
Manganese, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0062	0.010	0.11	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0057	0.0006	0.0050	-
Mercury (ng/L)	< 1	< 1	< 1	< 1	2	< 1	2	< 1	< 1	< 1	< 1	< 1	1	< 1	26
Molybdenum	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.51	0.51	0.67	0.62	0.59	0.60	0.62	0.57	0.61	0.60	0.57	0.60	0.64	0.62	-
Rubidium, dissolved (µg/L)	0.52	0.50	0.63	0.64	0.59	0.62	0.67	0.56	0.61	0.56	0.61	0.60	0.59	0.61	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.036	0.037	0.060	0.062	0.025	0.027	0.027	0.030	0.031	0.034	0.031	0.031	0.032	0.032	-
Strontium, dissolved	0.036	0.037	0.060	0.062	0.025	0.027	0.027	0.030	0.031	0.030	0.031	0.031	0.031	0.032	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	< 0.0005	< 0.0005	0.0010	0.0012	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0010	< 0.0005	< 0.0005	0.03
Zinc, dissolved	< 0.0005	0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	0.0015	< 0.0005	< 0.0005	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients															
Ammonia (as N)	< 0.01	0.02	0.02	0.01	0.01	0.02	0.19	0.02	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.02	6.02 to 190[h]
Ammonia (as N), dissolved	0.03	0.04	0.03	0.03	0.03	0.03	0.15	< 0.01	0.02	0.02	0.02	0.03	0.02	0.02	6.02 to 190[h]
Carbon, Organic dissolved	1.7	1.7	2.8	2.2	6.8	3.2	3.8	2.2	1.8	2.4	2.0	2.7	1.3	1.3	-
Carbon, Total Organic	1.6	1.6	2.2	2.0	7.2	3.3	3.0	2.1	1.9	1.9	1.8	2.7	1.3	1.3	-
Nitrate (as N)	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (as N), dissolved	0.02	0.03	0.01	0.02	< 0.01	0.02	0.02	< 0.01	0.02	0.02	0.02	0.01	0.01	0.02	3
Nitrate (NO3)	< 0.04	0.09	< 0.04	< 0.04	< 0.04	< 0.04	0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	13
Nitrate (NO3), dissolved	0.09	0.13	0.04	0.09	< 0.04	0.09	0.09	< 0.04	0.09	0.09	0.09	0.04	0.04	0.09	13
Nitrate+Nitrite (as N) calc.	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolv	0.02	0.03	0.01	0.02	< 0.01	0.02	0.02	< 0.01	0.02	0.02	0.02	0.01	0.01	0.02	-
Nitrogen, Total Kjeldahl	0.15	0.19	0.18	0.18	0.30	0.17	0.33	0.17	0.14	0.18	0.14	0.23	0.15	0.17	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties															
Apparent color	< 1	< 1	3	2	58	7	16	1	1	< 1	< 1	9	< 1	< 1	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.45	7.34	6.62	6.49	6.46	5.46	7.23	5.54	5.57	5.52	5.65	7.31	7.55	7.61	6.5 to 9.0
Specific Conductivity	32	32	20	21	16	23	24	32	32	32	34	32	40	42	-
Sum of ions	29	30	22	25	22	122	39	129	119	135	104	30	39	39	-
Alkalinity, Total (as CaCO3)	16	16	12	14	13	94	26	98	90	103	78	17	23	23	-
Solids, Total dissolved	20	23	14	18	25	32	37	43	37	30	34	31	33	30	-
Hardness, Total	14	15	9	10	9	11	11	14	14	15	15	15	18	18	-
Solids, Total suspended	< 1	< 1	< 1	< 1	< 1	2	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Turbidity (NTU)	0.4	0.4	0.4	0.6	1.1	1.2	2.2	1.9	1.9	0.4	0.6	0.9	1.3	0.4	-
Radionuclides															
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-
Radium-226 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Appendix C, Table 25

Detailed Water Chemistry Results from the Aquatic Study Area, July 2020

Parameter	Beet Lake Area 1		Beet Creek	Naomi Lake		Clearwater River Area 1	Lloyd Lake Inlet		Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 1	Lake J	SEQG[a]
	Above Thermocline	Below Thermocline	Surface Grab	Above Thermocline	Below Thermocline	Surface Grab	Above Thermocline	Below Thermocline	Surface Grab	Surface Grab	Composite	Surface Grab	Composite	Composite	
	26-Jul-2020	26-Jul-2020	26-Jul-2020	26-Jul-2020	26-Jul-2020	26-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	29-Jul-2020	25-Jul-2020	27-Jul-2020	27-Jul-2020	24-Jul-2020	
Inorganic Ions															
Bicarbonate (as HCO_3)	24	26	27	77	96	16	30	12	106	10	38	34	33	11	-
Calcium	4.1	4.2	3.9	2.3	2.4	3.2	2.6	2.6	2.7	3.0	5.1	3.4	3.2	0.4	-
Calcium, dissolved	4.1	4.2	3.9	2.3	2.4	3.3	2.6	2.6	2.7	3.0	5.1	3.4	3.3	0.4	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.6	0.6	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.3	< 0.1	< 0.1	0.2	< 0.1	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.5	1.5	1.5	0.6	0.6	1.1	0.9	0.9	0.9	1.1	1.3	1.5	1.4	0.1	-
Magnesium, dissolved	1.5	1.5	1.5	0.6	0.6	1.1	0.9	0.9	1.0	1.1	1.3	1.5	1.4	0.1	-
Potassium	0.7	0.7	0.7	0.4	0.4	0.6	0.5	0.5	0.5	0.4	0.4	0.5	0.8	0.3	-
Potassium, dissolved	0.6	0.6	0.6	0.4	0.4	0.6	0.5	0.5	0.5	0.4	0.3	0.5	0.8	0.3	-
Sodium	1.7	1.7	1.7	0.8	0.8	1.3	1.2	1.2	1.2	1.2	1.3	1.4	1.6	0.6	-
Sodium, dissolved	1.7	1.7	1.6	0.8	0.8	1.3	1.2	1.2	1.2	1.2	1.3	1.4	1.6	0.5	-
Sulphate	1.4	1.5	1.4	0.5	0.5	1.1	0.7	0.7	0.7	0.8	1.0	1.0	0.2	0.7	128[b]
Metals															
Aluminum	0.0018	0.0012	0.011	0.042	0.038	0.027	0.0086	0.0090	0.013	0.046	0.0032	0.010	0.043	0.016	0.005 to 0.1[c]
Aluminum, dissolved	< 0.0005	0.0008	0.0076	0.032	0.027	0.014	0.0080	0.0081	0.0094	0.034	0.0017	0.0044	0.0063	0.0096	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	< 0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	< 0.1	< 0.1	0.1	0.1	5
Arsenic, dissolved (µg/L)	< 0.1	< 0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	< 0.1	< 0.1	0.1	0.1	5
Barium	0.0079	0.0097	0.0075	0.0080	0.0089	0.0078	0.0063	0.0061	0.0066	0.0081	0.0050	0.0071	0.0011	0.0027	-
Barium, dissolved	0.0077	0.0093	0.0072	0.0074	0.0085	0.0068	0.0056	0.0056	0.0057	0.0073	0.0046	0.0057	0.0009	0.0018	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	0.00001	0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.04	0.04	0.04	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.12
Iron	0.020	0.065	0.17	0.75	0.99	0.42	0.43	0.42	0.59	1.14	0.056	0.39	0.093	0.035	0.3
Iron, dissolved	0.0038	0.0091	0.11	0.48	0.53	0.19	0.29	0.29	0.37	0.69	0.022	0.18	0.0093	0.012	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.2	3.2	3.1	1.0	1.0	2.2	1.6	1.7	1.6	1.1	1.6	2.1	3.0	< 0.1	-
Lithium, dissolved (µg/L)	3.1	3.2	3.1	1.0	1.0	2.3	1.7	1.7	1.6	1.1	1.5	2.0	3.0	< 0.1	-
Manganese	0.0063	0.032	0.011	0.029	0.068	0.032	0.019	0.021	0.036	0.043	0.015	0.029	0.024	0.0035	-
Manganese, dissolved	< 0.0005	0.0009	0.0051	0.0061	0.035	0.0042	0.0028	0.0030	0.0029	0.031	< 0.0005	0.0075	< 0.0005	0.0010	-
Mercury (ng/L)	< 1	< 1	1	2	1	1	2	2	2	2	< 1	2	< 1	< 1	26
Molybdenum	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.57	0.61	0.65	0.91	0.92	0.70	0.70	0.67	0.69	0.80	0.36	0.54	1.3	0.66	-
Rubidium, dissolved (µg/L)	0.58	0.60	0.56	0.95	0.92	0.74	0.66	0.68	0.68	0.77	0.39	0.44	1.2	0.70	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.031	0.032	0.030	0.023	0.023	0.028	0.022	0.022	0.023	0.022	0.016	0.022	0.014	0.0037	-
Strontium, dissolved	0.030	0.031	0.029	0.023	0.023	0.027	0.022	0.022	0.022	0.022	0.016	0.021	0.013	0.0034	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	< 0.0002	0.0006	0.0005	0.0004	< 0.0002	< 0.0002	< 0.0002	0.0006	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	< 0.0002	0.0003	0.0004	0.0002	< 0.0002	< 0.0002	0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	< 0.0005	0.0010	0.0007	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0013	0.0006	0.0009	0.03
Zinc, dissolved	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0010	0.0005	< 0.0005	< 0.0005	< 0.0005	0.0006	0.0007	0.0006	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients															
Ammonia (as N)	< 0.01	0.04	0.01	< 0.01	0.04	< 0.01	0.02	0.01	0.02	0.02	0.02	0.03	0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	< 0.01	0.03	0.01	0.01	0.06	0.03	0.04	< 0.01	0.03	0.03	0.03	0.05	0.03	0.02	6.02 to 190[h]
Carbon, Organic dissolved	2.2	2.0	3.8	9.5	9.2	5.4	6.4	6.8	6.6	11	6.2	8.4	7.0	5.8	-
Carbon, Total Organic	2.2	2.0	4.1	9.2	9.3	5.2	6.4	6.1	6.7	11	6.0	8.6	7.2	5.7	-
Nitrate (as N)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (as N), dissolved	< 0.01	0.02	< 0.01	< 0.01	0.01	0.01	0.01	< 0.01	0.01	0.02	0.01	0.01	0.01	0.01	3
Nitrate (NO3)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	13
Nitrate (NO3), dissolved	< 0.04	0.09	< 0.04	< 0.04	0.04	0.04	0.04	< 0.04	0.04	0.09	0.04	0.04	0.04	0.04	13
Nitrate+Nitrite (as N) calc.	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolved	< 0.01	0.02	< 0.01	< 0.01	0.01	0.01	0.01	< 0.01	0.01	0.02	0.01	0.01	0.01	0.01	-
Nitrogen, Total Kjeldahl	0.24	0.21	0.28	0.32	0.35	0.25	0.40	0.37	0.41	0.42	0.70	1.1	0.64	0.62	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	0.01	0.01	< 0.01	0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties															
Apparent color	2	2	24	60	62	37	39	39	45	86	9	24	5	7	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.53	7.31	7.41	5.44	5.41	7.20	6.36	7.23	5.46	6.82	6.97	6.72	6.93	5.50	6.5 to 9.0
Specific Conductivity	36	38	33	14	15	25	21	22	21	22	35	28	29	< 1	-
Sum of ions	34	36	37	82	101	24	36	18	112	17	47	42	40	13	-
Alkalinity, Total (as CaCO3)	20	21	22	63	79	13	25	10	87	8	31	28	27	9	-
Solids, Total dissolved	22	26	21	30	37	26	31	32	29	50	32	33	28	21	-
Hardness, Total	16	17	16	8	8	12	10	10	10	12	18	15	14	1	-
Solids, Total suspended	< 1	< 1	< 1	< 1	2	3	< 1	< 1	1	2	< 1	7	1	< 1	-
Turbidity (NTU)	1.4	0.8	1.3	2.5	4.6	2.8	1.6	1.6	2.2	3.2	1.8	5.4	3.1	1.7	-
Radionuclides															
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.03	0.03	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.009	< 0.008	0.01	-
Radium-226 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 26

Detailed Water Chemistry Results from the Aquatic Study Area, September 2020

Parameter	Broach Lake Area 2		Hodge Lake Area 1		Jed Creek	Patterson Lake North Arm - East Basin Area 1	Patterson Lake North Arm - West Basin Area 1		Patterson Lake South Arm Area 1		Forrest Lake Area 1	SEQG[a]
	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Surface Grab	Composite	Above Thermocline	Below Thermocline	Above Thermocline	Below Thermocline	Mid-depth	
	19-Sep-2020	19-Sep-2020	20-Sep-2020	20-Sep-2020	22-Sep-2020	24-Sep-2020	24-Sep-2020	24-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	
Inorganic Ions												
Bicarbonate (as HCO_3)	24	20	10	11	7	26	26	16	28	21	20	-
Calcium	3.6	3.7	2.7	2.7	2.3	2.8	3.6	3.7	3.8	3.9	3.5	-
Calcium, dissolved	3.8	3.9	2.8	2.8	2.4	2.9	3.8	3.8	3.8	4.0	3.8	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.4	0.4	1.8	1.9	0.2	0.4	0.6	0.6	0.6	0.6	0.6	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.2	1.2	0.7	0.6	0.6	1.0	1.3	1.3	1.3	1.4	1.5	-
Magnesium, dissolved	1.3	1.4	0.7	0.7	0.7	1.0	1.4	1.4	1.4	1.5	1.4	-
Potassium	0.6	0.6	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	-
Potassium, dissolved	0.6	0.6	0.3	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	-
Sodium	1.5	1.6	0.9	0.9	0.9	1.2	1.4	1.4	1.4	1.4	1.4	-
Sodium, dissolved	1.5	1.6	0.9	0.9	0.9	1.2	1.4	1.4	1.4	1.4	1.4	-
Sulphate	1.8	1.9	1.0	1.0	1.0	1.1	1.5	1.4	1.4	1.6	1.4	128[b]
Metals												
Aluminum	0.0017	0.0022	0.0070	0.0053	0.053	0.0036	0.0020	0.0006	0.0015	0.0010	0.0025	0.005 to 0.1[c]
Aluminum, dissolved	0.0018	0.0017	0.0038	0.0029	0.048	0.0020	0.0013	0.0006	0.0012	0.0012	0.0019	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	0.1	< 0.1	< 0.1	0.1	0.1	< 0.1	< 0.1	0.1	0.1	< 0.1	5
Arsenic, dissolved (µg/L)	0.1	0.3	< 0.1	< 0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	5
Barium	0.015	0.016	0.0067	0.0068	0.0092	0.0086	0.0084	0.010	0.0088	0.011	0.0090	-
Barium, dissolved	0.014	0.015	0.0065	0.0064	0.0088	0.0081	0.0082	0.010	0.0084	0.011	0.0087	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.04	0.04	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.12
Iron	0.018	0.013	0.018	0.017	0.64	0.14	0.013	0.011	0.020	0.017	0.031	0.3
Iron, dissolved	0.0014	0.0015	0.0042	0.0045	0.43	0.056	0.0031	0.0007	0.0093	0.0021	0.013	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	2.9	3.0	1.7	1.7	1.4	1.9	2.5	2.6	2.5	2.6	2.5	-
Lithium, dissolved (µg/L)	2.8	3.0	1.7	1.7	1.4	1.9	2.5	2.4	2.4	2.5	2.5	-
Manganese	0.0080	0.016	0.0026	0.0033	0.014	0.025	0.0060	0.013	0.0084	0.034	0.0082	-
Manganese, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.011	0.0026	< 0.0005	< 0.0005	0.0022	< 0.0005	0.0030	-
Mercury (ng/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	26
Molybdenum	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.50	0.52	0.65	0.66	0.60	0.66	0.63	0.60	0.56	0.58	0.58	-
Rubidium, dissolved (µg/L)	0.50	0.51	0.60	0.64	0.63	0.64	0.57	0.60	0.62	0.55	0.57	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.036	0.037	0.059	0.060	0.023	0.026	0.029	0.031	0.030	0.031	0.030	-
Strontium, dissolved	0.036	0.036	0.058	0.058	0.023	0.026	0.029	0.030	0.030	0.030	0.030	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.03
Zinc, dissolved	< 0.0005	0.0014	< 0.0005	< 0.0005	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients												
Ammonia (as N)	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	6.02 to 190[h]
Ammonia (as N), dissolved	< 0.01	0.01	< 0.01	< 0.01	0.02	0.03	0.02	0.02	< 0.01	< 0.01	< 0.01	6.02 to 190[h]
Carbon, Organic dissolved	1.6	1.5	2.3	2.3	8.4	3.4	2.0	1.9	2.0	1.7	2.0	-
Carbon, Total Organic	1.7	1.6	2.3	2.3	8.8	3.5	1.9	1.8	1.9	1.5	2.1	-
Nitrate (as N)	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	3
Nitrate (as N), dissolved	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	3
Nitrate (NO3)	< 0.04	0.09	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.09	< 0.04	13
Nitrate (NO3), dissolved	< 0.04	0.22	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	-
Nitrite+Nitrate-nitrogen, calc. dissolv	< 0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	-
Nitrogen, Total Kjeldahl	0.13	0.15	0.14	0.14	0.22	0.26	0.15	0.13	0.14	0.11	0.18	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties												
Apparent color	< 1	< 1	5	4	79	9	1	1	1	< 1	4	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.30	7.21	6.98	6.98	6.81	7.17	7.33	7.22	7.35	7.20	7.27	6.5 to 9.0
Specific Conductivity	30	31	19	19	14	22	30	31	30	32	30	-
Sum of ions	33	30	17	18	12	33	35	25	37	30	29	-
Alkalinity, Total (as CaCO3)	20	16	8	9	6	21	21	13	23	17	16	-
Solids, Total dissolved	39	42	22	25	32	35	39	42	35	38	30	-
Hardness, Total	14	14	10	9	8	11	14	14	15	15	15	-
Solids, Total suspended	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Turbidity (NTU)	0.5	0.6	0.5	0.6	2.0	1.2	0.4	0.5	0.6	0.6	0.7	-
Radionuclides												
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.006	< 0.005	-
Radium-226 (Bq/L)	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	0.006	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Appendix C, Table 26

Detailed Water Chemistry Results from the Aquatic Study Area, September 2020

Parameter	Forrest Lake Area 2	Beet Lake Area 1	Beet Creek	Naomi Lake	Clearwater River Area 1	Lloyd Lake Inlet	Lloyd Lake Outlet	Warner Rapids	Lake D	Lake G Area 1	Lake H Area 1	Lake J	SEQG[a]
	Composite	Composite	Surface Grab	Composite	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	Surface Grab	Surface Grab	Composite	
	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	21-Sep-2020	21-Sep-2020	26-Sep-2020	22-Sep-2020	22-Sep-2020	22-Sep-2020	20-Sep-2020	
Inorganic Ions													
Bicarbonate (as HCO_3)	37	34	22	2	20	8	15	15	29	27	26	4	-
Calcium	4.4	4.1	4.0	2.0	3.2	2.0	2.3	2.5	4.8	3.4	3.0	0.4	-
Calcium, dissolved	4.6	4.2	4.2	2.1	3.3	2.3	2.5	2.7	4.9	3.5	3.2	0.6	-
Carbonate (as CO_3)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Chloride	0.8	0.7	0.6	0.4	0.6	0.6	0.5	0.4	< 0.1	< 0.1	0.2	< 0.1	120
Hydroxide (as OH)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Magnesium	1.6	1.5	1.5	0.5	1.1	0.9	0.8	0.9	1.2	1.3	1.3	0.2	-
Magnesium, dissolved	2.0	1.6	1.6	0.6	1.2	0.8	1.0	1.0	1.3	1.6	1.4	0.2	-
Potassium	0.8	0.7	0.7	0.4	0.6	0.4	0.4	0.5	0.3	0.5	0.7	0.3	-
Potassium, dissolved	0.9	0.7	0.7	0.4	0.6	0.4	0.4	0.5	0.4	0.5	0.8	0.4	-
Sodium	1.9	1.7	1.7	0.8	1.3	1.2	1.2	1.2	1.3	1.4	1.5	0.5	-
Sodium, dissolved	1.9	1.7	1.7	0.8	1.3	1.2	1.1	1.3	1.3	1.4	1.6	0.5	-
Sulphate	1.7	1.5	1.5	0.7	1.1	0.7	0.7	0.8	1.0	0.9	0.3	0.9	128[b]
Metals													
Aluminum	0.0040	0.0015	0.0068	0.052	0.034	0.011	0.014	0.031	0.0049	0.0086	0.015	0.025	0.005 to 0.1[c]
Aluminum, dissolved	0.0010	0.0023	0.0090	0.047	0.021	0.0083	0.0087	0.022	0.0018	0.0045	0.0058	0.018	0.005 to 0.1[c]
Antimony	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Antimony, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Arsenic (µg/L)	0.1	< 0.1	< 0.1	0.2	< 0.1	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	0.2	5
Arsenic, dissolved (µg/L)	0.1	0.1	0.1	0.2	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.2	5
Barium	0.0074	0.0086	0.0082	0.0082	0.0084	0.0056	0.0059	0.0058	0.0055	0.0076	0.0015	0.0044	-
Barium, dissolved	0.0073	0.0079	0.0078	0.0080	0.0072	0.0053	0.0054	0.0055	0.0052	0.0071	0.0012	0.0042	-
Beryllium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Beryllium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Bismuth	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Bismuth, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Boron	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Boron, dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.5
Cadmium	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cadmium, dissolved	< 0.00001	< 0.00001	0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00004 to 0.00005[d]
Cesium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Cesium, dissolved	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
Chromium	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Chromium, dissolved	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.001
Cobalt	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Cobalt, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00078[e,f]
Copper	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Copper, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.002[d]
Fluoride	0.06	0.05	0.05	0.02	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.02	0.12
Iron	0.010	0.067	0.11	1.02	0.48	0.40	0.49	0.78	0.040	0.35	0.076	0.026	0.3
Iron, dissolved	0.0007	0.016	0.056	0.68	0.20	0.25	0.31	0.53	0.020	0.20	0.011	0.024	0.3
Lead	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.001[d]
Lead, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.001[d]
Lithium (µg/L)	3.4	2.9	2.9	0.8	2.2	1.4	1.4	1.1	1.5	2.1	2.9	< 0.1	-
Lithium, dissolved (µg/L)	3.3	2.8	2.9	0.8	2.1	1.5	1.5	1.1	1.4	2.0	2.8	< 0.1	-
Manganese	0.0021	0.024	0.015	0.032	0.040	0.016	0.020	0.024	0.0060	0.013	0.013	0.0035	-
Manganese, dissolved	< 0.0005	0.0024	0.0068	0.025	0.0077	0.0037	0.0042	0.014	0.0010	0.0036	0.0006	0.0030	-
Mercury (ng/L)	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	26
Molybdenum	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Molybdenum, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	31[g]
Nickel	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0001	0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Nickel, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.025[d]
Rubidium (µg/L)	0.60	0.62	0.64	0.84	0.70	0.61	0.53	0.83	0.35	0.48	1.2	1.1	-
Rubidium, dissolved (µg/L)	0.61	0.61	0.60	0.82	0.69	0.60	0.55	0.86	0.37	0.39	1.2	1.1	-
Selenium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Selenium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.001
Silver	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Silver, dissolved	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00025
Strontium	0.031	0.031	0.030	0.020	0.027	0.020	0.020	0.018	0.016	0.022	0.014	0.0049	-
Strontium, dissolved	0.031	0.031	0.031	0.020	0.026	0.020	0.020	0.018	0.016	0.021	0.013	0.0049	-
Tellurium (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Tellurium, dissolved (µg/L)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
Thallium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Thallium, dissolved	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008
Tin	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Tin, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Titanium	< 0.0002	< 0.0002	< 0.0002	0.0005	0.0006	< 0.0002	0.0002	0.0004	< 0.0002	< 0.0002	< 0.0002	0.0002	-
Titanium, dissolved	< 0.0002	< 0.0002	< 0.0002	0.0004	0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-
Uranium (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Uranium, dissolved (µg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	15
Vanadium	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Vanadium, dissolved	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.12[e]
Zinc	< 0.0005	< 0.0005	< 0.0005	0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0009	0.03
Zinc, dissolved	< 0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005	0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0008	0.03
Zirconium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Zirconium, dissolved	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Nutrients													
Ammonia (as N)	< 0.01	< 0.01	< 0.01	0.02	< 0.01	0.01	< 0.01	< 0.01	0.03	0.03	< 0.01	0.41	6.02 to 190[h]
Ammonia (as N), dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.02	0.02	0.04	0.02	0.01	0.41	6.02 to 190[h]
Carbon, Organic dissolved	1.3	2.0	3.6	11	5.4	6.5	6.6	7.8	6.3	8.8	7.0	5.6	-
Carbon, Total Organic	1.3	2.1	2.8	12	5.1	6.5	7.7	8.3	6.4	11	7.5	5.9	-
Nitrate (as N)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (as N), dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3
Nitrate (NO3)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	13
Nitrate (NO3), dissolved	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	13
Nitrate+Nitrite (as N) calc.	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrite+Nitrate-nitrogen, dissolv	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Nitrogen, Total Kjeldahl	0.11	0.18	0.18	0.31	0.28	0.30	0.28	0.30	0.64	0.87	0.55	1.0	-
Phosphorus, Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.02	< 0.01	< 0.01	-
Phosphorus, Total dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-
Physical Properties													
Apparent color	< 1	3	10	81	28	38	40	53	10	30	7	17	-
Alkalinity, Phenolphthalein	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	-
pH (pH units)	7.45	7.35	7.32	6.63	7.16	6.92	6.98	7.00	7.35	7.14	7.28	6.34	6.5 to 9.0
Specific Conductivity	39	36	36	12	25	16	18	19	32	28	29	4	-
Sum of ions	48	44	32	7	28	14	21	21	38	34	33	7	-
Alkalinity, Total (as CaCO3)	30	28	18	2	16	7	12	12	24	22	21	3	-
Solids, Total dissolved	35	40	27	40	39	34	36	42	37	45	40	16	-
Hardness, Total	18	16	16	7	12	9	9	10	17	14	13	2	-
Solids, Total suspended	< 1	< 1	< 1	< 1	1	< 1	< 1	3	2	4	6	< 1	-
Turbidity (NTU)	0.4	0.9	0.8	2.6	3.4	2.0	2.6	2.0	1.3	4.1	1.7	2.0	-
Radionuclides													
Lead-210 (Bq/L)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-
Polonium-210 (Bq/L)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	< 0.005	0.01	-
Radium-226 (Bq/L)	< 0.005	< 0.005	< 0.005	0.008	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11
Thorium-230 (Bq/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-

Note: All values are in mg/L unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) SEQG = Saskatchewan Environmental Quality Guidelines for freshwater aquatic life (GS 2020).

b) Sulphate guideline based on hardness: 128 mg/L at hardness = 0 mg/L to 30 mg/L; 218 mg/L at hardness = 31 mg/L to 75 mg/L; 309 mg/L at hardness = 76 mg/L to 180 mg/L; 429 mg/L at hardness = 181 mg/L to 250 mg/L.

c) Aluminum guideline based on field pH measurements: 0.005 mg/L if pH < 6.5 or 0.1 mg/L if pH ≥ 6.5.

d) Guideline based on hardness.

e) No SEQG exists, therefore, the guideline is based on the Federal Environmental Quality Guidelines (GC 2019).

f) Cobalt guideline is based on hardness = 100 mg/L. For other hardness values the following formula was used: FEQG = exp{(0.414[ln(hardness)] - 1.887}.

g) Molybdenum guideline is based on the Saskatchewan Surface Water Quality Objectives (WSA 2018).

h) Ammonia guideline based on field measured water temperature and pH.

Appendix C, Table 27

Summary of Sediment Chemistry Results and Sediment Quality Guidelines From the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Broach Lake Area 1						Hodge Lake Area 2						Patterson Lake North Arm - East Basin Area 2						Patterson Lake North Arm - East Basin Area 3						Guideline(s)				
	23, 24-Sep-2018						22-Sep-2018						01, 02-Oct-2018						28-Sep-2019										
	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
Inorganic Ions																													
Calcium	4	-	**4800**	390	4400	5200	5	-	**920**	130	760	1100	5	-	**1700**	960	450	2500	5	-	**1620**	303	1300	1900	-	-	-	-	-
Magnesium	4	-	**960**	26	940	1000	5	-	**300**	55	260	400	5	-	**500**	250	180	700	5	-	**460**	57	400	520	-	-	-	-	-
Potassium	4	-	**790**	100	710	940	5	-	**410**	56	350	490	5	-	**510**	200	250	680	5	-	**344**	78	280	470	-	-	-	-	-
Sodium	4	-	**210**	9.6	200	220	5	-	**90**	9	80	100	5	-	**90**	10	70	100	5	2	**20**	18	<10	50	-	-	-	-	-
Metals																													
Aluminum	4	-	**3730**	419	3340	4290	5	-	**1810**	328	1560	2330	5	-	**3050**	1840	1040	4550	5	-	**3278**	235	3010	3520	-	-	-	-	-
Antimony	4	3	**0.1**	0.05	< 0.2	0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	0	< 0.2	< 0.2	-	-	-	-	-
Arsenic	4	-	**4.5**	0.57	3.8	5.2	5	-	**1.2**	0.15	1	1.4	5	-	**2.6**	1.5	0.9	3.8	5	-	**3.6**	0.9	2.8	4.9	5.9	9.8	17	522	20.8
Barium	4	-	**130**	9.6	120	140	5	-	**34**	6.1	28	43	5	-	**74**	36	25	110	5	-	**107**	37	72	160	-	-	-	-	-
Beryllium	4	-	**0.2**	0	0.2	0.2	5	2	**0.08**	0.03	< 0.1	0.1	5	2	**0.2**	0.1	< 0.1	0.3	5	-	**0.3**	0.1	0.2	0.3	-	-	-	-	-
Boron	4	-	**14**	1.3	13	16	5	-	**4**	1	3	6	5	-	**17**	8.8	4	25	5	-	**12**	1	10	13	-	-	-	-	-
Cadmium	4	-	**0.6**	0.08	0.5	0.7	5	-	**0.3**	0.09	0.2	0.4	5	-	**0.3**	0.04	0.2	0.3	5	-	**0.1**	0	0.1	0.1	0.6	-	3.5	-	-
Cesium[f]	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	**-**	-	-	-	5	-	**0.1**	0	0.1	0.1	-	-	-	-	-
Chromium	4	-	**8**	0.4	7.5	8.4	5	-	**3.1**	0.61	2.6	4.1	5	-	**5.4**	4	0.9	8.8	5	-	**7.6**	1.3	5.9	9.3	37.3	-	90	-	-
Cobalt	4	-	**2.3**	0.34	2	2.8	5	-	**0.96**	0.15	0.8	1.2	5	1	**1.6**	1.4	< 0.2	2.7	5	-	**2.8**	0.4	2.4	3.2	-	-	-	-	-
Copper	4	-	**7.3**	0.59	6.6	7.9	5	-	**1.8**	0.42	1.5	2.5	5	1	**2.9**	2.3	< 0.5	4.7	5	-	**2.9**	0.4	2.4	3.3	35.7	22.2	197	-	-
Iron	4	-	**7800**	1200	6100	8700	5	-	**5960**	1110	4320	7200	5	-	**37300**	28800	4530	61000	5	-	**66100**	11780	55100	82700	-	-	-	-	-
Lead	4	-	**4.6**	3.5	1.9	9.5	5	-	**2.6**	0.38	2.3	3.2	5	-	**3.9**	2.1	1.6	5.8	5	-	**3.7**	0.5	3.1	4.5	35	36.7	91.3	-	-
Manganese	4	-	**360**	41	310	410	5	-	**280**	70	220	380	5	-	**400**	250	78	680	5	-	**926**	455	560	1530	-	-	-	-	-
Molybdenum	4	-	**2.5**	0.41	1.9	2.8	5	-	**0.2**	0.1	0.1	0.4	5	-	**0.82**	0.48	0.2	1.2	5	-	**1.2**	0.2	0.9	1.4	-	13.8	-	245	22.6
Nickel	4	-	**9.2**	0.58	8.7	10	5	-	**2.7**	0.51	2.2	3.5	5	-	**3.5**	2.6	0.6	5.8	5	-	**4.4**	1.0	3.2	5.8	-	23.4	-	326	21.4
Selenium	4	-	**0.7**	0.2	0.5	0.8	5	-	**0.1**	0.05	0.1	0.2	5	2	**0.3**	0.2	< 0.1	0.5	5	-	**0.3**	0.04	0.3	0.4	-	1.9	-	29.7	3.6
Silver	4	2	**0.08**	0.03	< 0.1	0.1	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	0	< 0.1	< 0.1	-	-	-	-	-
Strontium	4	-	**61**	3.9	57	66	5	-	**35**	3.1	32	40	5	-	**36**	7.5	26	42	5	-	**36**	4	32	40	-	-	-	-	-
Thallium	4	4	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	0	< 0.2	< 0.2	-	-	-	-	-
Tin	4	-	**0.2**	0.1	0.1	0.3	5	3	**0.07**	0.03	< 0.1	0.1	5	2	**0.1**	0.08	< 0.1	0.2	5	-	**0.18**	0.04	0.1	0.2	-	-	-	-	-
Titanium	4	-	**200**	17	180	220	5	-	**110**	24	94	150	5	-	**130**	73	44	190	5	-	**140**	7	130	150	-	-	-	-	-
Uranium	4	-	**0.3**	0	0.3	0.3	5	-	**0.2**	0.05	0.2	0.3	5	-	**0.5**	0.3	0.2	0.7	5	-	**0.5**	0.1	0.4	0.6	-	104.4	-	2296	96.7
Vanadium	4	-	**8.4**	1	7.5	9.7	5	-	**4.3**	0.86	3.6	5.7	5	-	**11**	7.9	1.9	17	5	-	**13**	1	11	14	-	35.2	-	-	-
Zinc	4	-	**31**	3.4	26	34	5	-	**14**	8	9.3	28	5	-	**20**	13	4.7	31	5	-	**27**	2	25	30	123	-	315	-	-
Nutrients																													
Carbon, Total Organic (%)	5	-	**22.5**	1.09	20.8	23.7	5	-	**3.09**	0.449	2.71	3.85	5	-	**8.26**	5.13	2.47	12.2	5	-	**7.66**	1.58	5.61	9.74	-	-	-	-	-
Phosphorus, Total	4	-	**560**	45	490	590	5	-	**320**	65	240	420	5	-	**670**	330	190	980	5	-	**706**	269	430	1100	-	-	-	-	-
Physical Properties																													
Clay (%)	5	-	**2.3**	0.49	1.7	2.8	5	-	**5.1**	0.86	4	6.1	5	-	**1.8**	0.78	0.8	2.6	5	-	**7.4**	1.4	5.1	8.7	-	-	-	-	-
Silt (%)	5	-	**18.4**	3.69	13.2	22.4	5	-	**24.2**	4.9	17.7	29.3	5	-	**10.8**	6.62	2.6	17.8	5	-	**59.8**	17.1	35.6	73.5	-	-	-	-	-
Fine sand (%)	5	-	**33.9**	4.62	30.2	40.8	5	-	**57.5**	3.92	52.6	63.5	5	-	**44.9**	15.7	18.9	58	5	-	**23**	7	17	33.5	-	-	-	-	-
Coarse sand (%)	5	-	**45.5**	7.78	36.7	55	5	-	**13.2**	6.13	7.5	21.9	5	-	**42.4**	22.7	21.5	77.7	5	-	**9.4**	11.4	0.8	25.8	-	-	-	-	-
Gravel (%)	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	0	< 0.01	< 0.01	-	-	-	-	-
Moisture (%)	5	-	**97.17**	0.32	96.9	97.56	5	-	**71.51**	2.48	68.66	75.28	5	-	**81.85**	18.92	51.21	94.32	5	-	**88.50**	2.87	84.45	91.41	-	-	-	-	-
Loss on Ignition (%)	5	-	**47.62**	2.50	43.59	50.3	5	-	**6.77**	0.99	5.71	8.38	5	-	**17.67**	10.83	5.29	25.88	5	-	**18.16**	3.33	13.95	22.54	-	-	-	-	-
Radionuclides																													
Lead-210 (Bq/g)	5	2	**0.19**	0.16	< 0.04	0.35	5	-	**0.18**	0.037	0.13	0.22	5	-	**0.21**	0.2	0.04	0.46	5	-	**0.28**	0.09	0.16	0.38	-	0.9	-	-	-
Polonium-210 (Bq/g)	5	-	**0.16**	0.13	0.03	0.36	5	-	**0.18**	0.034	0.15	0.23	5	-	**0.23**	0.16	0.06	0.42	5	-	**0.27**	0.06	0.17	0.34	-	0.8	-	-	-
Radium-226 (Bq/g)	5	1	**0.03**	0.02	< 0.01	0.06	5	1	**0.02**	0.01	< 0.01	0.03	5	2	**0.02**	0.02	< 0.01	0.04	5	-	**0.05**	0.01	0.04	0.07	-	0.6	-	-	-
Thorium-230 (Bq/g)	5	2	**0.03**	0.02	< 0.02	0.06	5	5	**0.01**	-	< 0.02	< 0.02	5	5	**0.01**	-	< 0.02	< 0.02	5	5	**0.01**	0	< 0.02	< 0.02	-	-	-	-	-

Appendix C, Table 27

Summary of Sediment Chemistry Results and Sediment Quality Guidelines From the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Patterson Lake North Arm - West Basin Area 1						Patterson Lake North Arm - West Basin Area 1						Patterson Lake South Arm Area 2						Forrest Lake Area 1						Guideline(s)				
	22-Sep-2018						26-Sep-2019						23-Sep-2018						26, 29-Sep-2018										
	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
Inorganic Ions																													
Calcium	5	-	**4300**	300	4000	4800	5	-	**3740**	134	3600	3900	5	-	**250**	55	200	340	5	-	**4200**	1600	2200	6200	-	-	-	-	-
Magnesium	5	-	**1700**	110	1500	1800	5	-	**1440**	114	1300	1600	5	-	**90**	20	70	120	5	-	**670**	130	480	790	-	-	-	-	-
Potassium	5	-	**1400**	150	1200	1600	5	-	**1280**	84	1200	1400	5	-	**280**	43	240	340	5	-	**490**	50	450	570	-	-	-	-	-
Sodium	5	-	**150**	19	130	180	5	-	**114**	11	100	130	5	-	**100**	15	80	120	5	-	**130**	15	110	150	-	-	-	-	-
Metals																													
Aluminum	5	-	**8300**	1000	6700	9300	5	-	**8020**	1013	6800	9100	5	-	**740**	130	590	930	5	-	**2840**	458	2320	3360	-	-	-	-	-
Antimony	5	1	**0.2**	0.04	< 0.2	0.2	5	3	**0.2**	0.1	< 0.2	0.3	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	-	-	-	-	-
Arsenic	5	-	**20**	15	11	46	5	-	**23.3**	10.1	9.3	36	5	-	**0.5**	0.07	0.4	0.6	5	-	**2.3**	0.71	1.4	3.2	5.9	9.8	17	522	20.8
Barium	5	-	**846**	148	700	1050	5	-	**954**	454	630	1600	5	-	**21**	1.6	19	23	5	-	**80**	21	52	100	-	-	-	-	-
Beryllium	5	-	**0.3**	0.04	0.3	0.4	5	-	**0.3**	0.04	0.3	0.4	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**0.2**	0.05	0.1	0.2	-	-	-	-	-
Boron	5	-	**24**	2.3	21	26	5	-	**21**	3	19	25	5	-	**2**	0.8	1	3	5	-	**5**	1	4	6	-	-	-	-	-
Cadmium	5	-	**0.6**	0.1	0.4	0.7	5	-	**0.6**	0.1	0.5	0.7	5	1	**0.1**	0.07	< 0.1	0.2	5	-	**0.4**	0.08	0.3	0.5	0.6	-	3.5	-	-
Cesium[f]	-	-	**-**	-	-	-	5	-	**0.6**	0.1	0.5	0.7	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	-	-	-
Chromium	5	-	**11**	1.2	9.7	13	5	-	**11.4**	1.4	9.9	13	5	5	**0.3**	-	< 0.5	< 0.5	5	-	**5.4**	1.3	3.8	7	37.3	-	90	-	-
Cobalt	5	-	**5**	0.4	4.4	5.4	5	-	**4.9**	0.7	3.7	5.5	5	5	**0.1**	-	< 0.2	< 0.2	5	-	**1.1**	0.23	0.8	1.3	-	-	-	-	-
Copper	5	-	**9**	1.4	7.7	11	5	-	**9.3**	1.3	7.7	11	5	5	**0.3**	-	< 0.5	< 0.5	5	-	**2.2**	0.37	1.8	2.7	35.7	22.2	197	-	-
Iron	5	-	**126000**	32500	99200	182000	5	-	**122000**	15811	102000	144000	5	-	**942**	102	820	1080	5	-	**11400**	3660	6600	15300	-	-	-	-	-
Lead	5	-	**12**	2.2	9	15	5	-	**13**	2	11	16	5	-	**1.2**	0.089	1.1	1.3	5	-	**2.3**	0.34	1.8	2.7	35	36.7	91.3	-	-
Manganese	5	-	**19300**	1850	17800	21800	5	-	**17360**	10354	5800	31400	5	-	**72**	22	44	99	5	-	**380**	120	210	490	-	-	-	-	-
Molybdenum	5	-	**4.5**	2.8	2.5	9.4	5	-	**5.0**	2.2	2.5	7.7	5	4	**0.06**	0.02	< 0.1	0.1	5	-	**0.5**	0.2	0.2	0.8	-	13.8	-	245	22.6
Nickel	5	-	**13**	1.6	11	15	5	-	**14**	2	13	16	5	4	**0.06**	0.02	< 0.1	0.1	5	-	**2.6**	0.55	2	3.2	-	23.4	-	326	21.4
Selenium	5	-	**1.3**	0.15	1.1	1.5	5	-	**1.4**	0.1	1.3	1.5	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**0.3**	0.08	0.2	0.4	-	1.9	-	29.7	3.6
Silver	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	0	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	-	-	-	-	-
Strontium	5	-	**65**	4	60	71	5	-	**71**	3	68	76	5	-	**19**	1.1	18	21	5	-	**44**	11	29	56	-	-	-	-	-
Thallium	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	0	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	-	-	-	-	-
Tin	5	-	**0.3**	0.05	0.3	0.4	5	-	**0.5**	0.1	0.4	0.5	5	5	**0.05**	-	< 0.1	< 0.1	5	1	**0.09**	0.02	< 0.1	0.1	-	-	-	-	-
Titanium	5	-	**270**	27	220	290	5	-	**254**	28	220	280	5	-	**41**	16	29	69	5	-	**210**	15	190	230	-	-	-	-	-
Uranium	5	-	**2**	0.49	1.7	2.9	5	-	**2.4**	0.6	1.7	3	5	-	**0.3**	0	0.3	0.3	5	-	**2.3**	1.1	1.5	4.2	-	104.4	-	2296	96.7
Vanadium	5	-	**19**	1.6	17	21	5	-	**19**	2	16	21	5	-	**0.2**	0.2	0.1	0.5	5	-	**8.6**	2.6	5.5	11	-	35.2	-	-	-
Zinc	5	-	**68**	9.4	53	78	5	-	**64**	8	57	76	5	-	**1.2**	0.25	1	1.6	5	-	**12**	3.4	7.5	16	123	-	315	-	-
Nutrients																													
Carbon, Total Organic (%)	5	-	**13.8**	1.2	12	15	5	-	**15.0**	1.0	13.9	16.4	5	-	**0.5**	0.049	0.45	0.58	5	-	**14.7**	3.18	12.1	18.9	-	-	-	-	-
Phosphorus, Total	5	-	**4800**	1400	3400	7100	5	-	**4820**	733	3800	5500	5	-	**50**	5	50	60	5	-	**420**	120	330	630	-	-	-	-	-
Physical Properties																													
Clay (%)	5	-	**6.3**	0.87	5.3	7.3	5	-	**10.2**	1.0	9.5	11.9	5	-	**2.4**	0.84	1.6	3.8	5	-	**4**	0.88	2.8	5.2	-	-	-	-	-
Silt (%)	5	-	**29.7**	3.83	25	35.3	5	-	**75.0**	1.0	73.6	76.3	5	-	**10.5**	3.31	7	15.7	5	-	**34.4**	7.35	24.6	44.7	-	-	-	-	-
Fine sand (%)	5	-	**40.6**	2.77	37.5	43.7	5	-	**14.6**	1.6	12.9	16.7	5	-	**15.9**	4.85	11.2	23.4	5	-	**46.3**	3.17	42.8	50.9	-	-	-	-	-
Coarse sand (%)	5	-	**23.5**	6.21	14.8	32.3	5	2	**0.15**	0.16	<0.01	0.38	5	-	**71.2**	7.29	62.9	80.3	5	-	**15.4**	8.97	5.8	29.9	-	-	-	-	-
Gravel (%)	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	0	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	-	-	-	-	-
Moisture (%)	5	-	**95.07**	0.58	94.39	95.6	5	-	**95.28**	0.18	95.13	95.59	5	-	**25.6**	2.13	23.49	28.68	5	-	**90.7**	1.46	89.42	93.08	-	-	-	-	-
Loss on Ignition (%)	5	-	**32.49**	3.01	27.53	34.86	5	-	**36.35**	1.66	34.79	39.12	5	-	**0.964**	0.09	0.83	1.07	5	-	**32.15**	6.48	24.74	39.1	-	-	-	-	-
Radionuclides																													
Lead-210 (Bq/g)	5	-	**0.69**	0.15	0.52	0.92	5	-	**0.9**	0.2	0.6	1.1	5	4	**0.03**	0.01	< 0.04	0.05	5	-	**0.25**	0.073	0.17	0.36	-	0.9	-	-	-
Polonium-210 (Bq/g)	5	-	**0.89**	0.18	0.74	1.2	5	-	**0.81**	0.13	0.61	0.95	5	-	**0.01**	0.006	0.01	0.02	5	-	**0.27**	0.069	0.16	0.34	-	0.8	-	-	-
Radium-226 (Bq/g)	5	-	**0.15**	0.031	0.1	0.18	5	-	**0.16**	0.05	0.1	0.24	5	4	**0.008**	0.007	< 0.01	0.02	5	-	**0.02**	0.01	0.01	0.04	-	0.6	-	-	-
Thorium-230 (Bq/g)	5	4	**0.01**	0.005	< 0.02	0.02	5	5	**0.01**	0	< 0.02	< 0.02	5	5	**0.01**	-	< 0.02	< 0.02	5	3	**0.02**	0.01	< 0.02	0.03	-	-	-	-	-

Appendix C, Table 27

Summary of Sediment Chemistry Results and Sediment Quality Guidelines From the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Forrest Lake Area 3						Forrest Lake Area 3						Beet Lake Area 2						Naomi Lake						Guideline(s)				
	29, 30-Sep-2018						29-Sep-2019						30-Sep-2018, 01 Oct-2018						22-Feb-2019										
	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
Inorganic Ions																													
Calcium	5	-	**1300**	910	460	2700	5	-	**972**	643	290	2000	5	-	**210**	18	200	240	5	-	**3800**	122	3700	4000	-	-	-	-	-
Magnesium	5	-	**490**	280	240	910	5	-	**408**	234	160	780	5	-	**130**	13	110	140	5	-	**702**	25	680	740	-	-	-	-	-
Potassium	5	-	**600**	240	360	970	5	-	**384**	184	200	670	5	-	**350**	57	270	410	5	-	**640**	32	600	690	-	-	-	-	-
Sodium	5	-	**130**	51	60	190	5	-	**54**	17	40	80	5	-	**92**	16	70	110	5	-	**84**	5	80	90	-	-	-	-	-
Metals																													
Aluminum	5	-	**2330**	1090	1410	3950	5	-	**1966**	1029	900	3610	5	-	**934**	92.4	790	1020	5	-	**9140**	627	8300	9800	-	-	-	-	-
Antimony	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	0	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	2	**0.2**	0.1	< 0.2	0.3	-	-	-	-	-
Arsenic	5	-	**3.3**	2.5	1.1	6.3	5	-	**2.3**	1.2	0.8	3.9	5	-	**0.7**	0.1	0.6	0.8	5	-	**10**	0.61	9.7	11	5.9	9.8	17	522	20.8
Barium	5	-	**43**	22	26	79	5	-	**32**	17	13	59	5	-	**22**	2.1	20	25	5	-	**148**	8	140	160	-	-	-	-	-
Beryllium	5	4	**0.06**	0.02	< 0.1	0.1	5	4	**0.06**	0.02	< 0.1	0.1	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**0.7**	0.04	0.6	0.7	-	-	-	-	-
Boron	5	1	**5.9**	5.3	< 1	14	5	-	**6**	4	2	12	5	2	**1**	0.8	< 1	2	5	-	**27**	0.71	26	28	-	-	-	-	-
Cadmium	5	-	**0.2**	0.2	0.1	0.5	5	4	**0.08**	0.07	< 0.1	0.2	5	-	**0.1**	0.05	0.1	0.2	5	-	**0.4**	0.04	0.3	0.4	0.6	-	3.5	-	-
Cesium[f]	-	-	**-**	-	-	-	5	4	**0.08**	0.07	< 0.1	0.2	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	-	-	-
Chromium	5	-	**3.9**	2.3	1.7	7.3	5	-	**4.2**	2.6	1.5	8.2	5	-	**1**	0.21	0.8	1.3	5	-	**24**	1.6	22	26	37.3	-	90	-	-
Cobalt	5	-	**1.1**	0.69	0.5	2	5	-	**1.1**	0.6	0.3	1.9	5	4	**0.1**	0.04	< 0.2	0.2	5	-	**6.2**	0.55	5.6	7.0	-	-	-	-	-
Copper	5	1	**1.6**	1.7	< 0.5	4.3	5	1	**1.37**	1.02	<0.5	3	5	5	**0.3**	-	< 0.5	< 0.5	5	-	**4.9**	0.38	4.5	5.3	35.7	22.2	197	-	-
Iron	5	-	**8060**	7610	2230	21100	5	-	**5700**	3319	1980	10700	5	-	**1750**	102	1620	1870	5	-	**98740**	5781	93200	105000	-	-	-	-	-
Lead	5	-	**2.9**	1.5	1.6	5.3	5	-	**2.6**	1.3	1.2	4.7	5	-	**1.3**	0.11	1.1	1.4	5	-	**5.8**	0.85	5.0	6.9	35	36.7	91.3	-	-
Manganese	5	-	**170**	120	81	370	5	-	**161**	75	77	250	5	-	**74**	28	45	120	5	-	**834**	55	770	910	-	-	-	-	-
Molybdenum	5	3	**0.2**	0.3	< 0.1	0.8	5	1	**0.37**	0.28	< 0.1	0.8	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**2.4**	0.24	2.2	2.8	-	13.8	-	245	22.6
Nickel	5	-	**2.4**	1.6	0.9	4.6	5	-	**2.5**	1.8	0.5	5.5	5	-	**0.3**	0.07	0.2	0.4	5	-	**8.9**	0.73	8.1	9.6	-	23.4	-	326	21.4
Selenium	5	1	**0.2**	0.2	< 0.1	0.4	5	1	**0.17**	0.14	< 0.1	0.4	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**0.7**	0.07	0.6	0.8	-	1.9	-	29.7	3.6
Silver	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	0	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	-	-	-	-	-
Strontium	5	-	**27**	6.8	21	38	5	-	**25**	6	20	35	5	-	**22**	1.9	20	24	5	-	**48**	1.8	46	51	-	-	-	-	-
Thallium	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	0	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	-	-	-	-	-
Tin	5	3	**0.1**	0.08	< 0.1	0.2	5	3	**0.09**	0.07	< 0.1	0.2	5	5	**0.05**	-	< 0.1	< 0.1	5	-	**0.4**	0.04	0.3	0.4	-	-	-	-	-
Titanium	5	-	**160**	54	100	240	5	-	**114**	47	61	180	5	-	**77**	14	58	95	5	-	**252**	15	230	270	-	-	-	-	-
Uranium	5	-	**0.2**	0.05	0.2	0.3	5	1	**0.19**	0.11	<0.1	0.3	5	-	**0.2**	0	0.2	0.2	5	-	**1.4**	0.10	1.3	1.5	-	104.4	-	2296	96.7
Vanadium	5	-	**4.8**	2.7	2.1	8.7	5	-	**4.3**	2.7	1.2	8.6	5	-	**1**	0.16	0.8	1.2	5	-	**65**	3.2	60	68	-	35.2	-	-	-
Zinc	5	-	**8.9**	6.1	2.7	18	5	-	**9.6**	6.9	2.2	21	5	-	**1.4**	0	1.4	1.4	5	-	**62**	3.3	58	66	123	-	315	-	-
Nutrients																													
Carbon, Total Organic (%)	5	-	**4.05**	3.54	0.75	9.78	5	-	**3.78**	3.03	0.76	8.84	5	-	**0.24**	0.056	0.18	0.3	5	-	**25.8**	0.576	25.1	26.5	-	-	-	-	-
Phosphorus, Total	5	-	**370**	330	90	920	5	-	**290**	182	90	560	5	-	**50**	5	50	60	5	-	**1720**	217	1500	2000	-	-	-	-	-
Physical Properties																													
Clay (%)	5	-	**3.2**	0.67	2.2	3.9	5	-	**4.7**	2.5	1.8	8.3	5	-	**2.5**	0.77	1.6	3.5	5	-	**6.6**	0.55	5.9	7.1	-	-	-	-	-
Silt (%)	5	-	**18.2**	4.45	11.8	23.6	5	-	**45.0**	30.0	8.8	80.2	5	-	**8.24**	2.23	5	10.3	5	-	**43.0**	1.98	40.2	45.5	-	-	-	-	-
Fine sand (%)	5	-	**41.9**	7.94	33.4	51.5	5	-	**25.3**	12.0	10.6	36.5	5	-	**16.7**	4.59	10.2	21.7	5	-	**49.2**	1.89	46.6	51.5	-	-	-	-	-
Coarse sand (%)	5	-	**36.7**	12	25	52.1	5	-	**24.97**	22.10	0.86	53.7	5	-	**72.5**	6.06	64.5	81	5	-	**1.3**	0.67	0.75	2.4	-	-	-	-	-
Gravel (%)	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	0	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	-	-	-	-	-
Moisture (%)	5	-	**74.14**	18.96	43.86	93.42	5	-	**72.38**	18.56	42.07	91.65	5	-	**34.32**	4.23	28.49	38.09	5	-	**96.59**	0.56	96.06	97.43	-	-	-	-	-
Loss on Ignition (%)	5	-	**8.57**	7.54	1.57	20.78	5	-	**8.32**	6.51	1.59	19.06	5	-	**0.58**	0.10	0.5	0.7	5	-	**47.20**	0.67	46.15	47.79	-	-	-	-	-
Radionuclides																													
Lead-210 (Bq/g)	5	1	**0.19**	0.14	< 0.04	0.39	5	-	**0.14**	0.09	0.07	0.29	5	5	**0.02**	-	< 0.04	< 0.04	5	-	**0.60**	0.089	0.52	0.73	-	0.9	-	-	-
Polonium-210 (Bq/g)	5	-	**0.19**	0.14	0.04	0.41	5	-	**0.15**	0.09	0.05	0.28	5	1	**0.01**	0.006	< 0.01	0.02	5	-	**0.57**	0.082	0.47	0.64	-	0.8	-	-	-
Radium-226 (Bq/g)	5	5	**0.005**	-	< 0.01	< 0.01	5	2	**0.016**	0.015	< 0.01	0.04	5	2	**0.01**	0.008	< 0.01	0.02	5	-	**0.07**	0.008	0.06	0.08	-	0.6	-	-	-
Thorium-230 (Bq/g)	5	5	**0.01**	-	< 0.02	< 0.02	5	5	**0.01**	0	< 0.02	< 0.02	5	5	**0.01**	-	< 0.02	< 0.02	5	2	**0.02**	0.01	< 0.02	0.03	-	-	-	-	-

Appendix C, Table 27

Summary of Sediment Chemistry Results and Sediment Quality Guidelines from the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Clearwater River Area 2						Lloyd Lake Inlet						Lake G Area 2						Lake H Area 2						Guideline(s)				
	24-Sep-2018						25-Sep-2018						28-Sep-2018						27-Sep-2018										
	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	N	N<RDL	Mean	SD	Min	Max	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
Inorganic Ions																													
Calcium	5	-	**3300**	1700	400	4900	5	-	**2300**	210	1900	2400	4	-	**3900**	660	3000	4600	3	-	**2600**	1400	1400	4100	-	-	-	-	-
Magnesium	5	-	**580**	280	120	800	5	-	**1200**	71	1100	1300	4	-	**910**	82	800	990	3	-	**700**	370	380	1100	-	-	-	-	-
Potassium	5	-	**540**	210	180	730	5	-	**1300**	71	1200	1400	4	-	**660**	49	600	720	3	-	**630**	280	420	940	-	-	-	-	-
Sodium	5	-	**120**	38	60	160	5	-	**150**	16	120	160	4	-	**140**	15	120	150	3	-	**140**	46	100	190	-	-	-	-	-
Metals																													
Aluminum	5	-	**3160**	1270	1120	4430	5	-	**8800**	320	8400	9300	4	-	**4440**	220	4150	4620	3	-	**2540**	992	1710	3640	-	-	-	-	-
Antimony	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	4	4	**0.1**	-	< 0.2	< 0.2	3	3	**0.1**	-	< 0.2	< 0.2	-	-	-	-	-
Arsenic	5	-	**5.1**	2.4	1.4	7.9	5	-	**6.1**	0.94	4.7	7.2	4	-	**4.4**	0.75	3.5	5.2	3	-	**1.7**	0.47	1.3	2.2	5.9	9.8	17	522	20.8
Barium	5	-	**78**	34	20	100	5	-	**100**	11	82	110	4	-	**64**	5.6	56	69	3	-	**51**	23	32	77	-	-	-	-	-
Beryllium	5	-	**0.5**	0.3	0.1	0.8	5	-	**0.3**	0.05	0.3	0.4	4	-	**0.1**	0.05	0.1	0.2	3	2	**0.07**	0.03	< 0.1	0.1	-	-	-	-	-
Boron	5	-	**16**	10	2	29	5	-	**20**	1.8	17	22	4	-	**10**	0.5	9	10	3	-	**7**	3.6	4	11	-	-	-	-	-
Cadmium	5	-	**0.2**	0.09	0.1	0.3	5	-	**0.3**	0.05	0.2	0.3	4	-	**0.3**	0.05	0.3	0.4	3	-	**0.4**	0.1	0.3	0.5	0.6	-	3.5	-	-
Cesium[f]	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	**-**	-	-	-	-	-	-	-	-
Chromium	5	-	**14**	6.2	3.5	19	5	-	**14**	1.6	13	17	4	-	**7.2**	0.39	6.7	7.6	3	-	**4.9**	1.6	3.9	6.8	37.3	-	90	-	-
Cobalt	5	-	**1.2**	0.51	0.3	1.6	5	-	**3**	0.79	2.5	4.4	4	-	**2.1**	0.24	1.8	2.3	3	-	**1.2**	0.55	0.8	1.8	-	-	-	-	-
Copper	5	1	**1.8**	0.93	< 0.5	2.5	5	-	**3.7**	0.4	3	4	4	-	**4**	0.38	3.4	4.2	3	-	**4.1**	1.5	2.4	5	35.7	22.2	197	-	-
Iron	5	-	**50200**	31700	7300	94100	5	-	**65300**	11400	47600	75600	4	-	**20800**	3840	15400	24500	3	-	**4100**	2380	2310	6800	-	-	-	-	-
Lead	5	-	**2**	0.48	1.3	2.5	5	-	**3.4**	0.23	3.2	3.8	4	-	**3.9**	1.6	2.1	5.6	3	-	**4**	0.96	3.1	5	35	36.7	91.3	-	-
Manganese	5	-	**430**	280	58	740	5	-	**570**	130	360	720	4	-	**280**	83	160	340	3	-	**83**	42	51	130	-	-	-	-	-
Molybdenum	5	1	**0.83**	0.49	< 0.1	1.4	5	-	**0.5**	0.2	0.2	0.8	4	-	**0.8**	0.1	0.6	0.9	3	2	**0.2**	0.2	< 0.1	0.4	-	13.8	-	245	22.6
Nickel	5	-	**2.9**	1.4	0.4	3.9	5	-	**7.4**	0.67	6.7	8.5	4	-	**5.2**	0.29	4.9	5.5	3	-	**2.9**	1.2	2.2	4.3	-	23.4	-	326	21.4
Selenium	5	1	**0.2**	0.1	< 0.1	0.3	5	-	**0.5**	0.05	0.4	0.5	4	-	**0.6**	0.05	0.5	0.6	3	-	**0.3**	0.2	0.2	0.5	-	1.9	-	29.7	3.6
Silver	5	5	**0.05**	-	< 0.1	< 0.1	5	5	**0.05**	-	< 0.1	< 0.1	4	4	**0.05**	-	< 0.1	< 0.1	3	3	**0.05**	-	< 0.1	< 0.1	-	-	-	-	-
Strontium	5	-	**45**	15	25	67	5	-	**45**	3	40	48	4	-	**32**	3.8	26	34	3	-	**41**	8.6	33	50	-	-	-	-	-
Thallium	5	5	**0.1**	-	< 0.2	< 0.2	5	5	**0.1**	-	< 0.2	< 0.2	4	4	**0.1**	-	< 0.2	< 0.2	3	3	**0.1**	-	< 0.2	< 0.2	-	-	-	-	-
Tin	5	1	**0.2**	0.1	< 0.1	0.3	5	-	**0.3**	0	0.3	0.3	4	-	**0.2**	0.05	0.1	0.2	3	-	**0.2**	0.2	0.1	0.4	-	-	-	-	-
Titanium	5	-	**190**	79	70	270	5	-	**290**	13	270	300	4	-	**160**	5	160	170	3	-	**120**	29	98	150	-	-	-	-	-
Uranium	5	-	**0.7**	0.3	0.2	0.9	5	-	**0.7**	0.05	0.7	0.8	4	-	**0.3**	0	0.3	0.3	3	-	**0.3**	0.06	0.3	0.4	-	104.4	-	2296	96.7
Vanadium	5	-	**55**	32	9.2	88	5	-	**22**	1.1	20	23	4	-	**10**	0.79	9.4	11	3	-	**8**	3.6	5.1	12	-	35.2	-	-	-
Zinc	5	-	**15**	5.4	6	20	5	-	**24**	1.7	22	26	4	-	**32**	1.5	30	33	3	-	**17**	7.6	9.8	25	123	-	315	-	-
Nutrients																													
Carbon, Total Organic (%)	5	-	**13.7**	7.42	1.06	18.6	5	-	**12.4**	0.378	11.7	12.6	5	-	**23.4**	0.802	22.6	24.6	5	-	**25.5**	11.4	11.4	36.4	-	-	-	-	-
Phosphorus, Total	5	-	**980**	520	140	1500	5	-	**1600**	290	1200	1900	4	-	**800**	150	580	900	3	-	**850**	570	420	1500	-	-	-	-	-
Physical Properties																													
Clay (%)	5	-	**6.5**	1.5	5.1	8.5	5	-	**7.6**	1.3	6.2	9.6	5	-	**2.8**	0.44	2.3	3.5	5	-	**6.2**	2.9	3.1	9.5	-	-	-	-	-
Silt (%)	5	-	**36.7**	4.88	30.2	43.4	5	-	**47**	4.36	42.9	54.1	5	-	**17.4**	2.39	14.5	20.3	5	-	**44**	13.9	30.2	62.6	-	-	-	-	-
Fine sand (%)	5	-	**42**	8.3	27.5	48.6	5	-	**43.9**	5.09	35.6	48.6	5	-	**32**	4.84	27.2	38.5	5	-	**29**	6.79	23.3	39.7	-	-	-	-	-
Coarse sand (%)	5	-	**14.8**	11.2	4.2	33.8	5	-	**1.5**	0.56	0.8	2.3	5	-	**47.8**	6.68	37.7	56	5	-	**20.8**	11.4	5.2	34.9	-	-	-	-	-
Gravel (%)	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	5	5	**0.005**	-	< 0.01	< 0.01	-	-	-	-	-
Moisture (%)	5	-	**82.8**	22.03	43.43	93.52	5	-	**92.48**	0.90	91.22	93.45	5	-	**95.62**	0.58	94.93	96.44	5	-	**97.65**	1.54	95.17	98.87	-	-	-	-	-
Loss on Ignition (%)	5	-	**29.04**	15.86	2.19	41.2	5	-	**25.27**	1.20	23.29	26.18	5	-	**45.97**	1.77	44.2	48.08	5	-	**53.43**	24.14	23.35	75.66	-	-	-	-	-
Radionuclides																													
Lead-210 (Bq/g)	5	1	**0.22**	0.12	< 0.04	0.33	5	-	**0.30**	0.039	0.24	0.33	5	-	**0.28**	0.042	0.24	0.35	5	-	**0.78**	0.37	0.33	1.1	-	0.9	-	-	-
Polonium-210 (Bq/g)	5	-	**0.16**	0.1	0.01	0.28	5	-	**0.29**	0.05	0.22	0.33	5	-	**0.26**	0.14	0.15	0.5	5	-	**0.87**	0.41	0.35	1.2	-	0.8	-	-	-
Radium-226 (Bq/g)	5	1	**0.02**	0.007	< 0.01	0.02	5	-	**0.03**	0.007	0.02	0.04	5	-	**0.03**	0.01	0.02	0.05	5	3	**0.02**	0.02	< 0.01	0.06	-	0.6	-	-	-
Thorium-230 (Bq/g)	5	4	**0.01**	0.005	< 0.02	0.02	5	4	**0.01**	0.005	< 0.02	0.02	5	5	**0.01**	-	< 0.02	< 0.02	5	5	**0.01**	-	< 0.02	< 0.02	-	-	-	-	-

Note: All values are in µg/g on a dry weight basis unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

Means are **bolded** for ease of data comparison.

a) Canadian sediment quality guidelines for the protection of aquatic life (CCME 2017); ISQG = interim sediment quality guideline.

b) LEL = Lowest effects level (Thompson et al. 2005).

c) Canadian sediment quality guidelines for the protection of aquatic life (CCME 2018); PEL = probable effects level.

d) NE2 = No-effect value (Burnett-Seidel and Liber 2013).

e) REF = Reference sediment value (Burnett-Seidel and Liber 2013).

f) Cesium was not analyzed until September 2019.

Appendix C, Table 28

Detailed Sediment Physical Properties from the Benthic Invertebrate Sampling Stations not Co-Located with Sediment Chemistry Stations in the Aquatic Study Area, September/October 2018

Parameter	Patterson Lake North Arm - East Basin Area 3					Patterson Lake North Arm - West Basin Area 2					Forrest Lake Area 4				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	02-Oct-2018					22-Sep-2018					29-Sep-2018				
Nutrients															
Carbon, Total Organic (%)	9.47	6.42	4.18	4.48	5.51	0.35	0.3	0.31	0.32	0.34	0.33	0.42	0.57	0.5	0.42
Physical Properties															
Moisture (%)	83.23	87.09	82.65	77.9	83.37	27.49	25.54	25.14	26	27.15	25.52	30.3	34.36	33.33	29.43
Silt (%)	17.2	17.6	12.5	16	16.1	1.4	1.1	2.5	1.5	2.4	1.5	1.8	2.1	2	1.8
Fine sand (%)	52.7	53	48	52.3	53.4	7.4	7.1	11.8	8.2	14.9	9.9	9.6	12.9	13.8	10.9
Gravel (%)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Coarse sand (%)	27.3	26.4	37.3	28.5	27.4	90.5	91.2	84.8	89.6	81.8	88	88	84.2	83.4	86.5
Clay (%)	2.9	3	2.2	3.2	3	0.7	0.7	0.9	0.7	0.9	0.7	0.7	0.8	0.8	0.7

Note: All data presented on a dry weight basis.

Appendix C, Table 29

Sediment Chemistry and Physical Properties in the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Broach Lake Area 1					Hodge Lake Area 2					Patterson Lake North Arm - East Basin Area 2					Patterson Lake North Arm - East Basin Area 3					Guidelines				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
	23-Sep-2018	24-Sep-2018				22-Sep-2018					01-Oct-2018		02-Oct-2018			28-Sep-2019									
Inorganic Ions																									
Calcium	5100	4600	5200	4400	-	990	1100	900	850	760	450	990	2500	2300	2500	1300	1900	1900	1300	1700	-	-	-	-	-
Magnesium	950	1000	940	960	-	300	400	280	280	260	180	290	700	650	690	400	500	520	400	480	-	-	-	-	-
Potassium	710	940	760	740	-	440	490	370	400	350	250	340	680	620	680	300	470	370	300	280	-	-	-	-	-
Sodium	220	210	200	220	-	100	80	90	80	80	70	100	100	80	90	20	50	< 10	20	< 10	-	-	-	-	-
Metals																									
Aluminum	3340	4290	3790	3490	-	1940	2330	1600	1620	1560	1040	1040	4550	4160	4480	3010	3350	3520	3050	3460	-	-	-	-	-
Antimony	< 0.2	0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	-	-	-
Arsenic	3.8	4.5	5.2	4.6	-	1.2	1.4	1.2	1.3	1	0.9	1.1	3.5	3.8	3.8	3	4.9	4.1	2.8	3.4	5.9	9.8	17	522	20.8
Barium	140	130	140	120	-	36	43	28	33	29	25	47	92	94	110	82	160	130	72	93	-	-	-	-	-
Beryllium	0.2	0.2	0.2	0.2	-	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	-	-	-	-	-
Boron	14	14	16	13	-	5	6	3	4	3	4	13	25	22	23	11	13	13	10	13	-	-	-	-	-
Cadmium	0.6	0.6	0.5	0.7	-	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.6	-	3.5	-	-
Cesium[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-
Chromium	7.8	8.4	7.5	8.2	-	3.2	4.1	2.6	2.8	2.7	1.1	0.9	8.8	7.8	8.4	6.9	7.3	8.4	5.9	9.3	37.3	-	90	-	-
Cobalt	2	2.3	2.8	2.2	-	1	1.2	0.9	0.8	0.9	0.2	< 0.2	2.6	2.6	2.7	2.4	2.4	2.9	3.2	2.9	-	-	-	-	-
Copper	7.1	7.9	7.7	6.6	-	2	2.5	1.6	1.5	1.6	0.6	< 0.5	4.7	4.4	4.5	2.4	2.9	3.1	2.6	3.3	35.7	22.2	197	-	-
Iron	6100	7800	8400	8700	-	4320	7200	6700	6000	5600	4530	7100	54300	59400	61000	55100	82700	73500	56500	62700	-	-	-	-	-
Lead	1.9	9.5	2.4	4.6	-	2.8	3.2	2.4	2.4	2.3	1.7	1.6	5.8	5.2	5.4	3.4	3.6	3.9	3.1	4.5	35	36.7	91.3	-	-
Manganese	310	410	350	350	-	250	380	220	320	220	200	78	480	570	680	590	1530	1300	560	650	-	-	-	-	-
Molybdenum	2.8	1.9	2.7	2.6	-	0.1	0.4	0.2	0.2	0.1	0.2	0.4	1.2	1.2	1.1	0.9	1.3	1.3	0.9	1.4	-	13.8	-	245	22.6
Nickel	8.7	9	10	8.9	-	2.7	3.5	2.2	2.3	2.7	0.6	0.6	5.8	5.1	5.3	3.8	4.5	4.8	3.2	5.8	-	23.4	-	326	21.4
Selenium	0.8	0.6	0.8	0.5	-	0.2	0.2	0.1	0.1	0.1	< 0.1	< 0.1	0.5	0.4	0.5	0.3	0.3	0.3	0.3	0.4	-	1.9	-	29.7	3.6
Silver	0.1	< 0.1	< 0.1	0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	-	-	-
Strontium	66	57	62	59	-	37	40	34	34	32	26	29	42	40	41	32	40	40	32	36	-	-	-	-	-
Thallium	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	-	-	-
Tin	0.3	0.3	0.1	0.2	-	0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	-	-	-	-	-
Titanium	180	220	190	190	-	120	150	94	99	95	59	44	180	180	190	140	130	150	140	140	-	-	-	-	-
Uranium	0.3	0.3	0.3	0.3	-	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.7	0.6	0.7	0.4	0.6	0.5	0.4	0.5	-	104.4	-	2296	96.7
Vanadium	7.5	9.7	8.8	7.7	-	4.5	5.7	3.8	3.8	3.6	1.9	2.6	17	16	17	11	13	13	12	14	-	35.2	-	-	-
Zinc	26	32	34	30	-	28	15	9.4	9.3	9.8	4.7	6.9	31	28	31	25	25	28	26	30	123	-	315	-	-
Nutrients																									
Total Organic Carbon (%)	23	22.3	22.9	20.8	23.7	2.93	3.85	2.71	3.1	2.85	2.47	2.83	12.1	12.2	11.7	6.71	9.74	8.4	5.61	7.82	-	-	-	-	-
Total Phosphorus	490	590	560	580	-	240	420	330	310	300	190	480	820	900	980	530	1100	850	430	620	-	-	-	-	-
Physical Properties																									
Clay (%)	2.5	1.9	2.7	2.8	1.7	4	5.2	6.1	4.6	5.8	1.3	0.8	2.5	2	2.6	7	8	8.7	5.1	8.3	-	-	-	-	-
Silt (%)	20	16.1	22.4	20.3	13.2	17.7	23.5	29.3	21.7	28.8	5.6	2.6	16.4	11.7	17.8	48.1	73.4	73.5	35.6	68.5	-	-	-	-	-
Fine sand (%)	40.8	31.4	36.4	30.5	30.2	56.4	63.5	52.6	57.1	57.8	41.7	18.9	53.1	53	58	27.9	17.2	17	33.5	21.4	-	-	-	-	-
Coarse sand (%)	36.7	50.6	38.6	46.4	55	21.9	7.8	12.1	16.6	7.5	51.4	77.7	27.9	33.3	21.5	16.9	1.5	0.8	25.8	1.8	-	-	-	-	-
Gravel (%)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	-	-	-
Loss on Ignition (%)	48.67	47.35	48.21	43.59	50.3	6.49	8.38	5.71	6.84	6.41	5.29	6.35	25.88	25.29	25.56	16.01	22.54	19.76	13.95	18.55	-	-	-	-	-
Moisture (%)	96.9	97.02	96.91	97.48	97.56	68.66	75.28	71.37	72.12	70.11	75.61	51.21	94.22	94.32	93.89	86.62	91.41	89.98	84.45	90.03	-	-	-	-	-
Radionuclides																									
Lead-210 (Bq/g)	< 0.04	0.33	< 0.04	0.22	0.35	0.2	0.18	0.15	0.22	0.13	0.09	0.04	0.46	0.38	0.07	0.22	0.33	0.3	0.16	0.38	-	0.9	-	-	-
Polonium-210 (Bq/g)	0.03	0.21	0.06	0.16	0.36	0.17	0.23	0.15	0.21	0.16	0.14	0.06	0.39	0.42	0.16	0.24	0.34	0.3	0.17	0.28	-	0.8	-	-	-
Radium-226 (Bq/g)	0.02	0.02	< 0.01	0.06	0.04	0.02	0.03	0.01	0.02	< 0.01	< 0.01	< 0.01	0.04	0.03	0.03	0.07	0.05	0.05	0.05	0.04	-	0.6	-	-	-
Thorium-230 (Bq/g)	< 0.02	0.02	< 0.02	0.06	0.04	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	-	-	-	-

Appendix C, Table 29

Sediment Chemistry and Physical Properties in the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Patterson Lake North Arm - West Basin Area 1					Patterson Lake North Arm - West Basin Area 1					Patterson Lake South Arm Area 2					Forrest Lake Area 1					Guidelines				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
	22-Sep-2018					26-Sep-2019					23-Sep-2018					26-Sep-2018				29-Sep-2018					
Inorganic Ions																									
Calcium	4000	4800	4400	4200	4200	3600	3900	3600	3800	3800	230	340	240	200	220	2200	4300	5400	3100	6200	-	-	-	-	-
Magnesium	1700	1500	1800	1700	1700	1300	1500	1600	1400	1400	70	120	80	80	100	480	680	790	600	790	-	-	-	-	-
Potassium	1500	1200	1600	1500	1400	1200	1400	1300	1300	1200	240	340	250	250	300	450	450	570	490	470	-	-	-	-	-
Sodium	160	130	180	160	140	100	120	130	110	110	80	120	100	100	110	110	130	150	120	120	-	-	-	-	-
Metals																									
Aluminum	8900	6700	9300	8100	8600	6800	8900	9100	8100	7200	590	930	680	690	790	2320	2850	3230	2460	3360	-	-	-	-	-
Antimony	0.2	0.2	0.2	< 0.2	0.2	< 0.2	0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	-	-	-
Arsenic	14	46	11	15	15	36	18	9.3	27	26	0.5	0.6	0.5	0.5	0.4	1.4	2.2	2.8	1.9	3.2	5.9	9.8	17	522	20.8
Barium	740	1050	700	790	950	1600	630	630	640	1270	19	23	22	20	20	52	77	100	70	100	-	-	-	-	-
Beryllium	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.2	0.2	0.1	0.2	-	-	-	-	-
Boron	26	21	26	22	24	19	23	25	21	19	3	2	2	1	1	4	4	6	6	5	-	-	-	-	-
Cadmium	0.7	0.4	0.7	0.6	0.6	0.5	0.7	0.7	0.5	0.5	< 0.1	0.2	0.2	0.1	0.1	0.3	0.5	0.3	0.4	0.4	0.6	-	3.5	-	-
Cesium[f]	-	-	-	-	-	0.5	0.7	0.6	0.6	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	12	9.7	13	11	11	9.9	13	12	12	10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	3.8	5.8	5.9	4.3	7	37.3	-	90	-	-
Cobalt	5.2	4.4	5.4	4.7	5.1	5.2	4.8	5.5	3.7	5.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.8	1.2	1.3	0.9	1.3	-	-	-	-	-
Copper	11	7.7	9.8	7.9	8.4	7.7	10	11	9.2	8.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.9	1.8	2.7	2.4	2.2	35.7	22.2	197	-	-
Iron	122000	182000	109000	99200	118000	144000	116000	102000	118000	130000	1000	880	1080	930	820	6600	10100	14800	10000	15300	-	-	-	-	-
Lead	15	12	13	9	12	11	16	12	12	12	1.1	1.3	1.1	1.2	1.1	1.8	2.7	2.5	2.2	2.4	35	36.7	91.3	-	-
Manganese	18100	20800	17800	18100	21800	31400	10500	15000	5800	24100	86	44	99	73	56	210	300	490	420	480	-	-	-	-	-
Molybdenum	2.5	9.4	2.7	3.8	4	7.7	3.6	2.5	4.5	6.8	< 0.1	0.1	< 0.1	< 0.1	< 0.1	0.2	0.4	0.6	0.3	0.8	-	13.8	-	245	22.6
Nickel	15	11	14	12	12	13	16	16	14	13	< 0.1	0.1	< 0.1	< 0.1	< 0.1	2	2.3	3.1	2.2	3.2	-	23.4	-	326	21.4
Selenium	1.4	1.5	1.3	1.1	1.3	1.3	1.5	1.4	1.4	1.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.3	0.3	0.2	0.4	-	1.9	-	29.7	3.6
Silver	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	-	-	-
Strontium	60	71	64	64	65	76	68	68	71	72	18	21	19	19	19	29	47	51	38	56	-	-	-	-	-
Thallium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	-	-	-
Tin	0.4	0.3	0.4	0.3	0.3	0.5	0.5	0.4	0.5	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.1	0.1	-	-	-	-	-
Titanium	280	220	270	290	270	220	280	280	260	230	29	69	32	34	41	190	200	200	210	230	-	-	-	-	-
Uranium	1.7	2.9	1.9	1.9	1.8	3	1.9	1.7	2.8	2.4	0.3	0.3	0.3	0.3	0.3	1.9	1.5	4.2	2.3	1.8	-	104.4	-	2296	96.7
Vanadium	20	17	21	18	19	16	21	21	20	18	0.1	0.5	0.1	0.2	0.2	5.5	9	11	6.4	11	-	35.2	-	-	-
Zinc	71	53	78	65	71	57	70	76	58	60	1.1	1.6	1	1	1.2	7.5	12	13	9	16	123	-	315	-	-
Nutrients																									
Total Organic Carbon (%)	15	14.1	14.7	12	13.4	13.9	16.4	15.4	15.2	14	0.48	0.58	0.52	0.45	0.49	13	17.4	18.9	12.1	12.3	-	-	-	-	-
Total Phosphorus	4600	7100	4800	3400	3900	5500	4400	3800	5500	4900	60	60	50	50	50	360	330	630	390	390	-	-	-	-	-
Physical Properties																									
Clay (%)	6.9	7.3	5.3	5.5	6.5	11.9	9.7	9.6	9.5	10.5	3.8	2	2.1	1.6	2.3	5.2	2.8	3.6	4.2	4.1	-	-	-	-	-
Silt (%)	30.9	35.3	25	27.8	29.4	75	73.6	75.3	75	76.3	15.7	9.3	9	7	11.4	44.7	24.6	32.2	33.2	37.2	-	-	-	-	-
Fine sand (%)	37.9	42.6	37.5	43.7	41.1	12.9	16.7	14.7	15.5	13	17.7	23.4	12.5	11.2	14.9	44.3	42.8	47.8	50.9	45.6	-	-	-	-	-
Coarse sand (%)	24.3	14.8	32.3	23	23	0.17	< 0.01	0.38	< 0.01	0.21	62.9	65.3	76.3	80.3	71.4	5.8	29.9	16.3	11.7	13.1	-	-	-	-	-
Gravel (%)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	-	-	-
Loss on Ignition (%)	34.86	34.18	34.1	27.53	31.77	35.44	39.12	36.39	36.02	34.79	0.94	1.07	1	0.83	0.98	26.22	33.25	37.45	24.74	39.1	-	-	-	-	-
Moisture (%)	94.52	95.6	95.56	94.39	95.27	95.59	95.25	95.27	95.13	95.18	23.49	28.68	23.86	25.34	26.62	89.68	89.42	93.08	90.35	90.95	-	-	-	-	-
Radionuclides																									
Lead-210 (Bq/g)	0.64	0.92	0.68	0.52	0.67	1.1	1	0.6	0.94	0.8	< 0.04	< 0.04	< 0.04	0.05	< 0.04	0.2	0.26	0.36	0.27	0.17	-	0.9	-	-	-
Polonium-210 (Bq/g)	0.74	1.2	0.9	0.78	0.85	0.95	0.86	0.61	0.84	0.79	0.01	0.01	0.02	0.02	0.01	0.31	0.27	0.34	0.25	0.16	-	0.8	-	-	-
Radium-226 (Bq/g)	0.14	0.18	0.1	0.14	0.17	0.1	0.13	0.15	0.18	0.24	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.01	0.02	0.04	0.01	0.02	-	0.6	-	-	-
Thorium-230 (Bq/g)	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	0.03	< 0.02	< 0.02	-	-	-	-	-

Appendix C, Table 29

Sediment Chemistry and Physical Properties in the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Forrest Lake Area 3					Forrest Lake Area 3					Beet Lake Area 2					Naomi Lake					Guidelines				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
	29-Sep-2018	30-Sep-2018				29-Sep-2019					30-Sep-2018	01-Oct-2018				22-Feb-2019									
Inorganic Ions																									
Calcium	600	980	460	1600	2700	610	990	290	970	2000	200	240	220	200	200	3700	4000	3700	3800	3800	-	-	-	-	-
Magnesium	270	400	240	610	910	270	420	160	410	780	130	140	140	110	120	680	740	710	700	680	-	-	-	-	-
Potassium	360	500	490	680	970	250	420	200	380	670	370	390	320	410	270	640	690	630	600	640	-	-	-	-	-
Sodium	60	100	130	160	190	40	60	40	50	80	100	100	80	110	70	80	90	90	80	80	-	-	-	-	-
Metals																									
Aluminum	1410	1940	1440	2910	3950	1350	2070	900	1900	3610	1010	1020	930	920	790	8300	9800	9600	9300	8700	-	-	-	-	-
Antimony	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	0.2	0.3	0.2	<0.2	-	-	-	-	-
Arsenic	1.4	1.8	1.1	6.3	5.8	1.8	1.7	0.8	3.1	3.9	0.6	0.8	0.6	0.6	0.8	11	10	9.7	10	11	5.9	9.8	17	522	20.8
Barium	28	34	26	46	79	24	30	13	35	59	21	22	20	25	20	150	150	140	140	160	-	-	-	-	-
Beryllium	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.7	0.7	0.7	0.7	0.6	-	-	-	-	-
Boron	3	4	< 1	8	14	4	6	2	6	12	2	2	< 1	1	< 1	27	27	26	28	27	-	-	-	-	-
Cadmium	0.2	0.2	0.1	0.2	0.5	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.4	0.4	0.4	0.4	0.3	0.6	-	3.5	-	-
Cesium[f]	-	-	-	-	-	< 0.1	< 0.1	< 0.1	< 0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	2.3	3.1	1.7	5.1	7.3	2.6	4.9	1.5	3.8	8.2	0.9	1.2	1	0.8	1.3	22	25	24	26	23	37.3	-	90	-	-
Cobalt	0.6	0.6	0.5	2	1.6	1.1	1.2	0.3	1	1.9	< 0.2	< 0.2	0.2	< 0.2	< 0.2	5.8	7	6.4	6.2	5.6	-	-	-	-	-
Copper	0.7	0.7	< 0.5	2.2	4.3	0.9	1.2	< 0.5	1.5	3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	4.5	5.2	5.3	4.8	4.5	35.7	22.2	197	-	-
Iron	3680	5200	2230	8100	21100	4090	4730	1980	7000	10700	1680	1780	1820	1620	1870	105000	93200	94900	95600	105000	-	-	-	-	-
Lead	2.1	2.4	1.6	3.2	5.3	1.7	2.6	1.2	2.7	4.7	1.4	1.3	1.3	1.2	1.1	5	6.9	6.4	5.6	5	35	36.7	91.3	-	-
Manganese	92	130	81	160	370	130	120	77	230	250	45	80	65	62	120	870	810	770	810	910	-	-	-	-	-
Molybdenum	< 0.1	< 0.1	< 0.1	0.8	0.2	0.4	0.2	< 0.1	0.4	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	2.8	2.4	2.4	2.2	2.2	-	13.8	-	245	22.6
Nickel	1.4	1.6	0.9	3.5	4.6	1.7	2.5	0.5	2.3	5.5	0.3	0.4	0.3	0.2	0.3	8.1	9.6	9.1	9.6	8.2	-	23.4	-	326	21.4
Selenium	0.1	0.1	< 0.1	0.3	0.4	0.1	0.1	< 0.1	0.2	0.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.7	0.8	0.7	0.7	0.6	-	1.9	-	29.7	3.6
Silver	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	<0.1	0.1	0.1	<0.1	-	-	-	-	-
Strontium	21	25	22	28	38	20	24	20	26	35	23	24	23	20	20	46	51	48	49	48	-	-	-	-	-
Thallium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-
Tin	< 0.1	< 0.1	< 0.1	0.2	0.2	< 0.1	0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.4	0.4	0.4	0.4	0.3	-	-	-	-	-
Titanium	100	170	120	160	240	81	140	61	110	180	86	74	95	71	58	230	270	260	250	250	-	-	-	-	-
Uranium	0.2	0.2	0.2	0.3	0.3	0.1	0.3	< 0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	1.3	1.5	1.5	1.4	1.3	-	104.4	-	2296	96.7
Vanadium	3	3.8	2.1	6.3	8.7	3	4.3	1.2	4.2	8.6	1.1	1.1	1.2	0.8	0.9	60	68	67	65	63	-	35.2	-	-	-
Zinc	5.9	6	2.7	12	18	8	8.7	2.2	8.3	21	1.4	1.4	1.4	1.4	1.4	60	66	65	62	58	123	-	315	-	-
Nutrients																									
Total Organic Carbon (%)	1.84	3.09	0.75	4.79	9.78	2.47	3.18	0.76	3.66	8.84	0.21	0.18	0.21	0.3	0.3	25.1	26.1	26.5	25.9	25.3	-	-	-	-	-
Total Phosphorus	200	230	90	410	920	180	250	90	370	560	50	60	50	50	60	1900	1600	1500	1600	2000	-	-	-	-	-
Physical Properties																									
Clay (%)	2.2	3.5	3.6	3.9	3	3.7	3.9	1.8	6	8.3	1.6	2.8	3.5	1.9	2.8	7.1	7.1	6.1	5.9	6.6	-	-	-	-	-
Silt (%)	11.8	20	16.1	23.6	19.4	26.1	39	8.8	70.8	80.2	5	9.8	10.3	6.9	9.2	44	45.5	42.3	40.2	43.2	-	-	-	-	-
Fine sand (%)	33.9	51.5	33.4	44.5	46	29	36.5	35.8	14.6	10.6	19.5	14.1	21.7	10.2	18.2	48.2	46.6	50.3	51.5	49.2	-	-	-	-	-
Coarse sand (%)	52.1	25	46.9	28	31.7	41.1	20.6	53.7	8.6	0.86	73.9	73.3	64.5	81	69.7	0.75	0.82	1.3	2.4	1.1	-	-	-	-	-
Gravel (%)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-
Loss on Ignition (%)	3.82	6.56	1.57	10.14	20.78	5.54	7.35	1.59	8.04	19.06	0.51	0.52	0.5	0.68	0.7	46.15	47.68	47.79	47.45	46.94	-	-	-	-	-
Moisture (%)	70.86	77.04	43.86	85.53	93.42	71.54	75.39	42.07	81.24	91.65	28.49	31.17	38.09	36.89	36.95	96.81	96.11	97.43	96.53	96.06	-	-	-	-	-
Radionuclides																									
Lead-210 (Bq/g)	0.13	0.13	< 0.04	0.27	0.39	0.07	0.12	0.07	0.15	0.29	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.54	0.52	0.55	0.73	0.65	-	0.9	-	-	-
Polonium-210 (Bq/g)	0.11	0.18	0.04	0.21	0.41	0.08	0.12	0.05	0.2	0.28	< 0.01	0.01	0.01	0.01	0.02	0.64	0.49	0.47	0.6	0.64	-	0.8	-	-	-
Radium-226 (Bq/g)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.04	0.02	0.02	0.02	< 0.01	0.02	< 0.01	0.07	0.07	0.06	0.08	0.08	-	0.6	-	-	-
Thorium-230 (Bq/g)	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02	<0.02	0.03	0.03	<0.02	-	-	-	-	-

Appendix C, Table 29

Sediment Chemistry and Physical Properties in the Aquatic Study Area, September/October 2018, February 2019, and September 2019

Parameter	Clearwater River Area 2					Lloyd Lake Inlet					Lake G Area 2					Lake H Area 2					Guidelines				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	ISQG[a]	LEL[b]	PEL[c]	NE2[d]	REF[e]
	24-Sep-2018					25-Sep-2018					28-Sep-2018					27-Sep-2018									
Inorganic Ions																									
Calcium	3500	400	4300	4900	3500	1900	2300	2400	2400	2300	4600	-	4000	3800	3000	2400	4100	-	-	1400	-	-	-	-	-
Magnesium	560	120	800	800	620	1100	1200	1200	1300	1200	990	-	950	910	800	620	1100	-	-	380	-	-	-	-	-
Potassium	560	180	620	730	630	1200	1300	1300	1400	1300	720	-	670	660	600	520	940	-	-	420	-	-	-	-	-
Sodium	130	60	130	160	140	120	160	150	160	150	150	-	150	150	120	130	190	-	-	100	-	-	-	-	-
Metals																									
Aluminum	3940	1120	2940	4430	3360	8400	8800	8800	9300	8700	4620	-	4380	4150	4600	2280	3640	-	-	1710	-	-	-	-	-
Antimony	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	< 0.2	-	-	-	-	-
Arsenic	6.1	1.4	5.1	5.2	7.9	4.7	6.1	6.7	6	7.2	4.8	-	3.5	5.2	4.1	1.5	2.2	-	-	1.3	5.9	9.8	17	522	20.8
Barium	77	20	100	94	100	82	100	110	100	110	69	-	65	66	56	44	77	-	-	32	-	-	-	-	-
Beryllium	0.8	0.1	0.4	0.6	0.5	0.3	0.3	0.3	0.4	0.4	0.1	-	0.1	0.1	0.2	< 0.1	0.1	-	-	< 0.1	-	-	-	-	-
Boron	12	2	29	14	23	17	20	19	22	20	10	-	10	9	10	6	11	-	-	4	-	-	-	-	-
Cadmium	0.3	0.3	0.2	0.3	0.1	0.2	0.3	0.2	0.3	0.3	0.3	-	0.3	0.4	0.3	0.5	0.4	-	-	0.3	0.6	-	3.5	-	-
Cesium[f]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	18	3.5	13	16	19	13	14	14	17	13	7.6	-	7.4	6.7	7.2	4	6.8	-	-	3.9	37.3	-	90	-	-
Cobalt	1.6	0.3	1.2	1.2	1.5	2.6	2.7	2.9	4.4	2.5	2.2	-	2.3	1.8	1.9	0.8	1.8	-	-	0.9	-	-	-	-	-
Copper	2.3	< 0.5	1.6	2.5	2.3	3	3.6	3.8	4	3.9	4.2	-	4	4.2	3.4	5	4.9	-	-	2.4	35.7	22.2	197	-	-
Iron	40500	7300	62400	46600	94100	47600	66000	74700	62600	75600	21600	-	24500	21700	15400	3200	6800	-	-	2310	-	-	-	-	-
Lead	2.5	1.3	2	2.4	1.9	3.2	3.3	3.4	3.8	3.5	4.7	-	3.1	2.1	5.6	3.8	5	-	-	3.1	35	36.7	91.3	-	-
Manganese	240	58	740	500	620	360	590	620	540	720	330	-	340	300	160	68	130	-	-	51	-	-	-	-	-
Molybdenum	0.8	< 0.1	0.9	1	1.4	0.2	0.4	0.4	0.7	0.8	0.8	-	0.9	0.6	0.9	< 0.1	0.4	-	-	< 0.1	-	13.8	-	245	22.6
Nickel	3.5	0.4	3.2	3.9	3.6	6.7	7.3	7.1	8.5	7.3	5.4	-	5.5	4.9	5	2.3	4.3	-	-	2.2	-	23.4	-	326	21.4
Selenium	0.3	< 0.1	0.2	0.3	0.2	0.4	0.5	0.4	0.5	0.5	0.6	-	0.6	0.6	0.5	0.3	0.5	-	-	0.2	-	1.9	-	29.7	3.6
Silver	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1	-	-	-	-	-
Strontium	41	25	67	51	40	40	45	46	48	46	34	-	32	34	26	39	50	-	-	33	-	-	-	-	-
Thallium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	-	< 0.2	-	-	-	-	-
Tin	0.3	< 0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	-	0.2	0.1	0.2	0.2	0.4	-	-	0.1	-	-	-	-	-
Titanium	270	70	170	250	210	290	300	270	300	300	160	-	160	160	170	100	150	-	-	98	-	-	-	-	-
Uranium	0.9	0.2	0.6	0.7	0.9	0.7	0.7	0.7	0.8	0.8	0.3	-	0.3	0.3	0.3	0.3	0.4	-	-	0.3	-	104.4	-	2296	96.7
Vanadium	88	9.2	44	53	82	20	22	22	23	22	11	-	10	9.4	11	7	12	-	-	5.1	-	35.2	-	-	-
Zinc	18	6	16	20	16	22	24	24	26	26	33	-	33	30	31	16	25	-	-	9.8	123	-	315	-	-
Nutrients																									
Total Organic Carbon (%)	17.4	1.06	12.9	18.4	18.6	11.7	12.5	12.6	12.4	12.6	23.4	24.6	23.5	22.6	22.7	15.4	29.9	34.6	36.4	11.4	-	-	-	-	-
Total Phosphorus	1000	140	1500	940	1300	1200	1600	1800	1400	1900	900	-	880	830	580	630	1500	-	-	420	-	-	-	-	-
Physical Properties																									
Clay (%)	5.1	8.5	6.4	5.1	7.4	6.2	9.6	8	6.7	7.7	2.3	2.7	2.9	2.7	3.5	3.1	8.9	9.5	5.9	3.7	-	-	-	-	-
Silt (%)	38.8	30.2	34.9	36.1	43.4	42.9	54.1	47.6	44.2	46.2	14.5	15.4	18.8	17.8	20.3	31.3	62.6	52.8	43.1	30.2	-	-	-	-	-
Fine sand (%)	44.5	27.5	44.5	48.6	45	48.6	35.6	43.3	47.3	44.8	27.2	35.6	28.7	29.9	38.5	39.7	23.3	23.6	27.2	31.2	-	-	-	-	-
Coarse sand (%)	11.7	33.8	14.2	10.2	4.2	2.3	0.8	1.2	1.7	1.4	56	46.2	49.6	49.7	37.7	25.9	5.2	14.1	23.8	34.9	-	-	-	-	-
Gravel (%)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	-	-	-
Loss on Ignition (%)	36.5	2.19	27.41	37.92	41.2	23.29	26.18	25.95	24.97	25.96	47.46	48.08	45.73	44.2	44.36	32.27	62.29	73.57	75.66	23.35	-	-	-	-	-
Moisture (%)	93.19	43.43	90.85	93.52	92.99	91.22	92.92	93.45	91.92	92.91	95.88	96.44	95.59	95.27	94.93	97.19	98.24	98.79	98.87	95.17	-	-	-	-	-
Radionuclides																									
Lead-210 (Bq/g)	0.26	< 0.04	0.24	0.33	0.25	0.33	0.32	0.24	0.28	0.33	0.27	0.35	0.28	0.24	0.26	0.43	0.96	1.1	1.1	0.33	-	0.9	-	-	-
Polonium-210 (Bq/g)	0.14	0.01	0.16	0.28	0.21	0.22	0.33	0.32	0.26	0.33	0.23	0.5	0.24	0.15	0.17	0.52	1.2	1.2	1.1	0.35	-	0.8	-	-	-
Radium-226 (Bq/g)	0.02	< 0.01	0.02	0.02	0.02	0.02	0.04	0.03	0.03	0.03	0.02	0.03	0.05	0.02	0.03	< 0.01	< 0.01	0.06	0.02	< 0.01	-	0.6	-	-	-
Thorium-230 (Bq/g)	0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	-	-	-	-

Note: All values are in µg/g on a dry weight basis unless specified otherwise.

Shaded cells indicate exceedances over guidelines.

a) Canadian sediment quality guidelines for the protection of aquatic life (CCME 2017); ISQG = interim sediment quality guideline.

b) LEL = Lowest effects level (Thompson et al. 2005).

c) Canadian sediment quality guidelines for the protection of aquatic life (CCME 2018); PEL = probable effects level.

d) NE2 = No-effect value (Burnett-Seidel and Liber 2013).

e) REF = Reference sediment value (Burnett-Seidel and Liber 2013).

f) Cesium was not analyzed for until September 2019.

Appendix C, Table 30

Phytoplankton Enumeration Results for the Aquatic Study Area, September/October 2018

Taxon	Broach Lake Area 2		Hodge Lake Area 1		Patterson Lake North Arm - West Basin Area 1		Forrest Lake Area 2		Beet Lake Area 1		Naomi Lake	
	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%
Bacteria												
Cyanophycota (blue-green algae)												
Cyanophyceae												
Synechococcophycideae												
Pseudanabaenales												
Pseudanabaenaceae												
Leptolyngbyoideae												
Planktolyngbya							30143	**0.7**				
Synechococcales												
Synechococcaceae												
Aphanothecoideae												
Cyanodictyon	4460837	**45.0**	4248684	**37.3**	6719810	**54.9**	2439325	**56.8**	5851700	**54.9**	4637337	**39.2**
Chamaesiphonales												
Chamaesiphonaceae												
Chamaesiphon											309156	**2.6**
Chroococcales												
Chroococcaceae												
Aphanocapsa	1929132	**19.5**	1791337	**15.7**			519124	**12.1**				
Aphanothece	716117	**7.2**										
Chroococcus			155020	**1.4**	16076	**0.1**	30143	**0.7**	96457	**0.9**	568074	**4.8**
Merismopedia											989298	**8.4**
Synechococcus	65766	**0.7**	218176	**1.9**	289370	**2.4**	128106	**3.0**	40190	**0.4**	46373	**0.4**
Nostocales												
Nostocaceae												
Aphanizomenon	241141	**2.4**	442093	**3.9**	217027	**1.8**	15071	**0.4**	217027	**2.0**		
Dolichospermum	124224	**1.3**	143537	**1.3**	401902	**3.3**			112533	**1.1**		
Pseudanabaena			317694	**2.8**			25119	**0.6**			46373	**0.4**
Oscillatoriaceae												
Leptolyngbya			321522	**2.8**								
Pleurocapsales												
Pleurocapsaceae												
Pleurocapsa							10048	**0.2**				
Cyanophycota colony unidentified	1592995	**16.1**	2661169	**23.4**	2446247	**20.0**	628601	**14.6**	1414697	**13.3**	340071	**2.9**
Chromista												
Chromista												
Haptophyta												
Prymnesiophyceae												
Prymnesiales												
Prymnesiaceae												
Chrysochromulina	54805	**0.6**	63156	**0.6**	40190	**0.3**	62797	**1.5**	64304	**0.6**	15458	**0.1**
Pyrrophycophyta (dinoflagellates)												
Dinophyceae												
Gymnodiniales												
Gymnodiniaceae												
Gymnodinium	29229	**0.3**	80380	**0.7**	32152	**0.3**	17583	**0.4**	72342	**0.7**	15458	**0.1**
Gymnodinium fuscum							2512	**0.1**				
Peridiniales												
Peridiniaceae												
Peridinium			5741	**0.1**								
Chrysophyta (golden-brown algae)												
Chrysophyceae												
Chromalinales												
Chromulinaceae												
Chromulina	18268	**0.2**	45932	**0.4**	8038	**0.1**	7536	**0.2**	16076	**0.2**	154578	**1.3**
Chrysococcaceae												
Kephyrion	54805	**0.6**	97605	**0.9**			5024	**0.1**	16076	**0.2**	15458	**0.1**
Hibberdiales												
Stylococcaceae												
Bitrichia longispina			5741	**0.1**								
Ochromonadales												
Dinobryaceae												
Dinobryon	14615	**0.1**	11483	**0.1**			2512	**0.1**				
Dinobryon bavaricum	7307	**0.1**	68898	**0.6**	72342	**0.6**	5024	**0.1**			46373	**0.4**
Dinobryon borgei	7307	**0.1**	17224	**0.2**								
Dinobryon divergens	14615	**0.1**			1527229	**12.5**	37678	**0.9**	1052985	**9.9**	1762188	**14.9**
Epipyxis	3654	**0.04**	11483	**0.1**			5024	**0.1**			15458	**0.1**
Ochromonadaceae												
Ochromonas	7307	**0.1**	5741	**0.1**	8038	**0.1**	2512	**0.1**	48228	**0.5**	15458	**0.1**
Synuraceae												
Mallomonas	3654	**0.04**	11483	**0.1**			2512	**0.1**	16076	**0.2**		
Mallomonas akrokomas											123662	**1.0**
Spiniferomonas									8038	**0.1**		

Appendix C, Table 30

Phytoplankton Enumeration Results for the Aquatic Study Area, September/October 2018

Taxon	Broach Lake Area 2		Hodge Lake Area 1		Patterson Lake North Arm - West Basin Area 1		Forrest Lake Area 2		Beet Lake Area 1		Naomi Lake	
	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%
Cryptophycophyta												
Cryptophyceae												
Cryptomonadales												
Cryptomonadaceae												
Chroomonas									8038	**0.1**		
Cryptomonas	14615	**0.1**	40190	**0.4**	24114	**0.2**	2512	**0.1**	112533	**1.1**	30916	**0.3**
Plagioselmis nanoplanctica	116917	**1.2**	86122	**0.8**	32152	**0.3**	72845	**1.7**	136647	**1.3**	479191	**4.0**
Chromista flagellated unidentified algal cell[a]	29229	**0.3**	68898	**0.6**	48228	**0.4**	20095	**0.5**	80380	**0.8**	123662	**1.0**
Hacrobia (cryptomonads-haptophytes)												
Cryptophyta												
Cryptophyta incertae sedis												
Katablepharidaceae												
Katablepharis ovalis	10961	**0.1**	17224	**0.2**	40190	**0.3**	5024	**0.1**	56266	**0.5**		
Harosa (stramenopiles, alveolates, and Rhizaria)												
Ochrophyta												
Bacillariophyta (diatoms)												
Bacillariophyceae												
Achnanthales												
Achnanthidiaceae												
Achnanthidium minutissimum							2512	**0.1**				
Bacillariales												
Bacillariaceae												
Nitzschia	3654	**0.04**										
Coscinodiscophyceae												
Aulacoseirales												
Aulacoseiraceae												
Aulacoseira			45932	**0.4**	24114	**0.2**	12559	**0.3**	88419	**0.8**	757432	**6.4**
Rhizosoleniales												
Rhizosoleniaceae												
Urosolenia			63156	**0.6**	192913	**1.6**	12559	**0.3**	257218	**2.4**	15458	**0.1**
Thalassiosirales												
Stephanodiscaceae												
Cyclotella	32883	**0.3**	22966	**0.2**			30143	**0.7**	80380	**0.8**		
Stephanodiscus							10048	**0.2**				
Fragilariophyceae												
Fragilariales												
Fragilariaceae												
Asterionella formosa	138839	**1.4**			16076	**0.1**	25119	**0.6**	602854	**5.7**	355529	**3.0**
Fragilaria capucina	87688	**0.9**										
Fragilaria crotonensis	36537	**0.4**										
Synedra	3654	**0.04**	5741	**0.1**	24114	**0.2**	10048	**0.2**	40190	**0.4**	15458	**0.1**
Synedra ulna									8038	**0.1**		
Tabellariales												
Tabellariaceae												
Tabellaria fenestrata							5024	**0.1**			278240	**2.4**
Plantae (plants)												
Viridiplantae (green plants)												
Charophyta (green algae)												
Conjugophytina												
Conjugophyceae												
Zygnematales												
Desmidiaceae												
Cosmarium			11483	**0.1**			2512	**0.1**	8038	**0.1**		
Euastrum	3654	**0.04**										
Spondylosium											46373	**0.4**
Staurodesmus							5024	**0.1**				
Chlorophyta (green algae)												
Chlorophytina												
Chlorophyceae												
Chlorococcales												
Chlorococcaceae												
Tetraedron minimum					16076	**0.1**						
Sphaeropleales												
Scenedesmaceae												
Crucigenia fenestrata			22966	**0.2**			40190	**0.9**			370987	**3.1**
Elakatothrix gelatinosa	29229	**0.3**	17224	**0.2**	24114	**0.2**	20095	**0.5**	32152	**0.3**	15458	**0.1**
Scenedesmus arcuatus									64304	**0.6**		
Volvocales												
Chlamydomonadaceae												
Chlamydomonas	10961	**0.1**	74639	**0.7**			5024	**0.1**	64304	**0.6**	46373	**0.4**
Pyramimonadophyceae												
Pyramimonadales												

Appendix C, Table 30

Phytoplankton Enumeration Results for the Aquatic Study Area, September/October 2018

Taxon	Broach Lake Area 2		Hodge Lake Area 1		Patterson Lake North Arm - West Basin Area 1		Forrest Lake Area 2		Beet Lake Area 1		Naomi Lake	
	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%
Polyblepharidaceae												
Pyramimonas	3654	**0.04**					2512	**0.1**				

Appendix C, Table 30

Phytoplankton Enumeration Results for the Aquatic Study Area, September/October 2018

Taxon	Broach Lake Area 2		Hodge Lake Area 1		Patterson Lake North Arm - West Basin Area 1		Forrest Lake Area 2		Beet Lake Area 1		Naomi Lake	
	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%	Cells/L	%
Trebouxiophyceae												
Oocystales												
Oocystaceae												
Franceia			5741	**0.1**								
Monoraphidium	10961	**0.1**	22966	**0.2**			7536	**0.2**			46373	**0.4**
Nephrocytium			28707	**0.3**	8038	**0.1**	2512	**0.1**			77289	**0.7**
Oocystis	25576	**0.3**	103346	**0.9**	16076	**0.1**	22607	**0.5**			61831	**0.5**
Planktosphaeria							5024	**0.1**				
Ulvophyceae												
Ulotrichales												
Ulotrichaceae												
Planctonema			34449	**0.3**								
Protozoa (single-celled eukaryotes)												
Euglenophycota												
Euglenophyceae												
Euglenales												
Euglenaceae												
Euglena											15458	**0.1**
Total	**9904789**	**100**	**11395850**	**100**	**12244629**	**100**	**4297915**	**100**	**10666492**	**100**	**11836801**	**100**

Note: Cells/L = number of cells per litre; % = percent composition.

a) < 10µm in length.

Appendix C, Table 31

Zooplankton Enumeration for the Aquatic Study Area, September/October 2018

Taxon	Broach Lake Area 2		Hodge Lake Area 1		Patterson Lake North Arm - West Basin Area 1		Forrest Lake Area 2		Beet Lake Area 1		Naomi Lake	
	Org/L	%	Org/L	%	Org/L	%	Org/L	%	Org/L	%	Org/L	%
Arthropoda												
Crustacea												
Branchiopoda												
Phyllopoda												
Diplostraca												
Cladocera												
Bosminidae												
Eubosmina	0.930	**2.7**	0.398	**1.2**	5.874	**11.0**	0.110	**0.2**	25.597	**17.8**	5.379	**8.2**
Chydoridae												
Chydoridae unidentified	0.029	**0.1**							0.663	**0.5**		
Chydorus sphaericus					1.013	**1.9**					0.849	**1.3**
Daphniidae												
Daphnia galeata	0.575	**1.6**	0.119	**0.4**			0.293	**0.6**			0.377	**0.6**
Daphnia longiremis			0.411	**1.3**	3.038	**5.7**	0.293	**0.6**	4.907	**3.4**	5.190	**7.9**
Holopediidae												
Holopedium gibberum	0.221	**0.6**	0.172	**0.5**	3.849	**7.2**	0.037	**0.1**	0.531	**0.4**	0.661	**1.0**
Sididae												
Sididae unidentified	0.010	**0.03**									0.094	**0.1**
Sida crystallina									0.133	**0.1**		
Maxillopoda												
Copepoda												
Calanoida												
Diaptomidae												
Leptodiaptomus minutus	0.077	**0.2**	0.279	**0.9**	0.081	**0.2**	0.073	**0.2**	0.345	**0.2**	1.227	**1.9**
Leptodiaptomus sicilis											0.566	**0.9**
Temoridae												
Epischura lacustris	0.067	**0.2**									0.094	**0.1**
Calanoida unidentified	0.192	**0.5**	0.133	**0.4**	0.628	**1.2**	1.577	**3.5**	0.318	**0.2**	0.755	**1.2**
Cyclopoida												
Cyclopidae												
Diacyclops thomasi	3.931	**11.3**	0.862	**2.6**	1.256	**2.4**	1.724	**3.8**	1.883	**1.3**	1.604	**2.4**
Microcyclops rubellus									3.846	**2.7**		
Cyclopoida unidentified	22.531	**64.6**	22.613	**69.2**	4.578	**8.6**	23.397	**51.2**	67.641	**47.1**	21.703	**33.1**
Rotifera												
Monogonta												
Monogononta												
Collothecaceae												
Collothecidae												
Collotheca					0.203	**0.4**						
Floscullariaceae												
Conochilidae												
Conochilus	0.384	**1.1**	1.989	**6.1**	11.951	**22.4**	2.567	**5.6**	12.467	**8.7**	5.709	**8.7**
Testudinellidae												
Pompholyx					3.849	**7.2**						
Ploima												
Asplanchnidae												
Asplanchna					1.620	**3.0**			2.387	**1.7**	1.038	**1.6**
Brachionidae												
Kellicottia	5.081	**14.6**	4.775	**14.6**	8.710	**16.3**	14.852	**32.5**	4.775	**3.3**	1.557	**2.4**
Keratella	0.767	**2.2**	0.796	**2.4**	5.064	**9.5**	0.733	**1.6**	12.732	**8.9**	11.937	**18.2**
Gastropodidae												
Ascomorpha									0.531	**0.4**		
Gastropus			0.133	**0.4**	0.405	**0.8**						
Synchaetidae												
Polyarthra									1.326	**0.9**	4.152	**6.3**
Synchaeta	0.096	**0.3**			1.215	**2.3**			3.448	**2.4**	2.595	**4.0**
Total	**34.89**	**100**	**32.68**	**100**	**53.33**	**100**	**45.66**	**100**	**143.53**	**100**	**65.49**	**100**

Note: Org/L: organisms per Liter; %: percent composition.

Appendix C, Table 32

Benthic Invertebrates Deemed Non-Benthic and Excluded from the Community Analyses of the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake North Arm - East Basin Area 3 (2018)							Patterson Lake North Arm - East Basin Area 3 (2019)							Patterson Lake North Arm - West Basin Area 1 (2019)							Forrest Lake Area 4 (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%
Annelida																												
Clitellata																												
Oligochaeta cocoon	492			308	77	**877**	**73**	3138	1046	862	462	369	**5877**	**96**				4		**4**	**20**							
Arthropoda																												
Crustacea																												
Branchiopoda																												
Phyllopoda																												
Diplostraca																												
Cladocera																												
Daphniidae																												
Daphnia			19	154	77	**250**	**21**	62			123	62	**246**	**4**		8	8			**15**	**80**					62	**62**	**100**
Holopediidae																												
Holopedium gibberum																												
Maxillopoda																												
Copepoda																												
Calanoida			77			**77**	**6**																					
Total	**492**	**0**	**96**	**462**	**154**	**1204**	**100**	**3200**	**1046**	**862**	**585**	**431**	**6123**	**100**	**0**	**8**	**8**	**4**	**0**	**19**	**100**	**0**	**0**	**0**	**0**	**62**	**62**	**100**

Appendix C, Table 32

Benthic Invertebrates Deemed Non-Benthic and Excluded from the Community Analyses of the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Forrest Lake Area 3 (2019)							Beet Lake Area 2 (2018)							Naomi Lake (2018)							Lake G Area 2 (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%	1	2	3	4	5	Tot	%
Annelida																												
Clitellata																												
Oligochaeta cocoon	8	23		12	8	**50**	**87**																					
Arthropoda																												
Crustacea																												
Branchiopoda																												
Phyllopoda																												
Diplostraca																												
Cladocera																												
Daphniidae																												
Daphnia	4					**4**	**7**				15	15	**31**	**100**				31		**31**	**10**	538	1077	6154	5923	8462	**22154**	**97**
Holopediidae																												
Holopedium gibberum																			123	**123**	**40**				154		**154**	**1**
Maxillopoda																												
Copepoda																												
Calanoida		4				**4**	**7**										31	62	62	**154**	**50**			154	308		**462**	**2**
Total	**12**	**27**	**0**	**12**	**8**	**58**	**100**	**0**	**0**	**0**	**15**	**15**	**31**	**100**	**0**	**0**	**31**	**92**	**185**	**308**	**100**	**538**	**1077**	**6308**	**6385**	**8462**	**22769**	**100**

Note: Total = total per taxon per waterbody; % = percent composition.

Note: No organisms found in Broach Lake Area 1, Hodge Lake Area 2, Patterson Lake North Area 2, Patterson Lake East Area 2, Forrest Lake Area 1, Clearwater River Area 2, Lloyd Lake Inlet, or Lake H Area 2 were deemed non-benthic.

Note: All values are on a per m^2 basis, except taxon totals that are on a per 5 m^2 basis.

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Broach Lake Area 1 (2018)							Hodge Lake Area 2 (2018)							Patterson Lake North Arm - East Basin Area 3 (2018)							Patterson Lake North Arm - East Basin Area 3 (2019)							Patterson Lake North Arm - West Basin Area 2 (2019)							Patterson Lake North Arm - West Basin Area 1 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Annelida																																										
Clitellata																																										
Hirudinea																																									
Hirudinea																																									
Arhynchobdellida																																									
Erpobdelliformes																																									
Erpobdellidae																																									
Erpobdella punctata																																									
Nephelopsis obscura																																									
Hirudiniformes																																									
Haemopidae																																									
Haemopis grandis																																									
Rhynchobdellida																																									
Glossiphoniidae																																									
Glossiphonia complanata																																									
Helobdella stagnalis		31	31		31	**92**	**1**								185	431	442	115	185	**1358**	**2**	308	62	31	77	492	**969**	**3**														
Glossiphoniidae unidentified																																										
Oligochaeta																																									
Lumbriculata																																									
Lumbriculidae	31	62	62	31	31	**215**	**3**	31	77		154		**262**	**0.16**																												
Oligochaeta																																									
Enchytraeida																																									
Enchytraeidae																																									
Haplotaxida																																									
Tubificina																																									
Naididae		31			62	**92**	**1**								246					**246**	**0.4**																			
Tubificidae								277	231	465	154	538	**1665**	**1**	892	1231	346	577	862	**3908**	**6**	800	492	246	400	431	**2369**	**8**	23		19	19	4	**65**	**1**	4	4		4		**12**	**1**
Arthropoda																																									
Chelicerata																																									
Arachnida																																									
Acari																																									
Trombidiformes																																									
Prostigmata																																									
Arrenuridae																																									
Arrenurus																																									
Hydrodromidae																																									
Hydrodroma																													4	4	8		12	**27**	**0.3**							
Hygrobatidae																																									
Lebertiidae																																									
Lebertia																																									
Limnesiidae																																									
Limnesia																																									
Oxidae																																									
Oxus																																									
Pionidae																																									
Piona				31		**31**	**0.5**		77	77			**154**	**0.09**																	4		4	**8**	**0.1**							
Sperchontidae																																									
Sperchon																		77		**77**	**0.1**																			
Unionicolidae																																									
Neumania																											31	**31**	**0**													
Unionicola																															15			**15**	**0.1**	4	4	4			**12**	**1**
Trombidiformes unidentified[1]		92		31		**123**	**2**																									31	**31**	**0.3**			4			**4**	**0**
Crustacea																																										
Branchiopoda																																										
Phyllopoda																																										
Diplostraca																																										
Cladocera																																										
Chydoridae																																										
Eurycercus	62	31		31		**123**	**2**								431				31	**462**	**1**								319	258	246	242	338	**1404**	**13**							
Chydoridae unidentified		31		31	31	**92**	**1**															185	308	185	123		**800**	**3**													
Ilyocryptidae																																										
Ilyocryptus																									123	92	185	**400**	**1**								4				**4**	**0**
Macrothricidae	92	123	31	62	62	**369**	**6**								892	246	538	923	308	**2908**	**4**	369	738	431	338	369	**2246**	**7**													
Sididae																																										
Latona setifera								123	77	77	77		**354**	**0.21**	62					**62**	**0.1**								50	31	15	62	62	**219**	**2**							
Malacostraca																																										
Eumalacostraca																																										
Amphipoda																																										
Gammaridea																																										
Gammaridae																																										
Gammarus lacustris								250					**250**	**0.15**																												
Hyalellidae																																										
Hyalella azteca	215	585	646	246	277	**1969**	**30**	1046	846		2154		**4046**	**2**	1785		212			**1996**	**3**	554		492			**1046**	**3**	131	58	142	154	69	**554**	**5**							

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Broach Lake Area 1 (2018)							Hodge Lake Area 2 (2018)							Patterson Lake North Arm - East Basin Area 3 (2018)							Patterson Lake North Arm - East Basin Area 3 (2019)							Patterson Lake North Arm - West Basin Area 2 (2019)							Patterson Lake North Arm - West Basin Area 1 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Maxillopoda																																										
Copepoda																																										
Cyclopoida					62	**62**	**1**	31	77		77		**185**	**0.11**	246	615	154	462	323	**1800**	**3**	246	431	62	185	369	**1292**	**4**	46	62	46	31	15	**200**	**2**			8			**8**	**0**
Ostracoda		31		92	31	**154**	**2**								154	277			31	**462**	**1**		123	92	154	338	**708**	**2**	15	15				**31**	**0.3**				35		**35**	**2**
Hexapoda																																										
Insecta																																										
Pterygota																																										
Coleoptera																																										
Chrysomelidae																																										
Donacia																																										
Dytiscidae																																										
Agabus																																										
Dytiscidae unidentified																																										
Diptera																																										
Nematocera																																										
Ceratopogonidae																																										
Bezzia																							62				**62**	**0**														
Culicoides																																										
Dasyhelea																														15				**15**	**0.1**							
Probezzia									77	77		**154**	**0.09**									31			15		**46**	**0**		4	4	31		**38**	**0.4**							
Chaoboridae																																										
Chaoborus																																				4					**4**	**0**
Chironomidae																																										
Chironominae																																										
Chironomini																																										
Chironomus		31				**31**	**0.5**									31			15	**46**	**0.1**					31	**31**	**0**								46	85	50	335	58	**573**	**32**
Cladopelma	31		62	92		**185**	**3**	4	154		77	77	**312**	**0.19**																												
Cryptochironomus	31	31		62		**123**	**2**								215	92	96	58	46	**508**	**1**				31		**31**	**0**	112	112	135	169	150	**677**	**6**							
Demicryptochironomus																													4			8	4	**15**	**0.1**							
Dicrotendipes	62			62		**123**	**2**									62	135		31	**227**	**0.3**	62	62				**123**	**0**	8		8	15	35	**65**	**1**							
Endochironomus																																										
Glyptotendipes																	77			**77**	**0.1**																				
Lauterborniella		62				**62**	**1**																																		
Microtendipes															31					**31**	**0.05**																				
Nilothauma											77		**77**	**0.05**																	15	31	19	**65**	**1**							
Pagastiella			31			**31**	**0.5**		77		154	154	**385**	**0.23**	62	31	77	154	385	**708**	**1**	246	123	31	62	31	**492**	**2**	15		31		15	**62**	**1**							
Parachironomus																																										
Paracladopelma																																										
Phaenopsectra																																										
Polypedilum	31	92	92	185		**400**	**6**	215					**215**	**0.13**	2185	1077	1346	1154	1077	**6838**	**10**	523	831	462	585	1077	**3477**	**11**														
Sergentia											77		**77**	**0.05**																						50	62	65	250	19	**446**	**25**
Stenochironomus																																										
Stictochironomus								862	923	846	385	615	**3631**	**2**	308	492			154	**954**	**1**								15	27	54	42	62	**200**	**2**	27	8	35		31	**100**	**6**
Tribelos																																										
Pseudochironomini																																										
Pseudochironomus															923	1046	1615	904	277	**4765**	**7**								142	173	135	212	112	**773**	**7**							
Tanytarsini																																										
Tanytarsini unidentified																																										
Cladotanytarsus	62	31	31			**123**	**2**		615	923	154	846	**2538**	**2**	677	462	19		31	**1188**	**2**	62	62	92	77	123	**415**	**1**	15			15		**31**	**0.3**							
Corynocera	92	31	31	31	62	**246**	**4**	8308	30154	53538	20615	27077	**139692**	**83**																												
Micropsectra																																				19	4	42		19	**85**	**5**
Neostempellina																																										
Paratanytarsus																																										
Stempellinella																																										
Tanytarsus	31	92	123	338	123	**708**	**11**	123	231	538		154	**1046**	**1**	5877	8092	4750	3481	5262	**27462**	**41**	2277	2400	708	708	1754	**7846**	**26**				15		**15**	**0.1**	12		4	12	8	**35**	**2**
Diamesinae																																										
Diamesini																																										
Potthastia longimana																													8	15	4	23		**50**	**0.5**							
Protanypus																																						8		4	**12**	**1**
Orthocladiinae																																										
Epoicocladius																																										
Heterotanytarsus											77		**77**	**0.05**																												
Heterotrissocladius																														15	4			**19**	**0.2**							
Orthocladius																																										
Paracladius																																										
Psectrocladius								62	77				**138**	**0.08**		123				**123**	**0.2**	62					**62**	**0**	19					**19**	**0.2**							
Tvetenia																																										
Zalutschia																																										

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Broach Lake Area 1 (2018)							Hodge Lake Area 2 (2018)							Patterson Lake North Arm - East Basin Area 3 (2018)							Patterson Lake North Arm - East Basin Area 3 (2019)							Patterson Lake North Arm - West Basin Area 2 (2019)							Patterson Lake North Arm - West Basin Area 1 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Prodiamesinae																																										
Monodiamesa																													50	4	12	19	4	**88**	**1**							
Tanypodinae																																										
Coelotanypodini																																										
Clinotanypus																																										
Pentaneurini																																										
Ablabesmyia					31	**31**	**0.5**		77				**77**	**0.05**				77	15	**92**	**0.1**																				
Guttipelopia																									92	15		**108**	**0**													
Larsia		62			31	**92**	**1**																																		
Thienemannimyia															62					**62**	**0.1**											4	4	**8**	**0.07**							
Procladiini																																										
Procladius	62	185		185	154	**585**	**9**	246	231	231	154	231	**1092**	**1**	523	954	846	577	692	**3592**	**5**	1108	954	369	569	800	**3800**	**12**	204	296	223	112	138	**973**	**9**	62	8	46	15	19	**150**	**8**
Tanypodinae unidentified																																	4	**4**	**0.04**							
Chironomidae pupa																																										
Ephemeroptera																																										
Baetidae																																										
Callibaetis																																										
Caenidae																																										
Caenis																123	115			**238**	**0.4**								19	12	19	19	35	**104**	**1**							
Ephemerellidae																																										
Eurylophella																																										
Ephemeridae																																										
Ephemera																										4	**4**	**0**	31	73	46	77	69	**296**	**3**							
Hexagenia limbata															4	4				**8**	**0.01**																				
Leptophlebiidae																																										
Leptophlebia																																	31	**31**	**0.3**							
Hemiptera																																										
Heteroptera																																										
Corixidae																																										
Cymatia americana																																										
Sigara																																										
Sigara conocephala																																										
Corixidae unidentified																																										
Notonectidae																																										
Notonecta																																										
Odonata																																										
Anisoptera																																										
Corduliidae																																										
Cordulia shurtleffii																																										
Somatochlora																																										
Gomphidae																																										
Ophiogomphus																																										
Zygoptera																																										
Coenagrionidae																																										
Enallagma																																										
Trichoptera																																										
Brachycentridae																																										
Brachycentrus																																										
Hydroptilidae																																										
Oxyethira																																										
Lepidostomatidae																																										
Lepidostoma																																										
Leptoceridae																																										
Ceraclea																																										
Mystacides																														15	4		15	**35**	**0.3**							
Nectopsyche																									62			**62**	**0**													
Oecetis																						62						**62**	**0**	119	173	104	88	142	**627**	**6**							
Molannidae																																										
Molanna								8	81	4	88		**181**	**0.11**		31				**31**	**0.05**					31	**31**	**0**														
Phryganeidae																																										
Agrypnia								15	15	15	23	8	**77**	**0.05**																												
Phryganea																4				**4**	**0.01**																				
Polycentropodidae																																										
Polycentropus																																										
Trichoptera pupa[a]																																	4	**4**	**0.04**							
Mollusca																																										
Bivalvia																																										
Heterodonta																																										
Veneroida																																										

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Broach Lake Area 1 (2018)							Hodge Lake Area 2 (2018)							Patterson Lake North Arm - East Basin Area 3 (2018)							Patterson Lake North Arm - East Basin Area 3 (2019)							Patterson Lake North Arm - West Basin Area 2 (2019)							Patterson Lake North Arm - West Basin Area 1 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Pisidiidae																																										
Pisidium				31		**31**	**0.5**	646	1769	1846	1231	615	**6108**	**4**	1727	773	712	1058	877	**5146**	**8**	646	492	277	231	200	**1846**	**6**	412	338	338	304	373	**1765**	**17**			46	65	4	**115**	**7**
Sphaerium										4			**4**	**0.002**												31	**31**	**0**													
Pisidiidae unidentified	123	123	92	92	31	**462**	**7**	800		769	308	538	**2415**	**1**	62	123			77	**262**	**0.4**		123	431	369	462	**1385**	**5**	415	292	246	277	646	**1877**	**18**	8	4	42	50	4	**108**	**6**
Palaeoheterodonta																																									
Unionoida																																									
Unionidae																																									
Lasmigona																																									
Gastropoda																																									
Prosobranchia																																									
Heterostropha																																									
Valvatidae																																									
Valvata sincera								62	923	1154	308	462	**2908**	**2**	215	369	77	212	231	**1104**	**2**	62	215	277	15	154	**723**	**2**													
Basommatophora																																									
Ancylidae																																									
Ferrissia rivularis																																									
Lymnaeidae																																									
Physidae																																									
Physa																																									
Planorbidae																																									
Gyraulus		92				**92**	**1**										96			**96**	**0.1**									4	4		15	**23**	**0.2**						
Helisoma																																									
Promenetus exacuous																																									
Neotaenioglossa																																									
Hydrobiidae																																									
Amnicola																																									
Nematoda										154			**154**	**0.09**	277		96		31	**404**	**1**		31	185			**215**	**1**	19		15	15		**50**	**0.5**	15	19	4	23	8	**69**	**4**
Platyhelminthes																																									
Total	**923**	**1846**	**1231**	**1631**	**1015**	**6646**	**100**	**13108**	**36712**	**60719**	**26419**	**31315**	**168273**	**100**	**18038**	**16688**	**11750**	**9827**	**10938**	**67242**	**100**	**7600**	**7508**	**4646**	**4046**	**6912**	**30712**	**100**	**2196**	**1996**	**1896**	**1985**	**2412**	**10485**	**100**	**250**	**200**	**358**	**788**	**173**	**1769**	**100**

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake South Arm Area 2 (2018)							Forrest Lake Area 1 (2018)							Forrest Lake Area 4 (2018)							Forrest Lake Area 3 (2019)							Beet Lake Area 2 (2018)							Naomi Lake (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Annelida																																										
Clitellata																																										
Hirudinea																																									
Hirudinea																																									
Arhynchobdellida																																									
Erpobdelliformes																																									
Erpobdellidae																																									
Erpobdella punctata																																									
Nephelopsis obscura										8	96	8	**112**	**0.1**																												
Hirudiniformes																																									
Haemopidae																																									
Haemopis grandis																																									
Rhynchobdellida																																									
Glossiphoniidae																																									
Glossiphonia complanata								4	8	81	4		**96**	**0.1**																												
Helobdella stagnalis								77	154	388	158		**777**	**1**																												
Glossiphoniidae unidentified																																									
Oligochaeta																																									
Lumbriculata																																									
Lumbriculidae																																									
Oligochaeta																																									
Enchytraeida																																									
Enchytraeidae		15				**15**	**0.1**	231			154	246	**631**	**1**																												
Haplotaxida																																									
Tubificina																																									
Naididae								77					**77**	**0.1**										4			**4**	**0**														
Tubificidae	88	46	42	15	23	**215**	**1**	77					**77**	**0.1**	77	81	108	31		**296**	**1**	27	12	88	15	4	**146**	**3**	19	50	104	15	54	**242**	**2**	200	631	1077	600	462	**2969**	**24**
Arthropoda																																										
Chelicerata																																										
Arachnida																																										
Acari																																										
Trombidiformes																																										
Prostigmata																																										
Arrenuridae																																										
Arrenurus											77		**77**	**0.1**																												
Hydrodromidae																																										
Hydrodroma		15	15		42	**73**	**0.5**										15			**15**	**0.1**																				
Hygrobatidae		15	31			**46**	**0.3**																																			
Lebertiidae																																										
Lebertia																																										
Limnesiidae																																										
Limnesia																															15			**15**	**0.1**							
Oxidae																																	15	**15**	**0.1**							
Oxus																																										
Pionidae																																										
Piona		15	15	15		**46**	**0.3**																			8	**8**	**0**														
Sperchontidae																																										
Sperchon																																										
Unionicolidae																																										
Neumania																																										
Unionicola																																								15		**15**	**0.1**
Trombidiformes unidentified[1]	15					**15**	**0.1**																																		
Crustacea																																										
Branchiopoda																																										
Phyllopoda																																										
Diplostraca																																										
Cladocera																																										
Chydoridae																																										
Eurycercus	508	138	112	231	96	**1085**	**7**		77	77	154	31	**338**	**0.3**	862	708	554	585	508	**3215**	**12**				4	4	**8**	**0**	8				4	**12**	**0.1**							
Chydoridae unidentified																																										
Ilyocryptidae																																										
Ilyocryptus								77			154		**231**	**0.2**										4			**4**	**0**														
Macrothricidae	15					**15**	**0.1**	231	2923	846	308	3077	**7385**	**7**		92		31	62	**185**	**1**									31			**31**	**0.3**							
Sididae																																										
Latona setifera	31	15		31	15	**92**	**1**		77				**77**	**0.1**		31	31	31	77	**169**	**1**								19	31	31	15	46	**142**	**1**							
Malacostraca																																										
Eumalacostraca																																										
Amphipoda																																										
Gammaridea																																										
Gammaridae																																										
Gammarus lacustris																			31	**31**	**0.1**																				
Hyalellidae																																										
Hyalella azteca			15			**15**	**0.1**	385	11000	12538	9308	10092	**43323**	**42**	1185	1031	1062	985	877	**5138**	**19**			4			**4**	**0**	8	31	73		15	**127**	**1**				169		**169**	**1**

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Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake South Arm Area 2 (2018)							Forrest Lake Area 1 (2018)							Forrest Lake Area 4 (2018)							Forrest Lake Area 3 (2019)							Beet Lake Area 2 (2018)							Naomi Lake (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Maxillopoda																																									
Copepoda																																									
Cyclopoida	31	15	31	62	15	**154**	**1**	1000		154	231	615	**2000**	**2**	62		246	62	215	**585**	**2**		8	4	12		**23**	**1**	8	15	46	31		**100**	**1**	92	92	92	62	215	**554**	**5**
Ostracoda		15				**15**	**0.1**		154	462	77		**692**	**1**		31	31			**62**	**0.2**	131	58	27	38	119	**373**	**9**													
Hexapoda																																									
Insecta																																									
Pterygota																																									
Coleoptera																																									
Chrysomelidae																																									
Donacia																																									
Dytiscidae																																									
Agabus																																									
Dytiscidae unidentified																																									
Diptera																																									
Nematocera																																									
Ceratopogonidae																																									
Bezzia																																									
Culicoides																																									
Dasyhelea																																									
Probezzia	31	62	8		4	**104**	**1**	231	154	385	77	185	**1031**	**1**	15	15	62	62		**154**	**1**								8	4	12	8	4	**35**	**0.3**							
Chaoboridae																																									
Chaoborus																																						231	246	169	262	**908**	**7**
Chironomidae																																									
Chironominae																																									
Chironomini																																									
Chironomus		154				**154**	**1**												15	**15**	**0.1**	85			65	62	**212**	**5**	35	31	58	12	77	**212**	**2**	46	1092	969	831	1200	**4138**	**34**
Cladopelma																																									
Cryptochironomus	196	169	219	169	165	**919**	**6**		231	77	154	154	**615**	**1**		46	31	62	215	**354**	**1**			4			**4**	**0**	31	38	108	46	19	**242**	**2**		15				**15**	**0.1**
Demicryptochironomus					15	**15**	**0.1**									15				**15**	**0.1**								4	15	31			**50**	**0.4**							
Dicrotendipes	15	31		31	38	**115**	**1**	3000	154	1385	769	431	**5738**	**6**	138	277	108	77	154	**754**	**3**								135	65	181	77	112	**569**	**5**							
Endochironomus								692		77	308		**1077**	**1**															19					**19**	**0.2**							
Glyptotendipes																																									
Lauterborniella																																									
Microtendipes								1385		615	231	62	**2292**	**2**																										31	**31**	**0.3**
Nilothauma																																									
Pagastiella									462	77			**538**	**1**	123	92	215	169	123	**723**	**3**								15	31	154	138	108	**446**	**4**							
Parachironomus	31					**31**	**0.2**																									15		**15**	**0.1**				31		**31**	**0.3**
Paracladopelma																								8			**8**	**0**														
Phaenopsectra								77					**77**	**0.1**																												
Polypedilum	15					**15**	**0.1**	692			231		**923**	**1**				15	15	**31**	**0.1**		4				**4**	**0**			15	4	4	**23**	**0.2**				15	15	**31**	**0.3**
Sergentia															15				31	**46**	**0.2**	396	135		73	135	**738**	**17**	38	77	85	281	227	**708**	**6**							
Stenochironomus				15		**15**	**0.1**																																			
Stictochironomus	38	123	8		88	**258**	**2**								708	431	815	492	492	**2938**	**11**		258	208	69	85	**619**	**15**	154	223	254	200	77	**908**	**7**							
Tribelos															46	31			62	**138**	**1**																				
Pseudochironomini																																									
Pseudochironomus	38	62	50	31	23	**204**	**1**			77			**77**	**0.1**	15		15	62	62	**154**	**1**									12	81	12	62	**165**	**1**	31					**31**	**0.3**
Tanytarsini																																									
Tanytarsini unidentified	15					**15**	**0.1**																																		
Cladotanytarsus								77	154				**231**	**0.2**	92	31	92	92	92	**400**	**2**			4			**4**	**0**	19	77	62	62	31	**250**	**2**							
Corynocera																																									
Micropsectra																						8	38	4		8	**58**	**1**														
Neostempellina			15			**15**	**0.1**																								15			**15**	**0.1**							
Paratanytarsus					15	**15**	**0.1**		154				**154**	**0.1**															15					**15**	**0.1**							
Stempellinella																								4			**4**	**0**														
Tanytarsus	46		15		15	**77**	**1**	2154	462	77	154		**2846**	**3**			31		31	**62**	**0.2**	4					**4**	**0**	88	108	108	146	81	**531**	**4**		15	31	15		**62**	**1**
Diamesinae																																									
Diamesini																																									
Potthastia longimana			4		4	**8**	**0.05**									31		15	15	**62**	**0.2**				4		**4**	**0**	12	8	31		4	**54**	**0.4**							
Protanypus																						23	23		69	27	**142**	**3**														
Orthocladiinae																																									
Epoicocladius	4					**4**	**0.03**																																		
Heterotanytarsus										77			**77**	**0.1**																												
Heterotrissocladius	35	31	54			**119**	**1**								15	46	123	31	31	**246**	**1**			4			**4**	**0**	15	23	23	12	4	**77**	**1**							
Orthocladius								77					**77**	**0.1**	31					**31**	**0.1**																				
Paracladius																		31	31	**62**	**0.2**		12	227			**238**	**6**	12					**12**	**0.1**							
Psectrocladius	31		27	77		**135**	**1**	77	154		77	31	**338**	**0.3**		31		46	31	**108**	**0.4**								31	85	58	154	62	**388**	**3**							
Tvetenia								77					**77**	**0.1**																												
Zalutschia								77					**77**	**0.1**					31	**31**	**0.1**	4	12	19	4	27	**65**	**2**														

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake South Arm Area 2 (2018)							Forrest Lake Area 1 (2018)							Forrest Lake Area 4 (2018)							Forrest Lake Area 3 (2019)							Beet Lake Area 2 (2018)							Naomi Lake (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Prodiamesinae																																										
Monodiamesa																15				**15**	**0.1**			27			**27**	**1**			4	23	4	**31**	**0.3**							
Tanypodinae																																										
Coelotanypodini																																										
Clinotanypus								77		154			**231**	**0.2**																											
Pentaneurini																																										
Ablabesmyia		15	4			**19**	**0.1**	154		154	77		**385**	**0.4**																											
Guttipelopia								231		154			**385**	**0.4**																											
Larsia								154				369	**523**	**1**																											
Thienemannimyia	19		15			**35**	**0.2**	846		77	615		**1538**	**1**																											
Procladiini																																										
Procladius	462	462	262	308	258	**1750**	**12**	846	1154	538	615	1292	**4446**	**4**	446	415	354	231	123	**1569**	**6**	62	112	58	4	115	**350**	**8**	169	173	281	404	288	**1315**	**11**	62	400	246	415	200	**1323**	**11**
Tanypodinae unidentified					15	**15**	**0.1**										31			**31**	**0.1**																					
Chironomidae pupa																								4			**4**	**0**													
Ephemeroptera																																										
Baetidae																																										
Callibaetis																15	15			**31**	**0.1**																					
Caenidae																																										
Caenis	281	215	162	262	181	**1100**	**7**	769	462	538	154	615	**2538**	**2**	62	46	46	108	46	**308**	**1**								4	46	58	8		**115**	**1**							
Ephemerellidae																																										
Eurylophella								77				31	**108**	**0**																											
Ephemeridae																																										
Ephemera	73	46	123	62	27	**331**	**2**		4				**4**	**0.004**	19	15	31	38	4	**108**	**0.4**								77	131	135	46	38	**427**	**3**							
Hexagenia limbata																													4			12		**15**	**0.1**							
Leptophlebiidae																																										
Leptophlebia								231				31	**262**	**0.3**																											
Hemiptera																																										
Heteroptera																																										
Corixidae																																										
Cymatia americana																																										
Sigara																																										
Sigara conocephala																																										
Corixidae unidentified																																										
Notonectidae																																										
Notonecta																																										
Odonata																																										
Anisoptera																																										
Corduliidae																																										
Cordulia shurtleffii								27	4	12			**42**	**0.04**																											
Somatochlora																4				**4**	**0.0**																					
Gomphidae																																										
Ophiogomphus										4			**4**	**0.004**																											
Zygoptera																																										
Coenagrionidae																																										
Enallagma								15		4			**19**	**0.02**																											
Trichoptera																																										
Brachycentridae																																										
Brachycentrus			15			**15**	**0.1**																																		
Hydroptilidae																																										
Oxyethira								231		308	77		**615**	**1**																											
Lepidostomatidae																																										
Lepidostoma																	15			**15**	**0.1**																					
Leptoceridae																																										
Ceraclea								77					**77**	**0.1**																											
Mystacides					4	**4**	**0.03**					31	**31**	**0.03**		15	15			**31**	**0.1**								4				8	**12**	**0.1**							
Nectopsyche																																										
Oecetis		15	38	62	31	**146**	**1**			77	77		**154**	**0.1**		46		31	15	**92**	**0.3**									27	35	19		**81**	**1**							
Molannidae																																										
Molanna	4	19	4		19	**46**	**0.3**								8	8	42	8	35	**100**	**0.4**								4	31	58	23	15	**131**	**1**							
Phryganeidae																																										
Agrypnia								154		158	169		**481**	**0.5**																											
Phryganea																																										
Polycentropodidae																																										
Polycentropus										308	77	277	**662**	**1**															4					**4**	**0.03**							
Trichoptera pupa[a]																															4			**4**	**0.03**							
Mollusca																																										
Bivalvia																																										
Heterodonta																																										
Veneroida																																										

Appendix C, Table 33

Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake South Arm Area 2 (2018)							Forrest Lake Area 1 (2018)							Forrest Lake Area 4 (2018)							Forrest Lake Area 3 (2019)							Beet Lake Area 2 (2018)							Naomi Lake (2018)						
	1	2	3	4	5	Tot	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Pisidiidae																																									
Pisidium	446	800	565	373	738	**2923**	**19**	1969	1231	2165	1615	1335	**8315**	**8**	827	696	546	485	435	**2988**	**11**	19	185	162	42	100	**508**	**12**	223	469	362	396	415	**1865**	**15**		200	138	108	154	**600**	**5**
Sphaerium				15		**15**	**0.1**																4				**4**	**0**					8	**8**	**0.06**							
Pisidiidae unidentified	708	954	819	600	708	**3788**	**25**	615	1538	2077	308	738	**5277**	**5**	954	631	1108	1385	831	**4908**	**18**	23	142	269	19	69	**523**	**12**	338	600	600	462	585	**2585**	**21**	231	246	262	154	338	**1231**	**10**
Palaeoheterodonta																																									
Unionoida																																									
Unionidae																																									
Lasmigona											4		**4**	**0.004**																												
Gastropoda																																									
Prosobranchia																																									
Heterostropha																																									
Valvatidae																																									
Valvata sincera		15				**15**	**0.1**	77	231	154	77	185	**723**	**1**			46		15	**62**	**0.2**								12	50	27	4	8	**100**	**1**							
Basommatophora																																									
Ancylidae																																									
Ferrissia rivularis								615		154	231		**1000**	**1**																												
Lymnaeidae	77	46	85	46	65	**319**	**2**										15			**15**	**0.1**								4	12	46			**62**	**1**							
Physidae																																									
Physa								162					**162**	**0.2**					31	**31**	**0.1**																				
Planorbidae																																									
Gyraulus	62		123	62	85	**331**	**2**	538		77	77	31	**723**	**1**	31	15	15		46	**108**	**0.4**									4				**4**	**0.03**							
Helisoma								31		4			**35**	**0.03**																												
Promenetus exacuous											77		**77**	**0.1**																												
Neotaenioglossa																																									
Hydrobiidae																																									
Amnicola								692	154	231	231	31	**1338**	**1**																												
Nematoda	15	15	46	15	62	**154**	**1**			231	77	31	**338**	**0.3**	31		46		46	**123**	**0.5**	85	12		46	23	**165**	**4**	4	8		15	19	**46**	**0.4**			31			**31**	**0.3**
Platyhelminthes																								8			**8**	**0**													
Total	**3331**	**3527**	**2923**	**2481**	**2754**	**15015**	**100**	**19362**	**21092**	**24977**	**17277**	**19927**	**102635**	**100**	**5762**	**4942**	**5865**	**5162**	**4827**	**26558**	**100**	**865**	**1012**	**1135**	**469**	**785**	**4265**	**100**	**1538**	**2504**	**3150**	**2638**	**2392**	**12223**	**100**	**677**	**2923**	**3092**	**2569**	**2877**	**12138**	**100**

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Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Beet Lake Area 2 (2018)							Naomi Lake (2018)							Clearwater River Area 2 (2018)							Lloyd Lake Inlet (2018)							Lake G Area 2 (2018)							Lake H Area 2 (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Annelida																																										
Clitellata																																										
Hirudinea																																									
Hirudinea																																									
Arhynchobdellida																																									
Erpobdelliformes																																									
Erpobdellidae																																									
Erpobdella punctata																			15	**15**	**0.007**								8			4		**12**	**0.01**							
Nephelopsis obscura																																	4	**4**	**0.003**							
Hirudiniformes																																									
Haemopidae																																									
Haemopis grandis																																	4	**4**	**0.003**							
Rhynchobdellida																																									
Glossiphoniidae																																									
Glossiphonia complanata																														31			77	**108**	**0.1**							
Helobdella stagnalis															162			77	77	**315**	**0.2**								481	185	4		154	**823**	**1**							
Glossiphoniidae unidentified																														31				**31**	**0.03**							
Oligochaeta																																									
Lumbriculata																																									
Lumbriculidae																													4	123	419	385	100	**1031**	**1**			15			**15**	**1**
Oligochaeta																																									
Enchytraeida																																									
Enchytraeidae															77	62	308			**446**	**0.2**								231	185	308	615		**1338**	**1**							
Haplotaxida																																									
Tubificina																																									
Naididae																						31	62		108		**200**	**1**														
Tubificidae	19	50	104	15	54	**242**	**2**	200	631	1077	600	462	**2969**	**24**			308			**308**	**0.1**	138	369	523	385	169	**1585**	**11**	154	123				**277**	**0.2**	31	31			138	**200**	**13**
Arthropoda																																									
Chelicerata																																									
Arachnida																																									
Acari																																									
Trombidiformes																																									
Prostigmata																																									
Arrenuridae																																									
Arrenurus																		77		**77**	**0.04**																				
Hydrodromidae																																									
Hydrodroma																																									
Hygrobatidae																																									
Lebertiidae																																									
Lebertia																														31		77		**108**	**0.1**							
Limnesiidae																																									
Limnesia			15			**15**	**0.1**																																			
Oxidae																																									
Oxus					15	**15**	**0.1**										154			**154**	**0.1**																				
Pionidae																																									
Piona																							31	15		46	**92**	**1**	77	62	154	77	154	**523**	**0.4**							
Sperchontidae																																									
Sperchon																62				**62**	**0.03**																				
Unionicolidae																																									
Neumania																																									
Unionicola								15					**15**	**0.1**										15			**15**	**0.1**														
Trombidiformes unidentified[1]																																									
Crustacea																																									
Branchiopoda																																									
Phyllopoda																																									
Diplostraca																																									
Cladocera																																									
Chydoridae																																									
Eurycercus	8				4	**12**	**0.1**															31			15		**46**	**0.3**														
Chydoridae unidentified																																	154	**154**	**0.1**							
Ilyocryptidae																																									
Ilyocryptus																62				**62**	**0.03**	92					**92**	**1**														
Macrothricidae		31				**31**	**0.3**								154	62	462	154	923	**1754**	**1**	62					**62**	**0.4**														
Sididae																																									
Latona setifera	19	31	31	15	46	**142**	**1**															62	77				**138**	**1**												31	**31**	**2**
Malacostraca																																									
Eumalacostraca																																									
Amphipoda																																									
Gammaridea																																									
Gammaridae																																									
Gammarus lacustris																		19	88	**108**	**0.1**																				
Hyalellidae																																									
Hyalella azteca	8	31	73		15	**127**	**1**				169		**169**	**1**	5769	6123	11846	9000	12462	**45200**	**22**	15					**15**	**0.1**	3308	954	923	2923	1154	**9262**	**8**							

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Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Beet Lake Area 2 (2018)							Naomi Lake (2018)							Clearwater River Area 2 (2018)							Lloyd Lake Inlet (2018)							Lake G Area 2 (2018)							Lake H Area 2 (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Maxillopoda																																										
Copepoda																																										
Cyclopoida	8	15	46	31		**100**	**1**	92	92	92	62	215	**554**	**5**		185	308	154		**646**	**0.3**	185	338	31	62		**615**	**4**		246				**246**	**0.2**							
Ostracoda																		154	308	**462**	**0.2**	77		77		31	**185**	**1**	385	62	308		308	**1062**	**1**		31	31			**62**	**4**
Hexapoda																																										
Insecta																																										
Pterygota																																										
Coleoptera																																										
Chrysomelidae																																										
Donacia																			12	**12**	**0.006**																				
Dytiscidae																																										
Agabus																			15	**15**	**0.007**																				
Dytiscidae unidentified																31				**31**	**0.015**																				
Diptera																																										
Nematocera																																										
Ceratopogonidae																																										
Bezzia																62	154	77		**292**	**0**								77	154	77	77	1462	**1846**	**2**							
Culicoides																31				**31**	**0.015**																				
Dasyhelea																		77		**77**	**0.04**																				
Probezzia	8	4	12	8	4	**35**	**0.3**								154		462	308	308	**1231**	**1**								154	492		385	77	**1108**	**1**							
Chaoboridae																																										
Chaoborus									231	246	169	262	**908**	**7**								92	15	31	15	77	**231**	**2**			77			**77**	**0.1**							
Chironomidae																																										
Chironominae																																										
Chironomini																																										
Chironomus	35	31	58	12	77	**212**	**2**	46	1092	969	831	1200	**4138**	**34**								215	246	262	369	231	**1323**	**9**				77		**77**	**0.1**				15		**15**	**1**
Cladopelma																							62				**62**	**0.4**														
Cryptochironomus	31	38	108	46	19	**242**	**2**		15				**15**	**0.1**	154				385	**538**	**0.3**	46	31		77		**154**	**1**				154	385	**538**	**0.5**					15	**15**	**1**
Demicryptochironomus	4	15	31			**50**	**0.4**																																		
Dicrotendipes	135	65	181	77	112	**569**	**5**								77			154		**231**	**0.1**								308	892	462	308		**1969**	**2**							
Endochironomus	19					**19**	**0.2**									62				**62**	**0.03**																				
Glyptotendipes																														1015	2231	2692	1154	**7092**	**6**			15			**15**	**1**
Lauterborniella																																										
Microtendipes												31	**31**	**0.3**	12538	4554	6692	6692	9538	**40015**	**19**								615	492	1308	2077	615	**5108**	**4**							
Nilothauma															231		385	154	154	**923**	**0.4**																				
Pagastiella	15	31	154	138	108	**446**	**4**									123	769			**892**	**0.4**		15		31		**46**	**0.3**	154	185	154	462	308	**1262**	**1**							
Parachironomus				15		**15**	**0.1**				31		**31**	**0.3**																												
Paracladopelma																																										
Phaenopsectra																																										
Polypedilum			15	4	4	**23**	**0.2**				15	15	**31**	**0.3**	769	554	308	846	308	**2785**	**1**	1123	800	431	338	354	**3046**	**21**	77	246	538	231	769	**1862**	**2**	215	31	246	15	185	**692**	**47**
Sergentia	38	77	85	281	227	**708**	**6**																																		
Stenochironomus																																										
Stictochironomus	154	223	254	200	77	**908**	**7**										692			**692**	**0.3**																				
Tribelos																																										
Pseudochironomini																																										
Pseudochironomus		12	81	12	62	**165**	**1**	31					**31**	**0.3**	4077	7785	37154	22077	6077	**77169**	**37**								2769	3538	6846	11077	6769	**31000**	**26**	31					**31**	**2**
Tanytarsini																																										
Tanytarsini unidentified																																										
Cladotanytarsus	19	77	62	62	31	**250**	**2**								385	277	2462	538	2000	**5662**	**3**								2615	5169	5462	5154	5769	**24169**	**20**		31	46		31	**108**	**7**
Corynocera																																										
Micropsectra																																										
Neostempellina			15			**15**	**0.1**																																		
Paratanytarsus	15					**15**	**0.1**									62			154	**215**	**0.1**																				
Stempellinella																																										
Tanytarsus	88	108	108	146	81	**531**	**4**		15	31	15		**62**	**1**	769	892	2231	1231	1000	**6123**	**3**	400	338	231	292	123	**1385**	**10**		246	3000	385	1615	**5246**	**4**				15	**15**	**1**
Diamesinae																																										
Diamesini																																										
Potthastia longimana	12	8	31		4	**54**	**0.4**																																		
Protanypus																																										
Orthocladiinae																																										
Epoicocladius																																										
Heterotanytarsus																																										
Heterotrissocladius	15	23	23	12	4	**77**	**1**																																		
Orthocladius																			154	**154**	**0.1**																				
Paracladius	12					**12**	**0.1**																																		
Psectrocladius	31	85	58	154	62	**388**	**3**																																		
Tvetenia																																										
Zalutschia																																										

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Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Beet Lake Area 2 (2018)							Naomi Lake (2018)							Clearwater River Area 2 (2018)							Lloyd Lake Inlet (2018)							Lake G Area 2 (2018)							Lake H Area 2 (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Prodiamesinae																																									
Monodiamesa			4	23	4	**31**	**0.3**																																			
Tanypodinae																																									
Coelotanypodini																																									
Clinotanypus															615	154	308		77	**1154**	**1**		31			31	**62**	**0.4**		62		231		**292**	**0.2**							
Pentaneurini																																									
Ablabesmyia																31				**31**	**0.015**	15		15			**31**	**0.2**													
Guttipelopia																																					31				**31**	**2**
Larsia																																									
Thienemannimyia																																									
Procladiini																																									
Procladius	169	173	281	404	288	**1315**	**11**	62	400	246	415	200	**1323**	**11**	1000	492	769	769	769	**3800**	**2**	262	185	169	138	154	**908**	**6**	231	646	692	1231	846	**3646**	**3**			15	15	46	**77**	**5**
Tanypodinae unidentified																																									
Chironomidae pupa																																									
Ephemeroptera																																									
Baetidae																																									
Callibaetis																		77		**77**	**0.04**									62				**62**	**0.1**							
Caenidae																																									
Caenis	4	46	58	8		**115**	**1**									215	77	385	77	**754**	**0.4**									62	154	77		**292**	**0.2**							
Ephemerellidae																																									
Eurylophella																31				**31**	**0.015**																				
Ephemeridae																																									
Ephemera	77	131	135	46	38	**427**	**3**																																		
Hexagenia limbata	4			12		**15**	**0.1**								4					**4**	**0.002**	19	4	12	19	8	**62**	**0.4**													
Leptophlebiidae																																									
Leptophlebia																123	154	231	615	**1123**	**1**										154	462		**615**	**1**						
Hemiptera																																									
Heteroptera																																									
Corixidae																																									
Cymatia americana																			4	**4**	**0.002**										4			**4**	**0.003**						
Sigara																														31	4			**35**	**0.03**						
Sigara conocephala																															4			**4**	**0.003**						
Corixidae unidentified																						15	15			31	**62**	**0.4**													
Notonectidae																																									
Notonecta																															4			**4**	**0.003**						
Odonata																																									
Anisoptera																																									
Corduliidae																																									
Cordulia shurtleffii																																									
Somatochlora																																									
Gomphidae																																									
Ophiogomphus																																									
Zygoptera																																									
Coenagrionidae																																									
Enallagma																																									
Trichoptera																																									
Brachycentridae																																									
Brachycentrus																																									
Hydroptilidae																																									
Oxyethira																																									
Lepidostomatidae																																									
Lepidostoma																																									
Leptoceridae																																									
Ceraclea																																									
Mystacides	4				8	**12**	**0.1**																																		
Nectopsyche																																									
Oecetis		27	35	19		**81**	**1**																							77		154	308		**538**	**0.5**						
Molannidae																																									
Molanna	4	31	58	23	15	**131**	**1**										77		4	**81**	**0.04**																				
Phryganeidae																																									
Agrypnia															35			12	4	**50**	**0.02**																				
Phryganea																										4	**4**	**0.0**													
Polycentropodidae																																									
Polycentropus	4					**4**	**0.03**																																		
Trichoptera pupa[a]			4			**4**	**0.03**																																		
Mollusca																																									
Bivalvia																																									
Heterodonta																																									
Veneroida																																									

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Benthic Invertebrate Enumeration in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Beet Lake Area 2 (2018)							Naomi Lake (2018)							Clearwater River Area 2 (2018)							Lloyd Lake Inlet (2018)							Lake G Area 2 (2018)							Lake H Area 2 (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Pisidiidae																																									
Pisidium	223	469	362	396	415	**1865**	**15**		200	138	108	154	**600**	**5**	1000	1723	1923	77	462	**5185**	**3**	338	446	369	335	288	**1777**	**12**	2077	2615	3769	2692	923	**12077**	**10**	31	31		15	15	**92**	**6**
Sphaerium					8	**8**	**0.06**									31			88	**119**	**0.1**		8				**8**	**0.1**													
Pisidiidae unidentified	338	600	600	462	585	**2585**	**21**	231	246	262	154	338	**1231**	**10**	1385	862	1385	308	923	**4862**	**2**	400	554	308	431	185	**1877**	**13**	692	615	308	154	308	**2077**	**2**							
Palaeoheterodonta																																									
Unionoida																																									
Unionidae																																									
Lasmigona																																									
Gastropoda																																									
Prosobranchia																																									
Heterostropha																																									
Valvatidae																																									
Valvata sincera	12	50	27	4	8	**100**	**1**								77	308	462	308		**1154**	**1**			77	15	46	**138**	**1**	77	277	538	154		**1046**	**1**					15	**15**	**1**
Basommatophora																																									
Ancylidae																																									
Ferrissia rivularis																																									
Lymnaeidae	4	12	46			**62**	**1**																																		
Physidae																																									
Physa																																									
Planorbidae																																									
Gyraulus		4				**4**	**0.03**																																		
Helisoma																		4		**4**	**0.002**																				
Promenetus exacuous																																									
Neotaenioglossa																																									
Hydrobiidae																																									
Amnicola																																									
Nematoda	4	8		15	19	**46**	**0.4**			31			**31**	**0.3**		31	538	77	8	**654**	**0.3**		77	31			**108**	**1**	77	338	154	154	154	**877**	**1**	62				8	**69**	**5**
Platyhelminthes																																									
Total	**1538**	**2504**	**3150**	**2638**	**2392**	**12223**	**100**	**677**	**2923**	**3092**	**2569**	**2877**	**12138**	**100**	**29431**	**24985**	**70462**	**43958**	**37008**	**205842**	**100**	**3619**	**3704**	**2596**	**2631**	**1777**	**14327**	**100**	**14646**	**19169**	**28208**	**32619**	**23262**	**117904**	**100**	**369**	**185**	**369**	**62**	**500**	**1485**	**100**

Note: % = percent composition.

Note: All values are on a per m^2 basis, except taxon totals that are on a per 5 m^2 basis.

Note: Invertebrate taxa deemed non-benthic were excluded; They are listed in Appendix C, Table 32.

a) Unidentified Trombidiformes and unidentified Trichoptera pupae were included for density computations but were excluded from taxon richness, Simpson's diversity, and Simpson's evenness computations.

Appendix C, Table 34

Benthic Invertebrate Biomass in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Broach Lake Area 1 (2018)							Hodge Lake Area 2 (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea		0.0738	0.0585		0.4092	0.5415	4.65							
Oligochaeta	0.9754	0.3662	0.5138	0.1323	0.1908	2.1785	18.72	0.4185	0.9846	0.9985	1.4462	0.3231	4.1708	2.36
Amphipoda	0.4215	0.8923	1.1046	0.4738	0.0831	2.9754	25.56	2.4327	1.4077		2.2000	0.0615	6.1019	3.45
Coleoptera														
Chironomidae	0.4585	1.4923	1.2369	1.5077	0.6677	5.3631	46.07	5.5785	30.3615	52.8154	17.1462	33.6615	139.5631	78.87
Other Diptera										0.0692	0.0231		0.0923	0.05
Ephemeroptera														
Heteroptera														
Odonata														
Trichoptera								1.3765	1.3285	0.9731	2.6646	0.2492	6.5919	3.73
Mollusca (Unionidae)														
Mollusca (Other)	0.1169	0.1600	0.0431	0.0523	0.0062	0.3785	3.25	2.1231	6.6308	4.0715	4.4077	3.0462	20.2792	11.46
Other Taxa	0.0308	0.0677	0.0062	0.0585	0.0400	0.2031	1.74	0.0246	0.0385	0.0538	0.0308		0.1477	0.08
Total	**2.0031**	**3.0523**	**2.9631**	**2.2246**	**1.3969**	**11.6400**	**100**	**11.9538**	**40.7515**	**58.9815**	**27.9185**	**37.3415**	**176.9469**	**100**
Taxon	**Patterson Lake North Arm - East Basin Area 3 (2018)**							**Patterson Lake North Arm - East Basin Area 3 (2019)**						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea	0.4431	0.5108	0.7269	0.3788	0.7077	2.7673	4.69	0.5446	0.2400	0.0369	0.1769	0.6708	1.6692	6.44
Oligochaeta	1.5908	1.6400	0.4596	1.1865	1.1169	5.9938	10.15	1.0677	0.7477	0.5200	0.4215	0.4646	3.2215	12.43
Amphipoda	1.6092		0.2115			1.8208	3.08	0.5354		0.4123			0.9477	3.66
Coleoptera														
Chironomidae	8.6062	7.9785	8.3827	4.8288	4.2923	34.0885	57.72	2.9938	2.8615	1.5415	1.7154	2.6800	11.7923	45.50
Other Diptera								0.0338	0.0062		0.0169		0.0569	0.22
Ephemeroptera	0.9738	0.5212	0.0404			1.5354	2.60					0.1481	0.1481	0.57
Heteroptera														
Odonata														
Trichoptera		0.3627				0.3627	0.61	0.0369		0.0308		0.0123	0.0800	0.31
Mollusca (Unionidae)														
Mollusca (Other)	3.3388	1.5042	2.5654	1.7962	2.2723	11.4769	19.43	0.8800	1.3692	0.9846	0.7215	2.9927	6.9481	26.81
Other Taxa	0.3262	0.1785	0.1365	0.2365	0.1385	1.0162	1.72	0.1108	0.2646	0.2031	0.1754	0.3015	1.0554	4.07
Total	**16.8881**	**12.6958**	**12.5231**	**8.4269**	**8.5277**	**59.0615**	**100**	**6.2031**	**5.4892**	**3.7292**	**3.2277**	**7.2700**	**25.9192**	**100**

Appendix C, Table 34

Benthic Invertebrate Biomass in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Patterson Lake North Arm - West Basin Area 2 (2018)							Patterson Lake North Arm - West Basin Area 1 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea														
Oligochaeta	0.0923		0.0308	0.0331	0.0073	0.1635	1.22	0.0304	0.0088		0.0146		0.0538	0.74
Amphipoda	0.1592	0.0462	0.1050	0.0792	0.0462	0.4358	3.26							
Coleoptera														
Chironomidae	0.4854	0.6492	0.4762	0.5788	0.4635	2.6531	19.84	0.7927	1.0677	0.8108	3.6685	0.6058	6.9454	95.75
Other Diptera		0.0031	0.0015	0.0185		0.0231	0.17	0.0023					0.0023	0.03
Ephemeroptera	0.8581	1.2562	0.8546	2.0315	1.7900	6.7904	50.78							
Heteroptera														
Odonata														
Trichoptera	0.1831	0.1200	0.1558	0.1412	0.2054	0.8054	6.02							
Mollusca (Unionidae)														
Mollusca (Other)	0.5238	0.3750	0.3404	0.2735	0.4465	1.9592	14.65	0.0027	0.0008	0.0873	0.1185	0.0065	0.2158	2.97
Other Taxa	0.1146	0.1035	0.0900	0.1035	0.1304	0.5419	4.05	0.0050	0.0104	0.0069	0.0115	0.0023	0.0362	0.50
Total	**2.4165**	**2.5531**	**2.0542**	**3.2592**	**3.0892**	**13.3723**	**100**	**0.8331**	**1.0877**	**0.9050**	**3.8131**	**0.6146**	**7.2535**	**100**
Taxon	**Patterson Lake South Arm Area 2 (2018)**							**Forrest Lake Area 1 (2018)**						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea								0.4927	0.6985	2.0023	4.9746	2.8396	11.0077	3.32
Oligochaeta	0.1935	0.1354	0.0738	0.0092	0.0623	0.4742	4.60	0.0385			0.0154	0.0246	0.0785	0.02
Amphipoda			0.0092			0.0092	0.09	0.9385	15.8923	29.0769	21.0077	15.3723	82.2877	24.84
Coleoptera														
Chironomidae	0.4812	0.6415	0.3408	0.3646	0.2938	2.1219	20.59	11.8462	2.8615	3.4462	3.0692	1.5785	22.8015	6.88
Other Diptera	0.0169	0.0308	0.0023		0.0008	0.0508	0.49	0.3231	0.2615	0.3462	0.3769	0.1077	1.4154	0.43
Ephemeroptera	0.7731	0.7565	0.0550	0.8808	0.1985	2.6638	25.85	1.1923	0.3608	0.1000	0.0308	0.3569	2.0408	0.62
Heteroptera														
Odonata								6.9985	1.0942	1.6350	1.9535	1.0742	12.7554	3.85
Trichoptera	0.0773	0.4319	0.0973	0.0462	0.0562	0.7088	6.88	0.6154		2.3838	1.5704	1.3346	5.9042	1.78
Mollusca (Unionidae)											150.3042		150.3042	45.38
Mollusca (Other)	0.5569	0.8154	0.6219	0.8915	0.8838	3.7696	36.58	15.5219	3.8546	10.6258	5.7900	4.3935	40.1858	12.13
Other Taxa	0.1523	0.0923	0.0665	0.1015	0.0938	0.5065	4.92	0.2769	0.7462	0.4077	0.2538	0.7754	2.4600	0.74
Total	**2.2512**	**2.9038**	**1.2669**	**2.2938**	**1.5892**	**10.3050**	**100**	**38.2438**	**25.7696**	**50.0238**	**189.3465**	**27.8573**	**331.2412**	**100**

Appendix C, Table 34

Benthic Invertebrate Biomass in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Forrest Lake Area 4 (2018)							Forrest Lake Area 3 (2019)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea														
Oligochaeta	0.0600	0.4396	0.0692	0.0123	0.0262	0.6073	2.23	0.0685	0.0792	0.3104	0.0081	0.0027	0.4688	5.97
Amphipoda	1.1215	0.8108	0.8800	0.6800	0.5231	4.0154	14.72			0.0069			0.0069	0.09
Coleoptera														
Chironomidae	1.3692	0.9569	1.4954	0.8369	1.3231	5.9815	21.92	1.4688	1.3985	0.2881	1.1442	1.6315	5.9312	75.46
Other Diptera	0.0092	0.0123	0.0215	0.0415		0.0846	0.31							
Ephemeroptera	0.8908	0.7550	1.2023	0.9300	0.0742	3.8523	14.12							
Heteroptera														
Odonata		0.9700				0.9700	3.55							
Trichoptera	0.1931	0.2673	0.8919	0.2935	0.0415	1.6873	6.18							
Mollusca (Unionidae)														
Mollusca (Other)	2.2219	1.4038	1.7204	2.2342	1.1500	8.7304	31.99	0.0408	0.5496	0.4435	0.0838	0.2223	1.3400	17.05
Other Taxa	0.2923	0.3723	0.2615	0.2231	0.2092	1.3585	4.98	0.0369	0.0088	0.0108	0.0219	0.0342	0.1127	1.43
Total	**6.1581**	**5.9881**	**6.5423**	**5.2515**	**3.3473**	**27.2873**	**100**	**1.6150**	**2.0362**	**1.0596**	**1.2581**	**1.8908**	**7.8596**	**100**
Taxon	**Beet Lake Area 2 (2018)**							**Naomi Lake (2018)**						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea														
Oligochaeta	0.0504	0.1185	0.1981	0.0369	0.1385	0.5423	3.42	1.1723	0.2323	0.2446	0.1542	0.2296	2.0331	7.84
Amphipoda	0.0038	0.0273	0.0858		0.0135	0.1304	0.82							
Coleoptera														
Chironomidae	1.0042	1.1096	2.0373	1.6477	1.5677	7.3665	46.39	10.8569	2.7669	2.6181	2.1042	2.7815	21.1277	81.47
Other Diptera	0.0027	0.0038	0.0081	0.0127	0.0008	0.0281	0.18	0.3369	0.1719	0.2219	0.1496	0.2004	1.0808	4.17
Ephemeroptera	0.6273	0.6242	0.6869	1.2081	0.1877	3.3342	21.00	0.8165					0.8165	3.15
Heteroptera														
Odonata														
Trichoptera	0.0246	0.2054	0.1885	0.0458	0.0092	0.4735	2.98							
Mollusca (Unionidae)														
Mollusca (Other)	0.3919	0.8831	1.2158	0.6138	0.8392	3.9438	24.84	0.3262	0.0988	0.1885	0.0350	0.0938	0.7423	2.86
Other Taxa	0.0054	0.0204	0.0200		0.0146	0.0604	0.38	0.0492	0.0092	0.0308	0.0138	0.0292	0.1323	0.51
Total	**2.1104**	**2.9923**	**4.4404**	**3.5650**	**2.7712**	**15.8792**	**100**	**13.5581**	**3.2792**	**3.3038**	**2.4569**	**3.3346**	**25.9327**	**100**

Appendix C, Table 34

Benthic Invertebrate Biomass in the Aquatic Study Area, September/October 2018 and September 2019

Taxon	Clearwater River Area 2 (2018)							Lloyd Lake Inlet (2018)						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea	2.9131			0.9538	1.2331	5.1000	2.17							
Oligochaeta	0.0077	0.0062	0.7000			0.7138	0.30	0.0323	0.1292	0.2154	0.1354	0.0615	0.5738	1.51
Amphipoda	10.7308	10.4154	10.1692	11.1715	29.3181	71.8050	30.55	0.0077					0.0077	0.02
Coleoptera		0.0400			0.4100	0.4500	0.19							
Chironomidae	31.6231	17.5323	45.4077	32.7846	11.2615	138.6092	58.98	4.5169	5.7831	3.2123	4.6846	2.4154	20.6123	54.34
Other Diptera	0.0462	0.1292	0.5385	0.2923	0.1615	1.1677	0.50	0.0631	0.0354	0.0492	0.0215	0.0938	0.2631	0.69
Ephemeroptera	0.5246	0.2646	0.1538	0.6231	0.6231	2.1892	0.93	3.1477	1.2112	1.6877	1.1681	1.7477	8.9623	23.63
Heteroptera					0.1465	0.1465	0.06	0.0462	0.0308			0.0662	0.1431	0.38
Odonata														
Trichoptera	2.8608		0.1000	1.6315	0.4127	5.0050	2.13					0.2650	0.2650	0.70
Mollusca (Unionidae)														
Mollusca (Other)	0.8077	2.5785	1.7615	1.0696	1.7850	8.0023	3.40	1.0954	1.4381	1.6569	1.2162	1.4035	6.8100	17.95
Other Taxa	0.5846	0.1508	0.2308	0.0769	0.7919	1.8350	0.78	0.0892	0.0985	0.0400	0.0169	0.0508	0.2954	0.78
Total	**50.0985**	**31.1169**	**59.0615**	**48.6035**	**46.1435**	**235.0238**	**100**	**8.9985**	**8.7262**	**6.8615**	**7.2427**	**6.1038**	**37.9327**	**100**
Taxon	**Lake G Area 2 (2018)**							**Lake H Area 2 (2018)**						
	1	2	3	4	5	Total	%	1	2	3	4	5	Total	%
Hirudinea	4.5927	2.2431	0.0938	2.8046	18.5985	28.3327	10.83							
Oligochaeta	0.1392	1.8646	3.0700	2.5154	0.7996	8.3888	3.21	0.0031	0.0031	0.0723		0.0892	0.1677	1.83
Amphipoda	11.0846	2.9169	2.5769	8.9538	3.7154	29.2477	11.17							
Coleoptera														
Chironomidae	17.0000	18.4985	34.5538	59.3923	29.7923	159.2369	60.84	1.2831	0.2154	1.7723	0.3031	1.3846	4.9585	54.02
Other Diptera	0.1615	0.4554	0.3846	0.6000	0.1308	1.7323	0.66							
Ephemeroptera		0.0246	0.4308	1.5846		2.0400	0.78							
Heteroptera		0.8708	0.7888			1.6596	0.63							
Odonata														
Trichoptera	0.5000		0.5231	0.7769		1.8000	0.69							
Mollusca (Unionidae)														
Mollusca (Other)	3.1231	4.3354	5.5154	5.7231	0.8385	19.5354	7.46	1.2515	0.6369		0.4985	1.4773	3.8642	42.10
Other Taxa	0.2000	0.4831	2.0077	3.2692	3.8000	9.7600	3.73	0.1569	0.0062			0.0254	0.1885	2.05
Total	**36.8012**	**31.6923**	**49.9450**	**85.6200**	**57.6750**	**261.7335**	**100**	**2.6946**	**0.8615**	**1.8446**	**0.8015**	**2.9765**	**9.1788**	**100**

Note: % = percent composition.

Note: All values are in g/m^2 on a wet weight basis, except taxon totals that are g/5 m^2.

Appendix C, Table 35

Benthic Invertebrate Community Indices in the Aquatic Study Area, September/October 2018 and September 2019

Area	Station	Density (Organisms/m^2)	Taxon Richness[a]	Biomass (g/m^2)	Simpson's Diversity[a]	Simpson's Evenness[a]
Broach Lake Area 1 (2018)	1	923	6	2.00	0.72	0.60
	2	1846	10	3.05	0.75	0.40
	3	1231	6	2.96	0.62	0.44
	4	1631	8	2.22	0.61	0.32
	5	1015	10	1.40	0.75	0.41
Total		6646	12	11.64	-	-
Mean		**1329**	**8.0**	**2.33**	**0.69**	**0.44**
Standard Deviation		**397**	**2.0**	**0.69**	**0.07**	**0.11**
Standard Error		178	0.9	0.31	0.03	0.047
Median		1231	8	2.22	0.72	0.408
Minimum		923	6	1.40	0.61	0.32
Maximum		1846	10	3.05	0.75	0.60
Hodge Lake Area 2 (2018)	1	13108	11	12.0	0.42	0.16
	2	36712	11	40.8	0.21	0.12
	3	60719	10	59.0	0.14	0.12
	4	26419	11	27.9	0.31	0.13
	5	31315	5	37.3	0.13	0.23
Total		168273	14	176.9	-	-
Mean		**33655**	**9.6**	**35.4**	**0.24**	**0.15**
Standard Deviation		**17477**	**2.6**	**17.3**	**0.12**	**0.05**
Standard Error		7816	1.2	7.7	0.05	0.021
Median		31315	11	37.3	0.21	0.132
Minimum		13108	5	12.0	0.13	0.12
Maximum		60719	11	59.0	0.42	0.23
Patterson Lake North Arm - East Basin Area 3 (2018)	1	18038	14	16.9	0.61	0.18
	2	16688	12	12.7	0.43	0.15
	3	11750	11	12.5	0.41	0.15
	4	9827	8	8.4	0.55	0.28
	5	10938	10	8.5	0.45	0.18
Total		67242	19	59.1	-	-
Mean		**13448**	**11.0**	**11.8**	**0.49**	**0.19**
Standard Deviation		**3670**	**2.2**	**3.5**	**0.09**	**0.05**
Standard Error		1641	1.0	1.6	0.04	0.023
Median		11750	11	12.5	0.45	0.182
Minimum		9827	8	8.4	0.41	0.15
Maximum		18038	14	16.9	0.61	0.28
Patterson Lake North Arm - East Basin Area 3 (2019)	1	7600	11	6.2	0.64	0.26
	2	7508	11	5.5	0.62	0.24
	3	4646	13	3.7	0.80	0.39
	4	4046	11	3.2	0.70	0.30
	5	6912	12	7.3	0.67	0.25
Total		30712	17	25.9	-	-
Mean		**6142**	**11.6**	**5.2**	**0.69**	**0.29**
Standard Deviation		**1674**	**0.9**	**1.7**	**0.07**	**0.06**
Standard Error		749	0.4	0.8	0.03	0.028
Median		6912	11	5.5	0.67	0.256
Minimum		4046	11	3.2	0.62	0.24
Maximum		7600	13	7.3	0.80	0.39

Appendix C, Table 35

Benthic Invertebrate Community Indices in the Aquatic Study Area, September/October 2018 and September 2019

Area	Station	Density (Organisms/m^2)	Taxon Richness[a]	Biomass (g/m^2)	Simpson's Diversity[a]	Simpson's Evenness[a]
Patterson Lake North Arm - West Basin Area 2 (2018)	1	2196	13	2.4	0.76	0.32
	2	1996	13	2.6	0.77	0.33
	3	1896	16	2.1	0.77	0.27
	4	1985	12	3.3	0.78	0.37
	5	2412	14	3.1	0.74	0.27
Total		10485	18	13.4	-	-
Mean		**2097**	**13.6**	**2.7**	**0.76**	**0.31**
Standard Deviation		**207**	**1.5**	**0.5**	**0.02**	**0.04**
Standard Error		93	0.7	0.2	0.01	0.019
Median		1996	13	2.6	0.77	0.316
Minimum		1896	12	2.1	0.74	0.27
Maximum		2412	16	3.3	0.78	0.37
Patterson Lake North Arm - West Basin Area 1 (2019)	1	250	6	0.8	0.25	0.22
	2	200	6	1.1	0.31	0.24
	3	358	5	0.9	0.44	0.36
	4	788	5	3.8	0.37	0.32
	5	173	3	0.6	0.17	0.40
Total		1769	9	7.3	-	-
Mean		**354**	**5.0**	**1.5**	**0.31**	**0.31**
Standard Deviation		**253**	**1.2**	**1.3**	**0.11**	**0.08**
Standard Error		113	0.5	0.6	0.05	0.034
Median		250	5	0.9	0.31	0.320
Minimum		173	3	0.6	0.17	0.22
Maximum		788	6	3.8	0.44	0.40
Patterson Lake South Arm Area 2 (2018)	1	3331	14	2.3	0.76	0.30
	2	3527	19	2.9	0.66	0.15
	3	2923	18	1.3	0.71	0.19
	4	2481	13	2.3	0.75	0.31
	5	2754	15	1.6	0.66	0.20
Total		15015	23	10.3	-	-
Mean		**3003**	**15.8**	**2.1**	**0.71**	**0.23**
Standard Deviation		**425**	**2.6**	**0.6**	**0.05**	**0.07**
Standard Error		190	1.2	0.3	0.02	0.032
Median		2923	15	2.3	0.71	0.197
Minimum		2481	13	1.3	0.66	0.15
Maximum		3527	19	2.9	0.76	0.31
Forrest Lake Area 1 (2018)	1	19362	24	38.2	0.67	0.13
	2	21092	14	25.8	0.67	0.22
	3	24977	23	50.0	0.70	0.14
	4	17277	24	189.3	0.66	0.12
	5	19927	18	27.9	0.69	0.18
Total		102635	34	331.2	-	-
Mean		**20527**	**20.6**	**66.2**	**0.68**	**0.16**
Standard Deviation		**2846**	**4.4**	**69.5**	**0.02**	**0.04**
Standard Error		1273	2.0	31.1	0.01	0.018
Median		19927	23	38.2	0.67	0.143
Minimum		17277	14	25.8	0.66	0.12
Maximum		24977	24	189.3	0.70	0.22

Appendix C, Table 35

Benthic Invertebrate Community Indices in the Aquatic Study Area, September/October 2018 and September 2019

Area	Station	Density (Organisms/m^2)	Taxon Richness[a]	Biomass (g/m^2)	Simpson's Diversity[a]	Simpson's Evenness[a]
Forrest Lake Area 4 (2018)	1	5762	12	6.2	0.76	0.35
	2	4942	16	6.0	0.78	0.28
	3	5865	20	6.5	0.78	0.23
	4	5162	13	5.3	0.75	0.31
	5	4827	16	3.3	0.78	0.29
Total		26558	24	27.3	-	-
Mean		**5312**	**15.4**	**5.5**	**0.77**	**0.29**
Standard Deviation		**475**	**3.1**	**1.3**	**0.01**	**0.04**
Standard Error		212	1.4	0.6	0.01	0.020
Median		5162	16	6.0	0.78	0.285
Minimum		4827	12	3.3	0.75	0.23
Maximum		5865	20	6.5	0.78	0.35
Forrest Lake Area 3 (2019)	1	865	5	1.6	0.51	0.41
	2	1012	6	2.0	0.55	0.37
	3	1127	7	1.1	0.59	0.35
	4	469	8	1.3	0.59	0.30
	5	785	7	1.9	0.59	0.35
Total		4258	11	7.9	-	-
Mean		**852**	**6.6**	**1.6**	**0.57**	**0.36**
Standard Deviation		**251**	**1.1**	**0.4**	**0.03**	**0.04**
Standard Error		112	0.5	0.2	0.02	0.018
Median		865	7	1.6	0.59	0.350
Minimum		469	5	1.1	0.51	0.30
Maximum		1127	8	2.0	0.59	0.41
Beet Lake Area 2 (2018)	1	1538	16	2.1	0.60	0.16
	2	2504	16	3.0	0.66	0.19
	3	3150	14	4.4	0.66	0.21
	4	2638	12	3.6	0.53	0.18
	5	2392	13	2.8	0.59	0.19
Total		12223	20	15.9	-	-
Mean		**2445**	**14.2**	**3.2**	**0.61**	**0.18**
Standard Deviation		**584**	**1.8**	**0.9**	**0.05**	**0.02**
Standard Error		261	0.8	0.4	0.02	0.009
Median		2504	14	3.0	0.60	0.186
Minimum		1538	12	2.1	0.53	0.16
Maximum		3150	16	4.4	0.66	0.21
Naomi Lake (2018)	1	677	5	13.6	0.74	0.76
	2	2923	5	3.3	0.65	0.57
	3	3092	6	3.3	0.69	0.54
	4	2569	6	2.5	0.67	0.50
	5	2877	5	3.3	0.68	0.62
Total		12138	8	25.9	-	-
Mean		**2428**	**5.4**	**5.2**	**0.68**	**0.60**
Standard Deviation		**997**	**0.5**	**4.7**	**0.03**	**0.10**
Standard Error		446	0.2	2.1	0.01	0.044
Median		2877	5	3.3	0.68	0.574
Minimum		677	5	2.5	0.65	0.50
Maximum		3092	6	13.6	0.74	0.76

Appendix C, Table 35

Benthic Invertebrate Community Indices in the Aquatic Study Area, September/October 2018 and September 2019

Area	Station	Density (Organisms/m^2)	Taxon Richness[a]	Biomass (g/m^2)	Simpson's Diversity[a]	Simpson's Evenness[a]
Clearwater River Area 2 (2018)	1	29431	10	50.1	0.46	0.19
	2	24985	15	31.1	0.57	0.15
	3	70462	14	59.1	0.43	0.13
	4	43958	17	48.6	0.41	0.10
	5	37008	17	46.1	0.57	0.14
Total		205842	29	235.0	-	-
Mean		**41168**	**14.6**	**47.0**	**0.49**	**0.14**
Standard Deviation		**17909**	**2.9**	**10.1**	**0.08**	**0.03**
Standard Error		8009	1.3	4.5	0.03	0.014
Median		37008	15	48.6	0.46	0.138
Minimum		24985	10	31.1	0.41	0.10
Maximum		70462	17	59.1	0.57	0.19
Lloyd Lake Inlet (2018)	1	3619	14	9.0	0.63	0.19
	2	3704	11	8.7	0.69	0.30
	3	2596	11	6.9	0.71	0.31
	4	2631	9	7.2	0.67	0.33
	5	1777	10	6.1	0.66	0.30
Total		14327	19	37.9	-	-
Mean		**2865**	**11.0**	**7.6**	**0.67**	**0.29**
Standard Deviation		**804**	**1.9**	**1.2**	**0.03**	**0.05**
Standard Error		359	0.8	0.6	0.01	0.025
Median		2631	11	7.2	0.67	0.298
Minimum		1777	9	6.1	0.63	0.19
Maximum		3704	14	9.0	0.71	0.33
Lake G Area 2 (2018)	1	14646	14	36.8	0.70	0.24
	2	19169	17	31.7	0.54	0.13
	3	28208	17	49.9	0.44	0.10
	4	32619	14	85.6	0.44	0.13
	5	23262	12	57.7	0.38	0.13
Total		117904	24	261.7	-	-
Mean		**23581**	**14.8**	**52.3**	**0.50**	**0.15**
Standard Deviation		**7115**	**2.2**	**21.3**	**0.13**	**0.05**
Standard Error		3182	1.0	9.5	0.06	0.023
Median		23262	14	49.9	0.44	0.128
Minimum		14646	12	31.7	0.38	0.10
Maximum		32619	17	85.6	0.70	0.24
Lake H Area 2 (2018)	1	369	4	2.7	0.51	0.51
	2	185	4	0.9	0.67	0.75
	3	369	3	1.8	0.23	0.43
	4	62	2	0.8	0.38	0.80
	5	500	6	3.0	0.58	0.39
Total		1485	8	9.2	-	-
Mean		**297**	**3.8**	**1.8**	**0.47**	**0.58**
Standard Deviation		**173**	**1.5**	**1.0**	**0.17**	**0.19**
Standard Error		77	0.7	0.5	0.08	0.083
Median		369	4	1.8	0.51	0.514
Minimum		62	2	0.8	0.23	0.39
Maximum		500	6	3.0	0.67	0.80

All data are presented on a 1 m^2 basis, except totals that are on a 5 m^2 basis.

Crustacean families Holopedidae, Daphniidae, and Calanoida (Copepods) were deemed non-benthic and excluded from all analyses.

[a]Computed at the Family level, except for Cyclopoida, Ostracoda, and Nematoda that were identified at higher taxonomic levels.

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Lloyd Lake Inlet														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	**-**	-	-	-	-	**-**	-	-	-	-	**474**	79	390	600
Magnesium	-	**-**	-	-	-	-	**-**	-	-	-	-	**442**	72	340	520
Potassium	-	**-**	-	-	-	-	**-**	-	-	-	-	**1158**	777	480	2400
Sodium	-	**-**	-	-	-	-	**-**	-	-	-	-	**472**	569	70	1400
Metals															
Aluminum	-	**9.9**	1.7	7.6	12	-	**114**	73	54	240	-	**3084**	418	2480	3500
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	3	**0.04**	0.02	<0.05	0.07	-	**0.42**	0.25	0.28	0.86	-	**0.8**	0.1	0.6	0.9
Barium	-	**35**	12	22	51	-	**45**	20	21	65	-	**29**	5	22	36
Beryllium	5	**0.005**	-	<0.01	<0.01	1	**0.01**	0.01	<0.01	0.02	2	**0.08**	0.03	<0.1	0.1
Boron	-	**4**	1	3	5	-	**3**	0.7	2	4	-	**3**	1	1	4
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.05**	0.02	0.03	0.08	3	**0.1**	0.1	<0.1	0.2
Chromium	-	**2**	0.7	0.7	2.6	-	**5**	9	0.8	22	-	**3.6**	0.91	2.4	4.4
Cobalt	-	**0.06**	0.04	0.03	0.11	-	**0.46**	0.13	0.24	0.56	2	**0.3**	0.2	<0.2	0.6
Copper	-	**0.60**	0.30	0.31	0.99	-	**40**	7	34	50	2	**1**	1	<0.5	2.9
Iron	-	**362**	243	120	660	-	**6000**	1423	4500	7800	-	**2596**	605	1860	3200
Lead	-	**0.01**	0.01	0.01	0.02	-	**0.27**	0.11	0.16	0.45	-	**1.3**	0.13	1.1	1.4
Manganese	-	**623**	320	293	1090	-	**390**	232	126	640	-	**39**	5	31	43
Mercury	5	**0.003**	-	<0.005	<0.005	-	**0.02**	0.01	0.008	0.028	-	**-**	-	-	-
Molybdenum	-	**0.5**	0.4	0.2	1.2	-	**0.2**	0.04	0.2	0.3	5	**0.05**	-	<0.1	<0.1
Nickel	-	**0.85**	0.50	0.38	1.7	-	**2.5**	3.2	0.95	8.3	-	**1.8**	1.2	0.9	3.8
Selenium	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.01118034	<0.05	0.05	5	**0.05**	-	<0.1	<0.1
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	2	**0.1**	0.1	<0.1	0.2
Strontium	-	**27**	15	11	47	-	**39**	19	18	57	-	**23**	1	22	24
Thallium	5	**0.03**	-	<0.05	<0.05	4	**0.04**	0.03	<0.05	0.09	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.02	<0.05	0.07	3	**0.2**	0.1	<0.1	0.3
Titanium	-	**0.33**	0.029	0.29	0.37	-	**3.3**	2.9	1.5	8.4	-	**190**	17	180	220
Uranium	5	**0.005**	-	<0.01	<0.01	-	**0.09**	0.03	0.06	0.13	-	**0.2**	0.0	0.1	0.2
Vanadium	5	**0.05**	-	<0.1	<0.1	-	**0.5**	0.3	0.3	1	-	**5.2**	0.79	4.4	6.3
Zinc	-	**25**	8	13	35	-	**22**	6	12	27	-	**2.7**	0.29	2.3	3.0
Nutrients															
Carbon, Total Organic (%)	-	**-**	-	-	-	-	**-**	-	-	-	-	**1.4**	0.39	0.93	1.85
Phosphorus, Total	-	**-**	-	-	-	-	**-**	-	-	-	-	**72**	16	50	90
Physical Properties															
Ash (%)	-	**5.63**	0.836	4.71	6.97	-	**6.10**	2.34	3.27	8.91	-	**-**	-	-	-
Moisture (%)	-	**73.85**	2.98	70.50	77.82	-	**84.33**	0.32	83.91	84.78	-	**36.67**	4.41	30.69	41.30
Radionuclides															
Lead-210 (Bq/g)	-	**0.01**	0.004	0.005	0.017	-	**0.090**	0.064	0.032	0.18	5	**0.02**	-	<0.04	<0.04
Polonium-210 (Bq/g)	-	**0.005**	0.001	0.004	0.006	-	**0.067**	0.042	0.024	0.11	1	**0.01**	0.01	<0.01	0.02
Radium-226 (Bq/g)	-	**0.005**	0.002	0.002	0.007	-	**0.008**	0.003	0.005	0.012	-	**0.02**	0.01	0.01	0.02
Thorium-230 (Bq/g)	5	**0.0005**	-	<0.001	<0.001	5	**0.0008**	-	<0.001	<0.002	5	**0.01**	-	<0.02	<0.02

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Broach Lake														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	-	-	-	-	-	-	-	-	-	-	**234**	109	140	400
Magnesium	-	-	-	-	-	-	-	-	-	-	-	**94**	26	60	120
Potassium	-	-	-	-	-	-	-	-	-	-	-	**508**	254	280	840
Sodium	-	-	-	-	-	-	-	-	-	-	-	**124**	23	100	150
Metals															
Aluminum	-	**9**	2	6	12	-	**254**	222	72	620	-	**1304**	652	670	2280
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	1	**0.06**	0.03	<0.05	0.11	-	**0.95**	0.58	0.33	1.7	-	**0.5**	0.07	0.4	0.6
Barium	-	**44**	8.2	34	53	-	**29**	7.7	24	42	-	**24**	9.3	16	36
Beryllium	5	**0.005**	-	<0.01	<0.01	1	**0.02**	0.01	<0.01	0.03	5	**0.05**	-	<0.1	<0.1
Boron	-	**5**	2	4	7	-	**2**	0.5	2	3	-	**2**	0.8	1	3
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.04**	0.04	0.02	0.11	1	**0.2**	0.07	<0.1	0.2
Chromium	1	**4**	5	<0.5	12	-	**143**	85	46	240	3	**0.6**	0.5	<0.5	1.4
Cobalt	-	**0.05**	0.04	0.02	0.13	-	**2**	0.8	0.8	2.6	3	**0.2**	0.1	<0.2	0.4
Copper	-	**0.42**	0.30	0.14	0.83	-	**1**	0.8	0.7	2.6	3	**0.6**	0.5	<0.5	1.3
Iron	-	**276**	171	110	530	-	**3820**	1910	1500	6800	-	**614**	213	410	850
Lead	1	**0.02**	0.01	<0.01	0.04	-	**0.39**	0.15	0.18	0.58	-	**1**	0.3	0.9	1.7
Manganese	-	**350**	104	178	453	-	**162**	63	89	258	-	**11**	3.4	6.8	16
Mercury	4	**0.003**	0.0020	<0.005	0.007	4	**0.006**	0.009	<0.005	0.022	-	**-**	-	-	-
Molybdenum	-	**0.7**	0.2	0.5	1	-	**0.4**	0.1	0.3	0.5	5	**0.05**	-	<0.1	<0.1
Nickel	-	**1.5**	1.9	0.20	4.8	-	**60**	36	17	100	3	**0.2**	0.2	<0.1	0.4
Selenium	5	**0.025**	-	<0.05	<0.05	4	**0.1**	0.2	<0.05	0.44	4	**0.1**	0.1	<0.1	0.3
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.05**	-	<0.1	<0.1
Strontium	-	**24**	15	11	48	-	**13**	4.2	8.4	19	-	**21**	4.4	16	27
Thallium	5	**0.025**	-	<0.05	<0.05	3	**0.04**	0.03	<0.05	0.08	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.025**	-	<0.05	<0.05	4	**0.03**	0.02	<0.05	0.06	5	**0.05**	-	<0.1	<0.1
Titanium		**0.26**	0.07	0.20	0.37	-	**5.4**	5.01	1.2	14	-	**67**	53	27	150
Uranium	5	**0.005**	-	<0.01	<0.01	-	**0.03**	0.03	0.01	0.08	-	**0.2**	0.04	0.2	0.3
Vanadium	5	**0.05**	-	<0.1	<0.1	-	**1**	0.4	0.6	1.6	-	**1**	0.7	0.5	2.2
Zinc		**17**	2.2	14	19	-	**13**	6.2	5.7	21	-	**1**	0.8	0.6	2.6
Nutrients															
Carbon, Total Organic (%)	-	-	-	-	-	-	-	-	-	-	-	**0.71**	0.47	0.22	1.43
Phosphorus, Total	-	-	-	-	-	-	-	-	-	-	-	**50**	12	40	70
Physical Properties															
Ash (%)	-	**5.23**	2.40	2.96	8.00	-	**24.98**	7.441	12.79	30.73	-	-	-	-	-
Moisture (%)	-	**71.20**	4.005	66.8	75.12	-	**77.50**	2.970	74.04	82.19	-	**26.23**	4.953	18.55	31.13
Radionuclides															
Lead-210 (Bq/g)	-	**0.006**	0.003	0.004	0.011	1	**0.01**	0.007	<0.004	0.02	4	**0.02**	0.009	<0.04	0.04
Polonium-210 (Bq/g)	-	**0.0028**	0.001	0.001	0.0047	-	**0.01**	0.006	0.007	0.02	2	**0.008**	0.003	<0.01	0.01
Radium-226 (Bq/g)	-	**0.007**	0.005	0.0007	0.013	-	**0.006**	0.003	0.001	0.01	2	**0.01**	0.008	<0.01	0.02
Thorium-230 (Bq/g)	5	**0.0006**	0.0004	<0.0006	<0.002	5	**0.003**	0.0009	<0.002	<0.006	5	**0.01**	-	<0.02	<0.02

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Jed Creek														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	-	-	-	-	-	-	-	-	-	-	**186**	29.7	140	220
Magnesium	-	-	-	-	-	-	-	-	-	-	-	**100**	23	80	140
Potassium	-	-	-	-	-	-	-	-	-	-	-	**394**	83.2	280	510
Sodium	-	-	-	-	-	-	-	-	-	-	-	**148**	23.9	110	170
Metals															
Aluminum	-	**17**	7.4	8.4	28	-	**484**	284	170	870	-	**1134**	212	950	1500
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	2	**0.06**	0.04	<0.05	0.12	-	**2**	2	0.39	6	-	**0.6**	0	0.6	0.6
Barium	-	**39**	9.0	25	48	-	**21**	8.5	12	30	-	**15**	1.8	13	17
Beryllium	5	**0.005**	-	<0.01	<0.01	-	**0.07**	0.04	0.03	0.12	5	**0.05**	-	<0.1	<0.1
Boron	-	**5**	1	4	7	-	**2**	0	2	2	-	**3**	2	1	4
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.1**	0.05	0.07	0.19	-	**0.2**	0.04	0.2	0.3
Chromium	-	**1**	0.5	0.6	1.8	-	**55**	52	7.7	120	5	**0.25**	-	<0.5	<0.5
Cobalt	-	**0.14**	0.10	0.04	0.30	-	**2.0**	1.1	0.92	3.7	4	**0.2**	0.1	<0.2	0.4
Copper	-	**0.52**	0.22	0.24	0.75	-	**1.4**	0.602	0.87	2.1	5	**0.25**	-	<0.5	<0.5
Iron	-	**268**	113	130	410	-	**5360**	2337	3000	8400	-	**424**	96.6	330	580
Lead	-	**0.02**	0.009	0.02	0.04	-	**0.40**	0.20	0.23	0.74	-	**1.4**	0.084	1.3	1.5
Manganese	-	**316**	171	171	610	-	**95**	72	39	199	-	**6.7**	1.39	5.3	8.2
Mercury	5	**0.0025**	-	<0.005	<0.005	1	**0.009**	0.005	<0.005	0.017	-	**-**	-	-	-
Molybdenum	-	**0.8**	0.6	0.2	1.8	-	**1**	1	0.3	3.5	5	**0.05**	-	<0.1	<0.1
Nickel	-	**0.76**	0.25	0.33	0.96	-	**24**	24	3	57	4	**0.08**	0.07	<0.1	0.2
Selenium	5	**0.025**	-	<0.05	<0.05	3	**0.05**	0.03	<0.05	0.1	5	**0.05**	-	<0.1	<0.1
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.05**	-	<0.1	<0.1
Strontium	-	**28**	3.4	24	32	-	**15**	6.0	9.4	25	-	**23**	0.84	22	24
Thallium	5	**0.025**	-	<0.05	<0.05	2	**0.07**	0.06	<0.05	0.17	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.025**	-	<0.05	<0.05	3	**0.04**	0.02	<0.05	0.07	5	**0.05**	-	<0.1	<0.1
Titanium	-	**0.26**	0.083	0.16	0.35	-	**7.8**	4.2	2.8	14	-	**44**	5.9	38	53
Uranium	5	**0.005**	-	<0.01	<0.01	-	**0.1**	0.06	0.04	0.18	-	**0.2**	0.05	0.2	0.3
Vanadium	2	**0.12**	0.08	<0.1	0.20	-	**5.1**	2.7	3.1	9.7	-	**1**	0.9	0.7	3
Zinc	-	**21**	4.6	17	28	-	**22**	8.8	8.7	32	-	**0.9**	0.1	0.7	1
Nutrients															
Carbon, Total Organic (%)	-	-	-	-	-	-	-	-	-	-	-	**0.19**	0.052	0.12	0.26
Phosphorus, Total	-	-	-	-	-	-	-	-	-	-	-	**42**	4.5	40	50
Physical Properties															
Ash (%)	-	**6.59**	1.15	5.14	7.74	-	**15.8**	8.38	5.71	28.12	-	**-**	-	-	-
Moisture (%)	-	**72.56**	4.04	65.80	76.31	-	**81.91**	2.654	79.13	85.56	-	**20.1**	2.14	17.7	23.21
Radionuclides															
Lead-210 (Bq/g)	-	**0.007**	0.003	0.004	0.01	-	**0.029**	0.012	0.014	0.045	2	**0.04**	0.02	<0.04	0.07
Polonium-210 (Bq/g)	-	**0.0032**	0.00049	0.0026	0.0039	-	**0.029**	0.0084	0.019	0.039	4	**0.006**	0.002	<0.01	0.01
Radium-226 (Bq/g)	-	**0.007**	0.001	0.005	0.008	1	**0.003**	0.002	<0.002	0.006	3	**0.01**	0.008	<0.01	0.02
Thorium-230 (Bq/g)	5	**0.0007**	0.0003	<0.001	<0.002	5	**0.002**	0.0010	<0.001	<0.006	5	**0.01**	-	<0.02	<0.02

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Patterson Creek														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	-	-	-	-	-	-	-	-	-	-	**344**	62.7	260	430
Magnesium	-	-	-	-	-	-	-	-	-	-	-	**140**	18.7	110	160
Potassium	-	-	-	-	-	-	-	-	-	-	-	**568**	72.6	460	650
Sodium	-	-	-	-	-	-	-	-	-	-	-	**192**	25.9	150	220
Metals															
Aluminum	-	**11**	3.9	5.8	15	-	**453**	378	74	1000	-	**1348**	142	1230	1530
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	5	**0.025**	-	<0.05	<0.05	-	**0.51**	0.21	0.18	0.72	-	**0.5**	0.08	0.4	0.6
Barium	-	**37**	8.9	30	52	-	**24**	8.1	15	35	-	**25**	2.7	22	28
Beryllium	5	**0.005**	-	<0.01	<0.01	1	**0.03**	0.021	<0.01	0.06	5	**0.05**	-	<0.1	<0.1
Boron	-	**6**	2	4	8	-	**4**	1	3	6	2	**1**	0.8	<1	2
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.04**	0.02	0.01	0.06	-	**0.2**	0.05	0.1	0.2
Chromium	-	**4**	2	3	7.1	-	**66**	69	16	180	4	**0.4**	0.2	<0.5	0.8
Cobalt	-	**0.05**	0.01	0.04	0.07	-	**0.85**	0.66	0.32	1.9	4	**0.1**	0.09	<0.2	0.3
Copper	-	**0.37**	0.24	0.21	0.79	-	**1.1**	0.49	0.63	1.9	5	**0.25**	-	<0.5	<0.5
Iron	-	**112**	20	78	130	-	**3660**	912.7	2400	4500	-	**502**	62.2	400	560
Lead	-	**0.02**	0.007	0.01	0.03	-	**1.1**	0.85	0.16	2.1	-	**1.3**	0.11	1.2	1.4
Manganese	-	**257**	87.0	122	351	-	**97**	14	82	117	-	**12**	1.3	9.9	13
Mercury	5	**0.0025**	-	<0.005	<0.005	1	**0.008**	0.004	<0.005	0.013	-	**-**	-	-	-
Molybdenum	-	**0.6**	0.4	0.3	1.4	-	**0.6**	0.6	0.2	1.6	5	**0.05**	-	<0.1	<0.1
Nickel	-	**1.7**	0.63	1.2	2.8	-	**28**	28	6.2	74	4	**0.08**	0.07	<0.1	0.2
Selenium	5	**0.025**	-	<0.05	<0.05	1	**0.1**	0.09	<0.05	0.26	5	**0.05**	-	<0.1	<0.1
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.05**	-	<0.1	<0.1
Strontium	-	**31**	12	22	52	-	**30**	13	15	43	-	**25**	1.5	23	27
Thallium	5	**0.025**	-	<0.05	<0.05	5	**0.025**	-	<0.05	<0.05	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.025**	-	<0.05	<0.05	3	**0.04**	0.02	<0.05	0.06	5	**0.05**	-	<0.1	<0.1
Titanium	-	**0.41**	0.15	0.26	0.57	-	**15**	13	2	34	-	**70**	15	47	88
Uranium	-	**0.08**	0.04	0.02	0.11	-	**0.32**	0.19	0.14	0.62	-	**0.2**	3E-09	0.2	0.2
Vanadium	5	**0.05**	-	<0.1	<0.1	-	**2**	1	0.3	3.5	-	**1.0**	0.2	0.8	1.1
Zinc	-	**15**	2.6	12	18	-	**15**	10	6.2	26	-	**0.8**	0.09	0.7	0.9
Nutrients															
Carbon, Total Organic (%)	-	-	-	-	-	-	-	-	-	-	-	**0.55**	0.12	0.45	0.73
Phosphorus, Total	-	-	-	-	-	-	-	-	-	-	-	**38**	4.5	30	40
Physical Properties															
Ash (%)	-	**6.32**	0.680	5.18	6.92	-	**15.1**	10.3	4.05	27.83	-	-	-	-	-
Moisture (%)	-	**76.11**	2.11	74.00	78.75	-	**83.0**	1.73	80.6	85.08	-	**24.12**	1.352	22.01	25.52
Radionuclides															
Lead-210 (Bq/g)	-	**0.005**	0.0007	0.004	0.006	-	**0.06**	0.06	0.007	0.16	4	**0.03**	0.02	<0.04	0.06
Polonium-210 (Bq/g)	-	**0.0024**	0.00058	0.0014	0.0028	-	**0.05**	0.05	0.007	0.14	4	**0.006**	0.002	<0.01	0.01
Radium-226 (Bq/g)	-	**0.003**	0.001	0.001	0.004	1	**0.003**	0.002	<0.0005	0.006	3	**0.01**	0.008	<0.01	0.02
Thorium-230 (Bq/g)	5	**0.0005**	-	<0.001	<0.001	5	**0.002**	0.001	<0.001	<0.006	5	**0.01**	-	<0.02	<0.02

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Beet Creek														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	-	-	-	-	-	-	-	-	-	-	**250**	65.6	160	300
Magnesium	-	-	-	-	-	-	-	-	-	-	-	**62**	16	50	80
Potassium	-	-	-	-	-	-	-	-	-	-	-	**392**	98.1	290	520
Sodium	-	-	-	-	-	-	-	-	-	-	-	**166**	46.7	120	230
Metals															
Aluminum		**10**	5.8	5.6	17	-	**580**	279	270	1000	-	**940**	260	700	1300
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	5	**0.025**	-	<0.05	<0.05	-	**0.5**	0.2	0.3	0.71	-	**0.6**	0.2	0.5	0.9
Barium	-	**32**	5.8	23	39	-	**27**	13	13	48	-	**20**	4.0	16	25
Beryllium	5	**0.005**	-	<0.01	<0.01	-	**0.03**	0.01	0.02	0.05	5	**0.05**	-	<0.1	<0.1
Boron	-	**4**	0	4	4	-	**2**	0.5	2	3	3	**1**	0.8	<1	2
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.05**	0.01	0.03	0.06	-	**0.2**	0.04	0.1	0.2
Chromium	-	**1**	0.4	0.8	1.9	-	**42**	21	20	65	2	**0.7**	0.4	<0.5	1.1
Cobalt	-	**0.02**	0.005	0.02	0.03	-	**0.58**	0.18	0.36	0.74	4	**0.1**	0.09	<0.2	0.3
Copper	-	**0.31**	0.036	0.27	0.36	-	**0.93**	0.24	0.59	1.2	5	**0.25**	-	<0.5	<0.5
Iron	-	**155**	98	88	320	-	**4540**	1638	2200	6600	-	**424**	120	300	610
Lead	1	**0.01**	0.005	<0.01	0.02	-	**0.60**	0.13	0.43	0.79	-	**1.2**	0.045	1.2	1.3
Manganese	-	**306**	156	149	550	-	**58**	28	26	99	-	**6**	0.8	5.2	7
Mercury	5	**0.0025**	-	<0.005	<0.005	-	**0.02**	0.01	0.009	0.043	-	**-**	-	-	-
Molybdenum	-	**0.2**	0.2	0.1	0.5	-	**0.5**	0.2	0.3	0.8	5	**0.05**	-	<0.1	<0.1
Nickel	-	**0.53**	0.18	0.34	0.83	-	**17**	8.5	7.7	27	1	**0.3**	0.1	<0.1	0.4
Selenium	5	**0.025**	-	<0.05	<0.05	1	**0.08**	0.04	<0.05	0.13	5	**0.05**	-	<0.1	<0.1
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.05**	-	<0.1	<0.1
Strontium	-	**16**	1.1	14	17	-	**21**	12	14	43	-	**23**	2.2	21	26
Thallium	5	**0.025**	-	<0.05	<0.05	5	**0.025**	-	<0.05	<0.05	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.025**	-	<0.05	<0.05	4	**0.03**	0.01	<0.05	0.05	5	**0.05**	-	<0.1	<0.1
Titanium	-	**0.16**	0.05	0.1	0.22	-	**15**	4.6	8.4	19	-	**33**	8.8	26	45
Uranium	5	**0.005**	-	<0.01	<0.01	-	**0.09**	0.03	0.06	0.14	-	**0.2**	3E-09	0.2	0.2
Vanadium	5	**0.05**	-	<0.1	<0.1	-	**2**	1.0	1.6	4	-	**0.8**	0.5	0.5	1.6
Zinc	-	**23**	4.4	17	28	-	**7.4**	2.6	3.8	10	1	**0.5**	0.2	<0.5	0.6
Nutrients															
Carbon, Total Organic (%)	-	-	-	-	-	-	-	-	-	-	-	**0.8**	0.5	0.3	1.47
Phosphorus, Total	-	-	-	-	-	-	-	-	-	-	-	**38**	8.4	30	50
Physical Properties															
Ash (%)	-	**6.40**	0.651	5.84	7.51	-	**17.26**	6.13	8.92	24.6	-	-	-	-	-
Moisture (%)	-	**72.33**	1.201	71.25	74.22	-	**81.50**	2.289	79.59	85.34	-	**27.33**	2.236	25.22	30.75
Radionuclides															
Lead-210 (Bq/g)	-	**0.009**	0.003	0.004	0.012	-	**0.071**	0.0343	0.033	0.11	5	**0.02**	-	<0.04	<0.04
Polonium-210 (Bq/g)	-	**0.0048**	0.0013	0.0031	0.0064	-	**0.077**	0.037	0.039	0.12	5	**0.005**	-	<0.01	<0.01
Radium-226 (Bq/g)	-	**0.002**	0.001	0.001	0.004	-	**0.004**	0.0005	0.003	0.004	2	**0.01**	0.006	<0.01	0.02
Thorium-230 (Bq/g)	5	**0.0006**	0.0002	<0.001	<0.002	4	**0.002**	0.0004	<0.002	0.005	5	**0.01**	-	<0.02	<0.02

Appendix C, Table 36

Summary of Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Clearwater River Nearfield														
	Shoots					Roots					Sediment				
	N = 5					N = 5					N = 5				
	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max	N<RDL	Mean	SD	Min	Max
Inorganic Ions															
Calcium	-	-	-	-	-	-	-	-	-	-	-	**392**	147	240	560
Magnesium	-	-	-	-	-	-	-	-	-	-	-	**100**	14	90	120
Potassium	-	-	-	-	-	-	-	-	-	-	-	**340**	81.2	260	460
Sodium	-	-	-	-	-	-	-	-	-	-	-	**112**	24	80	140
Metals															
Aluminum	-	**25**	11	13	37	-	**560**	303	390	1100	-	**1126**	240	870	1520
Antimony	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.1**	-	<0.2	<0.2
Arsenic	1	**0.08**	0.04	<0.05	0.13	-	**3**	3	0.24	8	-	**0.9**	0.3	0.6	1.2
Barium	-	**28**	7.3	16	35	-	**19**	8.5	11	28	-	**19**	1.1	18	21
Beryllium	5	**0.005**	-	<0.01	<0.01	-	**0.2**	0.1	0.06	0.37	3	**0.1**	0.08	<0.1	0.2
Boron	-	**5**	2	4	9	-	**2**	0.5	2	3	-	**2**	0.4	2	3
Cadmium	5	**0.005**	-	<0.01	<0.01	-	**0.03**	0.008	0.02	0.04	-	**0.1**	0.05	0.1	0.2
Chromium	-	**2**	0.8	0.9	2.8	-	**102**	74	38	230	2	**1**	1	<0.5	3
Cobalt	-	**0.06**	0.02	0.04	0.08	-	**1.3**	0.76	0.69	2.6	3	**0.2**	0.1	<0.2	0.3
Copper	-	**0.37**	0.03	0.33	0.40	-	**1.4**	0.69	0.81	2.6	5	**0.25**	-	<0.5	<0.5
Iron	-	**384**	217	150	640	-	**6800**	5022	1000	14100	-	**1942**	1120	360	3010
Lead	-	**0.03**	0.01	0.01	0.04	-	**0.7**	0.10	0.53	0.8	-	**1.3**	0.055	1.3	1.4
Manganese	-	**186**	76	54	233	-	**47**	22	15	72	-	**19**	7.4	7.6	28
Mercury	5	**0.0025**	-	<0.005	<0.005	1	**0.006**	0.002	<0.005	0.008	-	**-**	-	-	-
Molybdenum	1	**0.6**	0.5	<0.1	1.4	-	**0.6**	0.4	0.2	1.2	5	**0.05**	-	<0.1	<0.1
Nickel	-	**0.89**	0.28	0.59	1.3	-	**42**	28	14	90	4	**0.1**	0.20	<0.1	0.5
Selenium	5	**0.025**	-	<0.05	<0.05	2	**0.09**	0.10	<0.05	0.26	5	**0.05**	-	<0.1	<0.1
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.05**	-	<0.1	<0.1
Strontium	-	**18**	3.4	16	24	-	**18**	3.7	14	23	-	**25**	1.6	24	28
Thallium	5	**0.025**	-	<0.05	<0.05	4	**0.03**	0.02	<0.05	0.06	5	**0.1**	-	<0.2	<0.2
Tin	5	**0.025**	-	<0.05	<0.05	2	**0.07**	0.04	<0.05	0.1	5	**0.05**	-	<0.1	<0.1
Titanium	-	**0.71**	0.41	0.31	1.3	-	**36**	26	18	76	-	**56**	9.4	42	68
Uranium	2	**0.008**	0.003	<0.01	0.01	-	**0.2**	0.1	0.1	0.3	-	**0.3**	0.05	0.2	0.3
Vanadium	2	**0.2**	0.2	<0.1	0.5	-	**18**	15	2.5	36	-	**6.9**	5.8	1.2	13
Zinc	-	**13**	5.4	5.9	19	-	**10**	9.5	1.9	24	-	**1.4**	0.68	0.8	2.3
Nutrients															
Carbon, Total Organic (%)	-	-	-	-	-	-	-	-	-	-	-	**1.6**	0.98	0.75	3.02
Phosphorus, Total	-	-	-	-	-	-	-	-	-	-	-	**100**	27	70	140
Physical Properties															
Ash (%)	-	**5.25**	0.750	4.35	6.38	-	**25**	17.0	5.7	40.57	-	**-**	-	-	-
Moisture (%)	-	**74.22**	1.898	72.54	76.99	-	**71.45**	2.825	68.18	75.05	-	**39.72**	10.54	27.25	54.73
Radionuclides															
Lead-210 (Bq/g)	-	**0.007**	0.002	0.004	0.01	-	**0.03**	0.02	0.01	0.054	4	**0.03**	0.02	<0.04	0.06
Polonium-210 (Bq/g)	-	**0.0047**	0.0011	0.0035	0.0059	-	**0.02**	0.02	0.007	0.053	2	**0.02**	0.01	<0.01	0.04
Radium-226 (Bq/g)	-	**0.004**	0.0005	0.0029	0.004	3	**0.002**	0.001	<0.0008	0.004	4	**0.008**	0.007	<0.01	0.02
Thorium-230 (Bq/g)	5	**0.0005**	2E-05	<0.0009	<0.001	5	**0.003**	0.002	<0.001	<0.008	5	**0.01**	-	<0.02	<0.02

Note: All values are in µg/L unless specified otherwise.

Note: N = number of samples; N<RDL = number of samples less than the reporting detection limit (RDL); SD = standard deviation; Min = Minimum; Max = Maximum.

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs.

Means are **bolded** for ease of data comparison.

Appendix C, Table 37

Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results for Lloyd Lake Inlet, August 2018

Parameter	Station 1			Station 2			Station 3			Station 4			Station 5		
	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment
Inorganic Ions															
Calcium	-	-	600	-	-	470	-	-	390	-	-	480	-	-	430
Magnesium	-	-	490	-	-	520	-	-	340	-	-	460	-	-	400
Potassium	-	-	870	-	-	640	-	-	480	-	-	2400	-	-	1400
Sodium	-	-	170	-	-	80	-	-	70	-	-	1400	-	-	640
Metals															
Aluminum	7.6	54	3360	9.1	85	3500	12	240	2480	10	94	3240	11	95	2840
Antimony	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2
Arsenic	0.07	0.28	0.8	<0.05	0.3	0.8	0.05	0.86	0.7	<0.05	0.35	0.9	<0.05	0.3	0.6
Barium	26	26	36	41	57	30	22	21	22	36	54	31	51	65	28
Beryllium	<0.01	<0.01	0.1	<0.01	0.01	0.1	<0.01	0.02	<0.1	<0.01	0.01	0.1	<0.01	0.01	<0.1
Boron	3	2	4	3	4	3	4	3	1	4	3	4	5	3	3
Cadmium	<0.01	0.03	0.2	<0.01	0.08	<0.1	<0.01	0.04	<0.1	<0.01	0.06	0.2	<0.01	0.05	<0.1
Chromium	2.6	1.2	4.4	0.7	0.8	4.1	1.7	22	2.4	1.1	1	4.3	1.8	0.8	2.9
Cobalt	0.11	0.24	0.3	0.04	0.56	0.2	0.08	0.49	<0.2	0.03	0.55	0.6	0.03	0.46	<0.2
Copper	0.99	34	0.9	0.31	50	0.6	0.37	34	<0.5	0.49	41	2.9	0.83	43	<0.5
Iron	660	4500	2670	270	5100	3150	580	7800	2100	180	5400	3200	120	7200	1860
Lead	0.02	0.16	1.4	0.01	0.26	1.2	0.02	0.45	1.2	0.01	0.27	1.4	0.01	0.22	1.1
Manganese	373	158	42	760	640	43	293	126	31	600	498	43	1090	526	37
Mercury	<0.005	0.008	-	<0.005	0.014	-	<0.005	0.01	-	<0.005	0.023	-	<0.005	0.028	-
Molybdenum	0.4	0.2	<0.1	0.2	0.2	<0.1	0.4	0.2	<0.1	0.4	0.2	<0.1	1.2	0.3	<0.1
Nickel	1.7	1.2	1.5	0.38	1	1.6	0.69	8.3	0.9	0.68	1	3.8	0.82	0.95	1
Selenium	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.05	<0.1	<0.05	<0.05	<0.1
Silver	<0.01	<0.01	0.2	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	0.2	<0.01	<0.01	0.1
Strontium	11	18	24	38	51	22	15	18	23	25	50	23	47	57	22
Thallium	<0.05	<0.05	<0.2	<0.05	0.09	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2
Tin	<0.05	<0.05	0.3	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.07	0.3	<0.05	<0.05	<0.1
Titanium	0.29	1.5	180	0.32	2	220	0.34	8.4	180	0.33	2.2	190	0.37	2.4	180
Uranium	<0.01	0.06	0.2	<0.01	0.13	0.2	<0.01	0.08	0.1	<0.01	0.1	0.2	<0.01	0.1	0.2
Vanadium	<0.1	0.3	5.2	<0.1	0.4	6.3	<0.1	1	4.4	<0.1	0.5	5.6	<0.1	0.4	4.5
Zinc	28	23	2.9	13	27	2.8	23	12	2.5	24	23	3	35	26	2.3
Nutrients															
Carbon, Total Organic (%)	-	-	1.85	-	-	1.51	-	-	0.93	-	-	1.60	-	-	1.04
Phosphorus, Total	-	-	80	-	-	80	-	-	50	-	-	90	-	-	60
Physical Properties															
Ash (%)	5.55	3.27	-	5.25	4.86	-	4.71	8.09	-	5.69	5.39	-	6.97	8.91	-
Moisture (%)	76.01	84.45	40.6	72.31	84.28	36.4	77.82	84.78	30.69	70.5	84.24	41.3	72.61	83.91	34.38

Appendix C, Table 37

Aquatic Macrophyte Shoot, Root, and Sediment Chemistry Results for Lloyd Lake Inlet, August 2018

Parameter	Station 1			Station 2			Station 3			Station 4			Station 5		
	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment
Radionuclides															
Lead-210 (Bq/g)	0.005	0.034	<0.04	0.011	0.074	<0.04	0.012	0.032	<0.04	0.01	0.18	<0.04	0.017	0.13	<0.04
Polonium-210 (Bq/g)	0.004	0.024	0.02	0.006	0.064	0.01	0.005	0.028	0.01	0.005	0.11	0.02	0.006	0.11	<0.01
Radium-226 (Bq/g)	0.004	0.005	0.02	0.006	0.008	0.01	0.002	0.006	0.02	0.006	0.012	0.02	0.007	0.01	0.01
Thorium-230 (Bq/g)	<0.001	<0.002	<0.02	<0.001	<0.001	<0.02	<0.0009	<0.002	<0.02	<0.001	<0.001	<0.02	<0.001	<0.002	<0.02

Note: All data presented on a dry weight basis.

Note: All values are in µg/g unless specified otherwise.

Appendix C, Table 38

Aquatic Macrophyte Shoot, Root, and Sediment Chemistry from the Aquatic Study Area, July 2019

Parameter	Units	Broach Lake															Jed Creek													
		Station 1			Station 2			Station 3			Station 4			Station 5			Station 1			Station 2			Station 3			Station 4			Station 5		
		Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment
Inorganic Ions																														
Calcium	µg/g	-	-	400	-	-	140	-	-	210	-	-	280	-	-	140	-	-	140	-	-	200	-	-	220	-	-	180	-	-	190
Magnesium	µg/g	-	-	80	-	-	90	-	-	120	-	-	120	-	-	60	-	-	80	-	-	100	-	-	140	-	-	90	-	-	90
Potassium	µg/g	-	-	330	-	-	370	-	-	720	-	-	840	-	-	280	-	-	280	-	-	390	-	-	510	-	-	370	-	-	420
Sodium	µg/g	-	-	140	-	-	130	-	-	150	-	-	100	-	-	100	-	-	110	-	-	160	-	-	170	-	-	140	-	-	160
Metals																														
Aluminum	µg/g	12	72	880	10	300	1060	9.0	170	1630	9.4	620	2280	6.0	110	670	28	680	950	15	320	1080	19	380	1500	13	870	1080	8.4	170	1060
Antimony	µg/g	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2
Arsenic	µg/g	<0.05	0.6	0.6	0.05	0.33	0.5	0.11	1.7	0.5	0.06	0.71	0.5	0.07	1.4	0.4	0.06	0.39	0.6	0.12	6.0	0.6	0.06	1.1	0.6	<0.05	0.58	0.6	<0.05	1.6	0.6
Barium	µg/g	53	24	21	46	25	16	34	42	32	50	31	36	37	24	16	37	29	13	25	12	14	48	22	17	44	30	17	43	13	16
Beryllium	µg/g	<0.01	<0.01	<0.1	<0.01	0.02	<0.1	<0.01	0.01	<0.1	<0.01	0.03	<0.1	<0.01	0.01	<0.1	<0.01	0.06	<0.1	<0.01	0.12	<0.1	<0.01	0.05	<0.1	<0.01	0.1	<0.1	<0.01	0.03	<0.1
Boron	µg/g	7	2	3	4	3	2	4	3	2	7	2	3	4	2	1	4	2	1	6	2	3	4	2	4	4	2	1	7	2	4
Cadmium	µg/g	<0.01	0.02	0.1	<0.01	0.02	<0.1	<0.01	0.03	0.2	<0.01	0.11	0.2	<0.01	0.04	0.2	<0.01	0.12	0.2	<0.01	0.07	0.2	<0.01	0.12	0.2	<0.01	0.08	0.2	<0.01	0.19	0.3
Chromium	µg/g	3.5	70	<0.5	12	240	1	1.5	150	<0.5	1.1	46	1.4	<0.5	210	<0.5	1.1	120	<0.5	1.3	29	<0.5	1.8	16	<0.5	1.8	100	<0.5	0.6	7.7	<0.5
Cobalt	µg/g	0.05	0.8	<0.2	0.13	2.6	<0.2	0.03	1.7	0.3	0.03	0.83	0.4	0.02	2.3	<0.2	0.3	2.5	<0.2	0.15	3.7	0.4	0.1	0.92	<0.2	0.11	1.6	<0.2	0.04	1.1	<0.2
Copper	µg/g	0.63	0.81	<0.5	0.32	0.84	1	0.2	0.7	<0.5	0.83	2.6	1.3	0.14	0.8	<0.5	0.37	1.2	<0.5	0.75	2.1	<0.5	0.51	0.87	<0.5	0.24	2	<0.5	0.74	0.87	<0.5
Iron	µg/g	230	3300	550	530	6800	830	360	3900	850	150	1500	430	110	3600	410	410	3000	330	290	6900	430	330	5300	580	180	3200	360	130	8400	420
Lead	µg/g	0.04	0.18	1.3	0.02	0.49	1.2	0.02	0.36	1.3	0.02	0.58	1.7	<0.01	0.36	0.9	0.02	0.4	1.3	0.02	0.29	1.3	0.04	0.34	1.5	0.02	0.74	1.4	0.02	0.23	1.4
Manganese	µg/g	368	130	9.7	453	176	6.8	346	156	16	178	89	11	404	258	12	171	49	6.4	610	140	8.1	230	46	8.2	277	39	5.3	292	199	5.5
Mercury	µg/g	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	<0.005	0	0.007	0.022	0	<0.005	<0.005	0	<0.005	0.009	-	<0.005	<0.005	-	<0.005	0.008	-	<0.005	0.017	-	<0.005	0.006	-
Molybdenum	µg/g	1.0	0.4	<0.1	0.6	0.3	<0.1	0.5	0.3	<0.1	0.7	0.5	<0.1	0.7	0.5	<0.1	0.2	0.3	<0.1	1.8	3.5	<0.1	0.6	0.5	<0.1	0.4	0.4	<0.1	1.1	0.3	<0.1
Nickel	µg/g	1.5	29	<0.1	4.8	100	0.4	0.65	68	<0.1	0.54	17	0.4	0.2	87	<0.1	0.96	57	<0.1	0.81	12	0.2	0.9	6.8	<0.1	0.79	42	<0.1	0.33	3.0	<0.1
Selenium	µg/g	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.44	0.3	<0.05	<0.05	<0.1	<0.05	0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.1	<0.1	<0.05	<0.05	<0.1
Silver	µg/g	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1
Strontium	µg/g	30	19	27	11	11	22	18	12	17	48	16	22	12	8.4	16	24	14	23	27	12	22	30	14	24	25	25	24	32	9.4	23
Thallium	µg/g	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	0.06	<0.2	<0.05	0.08	<0.2	<0.05	<0.05	<0.2	<0.05	0.06	<0.2	<0.05	<0.05	<0.2	<0.05	0.09	<0.2	<0.05	<0.05	<0.2	<0.05	0.17	<0.2
Tin	µg/g	<0.05	<0.05	<0.1	<0.05	0.06	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.07	<0.1	<0.05	<0.05	<0.1
Titanium	µg/g	0.37	1.2	27	0.28	3.1	37	0.23	5.0	90	0.24	14	150	0.2	3.6	32	0.34	9.4	38	0.24	6.3	42	0.35	6.6	53	0.21	14	45	0.16	2.8	40
Uranium	µg/g	<0.01	0.01	0.2	<0.01	0.03	0.2	<0.01	0.03	0.2	<0.01	0.08	0.3	<0.01	0.02	0.2	<0.01	0.1	0.2	<0.01	0.18	0.2	<0.01	0.12	0.3	<0.01	0.17	0.2	<0.01	0.04	0.3
Vanadium	µg/g	<0.1	0.6	0.5	<0.1	1.3	1.0	<0.1	1.1	1.5	<0.1	1.6	2.2	<0.1	1.3	0.5	0.2	3.1	0.7	0.1	9.7	3.0	0.2	4.8	1.4	<0.1	4.4	1.0	<0.1	3.4	0.8
Zinc	µg/g	16	8.5	0.6	18	21	1.1	19	17	2.6	14	5.7	1.4	19	14	0.8	28	18	0.7	17	24	0.9	22	26	1.0	17	8.7	1.0	23	32	1.0
Nutrients																														
Carbon, Total Organic	%	-	-	0.92	-	-	0.22	-	-	0.48	-	-	1.43	-	-	0.51	-	-	0.17	-	-	0.18	-	-	0.12	-	-	0.26	-	-	0.21
Phosphorus, Total	µg/g	-	-	40	-	-	50	-	-	70	-	-	50	-	-	40	-	-	40	-	-	50	-	-	40	-	-	40	-	-	40
Physical Properties																														
% Moisture	%	74.56	77.81	24.31	72.42	82.19	18.55	66.80	76.92	28.98	75.12	74.04	31.13	67.12	76.56	28.20	74.52	79.95	23.21	73.85	85.56	20.38	76.31	83.61	18.53	72.32	79.13	20.63	65.80	81.28	17.70
Ash	%	7.59	12.79	-	8.00	23.22	-	2.96	30.73	-	4.28	27.88	-	3.30	30.30	-	6.61	15.51	-	7.69	11.19	-	7.74	18.26	-	5.78	28.12	-	5.14	5.71	-
Radionuclides																														
Lead-210	Bq/g	0.005	0.02	0.04	0.006	<0.004	<0.04	0.005	0.007	<0.04	0.011	0.011	<0.04	0.004	0.016	<0.04	0.008	0.024	<0.04	0.009	0.014	0.06	0.004	0.034	0.07	0.004	0.045	<0.04	0.01	0.028	0.05
Polonium-210	Bq/g	0.0029	0.02	<0.01	0.001	0.007	<0.01	0.0027	0.009	0.01	0.0047	0.007	0.01	0.0026	0.016	0.01	0.0035	0.025	<0.01	0.0039	0.019	<0.01	0.003	0.037	<0.01	0.0026	0.039	<0.01	0.0032	0.027	0.01
Radium-226	Bq/g	0.003	0.001	<0.01	0.013	0.008	0.02	0.01	0.01	0.01	0.0007	0.007	0.02	0.0072	0.006	<0.01	0.007	0.006	<0.01	0.006	0.004	<0.01	0.008	<0.002	0.02	0.008	0.004	<0.01	0.005	0.002	0.02
Thorium-230	Bq/g	<0.002	<0.002	<0.02	<0.002	<0.005	<0.02	<0.0006	<0.006	<0.02	<0.0008	<0.006	<0.02	<0.0007	<0.006	<0.02	<0.001	<0.003	<0.02	<0.002	<0.002	<0.02	<0.002	<0.004	<0.02	<0.001	<0.006	<0.02	<0.001	<0.001	<0.02

Appendix C, Table 38

Aquatic Macrophyte Shoot, Root, and Sediment Chemistry from the Aquatic Study Area, July 2019

Parameter	Units	Patterson Creek															Beet Creek													
		Station 1			Station 2			Station 3			Station 4			Station 5			Station 1			Station 2			Station 3			Station 4			Station 5		
		Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment
Inorganic Ions																														
Calcium	µg/g	-	-	320	-	-	260	-	-	340	-	-	430	-	-	370	-	-	160	-	-	200	-	-	300	-	-	300	-	-	290
Magnesium	µg/g	-	-	140	-	-	110	-	-	150	-	-	140	-	-	160	-	-	50	-	-	50	-	-	80	-	-	50	-	-	80
Potassium	µg/g	-	-	650	-	-	540	-	-	460	-	-	580	-	-	610	-	-	350	-	-	290	-	-	470	-	-	330	-	-	520
Sodium	µg/g	-	-	220	-	-	190	-	-	150	-	-	200	-	-	200	-	-	140	-	-	120	-	-	200	-	-	140	-	-	230
Metals																														
Aluminum	µg/g	5.8	74	1530	11	200	1230	9.4	320	1280	15	1000	1230	15	670	1470	6.6	420	790	5.8	270	700	5.6	530	1130	17	680	780	16	1000	1300
Antimony	µg/g	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2
Arsenic	µg/g	<0.05	0.18	0.6	<0.05	0.65	0.6	<0.05	0.49	0.5	<0.05	0.72	0.4	<0.05	0.53	0.5	<0.05	0.56	0.50	<0.05	0.71	0.50	<0.05	0.30	0.50	<0.05	0.54	0.90	<0.05	0.45	0.5
Barium	µg/g	33	15	28	52	19	24	32	23	22	30	30	24	36	35	28	31	21	17	39	30	16	23	13	23	32	25	18	34	48	25
Beryllium	µg/g	<0.01	<0.01	<0.1	<0.01	0.02	<0.1	<0.01	0.03	<0.1	<0.01	0.06	<0.1	<0.01	0.04	<0.1	<0.01	0.03	<0.1	<0.01	0.02	<0.1	<0.01	0.03	<0.1	<0.01	0.04	<0.1	<0.01	0.05	<0.1
Boron	µg/g	4	3	2	8	4	<1	6	3	<1	5	6	2	8	5	2	4	3	<1	4	2	<1	4	2	2	4	2	<1	4	3	2
Cadmium	µg/g	<0.01	0.01	0.2	<0.01	0.06	0.2	<0.01	0.03	0.1	<0.01	0.06	0.1	<0.01	0.03	0.2	<0.01	0.03	0.2	<0.01	0.04	0.1	<0.01	0.05	0.2	<0.01	0.05	0.2	<0.01	0.06	0.2
Chromium	µg/g	7.1	16	0.8	3.8	23	<0.5	3.0	28	<0.5	4.5	82	<0.5	3.9	180	<0.5	0.8	46	<0.5	1.2	65	1.0	1.2	20	1.1	1.9	58	0.8	1.1	21	<0.5
Cobalt	µg/g	0.07	0.32	<0.2	0.04	0.47	<0.2	0.04	0.46	<0.2	0.05	1.1	<0.2	0.05	1.9	0.3	0.02	0.67	<0.2	0.02	0.74	<0.2	0.02	0.36	0.30	0.03	0.73	<0.2	0.03	0.42	<0.2
Copper	µg/g	0.24	0.63	<0.5	0.79	1.9	<0.5	0.31	0.88	<0.5	0.31	1.3	<0.5	0.21	1.0	<0.5	0.36	1.2	<0.5	0.32	0.59	<0.5	0.27	0.88	<0.5	0.28	1.1	<0.5	0.32	0.87	<0.5
Iron	µg/g	78	2400	530	110	4500	400	120	3800	560	120	3100	490	130	4500	530	99	3900	300	88	6600	440	100	2200	430	320	5300	610	170	4700	340
Lead	µg/g	0.02	0.16	1.4	0.03	1.9	1.4	0.01	0.56	1.2	0.02	2.1	1.2	0.02	0.81	1.4	0.02	0.56	1.2	<0.01	0.43	1.2	0.01	0.59	1.2	0.01	0.62	1.2	0.01	0.79	1.3
Manganese	µg/g	122	88	13	351	106	9.9	233	117	12	306	82	11	272	93	13	550	99	5.2	346	47	5.6	149	26	6.8	204	45	7.0	281	71	5.4
Mercury	µg/g	<0.005	<0.005	-	<0.005	0.007	-	<0.005	0.008	-	<0.005	0.013	-	<0.005	0.01	-	<0.005	0.01	-	<0.005	0.009	-	<0.005	0.014	-	<0.005	0.014	-	<0.005	0.043	-
Molybdenum	µg/g	0.4	0.2	<0.1	1.4	1.6	<0.1	0.5	0.4	<0.1	0.5	0.6	<0.1	0.3	0.4	<0.1	0.3	0.8	<0.1	0.5	0.3	<0.1	0.1	0.3	<0.1	0.1	0.5	<0.1	0.2	0.5	<0.1
Nickel	µg/g	2.8	6.2	0.2	1.5	11	<0.1	1.2	11	<0.1	1.7	36	<0.1	1.4	74	<0.1	0.34	18	0.2	0.51	27	0.4	0.51	7.7	0.4	0.83	22	0.3	0.48	8.3	<0.1
Selenium	µg/g	<0.05	<0.05	<0.1	<0.05	0.07	<0.1	<0.05	0.06	<0.1	<0.05	0.26	<0.1	<0.05	0.1	<0.1	<0.05	0.08	<0.1	<0.05	<0.05	<0.1	<0.05	0.09	<0.1	<0.05	0.07	<0.1	<0.05	0.13	<0.1
Silver	µg/g	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1
Strontium	µg/g	22	15	25	52	30	25	23	19	23	26	41	24	31	43	27	14	15	21	16	16	21	16	14	24	17	19	22	15	43	26
Thallium	µg/g	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2
Tin	µg/g	<0.05	<0.05	<0.1	<0.05	0.06	<0.1	<0.05	<0.05	<0.1	<0.05	0.06	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	0.05	<0.1	<0.05	<0.05	<0.1
Titanium	µg/g	0.26	2.0	88	0.35	8.3	63	0.29	9.7	76	0.56	34	47	0.57	20	74	0.16	12	26	0.1	8.4	26	0.13	16	39	0.21	19	27	0.22	19	45
Uranium	µg/g	0.02	0.25	0.2	0.05	0.21	0.2	0.1	0.14	0.2	0.11	0.62	0.2	0.1	0.38	0.2	<0.01	0.14	0.2	<0.01	0.06	0.2	<0.01	0.07	0.2	<0.01	0.09	0.2	<0.01	0.08	0.2
Vanadium	µg/g	<0.1	0.3	1.1	<0.1	1.1	0.8	<0.1	1.0	1.1	<0.1	3.5	0.8	<0.1	1.8	1.0	<0.1	2.1	0.5	<0.1	1.6	0.6	<0.1	1.8	1.6	<0.1	4.0	0.6	<0.1	2.1	0.7
Zinc	µg/g	17	26	0.7	16	26	0.7	18	10	0.7	12	6.2	0.8	13	6.4	0.9	27	8.8	<0.5	22	5.6	0.6	17	3.8	0.6	23	10	0.5	28	8.8	0.6
Nutrients																														
Carbon, Total Organic	%	-	-	0.45	-	-	0.45	-	-	0.58	-	-	0.73	-	-	0.56	-	-	0.30	-	-	0.46	-	-	1.47	-	-	0.54	-	-	1.05
Phosphorus, Total	µg/g	-	-	40	-	-	40	-	-	40	-	-	30	-	-	40	-	-	30	-	-	30	-	-	50	-	-	40	-	-	40
Physical Properties																														
% Moisture	%	74.00	84.22	22.01	77.89	85.08	23.70	78.75	82.78	24.44	75.53	82.40	24.91	74.40	80.60	25.52	72.32	79.59	25.22	74.22	81.27	28.18	72.51	85.34	30.75	71.33	79.92	26.88	71.25	81.39	25.62
Ash	%	5.18	4.05	-	6.26	5.08	-	6.70	20.94	-	6.53	17.77	-	6.92	27.83	-	5.84	18.71	-	6.03	24.60	-	6.32	8.92	-	7.51	20.54	-	6.32	13.54	-
Radionuclides																														
Lead-210	Bq/g	0.004	0.007	<0.04	0.005	0.052	0.06	0.005	0.025	<0.04	0.006	0.16	<0.04	0.005	0.031	<0.04	0.01	0.11	<0.04	0.004	0.033	<0.04	0.007	0.1	<0.04	0.01	0.041	<0.04	0.012	0.07	<0.04
Polonium-210	Bq/g	0.0014	0.007	<0.01	0.0025	0.035	<0.01	0.0026	0.028	<0.01	0.0028	0.14	<0.01	0.0028	0.036	0.01	0.0057	0.11	<0.01	0.0039	0.039	<0.01	0.0031	0.12	<0.01	0.005	0.046	<0.01	0.0064	0.07	<0.01
Radium-226	Bq/g	0.003	0.0005	0.02	0.003	0.002	<0.01	0.003	0.006	<0.01	0.001	0.004	<0.01	0.004	<0.003	0.02	0.002	0.004	<0.01	0.002	0.004	0.01	0.001	0.003	0.01	0.001	0.003	<0.01	0.004	0.004	0.02
Thorium-230	Bq/g	<0.001	<0.001	<0.02	<0.001	<0.001	<0.02	<0.001	<0.004	<0.02	<0.001	<0.004	<0.02	<0.001	<0.006	<0.02	<0.001	<0.004	<0.02	<0.001	<0.005	<0.02	<0.001	0.002	<0.02	<0.002	<0.004	<0.02	<0.001	<0.003	<0.02

Appendix C, Table 38

Aquatic Macrophyte Shoot, Root, and Sediment Chemistry from the Aquatic Study Area, July 2019

Parameter	Units	Clearwater River Near-Field														
		Station 1			Station 2			Station 3			Station 4			Station 5		
		Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment	Shoots	Roots	Sediment
Inorganic Ions																
Calcium	µg/g	-	-	320	-	-	240	-	-	560	-	-	300	-	-	540
Magnesium	µg/g	-	-	90	-	-	90	-	-	90	-	-	110	-	-	120
Potassium	µg/g	-	-	320	-	-	380	-	-	280	-	-	460	-	-	260
Sodium	µg/g	-	-	110	-	-	140	-	-	100	-	-	130	-	-	80
Metals																
Aluminum	µg/g	18	450	870	36	400	1060	37	460	1060	13	1100	1520	19	390	1120
Antimony	µg/g	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2
Arsenic	µg/g	0.08	2.4	0.7	0.09	0.81	0.7	0.13	8.0	1.1	<0.05	0.24	0.6	0.08	2.8	1.2
Barium	µg/g	30	28	19	35	15	18	29	28	19	16	11	19	32	12	21
Beryllium	µg/g	<0.01	0.07	<0.1	<0.01	0.09	<0.1	<0.01	0.37	0.2	<0.01	0.06	<0.1	<0.01	0.3	0.2
Boron	µg/g	9	3	2	4	2	2	5	3	2	4	2	2	5	2	3
Cadmium	µg/g	<0.01	0.04	0.1	<0.01	0.02	0.2	<0.01	0.03	0.1	<0.01	0.03	0.2	<0.01	0.02	0.1
Chromium	µg/g	2.2	79	<0.5	2.5	230	0.7	2.8	38	1.7	0.9	81	<0.5	1.6	82	3.0
Cobalt	µg/g	0.04	0.8	<0.2	0.06	2.6	<0.2	0.08	0.69	0.3	0.04	1.3	<0.2	0.08	1.3	0.3
Copper	µg/g	0.37	0.81	<0.5	0.36	2.6	<0.5	0.33	1.1	<0.5	0.4	1.2	<0.5	0.39	1.3	<0.5
Iron	µg/g	270	9200	1960	640	4300	1400	590	14100	3010	150	1000	360	270	5400	2980
Lead	µg/g	0.03	0.7	1.3	0.04	0.7	1.3	0.04	0.8	1.3	0.01	0.64	1.4	0.02	0.53	1.4
Manganese	µg/g	233	50	18	226	60	22	186	72	18	54	15	7.6	229	38	28
Mercury	µg/g	<0.005	0.008	-	<0.005	0.007	-	<0.005	0.008	-	<0.005	0.006	-	<0.005	<0.005	-
Molybdenum	µg/g	0.4	0.9	<0.1	0.5	0.5	<0.1	1.4	1.2	<0.1	<0.1	0.2	<0.1	0.5	0.4	<0.1
Nickel	µg/g	0.88	34	<0.1	0.99	90	<0.1	1.3	14	0.5	0.59	37	<0.1	0.68	35	<0.1
Selenium	µg/g	<0.05	0.06	<0.1	<0.05	<0.05	<0.1	<0.05	0.06	<0.1	<0.05	0.26	<0.1	<0.05	<0.05	<0.1
Silver	µg/g	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.1
Strontium	µg/g	24	23	24	17	15	25	16	18	24	16	20	28	17	14	25
Thallium	µg/g	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	<0.05	<0.2	<0.05	0.06	<0.2	<0.05	<0.05	<0.2
Tin	µg/g	<0.05	<0.05	<0.1	<0.05	0.1	<0.1	<0.05	0.08	<0.1	<0.05	<0.05	<0.1	<0.05	0.1	<0.1
Titanium	µg/g	0.31	20	42	0.98	18	59	1.3	49	58	0.44	18	55	0.54	76	68
Uranium	µg/g	0.01	0.1	0.2	0.01	0.11	0.2	0.01	0.27	0.3	<0.01	0.1	0.3	<0.01	0.3	0.3
Vanadium	µg/g	<0.1	8.9	1.9	0.3	11	5.5	0.5	32	13	<0.1	2.5	1.2	0.2	36	13
Zinc	µg/g	19	24	1.1	14	4.2	0.8	17	16	1.9	9.6	4.6	0.8	5.9	1.9	2.3
Nutrients																
Carbon, Total Organic	%	-	-	1.00	-	-	1.14	-	-	2.33	-	-	0.75	-	-	3.02
Phosphorus, Total	µg/g	-	-	110	-	-	80	-	-	100	-	-	70	-	-	140
Physical Properties																
% Moisture	%	73.00	68.18	32.94	75.38	75.05	43.90	76.99	71.81	39.77	72.54	69.11	27.25	73.18	73.08	54.73
Ash	%	6.38	7.82	-	5.48	40.57	-	5.02	5.70	-	4.35	35.48	-	5.01	36.40	-
Radionuclides																
Lead-210	Bq/g	0.007	0.054	<0.04	0.01	0.029	<0.04	0.007	0.022	<0.04	0.006	0.01	<0.04	0.004	0.01	0.06
Polonium-210	Bq/g	0.0049	0.053	0.02	0.0059	0.026	<0.01	0.0056	0.024	0.02	0.0035	0.007	<0.01	0.0036	0.014	0.04
Radium-226	Bq/g	0.004	<0.0008	<0.01	0.004	0.004	<0.01	0.004	0.003	<0.01	0.0029	<0.004	0.02	0.004	<0.004	<0.01
Thorium-230	Bq/g	<0.001	<0.002	<0.02	<0.001	<0.008	<0.02	<0.001	<0.001	<0.02	<0.0009	<0.007	<0.02	<0.001	<0.007	<0.02

Note: Data presented on a dry weight basis.

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	1	15.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	2	14.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	3	17.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	WSU	4	17	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	YP	5	12.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	6	15.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	7	14.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	YP	8	9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	LSU	9	11.1	-	U	U	-	✓	-
BE1-1	Summer	2018-08-05 10:10	2018-08-05 10:15	NP	10	12.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-05 10:33	2018-08-05 10:38	YP	1	11.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-05 10:33	2018-08-05 10:38	YP	2	11.8	-	U	U	-	✓	-
BE3-1	Summer	2018-08-05 10:48	2018-08-05 10:53	NF	-	-	-	-	-	-	-	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	1	15.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	2	14.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	3	11.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	YP	4	11.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	5	15.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	6	12.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	7	10.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	8	10.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	9	11	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	BB	10	9.1	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	11	11.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	12	16.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	13	12.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	14	11.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	15	13.1	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	16	14.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	17	13.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	18	13.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	19	13.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	LSU	20	11.1	-	U	U	-	✓	-
BE4-1	Summer	2018-08-05 11:05	2018-08-05 11:24	YP	21	15.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	STC	1	6.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	2	7.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	3	7.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	4	11.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	5	10.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	6	13	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	YP	7	5.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	STC	8	6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	9	16.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	10	9.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	11	13.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	12	14	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	13	8.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	14	6.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	15	7.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	16	7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	17	7.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	18	6.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	19	6.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	20	6.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	21	11.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	22	11	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	23	14	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	24	14.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	25	13.1	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	26	15.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	27	8.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	28	6.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	29	7.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	30	7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	31	6.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	32	7.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	33	6.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	34	8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	35	13	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	36	8.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	37	9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	CISC	38	6.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	39	11.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-05 11:48	2018-08-05 12:00	LSU	40	9.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	LSU	1	13.2	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	LSU	2	11.3	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	LSU	3	11	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	LSU	4	13.5	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	LSU	5	10.6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	STC	6	7.9	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	7	5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	8	5.2	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	9	11	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	10	8.8	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	STC	11	6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	12	5.3	-	U	U	-	✓	-
BE6-1	Summer	2018-08-05 12:17	2018-08-05 12:34	YP	13	4.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	1	17.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	2	16.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	3	15.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	4	10.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	5	14.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	WSU	6	9.9	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	WSU	7	9.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	8	13	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	9	15.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	10	12.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	11	10.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	12	15	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	13	11.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	14	14	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	WSU	15	16	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	16	15.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	WSU	17	12.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	18	12.4	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	19	15.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	20	15.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	21	14	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	22	15.1	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	23	15.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	24	13	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	WSU	25	14.9	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	26	10.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	27	3.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	LSU	28	11.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	29	13.2	24.03	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	30	12.5	22.39	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	31	12	17.28	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	32	10	11.28	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	33	9.9	9.61	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	34	10.8	17.73	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	35	10	10.55	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	36	10.7	16.61	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	37	9.3	8.93	U	U	-	x	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	38	10.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	39	11.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	40	10.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	41	11	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 12:55	2018-08-05 13:37	YP	42	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	NP	1	70.5	2420	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	2	42.3	900	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	3	17.7	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	4	16.7	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	5	14.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	6	15.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	7	21.1	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	8	21.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	9	19.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	10	18	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	11	16.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	12	17.7	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	13	14	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	14	18.4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	15	19.4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	16	17.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	17	17.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	18	14	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	19	11.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	20	10.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	21	10.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	22	10	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	23	13.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	24	9.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	25	9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	LSU	26	12.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	WSU	27	9.6	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	28	5.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	STC	29	8.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	STC	30	8.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	31	10.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	32	11.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	33	10.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	34	10	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	35	9.4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	36	9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	STC	37	8.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	38	8.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CCG	39	6.6	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	STC	40	7.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CCG	41	7.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	42	5.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	43	5.4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CCG	44	5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	45	7	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	46	7.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	47	8.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	48	8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	49	5.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	50	5.1	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	51	4.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	52	5.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	53	5.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	54	4.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	55	5.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	56	4.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	57	4.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CISC	58	5.7	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	59	4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	YP	60	5.4	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CCG	61	6.1	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	CCG	62	5.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	63	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	64	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	65	3.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	66	3.1	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	67	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	68	2.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	69	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	70	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	71	2.8	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	72	3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	73	2.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	74	2.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	75	3.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	76	2.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	77	3.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	78	2.2	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	79	2.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	80	2.5	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	81	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	82	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	83	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	84	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	85	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	86	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	87	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	88	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	89	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	90	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	91	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	92	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	93	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	94	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	95	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	96	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	97	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	98	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	99	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	100	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	101	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	102	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	103	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	104	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	105	-	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	106	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	107	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	108	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	109	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	110	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	111	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	112	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	113	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	114	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	115	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	116	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	117	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	118	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	119	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	120	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	121	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	122	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	123	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	124	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	125	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	126	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	127	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	128	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	129	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	130	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	131	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	132	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	133	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	134	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	135	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	136	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	137	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	138	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	139	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	140	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	141	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	142	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	143	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	144	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	145	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	146	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	147	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	148	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	149	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	150	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	151	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	152	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	153	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	154	-	-	U	U	-	✓	-
BE8-1	Summer	2018-08-11 10:29	2018-08-11 11:09	SU	155	-	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	1	13	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	2	16	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	3	11.4	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	4	16.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	5	12.6	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	6	16.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	7	14.2	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	8	11.3	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	9	11.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	YP	10	9.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	11	14.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	12	17	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	13	13.9	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	14	11.4	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	15	12.3	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	16	16.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	17	11.4	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	YP	18	11.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	19	14.2	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	20	11.2	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	LSU	21	17.7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-11 12:00	2018-08-11 12:19	BB	22	17.3	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	WSU	1	41	820	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	LSU	2	19.5	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	LSU	3	15.4	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	LSU	4	13.4	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	WSU	5	11.5	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	LSU	6	11.7	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	YP	7	12.5	-	U	U	-	✓	-
BE10-1	Summer	2018-08-11 12:52	2018-08-11 13:07	YP	8	11.2	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	WSU	1	20.5	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	2	16.7	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	3	11.3	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	WSU	4	16.7	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	5	13.3	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	6	7.5	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	WSU	7	18	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	8	15.3	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	9	12.8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	10	7.6	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	WSU	11	17.9	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	12	10.7	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	13	12.8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	14	7.5	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	15	8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	16	7.8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	17	8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	18	7.3	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	19	7.7	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	CISC	20	7.8	-	U	U	-	✓	-
BE11-1	Summer	2018-08-11 13:16	2018-08-11 13:30	LSU	21	7.1	-	U	U	-	✓	-
MT1-1	Summer	2018-08-11 9:10	2018-08-12 8:50	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-11 9:18	2018-08-12 8:58	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-11 9:23	2018-08-12 9:04	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2018-08-11 9:30	2018-08-12 9:09	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2018-08-11 9:40	2018-08-12 9:14	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2018-08-11 9:57	2018-08-12 9:21	NF	-	-	-	-	-	-	-	-
GN1-1	Fall	2018-10-09 13:15	2018-10-09 16:10	LSU	1	42.2	910	U	U	-	x	-
GN1-1	Fall	2018-10-09 13:15	2018-10-09 16:10	LT	2	53.8	1680	M	ST	-	✓	-
GN1-1	Fall	2018-10-09 13:15	2018-10-09 16:10	LT	3	48.5	1101	M	ST	-	✓	-
GN1-1	Fall	2018-10-09 13:15	2018-10-09 16:10	NP	4	78.6	3720	F	U	-	✓	-
GN2-1	Fall	2018-10-10 10:33	2018-10-10 15:45	NF	-	-	-	-	-	-	-	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	1	38.4	800	F	SP	5% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LT	2	65.7	3560	M	ST	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	3	45.3	1180	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	4	36.1	540	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	5	43.3	880	M	ST	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	6	40.2	980	F	MT	15% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	NP	7	69.6	2540	F	U	15% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	NP	8	49.4	1040	F	U	25% UIR	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	NP	9	42.4	580	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	10	34.7	580	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	11	34.3	680	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LT	12	50.6	1720	F	SP	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	13	48.2	1240	F	MT	25% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	14	40.3	1140	F	MT	5% UIR	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	15	38.1	720	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	16	4.1	1240	F	MT	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	17	46.3	1320	F	ST	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	18	45.8	1000	U	MT	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	NP	19	48.2	840	F	U	15% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	NP	20	55.4	1340	F	U	25% U	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	21	36.1	640	U	MT	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	22	36	540	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	23	43.2	1140	M	MT	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	24	43.3	1060	F	ST	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LSU	25	37	700	U	U	-	✓	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	26	48.3	1420	U	MT	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	27	42.2	1140	U	MT	-	x	-
GN3-1	Fall	2018-10-10 15:58	2018-10-11 10:50	LW	28	37.6	700	F	MT	-	✓	-
Hodge Lake												
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	1	19.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	2	15.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	3	16.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	4	13.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	5	6.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	6	15.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	7	13.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	CCG	8	8.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	9	14.1	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	NP	10	11.6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	11	13	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	12	13.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	13	14.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	14	12	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Hodge Lake												
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	YP	15	8.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	16	13.9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	17	17	-	U	U	-	✓	-
BE1-1	Summer	2018-08-07 10:23	2018-08-07 10:41	BB	18	5.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	CCG	1	8.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	CCG	2	7.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	BB	3	5.5	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	NP	4	9.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	CCG	5	6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	BB	6	7.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	JODA	7	4.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-07 10:58	2018-08-07 11:15	BB	8	7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-07 11:27	2018-08-07 11:29	BB	1	13.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-07 11:27	2018-08-07 11:29	JODA	2	4.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	NP	1	27.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	BB	2	22.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	3	4.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	4	4.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	5	6.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	CCG	6	5.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	BB	7	14	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	8	10.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	9	8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	10	5.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	11	6.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	TP	12	3.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	13	3.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	14	3.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	TP	15	7	3.8	U	U	-	x	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	16	7.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	17	6.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	18	3.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	19	3.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-07 11:36	2018-08-07 11:56	YP	20	3.3	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	BB	1	31.2	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	BB	2	13.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	3	6.3	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	4	7.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	5	7.2	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	6	6.5	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	7	6.3	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	8	4	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	9	3.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	10	3.2	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	11	5.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	12	5.3	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	13	3.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	14	8.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	15	6.6	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	16	4.2	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	17	8.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	18	9.6	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	19	7.1	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	20	6.2	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	21	5.6	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	22	4	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	23	4	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	24	7.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	25	7.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	26	6.3	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	27	8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	28	3.5	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	29	3.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	30	3.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	31	3.4	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	32	4.1	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	33	3.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	34	3.6	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	35	4	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	36	4.1	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	37	5.9	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	38	3.7	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	39	3.6	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	40	3.8	-	U	U	-	✓	-
BE4-2	Summer	2018-08-10 13:32	2018-08-10 13:52	YP	41	3.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	NP	1	57.5	1380	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	NP	2	30	225	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	NP	3	25.8	125	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Hodge Lake												
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	4	11.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	5	6.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	6	7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	7	6.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	8	4.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	9	6.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	10	7.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	11	8.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	12	7.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	13	6.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	STC	14	4.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	15	8.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	16	7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-07 12:20	2018-08-07 12:33	YP	17	8.1	-	U	U	-	✓	-
BE6-1	Summer	2018-08-07 13:02	2018-08-07 13:15	NF	-	-	-	-	-	-	-	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	NP	1	57.4	1460	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	NP	2	29	175	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	3	17	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	4	18.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	5	17.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	6	21.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	7	15.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	BB	8	24.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	BB	9	15.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	BB	10	18	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	WSU	11	10	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	NP	12	12.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	13	9.4	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	14	7.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	15	6.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	16	7.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	17	7.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	18	7.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	19	7.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	20	7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	21	6.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	22	6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	23	6.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	24	7.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	25	8.1	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	26	6.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	27	6.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	28	4	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	29	9.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	30	8.9	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	31	6.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	32	6.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	BB	33	6.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	34	8.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	35	7.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	36	8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	37	7.9	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	38	7.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	39	7.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	40	6.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	41	5.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	42	4.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	43	6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	44	3.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	45	3.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	46	5.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	47	6.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	48	7.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	49	6.4	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	50	3.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	51	4.1	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	52	3.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	53	4.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	54	4	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	55	4.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	56	3.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	57	4.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	58	3.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	59	8.3	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	60	6.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	61	6.5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	62	6.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	63	6.7	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Hodge Lake												
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	64	5.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	65	3.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	66	3.9	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	BB	67	6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	68	3.2	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	YP	69	3.8	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	NSB	70	5	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	NSB	71	4.7	-	U	U	-	✓	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	TP	72	6.1	2.68	U	U	-	x	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	TP	73	5	1.66	U	U	-	x	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	TP	74	5.7	2.33	U	U	-	x	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	TP	75	5.9	2.29	U	U	-	x	-
BE7-1	Summer	2018-08-10 9:40	2018-08-10 10:37	TP	76	6.3	3.04	U	U	-	x	-
BE8-1	Summer	2018-08-10 11:23	2018-08-10 11:35	NP	1	40.7	580	U	U	-	✓	-
BE8-1	Summer	2018-08-10 11:23	2018-08-10 11:35	BB	2	18	-	U	U	-	✓	-
BE8-1	Summer	2018-08-10 11:23	2018-08-10 11:35	BB	3	16.9	-	U	U	-	✓	-
BE8-1	Summer	2018-08-10 11:23	2018-08-10 11:35	BB	4	6.3	-	U	U	-	✓	-
BE8-1	Summer	2018-08-10 11:23	2018-08-10 11:35	CCG	5	7	-	U	U	-	✓	-
BE9-1	Summer	2018-08-10 11:51	2018-08-10 12:00	NP	1	14.2	-	U	U	-	✓	-
BE9-1	Summer	2018-08-10 11:51	2018-08-10 12:00	NSB	2	5.2	-	U	U	-	✓	-
BE10-1	Summer	2018-08-10 12:31	2018-08-10 12:40	NF	-	-	-	-	-	-	-	-
BE11-1	Summer	2018-08-10 12:48	2018-08-10 13:02	CCG	1	6.7	-	U	U	-	✓	-
BE11-1	Summer	2018-08-10 12:48	2018-08-10 13:02	TP	2	5.7	1.41	U	U	-	x	-
BE11-1	Summer	2018-08-10 12:48	2018-08-10 13:02	TP	3	7	3.82	U	U	-	x	-
BE12-1	Summer	2018-08-10 13:16	2018-08-10 13:27	BB	1	20.6	-	U	U	-	✓	-
DN1-1	Summer	2018-08-07 13:28	-	NSB	1	5.6	-	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	1	34.3	480	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	2	35	540	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	3	34.6	480	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	4	29.8	320	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	5	31	380	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	6	34.4	520	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	7	31.8	420	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	8	30	340	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LW	9	33.7	480	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:40	2018-08-10 16:44	LT	10	51	1540	U	U	-	✓	-
MT1-1	Summer	2018-08-10 14:55	2018-08-11 16:15	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-10 14:59	2018-08-11 16:17	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-10 15:03	2018-08-11 16:20	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2018-08-10 15:11	2018-08-11 16:32	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2018-08-10 15:16	2018-08-11 16:38	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2018-08-10 15:19	2018-08-11 16:41	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2018-08-10 13:22	2018-08-11 16:44	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2018-08-10 15:26	2018-08-11 16:48	NF	-	-	-	-	-	-	-	-
Jed Creek												
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	1	53.4	1580	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	2	57.9	2200	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	3	56.8	1920	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	4	44.2	900	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	5	45.5	1200	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	6	44	900	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	7	42	800	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	8	49.9	1380	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	9	53.1	1820	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	10	38.5	420	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	11	58.2	2200	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	12	41.7	720	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	13	44.5	840	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	14	51.8	1620	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	15	40.4	720	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	16	47.5	1320	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	17	52.5	1700	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	18	55	1920	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	19	52.9	1900	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	20	52.2	1620	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	21	49.5	1400	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	22	55.2	1820	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	NP	23	69	2600	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	24	53.3	1660	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	25	52.8	1880	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	26	42	620	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	27	48.8	1480	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	28	48	1260	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	29	48.5	1340	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	30	48.5	1400	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	31	54.5	1740	U	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	LSU	32	44.5	1300	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	33	54	1820	F	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	34	54.3	2320	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	35	46.9	1160	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	36	52.1	1700	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	NP	37	66.5	2160	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	NP	38	-	-	F	M	-	✓	Escaped
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	39	57.8	2000	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WSU	40	43.7	1340	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	41	47	1220	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WSU	42	41.4	1300	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	43	57.5	2240	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	44	53.6	1800	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	45	51.8	1680	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	46	42.2	800	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	47	52.5	1600	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	48	49.7	1500	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	49	53.3	1720	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	50	56.5	2120	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	51	52.8	1840	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	52	49.1	1360	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	53	50.8	1500	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	54	43	860	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	55	57.8	2400	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	56	48.4	1420	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	57	50.2	1520	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	58	54.1	1700	U	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	59	48.4	1160	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:00	2018-05-19 9:30	WE	60	44	1200	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	NP	1	62	1820	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	2	53.5	2840	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	3	55.2	2200	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	4	48.6	1520	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	5	51.5	1600	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	6	51.3	1620	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	7	38.6	700	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	8	51.2	1620	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	9	51.4	1880	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	10	53.6	1640	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	11	48.2	1420	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	12	50	1580	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	13	53.7	1640	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	14	47	1040	U	U	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	15	52.2	1480	F	MT	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	16	42.3	1080	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	17	47.2	1340	F	MT	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	18	53.2	1920	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	19	53.5	1640	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	20	52	1580	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	21	45.2	1220	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	22	48.5	1700	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	23	49.6	1460	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	24	36.4	520	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	25	52.4	1760	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	26	51.8	1980	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	27	46.6	1460	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	28	60.1	2180	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	29	46.8	1080	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	30	50.6	1520	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	31	49.5	1320	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	32	48.6	1340	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	33	57.4	2180	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	NP	34	65.3	2220	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	35	47.2	1060	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	36	49.4	1360	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	37	61	2880	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	38	48.5	1600	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	39	53.2	1700	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	40	57.5	2600	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	41	37.5	680	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	42	46.2	1580	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	43	47.2	1140	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	44	45.8	1240	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	45	53.6	1780	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	46	50.2	1640	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	47	50.4	1520	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	48	62.5	2500	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	49	45	920	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	50	48.5	1400	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	NP	51	57.7	1780	F	SP	-	✓	-

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Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	NP	52	64.4	2480	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	53	65	3480	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	54	51	1440	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	55	49.6	1400	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	56	39.6	700	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	57	43	860	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	58	37.5	620	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	59	44.2	1180	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	60	47	1240	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	61	59.5	820	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	62	58.6	1320	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	63	53.2	1980	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	64	50.8	1440	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	65	47.6	1380	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	66	55.2	1960	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	67	50.5	1480	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	68	33.6	950	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	69	36.5	1180	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	70	44	920	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	71	52.7	1620	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	72	50	1540	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	73	38.6	700	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	74	49.8	1480	F	MT	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	75	52.2	1780	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	76	39.4	640	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	77	47	1120	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	78	48.3	1520	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	79	53.3	1940	F	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	80	41.6	720	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	81	52.3	1520	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	82	45.4	1220	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	83	48.2	1500	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	84	43.4	960	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	85	43.8	1020	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	86	54.2	1700	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	87	47.8	1320	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	88	53.8	2100	M	M	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	89	45	1100	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	90	48.8	1820	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	91	54	1640	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	92	50.5	1600	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	93	54.4	1580	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	94	54	1740	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	95	49.8	1300	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	96	45.2	980	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	97	54.2	1780	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	98	46.6	1120	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	99	46	1020	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	100	51.3	1500	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	101	53.2	1560	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	102	53.2	1860	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	103	48.4	1240	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	LSU	104	39.5	860	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	105	55.6	2020	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	106	49.5	1300	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	107	52.2	1840	F	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	108	48.5	1220	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	WE	109	44.5	1020	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 10:45	2018-05-20 12:00	LSU	110	45	1260	F	M	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	1	52.4	1700	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	2	62.6	2500	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	3	67.8	3120	F	M	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	4	68	3860	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	5	43.5	1000	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	6	57.8	2160	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	7	61.8	3220	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	8	53	1720	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	LSU	9	39.4	860	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	10	-	-	U	U	-	✓	Escaped
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	11	46.2	1280	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	12	45.3	1160	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	13	43.5	900	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	14	47.8	1180	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	15	53.3	1640	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	16	56.8	1820	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	17	54.3	2120	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	18	54	1760	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	19	54.2	1740	U	ST	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	20	47.5	1120	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	21	51.2	1520	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	22	45.8	1120	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	23	57	2200	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	24	59.8	2600	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	25	54.8	2200	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	26	46.4	1160	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WSU	27	44	1500	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	28	52.8	1600	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	29	51.4	1640	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	30	49.8	1440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	31	40.6	660	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	32	43.5	880	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	33	49.3	1420	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	34	50.5	1560	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	35	45	1120	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	36	48.4	1220	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	37	56.6	2240	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	38	51.2	2080	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	39	49.3	1440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	40	52.2	1820	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	41	51	1660	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	42	47	1260	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	43	51.3	1640	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	44	37.4	580	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	45	48.9	1440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	46	48.3	1280	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	47	54	1680	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	48	49.5	1460	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	49	53.2	2020	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	50	45	1000	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	51	49.8	1540	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	52	59.3	2400	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	53	56.5	1920	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	54	63	2940	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	55	46.5	1320	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	56	42.3	740	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	57	39	580	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	58	56.5	2240	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	59	49.3	1400	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	60	48.6	1480	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	61	52	1700	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	62	47.5	1420	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	63	58.5	2480	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	64	45.5	1140	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	65	50.5	1600	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	66	49.3	1620	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	LSU	67	43.9	1100	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WSU	68	45.7	1620	F	M	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	69	49.5	1500	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	70	62.3	3000	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	71	53.2	1480	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	72	59.2	2980	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	73	60.3	2560	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	74	45.5	1220	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	75	65	3580	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	76	54	1920	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	77	46.5	1280	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	78	49.5	1440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	79	50.6	1600	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	80	52.8	2020	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	81	41.3	820	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	82	45.5	1340	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	83	43	980	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	84	50.5	1440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	85	46.6	1240	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	86	40.8	880	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	87	43.5	1080	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	88	55	2020	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	89	39.2	660	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	90	50.1	1520	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	91	47.5	1320	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	92	46.4	1180	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	93	44.6	1020	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	94	52	1780	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	95	40.1	700	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	96	46.5	1260	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	97	48	1380	U	ST	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	98	59.1	2440	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	99	55	1880	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	100	46	1020	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	101	42.1	820	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	102	47	1300	M	SP	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	103	50.4	1540	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	104	42	820	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	LSU	105	46.6	1520	F	M	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	LSU	106	45	1220	F	M	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	107	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	108	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	109	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	110	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	111	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	112	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	113	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	114	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	115	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	116	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	117	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	118	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	119	-	-	U	U	-	✓	-
HN1-3	Spring	2018-05-20 16:00	2018-05-21 13:30	WE	120	-	-	U	U	-	✓	-
HN1-4	Spring	2018-05-21 13:30	2018-05-22 11:00	NF	-	-	-	-	-	-	-	-
HN1-5	Spring	2018-05-22 11:30	2018-05-23 8:00	WE	1	50.8	1540	U	ST	-	✓	-
HN1-5	Spring	2018-05-22 11:30	2018-05-23 8:00	NP	2	71	3000	F	SP	-	✓	-
HN1-5	Spring	2018-05-22 11:30	2018-05-23 8:00	NP	3	-	-	U	U	-	✓	Escaped
HN1-5	Spring	2018-05-22 11:30	2018-05-23 8:00	LSU	4	43.4	1140	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	1	45.5	1420	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	2	-	-	U	U	-	✓	Escaped
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	3	-	-	U	U	-	✓	Escaped
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	4	42.4	1140	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	5	42	1040	F	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	6	46.1	1640	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	7	46.7	1680	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	8	42	1320	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	9	42.1	1240	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	10	38.6	940	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	11	46.9	1760	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	12	42.9	1380	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	13	43.4	1240	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	14	42.1	1180	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	15	43.5	1440	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	16	45.6	1320	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	17	42.4	1080	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	18	42.5	1140	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	19	44.7	1180	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	20	46	1460	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	21	42.8	1100	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	22	42.6	1240	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	23	42.5	1120	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	24	50.7	2340	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	25	48.6	1780	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	26	41.7	980	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	27	42.5	1240	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	28	45.4	1320	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	29	46.8	1400	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	30	43.1	1160	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	31	40.5	1040	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	32	40.3	1140	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	33	45.6	1700	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	34	42.7	1280	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	35	44.2	1500	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	36	47.6	1760	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	37	45.2	1540	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	38	40.2	1020	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	39	45.3	1440	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	40	40.6	1180	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	41	43.1	1320	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	42	42.9	1480	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	43	42.3	1440	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	44	43.6	1320	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WE	45	64.3	2580	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WE	46	57.5	2140	F	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	47	41.9	1220	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	48	46.8	1520	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	49	43.3	1420	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	50	44.4	1420	F	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	LSU	51	43.1	1080	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	52	46.1	1760	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	53	43.8	1380	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	54	42.6	1340	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	55	43.2	1360	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	56	42.4	1300	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	57	39.7	1120	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	58	42.9	1240	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	59	45.5	1620	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	60	44.5	1620	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	61	42.1	1140	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	62	43.5	1360	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	63	45.6	1660	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WE	64	51.3	1860	F	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WE	65	53	1980	F	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	66	44.1	1260	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WE	67	57.5	2160	U	ST	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	68	40.6	1140	M	SP	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	LSU	69	45.2	1320	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	70	44	1300	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	71	40.9	1180	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	72	47.6	1820	F	M	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	73	39.7	980	F	MT	-	✓	-
HN1-6	Spring	2018-05-23 8:00	2018-05-24 10:40	WSU	74	42.5	1280	F	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	1	51.4	1400	M	M	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	2	31.2	960	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	3	47.5	860	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	4	59.6	1860	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	5	55.4	1860	F	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	6	61.3	2460	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	7	46.5	1720	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	8	57.9	2240	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	LW	9	40.9	1020	U	U	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	10	51	1760	F	M	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	11	57.7	2340	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	12	54.6	1680	F	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	13	60.6	2320	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	14	47.6	1220	F	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	15	53.8	1600	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	NP	16	60.3	1580	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	17	53.8	1660	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	18	56.6	1940	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	19	42.1	780	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WSU	20	40	1120	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	NP	21	67	2280	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	NP	22	59.8	1480	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	23	38.3	660	M	SP	-	✓	-
HN1-7	Spring	2018-05-24 10:40	2018-05-25 9:40	WE	24	71.3	3180	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	WE	1	61.8	2200	M	SP	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	NP	2	52.7	1140	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	WE	3	42.9	1020	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	NP	4	59.3	1880	M	SP	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	WE	5	50.6	1680	F	SP	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	NP	6	47.6	920	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	WE	7	52.2	1680	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:40	2018-05-26 9:00	WE	8	40.3	640	M	ST	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	1	43.6	1200	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WE	2	46	1180	U	ST	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	3	46.4	1700	M	SP	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	4	40.2	1100	M	SP	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WE	5	47.4	2060	U	ST	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	6	45.5	1540	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WE	7	62	2600	U	ST	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	8	41.3	1300	M	SP	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	9	38.7	1180	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WE	10	47.8	1280	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	11	46.2	1560	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	12	43.4	1260	F	M	-	✓	-
HN1-9	Spring	2018-05-26 9:00	2018-05-27 9:00	WSU	13	43.5	1300	F	M	-	✓	-
HN1-10	Spring	2018-05-27 9:00	2018-05-28 9:00	LW	1	38.3	840	U	U	-	✓	-
HN1-10	Spring	2018-05-27 9:00	2018-05-28 9:00	WE	2	51.4	1460	U	ST	-	✓	-
HN1-10	Spring	2018-05-27 9:00	2018-05-28 9:00	WE	3	47.3	1960	F	M	-	✓	-
HN1-10	Spring	2018-05-27 9:00	2018-05-28 9:00	WE	4	50.6	1520	U	ST	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	1	44.7	1500	M	SP	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	2	-	-	U	U	-	✓	Escaped
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WE	3	51.8	1780	M	SP	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WE	4	-	-	U	U	-	✓	Escaped
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	5	46.5	1640	F	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	NP	6	-	-	U	U	-	✓	Escaped
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	7	45.6	1540	F	M	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	8	45.2	1380	M	SP	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	9	44.9	1400	F	M	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	10	42.1	1180	M	SP	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	NP	11	42.7	520	M	SP	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	12	49.5	1560	F	M	-	✓	-
HN1-11	Spring	2018-05-28 9:00	2018-05-29 9:00	WSU	13	44.6	1340	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	1	40.1	700	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	2	41.2	880	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	3	35.1	520	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	4	39	680	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	5	36.8	500	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	6	35.2	580	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	7	35.4	520	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	8	45.2	1100	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	9	35.1	520	U	MT	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	10	35.4	580	U	MT	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	11	42.1	1040	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	12	39.5	700	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	13	38.9	680	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	14	36.9	680	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	15	37.4	700	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	16	35.4	560	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	17	35	680	U	MT	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	18	35.1	520	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	19	34.9	546	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	20	34.1	540	U	MT	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	21	38.1	740	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	22	35.2	540	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	23	36.3	540	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	24	34.6	560	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	25	36.8	720	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	26	36.4	520	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	27	34.4	520	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	28	39.9	780	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	29	42.5	1080	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	30	36.7	660	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	31	36.3	620	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	32	35	560	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	33	35.7	560	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	34	36.4	580	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	35	34.9	620	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	36	34.5	540	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	37	39.2	800	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	38	39.4	800	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	39	36.2	640	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	40	36.4	660	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	41	35.4	640	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	42	36.5	640	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	43	37.7	660	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	44	55.3	580	F	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	45	36.2	640	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	46	37.2	660	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	47	36.2	600	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	48	36.2	600	M	M	-	✓	-
HN1-1	Fall	2018-10-07 10:00	2018-10-08 11:00	LW	49	36.3	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	1	35.2	500	U	MT	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	2	36.7	640	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	3	40.5	900	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	4	43.4	1080	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	5	35.3	520	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	6	39	760	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	7	39	760	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	8	36.2	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	9	36.7	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	10	36.2	580	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	11	38.4	800	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	12	36.4	580	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	13	37.1	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	14	34.6	500	U	MT	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	15	39	880	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	16	36.5	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	17	36.2	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	18	36.5	560	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	19	35.7	580	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	20	34.3	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	21	37.8	720	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	22	36.4	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	23	38.7	800	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	24	34.4	540	U	MT	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	25	35.9	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	26	35.9	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	27	40.7	940	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	28	37.3	740	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	29	36.5	680	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	30	35.6	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	31	39	760	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	32	36.5	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	33	40.6	980	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	34	37.3	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	35	33.9	540	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	36	36.3	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	37	36.3	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	38	38	700	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	39	40.7	840	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	40	34.4	560	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	41	41.8	940	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	42	39.8	820	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	43	38.6	760	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	44	36	600	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	45	34.9	580	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	46	36.7	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	47	34.5	560	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	48	34.8	540	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	49	35.5	700	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	50	36	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	51	39.3	760	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	52	33.5	560	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	53	35.5	600	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	54	36.6	720	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	55	35.8	600	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	56	35.3	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	57	37.9	760	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	58	34.3	540	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	59	38.8	860	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	60	46.2	1420	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	61	40.7	860	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	62	36.8	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	63	35.2	580	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	64	33.4	480	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	65	34.9	580	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	66	36.5	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	67	37.6	680	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	68	33.3	520	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	69	41.1	880	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	70	32.7	480	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	71	42.2	980	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	72	37.3	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	73	37	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	74	37.6	700	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	75	37.8	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	76	33.6	520	U	MT	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	77	34.3	580	M	M	-	x	Died in captivity
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	78	37	720	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	79	36.8	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	80	34.5	620	M	M	-	x	Died in captivity
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	81	36.6	640	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	82	35	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	83	35.3	600	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	84	36.6	680	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	85	36.7	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	86	38	800	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	87	34.5	480	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	88	38.2	780	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	89	36.9	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	90	33.5	520	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:00	2018-10-09 10:45	LW	91	36.2	640	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	1	35.7	580	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	2	36	540	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	3	34.9	540	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	4	41.9	960	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	5	40.5	900	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	6	38.5	840	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	7	34.5	480	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	8	34.9	500	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	9	39.2	740	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	10	33.8	520	F	SP	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	11	40.8	860	F	SP	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	12	38.7	780	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	13	35.8	580	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	14	35.8	540	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	15	33.3	440	U	ST	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	16	35.5	580	F	SP	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	17	38.1	760	F	SP	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	18	41.3	820	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	19	36.2	660	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	20	37.5	760	F	SP	-	x	Died in captivity
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	21	36	600	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	22	34.3	540	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	23	36.7	620	M	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	24	35.4	600	U	ST	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	25	34.7	580	F	M	-	x	Died in captivity
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	26	35.8	620	M	M	-	x	Died in captivity
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	27	42	1140	F	M	-	✓	-
HN1-3	Fall	2018-10-09 12:00	2018-10-10 12:30	LW	28	37.7	640	M	M	-	✓	-
Patterson Lake[f]												
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	YP	1	5.2	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	2	5.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	3	8.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	4	3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	5	3.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	TP	6	4.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	YP	7	5.4	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	8	6.8	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	9	9.6	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	10	3.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	11	2.5	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	YP	12	4.7	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	BB	13	-	-	U	U	-	✓	Escaped
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	14	2.9	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	15	6.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	16	3.6	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	TP	17	4.9	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	18	9.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	19	3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	20	3.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	21	2.8	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	NSB	22	4.6	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	23	2.9	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	NSB	24	5.2	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	25	12.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	26	3.4	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	TP	27	4.7	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	28	2.3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	29	2.7	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	LKC	30	8.9	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	31	2.2	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	32	2.6	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	33	3.5	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	34	2.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	35	2	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	36	2.5	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	37	2.7	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	38	3	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	39	2.6	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	40	2.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	41	3.1	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	42	2.8	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	43	3.2	-	U	U	-	✓	-
BE1-1	Spring	2018-05-21 14:20	2018-05-21 14:50	STC	44	2	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	TP	1	5.7	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	2	4.5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	3	4.6	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	TP	4	5.3	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	5	3	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	CCG	6	6.9	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	7	4.5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	8	4.4	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	9	4.5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	10	3.8	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	BB	11	11.4	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	YP	12	5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	13	2.8	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	NSB	14	4	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	CCG	15	4.3	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	16	2.9	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	17	3	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	18	3.5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	TP	19	3.9	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	20	3.4	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	CCG	21	4.3	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	22	3.5	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	23	2.7	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	24	3.1	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	25	3.6	-	U	U	-	✓	-
BE2-1	Spring	2018-05-21 15:10	2018-05-21 15:55	STC	26	3.1	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	TP	1	5.3	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	TP	2	4.4	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	TP	3	4.6	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	CCG	4	4.7	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	CCG	5	3.9	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	CCG	6	6	-	U	U	-	✓	-
BE3-1	Spring	2018-05-22 12:40	2018-05-22 13:10	CCG	7	3.6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	BB	1	18.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	2	4.6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	3	4.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	4	5.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	CCG	5	5.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	6	4.6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	7	3.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	8	4.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	9	4.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	NSB	10	3.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	11	4.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	12	4.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	13	4.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	WSU	14	4.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	15	4.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	16	5.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	NSB	17	4.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	18	2.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	19	3.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	20	3.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	21	5.1	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	22	2.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	23	2.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	24	2.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	25	3.3	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	26	3.5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	27	4.2	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	28	4.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	29	3.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	30	4.2	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	31	3.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	32	2.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	CCG	33	6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	34	4.5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	NSB	35	4.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	36	5.5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	37	3.8	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	CCG	38	4.5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	39	2.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	40	4.2	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	41	3.1	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	42	4.6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	43	4.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	44	5.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	45	5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	46	3.6	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	47	3.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	48	3.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	49	3.5	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	50	3.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	51	4.2	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	52	7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	53	4.9	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	54	3.7	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	TP	55	4.7	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	CCG	56	4.1	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	CCG	57	4.2	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	58	3.4	-	U	U	-	✓	-
BE4-1	Spring	2018-05-22 13:20	2018-05-22 13:50	STC	59	3.9	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	WSU	1	16.8	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	WSU	2	15.2	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	WSU	3	11.9	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	CCG	4	4.8	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	TP	5	7.2	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	CCG	6	4.8	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	TP	7	7.4	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	8	3.2	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	9	3.1	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	10	7.9	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	TP	11	4.6	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	12	7.3	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	13	4.1	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	CCG	14	4.8	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	CCG	15	6.3	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	16	6.4	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	17	3.5	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	TP	18	4.4	-	U	U	-	✓	-
BE5-1	Spring	2018-05-22 14:30	2018-05-22 14:55	STC	19	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	1	3.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	2	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	3	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	4	2.7	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	5	7.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	TP	6	5.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	7	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	8	3.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	9	3.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	10	2.7	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	11	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	BB	12	13.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	13	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	14	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	15	3.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	16	3.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	17	6.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	18	2.8	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	TP	19	5.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	20	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	21	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	22	2.7	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	23	2.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	24	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	TP	25	4.5	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	26	2.5	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	27	2.7	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	28	3.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	29	3.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	30	3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	31	3.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	TP	32	3.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	33	3.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	34	3.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	35	3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	36	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	37	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	38	3.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	39	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	40	2.7	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	41	3.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	42	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	43	2.8	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	44	5.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	45	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	46	3.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	47	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	48	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	49	3.1	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	50	2.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	51	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	52	2.6	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	53	3.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	54	2.3	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	TP	55	2.4	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	56	2.9	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	57	2.4	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	58	3.2	-	U	U	-	✓	-
BE6-1	Spring	2018-05-22 15:30	2018-05-22 16:00	STC	59	2.8	-	U	U	-	✓	-
GN1-1	Spring	2018-05-23 9:30	2018-05-23 11:55	WSU	1	33.5	560	U	ST	-	✓	-
GN1-1	Spring	2018-05-23 9:30	2018-05-23 11:55	WSU	2	37.3	840	U	ST	-	✓	-
GN1-1	Spring	2018-05-23 9:30	2018-05-23 11:55	NP	3	57.4	1540	U	ST	-	✓	-
GN1-1	Spring	2018-05-23 9:30	2018-05-23 11:55	WSU	4	36.9	800	U	ST	-	✓	-
GN2-1	Spring	2018-05-23 10:00	2018-05-23 13:00	NP	1	82.6	4100	M	SP	-	✓	-
GN2-1	Spring	2018-05-23 10:00	2018-05-23 13:00	NP	2	59.1	1900	M	SP	-	✓	-
GN2-1	Spring	2018-05-23 10:00	2018-05-23 13:00	LSU	3	39.8	1100	M	SP	-	✓	-
GN2-1	Spring	2018-05-23 10:00	2018-05-23 13:00	LSU	4	41.4	1400	M	SP	-	✓	-
GN2-1	Spring	2018-05-23 10:00	2018-05-23 13:00	LSU	5	11.7	100	U	U	-	✓	-
GN3-1	Spring	2018-05-23 12:20	2018-05-23 14:40	NP	1	68.5	2200	M	SP	-	✓	-
GN3-1	Spring	2018-05-23 12:20	2018-05-23 14:40	NP	2	46	780	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 13:30	2018-05-23 15:40	NF	-	-	-	-	-	-	-	-
GN5-1	Spring	2018-05-23 15:45	2018-05-23 16:20	NF	-	-	-	-	-	-	-	-
GN6-1	Spring	2018-05-24 8:25	2018-05-24 10:58	NF	-	-	-	-	-	-	-	-
GN7-1	Spring	2018-05-24 11:40	2018-05-24 13:15	NF	-	-	-	-	-	-	-	-
GN8-1	Spring	2018-05-24 13:40	2018-05-24 16:05	LW	1	27.4	310	U	U	-	✓	-
GN8-1	Spring	2018-05-24 13:40	2018-05-24 16:05	NP	2	80.4	3840	M	SP	-	✓	-
GN8-1	Spring	2018-05-24 13:40	2018-05-24 16:05	LW	3	29	360	U	U	-	✓	-
GN9-1	Spring	2018-05-24 16:45	2018-05-25 8:00	LW	1	32.9	460	U	U	-	✓	-
GN9-1	Spring	2018-05-24 16:45	2018-05-25 8:00	LW	2	34.2	580	U	U	-	✓	-
GN10-1	Spring	2018-05-25 8:25	2018-05-25 11:45	LW	1	33.7	600	U	U	-	✓	-
GN11-1	Spring	2018-05-25 14:00	2018-05-25 16:00	NF	-	-	-	-	-	-	-	-
GN12-1	Spring	2018-05-25 14:05	2018-05-25 15:50	NF	-	-	-	-	-	-	-	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	1	39.4	660	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	2	34.5	600	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	3	35.8	640	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	4	32.5	420	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	WSU	5	45.6	1360	M	SP	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	6	33	460	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	7	34.8	580	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	8	35.4	620	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	9	35.2	560	U	U	-	✓	-
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	10	-	-	U	U	-	✓	Escaped
GN13-1	Spring	2018-05-26 10:15	2018-05-26 12:15	LW	11	-	-	U	U	-	✓	Escaped
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	WSU	1	47.3	1360	M	SP	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	NP	2	54.5	1360	M	SP	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	NP	3	54.5	1380	U	ST	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	NP	4	48.8	1020	M	SP	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	WSU	5	42	1240	F	M	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	WSU	6	47.3	1680	F	M	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	NP	7	56.2	1380	M	SP	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	NP	8	50	1200	F	SP	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	LW	9	37.2	720	U	U	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	LW	10	39.1	740	U	U	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	WSU	11	41.3	1880	U	ST	-	✓	-
GN14-1	Spring	2018-05-26 12:20	2018-05-26 14:20	LW	12	-	-	U	U	-	✓	-
GN15-1	Spring	2018-05-26 15:00	2018-05-26 16:20	LW	1	37.7	720	U	U	-	✓	-
GN15-1	Spring	2018-05-26 15:00	2018-05-26 16:20	LW	2	39.1	740	U	U	-	✓	-
GN15-1	Spring	2018-05-26 15:00	2018-05-26 16:20	WSU	3	41.3	1080	M	SP	-	✓	-
GN15-1	Spring	2018-05-26 15:00	2018-05-26 16:20	LW	4	-	-	U	U	-	✓	Escaped
GN16-1	Spring	2018-05-27 11:00	2018-05-27 13:00	WSU	1	41.5	1100	F	M	-	✓	-
GN16-1	Spring	2018-05-27 11:00	2018-05-27 13:00	WSU	2	46.8	1280	F	M	-	✓	-
GN16-1	Spring	2018-05-27 11:00	2018-05-27 13:00	LW	3	36.5	620	U	U	-	✓	-
GN17-1	Spring	2018-05-27 13:05	2018-05-27 13:45	NF	-	-	-	-	-	-	-	-
GN18-1	Spring	2018-05-27 14:00	2018-05-27 16:00	NF	-	-	-	-	-	-	-	-
GN19-1	Spring	2018-05-27 16:45	2018-05-28 8:00	NF	-	-	-	-	-	-	-	-
GN20-1	Spring	2018-05-28 9:20	2018-05-28 11:20	NF	-	-	-	-	-	-	-	-
GN21-1	Spring	2018-05-28 13:30	2018-05-28 15:30	NF	-	-	-	-	-	-	-	-
GN22-1	Spring	2018-05-29 13:20	2018-05-29 15:30	WSU	1	-	-	U	U	-	✓	Escaped
GN22-1	Spring	2018-05-29 13:20	2018-05-29 15:30	LW	2	36	840	U	U	-	✓	-
GN22-1	Spring	2018-05-29 13:20	2018-05-29 15:30	LW	3	37.1	920	U	U	-	✓	-
GN22-1	Spring	2018-05-29 13:20	2018-05-29 15:30	WSU	4	37.2	920	M	SP	-	✓	-
GN23-1	Spring	2018-05-29 16:00	2018-05-29 17:30	NF	-	-	-	-	-	-	-	-
MT1-1	Spring	2018-05-21 8:30	2018-05-22 9:10	NF	-	-	-	-	-	-	-	-
MT2-1	Spring	2018-05-21 8:45	2018-05-22 9:15	YP	1	5.7	-	U	U	-	✓	-
MT2-1	Spring	2018-05-21 8:45	2018-05-22 9:15	YP	2	4.5	-	U	U	-	✓	-
MT3-1	Spring	2018-05-21 8:49	2018-05-22 9:20	NF	-	-	-	-	-	-	-	-
MT4-1	Spring	2018-05-21 8:53	2018-05-22 9:25	NF	-	-	-	-	-	-	-	-
MT5-1	Spring	2018-05-21 8:57	2018-05-22 9:30	NF	-	-	-	-	-	-	-	-
MT6-1	Spring	2018-05-21 9:00	2018-05-22 9:35	NF	-	-	-	-	-	-	-	-
MT7-1	Spring	2018-05-21 9:04	2018-05-22 9:38	NF	-	-	-	-	-	-	-	-
MT8-1	Spring	2018-05-21 9:10	2018-05-22 9:40	NF	-	-	-	-	-	-	-	-
MT9-1	Spring	2018-05-21 9:15	2018-05-22 9:42	NF	-	-	-	-	-	-	-	-
MT10-1	Spring	2018-05-21 9:20	2018-05-22 9:45	NF	-	-	-	-	-	-	-	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
MT11-1	Spring	2018-05-21 9:25	2018-05-22 9:50	TP	1	4.7	-	U	U	-	✓	-
MT12-1	Spring	2018-05-21 9:30	2018-05-22 10:35	TP	1	4.7	-	U	U	-	✓	-
MT13-1	Spring	2018-05-22 10:00	2018-05-23 12:05	CCG	1	6.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	1	5.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	2	6.4	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	3	5.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	CCG	4	7.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	5	6.1	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	6	6.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	7	6.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	8	6.1	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	9	6	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	CCG	10	7.3	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	11	6	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	12	6.9	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	13	6.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	14	6.3	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	15	6.2	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	16	5.9	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	17	5.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	18	6.4	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	19	6.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	20	6.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	21	6.4	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	22	5.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	23	5.1	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	24	6.5	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	25	5.4	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	26	5.8	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	27	6.3	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	NSB	28	6	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	29	6.3	-	U	U	-	✓	-
MT14-1	Spring	2018-05-22 10:05	2018-05-23 12:10	TP	30	6.2	-	U	U	-	✓	-
MT15-1	Spring	2018-05-22 10:10	2018-05-23 11:35	NF	-	-	-	-	-	-	-	-
MT16-1	Spring	2018-05-22 10:15	2018-05-23 11:40	YP	1	9.4	-	U	U	-	✓	-
MT17-1	Spring	2018-05-22 10:18	2018-05-23 11:45	NF	-	-	-	-	-	-	-	-
MT18-1	Spring	2018-05-22 10:20	2018-05-23 11:50	TP	1	5.4	-	U	U	-	✓	-
MT19-1	Spring	2018-05-22 10:22	2018-05-23 9:50	NF	-	-	-	-	-	-	-	-
MT20-1	Spring	2018-05-22 10:24	2018-05-23 9:52	NF	-	-	-	-	-	-	-	-
MT21-1	Spring	2018-05-22 10:26	2018-05-23 9:55	NF	-	-	-	-	-	-	-	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	1	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	2	5.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	3	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	4	6.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	5	6.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	6	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	7	6.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	8	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	9	6.5	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	10	6.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	11	5.9	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	12	7.1	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	13	7.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	14	7.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	15	6.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	16	5.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	17	5.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	18	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	19	6.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	20	6.5	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	21	5.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	22	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	23	6.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	24	5.7	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	25	5.9	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	26	5.9	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	YP	27	6.6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	28	5.9	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	29	5.7	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	30	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	31	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	32	6.5	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	33	5.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	34	6.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	35	5.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	36	6.7	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	37	6.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	38	5.9	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	39	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	40	6.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	41	5.9	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	42	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	43	5.3	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	44	6.4	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	45	5.7	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	46	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	47	5.7	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	48	6.1	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	49	6.1	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	50	6.1	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	51	6	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	52	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	53	5.2	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	NSB	54	5.8	-	U	U	-	✓	-
MT22-1	Spring	2018-05-22 10:28	2018-05-23 10:00	TP	55	6.2	-	U	U	-	✓	-
MT23-1	Spring	2018-05-22 10:30	2018-05-23 10:55	NSB	1	5.9	-	U	U	-	✓	-
MT23-1	Spring	2018-05-22 10:30	2018-05-23 10:55	TP	2	6.3	-	U	U	-	✓	-
MT23-1	Spring	2018-05-22 10:30	2018-05-23 10:55	TP	3	5.7	-	U	U	-	✓	-
MT23-1	Spring	2018-05-22 10:30	2018-05-23 10:55	NSB	4	5.8	-	U	U	-	✓	-
MT24-1	Spring	2018-05-22 10:32	2018-05-23 11:00	NF	-	-	-	-	-	-	-	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	1	7.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	2	6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	3	6.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	4	5.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	5	6.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	6	6.6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	7	6.9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	8	6.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	9	6.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	10	5.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	11	5.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	12	7.2	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	13	7.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	14	5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	15	4.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	16	7.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	17	4.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	18	6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-02 12:05	2018-08-02 12:15	TP	19	4.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	1	7.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	2	6.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	3	7.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	4	7.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	5	7.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	6	6.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	7	6.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	8	6.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	9	7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	10	5.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	11	7.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	12	6.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	13	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	14	7.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	15	3.5	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	16	3.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	17	8.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	18	7.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	19	6.5	-	U	U	-	✓	-
BE2-1	Summer	2018-08-02 12:24	2018-08-02 12:35	TP	20	6.3	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	1	7.7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	2	7.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	3	6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	4	7.1	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	5	7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	YP	6	2.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	7	6.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	8	6.6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	9	7.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	10	8	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	11	6.1	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	12	5.6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	13	5.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	14	5.7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	15	7.2	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	16	7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	17	5.3	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	18	6.9	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	19	6.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	20	6.7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	21	6.9	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	22	6.9	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	23	6.8	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	24	6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-02 12:45	2018-08-02 12:49	TP	25	6.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	LKC	1	11.1	15.07	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	LKC	2	11	14.13	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	BB	3	24.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	4	9	8.36	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	5	8	4.79	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	6	8.2	4.46	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	7	8.3	5.81	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	8	7.3	4.2	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	9	8.2	5.58	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	10	7.2	4.26	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	11	8.2	6.33	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	12	8.5	5.79	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	13	8	5.48	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	14	8.6	6.2	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	15	7	3.85	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	16	7.6	4.76	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	17	7.2	4.51	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	18	7.8	6.35	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	19	7.5	5.04	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	20	7.3	4.2	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	21	7.4	4.57	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	22	7.5	4.15	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	23	7	3.86	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	24	7.3	4.33	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	YP	25	12.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	26	7.1	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	YP	27	9.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	28	7.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	29	7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	30	6.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	31	6.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	32	7.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	33	5.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	34	6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	35	7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	36	7.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	37	6.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	38	6.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	39	6.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	40	6.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	41	7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	42	5.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	46	6.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	47	7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	48	6.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	49	7.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	50	6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	51	6.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	52	6.2	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	53	6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	YP	54	3.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	55	5.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	56	7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-02 13:15	2018-08-02 13:30	TP	57	4.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	1	8.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	2	6.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	3	6.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	4	8.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	5	8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	6	6.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	7	8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	8	6.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	9	6.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	10	8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	11	7.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	12	5.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	13	10.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	14	5.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	15	14.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	16	15.1	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	17	10.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	18	9.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	19	7.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	20	7.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	21	7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	22	5.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	23	7.1	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	24	20.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	25	22.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	26	14	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LSU	27	15.1	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	28	15.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	29	6.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	30	9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	WSU	31	14.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	32	12.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	33	4.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	34	6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	YP	35	9.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	36	7.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	37	7.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	38	6.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	TP	39	6.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	40	10.4	11.52	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	41	9.5	9.22	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	42	11.9	17.77	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	43	10.5	14.86	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	44	11.5	15.59	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	45	12.2	17.87	U	U	-	x	-
BE5-1	Summer	2018-08-02 14:05	2018-08-02 14:15	LKC	46	10.2	10.66	U	U	-	x	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	LKC	1	10.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	LKC	2	7.6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	3	6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	4	7.9	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	5	5.4	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	6	3.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	7	3.2	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	8	4.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	9	6.7	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	10	8.2	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	11	6.7	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	12	7.9	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	13	3.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	14	3.7	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	15	4.2	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	BB	16	21.6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	17	5.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	18	6	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	19	3	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	20	3.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	LKC	21	3	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	22	3	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	LKC	23	2.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	24	7.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	25	5.7	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	26	7	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	27	4.1	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	28	9.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	TP	29	7.1	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	30	3.5	-	U	U	-	✓	-
BE6-1	Summer	2018-08-02 5:25	2018-08-02 5:46	YP	31	3.6	-	U	U	-	✓	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	1	13.5	28.31	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	2	10.6	12.79	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	3	9.6	9.52	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	4	10.5	13.41	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	5	10.1	11.48	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	6	10.6	13.22	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	7	9.7	9.83	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	8	10.2	12.61	U	U	-	x	-
BE7-1	Summer	2018-08-05 16:30	2018-08-05 17:30	YP	9	10.1	10.89	U	U	-	x	-
MT1-1	Summer	2018-08-02 18:10	2018-08-03 16:56	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-02 18:12	2018-08-03 16:54	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-02 18:13	2018-08-03 16:53	NF	-	-	-	-	-	-	-	-
GN1-1	Fall	2018-09-30 9:50	2018-09-30 13:15	NF	-	-	-	-	-	-	-	-
GN2-1	Fall	2018-10-08 13:15	2018-10-08 16:15	LW	1	35.3	520	M	M	-	✓	-
GN2-1	Fall	2018-10-08 13:15	2018-10-08 16:15	LW	2	39.8	840	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	1	35.3	520	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	2	35.2	580	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake[f]												
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	3	40.2	800	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	4	37.8	540	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	5	33.6	380	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	6	36.2	520	F	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	7	37	580	M	M	-	✓	-
GN3-1	Fall	2018-10-08 13:30	2018-10-08 16:30	LW	8	40.7	720	M	M	-	✓	-
GN31-1	Fall	2018-10-12 10:15	2018-10-12 11:15	NF	-	-	-	-	-	-	-	-
GN32-1	Fall	2018-10-12 10:40	2018-10-12 11:40	NP	1	81.4	4220	F	U	85% UFR	✓	-
GN33-1	Fall	2018-10-12 11:20	2018-10-12 13:15	NF	-	-	-	-	-	-	-	-
GN34-1	Fall	2018-10-12 11:25	2018-10-12 13:25	NF	-	-	-	-	-	-	-	-
GN35-1	Fall	2018-10-12 12:46	-	LW	1	36.3	520	F	M	-	✓	-
GN35-1	Fall	2018-10-12 12:46	-	LW	2	35.4	420	M	M	-	✓	-
GN36-1	Fall	2018-10-12 13:35	2018-10-12 14:36	LW	1	43.1	800	F	ST	10% UIR	x	-
GN4-1	Fall	2018-10-09 9:55	2018-10-09 14:30	NF	-	-	-	-	-	-	-	-
GN5-1	Fall	2018-10-09 10:15	2018-10-09 13:35	LW	1	35.5	420	U	MT	-	✓	-
GN5-1	Fall	2018-10-09 10:15	2018-10-09 13:35	WSU	2	47.8	1660	U	U	-	✓	-
GN5-1	Fall	2018-10-09 10:15	2018-10-09 13:35	WSU	3	44.2	1400	U	U	-	✓	-
GN6-1	Fall	2018-10-10 11:00	2018-10-10 15:45	NF	-	-	-	-	-	-	-	-
GN7-1	Fall	2018-10-10 11:20	2018-10-10 16:20	NF	-	-	-	-	-	-	-	-
GN8-1	Fall	2018-10-11 9:15	2018-10-11 12:30	LW	1	34	440	F	M	-	✓	-
GN8-1	Fall	2018-10-11 9:15	2018-10-11 12:30	LW	2	35.3	540	F	M	-	✓	-
GN9-1	Fall	2018-10-11 9:20	2018-10-11 12:20	LW	1	37.2	560	F	M	-	✓	-
GN9-1	Fall	2018-10-11 9:20	2018-10-11 12:20	LW	2	48.2	1260	F	M	0%	x	-
GN9-1	Fall	2018-10-11 9:20	2018-10-11 12:20	LW	3	36	640	F	M	-	✓	-
GN9-1	Fall	2018-10-11 9:20	2018-10-11 12:20	LW	4	34.6	500	M	M	-	✓	-
GN9-1	Fall	2018-10-11 9:20	2018-10-11 12:20	LW	5	37.3	600	F	M	-	✓	-
GN10-1	Fall	2018-10-11 12:35	2018-10-11 16:30	NP	1	59.2	1580	M	U	25% UFR	x	-
GN10-1	Fall	2018-10-11 12:35	2018-10-11 16:30	LW	2	38	660	M	M	20% UIR	x	-
GN11-1	Fall	2018-10-11 12:45	2018-10-11 16:45	LW	1	35	520	F	M	-	✓	-
GN12-1	Fall	2018-10-12 9:35	2018-10-12 12:00	LW	1	33.8	440	M	M	% UIR, LW e	x	-
GN13-1	Fall	2018-10-12 9:40	2018-10-12 12:20	LW	1	40.2	760	F	M	10% UIR	x	-
GN13-1	Fall	2018-10-12 9:40	2018-10-12 12:20	LW	2	39.5	840	F	M	20% UIR	x	-
GN13-1	Fall	2018-10-12 9:40	2018-10-12 12:20	LW	3	35.2	520	F	M	25% UIR	x	-
GN14-1	Fall	2018-10-12 12:45	2018-10-12 16:15	LW	1	40.2	960	U	U	-	✓	-
GN14-1	Fall	2018-10-12 12:45	2018-10-12 16:15	LW	2	42.3	1220	U	U	-	✓	-
GN14-1	Fall	2018-10-12 12:45	2018-10-12 16:15	LW	3	39.5	860	U	U	-	✓	-
GN15-1	Fall	2018-10-12 13:00	2018-10-12 16:00	NF	-	-	-	-	-	-	-	-
GN16-1	Fall	2018-10-13 8:50	2018-10-13 12:15	NF	-	-	-	-	-	-	-	-
GN17-1	Fall	2018-10-13 9:00	2018-10-13 12:20	NF	-	-	-	-	-	-	-	-
GN18-1	Fall	2018-10-13 12:30	2018-10-13 16:00	NP	1	62	1540	U	U	-	✓	-
GN19-1	Fall	2018-10-13 12:35	2018-10-13 16:15	NF	-	-	-	-	-	-	-	-
GN20-1	Fall	2018-10-14 8:40	2018-10-14 12:40	LW	1	39.7	720	F	M	-	x	-
GN21-1	Fall	2018-10-14 8:45	2018-10-14 12:45	NF	-	-	-	-	-	-	-	-
GN22-1	Fall	2018-10-09 15:15	2018-10-09 16:45	NF	-	-	-	-	-	-	-	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	1	40.5	720	F	M	-	✓	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	2	42	720	F	M	-	✓	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	3	37.1	520	F	ST	-	✓	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	4	39.3	500	F	ST	-	✓	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	5	33.3	320	F	ST	-	✓	-
GN23-1	Fall	2018-10-10 9:15	2018-10-10 12:00	LW	6	36.6	440	F	M	-	x	-
GN24-1	Fall	2018-10-10 9:30	2018-10-10 11:35	NP	1	49.5	840	M	U	30% U	x	-
GN25-1	Fall	2018-10-10 11:45	2018-10-10 13:40	LW	1	34.6	340	U	ST	-	✓	-
GN26-1	Fall	2018-10-10 12:40	2018-10-10 14:15	NP	1	49.3	760	F	U	10% UFR	x	-
GN26-1	Fall	2018-10-10 12:40	2018-10-10 14:15	NP	2	66.8	2220	M	U	70% U	x	-
GN27-1	Fall	2018-10-10 14:00	2018-10-10 16:00	NF	-	-	-	-	-	-	-	-
GN28-1	Fall	2018-10-10 14:55	2018-10-10 16:20	NF	-	-	-	-	-	-	-	-
GN29-1	Fall	2018-10-11 9:16	2018-10-11 11:35	LW	1	38.5	540	F	M	-	✓	-
GN29-1	Fall	2018-10-11 9:16	2018-10-11 11:35	LW	2	39.4	560	F	ST	-	✓	-
GN29-1	Fall	2018-10-11 9:16	2018-10-11 11:35	LW	3	37.5	740	F	M	-	✓	-
GN29-1	Fall	2018-10-11 9:16	2018-10-11 11:35	LW	4	38.1	620	M	M	-	✓	-
GN29-1	Fall	2018-10-11 9:16	2018-10-11 11:35	LW	5	38.9	520	F	ST	-	✓	-
GN30-1	Fall	2018-10-12 9:30	2018-10-12 11:00	NF	-	-	-	-	-	-	-	-
Patterson Creek												
HN1-1	Spring	2018-05-18 16:40	2018-05-19 14:15	NP	1	54.5	1200	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	LW	12	32.5	360	U	U	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	1	46.3	660	M	MT	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	2	56.2	1260	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	3	80.5	3520	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	4	60.2	2320	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	5	65.2	1520	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	6	57.3	1360	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	7	60.1	1380	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	8	48.6	780	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	9	60.5	1340	M	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	10	56.2	1380	M	SP	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	11	72.4	2960	F	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	13	54.3	1320	F	M	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	14	55.5	1240	M	M	-	✓	-

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Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Creek												
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	15	59.8	1420	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	16	66.1	1820	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 14:20	2018-05-20 9:00	NP	17	51.3	900	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 9:45	2018-05-21 8:50	NP	1	64.3	2280	M	M	-	✓	-
HN1-3	Spring	2018-05-20 9:45	2018-05-21 8:50	NP	2	60.2	1400	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 9:45	2018-05-21 8:50	NP	3	57	1480	M	M	-	✓	-
HN1-3	Spring	2018-05-20 9:45	2018-05-21 8:50	WSU	4	39.4	900	F	M	-	✓	-
HN1-4	Spring	2018-05-21 9:10	2018-05-22 9:25	NP	1	61.2	1640	M	M	-	✓	-
HN1-4	Spring	2018-05-21 9:10	2018-05-22 9:25	NP	2	73.3	2620	F	SP	-	✓	-
HN1-4	Spring	2018-05-21 9:10	2018-05-22 9:25	NP	3	58.9	1400	M	M	-	✓	-
HN1-4	Spring	2018-05-21 9:10	2018-05-22 9:25	NP	4	40.3	300	U	U	-	✓	-
HN1-5	Spring	2018-05-22 9:40	2018-05-23 8:40	NF	-	-	-	-	-	-	-	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	LSU	8	40.6	920	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	NP	1	58.9	1240	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	NP	2	66.7	2220	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	NP	4	58.3	1300	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	NP	5	65.5	2200	U	ST	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	NP	6	50	800	M	M	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	WE	7	61.3	1560	U	ST	-	✓	-
HN1-6	Spring	2018-05-23 8:45	2018-05-24 9:20	WSU	3	44.3	1260	M	M	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	LW	10	36.8	600	U	U	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	1	67.8	1960	M	M	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	2	65.4	2500	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	3	56.6	1540	F	SP	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	4	60.5	1480	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	5	88.8	2520	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	6	51.3	1560	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	7	70.2	2500	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	8	63.6	1860	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 9:30	2018-05-25 9:00	NP	9	64	1640	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:15	2018-05-26 9:05	NP	1	72.5	2400	F	SP	-	x	-
HN1-8	Spring	2018-05-25 9:15	2018-05-26 9:05	NP	2	65.6	1820	U	ST	-	✓	-
HN1-8	Spring	2018-05-25 9:15	2018-05-26 9:05	WSU	3	24.6	160	U	U	-	✓	-
HN1-9	Spring	2018-05-26 9:20	2018-05-27 8:15	LW	1	39.5	760	U	U	-	✓	-
HN1-9	Spring	2018-05-26 9:20	2018-05-27 8:15	LW	2	40.3	640	U	U	-	✓	-
HN1-10	Spring	2018-05-27 8:20	2018-05-28 8:45	NP	2	64.7	2200	U	ST	-	✓	-
HN1-10	Spring	2018-05-27 8:20	2018-05-28 8:45	NP	3	62.2	1340	F	SP	-	✓	-
HN1-10	Spring	2018-05-27 8:20	2018-05-28 8:45	WSU	1	53.7	2240	F	M	-	✓	-
HN1-11	Spring	2018-05-28 8:50	2018-05-29 8:30	NF	-	-	-	-	-	-	-	-
HN1-12	Spring	2018-05-29 8:30	2018-05-30 8:20	NF	-	-	-	-	-	-	-	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	LW	2	32.1	320	U	U	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	LW	3	32.6	340	U	U	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	LSU	4	44.6	1340	F	M	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	LSU	7	48.9	1640	F	M	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	NP	1	59.1	1820	M	SP	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	NP	5	62.2	1740	F	SP	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	NP	6	43.1	540	M	M	-	✓	-
HN2-1	Spring	2018-05-18 17:00	2018-05-19 14:30	NP	8	48	720	M	M	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	LW	3	48.6	820	U	U	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	LW	4	40.2	720	U	U	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	LW	7	39.5	820	U	U	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	LW	8	41.5	800	U	U	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	NP	1	62.3	1680	M	M	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	NP	2	100	7880	F	SP	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	NP	5	66	2100	M	M	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	NP	6	50.5	1200	M	M	-	✓	-
HN2-2	Spring	2018-05-19 15:30	2018-05-20 10:30	NP	9	47.9	720	M	M	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LW	3	40.3	720	U	U	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LW	7	42	840	U	U	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LW	8	41.3	920	U	U	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LW	9	38	840	U	U	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LW	10	38.7	820	U	U	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	LSU	6	47.5	1520	M	M	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	NP	1	65.5	2800	U	ST	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	NP	2	58	1680	M	M	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	NP	4	57	1300	U	ST	-	✓	-
HN2-3	Spring	2018-05-20 11:00	2018-05-21 9:40	NP	5	56.9	1320	M	M	-	✓	-
HN2-4	Spring	2018-05-21 10:00	2018-05-22 9:55	NF	-	-	-	-	-	-	-	-
HN2-5	Spring	2018-05-22 10:00	2018-05-23 9:00	NF	-	-	-	-	-	-	-	-
HN2-6	Spring	2018-05-23 9:05	2018-05-24 9:40	NP	1	53.1	1200	M	M	-	✓	-
HN2-6	Spring	2018-05-23 9:05	2018-05-24 9:40	NP	2	70.3	2440	F	ST	-	✓	-
HN2-7	Spring	2018-05-24 9:45	2018-05-25 9:45	LW	1	40.4	840	U	U	-	✓	-
HN2-7	Spring	2018-05-24 9:45	2018-05-25 9:45	LW	2	39.2	640	U	U	-	✓	-
HN2-7	Spring	2018-05-24 9:45	2018-05-25 9:45	LW	3	32.7	400	U	U	-	✓	-
HN2-8	Spring	2018-05-25 9:35	2018-05-26 9:25	LW	1	43	1000	U	U	-	✓	-
HN2-9	Spring	2018-05-26 9:30	2018-05-27 8:30	NF	-	-	-	-	-	-	-	-
HN2-10	Spring	2018-05-27 8:35	2018-05-28 9:00	NF	-	-	-	-	-	-	-	-
HN2-11	Spring	2018-05-28 9:05	2018-05-29 8:40	NF	-	-	-	-	-	-	-	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Creek												
HN2-12	Spring	2018-05-29 8:40	2018-05-30 9:00	NF	-	-	-	-	-	-	-	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LW	1	30.7	480	U	U	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LW	2	32.2	460	U	U	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LW	3	38	820	U	U	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LW	4	38.1	760	U	U	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LSU	5	42	1060	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LSU	9	35.4	1300	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	LSU	12	42	1060	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	NP	14	65.2	2620	F	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	6	37.6	1000	F	M	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	7	33.3	860	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	8	39.5	1060	M	M	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	10	40.8	1220	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	11	41.9	1200	M	SP	-	✓	-
HN3-1	Spring	2018-05-28 9:15	2018-05-29 8:30	WSU	13	43.5	1040	M	SP	-	✓	-
HN3-2	Spring	2018-05-29 8:31	2018-05-30 8:00	NF	-	-	-	-	-	-	-	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	1	43	920	M	M	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	2	43.8	900	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	3	40.3	680	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	4	42.3	740	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	5	39.7	720	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	6	41.2	840	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	7	39.2	640	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	8	39.1	680	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	9	38.9	680	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	10	38.4	620	F	M	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	11	39.8	680	F	M	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	12	40.5	860	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	13	39.9	700	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	14	39.6	720	F	M	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	15	39.7	600	F	M	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	16	40.5	780	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	17	38.9	640	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	18	43.2	980	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	19	40	720	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	20	38.4	640	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	21	41	880	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	22	44.6	1040	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	23	40.5	700	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	24	41	840	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	25	44.5	1060	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	26	38.8	580	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	27	38.8	680	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	28	40.6	740	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	29	36.8	500	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	30	38	540	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	31	39	720	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	32	39.2	740	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	33	43.9	960	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	34	41.6	860	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	35	43	860	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	36	39	620	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	37	40	740	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	38	41.6	720	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	39	39.2	660	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	40	38.4	760	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	41	39.4	620	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	42	40.5	720	M	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	43	40.5	880	F	ST	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	44	38.4	620	F	SP	-	✓	-
HN1-1	Fall	2018-10-07 15:00	2018-10-08 11:07	LW	45	38.9	780	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	1	39.6	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	2	43.1	860	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	3	39.4	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	4	40.1	720	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	5	38.5	520	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	6	40.2	800	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	7	40.5	760	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	8	40.6	740	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	9	43.5	1080	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	10	41.2	800	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	11	41.3	820	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	12	38.5	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	13	40.1	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	14	40.5	800	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	15	38.7	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	16	38	660	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	17	40.8	700	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Creek												
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	18	39.2	680	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	19	34.2	320	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	20	39.5	740	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	21	39.6	620	U	MT	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	22	39	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	23	39.5	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	24	36.3	440	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	25	42.6	940	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	26	41.5	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	27	37.5	570	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	28	40.8	820	M	M	-	x	Died in captivity
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	29	40.6	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	30	40.5	740	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	31	40.5	680	F	ST	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	32	44.5	1180	F	M	-	x	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	33	39.8	780	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	34	44.3	1240	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	35	40.6	760	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	36	41	740	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	37	39.9	680	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	38	39.8	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	39	39	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	40	39.6	780	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	41	38.6	540	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	42	39.2	600	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	43	41.5	740	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	44	41.3	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	45	37.9	640	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	46	41.8	880	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	47	42.5	820	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	48	41.3	860	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	49	41	840	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	50	42.9	960	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	51	44.6	1100	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	52	44.8	1180	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	53	43.1	980	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	54	440.2	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	55	43.8	1020	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	56	40.5	700	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	57	39.2	660	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	58	39.6	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	59	39.7	700	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	60	40.7	840	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	61	41.5	900	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	62	42	820	F	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	63	40	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	64	40.3	640	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	65	40.3	580	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	66	44	1020	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	67	38	520	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	68	39.4	720	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	69	39.1	640	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	70	40.5	720	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	71	39.1	580	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	72	39.3	640	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	73	38.4	620	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	74	39.4	740	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	75	38.2	580	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	76	45.5	920	M	SP	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	77	39.9	740	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	78	40.4	880	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	79	39.2	680	F	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	80	37.1	480	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	81	40.6	620	M	M	-	✓	-
HN1-2	Fall	2018-10-08 12:20	2018-10-09 10:00	LW	82	49.8	1140	F	M	-	✓	-
HN1-3	Fall	2018-10-09 9:30	2018-10-10 10:15	LW	1	38.2	520	M	M	-	✓	-
HN1-3	Fall	2018-10-09 9:30	2018-10-10 10:15	LW	2	39.6	580	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	1	42.4	980	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	2	46.5	1120	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	3	41.5	780	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	4	39.9	680	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	5	40	720	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	6	46.4	1120	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	7	41.1	820	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	8	40.3	720	F	SP	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	9	41.3	880	F	SP	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	10	40.2	860	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	11	29.4	140	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Creek												
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	13	42.2	800	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	14	41.4	780	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	15	39	580	F	ST	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	16	41.3	800	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	17	45	1160	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	18	42	780	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	19	43.4	1140	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	20	40	780	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	21	43.7	1220	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	22	18.2	80	U	U	-	x	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	23	18.1	80	U	U	-	x	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	24	42.2	960	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	25	38.8	720	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	26	41.9	940	F	ST	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	27	38.3	520	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	28	39.2	700	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	29	42.2	900	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	30	43.3	820	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	31	42.9	840	M	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	32	38.3	620	F	M	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	LW	33	40.6	680	F	ST	-	✓	-
HN1-4	Fall	2018-10-10 10:15	2018-10-11 9:32	NP	12	26.5	100	U	U	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	1	40.5	660	M	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	2	39.2	600	U	MT	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	3	40.1	820	F	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	4	41	820	F	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	5	40.5	720	M	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	6	38.5	680	M	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	7	42.6	880	F	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	8	40.5	780	M	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	9	39.3	820	M	SP	-	x	Died in captivity
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	10	43	980	M	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	11	40.4	660	F	SP	-	x	Died in captivity
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	LW	12	39.5	840	F	SP	-	✓	-
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	NP	13	21.6	85.5	U	U	-	x	Died in captivity
HN2-1	Fall	2018-10-07 13:00	2018-10-08 13:00	NP	14	22.3	90	U	U	-	x	Died in captivity
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	1	40.5	720	M	M	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	2	41	820	F	ST	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	3	40	660	M	M	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	4	37.8	680	M	M	-	x	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	5	39.8	780	F	M	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	6	37.4	740	F	M	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	LW	7	35	480	F	M	-	✓	-
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	NP	8	20.5	66	U	U	-	x	Died in captivity
HN2-2	Fall	2018-10-08 12:05	2018-10-09 12:45	NP	9	20.7	68	U	U	-	x	-
HN2-3	Fall	2018-10-09 10:30	2018-10-10 10:55	LW	1	42.5	940	M	M	-	✓	-
HN2-4	Fall	2018-10-10 10:55	2018-10-11 10:35	LW	1	41.6	840	U	U	-	✓	-
HN2-4	Fall	2018-10-10 10:55	2018-10-11 10:35	LW	2	39.3	720	M	M	-	✓	-
HN2-4	Fall	2018-10-10 10:55	2018-10-11 10:35	LW	3	18	80	U	U	-	x	-
Forrest Lake												
GN1-1	Spring	2018-05-25 12:42	2018-05-25 14:20	NP	1	63	1860	U	ST	-	✓	-
GN1-1	Spring	2018-05-25 12:42	2018-05-25 14:20	NP	2	104	9060	U	ST	-	✓	-
GN11-1	Spring	2018-05-28 10:50	2018-05-28 11:50	NF	-	-	-	-	-	-	-	-
GN2-1	Spring	2018-05-25 14:45	2018-05-25 15:55	NP	1	68.8	2240	U	ST	-	✓	-
GN3-1	Spring	2018-05-26 13:10	2018-05-26 14:21	NP	1	65.7	2020	U	ST	-	✓	-
GN3-1	Spring	2018-05-26 13:10	2018-05-26 14:21	NP	2	58.5	1400	U	ST	-	✓	-
GN3-1	Spring	2018-05-26 13:10	2018-05-26 14:21	LW	3	43.2	1060	U	MT	-	✓	-
GN3-1	Spring	2018-05-26 13:10	2018-05-26 14:21	LT	4	51.8	1560	U	MT	-	✓	-
GN4-1	Spring	2018-05-26 14:55	2018-05-26 16:00	NP	1	68.5	2100	U	ST	-	✓	-
GN4-1	Spring	2018-05-26 14:55	2018-05-26 16:00	LT	2	54.8	1560	U	MT	-	✓	-
GN5-1	Spring	2018-05-27 15:44	2018-05-27 17:07	LSU	1	51.8	2120	F	MT	-	✓	-
GN5-1	Spring	2018-05-27 15:44	2018-05-27 17:07	NP	2	55.3	1420	U	ST	-	✓	-
GN6-1	Spring	2018-05-28 14:30	2018-05-28 15:33	NF	-	-	-	-	-	-	-	-
GN7-1	Spring	2018-05-26 13:40	2018-05-26 14:50	NP	1	84.7	4000	U	ST	-	✓	-
GN8-1	Spring	2018-05-26 15:05	2018-05-26 16:30	LT	1	51.2	1600	U	U	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	LT	1	50.5	1420	U	U	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	LSU	2	52	2000	F	M	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	NP	3	53.2	1820	U	ST	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	LSU	4	42.6	920	U	MT	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	LSU	5	39	740	M	M	-	✓	-
GN9-1	Spring	2018-05-27 13:40	2018-05-27 14:55	LSU	6	44.8	1020	M	M	-	✓	-
GN10-1	Spring	2018-05-27 15:15	2018-05-27 16:25	WSU	1	42.2	1400	M	M	-	✓	-
GN10-1	Spring	2018-05-27 15:15	2018-05-27 16:25	LT	2	66	2400	U	U	-	✓	-
GN10-1	Spring	2018-05-27 15:15	2018-05-27 16:25	NP	3	64.6	2400	U	ST	-	✓	-
GN10-1	Spring	2018-05-27 15:15	2018-05-27 16:25	NP	5	58.3	1240	U	ST	-	✓	-
AN1-1	Fall	2018-10-11 10:45	2018-10-11 11:04	LT	1	59.8	1980	U	ST	-	✓	-
AN1-1	Fall	2018-10-11 10:45	2018-10-11 11:04	LT	2	63	2060	U	ST	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
AN2-1	Fall	2018-10-12 11:58	2018-10-12 12:20	NF	-	-	-	-	-	-	-	-
AN3-1	Fall	2018-10-12 13:17	2018-10-12 13:50	NF	-	-	-	-	-	-	-	-
GN1-1	Fall	2018-09-29 13:40	2018-09-29 16:30	NP	1	61.5	1500	U	U	-	✓	-
GN2-1	Fall	2018-09-30 10:00	2018-09-30 14:30	NP	1	105	8300	U	U	-	✓	-
GN2-1	Fall	2018-09-30 10:00	2018-09-30 14:30	LT	2	57.9	2060	U	ST	-	✓	-
GN3-1	Fall	2018-10-01 11:10	2018-10-01 12:55	NF	-	-	-	-	-	-	-	-
GN4-1	Fall	2018-10-12 10:00	2018-10-12 11:20	NF	-	-	-	-	-	-	-	-
GN5-1	Fall	2018-10-12 10:35	2018-10-12 11:30	NP	1	57.3	1320	F	U	40% U	x	-
GN6-1	Fall	2018-10-12 11:35	2018-10-12 12:40	NF	-	-	-	-	-	-	-	-
GN7-1	Fall	2018-10-12 11:45	2018-10-12 12:50	NF	-	-	-	-	-	-	-	-
GN8-1	Fall	2018-10-12 13:03	2018-10-12 14:05	NF	-	-	-	-	-	-	-	-
GN9-1	Fall	2018-10-12 13:15	2018-10-12 14:15	NF	-	-	-	-	-	-	-	-
GN10-1	Fall	2018-10-13 8:30	2018-10-13 10:30	NF	-	-	-	-	-	-	-	-
GN11-1	Fall	2018-10-13 9:30	2018-10-13 13:00	NF	-	-	-	-	-	-	-	-
GN12-1	Fall	2018-10-13 13:30	2018-10-13 15:00	NF	-	-	-	-	-	-	-	-
GN13-1	Fall	2018-10-13 14:00	2018-10-13 15:30	LW	1	38.5	740	M	SP	-	✓	-
GN13-1	Fall	2018-10-13 14:00	2018-10-13 15:30	LW	2	40	820	M	SP	-	✓	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LW	1	35	1300	F	U	5% UIR	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LW	2	45.5	1420	F	U	5% U	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LW	3	45.2	1960	F	U	0%	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LW	4	41.4	1080	F	U	0%	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LW	5	40.4	960	F	U	10% U	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	NP	6	54.4	1320	M	U	20% U	x	-
HG1-1	Fall	2018-10-10 10:10	2018-10-10 13:00	LT	7	59.5	2020	F	ST	-	✓	-
HG2-1	Fall	2018-10-10 13:30	2018-10-10 14:50	LT	1	63.5	2620	F	ST	-	✓	-
HG2-1	Fall	2018-10-10 13:30	2018-10-10 14:50	NP	2	53.8	1220	M	U	20% U	x	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LT	1	59	2240	U	ST	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	2	40.2	740	F	SP	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	3	40.5	800	M	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	4	39.8	760	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	5	39.6	740	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	6	41.5	820	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	7	40.8	500	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LT	8	63.5	2620	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	9	-	-	U	U	-	✓	Escaped
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	10	44	1100	M	SP	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	11	40.6	800	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	12	40.2	780	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	13	40.2	740	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	14	-	-	U	U	-	✓	Escaped
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	15	-	-	U	U	-	✓	Escaped
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	LW	16	40	700	F	M	-	✓	-
HG3-1	Fall	2018-10-11 10:00	2018-10-11 12:00	NP	17	62.5	2060	F	U	30% U	x	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	WSU	1	51.5	2060	U	U	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	WSU	2	57.3	2620	U	U	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	3	43.4	1060	M	SP	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	4	40.3	820	F	M	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	5	40	800	F	M	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	6	40.2	840	F	M	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	7	35.9	720	F	M	-	✓	-
HG4-1	Fall	2018-10-11 12:50	2018-10-11 14:40	LW	8	41.5	860	F	M	-	✓	-
Beet Channel												
GN1-1	Spring	2018-05-25 12:30	2018-05-25 14:20	LW	1	40.6	680	U	U	-	✓	-
GN1-1	Spring	2018-05-25 12:30	2018-05-25 14:20	NP	2	59.7	1760	U	ST	-	✓	-
GN1-1	Spring	2018-05-25 12:30	2018-05-25 14:20	NP	3	72	2740	U	ST	-	✓	-
GN1-1	Spring	2018-05-25 12:30	2018-05-25 14:20	NP	4	47.2	800	U	ST	-	✓	-
GN2-1	Spring	2018-05-25 12:40	2018-05-25 14:40	NP	1	78.5	3800	F	ST	-	✓	-
GN2-1	Spring	2018-05-25 12:40	2018-05-25 14:40	NP	2	58.8	1400	M	M	-	✓	-
Beet Lake												
GN1-1	Spring	2018-05-22 13:00	2018-05-22 15:00	NF	-	-	-	-	-	-	-	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	NP	1	72.5	2480	U	ST	-	✓	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	LSU	2	46.6	1520	F	M	-	✓	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	WE	3	49.4	1240	U	MT	-	✓	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	LW	4	39.2	800	U	U	-	✓	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	LW	5	33.6	420	U	U	-	✓	-
GN2-1	Spring	2018-05-22 13:20	2018-05-22 15:20	NP	6	59.6	1500	U	ST	-	✓	-
GN3-1	Spring	2018-05-23 11:30	2018-05-23 13:20	NP	1	56.3	980	U	ST	-	✓	-
GN3-1	Spring	2018-05-23 11:30	2018-05-23 13:20	NP	2	57.4	1320	U	ST	-	✓	-
GN3-1	Spring	2018-05-23 11:30	2018-05-23 13:20	NP	3	68.8	1960	U	ST	-	✓	-
GN3-1	Spring	2018-05-23 11:30	2018-05-23 13:20	NP	4	50.2	880	U	ST	-	✓	-
GN3-1	Spring	2018-05-23 11:30	2018-05-23 13:20	NP	5	65.4	2400	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	1	53.3	1420	M	M	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	2	65.7	1900	F	M	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	WSU	3	40.7	920	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	WSU	4	41.7	1420	M	M	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	5	62.4	1620	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	WSU	6	45.7	1600	F	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Lake												
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	7	72.4	2500	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	8	57.5	1520	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	LSU	9	56.3	2400	F	M	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	10	46.3	720	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	NP	11	58.8	1480	U	ST	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	LSU	12	44.1	1120	M	M	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	LSU	13	52.4	1960	U	MT	-	✓	-
GN4-1	Spring	2018-05-23 11:40	2018-05-23 14:15	LSU	14	43.8	1220	M	M	-	✓	-
GN5-1	Spring	2018-05-23 14:30	2018-05-23 16:00	WSU	1	53	2500	F	M	-	✓	-
GN5-1	Spring	2018-05-23 14:30	2018-05-23 16:00	WSU	2	38.5	1240	F	M	-	✓	-
GN5-1	Spring	2018-05-23 14:30	2018-05-23 16:00	WSU	3	44.6	1660	F	M	-	✓	-
GN6-1	Spring	2018-05-23 14:40	2018-05-23 16:10	WSU	1	51	2280	F	M	-	✓	-
GN6-1	Spring	2018-05-23 14:40	2018-05-23 16:10	WSU	2	53.7	2760	F	M	-	✓	-
GN1-1	Fall	2018-10-01 14:45	2018-10-01 16:00	NF	-	-	-	-	-	-	-	-
GN2-1	Fall	2018-10-02 9:25	2018-10-02 12:45	LW	1	40	620	F	MT	-	✓	-
GN3-1	Fall	2018-10-06 12:40	-	NF	-	-	-	-	-	-	-	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	1	41.5	980	M	SP	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	2	48	1520	M	M	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	3	41.2	1020	M	MT	10% U	x	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	4	40	960	M	SP	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	5	42.3	1050	M	M	15% U	x	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	6	43	1120	M	SP	10% U	x	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	7	47	1480	M	SP	10% U	x	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	8	45.8	1320	M	M	15% U	x	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	9	48.2	1220	F	M	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	10	42.5	1040	M	SP	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	11	42.2	1180	M	SP	-	✓	-
GN4-1	Fall	2018-10-07 14:30	2018-10-08 16:20	LW	12	39.7	940	M	SP	-	✓	-
GN5-1	Fall	2018-10-09 12:00	2018-10-09 14:00	NF	-	-	-	-	-	-	-	-
GN6-1	Fall	2018-10-09 12:20	2018-10-09 14:20	NP	1	43.4	630	F	U	10% U	x	-
GN6-1	Fall	2018-10-09 12:20	2018-10-09 14:20	NP	2	46.3	860	M	U	15% U	x	-
GN7-1	Fall	2018-10-09 14:30	2018-10-09 16:10	NF	-	-	-	-	-	-	-	-
GN8-1	Fall	2018-10-09 14:45	2018-10-09 16:25	NF	-	-	-	-	-	-	-	-
Beet Creek												
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	NP	1	64.6	1620	F	ST	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	WSU	2	46.4	1440	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	3	38.4	740	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	4	44.6	1180	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	5	47	1420	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	6	47	1320	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	7	41.3	1000	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	8	46.9	1280	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	9	42.4	1020	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	10	48.4	1540	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	11	42.9	1020	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	12	46	1320	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	13	40	920	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	14	45.1	1260	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	15	40.2	920	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	16	49.5	1840	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	17	41.4	1000	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	18	47	1520	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	19	47	1340	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	20	48	1420	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	21	42.8	1180	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	22	42.3	1100	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	23	44.8	1220	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	24	43.2	1320	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	25	47.4	1480	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	26	41.5	920	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	27	41.5	980	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	28	42	980	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	29	45	1320	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	30	44.5	1220	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	31	44.3	1220	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	32	44.8	1280	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	33	51.7	2020	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	34	49.3	1620	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	35	45.2	1360	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	36	47.4	1500	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	37	44.3	1240	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	38	43	1080	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	39	41.9	1040	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	40	48	1560	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	41	44.6	1260	U	U	-	✓	Died in captivity
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	42	45	1300	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	43	41.8	1080	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	44	42	1020	M	SP	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Creek												
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	45	40.7	980	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	WE	46	61.8	2420	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	WE	47	53.6	1580	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	48	48.6	1540	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	49	52	2020	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	50	46.3	1380	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	51	48.4	1840	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	52	47.6	1520	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	53	51	1820	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	54	47.5	1540	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	55	46.7	1580	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	56	46.9	1480	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	57	45.3	1520	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	58	45.5	1180	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	59	48.5	1820	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	60	47.6	1420	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	61	41.6	1120	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	62	50.8	1900	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	63	46.1	1520	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	64	47.2	1520	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	65	41.8	980	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	66	47.5	1480	F	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	67	44.6	1220	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	68	46.4	1480	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	69	42.1	960	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	70	46.3	1280	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	71	48	1520	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	72	51	1940	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	73	39.5	860	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LW	74	41	980	U	U	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	75	53	2020	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	76	43	1080	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	77	29.7	1560	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	78	42	1020	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	79	47.4	1460	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	80	45.4	1220	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	81	45.7	1400	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	82	43.3	1080	M	M	-	✓	-
HN1-1	Spring	2018-05-18 16:00	2018-05-19 12:15	LSU	83	44.7	1280	M	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	1	68.8	2140	F	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	2	62.8	1620	M	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	3	57.3	1360	M	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	4	66.7	1940	F	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LW	5	42.5	1020	U	U	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	6	64.2	1560	F	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	7	54.6	1180	M	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	8	60.4	1580	M	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LW	9	41.8	980	U	U	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	10	50.8	1980	F	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	11	41.6	980	M	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	12	45	1460	F	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	13	45.7	1280	F	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	14	45.3	1180	F	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	15	52.7	980	U	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	NP	16	52.3	1020	F	ST	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	17	41.4	960	M	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	18	47.9	1480	M	M	-	✓	-
HN1-2	Spring	2018-05-19 12:15	2018-05-20 10:30	LSU	19	53.3	1860	F	ST	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	WSU	1	49.8	2100	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	2	46.6	1320	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	3	48	1500	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LW	4	44	1600	U	U	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	5	50.1	1920	U	MT	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LW	6	40.5	1220	U	U	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	NP	7	65.4	1740	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	8	51.8	2600	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	9	46	1320	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	10	56.3	2420	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	11	46.8	1040	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	12	52.5	1940	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	13	42.2	1400	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	14	42.5	980	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	15	41.5	880	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	16	49.4	1820	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	17	49	1680	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	NP	18	54.4	1600	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	19	49.9	1580	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	20	46	1300	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Creek												
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	21	49	1620	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	22	48.5	1540	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	23	49.4	1660	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	24	44.6	1200	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	25	46.5	1300	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	26	48.4	1420	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	NP	27	58.5	1680	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	28	48.5	1320	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	29	47	1240	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	30	46.5	1320	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	31	52.3	1920	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	32	54.1	1980	U	MT	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	33	46.4	1220	U	MT	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	34	47.8	1580	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	35	51.5	1940	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	36	52	2400	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	37	45.7	1320	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	38	44.5	1260	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	39	52.8	2200	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	40	46	1220	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	41	43.9	1600	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	42	46.3	1240	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	43	43.8	1200	M	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	44	45.4	1360	F	M	-	✓	-
HN1-3	Spring	2018-05-20 10:30	2018-05-21 13:15	LSU	45	43.4	1600	F	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	WE	1	62.1	2420	M	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	WE	2	46.5	1600	U	ST	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LW	3	43.3	1200	U	U	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LSU	4	44.3	1120	M	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LSU	5	49.1	1640	F	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	WE	6	46.7	1200	U	ST	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LSU	7	48	1480	M	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LSU	8	45.6	1400	M	M	-	✓	-
HN1-4	Spring	2018-05-21 15:30	2018-05-22 11:45	LSU	9	43	1200	M	M	-	✓	-
HN1-5	Spring	2018-05-22 12:00	2018-05-23 10:20	LSU	1	47.2	1120	F	ST	-	✓	-
HN1-5	Spring	2018-05-22 12:00	2018-05-23 10:20	LSU	2	45.8	1280	M	M	-	✓	-
HN1-5	Spring	2018-05-22 12:00	2018-05-23 10:20	LSU	3	48	1500	M	M	-	✓	-
HN1-5	Spring	2018-05-22 12:00	2018-05-23 10:20	LSU	4	50.4	1700	F	M	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LW	1	41.7	820	U	U	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LSU	2	42.8	1400	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	WSU	3	45.9	1540	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LSU	4	46.8	1320	M	M	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LSU	5	55.8	1980	F	M	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LSU	6	43.4	1200	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:30	2018-05-24 13:20	LSU	7	43.4	1120	M	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	1	45.3	1300	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	2	45.8	1300	M	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	3	46.7	1420	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	4	51	1700	F	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	5	48.1	1520	F	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	6	40.3	920	M	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	7	42.9	800	M	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	8	42	940	F	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	9	46.5	1920	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	10	45.5	780	M	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	11	41.6	780	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	12	38	740	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	13	37	840	F	M	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	LSU	14	39.5	1600	U	ST	-	✓	-
HN1-7	Spring	2018-05-24 13:40	2018-05-25 11:30	WSU	15	38.5	820	M	M	-	✓	-
HN1-8	Spring	2018-05-25 12:00	2018-05-26 11:10	NP	1	50.2	820	U	ST	-	✓	-
HN1-9	Spring	2018-05-26 11:15	2018-05-27 10:30	NF	-	-	-	-	-	-	-	-
Naomi Creek												
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	WE	1	50	1440	M	M	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	WE	2	48.1	1360	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	WE	3	46.3	1480	F	M	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	WE	4	55.6	2080	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	NP	5	58	1220	F	ST	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	LW	6	44.3	1160	U	U	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	LW	7	44.2	1220	U	U	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	WE	8	41.8	720	M	M	-	✓	-
HN1-1	Spring	2018-05-18 14:30	2018-05-19 13:00	NP	9	45.4	640	M	M	-	✓	-
HN1-2	Spring	2018-05-19 13:00	2018-05-20 11:30	NF	-	-	-	-	-	-	-	-
Naomi Lake												
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	1	49.5	820	U	U	-	✓	-
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	2	48	820	U	U	-	✓	-
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	3	44	580	U	U	-	✓	-
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	4	48	900	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Naomi Lake												
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	5	46.6	620	U	U	-	✓	-
GN1-1	Spring	2018-05-22 14:45	2018-05-22 16:30	NP	6	48.2	760	U	U	-	✓	-
GN2-1	Spring	2018-05-23 11:43	2018-05-23 13:00	NF	-	-	-	-	-	-	-	-
GN3-1	Spring	2018-05-23 13:55	2018-05-23 15:00	LW	1	44.5	1120	U	MT	-	✓	-
GN1-1	Fall	2018-10-04 11:20	2018-10-04 13:30	NF	-	-	-	-	-	-	-	-
GN2-1	Fall	2018-10-04 11:35	2018-10-04 13:40	NF	-	-	-	-	-	-	-	-
GN3-1	Fall	2018-10-04 13:50	2018-10-05 11:00	NP	1	54.71	1240	M	U	50% UFR	x	-
GN4-1	Fall	2018-10-04 13:55	2018-10-04 16:30	NF	-	-	-	-	-	-	-	-
GN5-1	Fall	2018-10-05 11:47	2018-10-05 14:27	NF	-	-	-	-	-	-	-	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	1	-	-	U	U	-	✓	Escaped
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	2	-	-	U	U	-	✓	Escaped
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	3	43.5	1020	M	M	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	4	44.4	1140	M	M	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	NP	5	53.8	1840	M	U	40% UFR	x	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	NP	6	46.5	760	F	U	55% UFR	x	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	7	43.5	1140	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	8	44	1080	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	9	43.5	1000	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	10	42	1120	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	11	41.7	1100	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	12	40	860	M	SP	-	✓	-
GN6-1	Fall	2018-10-05 12:00	2018-10-06 11:40	LW	13	47	1580	M	MT	-	✓	-
GN6-2	Fall	2018-10-06 11:40	2018-10-06 15:00	NF	-	-	-	-	-	-	-	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	1	43.5	1080	M	SP	10% U	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	2	41.5	940	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	3	41.8	940	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	4	40.8	1000	M	SP	20% U	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	5	35.8	760	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	6	42	1060	M	SP	5% U	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	7	44	1200	F	MT	10% U	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	8	42.3	1140	M	M	20% U	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	9	41.7	1000	M	SP	-	x	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	10	40	780	M	M	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	11	41.7	1000	M	M	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	12	41.9	940	U	U	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	13	42.5	920	M	M	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	14	45	1420	F	MT	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	15	44	1260	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	16	41.8	1040	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	17	39	740	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	18	44	1120	U	U	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	19	45	1120	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	20	43.4	1120	M	M	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	21	41	1080	M	SP	-	✓	-
GN7-1	Fall	2018-10-05 16:00	2018-10-06 11:00	LW	22	42	980	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	1	44.3	1060	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	2	44	1060	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	3	45.5	1120	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	4	41	940	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	NP	5	33.4	420	M	U	10% U	x	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	NP	6	49.2	920	F	U	40% UIR	x	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	7	44.8	1080	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	8	43.3	880	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	9	48.3	1620	F	M	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	10	48.2	1220	F	M	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	11	40.8	940	M	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	12	42.4	1140	F	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	LW	13	39.3	980	F	SP	-	✓	-
GN8-1	Fall	2018-10-07 12:42	2018-10-08 14:50	WSU	14	29	360	U	U	-	✓	-
HN1-1	Spring	2018-05-19 16:00	2018-05-20 10:30	NP	1	47	680	U	ST	-	✓	-
HN1-2	Spring	2018-05-20 11:50	2018-05-21 9:00	WSU	1	51	2440	F	M	-	✓	-
HN1-3	Spring	2018-05-21 9:30	2018-05-22 10:00	NF	-	-	-	-	-	-	-	-
HN1-4	Spring	2018-05-22 10:30	2018-05-23 8:45	NP	1	42.4	520	M	M	-	✓	-
HN1-4	Spring	2018-05-22 10:30	2018-05-23 8:45	NP	2	39.2	420	U	ST	-	✓	-
HN1-4	Spring	2018-05-22 10:30	2018-05-23 8:45	NP	3	56.6	1100	U	ST	-	✓	-
HN1-5	Spring	2018-05-23 9:15	2018-05-24 9:41	WSU	1	36.1	660	M	M	-	✓	-
HN1-5	Spring	2018-05-23 9:15	2018-05-24 9:41	WSU	2	52.5	2320	F	M	-	✓	-
HN1-5	Spring	2018-05-23 9:15	2018-05-24 9:41	NP	3	64	1680	F	SP	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	NP	1	23	90.3	U	U	-	x	Died in captivity
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	2	44.5	1320	M	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	3	48.3	1748	F	MT	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	4	50.4	2020	F	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	5	44.3	1300	M	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	6	46	1600	F	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	7	47	1440	F	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	8	48.4	1760	F	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	9	41	960	M	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Clearwater Creek												
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	10	46	1700	F	M	-	✓	-
HN1-6	Spring	2018-05-24 9:40	2018-05-25 9:15	WSU	11	45.7	1500	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	1	45.8	1120	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	2	48	1840	F	MT	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	3	47.4	1580	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	4	48.3	1940	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	5	47.2	1620	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	6	47.8	1800	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	7	45.9	1540	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	8	40.2	1020	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	9	42.7	1060	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	10	50.2	2100	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	11	43.4	1220	M	ST	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	12	46.9	1560	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	13	47.4	1660	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	14	42.3	1260	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	NP	15	40.1	480	U	ST	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	16	47.6	1780	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	17	47.4	1640	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	18	43.3	1200	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	19	45.4	1600	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	20	47.5	1800	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	21	43.6	1240	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	22	45.4	1360	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	23	41.5	1060	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	24	28.7	820	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	25	51.5	1900	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	26	44.6	1300	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	27	43	1200	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	28	46.2	1560	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	29	43.5	1120	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	30	40.7	1000	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	31	50.7	2160	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	32	48.7	1680	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	33	45.4	1400	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	34	46.5	1760	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	35	42.7	1100	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	36	44.4	1180	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	37	43.6	1220	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	38	44.8	1400	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	39	42.8	1180	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	40	48.1	1700	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	41	45.7	1380	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	42	45.3	1220	M	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	43	43.1	1300	F	M	-	✓	-
HN1-7	Spring	2018-05-25 9:35	2018-05-26 10:40	WSU	44	43.1	1240	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	1	51.3	2240	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	2	51.4	2100	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	3	40.5	900	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	4	44.8	1300	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	5	49.1	2040	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	6	48.4	1840	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	7	51.3	2100	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	8	41.2	1000	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	9	43.8	1220	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	10	43.7	1340	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	11	49.6	1700	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	12	50.9	2080	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	13	40.5	1140	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	14	46.9	1420	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	15	50	1780	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	16	46.3	1640	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	17	47	1600	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	18	49.8	1700	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	19	43.6	1220	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	20	43.5	1120	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	21	45.7	1400	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	22	47.5	1620	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	23	47.3	1700	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	24	44.2	1180	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	25	44.2	1280	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	26	45	1600	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	27	47.8	1740	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	28	43.8	1340	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	29	47.5	1520	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	30	42.1	1060	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	31	48.4	1860	F	M	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Clearwater Creek												
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	32	49.1	1800	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	33	48.5	1800	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	34	46.4	1540	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	35	45.5	1280	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	36	45.9	1540	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	37	43.5	1200	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	38	44.5	1400	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	39	44.5	1400	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	40	40.5	1080	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	41	44.5	1280	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	42	45.7	1480	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	43	45.8	1440	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	44	41.3	1040	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	45	50.3	2200	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	46	44.8	1400	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	47	44.8	1500	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	48	43.8	1420	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	49	45.3	1640	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	50	49.7	1860	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	51	46.4	1700	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	52	44.7	1300	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	53	50	2080	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	54	49.2	1960	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	55	52.3	2200	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	56	47	1620	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	57	51.5	2160	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	58	45	1240	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	59	50	2040	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	60	44.5	1400	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	61	46.4	1560	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	62	42.8	1220	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	63	45.8	1640	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	64	45.5	1540	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	65	48	1700	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	66	39.8	920	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	NP	67	49	860	U	ST	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	68	45.5	1480	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	69	43.7	1160	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	70	40	960	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	71	43.8	1240	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	72	42.7	1220	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	73	50.5	1900	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	74	50.7	2060	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	75	45.4	1420	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	76	42.5	1160	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	77	48	1780	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	78	42	1160	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	79	48	1840	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	80	48	1780	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	81	45	1300	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	82	46.8	1460	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	83	46.8	1640	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	84	44	1360	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	85	48.6	1900	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	86	48.5	1800	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	87	46.8	1500	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	88	44.9	1500	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	89	45.2	1440	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	90	49.1	1900	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	91	48	1820	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	92	45.1	1360	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	93	46.6	1640	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	94	44.2	1280	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	95	42.5	1180	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	96	35.5	740	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	97	44.2	1320	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	98	41	1080	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	99	45	1320	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	100	44.6	1420	M	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	101	44.2	1380	F	M	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	102	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	103	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	104	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	105	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	106	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	107	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	108	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	109	-	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Clearwater Creek												
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	110	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	111	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	112	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	113	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	114	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	115	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	116	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	117	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	118	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	119	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	120	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	121	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	122	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	123	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	124	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	125	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	126	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	127	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	128	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	129	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	130	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	131	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	132	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	133	-	-	U	U	-	✓	-
HN1-8	Spring	2018-05-26 10:40	2018-05-27 8:55	WSU	134	-	-	U	U	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	1	44.4	1220	M	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	NP	2	38.8	400	M	ST	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	3	49.2	1780	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	4	53.4	2500	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	5	48.1	1640	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	6	46.6	1660	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	7	50.3	1920	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	8	42.4	1260	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	9	42.6	1140	M	SP	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	10	48.5	1940	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	11	45	1280	M	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	12	52.1	2260	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	13	49.8	2100	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	14	49.6	1940	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	15	42.2	1180	M	SP	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	16	47.8	1660	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	17	46.7	1700	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	NP	18	55.1	1000	U	ST	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	19	42.7	1180	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	20	46.7	1680	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	21	50.1	1860	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	NP	22	53	1040	U	ST	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	23	49.1	1940	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	24	46.8	1640	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	25	53	2260	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	26	47	1640	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	27	39.7	1000	M	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	28	47.2	1800	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	29	49.1	1260	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	30	46.7	1620	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	31	44.5	1200	M	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	32	41.4	1000	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	33	46.8	1600	F	M	-	✓	-
HN1-9	Spring	2018-05-27 11:20	2018-05-28 9:30	WSU	34	36	780	M	M	-	✓	-
Clearwater River Nearfield												
AN1-1	Spring	2018-08-04 10:05	2018-08-04 11:07	NP	1	51.9	940	F	MT	onata, Trico	x	-
AN1-1	Spring	2018-08-04 10:05	2018-08-04 11:07	NP	2	50.2	840	M	MT	0%	x	-
AN1-1	Spring	2018-08-04 10:05	2018-08-04 11:07	NP	3	51.6	920	F	MT	50% Odonata	x	-
AN1-1	Spring	2018-08-04 10:05	2018-08-04 11:07	NP	4	40.2	480	-	-	-	✓	-
AN1-1	Spring	2018-05-20 14:08	2018-05-20 14:28	NF	-	-	-	-	-	-	-	-
AN1-2	Spring	2018-05-29 10:00	2018-05-29 10:17	NF	-	-	-	-	-	-	-	-
AN2-1	Spring	2018-05-20 15:40	2018-05-20 16:00	NF	-	-	-	-	-	-	-	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	1	54.2	1060	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	2	57.4	1120	F	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	3	58.6	1220	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	4	49.2	800	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	5	50.4	920	M	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	6	64.1	2900	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	7	52.8	980	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	8	50.4	980	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	9	55	1120	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	10	50.5	840	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	11	52	760	M	ST	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Clearwater River Nearfield												
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	12	53.6	980	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	13	47	720	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	14	54	1080	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	15	55.6	1220	F	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	16	47.2	720	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	17	44.8	640	M	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	18	50.6	940	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	19	49.9	840	F	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	20	44.4	620	F	MT	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	21	56.6	1260	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	22	44.7	580	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	23	68.5	2020	M	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	24	43.7	660	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	25	63.4	1540	F	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	26	35.6	360	M	M	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	27	53.7	940	M	SP	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	28	47.8	720	U	ST	-	✓	-
HN1-1	Spring	2018-05-18 13:30	2018-05-19 15:00	NP	29	48.6	780	M	M	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	LSU	1	52	1820	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	NP	2	45.6	600	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	NP	3	49.4	900	U	ST	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	NP	4	40.6	480	M	ST	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	WE	5	44.5	865	M	M	-	✓	-
HN1-2	Spring	2018-05-19 15:00	2018-05-20 12:40	WE	6	46.8	960	M	M	-	✓	-
HN1-3	Spring	2018-05-20 13:00	2018-05-21 10:00	WSU	1	45.1	1320	F	SP	-	✓	-
HN1-3	Spring	2018-05-20 13:00	2018-05-21 10:00	NP	2	47	680	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 13:00	2018-05-21 10:00	NP	3	50.2	860	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 13:00	2018-05-21 10:00	NP	4	50.7	860	U	ST	-	✓	-
HN1-3	Spring	2018-05-20 13:00	2018-05-21 10:00	NP	5	50.4	840	U	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	1	48.5	1360	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	2	49.7	1980	F	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	3	47.8	1680	F	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	4	47	1540	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	5	45.6	1360	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	6	43.9	1280	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	7	46.6	1460	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	8	47.4	1580	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	9	42.8	1160	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	10	42.5	1200	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	11	45.8	1360	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	12	45.8	1500	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	13	43	1240	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	14	39	900	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	LSU	15	50.8	1720	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	16	42.4	1100	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	17	53.2	2380	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	18	49.9	1740	F	U	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	19	38.1	840	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	20	49.8	1560	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	21	50.5	2600	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	22	49.7	2240	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	23	45	1600	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	24	48.9	1980	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	25	44.5	1300	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	26	44.1	1340	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	27	42.6	1240	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	28	44.4	1520	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	29	43	1160	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	30	43.4	1220	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	31	36.8	760	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	32	44.4	1320	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	33	49.8	1600	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	34	42.5	1160	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	35	48.7	1980	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	LSU	36	49.8	1440	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	37	43.9	1460	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	38	44.9	1380	M	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	39	42.4	1240	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	40	47	1760	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	41	43	1160	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	NP	42	48.4	760	M	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	43	42.1	1100	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	44	44.4	1360	F	MT	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	45	44.5	1280	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	46	42.4	1180	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	47	41.9	1100	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	48	36.8	880	F	SP	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	NP	49	55.2	1020	U	ST	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Clearwater River Nearfield												
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	50	44.6	1240	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	LSU	51	53.5	1980	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	52	40.6	1020	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	53	42.7	1160	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	LSU	54	44.8	1220	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	55	43	1180	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	56	43.8	1260	M	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	57	43.5	1280	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	58	48.7	1620	F	ST	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	59	44.3	1160	M	M	-	✓	-
HN1-4	Spring	2018-05-21 10:05	2018-05-22 10:40	WSU	60	42.4	1100	M	M	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	WSU	1	47.3	1720	F	MT	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	WSU	2	50.6	1680	F	ST	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	WSU	3	42.6	1120	F	ST	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	NP	4	54.6	960	U	ST	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	WE	5	43	800	U	ST	-	✓	-
HN1-5	Spring	2018-05-22 12:15	2018-05-23 9:30	WE	6	46.7	980	M	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	1	44.9	1320	F	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	2	49.4	1660	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	3	49	1800	F	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	4	48.1	1380	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	5	37.5	720	M	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	6	47.4	1380	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	7	45.7	1400	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	8	47	1360	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	9	45.1	1280	M	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	10	47.3	1400	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	11	44.9	1260	M	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	12	45.3	1300	M	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	13	45.8	1200	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	14	43.4	1020	F	ST	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	15	43.5	1160	M	M	-	✓	-
HN1-6	Spring	2018-05-23 10:00	2018-05-24 10:10	WSU	16	42.3	1080	M	ST	-	✓	-
HN1-7	Spring	2018-05-24 11:00	2018-05-25 10:22	WSU	1	40.5	900	M	M	-	✓	-
HN1-7	Spring	2018-05-24 11:00	2018-05-25 10:22	NP	2	50	880	U	U	-	✓	-
HN1-8	Spring	2018-05-25 10:35	2018-05-25 11:15	NF	-	-	-	-	-	-	-	-
HN1-9	Spring	2018-05-26 11:15	2018-05-27 12:20	WSU	1	44.4	1200	M	M	-	✓	-
HN1-9	Spring	2018-05-26 11:15	2018-05-27 12:20	WSU	2	44.3	1240	M	M	-	✓	-
HN1-9	Spring	2018-05-26 11:15	2018-05-27 12:20	WSU	3	46.4	1440	M	M	-	✓	-
HN1-9	Spring	2018-05-26 11:15	2018-05-27 12:20	WSU	4	43.8	1220	U	ST	-	✓	-
AN1-1	Summer	2018-08-04 10:05	2018-08-04 11:07	NP	5	39.6	460	-	-	-	✓	-
AN1-1	Summer	2018-08-04 10:05	2018-08-04 11:07	NP	6	35.3	300	-	-	-	✓	-
GN1-1	Summer	2018-08-04 9:40	2018-08-04 12:11	NP	1	44.1	620	F	MT	10% Leech	x	-
GN2-1	Summer	2018-08-04 9:57	2018-08-04 11:57	NP	1	52.7	920	F	MT	75% Bird	✓	-
GN2-1	Summer	2018-08-04 9:57	2018-08-04 11:57	WSU	2	44	1240	M	MT	10% U	✓	-
GN3-1	Summer	2018-08-04 12:30	2018-08-04 14:30	NP	1	49.6	760	M	MT	20% Odonata	✓	-
GN4-1	Summer	2018-08-04 12:37	2018-08-04 14:40	NF	-	-	-	-	-	-	-	-
Clearwater River Midfield												
BP1-1	Summer	2018-08-04 14:00	2018-08-04 14:15	BB	1	5.5	-	U	U	-	✓	-
BP2-1	Summer	2018-08-04 14:30	2018-08-04 14:44	NP	1	20.5	65	U	U	-	✓	-
BP2-1	Summer	2018-08-04 14:30	2018-08-04 14:44	NP	2	11.6	25	U	U	-	✓	-
BP2-1	Summer	2018-08-04 14:30	2018-08-04 14:44	NSB	3	3.4	-	U	U	-	✓	-
BP3-1	Summer	2018-08-04 15:00	2018-08-04 15:24	NF	-	-	-	-	-	-	-	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	CCG	1	5.8	30	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	NP	2	8.7	20	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	BB	3	5.6	-	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	NP	4	9	30	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	CCG	5	5.8	20	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	CCG	6	5.2	10	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	CCG	7	3	-	U	U	-	✓	-
BP4-1	Summer	2018-08-04 15:55	2018-08-04 16:15	CCG	8	2.7	-	U	U	-	✓	-
MT1-1	Summer	2018-08-04 10:17	2018-08-04 13:22	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-04 10:35	2018-08-04 13:45	NF	-	-	-	-	-	-	-	-
Lloyd Lake Inlet												
DN1-1	Summer	2018-08-12 12:23	2018-08-12 12:24	TP	1	8.2	-	U	U	-	x	Dead prior to capture
DN1-1	Summer	2018-08-12 12:23	2018-08-12 12:24	NSB	2	4.2	-	U	U	-	x	Dead prior to capture
DN2-1	Summer	2018-08-12 14:49	2018-08-12 14:50	NSB	1	2.3	-	U	U	-	✓	-
DN3-1	Summer	2018-08-12 15:50	2018-08-12 15:51	STC	1	2.4	-	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	1	51	1820	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	2	35.3	480	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	3	36.3	520	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	4	47.4	1120	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	5	47.9	1180	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	6	35	500	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	7	43.3	900	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	8	46.2	1140	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	9	44	980	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	10	37.5	620	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Lloyd Lake Inlet												
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	11	37.1	1220	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	12	50.2	1560	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	13	41.2	820	U	U	-	x	Died in captivity
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	14	38.7	660	U	U	-	x	Died in captivity
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	15	33.5	400	U	U	-	x	Died in captivity
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WSU	16	44.1	1220	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WSU	17	45.9	1320	U	U	-	✓	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	WE	18	44.1	920	U	U	-	x	Died in captivity
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	LW	19	46.1	1820	F	U	-	x	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	LW	20	41.7	1120	M	U	-	x	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	LW	21	40.2	1080	M	U	-	x	-
HG1-1	Summer	2018-08-10 14:02	2018-08-10 15:40	LW	22	34.6	620	F	U	-	x	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	WSU	1	35.2	580	U	U	-	✓	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	WE	2	39.4	1220	U	U	-	✓	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	WE	3	47.8	1120	U	U	-	✓	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	LW	4	28.6	360	U	U	-	✓	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	LW	5	45.4	1260	F	U	-	x	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	LW	6	44.5	1430	F	U	-	x	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	LW	7	35	620	M	U	-	x	-
HG2-1	Summer	2018-08-11 13:50	2018-08-11 15:07	LW	8	32.5	490	M	U	-	x	-
HG3-1	Summer	2018-08-12 10:24	2018-08-12 11:50	NP	1	43.6	520	U	U	-	✓	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LT	1	68.3	3680	U	U	-	✓	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	2	31.3	540	U	U	-	✓	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	3	41.8	1080	U	U	-	✓	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	4	32	620	U	U	-	x	Died in captivity
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	5	43.9	1320	U	U	-	✓	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	6	42.3	1180	U	U	-	x	Died in captivity
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	LW	7	49.2	1780	U	U	-	x	Died in captivity
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	NP	8	54.4	1020	M	U	0%	x	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	NP	9	66.7	1960	M	U	0%	x	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	NP	10	87.6	5120	M	U	1% UFR	x	-
HG4-1	Summer	2018-08-12 12:09	2018-08-12 14:29	NP	11	19.6	-	U	U	-	✓	-
HG5-1	Summer	2018-08-12 15:05	2018-08-12 16:23	WSU	1	40.2	880	U	U	-	✓	-
HG5-1	Summer	2018-08-12 15:05	2018-08-12 16:23	LW	2	37.8	780	U	U	-	✓	-
HG5-1	Summer	2018-08-12 15:05	2018-08-12 16:23	NP	3	41.5	420	U	U	-	✓	-
HG5-1	Summer	2018-08-12 15:05	2018-08-12 16:23	NP	4	21	1060	M	U	5% Unknown	x	-
HG5-1	Summer	2018-08-12 15:05	2018-08-12 16:23	NP	5	47.6	800	M	U	60% UFR	x	-
MT1-1	Summer	2018-08-09 12:08	2018-08-10 10:00	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-09 13:57	2018-08-10 10:12	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-10 10:33	2018-08-11 10:00	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2018-08-10 11:02	2018-08-11 10:20	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2018-08-10 12:10	2018-08-11 10:54	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2018-08-10 12:50	2018-08-11 10:43	NP	1	31.1	230	U	U	-	x	Died in captivity
MT7-1	Summer	2018-08-10 13:22	2018-08-11 10:36	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2018-08-11 14:05	2018-08-12 13:20	NF	-	-	-	-	-	-	-	-
MT9-1	Summer	2018-08-11 14:09	2018-08-12 13:30	NF	-	-	-	-	-	-	-	-
MT10-1	Summer	2018-08-11 14:15	2018-08-12 13:05	NSB	1	4.3	-	U	U	-	x	Died in captivity
MT11-1	Summer	2018-08-11 14:22	2018-08-12 12:57	NF	-	-	-	-	-	-	-	-
MT12-1	Summer	2018-08-11 14:30	2018-08-12 12:55	NF	-	-	-	-	-	-	-	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	YP	1	8.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	CCG	2	7.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	WSU	3	6.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	4	4.4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	5	4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	6	4.1	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	7	3.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	8	4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	9	4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	YP	10	8.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	CCG	11	5.4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	12	3.6	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	13	3.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	14	4.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	BB	15	18.3	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	CCG	16	4.3	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	17	4.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	18	3.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	19	3.7	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	20	4.3	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	21	4.3	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	22	4.6	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	23	4.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	24	3.9	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	25	4.4	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	26	4.5	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	27	3.7	-	U	U	-	✓	-
BE1-1	Fall	2018-09-27 10:45	2018-09-27 11:05	NSB	28	4.2	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Lloyd Lake Inlet												
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	1	9.1	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	2	9.1	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	3	8	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	4	9	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	5	7.3	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	6	6.3	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	7	6.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	8	4.5	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	9	3.7	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	10	4.5	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	11	4.5	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	12	4.4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	13	3.5	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	14	11.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NP	15	8.7	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	16	9.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	17	9.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	YP	18	4.4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	19	4.3	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	20	4.4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	21	4.6	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	22	4.4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	23	4.4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	24	3.7	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	25	4.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	26	4.2	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	27	4	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	28	2.9	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	29	4.1	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	30	3.9	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	31	3.7	-	U	U	-	✓	-
BE2-1	Fall	2018-09-27 11:40	2018-09-27 12:00	NSB	32	4.1	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NP	1	56.1	1100	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	CCG	2	7.3	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	3	4.4	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	4	3.8	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	5	4.2	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	6	3.3	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	7	4.3	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	8	3.5	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	9	4.1	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	10	3.7	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	11	4.1	-	U	U	-	✓	-
BE3-1	Fall	2018-09-27 12:23	2018-09-27 12:47	NSB	12	4.2	-	U	U	-	✓	-
Lake G												
BE1-1	Summer	2018-08-08 10:00	2018-08-08 10:30	NP	1	54.8	1200	U	U	-	✓	-
BE1-1	Summer	2018-08-08 10:00	2018-08-08 10:30	NP	2	38.9	400	U	U	-	✓	-
BE1-1	Summer	2018-08-08 10:00	2018-08-08 10:30	NP	3	45.4	600	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	1	31.7	200	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	2	35.8	320	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	3	45.5	780	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	4	35.9	320	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	5	38.8	440	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	6	14.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	7	12.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	8	11.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	9	12.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	10	13.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	NP	11	12.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-08 12:40	2018-08-08 13:15	BB	12	15	-	U	U	-	✓	Escaped
BE3-1	Summer	2018-08-08 13:50	2018-08-08 14:15	NP	1	47.8	840	U	U	-	✓	-
BE3-1	Summer	2018-08-08 13:50	2018-08-08 14:15	NP	2	53.7	1240	U	U	-	✓	-
BE3-1	Summer	2018-08-08 13:50	2018-08-08 14:15	NP	3	11.8	-	U	U	-	✓	-
BE3-1	Summer	2018-08-08 13:50	2018-08-08 14:15	NP	4	13.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-08 14:45	2018-08-08 15:00	NP	1	11.8	-	U	U	-	✓	-
HG1-1	Summer	2018-08-08 7:55	2018-08-08 11:56	NP	1	35.7	400	U	U	-	✓	-
HG1-1	Summer	2018-08-08 7:55	2018-08-08 11:56	NP	2	42.4	700	U	U	-	✓	-
MT1-1	Summer	2018-08-07 13:53	2018-08-08 7:38	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-07 13:58	2018-08-08 7:40	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-07 14:05	2018-08-08 7:45	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2018-08-07 14:10	2018-08-08 7:47	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2018-08-07 14:15	2018-08-08 8:10	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2018-08-07 14:22	2018-08-08 8:15	NF	-	-	-	-	-	-	-	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Lake H												
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	1	4.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	2	3.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	3	3.6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	4	3.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	5	3.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	6	4.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	7	4.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	8	3.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	9	3.9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	10	2.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	STC	11	3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	STC	12	2.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	13	4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	14	3.9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	15	4.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	16	4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	17	3.6	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	18	3.5	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	19	3.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	20	4.3	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	21	3.8	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	STC	22	2.7	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	STC	23	5.4	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	STC	24	8.9	-	U	U	-	✓	-
BE1-1	Summer	2018-08-06 11:55	2018-08-06 12:03	YP	25	3.5	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	1	8.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	2	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	3	5.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	4	4.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	5	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	6	5.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	7	5.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	8	5	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	9	5.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	YP	10	4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	11	7.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	12	6.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	13	5.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	14	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	15	4.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	16	7.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	17	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	18	4.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	19	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	20	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	21	5.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	22	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	23	8.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	24	5.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	25	7.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	26	7.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	27	4.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	28	4.7	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	29	4.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	30	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	31	4.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	32	5.2	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	33	5.3	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	34	4.8	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	35	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	36	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	37	8.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	38	6.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	39	4.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	40	5.1	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	41	6.9	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	42	4.6	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	43	7.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	YP	44	4.4	-	U	U	-	✓	-
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	45	5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2018-08-06 13:05	2018-08-06 13:18	STC	46	5.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	NP	1	26.9	120	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	NP	2	28.2	180	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	NP	3	15.6	30	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	4	2.4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	5	2.2	-	U	U	-	x	Died in captivity
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	6	2.6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	7	2.7	-	U	U	-	x	Died in captivity

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Lake H												
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	8	8.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	9	5.9	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	10	6.6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	11	6.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	STC	12	5.6	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	13	7.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	14	6.7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	15	6.4	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	16	6.7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	17	7	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	18	9.5	-	U	U	-	✓	-
BE3-1	Summer	2018-08-06 14:10	2018-08-06 14:20	YP	19	6.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	BB	1	16.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	BB	2	14.1	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	BB	3	8.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	4	7.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	5	3.3	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	STC	6	7.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	STC	7	7.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	8	3.9	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	9	5.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	10	10.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	11	3.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	12	7.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	13	6.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	14	7.4	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	15	6.6	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	16	3.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	17	5.5	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	18	3.8	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	YP	19	3.7	-	U	U	-	✓	-
BE4-1	Summer	2018-08-06 14:45	2018-08-06 15:00	STC	20	2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	1	3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	2	2.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	3	2.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	4	2.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	5	2.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	6	2.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	7	2.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	8	2.7	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	9	2.5	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	10	3.1	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	11	3.1	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	12	2.9	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	13	2.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	14	2.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	15	2.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	16	2.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	17	3.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	18	3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	19	2.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	20	2.4	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	21	2.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	22	2.2	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	23	2.3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	24	1.8	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	25	2.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	YP	26	3.6	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	27	3	-	U	U	-	✓	-
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	28	2.2	-	U	U	-	x	Died in captivity
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	29	2.9	-	U	U	-	x	Died in captivity
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	30	2.6	-	U	U	-	x	Died in captivity
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	31	2.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	32	2.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2018-08-06 15:16	2018-08-06 15:20	STC	33	2.7	-	U	U	-	x	Died in captivity
HG1-1	Summer	2018-08-06 10:15	2018-08-06 12:45	NP	1	53.6	960	U	U	-	✓	-
HG1-1	Summer	2018-08-06 10:15	2018-08-06 12:45	NP	2	35	380	U	U	-	✓	-
HG1-1	Summer	2018-08-06 10:15	2018-08-06 12:45	NP	3	55.6	640	U	U	-	x	-
HG1-1	Summer	2018-08-06 10:15	2018-08-06 12:45	NP	4	55.1	940	U	U	-	x	-
MT1-1	Summer	2018-08-05 8:15	2018-08-06 9:15	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2018-08-05 9:15	2018-08-06 9:21	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2018-08-05 10:00	2018-08-06 9:14	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2018-08-05 10:18	2018-08-06 9:08	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2018-08-05 11:05	2018-08-06 11:30	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2018-08-05 11:45	2018-08-06 11:52	STC	1	7.5	-	U	U	-	✓	-
MT6-1	Summer	2018-08-05 11:45	2018-08-06 11:52	STC	2	8.2	-	U	U	-	✓	-
MT6-1	Summer	2018-08-05 11:45	2018-08-06 11:52	STC	3	7.2	-	U	U	-	✓	-

Appendix C, Table 39

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2018

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
E Creek												
HN1-1	Spring	2018-05-21 12:00	2018-05-22 10:15	NF	-	-	-	-	-	-	-	-
HN1-2	Spring	2018-05-22 10:20	2018-05-23 9:20	NF	-	-	-	-	-	-	-	-
HN1-3	Spring	2018-05-23 9:25	2018-05-24 11:40	NP	1	37.3	320	M	M	-	✓	-
HN1-4	Spring	2018-05-24 11:45	2018-05-25 10:15	NF	-	-	-	-	-	-	-	-
G Creek												
HN1-1	Spring	2018-05-19 12:15	2018-05-20 11:40	NP	1	73	2680	F	SP	-	✓	-
HN1-1	Spring	2018-05-19 12:15	2018-05-20 11:40	NP	2	22.7	95	U	NS	-	✓	-
HN1-1	Spring	2018-05-19 12:15	2018-05-20 11:40	NP	3	-	-	U	U	-	✓	Escaped
HN1-1	Spring	2018-05-19 12:15	2018-05-20 11:40	BB	4	61.4	1220	U	U	-	✓	-
HN1-2	Spring	2018-05-20 12:00	2018-05-21 9:45	NP	1	-	-	U	U	-	-	-
HN1-3	Spring	2018-05-21 10:00	2018-05-22 12:30	NF	-	-	-	-	-	-	-	-
HN1-4	Spring	2018-05-22 12:30	2018-05-23 11:30	NF	-	-	-	-	-	-	-	-

a) GN = Short-length gill netting, HN = hoop net, HG = half-standard gang gill net, AN = angling, MT = minnow trap, BE = boat electrofishing, BP = backpack electrofishing, DN = dip net.

b) BB = burbot, CCG = slimy sculpin, JODA =johnny darter, LKC = lake chub, LSU = longnose sucker, LT = lake trout, LW = lake whitefish, NF = no fish, NP = northern pike, NSB = ninespine stickleback, WE = walleye, WSU = white sucker, YP = yellow perch.

c) M = male, F = female, U = unknown.

d) M = ripe, MT = green, NS = non spawner, SP = ripe+/running ripe, ST = spent, U = unknown.

e) LW = lake whitefish, NP = northern pike, U = unknown, UFR = unidentified fish remains, UIR = unidentified invertebrate remains.

f) Patterson Lake was surveyed for spawning conditions while, only the Mine Site Area and Camp Area (i.e., areas within Patterson Lake) were surveyed for the community survey.

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	BB	001	3.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	WSU	002	6.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	WSU	003	11.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	WSU	004	9.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	WSU	005	8.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	STC	006	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	STC	007	5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	STC	008	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	STC	009	6.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	CCG	010	4.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 10:20	2019-07-20 10:34	YP	011	5.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	001	12.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	002	11.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	003	14	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	004	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	005	7.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	WSU	006	11.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	STC	007	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 10:49	2019-07-20 10:59	CCG	008	3.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 11:20	2019-07-20 11:26	NF	-	-	-	-	-	-	-	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	001	13.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	002	14.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	003	15.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	004	13.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	005	15.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	006	13.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	007	15.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	008	10.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	009	12.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	010	12.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	011	12.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	012	13.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	013	13.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	WSU	014	14.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	015	12.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	016	13.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	017	14.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	018	12.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	LSU	019	6.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	WSU	020	6.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	WSU	021	5.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	NSB	022	4.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	WSU	023	6.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-20 11:35	2019-07-20 11:56	WSU	024	6.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	001	10.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	002	11.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	003	8.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	004	13.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	005	10.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	006	11.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	007	9.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	008	7.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	009	13.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	010	12.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	011	12.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	YP	012	10.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	013	5.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	014	6.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	015	11.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	016	10.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	017	9.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	018	9.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	STC	019	8.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	020	9.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	021	7.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	022	6.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	023	6.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	024	14.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	025	5.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	026	8.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	027	7.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	028	6.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	029	9.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	030	10.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	031	11.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	032	8.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	033	6.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	034	7.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	035	6.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	036	12.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	037	6.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	038	10.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	039	12.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	040	10.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	041	6.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	042	9.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	043	9.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	044	9.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	045	7.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	046	7.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	047	11.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	048	11.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	049	11.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	050	10.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	051	6.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	052	8.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	053	5.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	054	6.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	055	6.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	056	6.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	057	13.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	058	12.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	059	6.3	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	060	6.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	061	5.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	062	6.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	063	6.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	064	9.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	065	10.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	066	10.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	LSU	067	6.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-20 12:45	2019-07-20 13:14	WSU	068	6.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	001	11.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	002	19.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	003	17.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	004	15.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	005	12.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	006	12.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	007	13.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	008	14.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	009	11.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	010	9.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	011	13.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	012	12.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	013	12.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	014	11.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	015	13.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	016	12.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	017	9.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	018	11.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	019	12.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	020	13.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	021	11.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	022	11.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	YP	023	7.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	024	5.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	025	14.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	026	13.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	027	12.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	028	11.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	029	14.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	030	11.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	031	11.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	032	9.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	033	13.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	034	13.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	035	11.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	036	10.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	WSU	037	11.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	038	10.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	039	12.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-20 13:48	2019-07-20 14:00	LSU	040	11.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	WSU	001	8.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	WSU	002	6.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	NSB	003	5.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	LSU	004	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	WSU	005	6.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	NSB	006	5.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	CCG	007	5.9	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	LW	008	4.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-20 14:35	2019-07-20 14:50	BB	009	2.2	-	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	LT	001	48.4	1460	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	LT	002	49	1220	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	WSU	003	41.6	980	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	WSU	004	37	740	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	WSU	005	39	840	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	NP	006	78.3	4120	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	NP	007	74.2	2880	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	NP	008	62.6	1520	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	WSU	009	42.4	880	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	WSU	010	42.1	920	U	U	-	✓	-
HG1-1	Summer	2019-07-19 10:00	2019-07-19 13:15	LT	011	47.5	940	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-19 10:32	2019-07-19 14:10	WSU	001	47.2	1130	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:32	2019-07-19 14:10	WSU	002	32.5	520	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:32	2019-07-19 14:10	LT	003	53.5	1500	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:32	2019-07-19 14:10	LT	004	50.9	1360	F	U	-	x	Died in captivity
HG3-1	Summer	2019-07-19 14:28	2019-07-19 16:05	LT	001	49.7	1210	U	U	-	✓	-
HG4-1	Summer	2019-07-19 14:50	2019-07-19 16:25	LW	001	46.5	1160	U	U	-	x	Died in captivity
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	001	41.9	780	U	U	-	x	Died in captivity
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	002	41.5	760	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	003	39.8	750	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	004	43.4	840	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	005	37.1	610	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	006	37.7	640	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	007	38.1	740	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	008	37.5	580	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	009	43.7	1080	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	010	40.5	780	U	U	-	✓	-
HG5-1	Summer	2019-07-21 9:30	2019-07-21 12:28	WSU	011	43.8	1040	U	U	-	✓	-
HG6-1	Summer	2019-07-21 9:45	2019-07-21 12:50	NF	-	-	-	-	-	-	-	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	001	38.6	700	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	002	48.5	980	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	003	35.6	660	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	004	39.2	720	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	005	37.9	540	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	006	36	380	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	WSU	007	40	740	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:15	2019-07-21 16:00	NP	008	84.1	6800	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	NP	001	103.5	9200	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	002	40.4	820	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	003	39.6	820	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	004	39	660	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	005	41	780	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	006	37	700	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	007	38.8	780	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	LT	008	55.4	1580	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Broach Lake												
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	NP	009	84.6	5000	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	010	35.5	500	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	LT	011	52.3	1560	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	LT	012	69.8	4050	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	013	33.3	420	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	LT	014	52	1560	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	015	38.5	760	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	016	39.9	680	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	017	39.8	780	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	018	38.5	640	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	019	38.5	640	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	020	37.3	570	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	021	37.6	580	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	022	36.7	580	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	023	35.6	500	U	U	-	✓	-
HG8-1	Summer	2019-07-21 13:24	2019-07-21 16:56	WSU	024	38.4	560	U	U	-	✓	-
MT1-1	Summer	2019-07-19 10:55	2019-07-20 15:52	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-19 11:08	2019-07-20 15:58	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-19 11:15	2019-07-20 16:05	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-19 11:21	2019-07-20 16:10	WSU	001	9	-	U	U	-	✓	-
MT4-1	Summer	2019-07-19 11:21	2019-07-20 16:10	WSU	002	5.9	-	U	U	-	✓	-
MT5-1	Summer	2019-07-19 11:32	2019-07-20 16:24	BB	001	10.2	-	U	U	-	✓	-
MT6-1	Summer	2019-07-19 11:40	2019-07-20 16:32	WSU	001	7.2	-	U	U	-	✓	-
MT7-1	Summer	2019-07-19 11:50	2019-07-20 16:50	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-19 12:00	2019-07-20 16:55	NF	-	-	-	-	-	-	-	-
MT9-1	Summer	2019-07-19 12:08	2019-07-20 15:03	NF	-	-	-	-	-	-	-	-
MT10-1	Summer	2019-07-20 15:06	2019-07-21 15:37	NF	-	-	-	-	-	-	-	-
Hodge Lake												
AN1-1	Summer	2019-07-20 10:15	2019-07-20 10:45	NP	001	70	2900	M	U	0%	x	-
AN1-1	Summer	2019-07-20 10:15	2019-07-20 10:45	NP	002	76.6	3920	M	U	10% UFR	x	-
AN1-1	Summer	2019-07-20 10:15	2019-07-20 10:45	NP	003	63.8	2200	F	U	10% UFR	x	-
AN1-1	Summer	2019-07-20 10:15	2019-07-20 10:45	NP	004	63.7	1960	M	U	10% UFR	x	-
HG4-1	Summer	2019-07-19 14:55	2019-07-20 9:20	NP	001	94.3	6260	F	U	0%	x	-
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	001	39.8	900	F	U	25% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	002	30.9	420	M	U	10% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	003	31.8	400	F	U	25% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	004	32.1	420	F	U	25% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	005	31.7	460	F	U	25% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	006	34.7	560	M	U	25% UIR	x	Died in captivity
HG5-1	Summer	2019-07-20 17:20	2019-07-21 7:50	LW	007	29.6	400	M	U	10% UIR	x	Died in captivity
HG6-1	Summer	2019-07-20 17:30	2019-07-21 8:40	LW	001	37.9	900	M	U	0%	x	-
Jed Creek												
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	NP	001	26.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	002	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	003	6.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	004	7.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	005	8.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	006	7.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	007	7.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	008	5.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	009	6.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	010	5.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	011	7.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	012	8.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	013	6.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	014	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	015	7.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	016	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	017	7.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	018	7.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	019	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	020	7.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	021	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	022	7.1	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	023	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	024	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	025	6.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	026	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	027	8.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	028	8.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	029	6.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	030	7.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	031	6.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	032	6.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	033	6.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	034	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	035	6.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	036	7.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	037	7.8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	038	7.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	039	6.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	040	7.5	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	041	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	042	7.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	043	6.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	044	6.8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	045	8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	046	5.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	047	6.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	048	3.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	049	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	050	7.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	051	5.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	052	6.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	053	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	054	7.8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	055	8.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	056	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	057	7.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	058	7.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	059	7.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	060	8.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	061	7.9	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Jed Creek												
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	062	7.8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	063	8.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	064	7.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	065	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	066	6.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	067	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	068	5.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	069	7.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	070	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	071	5.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	072	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	073	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	074	8.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	075	7.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	076	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	077	7.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	078	6.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	079	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	080	6.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	081	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	082	5.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	083	7.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	084	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	085	7.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	086	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	087	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	088	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	089	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	090	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	091	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	092	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	093	6.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	BB	094	5.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	095	6.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	STC	096	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	097	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-25 12:28	2019-07-25 12:44	TP	098	7.4	-	U	U	-	✓	-
MT1-1	Summer	2019-07-25 11:14	2019-07-26 9:23	TP	001	6.6	-	U	U	-	✓	-
MT1-1	Summer	2019-07-25 11:14	2019-07-26 9:23	TP	002	6.3	-	U	U	-	✓	-
MT1-1	Summer	2019-07-25 11:14	2019-07-26 9:23	TP	003	5.8	-	U	U	-	✓	-
MT2-1	Summer	2019-07-25 11:25	2019-07-26 9:21	TP	001	7.3	-	U	U	-	✓	-
MT2-1	Summer	2019-07-25 11:25	2019-07-26 9:21	TP	002	7	-	U	U	-	✓	-
MT3-1	Summer	2019-07-25 11:30	2019-07-26 9:20	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-25 11:34	2019-07-26 9:18	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-25 11:41	2019-07-26 9:16	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-25 11:43	2019-07-26 9:16	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-25 11:52	2019-07-26 9:06	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-25 11:55	2019-07-26 9:05	NF	-	-	-	-	-	-	-	-
Patterson Lake												
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	001	4.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	LKC	002	5.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	003	4.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	004	4.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	YP	005	5.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	006	6.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	007	8.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	008	6.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	009	3.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	STC	010	3.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	STC	011	3.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	STC	012	3.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	013	3.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	YP	014	3.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	015	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	016	5.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	STC	017	3.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	018	7.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	019	6.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	020	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	021	7.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	022	5.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	023	6.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	024	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	CCG	025	4.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	CCG	026	5.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	027	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	STC	028	3.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	WSU	029	8.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	030	8.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	031	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	BB	032	4.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	033	3.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	034	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	CCG	035	4.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	036	3.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 9:34	2019-07-24 9:47	TP	037	4.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	BB	001	18.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	002	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	003	4.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	004	8.3	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	005	7.3	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	006	7.7	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	007	6.2	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	008	7.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	009	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	010	7.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	011	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	LKC	012	8.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	013	6.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	014	6.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	015	7.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	016	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	017	6.8	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	018	6.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	BB	019	4.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	STC	020	6.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	021	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	022	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	023	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	024	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	025	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	026	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	027	7.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	028	3.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	029	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	CCG	030	7.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	031	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	032	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	033	6.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	034	6.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	035	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	TP	036	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 10:25	2019-07-24 10:32	WSU	037	7.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	STC	001	6.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	002	6.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	003	6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	BB	004	12.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	005	6.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	BB	006	13.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	007	6.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	LKC	008	8.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	009	6.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	010	7.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	011	7.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	012	8.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	013	6.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	014	6.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	015	6.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	016	6.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	SU	017	3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	018	7.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	019	6.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	020	8.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	021	6.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	022	6.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	023	5.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	024	5.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	025	6.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	026	6.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	027	6.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	028	6.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	TP	029	6.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 11:00	2019-07-24 11:14	SU	030	2.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	001	6.3	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	002	6.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	003	6.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	004	6.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	005	6.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	006	8.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	007	8.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	008	6.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	009	6.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	010	5.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	011	7.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	012	6.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	013	7.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	014	6.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	015	6.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	016	6.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 11:42	2019-07-24 11:56	TP	017	5.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 13:00	2019-07-24 13:11	TP	001	6.6	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-24 13:00	2019-07-24 13:11	TP	002	8.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 13:00	2019-07-24 13:11	TP	003	8.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 13:00	2019-07-24 13:11	TP	004	6.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 13:00	2019-07-24 13:11	TP	005	7.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-24 13:20	2019-07-24 13:36	NF	-	-	-	-	-	-	-	-
BE7-1	Summer	2019-07-24 13:50	2019-07-24 13:59	NF	-	-	-	-	-	-	-	-
BE8-1	Summer	2019-07-24 14:09	2019-07-24 14:12	NF	-	-	-	-	-	-	-	-
BE9-1	Summer	2019-07-24 14:14	2019-07-24 14:17	NF	-	-	-	-	-	-	-	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	001	7.6	-	U	U	-	x	Died in captivity
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	002	7.8	-	U	U	-	x	Died in captivity
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	003	6.9	-	U	U	-	x	Died in captivity
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	CCG	004	6.5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	005	6.6	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	006	6.3	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	007	6.8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	NSB	008	2.1	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	WSU	009	7.8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	TP	010	6.7	-	U	U	-	✓	-
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	CCG	011	5.3	-	U	U	-	✓	
BE10-1	Summer	2019-07-24 14:53	2019-07-24 15:09	BB	012	16.7	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	BB	001	17.4	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	002	7.6	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	003	8.6	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	004	8.2	-	U	U	-	x	Died in captivity
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	005	7	-	U	U	-	x	Died in captivity
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	006	6.6	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	007	5.3	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	008	6.8	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	009	8.8	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	010	5.7	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	011	6.4	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	SU	012	2.1	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	013	6.9	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	SU	014	2.2	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	WSU	015	14.8	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	016	5.7	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	017	6.1	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	WSU	018	8.9	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	019	6.4	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	020	6	-	U	U	-	✓	-
BE11-1	Summer	2019-07-24 15:31	2019-07-24 15:54	TP	021	5.7	-	U	U	-	✓	-
BE12-1	Summer	2019-07-24 14:16	2019-07-24 14:22	BB	001	22.4	-	U	U	-	✓	-
BE12-1	Summer	2019-07-24 14:16	2019-07-24 14:22	CCG	002	5.6	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 14:40	2019-07-25 14:45	TP	001	7.1	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 14:40	2019-07-25 14:45	SP	002	-	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	YP	001	7.4	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LKC	002	11	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	003	6.4	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	004	5.7	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	005	6.8	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	NSB	006	2.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	007	2.2	-	U	U	-	x	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	008	2.1	-	U	U	-	x	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	009	5.8	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	010	7.1	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	011	2.3	-	U	U	-	x	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	012	2	-	U	U	-	x	
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	013	6.4	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	014	7.3	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	015	7.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	016	7.6	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	TP	017	7.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	018	2.1	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	019	2.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	020	2.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	021	2.1	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	022	2.1	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	023	2.1	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	024	1.9	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	025	2.3	-	U	U	-	✓	-
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	026	2.2	-	U	U	-	x	Died in captivity
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	027	1.7	-	U	U	-	x	Died in captivity
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	028	1.9	-	U	U	-	x	Died in captivity
BE14-1	Summer	2019-07-25 14:57	2019-07-25 15:07	LSU	029	2.2	-	U	U	-	x	Died in captivity
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	001	7.9	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	002	7.7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	003	7.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	004	7.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	005	6.6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	006	7.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	WSU	007	7.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	008	6.7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	009	7.6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	010	6.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	011	7.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	012	8.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	013	8.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	WSU	014	7.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	015	7.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	NSB	016	2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	017	7.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	018	5.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	019	5.7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	020	7.6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	021	8.2	-	U	U	-	✓	
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	022	6.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	023	6.9	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	024	7.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	025	5.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-25 15:43	2019-07-25 16:08	TP	026	6.7	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	001	7.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	002	8.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	003	6.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	004	5.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	005	7.2	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	006	5.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	007	7.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	008	6.3	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	009	6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	010	3.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	011	7.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	012	5.9	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	013	7.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	014	6.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	015	5.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	016	9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	017	10.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	018	8.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	019	8.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	020	5.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	021	6.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	022	7.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	023	6.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	024	6.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	025	6.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	026	6.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	027	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	028	8.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	YP	029	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	030	8.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	031	7.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	032	7.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	TP	033	6.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	034	11.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-25 16:40	2019-07-25 17:01	WSU	035	7.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	001	7.1	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	002	6.6	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LKC	003	5.7	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	004	7.2	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LKC	005	9.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	006	6.4	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	007	2.1	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	008	2.3	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	009	2.1	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	010	2.3	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	011	2.4	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	012	1.9	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	013	2.3	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	014	2.2	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	015	1.8	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	016	2.1	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	017	1.9	-	U	U	-	x	Died in captivity
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	LSU	018	1.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	019	6.5	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	020	6.5	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	021	7.3	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	022	7.2	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	023	5.6	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	024	6.3	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	025	7.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	026	6.7	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	027	6.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	WSU	028	7.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	029	7.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	030	7.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	031	6.7	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	CCG	032	5.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	033	6.5	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	034	6.6	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	035	5.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	CCG	036	5.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-28 10:17	2019-07-28 10:33	TP	037	3.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	001	7.4	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	002	7.6	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	003	8.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	004	6.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	005	8.2	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	006	7.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	007	8.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	008	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	009	6.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	010	7.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	011	8.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	012	8.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	013	8.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	014	8.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	015	8.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	016	6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	LSU	017	2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	018	8.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	019	7.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	020	8.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	LKC	021	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	022	7.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	023	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	024	6.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	025	8.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	026	8.3	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	027	7.2	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	028	6.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	029	7.3	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	030	7.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	031	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	032	7.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	033	6.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	034	6.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	035	6.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	036	4.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	037	8.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	038	7.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	039	6.4	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	040	7.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	041	7.7	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	042	7.7	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	043	5.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	044	9.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	045	7.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	046	6.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	TP	047	6.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	CCG	048	5.7	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	CCG	049	4.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	LSU	050	2	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	CCG	051	6.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-28 11:09	2019-07-28 11:23	CCG	052	4.6	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	001	7.4	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	002	8.1	-	U	U	-	x	Died in captivity
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	LKC	003	12.6	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	004	6.9	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	005	7.9	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	006	8	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	007	7.3	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	008	6.7	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	009	7.3	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	TP	010	6.7	-	U	U	-	✓	-
BE19-1	Summer	2019-07-28 11:47	2019-07-28 11:58	LKC	011	10	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	WSU	001	16.6	-	U	U	-	x	Died in captivity
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	002	7.3	-	U	U	-	x	Died in captivity
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	003	7.1	-	U	U	-	x	Died in captivity
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	004	8.2	-	U	U	-	x	Died in captivity
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	STC	005	7.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	006	8.1	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	007	5.7	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	008	6.6	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	009	6.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	010	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	011	7.6	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	012	8.1	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	013	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	014	5.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	015	6.1	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	016	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	017	5.1	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	018	7.6	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	019	8.7	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	020	8.2	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	YP	021	11.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	022	6.7	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	023	6.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	024	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	025	6.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	YP	026	10.5	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	027	6.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	028	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	029	6.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	030	7.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	031	7.3	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	032	6.9	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	033	5.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	034	6.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	035	6.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	036	5.9	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	037	7.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	038	5.6	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	WSU	039	12.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	WSU	040	15.4	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	WSU	041	16.5	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	LKC	042	8.9	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	043	7.5	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	044	7.6	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	045	6.2	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	046	7.9	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	047	7.7	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	048	5.8	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	049	6.7	-	U	U	-	✓	-
BE20-1	Summer	2019-07-28 12:46	2019-07-28 13:01	TP	050	6.6	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	001	7.1	-	U	U	-	x	Died in captivity
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	002	6.8	-	U	U	-	x	Died in captivity
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	003	6.3	-	U	U	-	x	Died in captivity
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	004	8.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	005	8.4	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	006	7.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	007	4.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	008	7.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	009	7.6	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	010	4.6	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	011	4.1	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	012	5.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	013	5.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	014	6.8	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	015	3.8	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	016	8.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	YP	017	6.7	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	018	7.1	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	019	4.9	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	020	4.5	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	021	7.7	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	022	6.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	023	6.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	024	6.8	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	025	4.9	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	026	6.1	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	027	6.8	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	028	6.9	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	029	7.2	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	030	7.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	031	8.5	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	032	6.7	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	033	8.3	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	034	6.6	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	035	6.4	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	036	6.7	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	STC	037	4.9	-	U	U	-	✓	-
BE21-1	Summer	2019-07-28 13:25	2019-07-28 13:36	TP	038	7.2	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	001	7.8	-	U	U	-	x	Died in captivity
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	002	8.5	-	U	U	-	x	Died in captivity
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	003	6.8	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	004	8.3	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	005	8.8	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	006	7.1	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	007	8.4	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	008	6.2	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	009	8.6	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	010	6.2	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	011	7.4	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	012	7.8	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	013	8.6	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	014	6.4	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	015	7.2	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	016	8.1	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	017	9.6	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	018	7.4	-	U	U	-	✓	-
BE22-1	Summer	2019-07-28 14:05	2019-07-28 14:15	TP	019	8.3	-	U	U	-	✓	-
BE23-1	Summer	2019-07-28 14:33	2019-07-28 14:42	NF	-	-	-	-	-	-	-	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	001	6.8	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	002	8.4	-	U	U	-	x	Died in captivity
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	003	6.8	-	U	U	-	x	Died in captivity
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	NP	004	23.3	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	WSU	005	12.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	YP	006	9.1	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	007	7.7	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	008	5.7	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	009	6.2	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	010	6.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	011	5.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	YP	012	6.3	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	013	6.6	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	014	7.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	015	6.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	YP	016	5.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	017	6.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	018	5.7	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	019	6.9	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	TP	020	7.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	021	4.3	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	022	5.4	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	YP	023	6.8	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	024	6.4	-	U	U	-	✓	-
BE24-1	Summer	2019-07-28 14:47	2019-07-28 15:02	STC	025	5.5	-	U	U	-	✓	-
BE25-1	Summer	2019-07-28 15:41	2019-07-28 15:56	NF	-	-	-	-	-	-	-	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	001	7.9	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	002	7.8	-	U	U	-	x	Died in captivity
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	003	6.3	-	U	U	-	x	Died in captivity
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	004	8.3	-	U	U	-	x	Died in captivity
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	005	7.4	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	006	7.5	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	007	6.8	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	008	6.3	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	009	7.2	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	010	8.6	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	011	6.2	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	012	5.6	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	013	7.3	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	014	7.8	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	015	7.3	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	016	7.4	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	LKC	017	11.7	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	018	8.6	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	019	8.2	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	LKC	020	9.2	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	YP	021	14	-	U	U	-	✓	-
BE26-1	Summer	2019-07-28 16:24	2019-07-28 16:38	TP	022	5.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	001	14.5	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	002	13.2	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	003	12.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	004	11.6	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	005	12.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	006	14.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	WSU	007	12.9	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	008	6.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	009	6.9	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	010	5.6	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	011	6.6	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	012	7.4	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	013	8.2	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	014	8.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	015	6.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	016	6.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	017	6.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	018	5.9	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	019	7.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	STC	020	7.4	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	021	6.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	022	6.3	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	023	7.2	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	024	6.8	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	TP	025	6.7	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	YP	026	11.6	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	YP	027	9.2	-	U	U	-	✓	-
BE27-1	Summer	2019-07-28 16:58	2019-07-28 17:18	LKC	028	9.8	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	001	7.8	-	U	U	-	x	Died in captivity
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	002	25	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	003	16.8	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	004	15.7	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	005	15.6	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	006	12.9	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	WSU	007	12	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	YP	008	11.2	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	009	6.6	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	010	7.2	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	011	5.4	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	YP	012	9.4	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	013	6.2	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	014	6.8	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	015	6.6	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	016	7.5	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	017	6.3	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	LKC	018	8.9	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	019	6.5	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	020	6.3	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	LKC	021	9.3	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	022	6.6	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	023	6.6	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	024	8.4	-	U	U	-	✓	-
BE28-1	Summer	2019-07-28 17:35	2019-07-28 17:50	TP	025	7.8	-	U	U	-	✓	-
BE29-1	Summer	2019-07-27 8:25	2019-07-27 8:45	TP	001	7.9	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	001	7.4	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	002	7.5	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	003	6.5	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	004	7.1	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	005	7.6	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	006	7.3	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	007	7.5	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	008	7.2	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	009	7.1	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	CCG	010	6.8	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	WSU	011	12.2	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	012	7.3	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	013	7.4	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	014	7.2	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	LKC	015	7.5	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	016	6.4	-	U	U	-	✓	-
BE30-1	Summer	2019-07-27 9:05	2019-07-27 9:28	TP	017	7.3	-	U	U	-	x	Died in captivity
BE31-1	Summer	2019-07-27 9:55	2019-07-27 10:01	NF	-	-	-	-	-	-	-	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	BB	001	20.7	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	BB	002	23.8	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	003	5.8	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	004	5.1	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	LKC	005	7.2	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	NSB	006	5	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	WSU	007	7.4	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	WSU	008	6.7	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	009	4.9	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	NSB	010	4.5	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	011	8.2	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	012	5.9	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	013	7.8	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	014	5.4	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	015	4.9	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	CCG	016	5.5	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	WSU	017	7.5	-	U	U	-	✓	-
BE32-1	Summer	2019-07-27 10:15	2019-07-27 10:35	NSB	018	4.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	BB	001	21.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	BB	002	16.6	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	003	14.5	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	004	10.6	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	005	12	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	006	12.6	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	007	14.1	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	008	15.7	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	009	6.7	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	010	6.2	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	LKC	011	10.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	012	7.3	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	013	7.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	014	5.6	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	015	7.5	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	016	7.5	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	017	7.2	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	018	5.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	019	7.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	020	5.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	021	8.1	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	022	5.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	WSU	023	8.2	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	024	6.6	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	025	5.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	026	6.4	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	027	6.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	028	7	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	029	5.9	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	030	7.3	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	031	7.5	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	032	6.9	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	033	6.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	034	5.5	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	035	5.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	036	6.2	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	037	6.8	-	U	U	-	✓	-
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	038	8	-	U	U	-	x	Died in captivity
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	039	8.5	-	U	U	-	x	Died in captivity
BE33-1	Summer	2019-07-27 10:56	2019-07-27 11:10	TP	040	7.5	-	U	U	-	x	Died in captivity
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	WSU	001	11.4	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	LSU	002	14.8	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	003	5.7	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	004	5.5	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	LKC	005	8.8	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	006	6.6	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	007	5.5	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	LKC	008	7.6	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	009	6.1	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	010	6.7	-	U	U	-	x	Died in captivity
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	011	4.2	-	U	U	-	x	Died in captivity
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	WSU	012	8.2	-	U	U	-	✓	-
BE34-1	Summer	2019-07-27 11:40	2019-07-27 11:43	TP	013	5.6	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	001	7	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	002	5.8	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	003	7.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	004	7.7	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	005	5.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	STC	006	3.9	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	STC	007	4.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	008	4.1	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	009	8.8	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	010	10.4	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	WSU	011	6.4	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LSU	012	8.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	013	5.9	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	014	6.3	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	WSU	015	7.3	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	016	5.7	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	STC	017	5.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	018	6.9	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LSU	019	8	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LSU	020	7.4	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	021	6	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LSU	022	8.4	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	023	5.1	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	024	7	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	025	7.4	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	026	7.3	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	027	7.8	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	028	6.1	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	029	7.6	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	030	7.8	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	031	6.2	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	032	7	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	033	6.8	-	U	U	-	x	Died in captivity
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	034	5.8	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	035	6.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	036	5.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	037	5.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	038	5.9	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LSU	039	7.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	LKC	040	9.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	STC	041	7.1	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	042	8.2	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	043	5.7	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	NP	044	6.5	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	TP	045	6.1	-	U	U	-	✓	-
BE35-1	Summer	2019-07-27 12:52	2019-07-27 13:08	STC	046	6.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	LSU	001	12.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	002	7.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	003	6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	004	5.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	005	7.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	006	7.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	LSU	007	11.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	008	7	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	009	6.1	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	010	7.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	WSU	011	12.1	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	012	4.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	LSU	013	10.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	WSU	014	13.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	015	5.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	016	6.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	WSU	017	13.7	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	LKC	018	12.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	WSU	019	14.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	020	7.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	NSB	021	2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	LSU	022	12.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	023	7.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	024	6.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	YP	025	11.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	WSU	026	12.4	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	027	6.4	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	028	6.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	029	7.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	030	5.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	031	5.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	032	5.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	YP	033	8.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	034	6.7	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	035	7.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	036	5.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	037	5.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	038	6.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	039	7	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	040	6.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	041	7.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	042	6.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	043	6.8	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	044	7.2	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	045	7.4	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	046	5.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	047	5.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	048	5.3	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	049	5.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	050	6.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	051	7.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	052	7	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	053	6.6	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	054	4.5	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	055	5.9	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	056	6.4	-	U	U	-	✓	-
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	057	6.5	-	U	U	-	x	Died in captivity
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	058	6.9	-	U	U	-	x	Died in captivity
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	059	6.8	-	U	U	-	x	Died in captivity
BE36-1	Summer	2019-07-27 13:43	2019-07-27 14:00	TP	060	6.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	001	19.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	002	11.7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	003	13.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	004	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	005	7.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	006	8.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	007	8.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	008	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	009	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	010	11.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	011	7.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	NP	012	5.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	013	8.4	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	014	6.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	015	7.7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	016	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	017	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	018	6.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	019	6.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	020	7.7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	021	7.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	022	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	023	17.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	024	9.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	025	6.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	026	7.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	027	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	028	7.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	029	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	030	6.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	031	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	032	7.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	033	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	034	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	035	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	036	8.2	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	037	7.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	038	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	039	7.5	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	040	8.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	041	7.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	042	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	043	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	044	6.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	045	6.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	046	5.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	047	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	048	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	049	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	050	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	051	8.5	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	052	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	053	7.5	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	054	7.2	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	055	8.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	056	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	057	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	058	7.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	059	7.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	060	8.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	061	7.5	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	062	8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	063	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	064	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	065	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	066	7.5	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	067	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	068	8.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	069	7.7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	070	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	071	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	072	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	073	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	074	7.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	075	8.2	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	076	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	077	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	078	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	079	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	080	6.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	081	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	082	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	083	6.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	084	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	085	6.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	086	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	087	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	088	8.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	089	8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	090	8.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	091	6.3	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	092	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	093	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	094	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	095	7.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	096	8.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	097	6.2	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	098	6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	099	8.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	100	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	101	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	102	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	103	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	104	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	105	6.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	106	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	107	7.9	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	108	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	109	7.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	110	6.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	111	8.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	112	8.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	113	5.8	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	114	7	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	115	7.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	116	7.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	117	7	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	118	7.6	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	119	7.1	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	120	6.4	-	U	U	-	x	Died in captivity
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	121	18.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	122	7.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	123	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	124	5.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	125	5.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	LKC	126	8.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	127	7.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	128	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	129	7.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	130	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	131	6.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	132	8.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	133	5.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	134	6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	135	5.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	136	6.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	137	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	138	5.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	139	7.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	140	7.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	141	8.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	142	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	143	6.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	144	8.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	LKC	145	7.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	146	8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	147	4.3	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	148	6.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	149	5.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	150	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	151	7.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	152	6.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	153	11.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	154	7.7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	155	6.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	LKC	156	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	157	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	158	5.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	LKC	159	8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	160	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	161	6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	162	6.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	163	8.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	164	5.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	165	7.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	166	8.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	167	5.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	168	6.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	169	8.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	170	7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	171	7.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	NP	172	7.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	173	14.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	174	5.9	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	175	5.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	176	7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	177	7.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	178	6.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	179	7.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	180	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	LSU	181	7.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	182	6.6	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	183	5.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	184	7.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	185	7.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	186	5.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	187	8.4	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	WSU	188	9.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	189	6.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	190	5.5	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	191	6.1	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	192	8.2	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	193	7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	194	6.8	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	195	5.7	-	U	U	-	✓	-
BE37-1	Summer	2019-07-27 14:46	2019-07-27 14:58	TP	196	5.5	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	001	5.4	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	002	4.4	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	003	5.4	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	004	5.4	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	005	4.6	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	006	4.1	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	LKC	007	4.3	-	U	U	-	x	Died in captivity
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	008	5.6	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	LKC	009	5.4	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	010	5.8	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	011	3.9	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	012	6	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	CCG	013	5	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	014	4.6	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	STC	015	6	-	U	U	-	✓	-
BE38-1	Summer	2019-07-27 16:50	2019-07-27 17:19	TP	016	6.3	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	LKC	001	5.4	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	LKC	002	7.2	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	TP	003	6.3	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	LKC	004	8.7	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	LKC	005	8.6	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	STC	006	4.3	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	TP	007	5.5	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	STC	008	3.6	-	U	U	-	✓	-
BE39-1	Summer	2019-07-27 17:30	2019-07-27 17:47	LKC	009	9.2	-	U	U	-	✓	-
HG1-1	Summer	2019-07-29 10:07	2019-07-29 11:44	LW	001	37.1	540	U	U	-	✓	-
HG1-1	Summer	2019-07-29 10:07	2019-07-29 11:44	LW	002	38	690	U	U	-	✓	-
HG1-1	Summer	2019-07-29 10:07	2019-07-29 11:44	LW	003	-	-	U	U	-	✓	-
HG2-1	Summer	2019-07-29 10:38	2019-07-29 12:40	WSU	001	43.2	1100	U	U	-	✓	-
HG2-1	Summer	2019-07-29 10:38	2019-07-29 12:40	LW	002	31	360	U	U	-	✓	-
HG2-1	Summer	2019-07-29 10:38	2019-07-29 12:40	LW	003	38.9	780	U	U	-	✓	-
HG2-1	Summer	2019-07-29 10:38	2019-07-29 12:40	LW	004	25.4	190	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-29 10:38	2019-07-29 12:40	LW	005	16.7	40	U	U	-	✓	-
HG3-1	Summer	2019-07-29 13:00	2019-07-29 14:48	WE	001	27.9	150	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-29 13:00	2019-07-29 14:48	WE	002	26.6	140	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-29 13:00	2019-07-29 14:48	LW	003	16.7	20	U	U	-	x	Died in captivity
HG4-1	Summer	2019-07-29 13:25	2019-07-29 15:16	LW	001	40.8	760	U	U	-	✓	-
HG5-1	Summer	2019-07-30 9:48	2019-07-30 11:26	LW	001	41.7	1110	U	U	-	✓	-
HG5-1	Summer	2019-07-30 9:48	2019-07-30 11:26	WSU	002	46.5	1500	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	001	16	45	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	002	16.5	50	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	003	16	50	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	004	19.4	70	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	005	14.5	40	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	006	15.4	35	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	007	15.6	35	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	008	16.3	40	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	009	15.5	30	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	010	15.9	45	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	011	19.7	70	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	012	15.2	45	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	013	34.9	610	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	014	34.8	610	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	015	34.7	580	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	016	36.9	630	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	017	24.1	200	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	LW	018	23.5	140	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	019	16.3	35	U	U	-	x	Died in captivity
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	YP	020	14.7	30	U	U	-	✓	-
HG6-1	Summer	2019-07-30 9:58	2019-07-30 11:58	WE	021	59.2	1580	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	LW	001	33.8	520	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	LW	002	34.3	530	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	LW	003	35.5	560	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	WE	004	35.3	500	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	WSU	005	39.9	1080	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:15	2019-07-30 14:20	LW	006	15.1	35	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	001	38.8	800	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	002	38	650	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	003	40.6	1010	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	004	35.3	640	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	005	35.2	670	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	WE	006	50.5	1560	U	U	-	✓	-
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	007	24.6	170	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	WE	008	38.7	580	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	009	30	390	U	U	-	x	Died in captivity
HG8-1	Summer	2019-07-30 12:25	2019-07-30 14:45	LW	010	39.5	860	U	U	-	x	Died in captivity
HG9-1	Summer	2019-07-30 15:05	2019-07-30 16:40	WSU	001	46.9	1440	U	U	-	✓	-
HG9-1	Summer	2019-07-30 15:05	2019-07-30 16:40	WSU	002	45.5	1490	U	U	-	✓	-
HG9-1	Summer	2019-07-30 15:05	2019-07-30 16:40	LW	003	37.1	700	U	U	-	✓	-
HG10-1	Summer	2019-07-30 15:15	2019-07-30 16:58	WE	001	56	1880	M	U	-	x	Died in captivity
HG10-1	Summer	2019-07-30 15:15	2019-07-30 16:58	LW	002	34.6	880	U	U	-	x	Died in captivity
HG10-1	Summer	2019-07-30 15:15	2019-07-30 16:58	LW	003	32.1	490	U	U	-	x	Died in captivity
HG10-1	Summer	2019-07-30 15:15	2019-07-30 16:58	LW	004	34.3	590	U	U	-	x	Died in captivity
HG10-1	Summer	2019-07-30 15:15	2019-07-30 16:58	LW	005	39.5	960	U	U	-	✓	-
HG11-1	Summer	2019-07-31 8:30	2019-07-31 9:28	NF	-	-	-	-	-	-	-	-
HG12-1	Summer	2019-07-31 8:50	2019-07-31 10:27	LW	001	28.3	420	U	U	-	x	Died in captivity
HG12-1	Summer	2019-07-31 8:50	2019-07-31 10:27	LW	002	26.2	800	U	U	-	✓	-
HG13-1	Summer	2019-07-31 10:48	2019-07-31 12:17	NP	001	27.4	770	U	U	-	✓	-
HG13-1	Summer	2019-07-31 10:48	2019-07-31 12:17	LSU	002	18.8	680	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	LW	001	33.9	1150	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	002	41.8	1640	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	003	44	1740	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	004	40.8	-	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	005	22.4	-	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	006	20.6	-	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	007	16.8	-	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	008	15.9	-	U	U	-	✓	-
HG14-1	Summer	2019-07-31 11:08	2019-07-31 12:47	WSU	009	15.5	-	U	U	-	✓	-
HG15-1	Summer	2019-07-31 8:07	2019-07-31 9:38	LW	001	29.6	320	U	U	-	✓	-
HG15-1	Summer	2019-07-31 8:07	2019-07-31 9:38	LW	002	35.8	600	U	U	-	✓	-
HG15-1	Summer	2019-07-31 8:07	2019-07-31 9:38	LW	003	29.4	290	U	U	-	x	Died in captivity
HG15-1	Summer	2019-07-31 8:07	2019-07-31 9:38	LW	004	38.3	760	U	U	-	✓	-
HG16-1	Summer	2019-07-31 9:47	2019-07-31 11:08	WSU	001	41.6	1200	U	U	-	✓	-
HG16-1	Summer	2019-07-31 9:47	2019-07-31 11:08	WE	002	65	2520	U	U	-	✓	-
HG16-1	Summer	2019-07-31 9:47	2019-07-31 11:08	WE	003	66.5	2720	U	U	-	✓	-
HG16-1	Summer	2019-07-31 9:47	2019-07-31 11:08	WSU	004	44.6	1360	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	LT	001	59.4	3300	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	LT	002	57.7	2620	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	LW	003	36.1	660	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	LT	004	58.6	3180	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	WE	005	44.6	1040	U	U	-	✓	-
HG17-1	Summer	2019-07-31 11:14	2019-07-31 12:32	LW	006	35.4	580	U	U	-	x	Died in captivity
MT1-1	Summer	2019-07-26 13:40	2019-07-27 11:29	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-26 14:06	2019-07-27 11:41	STC	001	5.3	-	U	U	-	✓	-
MT3-1	Summer	2019-07-26 16:14	2019-07-27 11:47	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-26 14:23	2019-07-27 11:51	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-26 16:53	2019-07-27 12:10	TP	001	7.7	-	U	U	-	✓	-
MT6-1	Summer	2019-07-26 17:05	2019-07-27 12:17	TP	001	7.4	-	U	U	-	✓	-
MT6-1	Summer	2019-07-26 17:05	2019-07-27 12:17	TP	002	6.3	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	YP	001	6.7	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	YP	002	5.7	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	YP	003	5.8	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	YP	004	5.8	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	YP	005	6.4	-	U	U	-	✓	-
MT7-1	Summer	2019-07-26 17:17	2019-07-28 9:20	TP	006	5.4	-	U	U	-	✓	-
MT8-1	Summer	2019-07-26 17:21	2019-07-28 9:08	TP	001	5.3	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Patterson Lake												
MT8-1	Summer	2019-07-26 17:21	2019-07-28 9:08	TP	002	7.9	-	U	U	-	x	Died in captivity
MT9-1	Summer	2019-07-26 17:25	2019-07-28 9:04	NF	-	-	-	-	-	-	-	-
MT10-1	Summer	2019-07-27 14:45	2019-07-29 13:49	NF	-	-	-	-	-	-	-	-
MT11-1	Summer	2019-07-27 14:52	2019-07-29 13:42	NF	-	-	-	-	-	-	-	-
MT12-1	Summer	2019-07-27 14:58	2019-07-30 10:05	TP	001	7.2	-	U	U	-	✓	-
MT12-1	Summer	2019-07-27 14:58	2019-07-30 10:05	TP	002	6.9	-	U	U	-	✓	-
MT13-1	Summer	2019-07-27 15:03	2019-07-30 10:18	NF	-	-	-	-	-	-	-	-
MT14-1	Summer	2019-07-28 14:00	2019-07-30 10:25	NF	-	-	-	-	-	-	-	-
MT15-1	Summer	2019-07-28 14:28	2019-07-30 10:31	TP	001	7.8	-	U	U	-	✓	-
MT15-1	Summer	2019-07-28 14:28	2019-07-30 10:31	TP	002	5.9	-	U	U	-	✓	-
MT15-1	Summer	2019-07-28 14:28	2019-07-30 10:31	TP	003	6.7	-	U	U	-	✓	-
MT15-1	Summer	2019-07-28 14:28	2019-07-30 10:31	TP	004	7.4	-	U	U	-	✓	-
MT16-1	Summer	2019-07-28 15:31	2019-07-30 10:38	LKC	001	5.2	-	U	U	-	✓	-
MT17-1	Summer	2019-07-29 13:58	2019-07-30 17:23	NF	-	-	-	-	-	-	-	-
MT18-1	Summer	2019-07-29 14:06	2019-07-30 17:28	TP	001	7.6	-	U	U	-	✓	-
MT19-1	Summer	2019-07-30 8:19	2019-07-31 8:22	NF	-	-	-	-	-	-	-	-
MT20-1	Summer	2019-07-30 8:24	2019-07-31 8:26	NF	-	-	-	-	-	-	-	-
MT21-1	Summer	2019-07-30 8:32	2019-07-31 8:34	NF	-	-	-	-	-	-	-	-
MT22-1	Summer	2019-07-30 8:39	2019-07-31 8:40	NF	-	-	-	-	-	-	-	-
MT23-1	Summer	2019-07-30 8:44	2019-07-31 8:44	NF	-	-	-	-	-	-	-	-
MT24-1	Summer	2019-07-30 8:50	2019-07-31 8:51	NF	-	-	-	-	-	-	-	-
MT25-1	Summer	2019-07-30 8:55	2019-07-31 8:59	NF	-	-	-	-	-	-	-	-
MT26-1	Summer	2019-07-30 9:02	2019-07-31 9:04	NF	-	-	-	-	-	-	-	-
MT27-1	Summer	2019-07-30 17:34	2019-07-31 10:01	NF	-	-	-	-	-	-	-	-
MT28-1	Summer	2019-07-30 17:42	2019-07-31 10:08	NF	-	-	-	-	-	-	-	-
Patterson Creek												
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	001	48.2	1060	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LW	002	44.2	1160	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	003	18.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	004	7.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	005	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	006	7.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	007	5.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	008	7.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	009	7.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	010	8.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	011	25.5	170	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	012	41.3	640	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	013	39.9	580	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	NP	014	24.4	110	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	BB	015	21.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	016	11.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	017	6.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	018	8.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	019	7.7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	020	7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	021	7.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	022	8.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	023	7.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	TP	024	7	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	025	6.5	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	026	7.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	027	8.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	028	9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	LKC	029	9.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	STC	030	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	CCG	031	7.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 8:35	2019-07-23 9:09	CCG	032	6.4	-	U	U	-	✓	-
MT1-1	Summer	2019-07-23 17:23	2019-07-24 8:20	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-23 17:27	2019-07-24 8:25	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-23 17:35	2019-07-24 8:25	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-23 17:40	2019-07-24 8:20	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-26 8:30	2019-07-26 17:30	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-26 8:35	2019-07-26 17:25	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-26 8:38	2019-07-26 17:20	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-26 8:40	2019-07-26 17:15	NF	-	-	-	-	-	-	-	-
Forrest Lake												
AN1-1	Summer	2019-07-18 16:50	2019-07-18 17:10	NF	-	-	-	-	-	-	-	-
AN2-1	Summer	2019-07-19 10:35	2019-07-19 10:50	NF	-	-	-	-	-	-	-	-
AN3-1	Summer	2019-07-20 14:19	2019-07-20 14:52	NP	001	65	2020	M	MT	0%	x	-
AN4-1	Summer	2019-07-30 15:56	2019-07-30 16:20	LT	001	46.2	1080	M	MT	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	BB	001	16.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	BB	002	18.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	003	9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	004	7.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	005	6.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	006	9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	007	7.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	008	8.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	009	5.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	010	7.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	011	5.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	012	7.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LSU	013	16	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	CCG	014	5.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	015	7.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	016	7.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	CCG	017	4.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	CCG	018	6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	TP	019	6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	TP	020	3.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	CCG	021	3.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	TP	022	4.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	CCG	023	4.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	TP	024	5.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-24 10:20	2019-07-24 10:34	LKC	025	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	001	7.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	002	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	003	7.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	004	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	005	5.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	006	4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	007	6.8	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	008	8.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	009	6.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	010	6.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	011	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	012	10.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	013	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	014	5.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	015	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	016	8.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	STC	017	3.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	018	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	BB	019	22.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	020	3.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	021	5.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	022	5.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	WSU	023	13.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	024	8.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	025	5.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	026	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	027	8.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	028	6.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	029	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	BB	030	17.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	031	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	032	8.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	033	10.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	034	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	035	3.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	036	3.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LSU	037	12.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	038	9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	039	8.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	040	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	041	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	042	3.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	043	5.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	044	3.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	045	5.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	046	2.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	047	7.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	048	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	049	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LSU	050	8.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	051	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	052	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	053	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	054	2.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	055	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	CCG	056	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	057	8.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	LKC	058	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	059	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-24 11:15	2019-07-24 11:30	TP	060	6.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	LW	001	3.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	LKC	002	4.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	003	2.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	004	2.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	CCG	005	4.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	006	2.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	007	3.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	008	3.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	009	2.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	BB	010	3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	CCG	011	5.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	CCG	012	5.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	LKC	013	3.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	CCG	014	4.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-24 12:30	2019-07-24 13:05	TP	015	2.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	001	5.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	002	6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	003	5.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	004	7.8	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	005	4.6	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	006	6.4	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	007	3.7	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	008	5.3	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	BB	009	14.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	BB	010	17.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	BB	011	14.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	BB	012	16.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	013	7.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	014	4.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	NSB	015	5.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	016	6.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	017	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	018	5.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	019	8.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	020	7.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	021	9.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	022	8.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	023	5.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	024	6.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	025	8.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	026	5.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	027	6.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	028	6.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	029	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	030	8.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	031	7.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	032	10.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	033	5.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	TP	034	5.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	035	9.3	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	036	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	LKC	037	8.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	038	4.5	-	U	U	-	✓	
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	039	5.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-24 14:05	2019-07-24 14:35	CCG	040	5.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	NSB	001	5.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	TP	002	4.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LKC	003	7.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LKC	004	5.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	NSB	005	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LKC	006	7.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	007	12.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	008	15.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	009	15	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	010	15.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	011	13.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	012	15.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	TP	013	5.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	TP	014	5.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	015	20.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	016	18.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	017	19.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	018	19.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	019	17.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	020	18.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	021	18.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-24 15:25	2019-07-24 15:35	LSU	022	22.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	BB	001	16.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	BB	002	16.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	BB	003	15.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	LKC	004	8.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	CCG	005	8.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	CCG	006	7.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	CCG	007	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	TP	008	2.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-25 9:20	2019-07-25 9:30	STC	009	3.4	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	YP	001	6.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	WSU	002	16.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LSU	003	16.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	004	5.3	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	BB	005	13.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	006	6.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	007	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	BB	008	11.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	009	4.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	NSB	010	5.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	011	4.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	012	2.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	013	7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	014	5.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	STC	015	5.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	016	2.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	017	4.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	BB	018	12.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	019	4.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	STC	020	7.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	021	3.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	022	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	023	3.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	024	5.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	STC	025	4.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	026	6.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	027	5.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	028	4.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	029	5.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	030	4.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	031	4.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	032	4.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	033	5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	034	3.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	035	5.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	036	5.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	STC	037	3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	038	5.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	039	6.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	040	6.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	041	5.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	042	4.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	043	4.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	044	6.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	LKC	045	5.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	046	4.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	047	2.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	048	5.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	049	5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	CCG	050	4.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	051	3.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-25 10:05	2019-07-25 10:30	TP	052	2.5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LSU	001	9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LSU	002	11.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	003	3.9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	004	5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	005	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	006	5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	WSU	007	11.8	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	008	5.6	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	009	5.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	010	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	011	5.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	012	4.9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	013	6.9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	014	4.7	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	015	5.6	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	016	5.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	017	7.8	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	018	6.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	019	7.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	020	5.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	021	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	022	5.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	023	5.5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	024	5.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	025	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	026	5.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	027	5.6	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	028	5.5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	029	5.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	030	6.3	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	031	4.9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	032	4.8	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	033	7.7	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	034	5.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LSU	035	7	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	036	4.8	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	037	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	038	5.7	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	LKC	039	6.1	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	040	5.6	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	CCG	041	4.9	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	042	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	043	5.2	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	044	5.5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	045	4.8	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	046	5.4	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	047	5.5	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	048	5.6	-	U	U	-	✓	-
BE8-1	Summer	2019-07-25 11:20	2019-07-25 11:30	TP	049	6.3	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	BB	001	15.6	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	LKC	002	7.4	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	NSB	003	4.4	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	NSB	004	4.9	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	LKC	005	5.8	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	BB	006	3	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	CCG	007	5.1	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	NSB	008	4.8	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	TP	009	4.8	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	NSB	010	5.9	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	NSB	011	4.3	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	CCG	012	4.5	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	TP	013	3.7	-	U	U	-	✓	-
BE9-1	Summer	2019-07-25 13:00	2019-07-25 13:25	CCG	014	5.8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	BB	001	12.4	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	002	6.4	-	U	U	-	x	Died in captivity
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	003	9.5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	004	5.2	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	005	8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	006	6.4	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	STC	007	8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	008	3.2	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	009	4.8	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	010	3.9	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	011	5.1	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	012	5.5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	013	5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	014	5.1	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	015	3.2	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	016	5.5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	LKC	017	4.5	-	U	U	-	✓	-
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	TP	018	5.2	-	U	U	-	x	Died in captivity
BE10-1	Summer	2019-07-25 13:45	2019-07-25 14:00	CCG	019	9	-	U	U	-	✓	-
BE11-1	Summer	2019-07-25 14:30	2019-07-25 14:40	NF	-	-	-	-	-	-	-	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LSU	001	26.5	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	BB	002	23.6	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	BB	003	17.9	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	004	6.4	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	005	8	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	NP	006	7.8	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	CCG	007	5.7	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	008	6.6	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	009	8.3	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	010	5.8	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	011	9.1	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	012	6.6	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	TP	013	5.5	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LSU	014	12.6	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	015	8.4	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	TP	016	4.1	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	LKC	017	7.5	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	CCG	018	5.5	-	U	U	-	✓	-
BE12-1	Summer	2019-07-25 14:50	2019-07-25 15:20	CCG	019	5.2	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 16:45	2019-07-25 16:59	NP	001	28.3	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 16:45	2019-07-25 16:59	STC	002	3.7	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 16:45	2019-07-25 16:59	STC	003	3.9	-	U	U	-	✓	-
BE13-1	Summer	2019-07-25 16:45	2019-07-25 16:59	STC	004	3.2	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	YP	001	5.8	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	002	12.4	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	YP	003	8.3	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	STC	004	3.8	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	YP	005	8.7	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	YP	006	5.9	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	YP	007	5.4	-	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	008	27.9	160	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	009	20.2	60	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	010	22.4	85	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	011	24.1	120	U	U	-	✓	-
BE14-1	Summer	2019-07-26 9:30	2019-07-26 10:10	NP	012	26.2	155	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	001	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	002	6.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	003	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	STC	004	7.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	005	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	006	5.1	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	007	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	008	9.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	009	5.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	010	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	011	4.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	012	5.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	013	9.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	014	6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	015	6.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	016	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	017	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	018	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	019	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	020	5.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	021	4.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	STC	022	6.9	-	U	U	-	x	Died in captivity
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	023	5.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	024	5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	025	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	026	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	027	5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	028	6.5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	029	7.6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	030	5.1	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	031	4.9	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	032	5.2	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	033	5.1	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	034	5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	035	5.5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	036	4.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	037	5.8	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	STC	038	6.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	039	5.3	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	040	5.4	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	041	5.6	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	042	5.1	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	LKC	043	7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	044	6.1	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	045	6.7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	046	4.7	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	047	5	-	U	U	-	✓	-
BE15-1	Summer	2019-07-26 10:52	2019-07-26 11:10	TP	048	5.3	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	001	5.1	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	002	6.9	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	003	5.5	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	004	5.2	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	005	4.7	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	006	3.4	-	U	U	-	x	Died in captivity
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	BB	007	18.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	008	3.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	LSU	009	11.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	010	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	011	6.7	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	012	5.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	013	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	014	6.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	015	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	016	4.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	017	5.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	018	4.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	019	5.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	020	4.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	021	5.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	022	4.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	023	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	024	5.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	025	7.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	026	4.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	027	5.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	028	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	029	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	030	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	031	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	032	5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	033	3.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	034	5.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	035	3.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	036	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	037	3.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	038	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	039	4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	040	6.7	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	041	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	042	7.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	043	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	044	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	045	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	046	6.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	047	5.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	048	5.5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	049	4.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	050	5.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	051	5.3	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	052	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	053	4.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	054	5.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	055	5.5	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	056	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	057	4.9	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	058	5.7	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	059	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	060	5.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	061	5.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	062	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	063	6.1	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	064	5.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	065	6.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	066	5	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	067	5.2	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	CCG	068	6.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	069	5.4	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	LKC	070	4.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	LKC	071	7.6	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	LSU	072	8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	CCG	073	4.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	LKC	074	7.8	-	U	U	-	✓	-
BE16-1	Summer	2019-07-26 12:40	2019-07-26 13:00	TP	075	5.1	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	LSU	001	22.3	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	LSU	002	10.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	TP	003	5	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	TP	004	5.7	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	TP	005	4.9	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	CCG	006	6.4	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	LKC	007	6.8	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	LKC	008	6.4	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	TP	009	5	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	TP	010	5.2	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	CCG	011	5.7	-	U	U	-	✓	-
BE17-1	Summer	2019-07-26 14:05	2019-07-26 14:35	CCG	012	4.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	001	6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	002	6.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	003	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	004	5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	005	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	006	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	007	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	008	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	009	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	010	6.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	011	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	012	6.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	013	6.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	014	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	015	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	016	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	017	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	018	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	019	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	020	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	021	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	022	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	023	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	024	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	025	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	026	6.1	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	027	5.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	028	5.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	029	5.4	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	030	6.6	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	031	6.2	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	032	4.4	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	033	4.9	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	034	5.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	035	4.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	036	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	037	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	038	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	039	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	040	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	041	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	042	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	043	5.7	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	044	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	045	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	046	4.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	047	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	048	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	049	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	050	6.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	051	4.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	052	6.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	053	4.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	054	4.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	055	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	056	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	057	4.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	058	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	059	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	060	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	061	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	062	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	063	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	064	5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	065	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	066	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	067	5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	068	5.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	069	4.8	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	070	5.5	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	071	5.3	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Forrest Lake												
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	072	5.1	-	U	U	-	x	Died in captivity
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	073	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	074	5.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	075	6.7	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	076	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	077	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	078	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	079	5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	080	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	081	4.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	082	5.1	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	083	5.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	084	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	085	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	086	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	087	4.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	088	6.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	089	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	LKC	090	5.9	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	091	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	092	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	093	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	094	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	095	5.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	096	5.3	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	097	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	098	4.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	099	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	100	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	101	6.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	102	6.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	103	5.4	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	104	6.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	105	5.8	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	106	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	107	6.5	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	108	5.2	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	109	5.6	-	U	U	-	✓	-
BE18-1	Summer	2019-07-26 15:19	2019-07-26 15:42	TP	110	5.4	-	U	U	-	✓	-
HG1-1	Summer	2019-07-18 11:17	2019-07-18 15:40	LW	001	40.2	880	U	U	-	✓	-
HG1-1	Summer	2019-07-18 11:17	2019-07-18 15:40	NP	002	48.5	740	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	001	49	1560	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	002	41.4	1100	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	003	45.4	1250	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	004	40.9	900	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	005	45.6	1200	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LW	006	43	1090	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	WE	007	52.5	1700	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	NP	008	64.5	2100	U	U	-	✓	-
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	NP	009	69.9	2580	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-19 10:00	2019-07-19 12:12	LT	010	57.5	2060	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-19 14:00	2019-07-19 15:06	LW	001	38.5	700	U	U	-	✓	-
HG4-1	Summer	2019-07-20 9:45	2019-07-20 10:53	LW	001	42	1160	U	U	-	✓	-
HG4-1	Summer	2019-07-20 9:45	2019-07-20 10:53	LW	002	45.6	1420	U	U	-	✓	-
HG4-1	Summer	2019-07-20 9:45	2019-07-20 10:53	LW	003	45.4	1320	U	U	-	✓	-
HG5-1	Summer	2019-07-20 12:50	2019-07-20 13:55	LW	001	45	1600	U	U	-	✓	-
HG5-1	Summer	2019-07-20 12:50	2019-07-20 13:55	LW	002	43.4	1540	F	MT	80% UFR, UIR	✓	-
HG6-1	Summer	2019-07-21 9:35	2019-07-21 10:40	LW	001	41	940	U	U	-	✓	-
HG6-1	Summer	2019-07-21 9:35	2019-07-21 10:40	LW	002	42.4	1100	U	U	-	✓	-
HG7-1	Summer	2019-07-21 13:25	2019-07-21 14:04	NP	001	66.2	1900	U	U	-	✓	-
HG8-1	Summer	2019-07-22 8:45	2019-07-22 9:45	NF	-	-	-	-	-	-	-	-
MT1-1	Summer	2019-07-18 11:30	2019-07-19 8:30	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-18 11:45	2019-07-19 8:35	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-18 11:55	2019-07-19 8:40	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-18 12:29	2019-07-19 8:45	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-19 9:15	2019-07-20 8:50	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-19 9:25	2019-07-20 8:55	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-19 9:35	2019-07-20 9:00	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-19 9:45	2019-07-20 9:05	NF	-	-	-	-	-	-	-	-
MT9-1	Summer	2019-07-20 9:25	2019-07-21 9:10	LKC	001	6.5	-	U	U	-	✓	-
MT10-1	Summer	2019-07-20 9:55	2019-07-21 9:00	NF	-	-	-	-	-	-	-	-
MT11-1	Summer	2019-07-20 10:00	2019-07-21 8:50	NF	-	-	-	-	-	-	-	-
MT12-1	Summer	2019-07-20 10:15	2019-07-21 8:35	NF	-	-	-	-	-	-	-	-
MT13-1	Summer	2019-07-21 9:45	2019-07-22 9:05	NF	-	-	-	-	-	-	-	-
MT14-1	Summer	2019-07-21 10:00	2019-07-22 9:10	NF	-	-	-	-	-	-	-	-
MT15-1	Summer	2019-07-21 11:05	2019-07-22 9:15	NF	-	-	-	-	-	-	-	-
MT16-1	Summer	2019-07-21 12:45	2019-07-22 9:25	NF	-	-	-	-	-	-	-	-
Beet Channel												
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	001	5.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	002	5.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	003	3.8	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	004	5.1	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	005	4.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	006	4.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	007	5.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	008	4.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	009	3.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	010	3.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	011	3.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	012	4.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	013	5.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	014	3.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-23 10:05	2019-07-23 10:15	STC	015	4.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	001	3.9	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	002	6.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	003	3.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	004	4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	005	3.7	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	006	5.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	007	3.6	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	008	4.1	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	009	6.1	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	010	6.1	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Channel												
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	011	6.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	012	4.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	013	5.6	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	014	6.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	015	3.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	016	5.6	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	017	4.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	018	3.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	019	4.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	020	3.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	021	4.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	022	4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	023	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	024	3.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	025	3.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	026	4.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	027	5.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	028	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	NP	029	9.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	NP	030	10	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	031	4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	032	4.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	033	3.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	034	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	035	5.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	036	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	037	3.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	038	4.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	STC	039	3.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	040	9.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	041	9.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	042	9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	043	5.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	044	9.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	045	9.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	YP	046	14.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	NP	047	23.1	90	U	U	-	✓	-
BE2-1	Summer	2019-07-23 10:51	2019-07-23 11:33	NP	048	25.3	130	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	001	58.5	1520	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	002	39.4	520	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	003	39.1	580	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	004	33	320	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	005	11.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	006	11.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	007	11.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	008	14.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	009	14.1	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	010	15.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	011	11.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	012	12.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	013	11.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	014	9.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	015	11.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	016	9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	017	6.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	018	11.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	019	11.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	020	31.6	200	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NP	021	25.2	125	U	U	-	✓	-
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	022	6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	YP	023	6.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	024	4.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	025	5.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	026	5.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	027	4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	028	4.2	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	029	4.2	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	030	4.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	031	3.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	032	4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	033	4.6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	034	4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	035	4.3	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	036	4.5	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	037	4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NSB	038	4.3	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	039	4.4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	040	5.5	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	041	4.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	042	5.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	043	4.3	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	NSB	044	4.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	045	5.6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-23 12:26	2019-07-23 13:07	STC	046	4.4	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	001	13.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	NP	002	11.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	003	10.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	004	3.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	005	6.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	006	5.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	007	4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	008	5.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	009	4.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	010	4.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	011	3.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	012	3.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	013	4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	014	3.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	015	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	016	3.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	017	4.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	018	10.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	NP	019	23	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Channel												
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	020	5.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	YP	021	11.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	022	3.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	023	6.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	024	4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	025	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	WSU	026	36.1	780	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	WSU	027	30	460	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	NP	028	-	-	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	NP	029	23.2	70	U	U	-	✓	-
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	030	3.6	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	031	4	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	032	5	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	033	4.2	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	034	4.1	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	035	3.8	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	036	3.9	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-23 14:01	2019-07-23 14:21	STC	037	4.3	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	001	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	002	7.2	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	003	4.3	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	004	3.8	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	005	3.8	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	006	3.7	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	007	6	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	008	4.2	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	009	4.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	010	5.6	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	011	4.5	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	012	4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	013	4.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	014	4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	015	3.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	016	3.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	017	4.5	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	018	4.4	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	019	5.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	020	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	021	4.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	022	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	023	3.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	024	3.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	025	3.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	026	6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	027	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	028	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	029	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	030	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	031	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	032	4.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	033	4.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	034	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	035	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	036	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	037	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	038	3.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	039	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	040	3.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	041	7.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	042	5.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	043	5.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	044	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	045	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	046	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	047	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	048	4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	049	4.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	050	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	051	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	052	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	053	8.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	054	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	055	3.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	056	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	057	4.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	058	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	059	4.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	060	4.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	061	6.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	062	8.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	063	8.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	064	4.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	065	3.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	066	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	067	3.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	068	6.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	069	7.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	070	4.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	071	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	072	5.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	073	4.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	SU	074	7.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	075	6.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	076	5.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	077	6.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	078	4.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	079	4.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	080	8.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	081	8.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	082	6.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	083	7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	084	4.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	085	4.2	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Channel												
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	086	4.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	087	4.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	088	5.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	089	9.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	090	6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	091	5.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	092	7.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	093	6.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	094	3.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	YP	095	5.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	096	5.9	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	097	4.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	098	3.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-23 14:49	2019-07-23 15:10	STC	099	6.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	001	3.6	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	002	3.7	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	003	4.2	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	004	4.3	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	005	4.3	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	006	4.1	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	007	3.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	YP	008	12.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	NP	009	8.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	010	4.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	011	4.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	012	4.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	013	3.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	014	4.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	015	3.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	016	3.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	017	3.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	018	4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	019	4.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	020	4.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	021	5.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	022	3.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	023	4.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	024	4.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	025	4.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	026	4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	027	4.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	028	3.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	029	3.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	030	3.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	031	4.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	032	5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	033	3.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	YP	034	5.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	035	3.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	036	3.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	037	5.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-23 15:55	2019-07-23 16:07	STC	038	4.1	-	U	U	-	✓	-
DN1-1	Summer	2019-07-22 15:00	2019-07-22 15:01	STC	001	1.6	-	U	U	-	x	-
HG1-1	Summer	2019-07-22 10:00	2019-07-22 11:35	NP	001	38.8	910	U	U	-	✓	-
HG1-1	Summer	2019-07-22 10:00	2019-07-22 11:35	NP	002	49.3	1500	U	U	-	✓	-
HG1-1	Summer	2019-07-22 10:00	2019-07-22 11:35	WSU	003	49.7	2420	U	U	-	✓	-
HG1-1	Summer	2019-07-22 10:00	2019-07-22 11:35	WSU	004	46.8	2190	U	U	-	✓	-
HG2-1	Summer	2019-07-23 8:50	2019-07-23 9:50	WSU	001	49.3	2220	U	U	-	✓	-
HG3-1	Summer	2019-07-31 11:13	2019-07-31 12:03	NF	-	-	-	-	-	-	-	-
MT1-1	Summer	2019-07-22 10:20	2019-07-23 9:00	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-22 10:30	2019-07-23 9:05	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-22 10:35	2019-07-23 9:10	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-22 10:45	2019-07-23 9:15	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-22 11:02	2019-07-23 9:20	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-22 11:10	2019-07-23 9:25	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-22 11:50	2019-07-23 9:30	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-22 12:00	2019-07-23 9:35	NF	-	-	-	-	-	-	-	-
Beet Lake												
AN1-1	Summer	2019-07-30 10:02	2019-07-30 11:01	WE	001	38.9	560	U	U	-	✓	-
AN2-1	Summer	2019-07-30 14:40	2019-07-30 15:45	NP	001	50.1	960	F	U	50% UFR	x	-
AN2-1	Summer	2019-07-30 14:40	2019-07-30 15:45	NP	002	58.9	1280	U	U	-	✓	-
AN2-1	Summer	2019-07-30 14:40	2019-07-30 15:45	NP	003	52.7	1040	U	U	-	✓	-
AN3-1	Summer	2019-07-31 9:00	2019-07-31 10:20	NP	001	73.9	2660	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	001	5.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	002	12.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	003	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	004	5.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	005	11.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	006	13.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	007	16.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	NP	008	11.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	009	5.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	010	11.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	011	12.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	012	12.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	013	14.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	014	13.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	015	13.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	016	6.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	017	6.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	018	6.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	019	7.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	020	7.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	021	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	022	6.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	023	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	024	6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	025	7.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	026	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	027	5.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	028	6.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	029	4.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	030	6.7	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Lake												
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	031	5.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	032	5.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	CCG	033	5.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	BB	034	-	-	U	U	-	✓	-
BE1-1	Summer	2019-07-22 9:30	2019-07-22 10:12	TP	035	-	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	001	7.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	002	6.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	003	7.8	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	004	5.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	005	6.4	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	006	7.7	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	007	6.5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	008	7.3	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	009	5.3	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	010	7.8	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	011	7.9	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	012	7.7	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	013	6.6	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	014	7.2	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	015	7.8	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	016	5	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	017	6.2	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	018	7	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	019	9.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	020	11.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	021	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	022	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	023	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	024	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	025	7.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	NP	026	10.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	027	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	028	6.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	029	5.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	030	8.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	031	9.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	032	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	033	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	034	7.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	035	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	036	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	037	7.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	038	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	039	7.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	040	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	041	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	042	7.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	043	8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	044	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	045	7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	046	5.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	047	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	048	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	049	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	050	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	051	8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	052	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	053	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	054	6.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	055	7.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	056	6.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	057	5.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	058	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	059	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	060	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	061	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	062	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	063	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	YP	064	2.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	YP	065	8.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	066	7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	067	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	068	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	069	6.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	070	6.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	071	7.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	072	6.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	073	6.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	074	5.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	075	5.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	076	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	077	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	078	7.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	LKC	079	9.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	080	5.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	081	4.5	-	U	U	-	✓	-
BE2-1	Summer	2019-07-22 11:15	2019-07-22 11:40	TP	082	5.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	BB	001	15.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	STC	002	6.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	003	6.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	TP	004	5.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	TP	005	6.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	006	5.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	BB	007	13.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	008	5.5	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	009	5.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	STC	010	3.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	011	4.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	012	5.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	013	5.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	014	5.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-22 12:40	2019-07-22 12:51	YP	015	5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	001	4.4	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Lake												
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	002	4.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	003	5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	004	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	005	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	006	4.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	007	10.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	008	4.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	009	4.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	010	4.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	011	6.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	BB	012	18.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	BB	013	23.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	BB	014	13.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	CCG	015	6.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	TP	016	5.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	YP	017	5.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	YP	018	5.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	019	4.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	020	4.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	BB	021	13.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	022	5.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	023	3.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	STC	024	4.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	WSU	025	12.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	BB	026	20	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	LKC	027	7.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	YP	028	5.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	LKC	029	5.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-22 13:23	2019-07-22 13:58	LKC	030	2.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	TP	001	8.5	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	STC	002	6.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	STC	003	7.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	BB	004	10.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	BB	005	9.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	TP	006	6.7	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	STC	007	6.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	BB	008	10.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	TP	009	6.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-22 14:22	2019-07-22 14:40	TP	010	5.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	WE	001	12.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	002	9.5	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	003	6	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	004	6.5	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	005	6.4	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	006	6.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	007	7.7	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	008	7.5	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	009	7.2	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	010	7.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	011	6.5	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	012	7.4	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	013	8.1	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	014	8.2	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	015	7.8	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	016	6.6	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	017	7.5	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	018	8	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	019	6.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	020	6.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	021	7.1	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	022	7.1	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	023	7.6	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	024	7.7	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	025	6.8	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	026	7.1	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	027	5.3	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	028	5.8	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	029	6.8	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	030	5.6	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	031	6.9	-	U	U	-	x	Died in captivity
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	032	8.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	033	7.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	034	6.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	035	9.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	036	7.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	037	7.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	038	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	039	6.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	040	7.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	041	6.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	042	7.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	043	6.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	044	5.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	045	6.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	046	5.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	047	6.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	048	3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	049	2.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	050	3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	051	2.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	052	2.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	053	2.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	054	2.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	055	7.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	056	6.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	057	7.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	058	5.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	059	7.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	060	2.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	061	2.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	062	2.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	063	2.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	064	2.5	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Lake												
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	065	2.6	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	066	2.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	067	2.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	068	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	069	2.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	070	2.7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	071	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	072	7.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	073	6.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	074	7.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	075	5.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	076	8.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	LKC	077	7.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	078	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	079	7.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	080	7.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	081	7.9	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	082	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	083	6.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	084	7.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	085	2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	YP	086	2.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	087	6.5	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	088	8.2	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	STC	089	7	-	U	U	-	✓	-
BE6-1	Summer	2019-07-22 15:00	2019-07-22 15:15	CCG	090	4.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	001	7.4	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	002	7.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	003	6	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	004	6.7	-	U	U	-	x	Died in captivity
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	005	7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	006	5.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	007	6.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	008	6.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	009	5.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	010	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	011	9.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	012	8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	013	7.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	014	6.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	015	6.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	016	8.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	017	8.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	018	5.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	019	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	020	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	021	5.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	022	5.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	WSU	023	11.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	024	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	025	9.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	WSU	026	15.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	027	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	028	6.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	029	6.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	030	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	031	9.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	032	8.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	033	7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	034	7.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	035	8.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	036	10.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	037	9.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	039	15	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	040	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	041	6.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	042	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	043	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	044	5.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	045	8.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	046	8.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	047	7.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	048	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	049	8.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	050	10.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	051	10.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	052	8.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	053	7.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	054	7.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	055	8.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	056	9.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	057	10.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	058	8.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	059	7.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	060	7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	061	4.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	062	6.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	WSU	063	11.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	064	7.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	065	9.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	066	8.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	067	9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	STC	068	6.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	069	8.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	YP	070	5.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	071	9.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	LKC	072	7.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-22 15:57	2019-07-22 16:12	NF	-	-	-	-	-	-	-	-
HG1-1	Summer	2019-07-23 10:50	2019-07-23 11:45	NF	-	-	-	-	-	-	-	-
HG2-1	Summer	2019-07-23 15:50	2019-07-23 16:40	NP	001	57.9	1880	U	U	-	✓	-
HG3-1	Summer	2019-07-29 13:53	2019-07-29 15:39	NF	-	-	-	-	-	-	-	-
HG4-1	Summer	2019-07-30 9:12	2019-07-30 11:26	WE	001	41.7	740	U	U	-	✓	-
HG4-1	Summer	2019-07-30 9:12	2019-07-30 11:26	LW	002	34.4	520	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Beet Lake												
HG4-1	Summer	2019-07-30 9:12	2019-07-30 11:26	LW	003	39.5	920	U	U	-	✓	-
HG4-1	Summer	2019-07-30 9:12	2019-07-30 11:26	NP	004	68.3	2080	F	U	-	x	-
HG5-1	Summer	2019-07-30 9:41	2019-07-30 12:05	NP	001	54.6	1020	M	U	-	x	-
HG6-1	Summer	2019-07-30 11:48	2019-07-30 13:40	LW	001	25.6	120	U	U	-	✓	-
HG6-1	Summer	2019-07-30 11:48	2019-07-30 13:40	LW	002	41.8	960	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:18	2019-07-30 14:20	LW	001	32.1	340	U	U	-	✓	-
HG7-1	Summer	2019-07-30 12:18	2019-07-30 14:20	LW	002	41.1	760	U	U	-	✓	-
HG8-1	Summer	2019-07-30 14:00	2019-07-30 16:04	WSU	001	22.5	120	U	U	-	✓	-
HG8-1	Summer	2019-07-30 14:00	2019-07-30 16:04	WSU	002	40.3	1100	U	U	-	✓	-
HG8-1	Summer	2019-07-30 14:00	2019-07-30 16:04	NP	003	57	1420	U	U	-	✓	-
HG8-1	Summer	2019-07-30 14:00	2019-07-30 16:04	NP	004	-	-	U	U	-	✓	-
HG9-1	Summer	2019-07-31 8:40	2019-07-31 10:44	LW	001	40.3	820	U	U	-	✓	-
HG9-1	Summer	2019-07-31 8:40	2019-07-31 10:44	LW	002	29.2	300	U	U	-	x	Died in captivity
HG9-1	Summer	2019-07-31 8:40	2019-07-31 10:44	LW	003	38	700	U	U	-	✓	-
HG9-1	Summer	2019-07-31 8:40	2019-07-31 10:44	WSU	004	33	520	U	U	-	✓	-
MT1-1	Summer	2019-07-27 9:16	2019-07-28 16:29	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-27 9:23	2019-07-28 16:24	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-27 9:33	2019-07-28 16:17	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-27 9:41	2019-07-28 16:12	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-28 16:36	2019-07-29 16:21	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-28 16:41	2019-07-29 16:17	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-28 16:46	2019-07-29 16:12	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-28 16:51	2019-07-29 16:04	NF	-	-	-	-	-	-	-	-
MT9-1	Summer	2019-07-28 16:58	2019-07-29 15:59	NF	-	-	-	-	-	-	-	-
MT10-1	Summer	2019-07-28 17:01	2019-07-29 15:50	STC	001	4.3	-	U	U	-	✓	-
MT11-1	Summer	2019-07-28 17:07	2019-07-29 15:44	YP	001	7	-	U	U	-	✓	-
MT12-1	Summer	2019-07-28 17:16	2019-07-29 16:27	NF	-	-	-	-	-	-	-	-
Beet Creek												
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	003	58.1	1420	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	001	64.6	1800	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	004	59.2	1700	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	YP	008	2.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	CCG	007	6.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	002	54.6	1260	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	005	46	780	U	U	-	✓	-
BE1-1	Summer	2019-07-21 14:50	2019-07-21 15:05	NP	006	7.1	-	U	U	-	✓	-
MT1-1	Summer	2019-07-27 9:53	2019-07-28 15:01	NP	001	6.4	-	U	U	-	✓	-
MT2-1	Summer	2019-07-27 9:57	2019-07-28 15:58	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-27 10:04	2019-07-28 12:30	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-27 10:06	2019-07-28 12:28	NF	-	-	-	-	-	-	-	-
Naomi Creek												
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	NP	001	32.6	320	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	NP	002	38.3	420	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	NP	003	34.9	380	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	004	2.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	005	2.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	006	2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	007	2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	008	2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	009	1.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	010	1.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	011	1.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 14:59	2019-07-20 15:12	LSU	012	1.5	-	U	U	-	✓	-
MT1-1	Summer	2019-07-24 10:07	2019-07-25 12:00	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-24 10:12	2019-07-25 12:03	BB	001	10.1	-	U	U	-	✓	-
MT3-1	Summer	2019-07-24 10:14	2019-07-25 12:06	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-24 10:19	2019-07-25 12:10	NF	-	-	-	-	-	-	-	-
Naomi Lake												
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	001	42.8	580	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	002	50.1	920	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	003	25.4	125	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	004	25.1	105	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	005	21.6	85	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	006	10.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	007	9.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	008	10.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	009	10.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	010	9.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	011	6.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	012	2.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	013	3.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	014	2.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	015	2.3	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	016	2.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	YP	017	10.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-20 12:20	2019-07-20 12:45	NP	018	9.3	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	NP	001	44.3	660	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	002	4.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	003	6.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	004	7.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	005	4.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	006	5.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	007	4.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	008	6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	009	5.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	010	5.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	011	6.4	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	012	6.2	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	013	2.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	014	5.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	015	5.6	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	016	4.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	017	5.1	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	018	2.8	-	U	U	-	✓	-
BE2-1	Summer	2019-07-20 14:15	2019-07-20 14:45	TP	019	5.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	001	7.6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	002	8.2	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	003	7.2	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	004	8.3	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	005	7.5	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	006	7.3	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	007	8.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	008	7.5	-	U	U	-	x	Died in captivity

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Naomi Lake												
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	TP	009	6.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	010	8.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	011	8	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	012	7.6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	013	7.8	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	014	8	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	015	7.4	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	016	9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	017	8.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	018	7	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	019	6.8	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	020	2.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	021	6.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	022	2.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	023	8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	024	7.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	025	7.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	026	2.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	TP	027	5.4	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	028	6	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	029	2.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	030	7.8	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	031	7.9	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	032	7.1	-	U	U	-	x	Died in captivity
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	033	8.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	034	7.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	035	6.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	036	3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	STC	037	7.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-20 15:58	2019-07-20 16:15	YP	038	3.1	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	NP	001	50.8	880	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	NP	002	38	460	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	NP	003	45.4	720	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	004	7.8	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	005	6.3	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	006	5.8	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	007	5.6	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	008	6.5	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	009	4.8	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	010	5.9	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	011	3.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	012	6.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	013	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	014	4.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	015	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	016	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	017	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	018	2.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	019	6.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	020	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	021	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	022	3.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	023	5.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	024	7.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	025	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	026	4.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	027	3.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	028	6.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	029	5.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	030	5.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	031	3.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	032	3.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	033	3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	034	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	035	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	036	3.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	037	3.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	038	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	039	2.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	040	15	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	041	6.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	042	7.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	043	4.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	044	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	045	6.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	046	6.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	BB	047	5.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	048	3.8	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	049	6.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	050	4.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	051	3.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	052	4.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	053	4.7	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	054	4.1	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	055	3.9	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	056	11.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	057	4.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	058	4.5	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	BB	059	18.6	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	060	6.3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	061	4.2	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	YP	062	3	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	063	4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-21 10:58	2019-07-21 11:18	STC	064	4.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	001	8.4	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	BB	002	6.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	003	9.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	004	9.2	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	YP	005	3.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	006	7.8	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	007	9.6	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	NP	008	10.3	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	YP	009	2.6	-	U	U	-	✓	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Naomi Lake												
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	YP	010	3.1	-	U	U	-	✓	-
BE5-1	Summer	2019-07-21 12:08	2019-07-21 12:27	BB	011	12.3	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	001	44.2	940	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	002	54.6	1200	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	003	44	760	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	004	49.7	980	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	005	29.1	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	006	20.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	NP	007	23.6	80	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	STC	008	4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	YP	009	10.4	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	STC	010	3.8	-	U	U	-	✓	-
BE6-1	Summer	2019-07-21 12:45	2019-07-21 13:05	STC	011	1.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	NP	001	54.5	1280	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	NP	002	10	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	003	14.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	004	3.6	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	005	10.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	006	10.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	007	9.9	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	008	11.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	009	9.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	010	3.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	011	3.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	012	3.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	013	3.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	014	3.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	015	3.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	016	3.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	017	3.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	018	3.7	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	019	3.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	020	7.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	021	6.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	022	4.1	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	023	6.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	024	6.2	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	025	3.8	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	026	3.5	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	027	11	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	028	3.4	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	029	3.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	030	3.3	-	U	U	-	✓	-
BE7-1	Summer	2019-07-21 13:40	2019-07-21 13:53	YP	031	3.5	-	U	U	-	✓	-
HG1-1	Summer	2019-07-25 10:44	2019-07-25 12:53	NF	-	-	-	-	-	-	-	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	001	44.6	1320	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	002	45.1	1440	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	003	44	1240	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	004	43.6	1420	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	005	41.5	1140	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	006	47.6	1680	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	007	42	1100	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	008	41.4	1080	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	009	45	1480	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	010	42.5	1320	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	011	41.9	1080	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	012	47.7	1540	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	013	40.3	1020	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	014	41.9	1080	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	015	44.2	1300	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	016	41.8	1080	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	017	42.1	1100	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	018	43.6	1080	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	019	41.4	1100	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	020	41	1080	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	021	37.3	700	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	022	43.1	1140	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WE	023	45.6	960	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	024	44	1320	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	025	-	1120	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	026	43	1320	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	027	42.2	1180	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	028	39.6	920	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	029	42.4	1140	U	U	-	x	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WE	030	45.4	960	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	031	43.4	1280	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	032	45	1420	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	NP	033	42.7	800	U	U	-	x	Died in captivity
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	NP	034	46.8	1120	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WE	035	50	320	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	036	117.7	1700	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	WSU	037	44.3	1220	U	U	-	✓	-
HG2-1	Summer	2019-07-25 13:40	2019-07-25 16:30	NP	038	53.6	1140	F	MT	15% Leech	x	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	NP	001	72.9	2500	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WE	002	47	1080	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WE	003	40.5	660	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	LW	004	43.1	1000	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	LW	005	42.1	1080	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	006	33	480	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	007	31.7	480	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	008	24	210	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	009	42.7	1210	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	010	42.5	960	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	011	44.4	1420	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WSU	012	45.5	1260	U	U	-	✓	-
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	LW	013	44.2	1340	U	U	-	x	Died in captivity
HG3-1	Summer	2019-07-26 9:24	2019-07-26 10:39	WE	014	29	80	U	U	-	x	Died in captivity
MT1-1	Summer	2019-07-25 12:17	2019-07-26 10:00	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-25 12:22	2019-07-26 9:32	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-25 12:28	2019-07-26 9:46	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-25 12:39	2019-07-26 10:12	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-25 15:10	2019-07-26 15:08	NP	001	6.6	-	U	U	-	✓	-
MT6-1	Summer	2019-07-25 15:16	2019-07-26 14:30	NF	-	-	-	-	-	-	-	-

Appendix C, Table 40

Detailed Fish Catch Data from Baseline Surveys in the Aquatic Study Area, 2019

Method[a]/ Station #	Season	Set Date	Catch Date	Species[b]	Fish Number	Length (cm)	Weight (g)	Sex[c]	Spawning Condition[d]	Stomach Contents[e]	Released Alive	Comments
Naomi Lake												
MT7-1	Summer	2019-07-25 15:22	2019-07-26 15:22	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-25 14:28	2019-07-26 15:16	NF	-	-	-	-	-	-	-	-
MT9-1	Summer	2019-07-27 10:18	2019-07-28 12:24	NF	-	-	-	-	-	-	-	-
MT10-1	Summer	2019-07-27 10:25	2019-07-28 12:22	NF	-	-	-	-	-	-	-	-
MT11-1	Summer	2019-07-27 10:40	2019-07-28 12:04	NF	-	-	-	-	-	-	-	-
MT12-1	Summer	2019-07-27 10:53	2019-07-28 12:17	NF	-	-	-	-	-	-	-	-
Clearwater Creek												
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	NP	001	32.3	280	U	U	-	✓	-
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	NP	002	15.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	NP	003	-	-	U	U	-	✓	-
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	NP	004	26.9	180	U	U	-	✓	-
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	NP	005	23.5	120	U	U	-	✓	-
BE1-1	Summer	2019-07-19 14:59	2019-07-19 15:41	BB	006	4.7	-	U	U	-	✓	-
MT1-1	Summer	2019-07-24 11:08	2019-07-25 14:44	BB	001	6.4	-	U	U	-	✓	-
MT2-1	Summer	2019-07-24 11:10	2019-07-25 14:47	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-24 11:14	2019-07-25 14:49	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-24 11:19	2019-07-25 14:51	NF	-	-	-	-	-	-	-	-
Clearwater River												
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	WE	001	43	680	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NP	002	35.8	420	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NP	003	45.9	680	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	YP	004	11.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	YP	005	14.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	006	2.5	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	007	2.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	YP	008	11.8	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	YP	009	10.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	STC	010	4.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	STC	011	4.7	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	012	2.4	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	013	2.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	014	1.9	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	YP	015	3.1	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	WSU	016	22.4	155	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NP	017	49.4	980	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NP	018	44	680	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NP	019	48.7	900	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	BB	020	15.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	BB	021	26.6	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	BB	022	6.2	-	U	U	-	✓	-
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	STC	023	6.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	024	2.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	025	2.2	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	026	2.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	027	2.3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	NSB	028	3	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	029	2.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	030	1.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	031	2.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	032	2.6	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	033	2.4	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	034	1.9	-	U	U	-	x	Died in captivity
BE1-1	Summer	2019-07-18 13:25	2019-07-18 13:56	SU	035	2.2	-	U	U	-	x	Died in captivity
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	NP	001	52.4	960	U	U	-	✓	-
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	NP	002	54.8	1260	U	U	-	✓	-
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	WSU	003	27.5	275	U	U	-	✓	-
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	WSU	004	14.9	-	U	U	-	✓	-
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	BB	005	5.7	-	U	U	-	✓	-
BE2-1	Summer	2019-07-18 14:48	2019-07-18 15:11	BB	006	27.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	NP	001	56.4	1460	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	NP	002	51	1020	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	NP	003	41	580	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	WE	004	28.6	280	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	NP	005	18.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	006	4.2	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	007	5.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	008	3.8	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	009	4.6	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	010	4.3	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	011	4.7	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	012	3.9	-	U	U	-	✓	-
BE3-1	Summer	2019-07-18 15:23	2019-07-18 15:52	STC	013	5.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-19 14:10	2019-07-19 14:16	GR	001	28.7	300	U	U	-	✓	-
BE4-1	Summer	2019-07-19 14:10	2019-07-19 14:16	BB	002	18.4	-	U	U	-	✓	-
BE4-1	Summer	2019-07-19 14:10	2019-07-19 14:16	STC	003	6.4	-	U	U	-	x	Died in captivity
BE4-1	Summer	2019-07-19 14:10	2019-07-19 14:16	STC	004	6.2	-	U	U	-	x	Died in captivity
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	001	46.9	860	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	002	54.8	1180	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	003	48.3	900	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	004	47.7	880	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	005	37.5	440	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	NP	006	33	340	U	U	-	✓	-
BE5-1	Summer	2019-07-19 14:30	2019-07-19 14:56	STC	007	5.8	-	U	U	-	✓	-
MT1-1	Summer	2019-07-19 9:50	2019-07-20 9:32	NF	-	-	-	-	-	-	-	-
MT2-1	Summer	2019-07-19 10:10	2019-07-20 9:51	NF	-	-	-	-	-	-	-	-
MT3-1	Summer	2019-07-19 10:20	2019-07-20 9:57	NF	-	-	-	-	-	-	-	-
MT4-1	Summer	2019-07-19 10:32	2019-07-20 10:11	NF	-	-	-	-	-	-	-	-
MT5-1	Summer	2019-07-19 10:40	2019-07-20 10:20	NF	-	-	-	-	-	-	-	-
MT6-1	Summer	2019-07-19 10:50	2019-07-20 10:34	NF	-	-	-	-	-	-	-	-
MT7-1	Summer	2019-07-19 11:00	2019-07-20 10:40	NF	-	-	-	-	-	-	-	-
MT8-1	Summer	2019-07-19 12:06	2019-07-20 10:26	NF	-	-	-	-	-	-	-	-

a) HG = half-standard gang gill net, AN = angling, MT = minnow trap, BE = boat electrofishing, BP = backpack electrofishing, DN = dip net.

b) BB = burbot, CCG = slimy sculpin, GR = Arctic grayling, LKC = lake chub, LSU = longnose sucker, LT = lake trout, LW = lake whitefish, NF = no fish, NP = northern pike, NSB = ninespine stickleback, SP = unidentified species, STC = spottail shiner, SU = unidentified sucker species, WE = walleye, WSU = white sucker, YP = yellow perch.

c) M = male, F = female, U = unknown.

d) M = ripe, MT = green, NS = non spawner, SP = ripe+/running ripe, ST = spent, U = unknown.

e) UFR = unidentified fish remains, UIR = unidentified invertebrate remains.

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Jed Creek														
19-May-2018	VS	01-1	-	0.20	30	40	0	0	0	30	50	Carex	2	Northern pike
19-May-2018	VS	01-1	-	0.20	30	40	0	0	0	30	50	Carex	6	Walleye
19-May-2018	VS	01-2	-	0.20	30	40	0	0	0	30	50	Carex	2	Northern pike
19-May-2018	VS	01-2	-	0.20	30	40	0	0	0	30	50	Carex	4	Walleye
19-May-2018	VS	01-3	-	0.20	30	40	0	0	0	30	50	Carex	1	Sucker spp.
19-May-2018	VS	01-3	-	0.20	30	40	0	0	0	30	50	Carex	1	Northern pike
19-May-2018	VS	01-3	-	0.20	30	40	0	0	0	30	50	Carex	3	Walleye
19-May-2018	KN	01-1	-	0.30	0	60	40	0	0	0	0	-	4	Walleye
19-May-2018	KN	01-2	-	0.30	0	60	40	0	0	0	0	-	2	Walleye
19-May-2018	KN	01-3	-	0.30	0	60	40	0	0	0	0	-	98	Walleye
Patterson Lake														
20-May-2018	KN	01-1	-	0.20	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	01-2	-	0.20	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	01-3	-	0.30	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	01-4	-	0.40	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	01-5	-	0.50	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	02-1	-	0.50	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	02-2	-	0.50	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	02-3	-	0.50	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	02-4	-	0.60	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	02-5	-	0.60	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	03-1	-	0.60	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	03-2	-	0.60	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	03-3	-	0.60	0	100	0	0	0	0	0	-	0	-
20-May-2018	KN	03-4	-	0.60	0	100	0	0	0	0	0	-	1	Sucker spp.
20-May-2018	KN	03-5	-	0.60	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	04-1	-	0.50	0	0	40	60	0	0	0	-	0	-
21-May-2018	KN	04-2	-	0.50	0	0	40	60	0	0	0	-	0	-
21-May-2018	KN	04-3	-	0.50	0	0	40	60	0	0	0	-	0	-
21-May-2018	KN	04-4	-	0.40	0	0	40	60	0	0	0	-	0	-
21-May-2018	KN	04-5	-	0.40	0	0	40	60	0	0	0	-	0	-
21-May-2018	KN	05-1	-	0.40	0	0	30	65	0	5	0	-	0	-
21-May-2018	KN	05-2	-	0.40	0	0	40	55	0	5	0	-	0	-
21-May-2018	KN	05-3	-	0.40	0	0	30	65	0	5	0	-	1	Walleye
21-May-2018	KN	05-4	-	0.50	0	0	40	55	0	5	0	-	2	Walleye

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
21-May-2018	KN	05-5	-	0.50	0	0	40	55	0	5	0	-	3	Sucker spp.
23-May-2018	KN	06-1	-	0.30	10	20	20	40	0	10	30	*Betula papyrifera*	0	-
23-May-2018	KN	06-2	-	0.20	10	20	20	40	0	10	50	*Betula papyrifera*	1	Walleye
23-May-2018	KN	06-3	-	0.30	10	10	20	40	0	20	30	*Betula papyrifera*	1	Northern pike
23-May-2018	KN	06-4	-	0.30	0	0	5	85	10	0	0	-	1	Walleye
23-May-2018	KN	06-4	-	0.30	0	0	5	85	10	0	0	-	52	Slimy sculpin
23-May-2018	KN	06-5	-	-	0	0	0	0	0	0	0	-	0	-
24-May-2018	KN	07-1	-	-	0	20	50	30	0	0	0	-	0	-
24-May-2018	KN	07-2	-	-	0	20	50	30	0	0	0	-	0	-
24-May-2018	KN	07-3	-	-	0	20	50	30	0	0	0	-	2	Sucker spp.
24-May-2018	KN	07-4	-	-	0	20	50	30	0	0	0	-	0	-
24-May-2018	KN	07-5	-	-	0	20	50	30	0	0	0	-	0	-
24-May-2018	KN	08-1	-	-	0	20	40	40	0	0	10	*Betula papyrifera*	1	Walleye
24-May-2018	KN	08-2	-	-	0	20	40	40	0	0	10	*Betula papyrifera*	0	-
24-May-2018	KN	08-3	-	-	0	20	40	40	0	0	10	*Betula papyrifera*	1	Walleye
24-May-2018	KN	08-4	-	-	0	20	50	30	0	0	10	*Betula papyrifera*	0	-
24-May-2018	KN	08-5	-	-	0	40	20	40	0	0	10	*Betula papyrifera*	0	-
24-May-2018	KN	09-1	-	-	0	40	20	40	0	0	0	-	0	-
24-May-2018	KN	09-2	-	-	0	40	20	40	0	0	0	-	0	-
24-May-2018	KN	09-3	-	-	0	40	20	40	0	0	0	-	1	Walleye
24-May-2018	KN	09-4	-	-	0	40	20	40	0	0	0	-	0	-
24-May-2018	KN	09-5	-	-	0	40	20	40	0	0	0	-	0	-
24-May-2018	KN	10-1	-	-	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	10-2	-	-	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	10-3	-	-	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	10-4	-	-	0	90	10	0	0	0	0	-	0	-
24-May-2018	KN	10-5	-	-	0	85	10	5	0	0	0	-	0	-
24-May-2018	KN	11-1	-	0.40	0	40	30	40	0	0	0	-	0	-
24-May-2018	KN	11-2	-	0.40	0	40	60	0	0	0	0	-	0	-
24-May-2018	KN	11-3	-	0.40	0	40	20	40	0	0	0	-	0	-
24-May-2018	KN	11-4	-	0.40	0	40	40	20	0	0	0	-	70	Walleye
24-May-2018	KN	11-5	-	0.40	0	40	40	20	0	0	0	-	0	-
24-May-2018	KN	12-1	-	0.30	0	0	10	90	0	0	0	-	1	Walleye
24-May-2018	KN	12-2	-	0.30	0	5	15	80	0	0	0	-	0	-
24-May-2018	KN	12-3	-	0.30	0	0	15	85	0	0	0	-	0	-

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
24-May-2018	KN	12-4	-	0.30	0	0	5	95	0	0	0	-	0	-
24-May-2018	KN	12-5	-	0.30	0	5	40	55	0	0	0	-	0	-
25-May-2018	KN	13-1	-	0.30	0	60	30	10	0	0	0	-	0	-
25-May-2018	KN	13-2	-	0.30	0	50	30	20	0	0	0	-	0	-
25-May-2018	KN	13-3	-	0.30	0	10	40	50	0	0	0	-	0	-
25-May-2018	KN	14-1	-	0.30	0	0	40	60	0	0	0	-	0	-
25-May-2018	KN	14-2	-	0.30	0	0	50	50	0	0	0	-	0	-
25-May-2018	KN	14-3	-	0.40	0	0	20	60	20	0	0	-	43	Walleye
25-May-2018	KN	15-1	-	0.40	0	0	40	60	0	0	0	-	1	Walleye
25-May-2018	KN	15-2	-	0.30	0	0	30	50	20	0	0	-	0	-
25-May-2018	KN	15-3	-	0.40	0	0	30	70	0	0	0	-	7	Sucker spp.
25-May-2018	KN	16-1	-	0.20	0	0	0	60	40	0	0	-	2	Sucker spp.
25-May-2018	KN	16-2	-	0.30	0	0	20	80	0	0	0	-	2	Sucker spp.
25-May-2018	KN	16-3	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	17-1	-	0.40	0	0	0	100	0	0	0	-	2	Walleye
25-May-2018	KN	17-2	-	0.40	0	0	10	90	0	0	0	-	1	Walleye
25-May-2018	KN	17-3	-	0.30	0	0	10	90	0	0	0	-	1	Walleye
25-May-2018	KN	18-1	-	0.40	0	0	0	50	50	0	0	-	0	-
25-May-2018	KN	18-2	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	18-3	-	-	0	0	0	5	95	0	0	-	0	-
25-May-2018	KN	18-4	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	18-5	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	19-1	-	0.30	0	0	20	80	0	0	0	-	0	-
25-May-2018	KN	19-2	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	19-3	-	0.30	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	20-1	-	0.40	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	20-2	-	0.40	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	100-1	-	0.60	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	100-2	-	0.60	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	100-3	-	0.50	0	0	10	90	0	0	0	-	10	Walleye
26-May-2018	KN	100-4	-	0.60	0	0	10	90	0	0	0	-	5	Walleye
26-May-2018	KN	101-1	-	0.50	0	5	60	35	0	0	0	-	0	-
26-May-2018	KN	101-2	-	0.50	0	5	60	35	0	0	0	-	0	-
26-May-2018	KN	102-1	-	0.40	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	102-2	-	0.50	0	0	10	90	0	0	0	-	0	-

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
26-May-2018	KN	102-3	-	0.60	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	102-4	-	0.50	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	102-5	-	0.50	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	103-1	-	0.30	0	10	0	90	0	0	0	-	3	Walleye
26-May-2018	KN	103-2	-	0.30	0	10	0	90	0	0	0	-	0	-
26-May-2018	KN	103-3	-	0.40	0	5	0	95	0	0	0	-	2	Walleye
26-May-2018	KN	103-4	-	0.50	0	5	0	95	0	0	0	-	0	-
26-May-2018	KN	103-5	-	0.40	0	5	0	95	0	0	0	-	0	-
26-May-2018	KN	104-1	-	0.60	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	104-2	-	0.50	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	104-3	-	0.40	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	104-4	-	0.60	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	104-5	-	0.50	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	105-1	-	0.50	0	0	50	50	0	0	0	-	1	Sucker spp.
26-May-2018	KN	105-2	-	0.50	0	0	30	70	0	0	0	-	0	-
26-May-2018	KN	105-3	-	0.50	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	105-4	-	0.60	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	105-5	-	0.50	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	106-1	-	0.40	0	10	45	45	0	0	0	-	1	Sucker spp.
26-May-2018	KN	106-2	-	0.50	0	10	45	45	0	0	0	-	0	-
26-May-2018	KN	106-3	-	0.30	0	20	45	35	0	0	0	-	2	Sucker spp.
26-May-2018	KN	106-4	-	0.40	0	5	35	60	0	0	0	-	0	-
26-May-2018	KN	106-5	-	0.40	0	5	35	60	0	0	0	-	0	-
26-May-2018	KN	107-1	-	0.40	0	20	45	35	0	0	0	-	0	-
26-May-2018	KN	107-2	-	0.40	0	20	45	35	0	0	0	-	0	-
26-May-2018	KN	107-3	-	0.40	0	20	45	35	0	0	0	-	0	-
26-May-2018	KN	107-4	-	0.40	0	20	45	35	0	0	0	-	0	-
26-May-2018	KN	107-5	-	0.40	0	20	45	35	0	0	0	-	1	Sucker spp.
26-May-2018	KN	108-1	-	0.50	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	108-2	-	0.40	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	108-3	-	0.40	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	108-4	-	0.40	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	108-5	-	0.30	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	109-1	-	0.50	0	35	0	40	20	5	0	-	1	Sucker spp.
26-May-2018	KN	109-2	-	0.50	0	35	0	40	20	5	0	-	1	Sucker spp.

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
26-May-2018	KN	109-3	-	0.30	0	50	0	25	25	0	0	-	0	-
26-May-2018	KN	109-4	-	0.20	0	50	0	25	25	0	0	-	0	-
26-May-2018	KN	109-5	-	0.20	0	50	0	25	25	0	0	-	1	Sucker spp.
26-May-2018	KN	109-5	-	0.20	0	50	0	25	25	0	0	-	3	Walleye
26-May-2018	KN	110-1	-	0.40	0	100	0	0	0	0	0	-	0	-
26-May-2018	KN	110-2	-	0.40	0	100	0	0	0	0	0	-	0	-
26-May-2018	KN	110-3	-	0.40	0	100	0	0	0	0	0	-	0	-
26-May-2018	KN	110-4	-	0.40	0	100	0	0	0	0	0	-	0	-
26-May-2018	KN	110-5	-	0.40	0	100	0	0	0	0	0	-	0	-
26-May-2018	KN	111-1	-	0.40	0	10	90	0	0	0	0	-	0	-
26-May-2018	KN	111-2	-	0.40	0	10	75	15	0	0	0	-	0	-
26-May-2018	KN	111-3	-	0.50	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	111-4	-	0.40	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	111-5	-	0.40	0	0	0	100	0	0	0	-	1	Sucker spp.
26-May-2018	KN	112-1	-	0.20	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	112-2	-	0.30	0	0	90	10	0	0	0	-	0	-
26-May-2018	KN	112-3	-	0.60	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	112-4	-	0.50	0	0	20	80	0	0	0	-	1	Walleye
26-May-2018	KN	112-5	-	0.50	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	113-1	-	0.50	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	113-2	-	0.60	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	113-3	-	0.50	0	0	0	100	0	0	0	-	1	Walleye
26-May-2018	KN	113-4	-	0.40	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	113-5	-	0.60	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	114-1	-	0.50	0	15	15	70	0	0	0	-	0	-
26-May-2018	KN	114-2	-	0.60	0	15	15	70	0	0	0	-	0	-
26-May-2018	KN	114-3	-	0.50	0	10	10	80	0	0	0	-	0	-
26-May-2018	KN	114-4	-	0.40	0	10	10	80	0	0	0	-	0	-
26-May-2018	KN	114-5	-	0.60	0	10	10	80	0	0	0	-	0	-
28-May-2018	KN	115-1	-	0.50	0	0	0	100	0	0	0	-	0	-
28-May-2018	KN	115-2	-	0.60	0	0	0	100	0	0	0	-	0	-
28-May-2018	KN	115-3	-	0.60	0	0	20	80	0	0	0	-	0	-
28-May-2018	KN	115-4	-	0.70	0	0	0	100	0	0	0	-	0	-
28-May-2018	KN	115-5	-	0.40	0	15	50	35	0	0	0	-	0	-
28-May-2018	KN	116-1	-	0.70	0	0	0	100	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
28-May-2018	KN	116-2	-	0.40	0	0	50	50	0	0	0	-	2	Walleye
28-May-2018	KN	116-3	-	0.80	0	0	20	80	0	0	0	-	1	Walleye
28-May-2018	KN	116-4	-	0.50	0	0	20	80	0	0	0	-	0	-
28-May-2018	KN	116-5	-	0.40	0	0	25	75	0	0	0	-	0	-
28-May-2018	KN	117-1	-	0.40	0	25	50	25	0	0	0	-	3	Sucker spp.
28-May-2018	KN	117-2	-	0.40	0	25	50	25	0	0	0	-	0	-
28-May-2018	KN	117-3	-	0.30	0	25	50	25	0	0	0	-	0	-
28-May-2018	KN	117-4	-	0.50	0	25	50	25	0	0	0	-	1	Sucker spp.
28-May-2018	KN	117-5	-	0.50	0	25	50	25	0	0	0	-	6	Sucker spp.
28-May-2018	KN	118-1	-	0.70	0	5	15	80	0	0	0	-	4	Walleye
28-May-2018	KN	118-2	-	0.80	0	0	25	75	0	0	0	-	8	Walleye
28-May-2018	KN	118-3	-	1.00	0	0	20	70	10	0	0	-	0	-
28-May-2018	KN	118-4	-	0.80	0	10	40	50	0	0	0	-	0	-
28-May-2018	KN	118-5	-	0.70	0	10	20	70	0	0	0	-	2	Sucker spp.
29-May-2018	KN	119-1	-	0.80	0	5	40	55	0	0	0	-	1	Walleye
29-May-2018	KN	119-2	-	0.60	0	0	0	0	0	0	0	-	0	-
29-May-2018	KN	119-3	-	1.00	0	0	30	35	35	0	0	-	0	-
29-May-2018	KN	119-4	-	1.00	0	0	30	35	35	0	0	-	0	-
29-May-2018	KN	119-5	-	1.00	0	0	30	35	35	0	0	-	0	-
29-May-2018	KN	120-1	-	0.60	0	0	70	30	0	0	0	-	0	-
29-May-2018	KN	120-2	-	0.70	0	0	70	30	0	0	0	-	4	Walleye
29-May-2018	KN	120-3	-	0.50	0	0	70	30	0	0	0	-	0	-
29-May-2018	KN	120-4	-	0.50	0	0	70	30	0	0	0	-	0	-
29-May-2018	KN	120-5	-	0.50	0	0	70	30	0	0	0	-	0	-
29-May-2018	KN	121-1	-	0.70	0	0	30	70	0	0	0	-	0	-
29-May-2018	KN	121-2	-	0.50	0	0	30	70	0	0	0	-	0	-
29-May-2018	KN	121-3	-	0.50	0	0	30	70	0	0	0	-	0	-
29-May-2018	KN	121-4	-	0.50	0	0	30	70	0	0	0	-	0	-
29-May-2018	KN	121-5	-	0.50	0	0	30	70	0	0	0	-	0	-
29-May-2018	KN	122-1	-	0.50	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	122-2	-	0.50	0	0	40	60	0	0	0	-	0	-
29-May-2018	KN	122-3	-	0.50	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	122-4	-	0.50	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	122-5	-	0.50	0	0	10	90	0	0	0	-	0	-
29-May-2018	KN	123-1	-	0.50	0	0	0	100	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
29-May-2018	KN	123-2	-	0.60	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	123-3	-	0.60	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	123-4	-	0.50	0	0	30	70	0	0	0	-	2	Walleye
29-May-2018	KN	123-5	-	0.50	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	124-1	-	0.40	0	0	30	70	0	0	0	-	2	Walleye
29-May-2018	KN	124-2	-	0.50	0	0	70	30	0	0	0	-	3	Walleye
29-May-2018	KN	125-1	-	0.30	0	0	80	20	0	0	0	-	0	-
29-May-2018	KN	125-2	-	0.40	0	0	50	50	0	0	0	-	1	Walleye
29-May-2018	KN	125-3	-	0.40	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	126-1	-	0.40	0	10	80	10	0	0	0	-	1	Sucker spp.
29-May-2018	KN	126-1	-	0.40	0	10	80	10	0	0	0	-	1	Walleye
29-May-2018	KN	126-2	-	0.40	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	126-3	-	0.40	0	0	50	50	0	0	0	-	1	Walleye
29-May-2018	KN	127-1	-	0.50	0	0	0	100	0	0	0	-	1	Walleye
29-May-2018	KN	127-2	-	0.60	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	20-3	-	0.30	0	0	5	95	0	0	0	-	1	Walleye
25-May-2018	KN	21-1	-	0.30	0	0	50	50	0	0	0	-	2	Walleye
25-May-2018	KN	21-2	-	0.30	0	0	40	60	0	0	0	-	0	-
25-May-2018	KN	21-3	-	0.30	0	0	40	60	0	0	0	-	2	Walleye
25-May-2018	KN	22-1	-	0.30	0	30	0	70	0	0	0	-	0	-
25-May-2018	KN	22-2	-	0.30	0	10	30	60	0	0	0	-	0	-
25-May-2018	KN	22-3	-	0.20	0	10	0	90	0	0	0	-	0	-
25-May-2018	KN	23-1	-	0.20	0	0	40	60	0	0	0	-	17	Sucker spp.
25-May-2018	KN	23-2	-	0.20	0	0	30	70	0	0	0	-	0	-
25-May-2018	KN	23-3	-	0.20	0	0	30	70	0	0	0	-	2	Sucker spp.
25-May-2018	KN	24-1	-	0.30	0	0	60	40	0	0	0	-	1	Sucker spp.
25-May-2018	KN	24-2	-	0.20	0	0	40	60	0	0	0	-	1	Sucker spp.
25-May-2018	KN	24-3	-	0.20	0	40	40	20	0	0	0	-	0	-
25-May-2018	KN	24-4	-	0.10	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	24-5	-	0.30	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	25-1	-	0.30	0	0	50	50	0	0	0	-	1	Sucker spp.
26-May-2018	KN	25-2	-	0.30	0	0	60	40	0	0	0	-	1	Walleye
26-May-2018	KN	25-3	-	0.30	0	20	20	60	0	0	0	-	0	-
26-May-2018	KN	26-1	-	0.30	0	20	30	50	0	0	0	-	0	-
26-May-2018	KN	26-2	-	0.20	0	20	30	50	0	0	0	-	2	Walleye

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
26-May-2018	KN	26-3	-	0.20	0	30	40	30	0	0	0	-	1	Walleye
26-May-2018	KN	27-1	-	0.30	0	40	30	30	0	0	0	-	0	-
26-May-2018	KN	27-2	-	0.30	0	20	20	60	0	0	0	-	0	-
26-May-2018	KN	27-3	-	0.30	0	0	20	80	0	0	0	-	1	Walleye
26-May-2018	KN	28-1	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	28-2	-	0.40	0	20	40	40	0	0	0	-	0	-
26-May-2018	KN	28-3	-	0.20	0	0	20	60	0	0	0	-	0	-
26-May-2018	KN	28-4	-	0.20	0	0	20	80	0	0	0	-	1	Walleye
26-May-2018	KN	29-1	-	0.30	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	29-2	-	0.30	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	29-3	-	0.30	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	30-1	-	0.20	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	30-2	-	0.20	0	0	0	100	0	0	0	-	1	Walleye
26-May-2018	KN	30-3	-	0.30	0	0	80	20	0	0	0	-	1	Walleye
26-May-2018	KN	31-1	-	0.50	0	0	80	20	0	0	0	-	0	-
26-May-2018	KN	31-2	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	31-3	-	0.30	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	32-1	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	32-2	-	0.30	0	0	10	90	0	0	0	-	0	-
26-May-2018	KN	32-3	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	33-1	-	0.30	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	33-2	-	0.30	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	33-3	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	34-1	-	0.20	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	34-2	-	0.20	0	20	0	80	0	0	0	-	0	-
26-May-2018	KN	34-3	-	0.20	0	30	0	70	0	0	0	-	1	Sucker spp.
26-May-2018	KN	35-1	-	0.20	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	35-2	-	0.20	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	35-3	-	0.20	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	36-1	-	0.40	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	36-2	-	0.40	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	36-3	-	0.40	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	37-1	-	0.30	0	0	20	80	0	0	0	-	0	-
26-May-2018	KN	37-2	-	0.30	0	5	10	85	0	0	0	-	0	-
26-May-2018	KN	37-3	-	0.20	0	0	15	85	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
26-May-2018	KN	38-1	-	0.20	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	38-2	-	0.20	0	0	40	60	0	0	0	-	0	-
26-May-2018	KN	38-3	-	0.20	0	5	30	65	0	0	0	-	0	-
26-May-2018	KN	39-1	-	0.20	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	39-2	-	0.30	0	0	5	95	0	0	0	-	0	-
26-May-2018	KN	39-3	-	0.30	0	50	20	30	0	0	0	-	0	-
27-May-2018	KN	40-1	-	0.30	0	95	5	0	0	0	0	-	1	Walleye
27-May-2018	KN	40-2	-	0.20	0	95	5	0	0	0	0	-	0	-
27-May-2018	KN	40-3	-	0.30	0	95	5	0	0	0	0	-	2	Sucker spp.
27-May-2018	KN	40-3	-	0.30	0	95	5	0	0	0	0	-	7	Walleye
27-May-2018	KN	41-1	-	0.30	0	95	5	0	0	0	0	-	0	-
27-May-2018	KN	41-2	-	0.20	0	95	5	0	0	0	0	-	0	-
27-May-2018	KN	41-3	-	0.30	0	85	5	10	0	0	0	-	0	-
27-May-2018	KN	42-1	-	0.20	0	0	40	60	0	0	0	-	0	-
27-May-2018	KN	42-2	-	0.20	0	0	90	10	0	0	0	-	0	-
27-May-2018	KN	42-3	-	0.30	0	0	20	80	0	0	0	-	0	-
27-May-2018	KN	43-1	-	0.20	0	20	50	30	0	0	0	-	0	-
27-May-2018	KN	43-2	-	0.30	0	0	50	50	0	0	0	-	0	-
27-May-2018	KN	43-3	-	0.30	0	5	60	35	0	0	0	-	0	-
27-May-2018	KN	44-1	-	0.30	0	0	40	60	0	0	0	-	1	Sucker spp.
27-May-2018	KN	44-2	-	0.30	0	0	50	50	0	0	0	-	2	Sucker spp.
27-May-2018	KN	44-3	-	0.30	0	0	30	70	0	0	0	-	1	Sucker spp.
27-May-2018	KN	45-1	-	0.20	0	0	50	50	0	0	0	-	0	-
27-May-2018	KN	45-2	-	0.30	0	0	50	50	0	0	0	-	1	Sucker spp.
27-May-2018	KN	45-3	-	0.30	0	0	5	95	0	0	0	-	0	-
27-May-2018	KN	46-1	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	46-2	-	0.20	0	0	5	95	0	0	0	-	0	-
27-May-2018	KN	46-3	-	0.20	0	0	0	80	20	0	0	-	0	-
27-May-2018	KN	47-1	-	0.30	0	0	0	100	0	0	0	-	1	Walleye
27-May-2018	KN	47-2	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	47-3	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	48-1	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	48-2	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	48-3	-	0.20	0	0	20	80	0	0	0	-	0	-
27-May-2018	KN	49-1	-	0.20	0	0	20	80	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
27-May-2018	KN	49-2	-	0.10	0	0	20	80	0	0	0	-	0	-
27-May-2018	KN	49-3	-	0.10	0	0	15	85	0	0	0	-	0	-
27-May-2018	KN	50-1	-	0.40	0	10	40	50	0	0	0	-	1	Walleye
27-May-2018	KN	50-2	-	0.40	0	5	65	30	0	0	0	-	1	Walleye
27-May-2018	KN	50-3	-	0.20	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	51-1	-	0.20	0	0	50	50	0	0	0	-	1	Sucker spp.
27-May-2018	KN	51-2	-	0.20	0	0	40	60	0	0	0	-	3	Sucker spp.
27-May-2018	KN	51-3	-	0.30	0	0	20	80	0	0	0	-	1	Sucker spp.
27-May-2018	KN	52-1	-	0.30	0	0	30	70	0	0	0	-	1	Walleye
27-May-2018	KN	52-2	-	0.40	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	52-3	-	0.30	0	0	20	80	0	0	0	-	0	-
27-May-2018	KN	53-1	-	0.30	0	0	40	60	0	0	0	-	1	Walleye
27-May-2018	KN	53-2	-	0.10	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	53-3	-	0.30	0	0	0	50	50	0	0	-	0	-
27-May-2018	KN	54-1	-	0.20	0	0	0	100	0	0	0	-	2	Walleye
27-May-2018	KN	54-2	-	0.10	0	0	0	100	0	0	0	-	2	Walleye
27-May-2018	KN	54-3	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	55-1	-	0.20	0	0	0	100	0	0	0	-	1	Slimy sculpin
27-May-2018	KN	55-2	-	0.20	0	0	20	80	0	0	0	-	9	Sucker spp.
27-May-2018	KN	55-3	-	0.20	0	0	50	50	0	0	0	-	0	-
27-May-2018	KN	56-1	-	0.30	0	0	80	20	0	0	0	-	0	-
27-May-2018	KN	56-2	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	56-3	-	0.30	0	0	80	20	0	0	0	-	0	-
27-May-2018	KN	57-1	-	0.30	0	0	20	80	0	0	0	-	0	-
27-May-2018	KN	57-2	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	57-3	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	58-1	-	0.20	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	58-2	-	0.20	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	58-3	-	0.40	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	59-1	-	0.40	0	0	60	40	0	0	0	-	1	Sucker spp.
27-May-2018	KN	59-2	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	59-3	-	0.20	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	60-1	-	0.30	0	0	50	50	0	0	0	-	0	-
27-May-2018	KN	60-2	-	0.20	0	0	50	50	0	0	0	-	0	-
27-May-2018	KN	60-3	-	0.30	0	5	25	70	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
27-May-2018	KN	60-4	-	0.30	0	10	20	70	0	0	0	-	0	-
27-May-2018	KN	60-5	-	0.20	0	5	25	70	0	0	0	-	0	-
28-May-2018	KN	61-1	-	0.10	0	90	5	5	0	0	0	-	0	-
28-May-2018	KN	61-2	-	0.10	0	90	2	8	0	0	0	-	0	-
28-May-2018	KN	61-3	-	0.10	0	95	5	0	0	0	0	-	0	-
28-May-2018	KN	62-1	-	0.10	0	50	0	50	0	0	0	-	0	-
28-May-2018	KN	62-2	-	0.10	0	50	0	50	0	0	0	-	1	Walleye
28-May-2018	KN	62-3	-	0.10	0	60	0	40	0	0	0	-	0	-
28-May-2018	KN	63-1	-	0.20	0	40	0	60	0	0	0	-	1	Walleye
28-May-2018	KN	63-2	-	0.30	0	30	20	50	0	0	0	-	0	-
28-May-2018	KN	63-3	-	0.30	0	85	5	10	0	0	0	-	0	-
28-May-2018	KN	64-1	-	0.20	0	75	20	5	0	0	0	-	0	-
28-May-2018	KN	64-2	-	0.20	0	85	10	5	0	0	0	-	0	-
28-May-2018	KN	64-3	-	0.30	0	40	30	30	0	0	0	-	3	Walleye
28-May-2018	KN	65-1	-	0.20	0	0	50	50	0	0	0	-	4	Walleye
28-May-2018	KN	65-2	-	0.20	0	5	5	90	0	0	0	-	1	Walleye
28-May-2018	KN	65-3	-	0.20	0	40	20	40	0	0	0	-	0	-
28-May-2018	KN	66-1	-	0.30	0	0	55	45	0	0	0	-	1	Sucker spp.
28-May-2018	KN	66-1	-	0.30	0	0	55	45	0	0	0	-	1	Walleye
28-May-2018	KN	66-2	-	0.20	0	10	40	50	0	0	0	-	1	Walleye
28-May-2018	KN	66-3	-	0.30	0	0	20	80	0	0	0	-	0	-
28-May-2018	KN	66-4	-	0.20	0	10	30	60	0	0	0	-	3	Sucker spp.
28-May-2018	KN	66-4	-	0.20	0	10	30	60	0	0	0	-	3	Walleye
28-May-2018	KN	66-5	-	0.20	0	15	5	80	0	0	0	-	2	Northern pike
28-May-2018	KN	66-5	-	0.20	0	15	5	80	0	0	0	-	3	Sucker spp.
28-May-2018	KN	67-1	-	0.20	0	15	25	60	0	0	0	-	4	Walleye
28-May-2018	KN	67-2	-	0.10	0	0	5	95	0	0	0	-	2	Walleye
28-May-2018	KN	67-3	-	0.10	0	0	20	80	0	0	0	-	1	Sucker spp.
28-May-2018	KN	68-1	-	0.20	0	0	0	100	0	0	0	-	1	Walleye
28-May-2018	KN	68-2	-	0.30	0	0	5	95	0	0	0	-	3	Walleye
28-May-2018	KN	68-3	-	0.30	0	5	5	90	0	0	0	-	1	Walleye
28-May-2018	KN	69-1	-	0.30	0	0	0	100	0	0	0	-	1	Walleye
28-May-2018	KN	69-2	-	0.20	0	0	20	80	0	0	0	-	1	Walleye
28-May-2018	KN	69-3	-	0.30	0	0	20	80	0	0	0	-	1	Walleye
28-May-2018	KN	70-1	-	0.30	0	0	0	100	0	0	0	-	1	Walleye

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
28-May-2018	KN	70-2	-	0.30	0	5	0	95	0	0	0	-	0	-
28-May-2018	KN	70-3	-	0.30	0	0	5	95	0	0	0	-	1	Walleye
28-May-2018	KN	71-2	-	0.20	0	10	20	70	0	0	0	-	0	-
28-May-2018	KN	71-3	-	0.30	0	0	5	95	0	0	0	-	0	-
28-May-2018	KN	72-1	-	0.20	0	0	5	95	0	0	0	-	1	Sucker spp.
28-May-2018	KN	72-2	-	0.20	0	0	50	50	0	0	0	-	3	Sucker spp.
28-May-2018	KN	72-3	-	0.20	0	0	50	50	0	0	0	-	2	Sucker spp.
28-May-2018	KN	72-4	-	0.30	0	0	5	95	0	0	0	-	3	Sucker spp.
28-May-2018	KN	72-5	-	0.30	0	5	10	85	0	0	0	-	0	-
29-May-2018	KN	73-1	-	0.30	0	0	5	95	0	0	0	-	1	Sucker spp.
29-May-2018	KN	73-2	-	0.30	0	0	5	95	0	0	0	-	3	Sucker spp.
29-May-2018	KN	73-3	-	0.30	0	0	0	100	0	0	0	-	1	Sucker spp.
29-May-2018	KN	74-1	-	0.40	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	74-2	-	0.30	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	74-3	-	0.20	0	10	40	50	0	0	0	-	0	-
29-May-2018	KN	75-1	-	0.30	0	0	20	80	0	0	0	-	1	Walleye
29-May-2018	KN	75-2	-	0.30	0	20	20	60	0	0	0	-	1	Walleye
29-May-2018	KN	75-3	-	0.30	0	20	30	50	0	0	0	-	2	Northern pike
29-May-2018	KN	75-3	-	0.30	0	20	30	50	0	0	0	-	130	Walleye
29-May-2018	KN	76-1	-	0.20	0	30	30	40	0	0	0	-	1	Sucker spp.
29-May-2018	KN	76-2	-	0.20	0	10	30	60	0	0	0	-	0	-
29-May-2018	KN	76-3	-	0.30	0	0	40	60	0	0	0	-	1	Sucker spp.
29-May-2018	KN	77-1	-	0.20	0	0	0	100	0	0	0	-	1	Northern pike
29-May-2018	KN	77-1	-	0.20	0	0	0	100	0	0	0	-	3	Sucker spp.
29-May-2018	KN	77-2	-	0.30	0	0	20	80	0	0	0	-	0	-
29-May-2018	KN	77-3	-	0.30	0	0	30	70	0	0	0	-	1	Sucker spp.
29-May-2018	KN	77-3	-	0.30	0	0	30	70	0	0	0	-	19	Walleye
29-May-2018	KN	78-1	-	0.40	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	78-2	-	0.40	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	78-3	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	79-1	-	0.30	0	50	0	50	0	0	0	-	0	-
29-May-2018	KN	79-2	-	0.20	0	0	30	70	0	0	0	-	1	Sucker spp.
29-May-2018	KN	79-3	-	0.30	0	0	0	100	0	0	0	-	1	Walleye
29-May-2018	KN	80-1	-	0.20	0	0	30	70	0	0	0	-	1	Walleye
29-May-2018	KN	80-1	-	0.20	0	0	30	70	0	0	0	-	3	Sucker spp.

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
29-May-2018	KN	80-2	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	80-3	-	0.30	0	0	10	90	0	0	0	-	1	Walleye
29-May-2018	KN	81-1	-	0.20	0	0	5	95	0	0	0	-	1	Sucker spp.
29-May-2018	KN	81-2	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	81-3	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	82-1	-	0.20	0	0	10	90	0	0	0	-	0	-
29-May-2018	KN	82-2	-	0.20	0	0	5	95	0	0	0	-	2	Sucker spp.
29-May-2018	KN	82-3	-	0.20	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	83-1	-	0.30	0	0	10	90	0	0	0	-	1	Sucker spp.
29-May-2018	KN	83-2	-	0.30	0	0	60	40	0	0	0	-	1	Sucker spp.
29-May-2018	KN	83-3	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	84-1	-	0.20	0	0	10	90	0	0	0	-	1	Sucker spp.
29-May-2018	KN	84-2	-	0.30	0	0	80	20	0	0	0	-	0	-
29-May-2018	KN	84-3	-	0.30	0	0	90	10	0	0	0	-	1	Walleye
29-May-2018	KN	85-1	-	0.30	0	0	40	60	0	0	0	-	2	Sucker spp.
29-May-2018	KN	85-2	-	0.30	0	0	20	80	0	0	0	-	1	Sucker spp.
29-May-2018	KN	85-3	-	0.30	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	86-1	-	0.40	0	0	0	100	0	0	0	-	0	-
29-May-2018	KN	86-2	-	0.20	0	60	20	20	0	0	0	-	1	Walleye
29-May-2018	KN	86-3	-	0.20	0	0	90	10	0	0	0	-	1	Walleye
29-May-2018	KN	87-1	-	0.30	0	40	40	20	0	0	0	-	1	Walleye
29-May-2018	KN	87-2	-	0.30	0	80	0	20	0	0	0	-	0	-
29-May-2018	KN	87-3	-	0.30	0	20	60	20	0	0	0	-	2	Sucker spp.
25-May-2018	KN	88-1	-	0.70	0	0	20	80	0	0	0	-	0	-
25-May-2018	KN	88-2	-	0.80	0	0	20	80	0	0	0	-	0	-
25-May-2018	KN	88-3	-	0.90	0	0	40	60	0	0	0	-	0	-
25-May-2018	KN	88-4	-	0.90	0	0	40	60	0	0	0	-	0	-
25-May-2018	KN	88-5	-	1.00	0	0	50	50	0	0	0	-	0	-
25-May-2018	KN	89-1	-	0.60	0	0	0	60	40	0	0	-	0	-
25-May-2018	KN	89-2	-	0.60	0	0	0	80	20	0	0	-	0	-
25-May-2018	KN	90-1	-	0.80	0	0	0	100	0	0	0	-	0	-
25-May-2018	KN	90-2	-	1.00	0	0	30	70	0	0	0	-	0	-
25-May-2018	KN	91-1	-	0.40	0	0	90	10	0	0	0	-	0	-
25-May-2018	KN	91-2	-	0.30	0	0	90	10	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
25-May-2018	KN	91-3	-	0.40	0	0	80	20	0	0	0	-	0	-
25-May-2018	KN	91-4	-	0.30	0	0	80	20	0	0	0	-	0	-
25-May-2018	KN	91-5	-	0.40	0	0	90	10	0	0	0	-	0	-
25-May-2018	KN	92-1	-	0.40	0	5	65	20	10	0	0	-	0	-
25-May-2018	KN	92-2	-	0.40	0	5	65	20	10	0	0	-	0	-
25-May-2018	KN	92-3	-	0.40	0	5	65	20	10	0	0	-	0	-
25-May-2018	KN	93-1	-	0.40	0	0	80	20	0	0	0	-	0	-
25-May-2018	KN	93-2	-	0.30	0	0	80	20	0	0	0	-	0	-
25-May-2018	KN	93-3	-	0.50	0	0	80	20	0	0	0	-	0	-
25-May-2018	KN	94-1	-	0.60	0	0	40	60	0	0	0	-	1	Sucker spp.
25-May-2018	KN	94-2	-	0.40	0	0	60	40	0	0	0	-	0	-
25-May-2018	KN	95-1	-	0.60	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	96-1	-	0.40	0	0	50	50	0	0	0	-	10	Walleye
26-May-2018	KN	96-2	-	0.40	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	96-3	-	0.40	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	96-4	-	0.40	0	0	50	50	0	0	0	-	5	Walleye
26-May-2018	KN	96-5	-	0.40	0	0	50	50	0	0	0	-	0	-
26-May-2018	KN	97-1	-	0.40	0	0	60	40	0	0	0	-	3	Walleye
26-May-2018	KN	97-2	-	0.50	0	0	60	40	0	0	0	-	4	Walleye
26-May-2018	KN	97-3	-	0.40	0	0	60	40	0	0	0	-	0	-
26-May-2018	KN	98-1	-	0.50	0	0	40	60	0	0	0	-	11	Walleye
26-May-2018	KN	98-2	-	0.60	0	0	40	60	0	0	0	-	11	Walleye
26-May-2018	KN	98-3	-	0.60	0	0	40	60	0	0	0	-	0	-
26-May-2018	KN	99-1	-	0.50	0	0	100	0	0	0	0	-	0	-
26-May-2018	KN	99-2	-	0.60	0	0	100	0	0	0	0	-	1	Walleye
26-May-2018	KN	99-3	-	0.50	0	0	100	0	0	0	0	-	2	Walleye
23-May-2018	VS	01-1	-	0.20	0	0	0	0	0	0	0	*Betula papyrifera*	1	Northern pike
23-May-2018	VS	01-2	-	0.20	0	0	0	0	0	0	0	*Betula papyrifera*	0	-
23-May-2018	VS	01-3	-	0.20	0	0	0	0	0	0	0	*Betula papyrifera*	0	-
23-May-2018	VS	01-4	-	0.20	0	0	0	0	0	0	0	*Betula papyrifera*	0	-
23-May-2018	VS	01-5	-	0.20	0	0	0	0	0	0	0	*Betula papyrifera*	0	-
26-May-2018	VS	02-1	-	0.20	0	0	0	0	0	0	20	-	0	-
26-May-2018	VS	02-2	-	0.20	0	0	0	0	0	0	30	-	0	-
26-May-2018	VS	02-3	-	0.30	0	0	0	0	0	0	10	-	3	Northern pike
26-May-2018	VS	02-4	-	0.30	0	0	0	0	0	0	20	-	2	Northern pike

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
26-May-2018	VS	02-5	-	0.20	0	0	0	0	0	0	10	-	0	-
26-May-2018	VS	03-1	-	0.30	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	03-2	-	0.30	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	03-3	-	0.40	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	04-1	-	0.30	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	04-2	-	0.30	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	04-3	-	0.20	0	0	0	0	0	0	10	*Myrica gale*	0	-
26-May-2018	VS	05-1	-	0.30	0	0	0	0	0	0	40	*Myrica gale*	0	-
26-May-2018	VS	05-2	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
26-May-2018	VS	05-3	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
27-May-2018	VS	06-1	-	0.20	0	0	0	0	0	0	10	*Myrica gale*	0	-
27-May-2018	VS	06-2	-	0.30	0	0	0	0	0	0	15	*Myrica gale*	3	Northern pike
27-May-2018	VS	06-3	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
27-May-2018	VS	07-1	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
27-May-2018	VS	07-2	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
27-May-2018	VS	07-3	-	0.30	0	0	0	0	0	0	15	*Myrica gale*	1	Northern pike
27-May-2018	VS	08-1	-	0.20	0	0	0	0	0	0	10	Carex	2	Northern pike
27-May-2018	VS	08-2	-	0.10	0	0	0	0	0	0	15	Carex	1	Northern pike
27-May-2018	VS	08-3	-	0.10	0	0	0	0	0	0	15	*Myrica gale*	0	-
29-May-2018	VS	09-1	-	0.20	0	0	0	0	0	0	20	-	0	-
29-May-2018	VS	09-2	-	0.20	0	0	0	0	0	0	20	-	0	-
29-May-2018	VS	09-3	-	0.20	0	0	0	0	0	0	100	-	0	-
29-May-2018	VS	09-4	-	0.20	0	0	0	0	0	0	20	-	1	Northern pike
29-May-2018	VS	09-5	-	0.20	0	0	0	0	0	0	40	-	2	Northern pike
29-May-2018	VS	10-1	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
29-May-2018	VS	10-2	-	0.30	0	0	0	0	0	0	20	*Myrica gale*	0	-
29-May-2018	VS	10-3	-	0.20	0	0	0	0	0	0	10	*Myrica gale*	1	Northern pike
Patterson Creek														
20-May-2018	KN	01-1	-	0.60	0	70	0	30	0	0	0	-	0	-
20-May-2018	KN	01-2	-	0.60	0	70	0	30	0	0	0	-	0	-
20-May-2018	KN	01-3	-	0.60	0	70	0	30	0	0	0	-	0	-
20-May-2018	KN	02-1	-	0.20	0	30	30	40	0	0	0	-	0	-
20-May-2018	KN	02-2	-	0.20	0	30	30	40	0	0	0	-	0	-
20-May-2018	KN	02-3	-	0.20	0	30	30	40	0	0	0	-	0	-
20-May-2018	KN	03-1	-	1.10	0	70	0	0	30	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Creek														
20-May-2018	KN	03-2	-	1.10	0	70	0	0	30	0	0	-	0	-
20-May-2018	KN	03-3	-	1.10	0	70	0	0	30	0	0	-	0	-
28-May-2018	KN	04-1	-	0.30	0	90	10	0	0	0	0	-	1	Sucker spp.
28-May-2018	KN	04-2	-	0.30	0	90	10	0	0	0	0	-	0	-
28-May-2018	KN	04-3	-	0.30	0	90	10	0	0	0	0	-	0	-
30-May-2018	KN	05-1	-	0.20	0	80	0	20	0	0	0	-	0	-
30-May-2018	KN	05-2	-	0.30	0	70	0	20	10	0	0	-	0	-
30-May-2018	KN	05-3	-	0.20	0	80	0	0	20	0	0	-	0	-
30-May-2018	KN	05-4	-	0.30	0	60	0	40	0	0	0	-	1	Sucker spp.
30-May-2018	KN	05-5	-	0.20	0	75	5	20	0	0	0	-	0	-
30-May-2018	KN	06-1	-	0.10	0	85	5	10	0	0	0	-	2	Sucker spp.
30-May-2018	KN	06-2	-	0.20	0	85	5	10	0	0	0	-	0	-
30-May-2018	KN	06-3	-	0.20	0	60	20	20	0	0	0	-	1	Walleye
30-May-2018	KN	06-3	-	0.20	0	60	20	20	0	0	0	-	2	Sucker spp.
30-May-2018	KN	07-1	-	0.30	0	90	5	0	0	5	0	-	0	-
30-May-2018	KN	07-2	-	0.90	0	80	0	20	0	0	0	-	0	-
30-May-2018	KN	07-3	-	1.00	0	80	0	0	5	5	0	-	0	-
30-May-2018	KN	08-1	-	1.20	0	0	5	90	5	0	0	-	2	Sucker spp.
30-May-2018	KN	08-2	-	1.20	0	0	5	90	5	0	0	-	2	Sucker spp.
30-May-2018	KN	08-3	-	1.20	0	0	5	90	5	0	0	-	1	Sucker spp.
30-May-2018	KN	09-1	-	0.60	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	09-2	-	0.55	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	09-3	-	0.40	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	10-1	-	0.10	0	0	0	0	0	100	25	Carex	0	-
30-May-2018	KN	10-2	-	0.10	0	0	0	0	0	100	40	Carex	0	-
30-May-2018	KN	10-3	-	0.10	0	0	0	0	0	100	40	Carex	0	-
30-May-2018	KN	11-1	-	0.50	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	11-2	-	0.50	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	11-3	-	0.50	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	12-1	-	0.40	0	98	0	0	0	2	0	-	0	-
30-May-2018	KN	12-2	-	0.40	0	98	0	0	0	2	0	-	0	-
30-May-2018	KN	12-3	-	0.40	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	13-1	-	0.50	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	13-2	-	0.50	0	95	0	0	0	5	0	-	0	-
30-May-2018	KN	13-3	-	0.50	0	95	0	0	0	5	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Creek														
20-May-2018	VS	01-1	-	0.30	30	0	0	0	0	70	100	Typha	0	-
20-May-2018	VS	01-2	-	0.30	30	0	0	0	0	70	100	Typha	0	-
20-May-2018	VS	01-3	-	0.30	30	0	0	0	0	70	100	Typha	0	-
20-May-2018	VS	02-1	-	0.40	40	30	0	0	0	30	50	Carex	0	-
20-May-2018	VS	02-2	-	0.40	40	30	0	0	0	30	50	Carex	3	Northern pike
20-May-2018	VS	02-3	-	0.40	40	30	0	0	0	30	50	Carex	2	Northern pike
20-May-2018	VS	03-1	-	0.30	40	30	0	0	0	30	50	Carex	4	Northern pike
20-May-2018	VS	03-2	-	0.30	40	30	0	0	0	30	50	Carex	0	-
20-May-2018	VS	03-3	-	0.30	40	30	0	0	0	30	50	Carex	1	Northern pike
20-May-2018	VS	04-1	-	0.30	50	0	0	0	0	50	50	Carex	1	Northern pike
20-May-2018	VS	04-2	-	0.30	50	0	0	0	0	50	50	Carex	1	Northern pike
20-May-2018	VS	04-3	-	0.30	50	0	0	0	0	50	50	Carex	5	Northern pike
20-May-2018	VS	05-1	-	0.30	70	0	0	0	0	30	30	Carex	1	Northern pike
20-May-2018	VS	05-2	-	0.30	70	0	0	0	0	30	30	Carex	0	-
20-May-2018	VS	05-3	-	0.30	70	0	0	0	0	30	30	Carex	2	Northern pike
20-May-2018	VS	06-1	-	0.30	70	0	0	0	0	30	25	Carex	0	-
20-May-2018	VS	06-2	-	0.30	70	0	0	0	0	30	25	Carex	1	Northern pike
20-May-2018	VS	06-3	-	0.30	70	0	0	0	0	30	25	Carex	0	-
20-May-2018	VS	07-1	-	0.30	70	0	0	0	0	30	20	Carex	0	-
20-May-2018	VS	07-2	-	0.30	70	0	0	0	0	30	20	Carex	0	-
20-May-2018	VS	07-3	-	0.30	70	0	0	0	0	30	20	Carex	0	-
20-May-2018	VS	08-1	-	0.50	40	20	0	0	0	40	75	Carex	0	-
20-May-2018	VS	08-2	-	0.50	40	20	0	0	0	40	75	Carex	0	-
20-May-2018	VS	08-3	-	0.50	40	20	0	0	0	40	75	Carex	0	-
20-May-2018	VS	09-1	-	0.30	90	0	0	0	0	10	15	Carex	4	Northern pike
20-May-2018	VS	09-2	-	0.30	90	0	0	0	0	10	15	Carex	2	Northern pike
20-May-2018	VS	09-3	-	0.30	90	0	0	0	0	10	15	Carex	2	Northern pike
20-May-2018	VS	10-1	-	0.30	70	0	0	0	0	30	50	Carex	1	Northern pike
20-May-2018	VS	10-2	-	0.30	70	0	0	0	0	30	50	Carex	13	Northern pike
20-May-2018	VS	10-3	-	0.30	70	0	0	0	0	30	50	Carex	6	Northern pike
20-May-2018	VS	11-1	-	0.30	70	0	0	0	0	30	50	Carex	2	Northern pike
20-May-2018	VS	11-2	-	0.30	70	0	0	0	0	30	50	Carex	0	-
20-May-2018	VS	11-3	-	0.30	70	0	0	0	0	30	50	Carex	1	Sucker spp.
20-May-2018	VS	12-1	-	0.10	0	80	0	0	0	20	25	Carex	0	-
20-May-2018	VS	12-2	-	0.10	0	80	0	0	0	20	25	Carex	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Creek														
20-May-2018	VS	12-3	-	0.10	0	80	0	0	0	20	25	Carex	3	Northern pike
20-May-2018	VS	13-1	-	0.30	80	0	0	0	0	20	40	Carex	3	Sucker spp.
20-May-2018	VS	13-1	-	0.30	80	0	0	0	0	20	40	Carex	7	Northern pike
20-May-2018	VS	13-2	-	0.30	80	0	0	0	0	20	40	Carex	1	Sucker spp.
20-May-2018	VS	13-2	-	0.30	80	0	0	0	0	20	40	Carex	3	Northern pike
20-May-2018	VS	13-3	-	0.30	80	0	0	0	0	20	40	Carex	7	Northern pike
20-May-2018	VS	14-1	-	0.40	80	0	0	0	0	20	75	Carex	8	Northern pike
20-May-2018	VS	14-2	-	0.40	80	0	0	0	0	20	75	Carex	1	Sucker spp.
20-May-2018	VS	14-2	-	0.40	80	0	0	0	0	20	75	Carex	11	Northern pike
20-May-2018	VS	14-3	-	0.40	80	0	0	0	0	20	75	Carex	6	Northern pike
20-May-2018	VS	15-1	-	0.30	80	0	0	0	0	20	70	Carex	0	-
20-May-2018	VS	15-2	-	0.30	80	0	0	0	0	20	70	Carex	1	Northern pike
20-May-2018	VS	15-3	-	0.30	80	0	0	0	0	20	70	Carex	2	Northern pike
20-May-2018	VS	16-1	-	0.40	70	10	0	0	0	20	50	Carex	3	Sucker spp.
20-May-2018	VS	16-1	-	0.40	70	10	0	0	0	20	50	Carex	4	Northern pike
20-May-2018	VS	16-2	-	0.40	70	10	0	0	0	20	50	Carex	2	Sucker spp.
20-May-2018	VS	16-2	-	0.40	70	10	0	0	0	20	50	Carex	5	Northern pike
20-May-2018	VS	16-3	-	0.40	70	10	0	0	0	20	50	Carex	3	Northern pike
30-May-2018	VS	17-1	-	0.20	0	0	0	0	0	0	20	-	1	Northern pike
30-May-2018	VS	17-2	-	0.20	0	0	0	0	0	0	20	-	2	Northern pike
30-May-2018	VS	17-3	-	0.20	0	0	0	0	0	0	50	-	1	Northern pike
30-May-2018	VS	18-1	-	0.20	0	0	0	0	0	0	15	*Myrica gale*	0	-
30-May-2018	VS	18-2	-	0.20	0	0	0	0	0	0	20	*Myrica gale*	0	-
30-May-2018	VS	18-3	-	0.20	0	0	0	0	0	0	15	Carex	1	Northern pike
30-May-2018	VS	19-1	-	0.40	0	0	0	0	0	0	40	Carex	2	Northern pike
30-May-2018	VS	19-2	-	0.20	0	0	0	0	0	0	80	Carex	0	-
30-May-2018	VS	19-3	-	0.20	0	0	0	0	0	0	50	Carex	0	-
30-May-2018	VS	20-1	-	0.30	0	0	0	0	0	0	30	Carex	1	Northern pike
30-May-2018	VS	20-2	-	0.50	0	0	0	0	0	0	60	-	1	Northern pike
30-May-2018	VS	20-3	-	0.50	0	0	0	0	0	0	60	-	1	Northern pike
30-May-2018	VS	21-1	-	0.30	0	0	0	0	0	0	50	Carex	11	Northern pike
30-May-2018	VS	21-2	-	0.30	0	0	0	0	0	0	30	Carex	0	-
30-May-2018	VS	21-3	-	0.30	0	0	0	0	0	0	20	Carex	1	Northern pike
30-May-2018	VS	22-1	-	0.40	0	0	0	0	0	100	95	Carex	0	-
30-May-2018	VS	22-2	-	0.40	0	0	0	0	0	100	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Creek														
30-May-2018	VS	22-3	-	0.40	0	0	0	0	0	100	0	-	0	-
30-May-2018	VS	23-1	-	0.40	0	0	0	0	0	100	90	*Myrica gale*	0	-
30-May-2018	VS	23-2	-	0.40	0	0	0	0	0	100	90	*Myrica gale*	0	-
30-May-2018	VS	23-3	-	0.40	0	0	0	0	0	100	90	*Myrica gale*	0	-
30-May-2018	VS	24-1	-	0.40	0	0	0	0	0	100	100	Carex	0	-
30-May-2018	VS	24-2	-	0.40	0	0	0	0	0	100	100	Carex	0	-
30-May-2018	VS	24-3	-	0.40	0	0	0	0	0	100	100	Carex	1	Sucker spp.
30-May-2018	VS	25-1	-	0.25	0	0	0	0	0	100	75	Carex	0	-
30-May-2018	VS	25-2	-	0.25	0	0	0	0	0	100	75	Carex	0	-
30-May-2018	VS	25-3	-	0.25	0	0	0	0	0	100	75	Carex	0	-
30-May-2018	VS	26-1	-	0.90	0	0	0	0	0	100	80	Carex	0	-
30-May-2018	VS	26-2	-	0.90	0	0	0	0	0	100	80	Carex	0	-
30-May-2018	VS	26-3	-	0.90	0	0	0	0	0	100	80	Carex	0	-
Forrest Lake														
27-May-2018	ES	01-1	1	0.50	0	0	20	10	70	0	0	-	0	-
27-May-2018	ES	01-2	1	0.50	0	0	20	10	70	0	0	-	0	-
27-May-2018	ES	01-3	1	0.50	0	0	20	10	70	0	0	-	0	-
27-May-2018	ES	02-1	1	0.60	0	0	10	80	10	0	0	-	1	Sucker spp.
27-May-2018	ES	02-2	1	0.60	0	0	10	80	10	0	0	-	0	-
27-May-2018	ES	02-3	1	0.60	0	0	10	80	10	0	0	-	0	-
27-May-2018	ES	03-1	1	0.40	0	0	20	80	0	0	0	-	0	-
27-May-2018	ES	03-2	1	0.40	0	0	20	80	0	0	0	-	0	-
27-May-2018	ES	03-3	1	0.40	0	0	20	80	0	0	0	-	0	-
28-May-2018	ES	04-1	1	0.40	0	0	30	50	20	0	0	-	0	-
28-May-2018	ES	04-2	1	0.40	0	0	30	50	20	0	0	-	0	-
28-May-2018	ES	04-3	1	0.40	0	0	30	50	20	0	0	-	0	-
28-May-2018	ES	05-1	1	0.70	0	0	10	30	60	0	0	-	0	-
28-May-2018	ES	05-2	1	0.70	0	0	10	30	60	0	0	-	0	-
28-May-2018	ES	05-3	1	0.70	0	0	10	30	60	0	0	-	0	-
26-May-2018	ES	06-1	1	0.50	0	20	10	70	0	0	0	-	0	-
26-May-2018	ES	06-2	1	0.50	0	20	10	70	0	0	0	-	0	-
26-May-2018	ES	06-3	1	0.50	0	20	10	70	0	0	0	-	0	-
25-May-2018	KN	01-1	-	0.40	0	15	65	20	0	0	0	-	1	Walleye
25-May-2018	KN	01-2	-	0.40	0	5	75	10	0	10	0	-	0	-
26-May-2018	KN	02-1	-	0.35	0	0	0	100	0	0	0	-	3	Northern pike

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
26-May-2018	KN	02-2	-	0.35	0	0	0	100	0	0	0	-	3	Walleye
26-May-2018	KN	02-3	-	0.35	0	0	0	100	0	0	0	-	0	-
26-May-2018	KN	03-1	-	0.20	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	03-2	-	0.20	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	03-3	-	0.20	0	0	10	50	40	0	0	-	0	-
26-May-2018	KN	04-1	-	0.40	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	04-2	-	0.40	0	0	0	55	45	0	0	-	0	-
26-May-2018	KN	04-3	-	0.40	0	0	0	55	45	0	0	-	0	-
26-May-2018	KN	05-1	-	0.40	0	0	0	90	10	0	0	-	0	-
26-May-2018	KN	05-2	-	0.40	0	0	0	90	10	0	0	-	0	-
26-May-2018	KN	05-3	-	0.40	0	0	0	90	10	0	0	-	0	-
26-May-2018	KN	06-1	-	0.60	0	0	0	20	80	0	0	-	0	-
26-May-2018	KN	06-2	-	0.50	0	0	0	30	70	0	0	-	0	-
26-May-2018	KN	06-3	-	0.30	0	0	0	40	60	0	0	-	0	-
26-May-2018	KN	07-1	-	0.50	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	07-2	-	0.50	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	07-3	-	0.50	0	0	0	50	50	0	0	-	0	-
26-May-2018	KN	08-1	-	0.30	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	08-2	-	0.30	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	08-3	-	0.30	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	09-1	-	0.60	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	09-2	-	0.60	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	09-3	-	0.60	0	0	75	25	0	0	0	-	0	-
26-May-2018	KN	10-1	-	0.40	0	70	30	0	0	0	0	-	0	-
26-May-2018	KN	10-2	-	0.40	0	70	30	0	0	0	0	-	0	-
26-May-2018	KN	10-3	-	0.40	0	70	30	0	0	0	0	-	0	-
26-May-2018	KN	11-1	-	0.30	0	70	20	10	0	0	0	-	0	-
26-May-2018	KN	11-2	-	0.30	0	70	20	10	0	0	0	-	0	-
26-May-2018	KN	11-3	-	0.30	0	70	20	10	0	0	0	-	0	-
26-May-2018	KN	12-1	-	0.50	0	20	30	50	0	0	0	-	0	-
26-May-2018	KN	12-2	-	0.50	0	20	30	50	0	0	0	-	100	Slimy sculpin
26-May-2018	KN	12-3	-	0.50	0	20	30	50	0	0	0	-	400	Slimy sculpin
26-May-2018	KN	13-1	-	0.40	0	80	10	10	0	0	0	-	50	Slimy sculpin
26-May-2018	KN	13-2	-	0.40	0	80	10	10	0	0	0	-	0	-
26-May-2018	KN	13-3	-	0.40	0	80	10	10	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
26-May-2018	KN	14-1	-	0.60	0	20	20	60	0	0	0	-	0	-
26-May-2018	KN	14-2	-	0.60	0	20	20	60	0	0	0	-	0	-
26-May-2018	KN	14-3	-	0.60	0	20	20	60	0	0	0	-	0	-
26-May-2018	KN	15-1	-	0.60	0	10	0	90	0	0	0	-	0	-
26-May-2018	KN	15-2	-	0.60	0	10	0	90	0	0	0	-	1	Sucker spp.
26-May-2018	KN	15-3	-	0.60	0	10	0	90	0	0	0	-	300	Slimy sculpin
26-May-2018	KN	16-1	-	0.50	0	40	10	50	0	0	0	-	0	-
26-May-2018	KN	16-2	-	0.50	0	40	10	50	0	0	0	-	0	-
26-May-2018	KN	16-3	-	0.50	0	40	10	50	0	0	0	-	0	-
27-May-2018	KN	17-1	-	0.50	0	0	0	70	30	0	0	-	0	-
27-May-2018	KN	17-2	-	0.50	0	0	0	70	30	0	0	-	0	-
27-May-2018	KN	17-3	-	0.50	0	0	0	70	30	0	0	-	0	-
27-May-2018	KN	18-1	-	0.70	0	0	20	70	10	0	0	-	0	-
27-May-2018	KN	18-2	-	0.70	0	0	20	70	10	0	0	-	0	-
27-May-2018	KN	18-3	-	0.70	0	0	20	70	10	0	0	-	0	-
27-May-2018	KN	19-1	-	0.50	0	0	30	70	0	0	0	-	0	-
27-May-2018	KN	19-2	-	0.50	0	0	30	70	0	0	0	-	0	-
27-May-2018	KN	19-3	-	0.50	0	0	30	70	0	0	0	-	0	-
27-May-2018	KN	20-1	-	0.30	0	40	10	50	0	0	0	-	0	-
27-May-2018	KN	20-2	-	0.30	0	40	10	50	0	0	0	-	0	-
27-May-2018	KN	20-3	-	0.30	0	40	10	50	0	0	0	-	1	Sucker spp.
27-May-2018	KN	21-1	-	0.60	0	0	20	60	20	0	0	-	1	Walleye
27-May-2018	KN	21-2	-	0.60	0	0	20	60	20	0	0	-	1	Sucker spp.
27-May-2018	KN	21-3	-	0.60	0	0	20	60	20	0	0	-	0	-
27-May-2018	KN	22-1	-	0.40	0	50	20	30	0	0	0	-	0	-
27-May-2018	KN	22-2	-	0.40	0	50	20	30	0	0	0	-	0	-
27-May-2018	KN	22-3	-	0.40	0	50	20	30	0	0	0	-	0	-
27-May-2018	KN	23-1	-	0.70	0	50	0	30	20	0	0	-	30	Slimy sculpin
27-May-2018	KN	23-2	-	0.70	0	50	0	30	20	0	0	-	0	-
27-May-2018	KN	23-3	-	0.70	0	50	0	30	20	0	0	-	0	-
27-May-2018	KN	24-1	-	0.60	10	70	10	10	0	0	0	-	0	-
27-May-2018	KN	24-2	-	0.60	10	70	10	10	0	0	0	-	0	-
27-May-2018	KN	24-3	-	0.60	10	70	10	10	0	0	0	-	0	-
27-May-2018	KN	25-1	-	0.60	0	0	100	0	0	0	0	-	0	-
27-May-2018	KN	26-1	-	0.20	0	0	10	90	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
27-May-2018	KN	26-2	-	0.20	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	26-3	-	0.20	0	0	10	90	0	0	0	-	0	-
27-May-2018	KN	27-1	-	0.30	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	27-2	-	0.30	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	27-3	-	0.30	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	28-1	-	0.40	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	28-2	-	0.40	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	28-3	-	0.40	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	29-1	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	29-2	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	29-3	-	0.30	0	0	0	100	0	0	0	-	0	-
27-May-2018	KN	30-1	-	0.55	0	0	15	80	5	0	0	-	0	-
27-May-2018	KN	30-2	-	0.55	0	0	15	80	5	0	0	-	0	-
27-May-2018	KN	30-3	-	0.55	0	0	15	80	5	0	0	-	0	-
27-May-2018	KN	31-1	-	0.77	0	0	0	85	15	0	0	-	0	-
27-May-2018	KN	31-3	-	0.77	0	0	0	85	15	0	0	-	0	-
28-May-2018	KN	32-1	-	0.60	0	0	20	70	10	0	0	-	0	-
28-May-2018	KN	32-2	-	0.60	0	0	20	70	10	0	0	-	0	-
28-May-2018	KN	32-3	-	0.60	0	0	20	70	10	0	0	-	0	-
28-May-2018	KN	33-1	-	0.60	0	0	90	10	0	0	0	-	0	-
28-May-2018	KN	33-2	-	0.60	0	0	90	10	0	0	0	-	0	-
28-May-2018	KN	33-3	-	0.60	0	0	90	10	0	0	0	-	0	-
28-May-2018	KN	34-1	-	0.60	0	0	15	70	15	0	0	-	0	-
28-May-2018	KN	34-2	-	0.60	0	0	45	45	10	0	0	-	0	-
28-May-2018	KN	34-3	-	0.60	0	0	45	45	10	0	0	-	0	-
28-May-2018	KN	35-1	-	0.40	0	0	33	34	33	0	0	-	0	-
28-May-2018	KN	35-2	-	0.40	0	0	33	34	33	0	0	-	0	-
28-May-2018	KN	35-3	-	0.40	0	0	33	34	33	0	0	-	0	-
28-May-2018	KN	36-1	-	0.10	0	100	0	0	0	0	0	-	0	-
28-May-2018	KN	36-2	-	0.10	0	100	0	0	0	0	0	-	0	-
28-May-2018	KN	36-3	-	0.10	0	100	0	0	0	0	0	-	0	-
28-May-2018	KN	37-1	-	0.25	0	0	75	25	0	0	0	-	0	-
28-May-2018	KN	37-2	-	0.25	0	0	60	40	0	0	0	-	0	-
29-May-2018	KN	38-1	-	0.30	0	0	33	34	33	0	0	-	0	-
29-May-2018	KN	38-2	-	0.40	0	0	33	34	33	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
29-May-2018	KN	38-3	-	0.50	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	39-1	-	0.40	0	0	0	50	50	0	0	-	0	-
29-May-2018	KN	39-2	-	0.40	0	0	0	50	50	0	0	-	0	-
29-May-2018	KN	39-3	-	0.40	0	0	0	50	50	0	0	-	0	-
29-May-2018	KN	40-1	-	0.60	0	0	33	34	33	0	0	-	0	-
29-May-2018	KN	40-2	-	0.60	0	0	33	34	33	0	0	-	0	-
29-May-2018	KN	40-3	-	0.60	0	0	33	34	33	0	0	-	0	-
29-May-2018	KN	41-1	-	0.50	0	0	5	70	25	0	0	-	0	-
29-May-2018	KN	41-2	-	0.50	0	0	5	70	25	0	0	-	0	-
29-May-2018	KN	41-3	-	0.50	0	0	5	70	25	0	0	-	0	-
29-May-2018	KN	42-1	-	0.40	0	0	50	0	50	0	0	-	0	-
29-May-2018	KN	42-2	-	0.40	0	0	50	0	50	0	0	-	0	-
29-May-2018	KN	42-3	-	0.40	0	0	50	0	50	0	0	-	0	-
29-May-2018	KN	43-1	-	0.40	0	0	50	50	0	0	0	-	75	Slimy sculpin
29-May-2018	KN	43-2	-	0.40	0	10	50	40	0	0	0	-	0	-
29-May-2018	KN	43-3	-	0.40	0	0	50	50	0	0	0	-	0	-
29-May-2018	KN	44-1	-	0.55	0	0	15	85	0	0	0	-	0	-
29-May-2018	KN	44-2	-	0.55	0	0	15	85	0	0	0	-	0	-
29-May-2018	KN	44-3	-	0.55	0	0	15	85	0	0	0	-	0	-
29-May-2018	KN	45-1	-	0.40	0	10	50	40	0	0	0	-	0	-
29-May-2018	KN	45-2	-	0.40	0	10	50	40	0	0	0	-	0	-
29-May-2018	KN	45-3	-	0.40	0	10	50	60	0	0	0	-	0	-
29-May-2018	KN	46-1	-	0.40	0	0	60	40	0	0	0	-	0	-
29-May-2018	KN	46-2	-	0.40	0	0	40	60	0	0	0	-	0	-
29-May-2018	KN	46-3	-	0.40	0	0	60	40	0	0	0	-	0	-
29-May-2018	KN	47-1	-	0.40	0	0	45	45	10	0	0	-	0	-
29-May-2018	KN	47-2	-	0.30	0	0	45	45	10	0	0	-	0	-
29-May-2018	KN	47-3	-	0.40	0	0	45	45	10	0	0	-	0	-
29-May-2018	KN	48-1	-	0.30	0	10	30	60	0	0	0	-	1	Slimy sculpin
29-May-2018	KN	48-2	-	0.25	0	10	30	60	0	0	0	-	12	Slimy sculpin
29-May-2018	KN	48-3	-	0.25	0	10	30	60	0	0	0	-	1	Walleye
29-May-2018	KN	48-3	-	0.25	0	10	30	60	0	0	0	-	12	Slimy sculpin
29-May-2018	KN	49-1	-	0.40	0	1	90	9	0	0	0	-	0	-
29-May-2018	KN	49-2	-	0.40	0	1	90	9	0	0	0	-	0	-
29-May-2018	KN	49-3	-	0.40	0	1	90	9	0	0	0	-	1	Slimy sculpin

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
30-May-2018	KN	50-1	-	0.10	0	0	20	80	0	0	0	-	1	Walleye
30-May-2018	KN	50-2	-	0.20	0	0	0	90	0	10	0	-	0	-
30-May-2018	KN	50-3	-	0.20	0	0	5	95	0	0	0	-	0	-
30-May-2018	KN	51-1	-	0.10	0	5	20	75	0	0	0	-	0	-
30-May-2018	KN	51-2	-	0.20	0	0	25	75	0	0	0	-	0	-
30-May-2018	KN	51-3	-	0.20	0	30	5	65	0	0	0	-	0	-
30-May-2018	KN	52-1	-	0.20	0	20	50	20	0	10	0	-	0	-
30-May-2018	KN	52-2	-	0.20	0	60	40	0	0	0	0	-	0	-
30-May-2018	KN	52-3	-	0.20	0	0	5	95	0	0	0	-	1	Walleye
30-May-2018	KN	53-1	-	0.40	0	20	20	60	0	0	0	-	1	Walleye
30-May-2018	KN	53-2	-	0.30	0	20	20	60	0	0	0	-	1	Walleye
30-May-2018	KN	53-3	-	0.20	0	0	20	80	0	0	0	-	3	Walleye
30-May-2018	KN	54-1	-	0.20	0	10	10	80	0	0	0	-	3	Walleye
30-May-2018	KN	54-2	-	0.10	0	0	70	30	0	0	0	-	0	-
30-May-2018	KN	54-3	-	0.10	0	0	80	20	0	0	0	-	0	-
30-May-2018	KN	55-1	-	0.20	0	0	80	20	0	0	0	-	0	-
30-May-2018	KN	55-2	-	0.20	0	90	0	10	0	0	0	-	0	-
30-May-2018	KN	55-3	-	0.30	0	50	30	20	0	0	0	-	1	Walleye
25-May-2018	VS	01-1	-	0.60	0	25	0	0	0	75	85	*Myrica gale*	0	-
25-May-2018	VS	01-2	-	0.60	0	25	0	0	0	75	85	*Myrica gale*	0	-
25-May-2018	VS	01-3	-	0.60	0	25	0	0	0	75	85	*Myrica gale*	0	-
25-May-2018	VS	02-1	-	0.80	0	0	0	0	0	100	85	*Chamaedaphne calyculata*	0	-
25-May-2018	VS	02-2	-	0.70	0	0	0	0	0	100	60	*Chamaedaphne calyculata*	0	-
25-May-2018	VS	02-3	-	0.65	0	0	0	0	0	100	60	*Chamaedaphne calyculata*	0	-
25-May-2018	VS	02-4	-	0.70	0	0	0	0	0	100	60	*Chamaedaphne calyculata*	0	-
25-May-2018	VS	02-5	-	0.80	0	0	0	0	0	100	85	*Myrica gale*	0	-
25-May-2018	VS	03-1	-	0.30	0	0	0	0	0	100	30	Carex	0	-
25-May-2018	VS	03-2	-	0.30	0	0	0	0	0	100	30	Carex	0	-
25-May-2018	VS	03-3	-	0.30	0	0	0	0	0	100	30	Carex	0	-
25-May-2018	VS	03-4	-	0.30	0	0	0	0	0	100	30	Carex	0	-
25-May-2018	VS	03-5	-	0.30	0	0	0	0	0	100	30	Carex	0	-
25-May-2018	VS	04-1	-	0.40	0	0	0	0	0	100	50	Carex	16	Northern pike
25-May-2018	VS	04-2	-	0.40	0	0	0	0	0	100	50	Carex	4	Northern pike
25-May-2018	VS	04-3	-	0.40	0	0	0	0	0	100	50	Carex	9	Northern pike
25-May-2018	VS	05-1	-	0.40	0	0	0	0	0	100	90	Carex	5	Northern pike

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
25-May-2018	VS	05-2	-	0.40	0	0	0	0	0	100	90	Carex	1	Northern pike
25-May-2018	VS	05-3	-	0.40	0	0	0	0	0	100	90	Carex	6	Northern pike
25-May-2018	VS	06-1	-	0.30	0	0	0	0	0	100	95	Carex	1	Northern pike
25-May-2018	VS	07-1	-	0.30	0	0	0	0	0	100	90	Carex	3	Northern pike
25-May-2018	VS	08-1	-	0.50	0	0	0	0	0	100	50	*Myrica gale*	0	-
Beet Channel														
25-May-2018	ES	01-1	1	0.80	70	0	0	10	20	0	0	-	0	-
25-May-2018	ES	01-2	1	0.80	70	0	0	10	20	0	0	-	0	-
25-May-2018	ES	01-3	1	0.80	70	0	0	10	20	0	0	-	0	-
25-May-2018	KN	01-1	-	0.60	10	90	0	0	0	0	0	-	0	-
25-May-2018	KN	01-2	-	0.60	10	90	0	0	0	0	0	-	0	-
25-May-2018	KN	01-3	-	0.60	10	90	0	0	0	0	0	-	0	-
25-May-2018	KN	02-1	-	0.50	10	80	10	0	0	0	0	-	0	-
25-May-2018	KN	02-2	-	0.50	10	80	10	0	0	0	0	-	0	-
25-May-2018	KN	02-3	-	0.50	10	80	10	0	0	0	0	-	0	-
25-May-2018	KN	03-1	-	0.50	70	10	10	10	0	0	0	-	0	-
25-May-2018	KN	03-2	-	0.50	70	10	10	10	0	0	0	-	0	-
25-May-2018	KN	03-3	-	0.50	70	10	10	10	0	0	0	-	0	-
25-May-2018	KN	04-1	-	0.50	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	04-2	-	0.50	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	04-3	-	0.50	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	05-1	-	0.70	80	0	0	0	0	20	0	-	0	-
25-May-2018	KN	05-2	-	0.70	80	0	0	0	0	20	0	-	0	-
25-May-2018	KN	05-3	-	0.70	80	0	0	0	0	20	0	-	0	-
25-May-2018	KN	06-1	-	0.20	0	90	10	0	0	0	0	-	0	-
25-May-2018	KN	06-2	-	0.20	0	90	10	0	0	0	0	-	0	-
25-May-2018	KN	06-3	-	0.20	0	90	10	0	0	0	0	-	0	-
25-May-2018	KN	07-1	-	0.30	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	07-2	-	0.30	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	07-3	-	0.30	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	08-1	-	0.50	100	0	0	0	0	0	0	-	0	-
25-May-2018	KN	08-2	-	0.50	100	0	0	0	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Channel														
25-May-2018	KN	08-3	-	0.50	100	0	0	0	0	0	0	-	0	-
25-May-2018	KN	09-1	-	0.40	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	09-2	-	0.40	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	09-3	-	0.40	0	100	0	0	0	0	0	-	0	-
25-May-2018	KN	10-1	-	0.30	90	0	0	0	0	10	0	-	0	-
25-May-2018	KN	10-2	-	0.30	90	0	0	0	0	10	0	-	0	-
25-May-2018	KN	10-3	-	0.30	90	0	0	0	0	10	0	-	0	-
27-May-2018	KN	11-1	-	0.20	0	100	0	0	0	0	0	-	0	-
27-May-2018	KN	11-2	-	0.20	0	100	0	0	0	0	0	-	0	-
27-May-2018	KN	11-3	-	0.20	0	100	0	0	0	0	0	-	0	-
25-May-2018	VS	01-1	-	0.30	0	100	0	0	0	0	30	Carex	0	-
25-May-2018	VS	01-2	-	0.30	0	100	0	0	0	0	30	Carex	0	-
25-May-2018	VS	01-2	-	0.30	0	100	0	0	0	0	30	Carex	0	-
Beet Lake														
22-May-2018	ES	01-1	1	0.40	0	10	40	50	0	0	0	-	0	-
22-May-2018	ES	01-2	1	0.40	0	10	40	50	0	0	0	-	40	Walleye
22-May-2018	ES	01-3	1	0.40	0	10	40	50	0	0	0	-	0	-
22-May-2018	ES	02-1	1	0.30	0	0	70	30	0	0	0	-	0	-
22-May-2018	ES	02-2	1	0.30	0	0	70	30	0	0	0	-	0	-
22-May-2018	ES	02-3	1	0.30	0	0	70	30	0	0	0	-	0	-
22-May-2018	ES	03-1	1	0.40	0	0	20	50	30	0	0	-	0	-
22-May-2018	ES	03-2	1	0.40	0	0	20	50	30	0	0	-	1	Sucker spp.
22-May-2018	ES	03-3	1	0.40	0	0	20	50	30	0	0	-	0	-
22-May-2018	ES	04-1	1	0.40	0	30	40	30	0	0	0	-	0	-
22-May-2018	ES	04-2	1	0.40	0	30	40	30	0	0	0	-	0	-
22-May-2018	ES	04-3	1	0.40	0	30	40	30	0	0	0	-	0	-
22-May-2018	ES	05-1	1	0.60	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	05-2	1	0.60	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	05-3	1	0.60	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	06-1	1	0.50	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	06-2	1	0.50	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	06-3	1	0.05	0	10	20	70	0	0	0	-	0	-
22-May-2018	ES	07-1	1	0.60	0	10	40	50	0	0	0	-	0	-
22-May-2018	ES	07-2	1	0.60	0	10	40	50	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
22-May-2018	ES	07-3	1	0.60	0	10	40	50	0	0	0	-	1	Walleye
23-May-2018	ES	08-1	1	0.50	0	0	0	100	0	0	0	-	2	Walleye
23-May-2018	ES	08-2	1	0.50	0	0	0	100	0	0	0	-	0	-
23-May-2018	ES	08-3	1	0.50	0	0	0	100	0	0	0	-	0	-
23-May-2018	ES	09-1	1	0.70	0	0	30	60	10	0	0	-	0	-
23-May-2018	ES	09-2	1	0.70	0	0	30	60	10	0	0	-	1	Walleye
23-May-2018	ES	09-3	1	0.70	0	0	30	60	10	0	0	-	0	-
23-May-2018	ES	10-1	1	0.50	0	10	30	60	0	0	0	-	0	-
23-May-2018	ES	10-2	1	0.50	0	10	30	60	0	0	0	-	1	Walleye
23-May-2018	ES	10-3	1	0.50	0	10	30	60	0	0	0	-	1	Sucker spp.
23-May-2018	ES	10-3	1	0.50	0	10	30	60	0	0	0	-	1	Walleye
23-May-2018	ES	11-1	1	0.50	0	20	0	80	0	0	0	-	3	Sucker spp.
23-May-2018	ES	11-2	1	0.50	0	20	0	80	0	0	0	-	2	Sucker spp.
23-May-2018	ES	11-3	1	0.50	0	20	0	80	0	0	0	-	0	-
23-May-2018	ES	12-1	1	0.40	0	0	30	70	0	0	0	-	3	Walleye
23-May-2018	ES	12-2	1	0.40	0	0	30	70	0	0	0	-	1	Sucker spp.
23-May-2018	ES	12-2	1	0.40	0	0	30	70	0	0	0	-	1	Walleye
23-May-2018	ES	12-3	1	0.40	0	0	30	70	0	0	0	-	0	-
23-May-2018	ES	13-1	1	0.70	0	10	20	70	0	0	0	-	3	Sucker spp.
23-May-2018	ES	13-2	1	0.70	0	10	20	70	0	0	0	-	1	Sucker spp.
23-May-2018	ES	13-2	1	0.70	0	10	20	70	0	0	0	-	1	Walleye
23-May-2018	ES	13-3	1	0.70	0	10	20	70	0	0	0	-	0	-
23-May-2018	ES	14-1	1	0.60	0	0	0	100	0	0	0	-	3	Sucker spp.
23-May-2018	ES	14-2	1	0.60	0	0	0	100	0	0	0	-	1	Walleye
23-May-2018	ES	14-3	1	0.60	0	0	0	100	0	0	0	-	2	Sucker spp.
24-May-2018	KN	01-1	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	01-2	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	01-3	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	02-1	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	02-2	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	02-3	-	0.20	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	03-1	-	0.30	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	03-2	-	0.30	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	03-3	-	0.30	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	04-1	-	0.30	0	100	0	0	0	0	0	-	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
24-May-2018	KN	04-2	-	0.30	0	100	0	0	0	0	0	-	0	-
24-May-2018	KN	04-3	-	0.30	0	100	0	0	0	0	0	-	0	-
Beet Creek														
21-May-2018	KN	01-1	-	0.20	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	01-2	-	0.20	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	01-3	-	0.20	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	02-1	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	02-2	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	02-3	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	03-1	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	03-2	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	03-3	-	0.40	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	04-1	-	0.50	0	100	0	0	0	0	0	-	0	-
21-May-2018	KN	04-2	-	0.50	0	100	0	0	0	0	0	-	2	Walleye
21-May-2018	KN	04-3	-	0.50	0	100	0	0	0	0	0	-	0	-
23-May-2018	KN	05-1	-	0.70	0	100	0	0	0	0	0	-	2	Sucker spp.
23-May-2018	KN	05-2	-	0.40	0	100	0	0	0	0	0	-	2	Sucker spp.
23-May-2018	KN	05-3	-	0.80	0	100	0	0	0	0	0	-	8	Walleye
21-May-2018	VS	01-1	-	0.40	30	40	0	0	0	30	80	Carex	0	-
21-May-2018	VS	01-2	-	0.40	30	40	0	0	0	30	80	Carex	0	-
21-May-2018	VS	01-3	-	0.40	30	40	0	0	0	30	80	Carex	0	-
21-May-2018	VS	02-1	-	0.40	70	0	0	0	0	30	70	Carex	0	-
21-May-2018	VS	02-2	-	0.40	70	0	0	0	0	30	70	Carex	1	Northern pike
21-May-2018	VS	02-3	-	0.40	70	0	0	0	0	30	70	Carex	0	-
21-May-2018	VS	03-1	-	0.30	80	0	0	0	0	20	60	Carex	0	-
21-May-2018	VS	03-2	-	0.30	80	0	0	0	0	20	60	Carex	0	-
21-May-2018	VS	03-3	-	0.30	80	0	0	0	0	20	60	Carex	0	-
21-May-2018	VS	04-1	-	0.20	50	20	0	0	0	30	30	Carex	0	-
21-May-2018	VS	04-2	-	0.20	50	20	0	0	0	30	30	Carex	0	-
21-May-2018	VS	04-3	-	0.20	50	20	0	0	0	30	30	Carex	0	-
18-May-2018	VS	05-1	-	0.30	0	20	0	0	0	80	100	Carex	16	Northern pike
18-May-2018	VS	05-2	-	0.20	0	60	0	0	0	40	60	Carex	0	-
18-May-2018	VS	05-3	-	0.30	0	20	0	0	0	80	90	Carex	9	Northern pike
18-May-2018	VS	05-4	-	0.30	0	20	0	0	0	80	100	Carex	0	-
18-May-2018	VS	05-5	-	0.20	10	40	0	0	0	50	80	Carex	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Creek														
23-May-2018	VS	06-1	-	0.30	0	0	0	0	0	100	0	Carex	0	-
23-May-2018	VS	06-2	-	0.30	0	0	0	0	0	100	0	Carex	1	Northern pike
24-May-2018	VS	07-1	-	0.30	0	0	0	0	0	100	100	Carex	2	Sucker spp.
24-May-2018	VS	07-1	-	0.30	0	0	0	0	0	100	100	Carex	5	Northern pike
24-May-2018	VS	07-2	-	0.25	0	0	0	0	0	100	100	Carex	0	-
24-May-2018	VS	07-3	-	0.18	0	0	0	0	0	100	75	Carex	0	-
24-May-2018	VS	07-4	-	0.60	0	100	0	0	0	0	0	-	0	-
24-May-2018	VS	07-5	-	0.60	0	90	0	0	0	10	50	*Myrica gale*	1	Walleye
24-May-2018	VS	08-1	-	0.40	0	0	0	0	0	100	50	*Myrica gale*	100	Yellow perch
24-May-2018	VS	08-2	-	0.50	0	0	0	0	0	100	0	-	0	-
24-May-2018	VS	08-3	-	0.30	0	0	0	0	0	100	70	Alnus	1	Northern pike
Naomi Creek														
18-May-2018	KN	01-1	-	0.40	0	90	0	0	0	10	0	-	22	Walleye
20-May-2018	KN	02-1	-	0.75	5	90	0	0	0	5	0	-	3	Walleye
20-May-2018	KN	03-1	-	0.70	5	90	0	0	0	5	0	-	0	-
20-May-2018	KN	04-1	-	0.60	0	95	0	0	0	5	0	-	5	Walleye
20-May-2018	KN	05-1	-	0.60	0	95	0	0	0	5	0	-	16	Walleye
20-May-2018	KN	06-1	-	0.60	0	95	0	0	0	5	0	-	6	Walleye
20-May-2018	KN	07-1	-	0.90	0	95	0	0	0	5	0	-	8	Walleye
20-May-2018	KN	08-1	-	0.70	5	90	0	0	0	5	0	-	0	-
20-May-2018	KN	09-1	-	0.40	0	95	0	0	0	5	0	-	0	-
20-May-2018	KN	10-1	-	0.80	0	95	0	0	0	5	0	-	0	-
20-May-2018	KN	11-1	-	0.70	0	95	0	0	0	5	0	-	12	Walleye
20-May-2018	KN	12-1	-	0.80	0	95	0	0	0	5	0	-	9	Walleye
20-May-2018	KN	13-1	-	0.80	0	95	0	0	0	5	0	-	0	-
20-May-2018	KN	14-1	-	0.70	5	90	0	0	0	5	0	-	0	-
20-May-2018	KN	15-1	-	0.80	5	90	0	0	0	5	0	-	1	Walleye
20-May-2018	KN	16-1	-	0.70	0	95	0	0	0	5	0	-	12	Walleye
20-May-2018	KN	17-1	-	0.60	0	95	0	0	0	5	0	-	16	Walleye
20-May-2018	KN	18-1	-	0.80	0	95	0	0	0	5	0	-	12	Walleye
20-May-2018	KN	19-1	-	0.60	0	95	0	0	0	5	0	-	5	Walleye
20-May-2018	KN	20-1	-	0.50	0	80	0	0	0	20	0	-	2	Walleye
20-May-2018	KN	21-1	-	0.80	0	95	0	0	0	5	0	-	1	Walleye

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Naomi Creek														
20-May-2018	KN	22-1	-	0.50	0	95	0	0	0	5	0	-	7	Walleye
20-May-2018	KN	23-1	-	0.70	0	95	0	0	0	5	0	-	1	Walleye
20-May-2018	VS	01-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
20-May-2018	VS	02-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
20-May-2018	VS	03-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
20-May-2018	VS	04-1	-	0.20	0	0	0	0	0	100	60	Carex	8	Northern pike
20-May-2018	VS	05-1	-	0.30	0	0	0	0	0	100	50	Carex	0	-
20-May-2018	VS	06-1	-	0.30	0	0	0	0	0	100	50	Carex	3	Northern pike
20-May-2018	VS	07-1	-	0.40	0	0	0	0	0	100	50	Carex	2	Northern pike
20-May-2018	VS	08-1	-	0.40	0	0	0	0	0	100	50	Carex	7	Northern pike
20-May-2018	VS	09-1	-	0.20	0	10	0	0	0	90	70	Carex	0	-
20-May-2018	VS	10-1	-	0.20	0	15	0	0	0	85	70	Carex	0	-
20-May-2018	VS	11-1	-	0.30	0	0	0	0	0	100	50	Carex	1	Walleye
20-May-2018	VS	12-1	-	0.50	0	20	0	0	0	80	50	Carex	2	Northern pike
20-May-2018	VS	13-1	-	0.50	0	0	0	0	0	100	50	Carex	2	Northern pike
20-May-2018	VS	14-1	-	0.50	0	20	0	0	0	80	50	Carex	57	Walleye
20-May-2018	VS	15-1	-	0.50	0	10	0	0	0	90	50	Carex	0	-
24-May-2018	VS	16-1	-	0.25	0	0	0	0	0	100	100	Carex	1	Northern pike
24-May-2018	VS	16-2	-	0.25	0	0	0	0	0	100	0	Carex	0	-
24-May-2018	VS	16-3	-	0.25	0	0	0	0	0	100	0	Carex	0	-
24-May-2018	VS	16-4	-	0.25	0	0	0	0	0	100	0	Carex	0	-
24-May-2018	VS	16-5	-	0.25	0	0	0	0	0	100	0	Carex	0	-
24-May-2018	VS	17-1	-	0.10	0	0	0	0	0	100	100	Carex	0	-
24-May-2018	VS	17-2	-	0.10	0	0	0	0	0	100	100	Carex	0	-
24-May-2018	VS	18-1	-	0.20	0	0	0	0	0	100	100	Carex	0	-
24-May-2018	VS	19-1	-	0.30	0	0	0	0	0	100	100	Carex	2	Walleye
24-May-2018	VS	19-2	-	0.30	0	0	0	0	0	100	100	Carex	1	Walleye
24-May-2018	VS	20-1	-	0.70	0	90	0	0	0	10	70	*amaedaphne calycu*	2	Walleye
24-May-2018	VS	21-1	-	0.07	0	0	0	0	0	100	100	Sparganium	0	-
24-May-2018	VS	21-2	-	0.05	0	0	0	0	0	100	100	Sparganium	0	-
24-May-2018	VS	22-1	-	0.60	0	50	0	0	0	50	90	*amaedaphne calycu*	0	-
Naomi Lake														
23-May-2018	ES	01-1	1	0.30	0	15	0	85	0	0	0	-	1	Northern pike
23-May-2018	ES	01-1	1	0.30	0	15	0	85	0	0	0	-	1	Walleye
23-May-2018	ES	01-2	1	0.30	0	15	0	85	0	0	0	-	0	-

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Naomi Lake														
23-May-2018	KN	01-1	-	0.25	0	0	0	100	0	0	0	-	0	-
23-May-2018	KN	01-2	-	0.25	0	0	0	100	0	0	0	-	0	-
23-May-2018	KN	01-3	-	0.25	0	0	0	100	0	0	0	-	0	-
23-May-2018	KN	01-4	-	0.25	0	0	0	100	0	0	0	-	0	-
23-May-2018	KN	01-5	-	0.25	0	0	0	100	0	0	0	-	0	-
23-May-2018	KN	02-1	-	0.40	0	50	0	0	0	50	75	Carex	0	-
23-May-2018	KN	02-2	-	0.40	0	50	0	0	0	50	75	Carex	0	-
23-May-2018	KN	02-3	-	0.45	0	40	0	0	0	60	80	Carex	0	-
23-May-2018	KN	02-4	-	0.15	0	35	0	0	0	65	90	Carex	0	-
23-May-2018	KN	02-5	-	0.15	0	30	0	0	0	60	95	Carex	0	-
23-May-2018	KN	03-1	-	0.20	0	65	0	0	0	35	80	Carex	0	-
23-May-2018	KN	03-2	-	0.20	0	65	0	0	0	35	80	Carex	0	-
23-May-2018	KN	03-3	-	0.20	0	65	0	0	0	35	80	Carex	0	-
23-May-2018	KN	03-4	-	0.25	0	65	0	0	0	35	80	Carex	0	-
23-May-2018	KN	03-5	-	0.25	0	65	0	0	0	35	80	Carex	0	-
23-May-2018	KN	04-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
23-May-2018	KN	04-2	-	0.30	0	0	0	0	0	100	100	Carex	0	-
23-May-2018	KN	04-3	-	0.30	0	0	0	0	0	100	100	Carex	0	-
23-May-2018	KN	04-4	-	0.30	0	0	0	0	0	100	100	Carex	0	-
23-May-2018	KN	04-5	-	0.30	0	0	0	0	0	100	100	Carex	0	-
23-May-2018	KN	05-1	-	0.55	0	0	0	90	10	0	0	-	150	Slimy sculpin
23-May-2018	KN	05-2	-	0.60	0	0	0	90	10	0	0	-	100	Slimy sculpin
23-May-2018	KN	06-1	-	0.30	0	40	0	0	60	0	0	-	0	-
23-May-2018	KN	06-2	-	0.30	0	40	0	0	60	0	0	-	0	-
23-May-2018	KN	06-3	-	0.30	0	40	0	0	60	0	0	-	0	-
22-May-2018	VS	01-1	-	0.47	0	0	0	0	0	100	90	Carex	0	-
22-May-2018	VS	01-2	-	0.35	0	0	0	0	0	100	100	Carex	1	Sucker spp.
22-May-2018	VS	02-1	-	0.40	0	40	0	0	0	60	50	Carex	0	-
22-May-2018	VS	02-2	-	0.40	0	40	0	0	0	60	45	Carex	0	-
22-May-2018	VS	02-3	-	0.40	0	40	0	0	0	60	40	Carex	0	-
22-May-2018	VS	03-1	-	0.40	0	0	0	0	0	100	95	Carex	0	-
22-May-2018	VS	03-2	-	0.40	0	0	0	0	0	100	100	Carex	0	-
22-May-2018	VS	03-3	-	0.40	0	0	0	0	0	100	100	Sphagnum	11	Sucker spp.
22-May-2018	VS	04-1	-	0.50	0	0	0	0	0	100	50	Picea (dead)	1	Northern pike
22-May-2018	VS	04-2	-	0.55	0	0	0	0	0	100	50	Picea (dead)	0	-

Appendix C, Table 41

Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Naomi Lake														
22-May-2018	VS	05-1	-	0.45	0	0	0	0	0	100	95	*Chamaedaphne calyculata*	0	-
22-May-2018	VS	05-2	-	0.45	0	0	0	0	0	100	90	*Chamaedaphne calyculata*	0	-
22-May-2018	VS	06-1	-	0.50	0	0	0	0	100	0	0	-	0	-
22-May-2018	VS	06-2	-	0.50	0	0	0	0	100	0	0	-	0	-
22-May-2018	VS	06-3	-	0.50	0	0	0	0	100	0	0	-	0	-
22-May-2018	VS	07-1	-	0.40	0	0	0	0	0	100	50	*Chamaedaphne calyculata*	0	-
22-May-2018	VS	07-2	-	0.40	0	0	0	0	0	100	50	*Chamaedaphne calyculata*	0	-
22-May-2018	VS	07-3	-	0.40	0	90	0	0	0	10	50	*Chamaedaphne calyculata*	0	-
23-May-2018	VS	08-1	-	0.35	0	60	0	0	0	40	95	Carex	0	-
23-May-2018	VS	08-2	-	0.38	0	60	0	0	0	40	95	Carex	0	-
23-May-2018	VS	09-1	-	0.12	0	100	0	0	0	0	80	Carex	0	-
23-May-2018	VS	09-2	-	0.12	0	100	0	0	0	0	80	Carex	0	-
23-May-2018	VS	09-3	-	0.12	0	100	0	0	0	0	80	Carex	0	-
24-May-2018	VS	10-1	-	0.40	0	0	0	0	0	100	95	Picea (dead)	0	-
24-May-2018	VS	10-2	-	0.40	0	0	0	0	0	100	95	Picea (dead)	0	-
24-May-2018	VS	10-3	-	0.40	0	0	0	0	0	100	95	Picea (dead)	0	-
24-May-2018	VS	10-4	-	0.40	0	0	0	0	0	100	95	Picea (dead)	0	-
24-May-2018	VS	11-1	-	0.20	0	0	0	0	0	100	100	Carex	0	-
24-May-2018	VS	11-3	-	0.30	0	0	0	0	0	100	100	Carex	0	-
Clearwater Creek														
28-May-2018	VS	01-1	-	0.15	0	0	0	0	0	100	100	Carex	0	-
28-May-2018	VS	01-2	-	0.15	0	0	0	0	0	100	100	Carex	0	-
28-May-2018	VS	01-3	-	0.15	0	0	0	0	0	100	100	Carex	0	-
28-May-2018	VS	02-1	-	0.15	0	0	0	0	0	100	100	Carex	0	-
28-May-2018	VS	02-2	-	0.15	0	0	0	0	0	100	100	Carex	4	Sucker spp.
28-May-2018	VS	02-3	-	0.15	0	0	0	0	0	100	100	Carex	0	-
28-May-2018	VS	03-1	-	0.10	0	0	0	0	0	100	80	Carex	0	-
28-May-2018	VS	03-2	-	0.10	0	0	0	0	0	100	80	Carex	0	-
28-May-2018	VS	03-3	-	0.10	0	0	0	0	0	100	80	Carex	0	-
28-May-2018	VS	04-1	-	0.20	0	0	0	0	0	100	95	*Myrica gale*	0	-
28-May-2018	VS	04-2	-	0.20	0	0	0	0	0	100	95	*Myrica gale*	0	-
28-May-2018	VS	04-3	-	0.20	0	0	0	0	0	100	95	*Myrica gale*	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Clearwater Creek														
21-May-2018	VS	05-1	-	0.30	0	0	0	0	0	100	100	Carex	15	Northern pike
21-May-2018	VS	05-1	-	0.30	0	0	0	0	0	100	100	Carex	19	Sucker spp.
21-May-2018	VS	05-2	-	0.30	0	0	0	0	0	100	100	Carex	3	Northern pike
21-May-2018	VS	05-2	-	0.30	0	0	0	0	0	100	100	Carex	4	Sucker spp.
21-May-2018	VS	06-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	06-2	-	0.30	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	06-3	-	0.35	0	0	0	0	0	100	100	Carex	1	Sucker spp.
21-May-2018	VS	07-1	-	0.30	0	0	0	0	0	100	100	Carex	1	Sucker spp.
21-May-2018	VS	08-1	-	0.25	0	0	0	0	0	100	90	Carex	3	Sucker spp.
Clearwater River														
20-May-2018	KN	01-1	-	0.40	0	10	30	40	20	0	0	-	9	Sucker spp.
20-May-2018	KN	01-2	-	0.60	0	10	30	30	30	0	0	-	25	Sucker spp.
20-May-2018	KN	01-3	-	0.70	0	20	30	30	20	0	0	-	3	Sucker spp.
20-May-2018	KN	01-4	-	0.50	0	25	35	30	10	0	0	-	75	Sucker spp.
20-May-2018	KN	01-5	-	0.50	0	15	25	25	35	0	0	-	42	Sucker spp.
20-May-2018	KN	02-1	-	0.40	0	10	10	80	10	0	0	-	3	Sucker spp.
20-May-2018	KN	02-2	-	0.50	0	5	5	90	0	0	0	-	5	Sucker spp.
20-May-2018	KN	02-3	-	0.35	0	5	0	95	0	0	0	-	0	-
20-May-2018	KN	02-4	-	0.40	0	5	0	95	0	0	0	-	2	Sucker spp.
20-May-2018	KN	02-5	-	0.30	0	0	0	100	0	0	0	-	0	-
21-May-2018	KN	03-1	-	0.35	0	0	5	45	50	0	0	-	0	-
21-May-2018	KN	03-2	-	0.35	0	0	5	45	50	0	0	-	0	-
21-May-2018	KN	03-3	-	0.35	0	0	2	8	90	0	0	-	12	Sucker spp.
21-May-2018	KN	04-1	-	0.40	0	0	0	10	80	10	0	-	0	-
21-May-2018	KN	04-2	-	0.40	0	0	0	10	80	10	0	-	0	-
21-May-2018	KN	04-3	-	0.30	0	0	0	40	50	10	0	-	0	-
21-May-2018	KN	04-4	-	0.60	0	0	15	55	20	10	0	-	1	Sucker spp.
21-May-2018	KN	04-5	-	0.60	0	0	15	55	20	10	0	-	0	-
29-May-2018	KN	05-1	-	0.55	0	25	0	40	35	0	0	-	0	-
29-May-2018	KN	05-2	-	0.55	0	25	0	40	35	0	0	-	0	-
29-May-2018	KN	05-3	-	0.55	0	25	0	40	35	0	0	-	0	-
29-May-2018	KN	05-4	-	0.40	0	25	50	25	0	0	0	-	1	Arctic grayling
29-May-2018	KN	05-5	-	0.40	0	25	50	25	0	0	0	-	2	Arctic grayling
29-May-2018	KN	05-5	-	0.40	0	25	50	25	0	0	0	-	2	Sucker spp.
21-May-2018	VS	01-1	-	0.10	0	0	0	0	0	100	100	Carex	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Clearwater River														
21-May-2018	VS	01-2	-	0.28	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	01-3	-	0.12	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	01-4	-	0.10	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	01-5	-	0.08	0	0	0	0	0	100	100	Fontinalis	1	Sucker spp.
21-May-2018	VS	02-1	-	0.20	0	0	0	0	0	100	80	Carex	0	-
21-May-2018	VS	02-2	-	0.15	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	03-1	-	0.10	0	0	0	0	0	100	0	Carex	0	-
21-May-2018	VS	03-2	-	0.10	0	0	0	0	0	100	0	Carex	0	-
21-May-2018	VS	03-3	-	0.08	0	0	0	0	0	100	0	Carex	0	-
21-May-2018	VS	04-1	-	0.30	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	04-2	-	0.40	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	04-3	-	0.40	0	0	0	0	0	100	100	Carex	0	-
21-May-2018	VS	04-4	-	0.40	0	0	0	0	0	100	100	Carex	1	Northern pike
21-May-2018	VS	04-5	-	0.40	0	0	0	0	0	100	100	Carex	1	Sucker spp.
21-May-2018	VS	04-5	-	0.40	0	0	0	0	0	100	100	Carex	2	Northern pike
21-May-2018	VS	05-1	-	0.20	0	0	0	0	0	100	20	Carex	0	-
21-May-2018	VS	05-2	-	0.25	0	0	0	0	0	100	100	Carex	3	Northern pike
21-May-2018	VS	06-1	-	0.35	0	0	0	0	0	100	50	Carex	0	-
21-May-2018	VS	06-2	-	0.40	0	0	0	0	0	100	85	Carex	0	-
21-May-2018	VS	06-3	-	0.42	0	0	0	0	0	100	90	Carex	2	Northern pike
Lake G														
24-May-2018	KN	01-1	-	-	20	0	0	20	40	20	0	-	0	-
24-May-2018	KN	02-1	-	-	60	0	10	10	0	20	0	-	0	-
24-May-2018	VS	01-1	-	0.50	0	50	0	0	0	50	50	Carex	0	-
24-May-2018	VS	02-1	-	0.50	0	50	0	0	0	50	50	Carex	0	-
24-May-2018	VS	03-1	-	0.50	0	50	0	0	0	50	50	Carex	0	-
24-May-2018	VS	04-1	-	0.50	60	0	10	10	0	20	50	Carex	0	-
24-May-2018	VS	05-1	-	0.50	60	5	5	0	0	30	50	Carex	0	-
24-May-2018	VS	06-1	-	0.50	30	0	0	0	0	70	50	Carex	0	-
24-May-2018	VS	07-1	-	0.50	30	0	0	0	0	70	50	Carex	0	-
24-May-2018	VS	08-1	-	0.50	30	0	0	0	0	70	50	Carex	0	-
24-May-2018	VS	09-1	-	0.50	30	0	0	0	0	70	50	Carex	0	-
24-May-2018	VS	10-1	-	0.50	30	0	0	0	0	70	50	Carex	0	-

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Egg Search Results from the Spring Spawning Survey Conducted in the Aquatic Study Area, May 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species[b]
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
G Creek														
24-May-2018	KN	01-1	-	0.40	15	55	0	0	0	30	20	Carex	0	-
24-May-2018	KN	01-2	-	0.40	10	45	15	0	0	30	20	Carex	0	-
24-May-2018	KN	01-3	-	0.30	15	55	0	0	0	30	20	Carex	0	-
24-May-2018	VS	01-1	-	0.40	15	55	0	0	0	30	20	Carex	0	-
24-May-2018	VS	01-2	-	0.40	10	45	15	0	0	30	20	Carex	0	-
24-May-2018	VS	01-3	-	0.30	15	55	0	0	0	30	20	Carex	0	-

a) Method: ES = egg sunctioning, KN = kick netting, VS = vegetation sweep.

b) Sucker spp. eggs could either be white sucker, longnose sucker, or both.

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	ES	01-1	1	0.70	0	0	0	20	80	0	0	-	2	Lake whitefish
11-Oct-2018	ES	01-2	1	0.70	0	0	0	20	80	0	0	-	2	Lake whitefish
11-Oct-2018	ES	01-3	1	0.70	0	0	0	20	80	0	0	-	4	Lake whitefish
11-Oct-2018	ES	01-4	1	0.70	0	0	0	20	80	0	0	-	0	-
11-Oct-2018	ES	01-5	1	0.70	0	0	0	20	80	0	0	-	2	Lake whitefish
30-Sep-2018	KN	01-1	-	0.60	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	01-2	-	0.50	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	01-3	-	0.40	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	01-4	-	0.50	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	01-5	-	0.60	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	02-1	-	0.30	0	0	50	25	25	0	0	-	0	-
30-Sep-2018	KN	02-2	-	0.50	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	02-3	-	0.50	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	02-4	-	0.40	0	0	50	25	25	0	0	-	3	Lake trout
30-Sep-2018	KN	02-5	-	0.50	0	0	25	50	25	0	0	-	0	-
30-Sep-2018	KN	03-1	-	0.50	0	0	75	25	0	0	0	-	1	Lake trout
30-Sep-2018	KN	03-2	-	0.50	0	0	75	25	0	0	0	-	3	Lake trout
30-Sep-2018	KN	03-3	-	0.50	0	0	10	80	10	0	0	-	0	-
30-Sep-2018	KN	03-4	-	0.50	0	0	75	25	0	0	0	-	1	Lake trout
30-Sep-2018	KN	03-5	-	0.60	0	0	10	20	70	0	0	-	0	-
30-Sep-2018	KN	04-1	-	0.50	0	0	90	10	0	0	0	-	2	Lake whitefish
30-Sep-2018	KN	04-1	-	0.50	0	0	90	10	0	0	0	-	4	Lake trout
30-Sep-2018	KN	04-2	-	0.50	0	0	50	50	0	0	0	-	7	Lake trout
30-Sep-2018	KN	04-3	-	0.50	0	0	90	10	0	0	0	-	5	Lake trout
30-Sep-2018	KN	04-4	-	0.50	0	0	90	10	0	0	0	-	1	Lake trout
30-Sep-2018	KN	04-5	-	0.50	0	0	90	10	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	05-1	-	0.40	0	0	75	25	0	0	0	-	0	-
30-Sep-2018	KN	05-2	-	0.50	0	0	50	50	0	0	0	-	2	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
30-Sep-2018	KN	05-3	-	0.50	0	0	50	50	0	0	0	-	4	Lake trout
30-Sep-2018	KN	05-4	-	0.60	0	50	50	0	0	0	0	-	0	-
30-Sep-2018	KN	06-1	-	0.50	0	0	0	40	60	0	0	-	1	Lake whitefish
30-Sep-2018	KN	06-2	-	0.40	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	06-3	-	0.40	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	06-4	-	0.30	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	06-5	-	0.30	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	07-1	-	0.30	0	10	20	70	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	07-2	-	0.50	0	25	40	35	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	07-3	-	0.50	0	40	60	0	0	0	0	-	0	-
30-Sep-2018	KN	07-4	-	0.70	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	07-5	-	0.90	0	15	30	65	0	0	0	-	0	-
30-Sep-2018	KN	08-1	-	0.50	0	0	40	60	0	0	0	-	3	Lake trout
30-Sep-2018	KN	08-2	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	08-3	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	09-1	-	0.50	0	0	90	10	0	0	0	-	1	Lake trout
30-Sep-2018	KN	09-2	-	0.50	0	0	90	10	0	0	0	-	0	-
30-Sep-2018	KN	09-3	-	0.50	0	0	90	10	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	09-4	-	0.50	0	0	80	20	0	0	0	-	0	-
30-Sep-2018	KN	09-5	-	0.50	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	10-1	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	10-2	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	10-3	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	10-4	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	10-5	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	11-1	-	0.50	0	0	50	50	0	0	0	-	1	Lake trout
30-Sep-2018	KN	11-1	-	0.50	0	0	50	50	0	0	0	-	5	Lake whitefish
30-Sep-2018	KN	11-2	-	0.50	0	0	40	60	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
30-Sep-2018	KN	11-3	-	0.50	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	12-1	-	0.30	0	0	80	20	0	0	0	-	8	Lake whitefish
30-Sep-2018	KN	12-1	-	0.30	0	0	80	20	0	0	0	-	12	Lake trout
30-Sep-2018	KN	12-2	-	0.40	0	0	80	20	0	0	0	-	11	Lake trout
30-Sep-2018	KN	12-3	-	0.30	0	0	80	20	0	0	0	-	1	Lake trout
30-Sep-2018	KN	13-1	-	0.30	0	0	80	20	0	0	0	-	1	Lake trout
30-Sep-2018	KN	13-1	-	0.30	0	0	80	20	0	0	0	-	2	Lake whitefish
30-Sep-2018	KN	13-2	-	0.50	0	0	20	80	0	0	0	-	1	Lake trout
30-Sep-2018	KN	13-3	-	0.50	0	0	10	90	0	0	0	-	1	Lake trout
30-Sep-2018	KN	14-1	-	0.20	0	10	70	20	0	0	0	-	0	-
30-Sep-2018	KN	14-2	-	0.20	0	10	70	20	0	0	0	-	0	-
30-Sep-2018	KN	14-3	-	0.20	0	10	70	20	0	0	0	-	0	-
30-Sep-2018	KN	14-4	-	0.20	0	10	70	20	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	14-5	-	0.20	0	10	70	20	0	0	0	-	0	-
30-Sep-2018	KN	15-1	-	0.10	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	15-2	-	0.10	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	15-3	-	0.10	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	15-4	-	0.10	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	15-5	-	0.10	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	16-1	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	16-2	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	16-3	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	16-4	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	16-5	-	0.20	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	17-1	-	0.20	0	40	40	20	0	0	0	-	0	-
30-Sep-2018	KN	17-2	-	0.20	0	40	40	20	0	0	0	-	0	-
30-Sep-2018	KN	17-3	-	0.20	0	40	40	20	0	0	0	-	0	-
30-Sep-2018	KN	17-4	-	0.20	0	40	40	20	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
30-Sep-2018	KN	17-5	-	0.20	0	40	40	20	0	0	0	-	0	-
30-Sep-2018	KN	18-1	-	0.30	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	18-2	-	0.30	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	18-3	-	0.60	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	18-4	-	0.30	0	50	50	0	0	0	0	-	0	-
30-Sep-2018	KN	18-5	-	0.30	0	33	34	33	0	0	0	-	0	-
30-Sep-2018	KN	19-1	-	0.40	0	20	60	20	0	0	0	-	0	-
30-Sep-2018	KN	19-2	-	0.40	0	20	60	20	0	0	0	-	0	-
30-Sep-2018	KN	19-3	-	0.40	0	20	60	20	0	0	0	-	0	-
30-Sep-2018	KN	19-4	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	19-5	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	20-1	-	0.20	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	20-2	-	0.20	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	20-3	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	20-4	-	0.40	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	20-5	-	0.30	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	21-1	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	21-2	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	21-3	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	21-4	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	21-5	-	0.40	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	22-1	-	0.40	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	22-2	-	0.40	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	22-3	-	0.40	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	23-1	-	0.40	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	23-2	-	0.40	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	23-3	-	0.40	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	24-1	-	0.40	0	0	50	50	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
30-Sep-2018	KN	24-2	-	0.40	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	24-3	-	0.40	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	24-4	-	0.40	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	24-5	-	0.40	0	0	10	90	0	0	0	-	0	-
30-Sep-2018	KN	25-1	-	0.30	0	95	5	0	0	0	0	-	0	-
30-Sep-2018	KN	25-2	-	0.30	0	90	10	0	0	0	0	-	0	-
30-Sep-2018	KN	25-3	-	0.30	0	100	0	0	0	0	0	-	0	-
30-Sep-2018	KN	25-4	-	0.30	0	90	10	0	0	0	0	-	0	-
30-Sep-2018	KN	25-5	-	0.30	0	25	25	50	0	0	0	-	0	-
30-Sep-2018	KN	26-1	-	0.30	0	15	40	45	0	0	0	-	0	-
30-Sep-2018	KN	26-2	-	0.30	0	15	40	45	0	0	0	-	0	-
30-Sep-2018	KN	26-3	-	0.30	0	15	40	45	0	0	0	-	0	-
30-Sep-2018	KN	26-4	-	0.30	0	15	40	45	0	0	0	-	0	-
30-Sep-2018	KN	26-5	-	0.30	0	15	40	45	0	0	0	-	0	-
30-Sep-2018	KN	27-1	-	0.30	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	27-2	-	1.00	0	0	0	100	0	0	0	-	1	Lake whitefish
30-Sep-2018	KN	27-3	-	1.00	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	27-4	-	0.30	0	0	50	50	0	0	0	-	0	-
30-Sep-2018	KN	27-5	-	1.00	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	28-1	-	0.30	0	0	20	80	0	0	0	-	0	-
30-Sep-2018	KN	28-2	-	0.40	0	0	10	90	0	0	0	-	0	-
30-Sep-2018	KN	28-3	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	28-4	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	28-5	-	0.50	0	0	0	100	0	0	0	-	0	-
30-Sep-2018	KN	29-1	-	0.40	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	29-2	-	0.40	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	29-3	-	0.40	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	29-4	-	0.40	0	10	20	70	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
30-Sep-2018	KN	29-5	-	0.40	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	30-1	-	0.30	0	10	20	70	0	0	0	-	4	Lake trout
30-Sep-2018	KN	30-2	-	0.30	0	10	20	70	0	0	0	-	2	Lake trout
30-Sep-2018	KN	30-3	-	0.60	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	30-4	-	0.70	0	10	20	70	0	0	0	-	0	-
30-Sep-2018	KN	30-5	-	0.30	0	10	20	70	0	0	0	-	23	Lake trout
8-Oct-2018	KN	31-1	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	31-2	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	31-3	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	31-4	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	31-5	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	32-1	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	32-2	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	32-3	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	32-4	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	32-5	-	0.50	0	100	0	0	0	0	0	-	0	-
8-Oct-2018	KN	33-1	-	0.30	10	30	40	20	0	0	0	-	7	Lake whitefish
8-Oct-2018	KN	33-2	-	0.30	10	30	40	20	0	0	0	-	33	Lake whitefish
8-Oct-2018	KN	33-3	-	0.30	10	30	40	20	0	0	0	-	9	Lake whitefish
8-Oct-2018	KN	33-4	-	0.30	10	30	40	20	0	0	0	-	10	Lake whitefish
8-Oct-2018	KN	33-5	-	0.30	10	30	40	20	0	0	0	-	27	Lake whitefish
8-Oct-2018	KN	34-1	-	0.40	0	20	50	30	0	0	0	-	150	Lake whitefish
8-Oct-2018	KN	34-2	-	0.40	0	20	50	30	0	0	0	-	620	Lake whitefish
8-Oct-2018	KN	35-1	-	0.60	10	10	0	80	0	0	0	-	55	Lake whitefish
8-Oct-2018	KN	35-2	-	0.60	10	10	0	80	0	0	0	-	13	Lake whitefish
9-Oct-2018	KN	36-1	-	0.60	0	100	0	0	0	0	0	-	0	-
9-Oct-2018	KN	36-2	-	0.60	0	100	0	0	0	0	0	-	0	-
9-Oct-2018	KN	36-3	-	0.60	0	100	0	0	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
9-Oct-2018	KN	36-4	-	0.60	0	100	0	0	0	0	0	-	0	-
9-Oct-2018	KN	36-5	-	0.60	0	100	0	0	0	0	0	-	0	-
9-Oct-2018	KN	37-1	-	0.40	10	60	10	0	0	20	0	-	0	-
9-Oct-2018	KN	37-2	-	0.40	10	60	10	0	0	20	0	-	0	-
9-Oct-2018	KN	37-3	-	0.40	10	60	10	0	0	20	0	-	0	-
9-Oct-2018	KN	37-4	-	0.40	10	60	10	0	0	20	0	-	0	-
9-Oct-2018	KN	37-5	-	0.40	10	60	10	0	0	20	0	-	0	-
10-Oct-2018	KN	38-1	-	0.40	0	80	20	0	0	0	0	-	5	Lake whitefish
10-Oct-2018	KN	38-2	-	0.40	0	80	20	0	0	0	0	-	1	Lake whitefish
10-Oct-2018	KN	38-3	-	0.40	0	80	20	0	0	0	0	-	1	Lake whitefish
10-Oct-2018	KN	38-4	-	0.40	0	80	20	0	0	0	0	-	2	Lake whitefish
10-Oct-2018	KN	38-5	-	0.40	0	80	20	0	0	0	0	-	1	Lake whitefish
10-Oct-2018	KN	39-1	-	0.40	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	39-2	-	0.40	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	39-3	-	0.40	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	40-1	-	0.30	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	40-2	-	0.30	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	40-3	-	0.30	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	40-4	-	0.30	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	40-5	-	0.30	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	41-1	-	0.50	0	10	0	90	0	0	0	-	0	-
10-Oct-2018	KN	41-2	-	0.50	0	10	0	90	0	0	0	-	0	-
10-Oct-2018	KN	41-3	-	0.50	0	10	0	90	0	0	0	-	1	Lake whitefish
10-Oct-2018	KN	41-4	-	0.50	0	10	0	90	0	0	0	-	0	-
10-Oct-2018	KN	41-5	-	0.50	0	10	0	90	0	0	0	-	0	-
10-Oct-2018	KN	42-1	-	0.50	0	30	20	50	0	0	0	-	0	-
10-Oct-2018	KN	42-2	-	0.50	0	30	20	50	0	0	0	-	0	-
10-Oct-2018	KN	42-3	-	0.50	0	30	20	50	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
10-Oct-2018	KN	42-4	-	0.50	0	30	20	50	0	0	0	-	0	-
10-Oct-2018	KN	42-5	-	0.50	0	30	20	50	0	0	0	-	0	-
10-Oct-2018	KN	43-1	-	0.50	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	43-2	-	0.50	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	43-3	-	0.50	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	43-4	-	0.50	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	43-5	-	0.50	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	44-1	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	44-2	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	44-3	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	44-4	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	44-5	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	45-1	-	0.40	0	40	20	40	0	0	0	-	0	-
10-Oct-2018	KN	45-2	-	0.40	0	40	20	40	0	0	0	-	0	-
10-Oct-2018	KN	45-3	-	0.40	0	40	20	40	0	0	0	-	0	-
10-Oct-2018	KN	45-4	-	0.40	0	40	20	40	0	0	0	-	0	-
10-Oct-2018	KN	45-5	-	0.40	0	40	20	40	0	0	0	-	0	-
10-Oct-2018	KN	46-1	-	0.50	0	40	20	30	10	0	0	-	0	-
10-Oct-2018	KN	46-2	-	0.50	0	40	20	30	10	0	0	-	0	-
10-Oct-2018	KN	46-3	-	0.50	0	40	20	30	10	0	0	-	0	-
10-Oct-2018	KN	46-4	-	0.50	0	40	20	30	10	0	0	-	0	-
10-Oct-2018	KN	46-5	-	0.50	0	40	20	30	10	0	0	-	0	-
10-Oct-2018	KN	47-1	-	0.60	20	30	30	20	0	0	0	-	0	-
10-Oct-2018	KN	47-2	-	0.60	20	30	30	20	0	0	0	-	0	-
10-Oct-2018	KN	47-3	-	0.60	20	30	30	20	0	0	0	-	0	-
10-Oct-2018	KN	47-4	-	0.60	20	30	30	20	0	0	0	-	0	-
10-Oct-2018	KN	47-5	-	0.60	20	30	30	20	0	0	0	-	0	-
10-Oct-2018	KN	48-1	-	0.50	0	100	0	0	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
10-Oct-2018	KN	48-2	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	48-3	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	48-4	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	48-5	-	0.50	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	49-1	-	0.30	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	49-2	-	0.30	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	49-3	-	0.30	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	49-4	-	0.30	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	49-5	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	50-1	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	50-2	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	50-3	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	50-4	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	50-5	-	0.30	0	100	0	0	0	0	0	-	0	-
11-Oct-2018	KN	51-1	-	0.20	0	60	10	30	0	0	0	-	0	-
11-Oct-2018	KN	51-2	-	0.20	0	60	10	30	0	0	0	-	0	-
11-Oct-2018	KN	51-3	-	0.20	0	60	10	30	0	0	0	-	0	-
11-Oct-2018	KN	51-4	-	0.20	0	60	10	30	0	0	0	-	0	-
11-Oct-2018	KN	51-5	-	0.20	0	60	10	30	0	0	0	-	0	-
11-Oct-2018	KN	52-1	-	0.50	0	0	60	40	0	0	0	-	1	Lake trout
11-Oct-2018	KN	52-1	-	0.50	0	0	60	40	0	0	0	-	85	Lake whitefish
11-Oct-2018	KN	52-2	-	0.50	0	0	60	40	0	0	0	-	1	Lake trout
11-Oct-2018	KN	52-2	-	0.50	0	0	60	40	0	0	0	-	35	Lake whitefish
11-Oct-2018	KN	52-3	-	0.50	0	0	60	40	0	0	0	-	65	Lake whitefish
11-Oct-2018	KN	52-4	-	0.50	0	0	60	40	0	0	0	-	2	Lake trout
11-Oct-2018	KN	52-4	-	0.50	0	0	60	40	0	0	0	-	49	Lake whitefish
11-Oct-2018	KN	52-5	-	0.50	0	0	60	40	0	0	0	-	95	Lake whitefish
11-Oct-2018	KN	53-1	-	0.40	0	80	20	0	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	KN	53-2	-	0.40	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	53-3	-	0.40	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	53-4	-	0.40	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	53-5	-	0.40	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	54-1	-	0.60	0	0	0	50	50	0	0	-	2	Lake whitefish
11-Oct-2018	KN	54-2	-	0.60	0	0	0	50	50	0	0	-	13	Lake whitefish
11-Oct-2018	KN	54-3	-	0.60	0	0	0	50	50	0	0	-	2	Lake whitefish
11-Oct-2018	KN	54-4	-	0.60	0	0	0	50	50	0	0	-	4	Lake whitefish
11-Oct-2018	KN	54-5	-	0.60	0	0	0	50	50	0	0	-	1	Lake whitefish
11-Oct-2018	KN	55-1	-	0.50	0	0	0	40	60	0	0	-	1	Lake trout
11-Oct-2018	KN	55-1	-	0.50	0	0	0	40	60	0	0	-	93	Lake whitefish
11-Oct-2018	KN	55-2	-	0.50	0	0	0	40	60	0	0	-	23	Lake whitefish
11-Oct-2018	KN	55-3	-	0.50	0	0	0	40	60	0	0	-	16	Lake whitefish
11-Oct-2018	KN	55-4	-	0.50	0	0	0	40	60	0	0	-	6	Lake whitefish
11-Oct-2018	KN	55-5	-	0.50	0	0	0	40	60	0	0	-	17	Lake whitefish
11-Oct-2018	KN	56-1	-	0.60	0	0	30	50	20	0	0	-	21	Lake whitefish
11-Oct-2018	KN	56-2	-	0.60	0	0	30	50	20	0	0	-	63	Lake whitefish
11-Oct-2018	KN	56-3	-	0.60	0	0	30	50	20	0	0	-	2	Lake whitefish
11-Oct-2018	KN	56-4	-	0.60	0	0	30	50	20	0	0	-	136	Lake whitefish
11-Oct-2018	KN	56-5	-	0.60	0	0	30	50	20	0	0	-	17	Lake whitefish
11-Oct-2018	KN	57-1	-	0.60	0	0	20	60	20	0	0	-	6	Lake whitefish
11-Oct-2018	KN	57-2	-	0.60	0	0	20	60	20	0	0	-	1	Lake whitefish
11-Oct-2018	KN	57-3	-	0.60	0	0	20	60	20	0	0	-	9	Lake whitefish
11-Oct-2018	KN	57-4	-	0.60	0	0	20	60	20	0	0	-	12	Lake whitefish
11-Oct-2018	KN	57-5	-	0.60	0	0	20	60	20	0	0	-	1	Lake trout
11-Oct-2018	KN	57-5	-	0.60	0	0	20	60	20	0	0	-	7	Lake whitefish
11-Oct-2018	KN	58-1	-	0.50	0	0	10	20	70	0	0	-	4	Lake trout
11-Oct-2018	KN	58-1	-	0.50	0	0	10	20	70	0	0	-	100	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	KN	58-2	-	0.50	0	0	10	20	70	0	0	-	25	Lake whitefish
11-Oct-2018	KN	58-3	-	0.50	0	0	10	20	70	0	0	-	12	Lake whitefish
11-Oct-2018	KN	58-4	-	0.50	0	0	10	20	70	0	0	-	6	Lake whitefish
11-Oct-2018	KN	58-5	-	0.50	0	0	10	20	70	0	0	-	25	Lake whitefish
11-Oct-2018	KN	59-1	-	0.60	0	0	0	20	80	0	0	-	21	Lake whitefish
11-Oct-2018	KN	59-2	-	0.60	0	0	0	20	80	0	0	-	100	Lake whitefish
11-Oct-2018	KN	59-3	-	0.60	0	0	0	20	80	0	0	-	6	Lake whitefish
11-Oct-2018	KN	59-4	-	0.60	0	0	0	20	80	0	0	-	3	Lake trout
11-Oct-2018	KN	59-4	-	0.60	0	0	0	20	80	0	0	-	65	Lake whitefish
11-Oct-2018	KN	59-5	-	0.60	0	0	0	20	80	0	0	-	25	Lake whitefish
11-Oct-2018	KN	60-1	-	0.50	0	0	0	20	80	0	0	-	2	Lake whitefish
11-Oct-2018	KN	60-2	-	0.50	0	0	0	20	80	0	0	-	2	Lake whitefish
11-Oct-2018	KN	60-3	-	0.50	0	0	0	20	80	0	0	-	15	Lake whitefish
11-Oct-2018	KN	60-4	-	0.50	0	0	0	20	80	0	0	-	0	-
11-Oct-2018	KN	60-5	-	0.50	0	0	0	20	80	0	0	-	8	Lake whitefish
11-Oct-2018	KN	61-1	-	0.30	0	50	0	50	0	0	0	-	0	-
11-Oct-2018	KN	61-2	-	0.30	0	50	0	50	0	0	0	-	0	-
11-Oct-2018	KN	61-3	-	0.30	0	50	0	50	0	0	0	-	0	-
11-Oct-2018	KN	61-4	-	0.30	0	50	0	50	0	0	0	-	0	-
11-Oct-2018	KN	61-5	-	0.30	0	50	0	50	0	0	0	-	0	-
11-Oct-2018	KN	62-1	-	0.40	0	0	0	70	30	0	0	-	1	Lake trout
11-Oct-2018	KN	62-1	-	0.40	0	0	0	70	30	0	0	-	6	Lake whitefish
11-Oct-2018	KN	62-2	-	0.40	0	0	0	70	30	0	0	-	7	Lake whitefish
11-Oct-2018	KN	62-3	-	0.40	0	0	0	70	30	0	0	-	22	Lake whitefish
11-Oct-2018	KN	62-4	-	0.40	0	0	0	70	30	0	0	-	12	Lake trout
11-Oct-2018	KN	62-4	-	0.40	0	0	0	70	30	0	0	-	50	Lake whitefish
11-Oct-2018	KN	62-5	-	0.40	0	0	0	70	30	0	0	-	20	Lake whitefish
11-Oct-2018	KN	63-1	-	0.40	0	60	0	30	10	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	KN	63-2	-	0.40	0	60	0	30	10	0	0	-	1	Lake trout
11-Oct-2018	KN	63-3	-	0.40	0	60	0	30	10	0	0	-	0	-
11-Oct-2018	KN	63-4	-	0.40	0	60	0	30	10	0	0	-	0	-
11-Oct-2018	KN	63-5	-	0.40	0	60	0	30	10	0	0	-	0	-
11-Oct-2018	KN	64-1	-	0.40	0	0	40	40	20	0	0	-	19	Lake trout
11-Oct-2018	KN	64-1	-	0.40	0	0	40	40	20	0	0	-	120	Lake whitefish
11-Oct-2018	KN	64-2	-	0.40	0	0	40	40	20	0	0	-	12	Lake trout
11-Oct-2018	KN	64-2	-	0.40	0	0	40	40	20	0	0	-	60	Lake whitefish
11-Oct-2018	KN	64-3	-	0.40	0	0	40	40	20	0	0	-	8	Lake trout
11-Oct-2018	KN	64-3	-	0.40	0	0	40	40	20	0	0	-	30	Lake whitefish
11-Oct-2018	KN	64-4	-	0.40	0	0	40	40	20	0	0	-	10	Lake trout
11-Oct-2018	KN	64-4	-	0.40	0	0	40	40	20	0	0	-	40	Lake whitefish
11-Oct-2018	KN	64-5	-	0.40	0	0	40	40	20	0	0	-	10	Lake trout
11-Oct-2018	KN	64-5	-	0.40	0	0	40	40	20	0	0	-	55	Lake whitefish
12-Oct-2018	KN	65-1	-	0.50	0	0	20	70	10	0	0	-	2	Lake whitefish
12-Oct-2018	KN	65-2	-	0.50	0	0	20	70	10	0	0	-	5	Lake whitefish
12-Oct-2018	KN	65-3	-	0.50	0	0	20	70	10	0	0	-	30	Lake whitefish
12-Oct-2018	KN	65-4	-	0.50	0	0	20	70	10	0	0	-	12	Lake whitefish
12-Oct-2018	KN	65-5	-	0.50	0	0	20	70	10	0	0	-	6	Lake whitefish
12-Oct-2018	KN	66-1	-	0.50	0	20	0	50	30	0	0	-	0	-
12-Oct-2018	KN	66-2	-	0.50	0	20	0	50	30	0	0	-	0	-
12-Oct-2018	KN	66-3	-	0.50	0	20	0	50	30	0	0	-	0	-
12-Oct-2018	KN	66-4	-	0.50	0	20	0	50	30	0	0	-	3	Lake whitefish
12-Oct-2018	KN	66-5	-	0.50	0	20	0	50	30	0	0	-	2	Lake whitefish
12-Oct-2018	KN	67-1	-	0.50	0	0	20	60	20	0	0	-	1	Lake trout
12-Oct-2018	KN	67-2	-	0.50	0	0	20	60	20	0	0	-	0	-
12-Oct-2018	KN	67-3	-	0.50	0	0	20	60	20	0	0	-	8	Lake trout
12-Oct-2018	KN	67-4	-	0.50	0	0	20	60	20	0	0	-	4	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
12-Oct-2018	KN	67-5	-	0.50	0	0	20	60	20	0	0	-	2	Lake whitefish
12-Oct-2018	KN	68-1	-	0.50	0	0	20	80	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	68-2	-	0.50	0	0	20	80	0	0	0	-	0	-
12-Oct-2018	KN	68-3	-	0.50	0	0	20	80	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	68-4	-	0.50	0	0	20	80	0	0	0	-	0	-
12-Oct-2018	KN	68-5	-	0.50	0	0	20	80	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	69-1	-	0.30	0	100	0	0	0	0	0	-	0	-
12-Oct-2018	KN	69-2	-	0.30	0	100	0	0	0	0	0	-	0	-
12-Oct-2018	KN	69-3	-	0.30	0	100	0	0	0	0	0	-	0	-
12-Oct-2018	KN	69-4	-	0.30	0	100	0	0	0	0	0	-	0	-
12-Oct-2018	KN	69-5	-	0.30	0	100	0	0	0	0	0	-	0	-
12-Oct-2018	KN	70-1	-	0.40	0	0	20	70	10	0	0	-	3	Lake trout
12-Oct-2018	KN	70-1	-	0.40	0	0	20	70	10	0	0	-	180	Lake whitefish
12-Oct-2018	KN	70-2	-	0.40	0	0	20	70	10	0	0	-	5	Lake trout
12-Oct-2018	KN	70-2	-	0.40	0	0	20	70	10	0	0	-	500	Lake whitefish
12-Oct-2018	KN	71-1	-	0.50	0	0	0	30	70	0	0	-	2	Lake trout
12-Oct-2018	KN	71-1	-	0.50	0	0	0	30	70	0	0	-	35	Lake whitefish
12-Oct-2018	KN	71-2	-	0.50	0	0	0	30	70	0	0	-	3	Lake trout
12-Oct-2018	KN	71-2	-	0.50	0	0	0	30	70	0	0	-	8	Lake whitefish
12-Oct-2018	KN	71-3	-	0.50	0	0	0	30	70	0	0	-	10	Lake whitefish
12-Oct-2018	KN	71-4	-	0.50	0	0	0	30	70	0	0	-	14	Lake whitefish
12-Oct-2018	KN	71-5	-	0.50	0	0	0	30	70	0	0	-	6	Lake whitefish
12-Oct-2018	KN	72-1	-	0.40	0	0	0	100	0	0	0	-	13	Lake trout
12-Oct-2018	KN	72-1	-	0.40	0	0	0	100	0	0	0	-	300	Lake whitefish
12-Oct-2018	KN	72-2	-	0.40	0	0	0	100	0	0	0	-	7	Lake whitefish
12-Oct-2018	KN	72-2	-	0.40	0	0	0	100	0	0	0	-	13	Lake trout
12-Oct-2018	KN	72-3	-	0.40	0	0	0	100	0	0	0	-	18	Lake trout
12-Oct-2018	KN	72-3	-	0.40	0	0	0	100	0	0	0	-	57	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
12-Oct-2018	KN	72-4	-	0.40	0	0	0	100	0	0	0	-	4	Lake trout
12-Oct-2018	KN	72-4	-	0.40	0	0	0	100	0	0	0	-	61	Lake whitefish
12-Oct-2018	KN	72-5	-	0.40	0	0	0	100	0	0	0	-	10	Lake trout
12-Oct-2018	KN	72-5	-	0.40	0	0	0	100	0	0	0	-	30	Lake whitefish
12-Oct-2018	KN	73-1	-	0.40	0	0	0	0	100	0	0	-	0	-
12-Oct-2018	KN	73-2	-	0.40	0	0	0	0	100	0	0	-	10	Lake whitefish
12-Oct-2018	KN	73-3	-	0.40	0	0	0	0	100	0	0	-	3	Lake whitefish
12-Oct-2018	KN	73-4	-	0.40	0	0	0	0	100	0	0	-	2	Lake whitefish
12-Oct-2018	KN	73-5	-	0.40	0	0	0	0	100	0	0	-	2	Lake whitefish
12-Oct-2018	KN	74-1	-	0.30	0	0	30	70	0	0	0	-	2	Lake trout
12-Oct-2018	KN	74-1	-	0.30	0	0	30	70	0	0	0	-	50	Lake whitefish
12-Oct-2018	KN	74-2	-	0.30	0	0	30	70	0	0	0	-	9	Lake whitefish
12-Oct-2018	KN	74-2	-	0.30	0	0	30	70	0	0	0	-	15	Lake trout
13-Oct-2018	KN	75-1	-	0.60	0	0	0	10	90	0	0	-	0	-
13-Oct-2018	KN	75-2	-	0.60	0	0	0	10	90	0	0	-	0	-
13-Oct-2018	KN	75-3	-	0.60	0	0	0	10	90	0	0	-	0	-
13-Oct-2018	KN	75-4	-	0.60	0	0	0	10	90	0	0	-	0	-
13-Oct-2018	KN	75-5	-	0.60	0	0	0	10	90	0	0	-	0	-
13-Oct-2018	KN	76-1	-	0.50	0	0	90	10	0	0	0	-	0	-
13-Oct-2018	KN	76-2	-	0.50	0	0	90	10	0	0	0	-	1	Lake whitefish
13-Oct-2018	KN	76-3	-	0.50	0	0	90	10	0	0	0	-	2	Lake whitefish
13-Oct-2018	KN	76-4	-	0.50	0	0	90	10	0	0	0	-	0	-
13-Oct-2018	KN	76-5	-	0.50	0	0	90	10	0	0	0	-	2	Lake whitefish
13-Oct-2018	KN	77-1	-	0.40	0	0	60	30	10	0	0	-	0	-
13-Oct-2018	KN	77-2	-	0.40	0	0	60	30	10	0	0	-	2	Lake trout
13-Oct-2018	KN	77-2	-	0.40	0	0	60	30	10	0	0	-	6	Lake whitefish
13-Oct-2018	KN	77-3	-	0.40	0	0	60	30	10	0	0	-	1	Lake trout
13-Oct-2018	KN	77-4	-	0.40	0	0	60	30	10	0	0	-	2	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
13-Oct-2018	KN	77-4	-	0.40	0	0	60	30	10	0	0	-	2	Lake whitefish
13-Oct-2018	KN	77-5	-	0.40	0	0	60	30	10	0	0	-	1	Lake trout
13-Oct-2018	KN	77-5	-	0.40	0	0	60	30	10	0	0	-	1	Lake whitefish
13-Oct-2018	KN	78-1	-	0.50	0	0	50	40	10	0	0	-	4	Lake trout
13-Oct-2018	KN	78-1	-	0.50	0	0	50	40	10	0	0	-	4	Lake whitefish
13-Oct-2018	KN	78-2	-	0.50	0	0	50	40	10	0	0	-	0	-
13-Oct-2018	KN	78-3	-	0.50	0	0	50	40	10	0	0	-	23	Lake trout
13-Oct-2018	KN	78-4	-	0.50	0	0	50	40	10	0	0	-	6	Lake whitefish
13-Oct-2018	KN	78-4	-	0.50	0	0	50	40	10	0	0	-	13	Lake trout
13-Oct-2018	KN	78-5	-	0.50	0	0	50	40	10	0	0	-	5	Lake trout
13-Oct-2018	KN	78-5	-	0.50	0	0	50	40	10	0	0	-	5	Lake whitefish
13-Oct-2018	KN	79-1	-	0.50	0	0	10	40	50	0	0	-	6	Lake trout
13-Oct-2018	KN	79-2	-	0.50	0	0	10	40	50	0	0	-	1	Lake whitefish
13-Oct-2018	KN	79-2	-	0.50	0	0	10	40	50	0	0	-	8	Lake trout
13-Oct-2018	KN	79-3	-	0.50	0	0	10	40	50	0	0	-	0	-
13-Oct-2018	KN	79-4	-	0.50	0	0	10	40	50	0	0	-	2	Lake whitefish
13-Oct-2018	KN	79-5	-	0.50	0	0	10	40	50	0	0	-	1	Lake trout
13-Oct-2018	KN	79-5	-	0.50	0	0	10	40	50	0	0	-	1	Lake whitefish
13-Oct-2018	KN	80-1	-	0.40	0	10	40	30	20	0	0	-	0	-
13-Oct-2018	KN	80-2	-	0.40	0	10	40	30	20	0	0	-	0	-
13-Oct-2018	KN	80-3	-	0.40	0	10	40	30	20	0	0	-	1	Lake trout
13-Oct-2018	KN	80-4	-	0.40	0	10	40	30	20	0	0	-	0	-
13-Oct-2018	KN	80-5	-	0.40	0	10	40	30	20	0	0	-	0	-
13-Oct-2018	KN	81-1	-	0.50	0	20	0	20	60	0	0	-	1	Lake whitefish
13-Oct-2018	KN	81-2	-	0.50	0	20	0	20	60	0	0	-	0	-
13-Oct-2018	KN	81-3	-	0.50	0	20	0	20	60	0	0	-	0	-
13-Oct-2018	KN	81-4	-	0.50	0	20	0	20	60	0	0	-	0	-
13-Oct-2018	KN	81-5	-	0.50	0	20	0	20	60	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
13-Oct-2018	KN	82-1	-	0.40	0	0	10	80	10	0	0	-	0	-
13-Oct-2018	KN	82-2	-	0.40	0	0	10	80	10	0	0	-	1	Lake whitefish
13-Oct-2018	KN	82-3	-	0.40	0	0	10	80	10	0	0	-	0	-
13-Oct-2018	KN	82-4	-	0.40	0	0	10	80	10	0	0	-	0	-
13-Oct-2018	KN	82-5	-	0.40	0	0	10	80	10	0	0	-	0	-
13-Oct-2018	KN	83-1	-	0.40	0	0	0	20	80	0	0	-	30	Lake trout
13-Oct-2018	KN	83-2	-	0.40	0	0	0	20	80	0	0	-	8	Lake trout
13-Oct-2018	KN	83-3	-	0.40	0	0	0	20	80	0	0	-	1	Lake whitefish
13-Oct-2018	KN	83-3	-	0.40	0	0	0	20	80	0	0	-	10	Lake trout
13-Oct-2018	KN	83-4	-	0.40	0	0	0	20	80	0	0	-	0	-
13-Oct-2018	KN	83-5	-	0.40	0	0	0	20	80	0	0	-	5	Lake trout
13-Oct-2018	KN	84-1	-	0.40	0	0	0	40	60	0	0	-	6	Lake whitefish
13-Oct-2018	KN	84-2	-	0.40	0	0	0	40	60	0	0	-	1	Lake whitefish
13-Oct-2018	KN	84-3	-	0.40	0	0	0	40	60	0	0	-	1	Lake trout
13-Oct-2018	KN	84-4	-	0.40	0	0	0	40	60	0	0	-	0	-
13-Oct-2018	KN	84-5	-	0.40	0	0	0	40	60	0	0	-	1	Lake trout
13-Oct-2018	KN	84-5	-	0.40	0	0	0	40	60	0	0	-	1	Lake whitefish
13-Oct-2018	KN	85-1	-	0.30	0	60	0	30	10	0	0	-	0	-
13-Oct-2018	KN	85-2	-	0.30	0	60	0	30	10	0	0	-	0	-
13-Oct-2018	KN	85-3	-	0.30	0	60	0	30	10	0	0	-	1	Lake whitefish
13-Oct-2018	KN	85-4	-	0.30	0	60	0	30	10	0	0	-	5	Lake whitefish
13-Oct-2018	KN	85-5	-	0.30	0	60	0	30	10	0	0	-	2	Lake whitefish
13-Oct-2018	KN	86-1	-	0.70	0	0	0	30	70	0	0	-	2	Lake whitefish
13-Oct-2018	KN	86-2	-	0.70	0	0	0	30	70	0	0	-	1	Lake whitefish
13-Oct-2018	KN	86-3	-	0.70	0	0	0	30	70	0	0	-	0	-
13-Oct-2018	KN	86-4	-	0.70	0	0	0	30	70	0	0	-	1	Lake whitefish
13-Oct-2018	KN	86-4	-	0.70	0	0	0	30	70	0	0	-	2	Lake trout
13-Oct-2018	KN	86-5	-	0.70	0	0	0	30	70	0	0	-	2	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
13-Oct-2018	KN	87-1	-	0.60	0	0	0	80	20	0	0	-	6	Lake whitefish
13-Oct-2018	KN	87-2	-	0.60	0	0	0	80	20	0	0	-	1	Lake whitefish
13-Oct-2018	KN	87-3	-	0.60	0	0	0	80	20	0	0	-	3	Lake whitefish
13-Oct-2018	KN	87-4	-	0.60	0	0	0	80	20	0	0	-	3	Lake whitefish
13-Oct-2018	KN	87-5	-	0.60	0	0	0	80	20	0	0	-	2	Lake whitefish
13-Oct-2018	KN	88-1	-	0.50	20	20	20	20	20	0	0	-	0	-
13-Oct-2018	KN	88-2	-	0.50	20	20	20	20	20	0	0	-	0	-
13-Oct-2018	KN	88-3	-	0.50	20	20	20	20	20	0	0	-	0	-
13-Oct-2018	KN	88-4	-	0.50	20	20	20	20	20	0	0	-	0	-
13-Oct-2018	KN	88-5	-	0.50	20	20	20	20	20	0	0	-	1	Lake trout
13-Oct-2018	KN	89-1	-	0.50	0	10	10	70	10	0	0	-	6	Lake whitefish
13-Oct-2018	KN	89-2	-	0.50	0	10	10	70	10	0	0	-	5	Lake whitefish
13-Oct-2018	KN	89-3	-	0.50	0	10	10	70	10	0	0	-	8	Lake whitefish
13-Oct-2018	KN	89-4	-	0.50	0	10	10	70	10	0	0	-	2	Lake whitefish
13-Oct-2018	KN	89-5	-	0.50	0	10	10	70	10	0	0	-	4	Lake whitefish
9-Oct-2018	KN	90-1	-	0.30	0	90	10	0	0	0	0	-	0	-
9-Oct-2018	KN	90-2	-	0.30	0	90	10	0	0	0	0	-	0	-
9-Oct-2018	KN	90-3	-	0.30	0	90	10	0	0	0	0	-	0	-
9-Oct-2018	KN	90-4	-	0.30	0	90	10	0	0	0	0	-	0	-
9-Oct-2018	KN	90-5	-	0.40	0	90	10	0	0	0	0	-	0	-
9-Oct-2018	KN	91-1	-	0.80	0	0	10	70	20	0	0	-	0	-
9-Oct-2018	KN	91-2	-	0.80	0	20	10	70	0	0	0	-	0	-
9-Oct-2018	KN	91-3	-	0.80	0	0	10	70	20	0	0	-	0	-
9-Oct-2018	KN	91-4	-	0.80	0	0	10	70	20	0	0	-	0	-
9-Oct-2018	KN	91-5	-	0.80	0	0	10	70	20	0	0	-	0	-
9-Oct-2018	KN	92-1	-	0.50	0	70	0	30	0	0	0	-	0	-
9-Oct-2018	KN	92-2	-	0.60	0	70	0	30	0	0	0	-	0	-
9-Oct-2018	KN	92-3	-	0.30	0	0	0	80	20	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
9-Oct-2018	KN	92-4	-	0.50	0	0	0	30	0	0	0	-	0	-
9-Oct-2018	KN	92-5	-	0.30	0	0	0	80	20	0	0	-	0	-
9-Oct-2018	KN	93-1	-	0.40	0	0	0	90	10	0	0	-	0	-
9-Oct-2018	KN	93-2	-	0.50	0	0	0	90	10	0	0	-	0	-
9-Oct-2018	KN	93-3	-	0.50	0	10	0	80	10	0	0	-	0	-
9-Oct-2018	KN	93-4	-	0.40	0	20	0	70	10	0	0	-	0	-
9-Oct-2018	KN	93-5	-	0.30	0	0	0	90	10	0	0	-	0	-
9-Oct-2018	KN	94-1	-	0.30	5	90	5	0	0	0	0	-	0	-
9-Oct-2018	KN	94-2	-	0.20	5	90	5	0	0	0	0	-	0	-
9-Oct-2018	KN	94-3	-	0.30	5	90	5	0	0	0	0	-	0	-
9-Oct-2018	KN	94-4	-	0.30	5	90	5	0	0	0	0	-	0	-
9-Oct-2018	KN	94-5	-	0.40	5	90	5	0	0	0	0	-	0	-
9-Oct-2018	KN	95-1	-	0.30	5	95	0	0	0	0	0	-	0	-
9-Oct-2018	KN	95-2	-	0.30	5	95	0	0	0	0	0	-	0	-
9-Oct-2018	KN	95-3	-	0.30	5	95	0	0	0	0	0	-	0	-
9-Oct-2018	KN	95-4	-	0.40	5	95	0	0	0	0	0	-	0	-
9-Oct-2018	KN	95-5	-	0.30	5	85	0	0	0	10	0	-	0	-
9-Oct-2018	KN	96-1	-	1.00	0	0	10	40	30	0	0	-	3	Lake whitefish
9-Oct-2018	KN	96-2	-	0.40	0	0	10	40	30	0	0	-	8	Lake whitefish
9-Oct-2018	KN	96-3	-	0.40	0	0	10	40	30	0	0	-	10	Lake whitefish
9-Oct-2018	KN	97-1	-	0.40	0	0	30	70	0	0	0	-	65	Lake whitefish
9-Oct-2018	KN	97-2	-	0.50	0	0	30	70	0	0	0	-	23	Lake whitefish
9-Oct-2018	KN	97-3	-	0.50	0	0	30	70	0	0	0	-	21	Lake whitefish
10-Oct-2018	KN	98-1	-	0.60	0	0	30	70	0	0	0	-	8	Lake whitefish
10-Oct-2018	KN	98-2	-	0.40	0	0	30	70	0	0	0	-	11	Lake whitefish
10-Oct-2018	KN	98-3	-	0.40	0	0	30	70	0	0	0	-	3	Lake whitefish
10-Oct-2018	KN	99-1	-	0.40	0	10	20	70	0	0	0	-	30	Lake whitefish
10-Oct-2018	KN	99-2	-	0.40	0	10	20	70	0	0	0	-	4	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
10-Oct-2018	KN	99-3	-	0.50	0	10	20	70	0	0	0	-	11	Lake whitefish
10-Oct-2018	KN	100-1	-	0.40	0	10	10	80	0	0	0	-	1	Lake whitefish
10-Oct-2018	KN	100-2	-	0.40	0	10	10	80	0	0	0	-	0	-
10-Oct-2018	KN	100-3	-	0.30	0	10	10	80	0	0	0	-	11	Lake whitefish
10-Oct-2018	KN	100-4	-	0.30	0	10	10	80	0	0	0	-	2	Lake whitefish
10-Oct-2018	KN	100-5	-	0.30	0	10	10	80	0	0	0	-	0	-
30-Sep-2018	KN	10-1	-	0.20	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	101-1	-	0.50	0	10	0	10	80	0	0	-	0	-
10-Oct-2018	KN	101-2	-	0.50	0	10	0	10	80	0	0	-	0	-
10-Oct-2018	KN	101-3	-	0.50	0	10	0	10	80	0	0	-	0	-
10-Oct-2018	KN	101-4	-	0.50	0	10	0	10	80	0	0	-	0	-
10-Oct-2018	KN	101-5	-	0.50	0	10	0	10	80	0	0	-	1	Lake whitefish
30-Sep-2018	KN	10-2	-	0.20	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	102-1	-	0.40	0	0	0	0	100	0	0	-	0	-
10-Oct-2018	KN	102-2	-	0.40	0	0	0	60	40	0	0	-	0	-
10-Oct-2018	KN	102-3	-	0.40	0	0	0	60	40	0	0	-	0	-
10-Oct-2018	KN	102-4	-	0.40	0	0	0	60	40	0	0	-	0	-
10-Oct-2018	KN	102-5	-	0.40	0	0	0	60	40	0	0	-	0	-
30-Sep-2018	KN	10-3	-	0.20	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	103-1	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	103-2	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	103-3	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	103-4	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	103-5	-	0.30	5	90	0	0	0	5	0	-	0	-
30-Sep-2018	KN	10-4	-	0.20	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	104-1	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	104-2	-	0.40	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	104-3	-	0.30	5	90	0	0	0	5	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
10-Oct-2018	KN	104-4	-	0.40	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	104-5	-	0.30	5	90	0	0	0	5	0	-	0	-
30-Sep-2018	KN	10-5	-	0.20	0	100	0	0	0	0	0	-	0	-
10-Oct-2018	KN	105-1	-	0.30	5	10	5	75	0	5	0	-	0	-
10-Oct-2018	KN	105-2	-	0.30	5	10	5	75	0	5	0	-	0	-
10-Oct-2018	KN	105-3	-	0.30	10	10	10	70	0	0	0	-	0	-
10-Oct-2018	KN	105-4	-	0.40	10	10	10	70	0	0	0	-	0	-
10-Oct-2018	KN	105-5	-	0.50	10	30	0	60	0	0	0	-	0	-
11-Oct-2018	KN	106-1	-	0.30	5	95	0	0	0	0	0	-	0	-
11-Oct-2018	KN	106-2	-	0.30	5	95	0	0	0	0	0	-	0	-
11-Oct-2018	KN	106-3	-	0.30	5	95	0	0	0	0	0	-	0	-
11-Oct-2018	KN	106-4	-	0.30	5	95	0	0	0	0	0	-	0	-
11-Oct-2018	KN	106-5	-	0.30	5	95	0	0	0	0	0	-	0	-
11-Oct-2018	KN	107-1	-	0.30	0	0	10	85	5	0	0	-	0	-
11-Oct-2018	KN	107-2	-	0.30	0	0	10	85	5	0	0	-	0	-
11-Oct-2018	KN	107-3	-	0.30	0	0	10	85	5	0	0	-	0	-
11-Oct-2018	KN	107-4	-	0.30	0	0	10	85	5	0	0	-	0	-
11-Oct-2018	KN	107-5	-	0.30	0	0	10	85	5	0	0	-	0	-
11-Oct-2018	KN	108-1	-	0.50	0	15	15	50	20	0	0	-	1	Lake whitefish
11-Oct-2018	KN	108-2	-	0.50	0	15	15	50	20	0	0	-	3	Lake whitefish
11-Oct-2018	KN	108-3	-	0.50	0	15	15	50	20	0	0	-	0	-
11-Oct-2018	KN	108-4	-	0.50	0	15	15	50	20	0	0	-	0	-
11-Oct-2018	KN	108-5	-	0.50	0	15	15	50	20	0	0	-	0	-
11-Oct-2018	KN	109-1	-	0.50	0	0	0	60	40	0	0	-	0	-
11-Oct-2018	KN	109-2	-	0.50	0	0	0	60	40	0	0	-	0	-
11-Oct-2018	KN	109-3	-	0.50	0	0	0	60	40	0	0	-	1	Lake whitefish
11-Oct-2018	KN	109-4	-	0.60	0	0	0	60	40	0	0	-	1	Lake whitefish
11-Oct-2018	KN	109-5	-	0.60	0	0	0	60	40	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	KN	110-1	-	0.40	0	10	10	60	20	0	0	-	1	Lake trout
11-Oct-2018	KN	110-1	-	0.40	0	10	10	60	20	0	0	-	3	Lake whitefish
11-Oct-2018	KN	110-2	-	0.40	0	10	10	60	20	0	0	-	6	Lake whitefish
11-Oct-2018	KN	110-3	-	0.40	0	10	10	60	20	0	0	-	1	Lake trout
11-Oct-2018	KN	110-3	-	0.40	0	10	10	60	20	0	0	-	19	Lake whitefish
30-Sep-2018	KN	11-1	-	0.50	0	0	50	50	0	0	0	-	1	Lake trout
30-Sep-2018	KN	11-1	-	0.50	0	0	50	50	0	0	0	-	5	Lake whitefish
11-Oct-2018	KN	111-1	-	0.50	0	10	10	60	20	0	0	-	25	Lake whitefish
11-Oct-2018	KN	111-2	-	0.50	0	10	10	60	20	0	0	-	20	Lake whitefish
11-Oct-2018	KN	111-3	-	0.50	0	10	10	60	20	0	0	-	27	Lake whitefish
30-Sep-2018	KN	11-2	-	0.50	0	0	40	60	0	0	0	-	0	-
11-Oct-2018	KN	112-1	-	0.40	0	0	10	60	30	0	0	-	27	Lake whitefish
11-Oct-2018	KN	112-2	-	0.40	0	0	10	60	30	0	0	-	1	Lake whitefish
11-Oct-2018	KN	112-3	-	0.40	0	0	10	60	30	0	0	-	0	-
30-Sep-2018	KN	11-3	-	0.50	0	0	50	50	0	0	0	-	0	-
11-Oct-2018	KN	113-1	-	0.30	0	0	0	60	40	0	0	-	75	Lake whitefish
11-Oct-2018	KN	113-2	-	0.30	0	0	0	60	40	0	0	-	28	Lake whitefish
11-Oct-2018	KN	113-3	-	0.30	0	0	0	60	40	0	0	-	57	Lake whitefish
11-Oct-2018	KN	114-1	-	0.40	0	0	5	50	45	0	0	-	45	Lake whitefish
11-Oct-2018	KN	114-2	-	0.40	0	0	5	50	45	0	0	-	6	Lake trout
11-Oct-2018	KN	114-2	-	0.40	0	0	5	50	45	0	0	-	75	Lake whitefish
11-Oct-2018	KN	114-3	-	0.40	0	0	0	0	0	0	0	-	3	Lake trout
11-Oct-2018	KN	114-3	-	0.40	0	0	0	0	0	0	0	-	25	Lake whitefish
11-Oct-2018	KN	115-1	-	0.40	0	5	10	50	35	0	0	-	1	Lake whitefish
11-Oct-2018	KN	115-2	-	0.50	0	5	10	50	35	0	0	-	0	-
11-Oct-2018	KN	115-3	-	0.40	0	5	10	50	35	0	0	-	1	Lake whitefish
11-Oct-2018	KN	115-4	-	0.40	0	5	10	50	35	0	0	-	1	Lake trout
11-Oct-2018	KN	115-5	-	0.40	0	5	10	50	35	0	0	-	1	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
11-Oct-2018	KN	116-1	-	0.40	0	0	0	90	10	0	0	-	1	Lake trout
11-Oct-2018	KN	116-2	-	0.40	0	0	0	90	10	0	0	-	0	-
11-Oct-2018	KN	116-3	-	0.40	0	0	0	90	10	0	0	-	0	-
11-Oct-2018	KN	116-4	-	0.40	0	0	20	70	10	0	0	-	0	-
11-Oct-2018	KN	116-5	-	0.40	0	0	20	70	10	0	0	-	0	-
11-Oct-2018	KN	117-1	-	0.30	0	10	10	80	0	0	0	-	0	-
11-Oct-2018	KN	117-2	-	0.30	0	10	10	80	0	0	0	-	0	-
11-Oct-2018	KN	117-3	-	0.30	0	10	10	80	0	0	0	-	0	-
11-Oct-2018	KN	117-4	-	0.30	0	10	10	80	0	0	0	-	0	-
11-Oct-2018	KN	117-5	-	0.30	0	10	10	80	0	0	0	-	0	-
11-Oct-2018	KN	118-1	-	0.30	0	10	20	60	10	0	0	-	1	Lake whitefish
11-Oct-2018	KN	118-1	-	0.30	0	10	20	60	10	0	0	-	3	Lake trout
11-Oct-2018	KN	118-2	-	0.40	0	10	20	60	10	0	0	-	1	Lake whitefish
11-Oct-2018	KN	118-2	-	0.40	0	10	20	60	10	0	0	-	7	Lake trout
11-Oct-2018	KN	118-3	-	0.30	0	10	20	60	10	0	0	-	1	Lake whitefish
11-Oct-2018	KN	118-3	-	0.30	0	10	20	60	10	0	0	-	3	Lake trout
11-Oct-2018	KN	118-4	-	0.30	0	10	20	60	10	0	0	-	2	Lake whitefish
11-Oct-2018	KN	119-1	-	0.40	0	10	10	70	10	0	0	-	4	Lake whitefish
11-Oct-2018	KN	119-2	-	0.60	0	10	10	70	10	0	0	-	1	Lake whitefish
11-Oct-2018	KN	119-3	-	0.40	0	10	10	70	10	0	0	-	8	Lake whitefish
11-Oct-2018	KN	120-1	-	0.40	0	20	20	50	10	0	0	-	23	Lake whitefish
11-Oct-2018	KN	120-2	-	0.40	0	20	20	50	10	0	0	-	1	Lake whitefish
11-Oct-2018	KN	120-3	-	0.40	0	20	20	50	10	0	0	-	4	Lake whitefish
30-Sep-2018	KN	12-1	-	0.30	0	0	80	20	0	0	0	-	8	Lake whitefish
30-Sep-2018	KN	12-1	-	0.30	0	0	80	20	0	0	0	-	12	Lake trout
11-Oct-2018	KN	121-1	-	0.30	0	20	20	50	10	0	0	-	0	-
11-Oct-2018	KN	121-2	-	0.30	0	20	20	50	10	0	0	-	0	-
11-Oct-2018	KN	121-3	-	0.30	0	20	20	50	10	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
12-Oct-2018	KN	122-1	-	0.30	0	0	40	60	0	0	0	-	1	Lake trout
12-Oct-2018	KN	122-1	-	0.30	0	0	40	60	0	0	0	-	48	Lake whitefish
12-Oct-2018	KN	122-2	-	0.30	0	0	40	60	0	0	0	-	27	Lake whitefish
12-Oct-2018	KN	122-3	-	0.30	0	0	40	60	0	0	0	-	10	Lake whitefish
12-Oct-2018	KN	123-1	-	0.40	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	123-2	-	0.40	0	0	0	100	0	0	0	-	1	Lake trout
12-Oct-2018	KN	123-2	-	0.40	0	0	0	100	0	0	0	-	29	Lake whitefish
12-Oct-2018	KN	123-3	-	0.40	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	124-1	-	0.40	0	0	20	40	40	0	0	-	7	Lake whitefish
12-Oct-2018	KN	124-2	-	0.40	0	0	20	40	40	0	0	-	1	Lake trout
12-Oct-2018	KN	124-2	-	0.40	0	0	20	40	40	0	0	-	2	Lake whitefish
12-Oct-2018	KN	124-3	-	0.40	0	0	20	40	40	0	0	-	1	Lake trout
12-Oct-2018	KN	124-3	-	0.40	0	0	20	40	40	0	0	-	21	Lake whitefish
12-Oct-2018	KN	125-1	-	0.30	0	0	10	30	60	0	0	-	2	Lake whitefish
12-Oct-2018	KN	125-2	-	0.40	0	0	10	30	60	0	0	-	1	Lake whitefish
12-Oct-2018	KN	125-3	-	0.30	0	0	10	30	60	0	0	-	5	Lake whitefish
12-Oct-2018	KN	126-1	-	0.30	0	0	0	90	10	0	0	-	5	Lake whitefish
12-Oct-2018	KN	126-2	-	0.30	0	0	0	90	10	0	0	-	4	Lake whitefish
12-Oct-2018	KN	126-3	-	0.30	0	0	0	90	10	0	0	-	5	Lake whitefish
12-Oct-2018	KN	127-1	-	0.40	0	0	20	60	20	0	0	-	5	Lake whitefish
12-Oct-2018	KN	127-2	-	0.30	0	0	20	60	20	0	0	-	1	Lake trout
12-Oct-2018	KN	127-2	-	0.30	0	0	20	60	20	0	0	-	7	Lake whitefish
12-Oct-2018	KN	127-3	-	0.30	0	0	20	60	20	0	0	-	4	Lake whitefish
12-Oct-2018	KN	128-1	-	0.30	0	0	30	40	30	0	0	-	2	Lake whitefish
12-Oct-2018	KN	128-2	-	0.30	0	0	30	40	30	0	0	-	3	Lake trout
12-Oct-2018	KN	128-2	-	0.30	0	0	30	40	30	0	0	-	3	Lake whitefish
12-Oct-2018	KN	128-3	-	0.30	0	0	30	40	30	0	0	-	2	Lake whitefish
12-Oct-2018	KN	129-1	-	0.20	0	0	40	30	30	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Lake														
12-Oct-2018	KN	129-2	-	0.20	0	0	40	30	30	0	0	-	0	-
12-Oct-2018	KN	129-3	-	0.20	0	0	40	30	30	0	0	-	0	-
12-Oct-2018	KN	129-4	-	0.20	0	0	40	30	30	0	0	-	0	-
12-Oct-2018	KN	129-5	-	0.20	0	0	40	30	30	0	0	-	0	-
12-Oct-2018	KN	130-1	-	0.30	0	0	20	70	10	0	0	-	0	-
12-Oct-2018	KN	130-2	-	0.30	0	0	20	70	10	0	0	-	5	Lake whitefish
12-Oct-2018	KN	130-3	-	0.30	0	0	20	70	10	0	0	-	2	Lake trout
12-Oct-2018	KN	130-3	-	0.30	0	0	20	70	10	0	0	-	8	Lake whitefish
12-Oct-2018	KN	130-4	-	0.30	0	0	20	70	10	0	0	-	4	Lake whitefish
Patterson Creek														
8-Oct-2018	KN	01-1	-	0.30	0	90	0	0	0	10	0	-	3	Lake whitefish
8-Oct-2018	KN	01-2	-	0.20	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	01-3	-	0.20	0	90	0	0	0	10	0	-	2	Lake whitefish
8-Oct-2018	KN	01-4	-	0.30	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	01-5	-	0.20	0	80	0	0	0	20	0	-	18	Lake whitefish
8-Oct-2018	KN	02-1	-	0.20	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	02-2	-	0.30	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	02-3	-	0.30	0	85	0	0	0	15	0	-	0	-
8-Oct-2018	KN	02-4	-	0.40	0	80	0	0	0	20	0	-	1	Lake whitefish
8-Oct-2018	KN	02-5	-	0.40	0	85	0	0	0	15	0	-	2	Lake whitefish
8-Oct-2018	KN	03-1	-	0.40	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	03-2	-	0.20	0	95	0	0	0	5	0	-	0	-
8-Oct-2018	KN	03-3	-	0.30	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	03-4	-	0.30	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	03-5	-	0.50	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	04-1	-	0.30	0	95	0	0	0	5	0	-	0	-
8-Oct-2018	KN	04-2	-	1.50	0	95	0	0	0	5	0	-	1	Lake whitefish
8-Oct-2018	KN	04-3	-	0.30	0	95	0	0	0	5	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Patterson Creek														
8-Oct-2018	KN	04-4	-	0.20	0	95	0	0	0	5	0	-	0	-
8-Oct-2018	KN	04-5	-	0.20	0	95	0	0	0	5	0	-	0	-
8-Oct-2018	KN	05-1	-	0.90	0	85	0	0	0	15	0	-	1	Lake whitefish
8-Oct-2018	KN	05-2	-	0.80	0	90	0	0	0	10	0	-	2	Lake whitefish
8-Oct-2018	KN	05-3	-	0.40	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	05-4	-	0.40	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	05-5	-	0.20	0	80	0	0	0	20	0	-	0	-
8-Oct-2018	KN	06-1	-	1.40	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	06-2	-	1.20	0	90	0	0	0	10	0	-	0	-
8-Oct-2018	KN	06-3	-	1.00	0	80	0	0	0	20	0	-	1	Lake whitefish
8-Oct-2018	KN	06-4	-	1.00	0	85	0	0	0	15	0	-	1	Lake whitefish
8-Oct-2018	KN	06-5	-	0.60	0	85	0	0	0	15	0	-	0	-
9-Oct-2018	KN	07-1	-	0.50	0	85	0	0	0	15	10	Carex	0	-
9-Oct-2018	KN	07-2	-	1.20	0	85	0	0	0	15	10	Carex	1	Lake whitefish
9-Oct-2018	KN	07-3	-	1.30	0	85	0	0	0	15	10	Carex	0	-
9-Oct-2018	KN	07-4	-	0.40	0	85	0	0	0	15	10	Carex	4	Lake whitefish
9-Oct-2018	KN	07-5	-	0.30	0	85	0	0	0	15	10	Carex	2	Lake whitefish
9-Oct-2018	KN	08-1	-	0.40	0	80	0	0	0	20	15	Carex	0	-
9-Oct-2018	KN	08-2	-	0.40	0	70	0	0	0	30	25	Carex	0	-
9-Oct-2018	KN	08-3	-	0.30	0	90	0	0	0	10	0	-	3	Lake whitefish
9-Oct-2018	KN	08-4	-	0.50	0	90	0	0	0	10	0	-	0	-
9-Oct-2018	KN	08-5	-	0.40	0	90	0	0	0	10	0	-	0	-
9-Oct-2018	KN	09-1	-	0.30	0	85	0	0	0	15	0	-	1	Lake whitefish
9-Oct-2018	KN	09-2	-	0.40	0	85	0	0	0	15	0	-	8	Lake whitefish
9-Oct-2018	KN	09-3	-	0.40	0	85	0	0	0	15	0	-	3	Lake whitefish
9-Oct-2018	KN	09-4	-	0.40	0	85	0	0	0	15	0	-	1	Lake whitefish
9-Oct-2018	KN	09-5	-	0.30	0	85	0	0	0	15	0	-	20	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
1-Oct-2018	KN	01-1	-	0.60	0	0	50	50	0	0	0	-	3	Lake trout
1-Oct-2018	KN	01-2	-	0.50	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	01-3	-	0.60	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	01-4	-	0.50	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	01-5	-	0.50	0	0	50	50	0	0	0	-	1	Lake trout
1-Oct-2018	KN	02-1	-	0.40	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	02-2	-	0.40	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	02-3	-	0.30	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	02-4	-	0.40	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	02-5	-	0.40	0	0	50	50	0	0	0	-	5	Lake trout
1-Oct-2018	KN	03-1	-	0.60	0	0	50	50	0	0	0	-	1	Lake trout
1-Oct-2018	KN	03-2	-	0.50	0	0	50	50	0	0	0	-	6	Lake whitefish
1-Oct-2018	KN	03-3	-	0.60	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	03-4	-	0.70	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	03-5	-	0.80	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	04-1	-	0.50	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	04-2	-	0.50	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	04-3	-	0.60	0	0	50	50	0	0	0	-	3	Lake trout
1-Oct-2018	KN	04-4	-	0.60	0	0	50	50	0	0	0	-	2	Lake trout
1-Oct-2018	KN	04-5	-	0.30	0	0	50	50	0	0	0	-	3	Lake trout
1-Oct-2018	KN	05-1	-	0.40	0	0	50	50	0	0	0	-	9	Lake trout
1-Oct-2018	KN	05-2	-	0.40	0	0	50	50	0	0	0	-	1	Lake trout
1-Oct-2018	KN	05-3	-	0.40	0	0	0	100	0	0	0	-	2	Lake trout
1-Oct-2018	KN	05-4	-	0.40	0	0	0	100	0	0	0	-	2	Lake trout
1-Oct-2018	KN	05-5	-	0.40	0	0	0	100	0	0	0	-	2	Lake trout
1-Oct-2018	KN	06-1	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	06-2	-	0.20	0	10	40	45	5	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
1-Oct-2018	KN	06-3	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	06-4	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	06-5	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	07-1	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	07-2	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	07-3	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	07-4	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	07-5	-	0.20	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	08-1	-	0.30	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	08-2	-	0.30	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	08-3	-	0.30	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	08-4	-	0.30	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	08-5	-	0.30	0	10	40	45	5	0	0	-	0	-
1-Oct-2018	KN	09-1	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	09-2	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	09-3	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	09-4	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	09-5	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	10-1	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	10-2	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	10-3	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	10-4	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	10-5	-	0.30	0	25	50	25	0	0	0	-	0	-
1-Oct-2018	KN	11-1	-	0.50	0	0	0	70	30	0	0	-	0	-
1-Oct-2018	KN	11-2	-	0.50	0	0	0	70	30	0	0	-	0	-
1-Oct-2018	KN	11-3	-	0.50	0	0	0	70	30	0	0	-	0	-
1-Oct-2018	KN	11-4	-	0.50	0	0	0	70	30	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
1-Oct-2018	KN	11-5	-	0.50	0	0	0	70	30	0	0	-	0	-
1-Oct-2018	KN	12-1	-	0.70	0	0	50	50	0	0	0	-	1	Lake trout
1-Oct-2018	KN	12-2	-	0.80	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	12-3	-	0.80	0	0	50	50	0	0	0	-	6	Lake trout
1-Oct-2018	KN	12-4	-	1.00	0	0	50	50	0	0	0	-	8	Lake trout
1-Oct-2018	KN	12-5	-	0.70	0	0	50	50	0	0	0	-	0	-
10-Oct-2018	KN	13-1	-	0.30	5	90	5	0	0	0	0	-	0	-
10-Oct-2018	KN	13-2	-	0.30	5	90	0	0	0	5	0	-	0	-
10-Oct-2018	KN	13-3	-	0.60	5	90	5	0	0	0	0	-	0	-
10-Oct-2018	KN	13-4	-	0.60	0	90	10	0	0	0	0	-	0	-
10-Oct-2018	KN	13-5	-	0.20	5	80	15	0	0	0	0	-	0	-
10-Oct-2018	KN	14-1	-	0.30	5	80	0	0	0	15	0	-	0	-
10-Oct-2018	KN	14-2	-	0.30	0	90	10	0	0	0	0	-	2	Lake whitefish
10-Oct-2018	KN	14-3	-	0.30	0	80	10	0	0	10	0	-	0	-
10-Oct-2018	KN	14-4	-	0.30	0	90	10	0	0	0	0	-	0	-
10-Oct-2018	KN	14-5	-	0.20	0	90	10	0	0	0	0	-	3	Lake whitefish
11-Oct-2018	KN	15-1	-	0.30	0	5	50	40	0	5	0	-	1	Lake trout
11-Oct-2018	KN	15-1	-	0.30	0	5	50	40	0	5	0	-	5	Lake whitefish
11-Oct-2018	KN	15-2	-	0.30	0	0	50	50	0	0	0	-	1	Lake whitefish
11-Oct-2018	KN	15-3	-	0.30	0	0	50	50	0	0	0	-	1	Lake whitefish
11-Oct-2018	KN	15-4	-	0.30	0	0	50	50	0	0	0	-	0	-
11-Oct-2018	KN	15-5	-	0.30	0	0	0	60	40	0	0	-	5	Lake whitefish
11-Oct-2018	KN	16-1	-	0.30	0	0	0	100	0	0	0	-	0	-
11-Oct-2018	KN	16-2	-	0.40	0	0	20	80	0	0	0	-	4	Lake whitefish
11-Oct-2018	KN	16-3	-	0.40	0	0	20	80	0	0	0	-	1	Lake whitefish
11-Oct-2018	KN	16-3	-	0.40	0	0	20	80	0	0	0	-	3	Lake trout
11-Oct-2018	KN	16-4	-	0.30	0	0	20	50	0	0	0	-	0	-
11-Oct-2018	KN	16-5	-	0.30	0	0	0	100	0	0	0	-	1	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
11-Oct-2018	KN	17-1	-	0.40	0	0	40	60	0	0	0	-	20	Lake whitefish
11-Oct-2018	KN	17-2	-	0.50	0	0	0	100	0	0	0	-	16	Lake whitefish
11-Oct-2018	KN	17-3	-	0.30	0	0	20	80	0	0	0	-	8	Lake whitefish
11-Oct-2018	KN	18-1	-	0.40	0	0	10	90	0	0	0	-	9	Lake whitefish
11-Oct-2018	KN	18-2	-	0.30	0	0	0	100	0	0	0	-	6	Lake whitefish
11-Oct-2018	KN	18-3	-	0.60	0	0	10	90	0	0	0	-	2	Lake trout
11-Oct-2018	KN	18-3	-	0.60	0	0	10	90	0	0	0	-	3	Lake whitefish
11-Oct-2018	KN	19-1	-	0.30	0	60	20	20	0	0	0	-	0	-
11-Oct-2018	KN	19-2	-	0.30	0	40	40	20	0	0	0	-	0	-
11-Oct-2018	KN	19-3	-	0.20	0	40	40	20	0	0	0	-	0	-
11-Oct-2018	KN	19-4	-	0.30	0	20	40	40	0	0	0	-	3	Lake whitefish
11-Oct-2018	KN	19-5	-	0.40	0	30	30	40	0	0	0	-	0	-
11-Oct-2018	KN	20-1	-	0.30	0	10	30	60	0	0	0	-	0	-
11-Oct-2018	KN	20-2	-	0.40	0	20	20	60	0	0	0	-	0	-
11-Oct-2018	KN	20-3	-	0.40	0	40	40	20	0	0	0	-	8	Lake whitefish
11-Oct-2018	KN	20-4	-	0.30	0	40	20	40	0	0	0	-	0	-
11-Oct-2018	KN	20-5	-	0.30	0	40	20	40	0	0	0	-	0	-
11-Oct-2018	KN	21-1	-	0.50	0	0	20	80	0	0	0	-	0	-
11-Oct-2018	KN	21-2	-	0.40	0	0	20	80	0	0	0	-	0	-
11-Oct-2018	KN	21-3	-	0.60	0	0	0	100	0	0	0	-	0	-
11-Oct-2018	KN	21-4	-	0.30	0	0	0	100	0	0	0	-	0	-
11-Oct-2018	KN	21-5	-	0.40	0	0	20	80	0	0	0	-	0	-
11-Oct-2018	KN	22-1	-	0.40	0	0	40	60	0	0	0	-	1	Lake trout
11-Oct-2018	KN	22-2	-	0.60	0	0	20	80	0	0	0	-	0	-
11-Oct-2018	KN	22-3	-	0.30	0	0	30	70	0	0	0	-	0	-
11-Oct-2018	KN	22-4	-	0.20	0	0	30	70	0	0	0	-	0	-
11-Oct-2018	KN	22-5	-	0.30	0	0	20	80	0	0	0	-	0	-
11-Oct-2018	KN	23-1	-	0.40	0	0	20	80	0	0	0	-	1	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
11-Oct-2018	KN	23-2	-	0.40	0	0	0	100	0	0	0	-	0	-
11-Oct-2018	KN	23-3	-	0.30	0	0	40	60	0	0	0	-	0	-
11-Oct-2018	KN	23-4	-	0.30	0	0	50	50	0	0	0	-	0	-
11-Oct-2018	KN	24-1	-	-	0	40	20	40	0	0	0	-	12	Lake whitefish
11-Oct-2018	KN	24-2	-	-	0	40	20	40	0	0	0	-	0	-
11-Oct-2018	KN	24-3	-	-	0	40	20	40	0	0	0	-	8	Lake whitefish
11-Oct-2018	KN	25-1	-	-	0	20	40	40	0	0	0	-	0	-
11-Oct-2018	KN	25-2	-	-	0	80	10	10	0	0	0	-	0	-
11-Oct-2018	KN	25-3	-	-	0	80	10	10	0	0	0	-	0	-
11-Oct-2018	KN	26-1	-	-	0	90	5	5	0	0	0	-	0	-
11-Oct-2018	KN	26-2	-	-	0	40	40	20	0	0	0	-	0	-
11-Oct-2018	KN	26-3	-	-	0	40	20	40	0	0	0	-	0	-
11-Oct-2018	KN	26-4	-	-	0	60	20	20	0	0	0	-	0	-
11-Oct-2018	KN	26-5	-	-	0	50	30	20	0	0	0	-	0	-
11-Oct-2018	KN	27-1	-	0.20	0	90	5	5	0	0	0	-	0	-
11-Oct-2018	KN	27-2	-	0.20	0	80	5	15	0	0	0	-	0	-
11-Oct-2018	KN	27-3	-	0.20	0	95	5	0	0	0	0	-	0	-
11-Oct-2018	KN	28-1	-	-	0	40	60	0	0	0	0	-	0	-
11-Oct-2018	KN	28-2	-	-	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	28-3	-	-	0	80	20	0	0	0	0	-	0	-
11-Oct-2018	KN	28-4	-	-	0	60	40	0	0	0	0	-	0	-
11-Oct-2018	KN	28-5	-	-	0	70	30	0	0	0	0	-	0	-
11-Oct-2018	KN	29-1	-	-	0	20	80	0	0	0	0	-	0	-
11-Oct-2018	KN	29-2	-	-	0	10	90	0	0	0	0	-	0	-
11-Oct-2018	KN	29-3	-	-	0	10	80	10	0	0	0	-	0	-
12-Oct-2018	KN	30-1	-	0.50	0	0	0	100	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	30-2	-	0.60	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	30-3	-	0.50	0	0	0	100	0	0	0	-	1	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
12-Oct-2018	KN	30-3	-	0.50	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	31-1	-	0.40	0	0	20	80	0	0	0	-	8	Lake whitefish
12-Oct-2018	KN	31-2	-	0.60	0	0	40	60	0	0	0	-	1	Lake trout
12-Oct-2018	KN	31-2	-	0.60	0	0	40	60	0	0	0	-	11	Lake whitefish
12-Oct-2018	KN	31-3	-	0.40	0	0	20	80	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	32-1	-	0.60	0	0	20	80	0	0	0	-	20	Lake whitefish
12-Oct-2018	KN	32-2	-	0.60	0	0	20	80	0	0	0	-	6	Lake whitefish
12-Oct-2018	KN	32-3	-	0.80	0	0	0	100	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	33-1	-	0.40	0	0	0	100	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	33-2	-	0.70	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	33-2	-	0.70	0	0	0	100	0	0	0	-	7	Lake trout
12-Oct-2018	KN	33-3	-	0.50	0	0	20	80	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	34-1	-	0.50	0	0	20	80	0	0	0	-	12	Lake whitefish
12-Oct-2018	KN	34-2	-	0.40	0	0	20	80	0	0	0	-	36	Lake whitefish
12-Oct-2018	KN	34-3	-	0.40	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	35-1	-	0.30	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	35-2	-	0.40	0	10	20	70	0	0	0	-	3	Lake whitefish
12-Oct-2018	KN	35-3	-	0.30	0	0	10	90	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	36-1	-	0.30	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	36-2	-	0.30	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	36-3	-	0.30	0	0	20	80	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	36-4	-	0.30	0	0	10	90	0	0	0	-	0	-
12-Oct-2018	KN	36-5	-	0.40	0	0	20	80	0	0	0	-	0	-
12-Oct-2018	KN	37-1	-	0.30	0	0	10	90	0	0	0	-	0	-
12-Oct-2018	KN	37-2	-	0.40	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	37-3	-	0.40	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	37-4	-	0.40	0	0	0	100	0	0	0	-	7	Lake whitefish
12-Oct-2018	KN	37-5	-	0.30	0	0	0	100	0	0	0	-	2	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
12-Oct-2018	KN	38-1	-	0.40	0	10	20	70	0	0	0	-	4	Lake trout
12-Oct-2018	KN	38-1	-	0.40	0	10	20	70	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	38-2	-	0.40	0	0	20	80	0	0	0	-	0	-
12-Oct-2018	KN	38-3	-	0.30	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	38-4	-	0.50	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	38-5	-	0.50	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	39-1	-	0.60	0	0	0	100	0	0	0	-	3	Lake whitefish
12-Oct-2018	KN	39-1	-	0.60	0	0	0	100	0	0	0	-	12	Lake trout
12-Oct-2018	KN	39-2	-	0.60	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	39-2	-	0.60	0	0	0	100	0	0	0	-	24	Lake trout
12-Oct-2018	KN	39-3	-	0.70	0	0	0	90	10	0	0	-	1	Lake whitefish
12-Oct-2018	KN	39-3	-	0.70	0	0	0	90	10	0	0	-	15	Lake trout
12-Oct-2018	KN	40-1	-	0.60	0	0	0	100	0	0	0	-	16	Lake trout
12-Oct-2018	KN	40-2	-	0.60	0	0	20	80	0	0	0	-	12	Lake whitefish
12-Oct-2018	KN	40-3	-	0.60	0	0	20	80	0	0	0	-	3	Lake whitefish
12-Oct-2018	KN	40-3	-	0.60	0	0	20	80	0	0	0	-	9	Lake trout
12-Oct-2018	KN	41-1	-	0.60	0	0	0	100	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	41-1	-	0.60	0	0	0	100	0	0	0	-	2	Lake trout
12-Oct-2018	KN	41-2	-	0.60	0	0	0	100	0	0	0	-	5	Lake trout
12-Oct-2018	KN	41-2	-	0.60	0	0	0	100	0	0	0	-	5	Lake whitefish
12-Oct-2018	KN	41-3	-	0.50	0	0	10	90	0	0	0	-	2	Lake trout
12-Oct-2018	KN	41-3	-	0.50	0	0	10	90	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	42-1	-	0.50	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	42-2	-	0.50	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	42-3	-	0.50	0	0	0	95	5	0	0	-	10	Lake trout
12-Oct-2018	KN	42-4	-	0.50	0	0	10	90	0	0	0	-	2	Lake trout
12-Oct-2018	KN	42-4	-	0.50	0	0	10	90	0	0	0	-	16	Lake whitefish
12-Oct-2018	KN	42-5	-	0.40	0	0	0	100	0	0	0	-	2	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
12-Oct-2018	KN	43-1	-	0.50	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	43-1	-	0.50	0	0	0	100	0	0	0	-	5	Lake trout
12-Oct-2018	KN	43-2	-	0.30	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	43-3	-	0.40	0	0	0	100	0	0	0	-	1	Lake trout
12-Oct-2018	KN	43-3	-	0.40	0	0	0	100	0	0	0	-	2	Lake whitefish
12-Oct-2018	KN	43-4	-	0.40	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	43-5	-	0.40	0	0	0	100	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	44-1	-	0.40	0	0	0	100	0	0	0	-	0	-
12-Oct-2018	KN	44-2	-	0.30	0	0	10	90	0	0	0	-	0	-
12-Oct-2018	KN	44-3	-	0.30	0	0	20	80	0	0	0	-	13	Lake whitefish
12-Oct-2018	KN	44-4	-	0.40	0	0	10	90	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	44-4	-	0.40	0	0	10	90	0	0	0	-	8	Lake trout
12-Oct-2018	KN	45-1	-	0.30	0	0	0	100	0	0	0	-	2	Lake trout
12-Oct-2018	KN	45-1	-	0.30	0	0	0	100	0	0	0	-	14	Lake whitefish
12-Oct-2018	KN	45-2	-	0.40	0	0	0	100	0	0	0	-	31	Lake trout
12-Oct-2018	KN	45-3	-	0.30	0	0	0	100	0	0	0	-	13	Lake trout
12-Oct-2018	KN	46-1	-	0.20	0	60	20	20	0	0	0	-	0	-
12-Oct-2018	KN	46-2	-	0.30	0	50	20	30	0	0	0	-	0	-
12-Oct-2018	KN	46-3	-	0.30	0	50	20	30	0	0	0	-	0	-
12-Oct-2018	KN	46-4	-	0.30	0	50	20	30	0	0	0	-	0	-
12-Oct-2018	KN	46-5	-	0.30	0	40	40	20	0	0	0	-	0	-
12-Oct-2018	KN	47-1	-	0.30	0	40	40	20	0	0	0	-	0	-
12-Oct-2018	KN	47-2	-	0.30	0	60	20	20	0	0	0	-	0	-
12-Oct-2018	KN	47-3	-	0.30	0	60	20	20	0	0	0	-	0	-
12-Oct-2018	KN	47-4	-	0.30	0	60	20	20	0	0	0	-	0	-
12-Oct-2018	KN	48-1	-	0.30	0	40	20	40	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	48-2	-	0.30	0	40	20	40	0	0	0	-	3	Lake whitefish
12-Oct-2018	KN	48-3	-	0.30	0	40	20	40	0	0	0	-	2	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
12-Oct-2018	KN	49-1	-	0.30	0	0	20	80	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	49-2	-	0.30	0	0	30	70	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	49-3	-	0.30	0	0	30	70	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	50-1	-	0.30	0	0	20	80	0	0	0	-	1	Lake whitefish
12-Oct-2018	KN	50-2	-	0.30	0	0	20	80	0	0	0	-	4	Lake whitefish
12-Oct-2018	KN	50-3	-	0.30	0	0	20	80	0	0	0	-	3	Lake whitefish
12-Oct-2018	KN	51-1	-	0.30	0	0	20	80	0	0	0	-	0	-
12-Oct-2018	KN	51-2	-	0.30	0	0	30	70	0	0	0	-	0	-
12-Oct-2018	KN	51-3	-	0.30	0	20	30	50	0	0	0	-	0	-
12-Oct-2018	KN	51-4	-	0.30	0	20	20	60	0	0	0	-	0	-
12-Oct-2018	KN	51-5	-	0.20	0	40	20	40	0	0	0	-	0	-
12-Oct-2018	KN	52-1	-	0.30	0	40	20	40	0	0	0	-	0	-
12-Oct-2018	KN	52-2	-	0.30	0	40	40	20	0	0	0	-	0	-
12-Oct-2018	KN	52-3	-	0.30	0	40	40	20	0	0	0	-	0	-
12-Oct-2018	KN	52-4	-	0.30	0	20	40	40	0	0	0	-	0	-
12-Oct-2018	KN	52-5	-	0.30	0	20	40	40	0	0	0	-	0	-
13-Oct-2018	KN	53-1	-	0.30	0	20	40	40	0	0	0	-	11	Lake whitefish
13-Oct-2018	KN	53-2	-	0.30	0	20	40	40	0	0	0	-	1	Lake whitefish
13-Oct-2018	KN	53-3	-	0.30	0	0	60	40	0	0	0	-	3	Lake whitefish
13-Oct-2018	KN	54-1	-	0.30	0	0	20	80	0	0	0	-	0	-
13-Oct-2018	KN	54-2	-	0.30	0	0	20	80	0	0	0	-	0	-
13-Oct-2018	KN	54-3	-	0.30	0	0	20	80	0	0	0	-	0	-
13-Oct-2018	KN	54-4	-	0.30	0	20	40	40	0	0	0	-	0	-
13-Oct-2018	KN	54-5	-	0.30	0	20	40	40	0	0	0	-	0	-
14-Oct-2018	KN	57-1	-	0.90	0	0	0	100	0	0	0	-	13	Lake whitefish
14-Oct-2018	KN	57-2	-	0.80	0	0	0	100	0	0	0	-	1	Lake whitefish
14-Oct-2018	KN	57-3	-	0.90	0	0	0	100	0	0	0	-	4	Lake whitefish
14-Oct-2018	KN	58-1	-	0.70	0	0	20	80	0	0	0	-	4	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Forrest Lake														
14-Oct-2018	KN	58-2	-	0.80	0	0	20	80	0	0	0	-	1	Lake trout
14-Oct-2018	KN	58-2	-	0.80	0	0	20	80	0	0	0	-	5	Lake whitefish
14-Oct-2018	KN	58-3	-	0.50	0	0	20	80	0	0	0	-	3	Lake whitefish
14-Oct-2018	KN	55-1	-	0.50	0	0	20	80	0	0	0	-	11	Lake whitefish
14-Oct-2018	KN	55-2	-	0.40	0	0	20	80	0	0	0	-	1	Lake whitefish
14-Oct-2018	KN	55-3	-	0.50	0	0	20	80	0	0	0	-	4	Lake whitefish
14-Oct-2018	KN	56-1	-	0.30	0	20	20	60	0	0	0	-	3	Lake whitefish
14-Oct-2018	KN	56-2	-	0.40	0	20	30	50	0	0	0	-	1	Lake whitefish
14-Oct-2018	KN	56-3	-	0.40	0	0	40	60	0	0	0	-	2	Lake whitefish
Beet Lake														
1-Oct-2018	KN	01-1	-	0.60	0	0	90	10	0	0	0	-	68	Lake trout
1-Oct-2018	KN	01-2	-	0.60	0	0	50	50	0	0	0	-	6	Lake trout
1-Oct-2018	KN	02-1	-	0.30	0	0	90	10	0	0	0	-	24	Lake trout
1-Oct-2018	KN	02-2	-	0.30	0	0	50	50	0	0	0	-	3	Lake trout
1-Oct-2018	KN	03-1	-	0.40	0	0	90	10	0	0	0	-	2	Lake trout
1-Oct-2018	KN	03-2	-	0.40	0	0	80	20	0	0	0	-	2	Lake trout
1-Oct-2018	KN	03-3	-	0.70	0	0	40	60	0	0	0	-	0	-
1-Oct-2018	KN	03-4	-	0.60	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	03-5	-	0.40	0	0	80	20	0	0	0	-	0	-
1-Oct-2018	KN	04-1	-	0.50	0	0	10	90	0	0	0	-	0	-
1-Oct-2018	KN	04-2	-	0.20	0	0	50	50	0	0	0	-	1	Lake trout
1-Oct-2018	KN	04-3	-	0.40	0	0	50	50	0	0	0	-	0	-
1-Oct-2018	KN	04-4	-	0.40	0	0	0	100	0	0	0	-	0	-
1-Oct-2018	KN	04-5	-	0.20	0	0	20	80	0	0	0	-	0	-
2-Oct-2018	KN	05-1	-	0.30	0	0	50	50	0	0	0	-	3	Lake trout
2-Oct-2018	KN	05-2	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	05-3	-	0.30	0	0	50	50	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
2-Oct-2018	KN	05-4	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	05-5	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	06-1	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	06-2	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	06-3	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	06-4	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	06-5	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	07-1	-	0.20	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	07-2	-	0.20	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	07-3	-	0.20	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	07-4	-	0.20	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	07-5	-	0.20	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	08-1	-	0.20	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	08-2	-	0.20	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	08-3	-	0.40	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	08-4	-	0.40	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	08-5	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	09-1	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	09-2	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	09-3	-	0.30	0	0	50	50	0	0	0	-	0	-
2-Oct-2018	KN	09-4	-	0.30	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	09-5	-	0.30	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	10-1	-	0.40	0	0	50	50	0	0	0	-	5	Lake trout
2-Oct-2018	KN	10-2	-	0.40	0	0	50	50	0	0	0	-	11	Lake trout
2-Oct-2018	KN	10-2	-	0.40	0	0	50	50	0	0	0	-	18	Lake whitefish
2-Oct-2018	KN	10-3	-	0.50	0	0	50	50	0	0	0	-	4	Lake trout

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
2-Oct-2018	KN	11-1	-	0.40	0	0	50	50	0	0	0	-	7	Lake trout
2-Oct-2018	KN	11-2	-	0.40	0	0	50	50	0	0	0	-	7	Lake trout
2-Oct-2018	KN	11-3	-	0.40	0	0	50	50	0	0	0	-	9	Lake trout
2-Oct-2018	KN	12-1	-	0.30	0	0	50	50	0	0	0	-	3	Lake trout
2-Oct-2018	KN	12-2	-	0.40	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	12-3	-	0.30	0	0	50	50	0	0	0	-	1	Lake trout
2-Oct-2018	KN	12-4	-	0.30	0	0	50	50	0	0	0	-	4	Lake trout
2-Oct-2018	KN	12-5	-	0.60	0	0	50	50	0	0	0	-	0	-
5-Oct-2018	KN	13-1	-	0.20	0	0	20	80	0	0	0	-	7	Lake whitefish
5-Oct-2018	KN	13-2	-	0.20	0	0	0	100	0	0	0	-	1	Lake trout
5-Oct-2018	KN	13-3	-	0.30	0	0	20	80	0	0	0	-	4	Lake whitefish
5-Oct-2018	KN	14-1	-	0.30	0	0	20	80	0	0	0	-	1	Lake whitefish
5-Oct-2018	KN	14-2	-	0.20	0	80	20	0	0	0	0	-	0	-
5-Oct-2018	KN	14-3	-	0.20	0	60	30	20	0	0	0	-	0	-
6-Oct-2018	KN	15-1	-	0.20	0	40	20	40	0	0	0	-	7	Lake whitefish
6-Oct-2018	KN	15-2	-	0.20	0	40	20	40	0	0	0	-	4	Lake whitefish
6-Oct-2018	KN	15-3	-	0.20	0	40	20	40	0	0	0	-	2	Lake whitefish
6-Oct-2018	KN	15-4	-	0.30	0	0	20	80	0	0	0	-	0	-
6-Oct-2018	KN	15-5	-	0.30	0	0	20	80	0	0	0	-	2	Lake whitefish
6-Oct-2018	KN	16-1	-	0.30	0	60	20	20	0	0	0	-	0	-
6-Oct-2018	KN	16-2	-	0.20	10	30	20	20	0	20	0	-	0	-
6-Oct-2018	KN	16-3	-	0.20	0	60	30	0	0	10	0	-	0	-
6-Oct-2018	KN	16-4	-	0.20	0	70	10	10	0	0	0	-	0	-
6-Oct-2018	KN	16-5	-	0.20	0	80	20	0	0	0	0	-	0	-
6-Oct-2018	KN	17-1	-	0.20	0	60	20	20	0	0	0	-	0	-
6-Oct-2018	KN	17-2	-	0.20	0	40	20	40	0	0	0	-	0	-
6-Oct-2018	KN	17-3	-	0.20	0	0	20	80	0	0	0	-	1	Lake trout
6-Oct-2018	KN	17-4	-	0.20	0	0	20	80	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
6-Oct-2018	KN	17-5	-	0.20	0	20	20	60	0	0	0	-	0	-
6-Oct-2018	KN	18-1	-	0.20	0	0	60	40	0	0	0	-	0	-
6-Oct-2018	KN	18-2	-	0.20	0	20	30	50	0	0	0	-	0	-
6-Oct-2018	KN	18-3	-	0.20	0	0	50	50	0	0	0	-	2	Lake whitefish
6-Oct-2018	KN	18-4	-	0.20	0	0	0	100	0	0	0	-	0	-
6-Oct-2018	KN	18-5	-	0.20	0	0	0	100	0	0	0	-	0	-
6-Oct-2018	KN	19-1	-	0.30	0	0	30	70	0	0	0	-	0	-
6-Oct-2018	KN	19-2	-	0.30	0	0	20	80	0	0	0	-	0	-
6-Oct-2018	KN	19-3	-	0.30	0	0	0	100	0	0	0	-	1	Lake whitefish
6-Oct-2018	KN	19-4	-	0.30	0	0	20	80	0	0	0	-	0	-
6-Oct-2018	KN	19-5	-	0.30	0	20	30	50	0	0	0	-	1	Lake whitefish
6-Oct-2018	KN	20-1	-	0.30	0	10	20	70	0	0	0	-	0	-
6-Oct-2018	KN	20-2	-	0.30	0	20	30	50	0	0	0	-	0	-
6-Oct-2018	KN	20-3	-	0.30	0	0	40	60	0	0	0	-	0	-
6-Oct-2018	KN	20-4	-	0.30	0	0	40	60	0	0	0	-	0	-
6-Oct-2018	KN	20-5	-	0.30	0	0	50	50	0	0	0	-	0	-
6-Oct-2018	KN	21-1	-	0.30	0	0	40	60	0	0	0	-	0	-
6-Oct-2018	KN	21-2	-	0.20	0	20	40	40	0	0	0	-	0	-
6-Oct-2018	KN	21-3	-	0.30	0	20	40	40	0	0	0	-	0	-
6-Oct-2018	KN	22-1	-	0.40	0	80	0	20	0	0	0	-	0	-
6-Oct-2018	KN	22-2	-	0.40	0	90	0	10	0	0	0	-	0	-
6-Oct-2018	KN	22-3	-	0.60	0	10	0	0	0	0	0	-	0	-
9-Oct-2018	KN	23-1	-	0.30	0	0	0	100	0	0	0	-	1	Lake whitefish
9-Oct-2018	KN	23-2	-	0.30	0	0	20	80	0	0	0	-	3	Lake whitefish
9-Oct-2018	KN	23-3	-	0.30	0	0	0	100	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	24-1	-	0.30	0	20	20	40	0	20	0	-	0	-
9-Oct-2018	KN	24-2	-	0.40	0	0	0	100	0	0	0	-	1	Lake trout
9-Oct-2018	KN	24-3	-	0.40	0	0	20	80	0	0	0	-	1	Lake whitefish

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Lake														
9-Oct-2018	KN	24-4	-	0.30	0	0	20	80	0	0	0	-	0	-
9-Oct-2018	KN	24-5	-	0.30	0	0	20	80	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	24-5	-	0.30	0	0	20	80	0	0	0	-	4	Lake trout
9-Oct-2018	KN	25-1	-	0.40	0	0	30	60	0	10	0	-	0	-
9-Oct-2018	KN	25-2	-	0.40	0	0	20	80	0	0	0	-	2	Lake trout
9-Oct-2018	KN	25-3	-	0.40	0	0	0	100	0	0	0	-	3	Lake whitefish
9-Oct-2018	KN	25-4	-	0.40	0	0	0	100	0	0	0	-	0	-
9-Oct-2018	KN	25-5	-	0.30	0	0	0	100	0	0	0	-	0	-
9-Oct-2018	KN	26-1	-	0.30	0	0	0	100	0	0	0	-	1	Lake whitefish
9-Oct-2018	KN	26-2	-	0.30	0	0	20	80	0	0	0	-	3	Lake whitefish
9-Oct-2018	KN	26-3	-	0.30	0	0	30	70	0	0	0	-	6	Lake trout
9-Oct-2018	KN	26-4	-	0.30	0	20	40	40	0	0	0	-	0	-
9-Oct-2018	KN	26-5	-	0.30	0	0	0	100	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	27-1	-	0.30	0	0	30	70	0	0	0	-	0	-
9-Oct-2018	KN	27-2	-	0.30	0	0	0	100	0	0	0	-	1	Lake trout
9-Oct-2018	KN	27-3	-	0.40	0	20	20	60	0	0	0	-	2	Lake trout
Beet Creek														
9-Oct-2018	KN	27-4	-	0.40	0	20	20	60	0	0	0	-	2	Lake trout
9-Oct-2018	KN	27-5	-	0.50	0	0	40	60	0	0	0	-	77	Lake trout
9-Oct-2018	KN	28-1	-	0.30	0	30	40	30	0	0	0	-	0	-
9-Oct-2018	KN	28-2	-	0.30	0	40	40	20	0	0	0	-	1	Lake whitefish
9-Oct-2018	KN	28-3	-	0.20	0	30	40	30	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	29-1	-	0.20	0	10	50	30	0	0	0	-	0	-
9-Oct-2018	KN	29-2	-	0.20	0	20	60	20	0	0	0	-	0	-
9-Oct-2018	KN	29-3	-	0.20	0	10	40	50	0	0	0	-	0	-
9-Oct-2018	KN	29-4	-	0.20	0	0	60	40	0	0	0	-	0	-
9-Oct-2018	KN	29-5	-	0.20	0	0	40	60	0	0	0	-	0	-
9-Oct-2018	KN	30-1	-	0.20	0	0	20	80	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Beet Creek														
9-Oct-2018	KN	30-2	-	0.30	0	0	40	60	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	30-3	-	0.30	0	20	40	40	0	0	0	-	1	Lake trout
9-Oct-2018	KN	30-4	-	0.30	0	0	40	60	0	0	0	-	3	Lake whitefish
9-Oct-2018	KN	30-5	-	0.20	0	0	30	70	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	31-1	-	0.30	0	20	20	60	0	0	0	-	1	Lake trout
9-Oct-2018	KN	31-2	-	0.30	0	0	40	60	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	31-3	-	0.30	0	0	40	60	0	0	0	-	1	Lake trout
9-Oct-2018	KN	31-3	-	0.30	0	0	40	60	0	0	0	-	31	Lake whitefish
9-Oct-2018	KN	32-1	-	0.40	0	0	40	60	0	0	0	-	2	Lake trout
9-Oct-2018	KN	32-2	-	0.30	0	0	80	20	0	0	0	-	5	Lake trout
9-Oct-2018	KN	32-3	-	0.30	0	0	80	20	0	0	0	-	2	Lake trout
9-Oct-2018	KN	32-3	-	0.30	0	0	80	20	0	0	0	-	2	Lake whitefish
9-Oct-2018	KN	33-1	-	0.30	0	20	20	60	0	0	0	-	5	Lake whitefish
9-Oct-2018	KN	33-2	-	0.30	0	0	20	80	0	0	0	-	11	Lake whitefish
9-Oct-2018	KN	33-2	-	0.30	0	0	20	80	0	0	0	-	24	Lake trout
9-Oct-2018	KN	33-3	-	0.40	0	0	20	80	0	0	0	-	3	Lake trout
6-Oct-2018	KN	01-1	-	0.30	10	70	0	0	0	20	0	-	0	-
6-Oct-2018	KN	01-2	-	0.40	10	70	0	0	0	20	0	-	0	-
6-Oct-2018	KN	01-3	-	0.40	10	70	0	0	0	20	0	-	0	-
6-Oct-2018	KN	01-4	-	0.80	0	80	0	0	0	20	0	-	0	-
6-Oct-2018	KN	01-5	-	0.40	10	70	0	0	0	20	0	-	0	-
Naomi Lake														
4-Oct-2018	KN	01-1	-	0.20	0	95	5	0	0	0	0	-	0	-
4-Oct-2018	KN	01-2	-	0.20	0	100	0	0	0	0	0	-	0	-
4-Oct-2018	KN	01-3	-	0.20	0	100	0	0	0	0	0	-	0	-
4-Oct-2018	KN	01-4	-	0.20	0	95	0	0	0	5	0	-	0	-
4-Oct-2018	KN	01-5	-	0.20	0	95	5	0	0	0	0	-	0	-
4-Oct-2018	KN	02-1	-	0.20	0	90	0	10	0	0	0	-	0	-

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Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Naomi Lake														
4-Oct-2018	KN	02-2	-	0.20	0	90	0	10	0	0	0	-	0	-
4-Oct-2018	KN	02-3	-	0.20	0	90	0	10	0	0	0	-	0	-
4-Oct-2018	KN	02-4	-	0.20	0	70	0	30	0	0	0	-	0	-
4-Oct-2018	KN	02-5	-	0.30	0	60	0	40	0	0	0	-	0	-
4-Oct-2018	KN	03-1	-	0.30	0	90	5	5	0	0	0	-	0	-
4-Oct-2018	KN	03-2	-	0.20	0	85	5	10	0	0	0	-	0	-
4-Oct-2018	KN	03-3	-	0.20	0	80	0	20	0	0	0	-	0	-
4-Oct-2018	KN	03-4	-	0.20	0	80	5	15	0	0	0	-	0	-
4-Oct-2018	KN	03-5	-	0.20	0	20	20	60	0	0	0	-	0	-
4-Oct-2018	KN	04-1	-	0.40	0	70	0	0	0	30	0	-	0	-
4-Oct-2018	KN	04-2	-	0.40	0	60	0	0	0	40	0	-	0	-
4-Oct-2018	KN	04-3	-	0.40	0	50	0	0	0	50	0	-	0	-
4-Oct-2018	KN	04-4	-	0.30	0	40	0	0	0	60	0	-	0	-
4-Oct-2018	KN	04-5	-	0.30	0	30	0	0	0	70	0	-	0	-
4-Oct-2018	KN	05-1	-	-	0	70	0	30	0	0	0	-	0	-
4-Oct-2018	KN	05-2	-	-	0	60	0	40	0	0	0	-	0	-
4-Oct-2018	KN	05-3	-	-	0	70	0	30	0	0	0	-	0	-
4-Oct-2018	KN	05-4	-	-	0	95	0	0	0	5	0	-	0	-
4-Oct-2018	KN	05-5	-	-	0	95	0	0	0	5	0	-	0	-
4-Oct-2018	KN	06-1	-	-	0	95	0	0	0	5	0	-	0	-
4-Oct-2018	KN	06-2	-	-	0	95	0	0	0	5	0	-	0	-
4-Oct-2018	KN	06-3	-	-	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	07-1	-	0.20	0	70	0	30	0	0	0	-	0	-
5-Oct-2018	KN	07-2	-	0.30	0	100	0	0	0	0	0	-	0	-
5-Oct-2018	KN	07-3	-	0.30	0	100	0	0	0	0	0	-	0	-
5-Oct-2018	KN	08-1	-	0.40	0	60	0	40	0	0	0	-	0	-
5-Oct-2018	KN	08-2	-	0.40	0	60	0	40	0	0	0	-	0	-
5-Oct-2018	KN	08-3	-	0.40	0	55	0	35	0	0	0	-	0	-

Appendix C, Table 42

Egg Search Results for the Fall Spawning Survey Conducted in the Aquatic Study Area, September/October 2018

Date	Method[a]	Site #	Sample Time (min)	Water Depth (m)	% Substrate						% Cover Vegetation		# Eggs Collected	Species
					Silt/ Clay	Sand	Gravel	Cobble	Boulder	Organic	Total	Dominant Species		
Naomi Lake														
5-Oct-2018	KN	09-1	-	0.20	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	09-2	-	0.20	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	09-3	-	0.20	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	10-1	-	0.20	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	10-2	-	0.20	0	95	0	0	0	5	0	-	0	-
5-Oct-2018	KN	10-3	-	0.20	0	95	0	0	0	5	0	-	0	-

a) ES = egg sunctioning, KN = kick netting, VS = vegetation sweep.

Appendix C, Table 43

Fish Capture Results and Spawning Condition from Spring and Fall Surveys in the Aquatic Study Area, 2018

Season	Waterbody	Spawning Condition	Lake Trout[a]	Lake Whitefish[a]	Longnose Sucker[b]	Northern Pike[b]	Walleye[b]	White Sucker[b]	Yellow Perch[b]
Spring	Jed Creek	Green					27	20	
		Ripe			6	4	47	32	
		Ripe Running			3	8	154	34	
		Spent			1	3	66	1	
		Unknown		2		2	17	3	
	Patterson Lake	Ripe						4	
		Ripe Running			2	8		4	
		Spent				3		4	
		Unknown		24	1			5	8
	Patterson Creek	Green				1			
		Ripe			4	27		5	
		Ripe Running			3	11		4	
		Spent				18	1		
		Unknown		23		1		1	
	Forrest Lake	Green	2	1	2				
		Ripe			3			1	
		Spent				11			
		Unknown	3						
	Beet Channel	Ripe				1			
		Spent				4			
		Unknown		1					
	Beet Lake	Green			1		1		
		Ripe			4	2		7	
		Spent				12		1	
		Unknown		2					
	Beet Creek	Green			23		1		
		Ripe			92	3	2	2	
		Ripe Running			19			1	
		Spent			11	11	2	1	
		Unknown		15					
	Naomi Creek	Ripe				1	3		
		Ripe Running					2		
		Spent				1			
		Unknown		2					
	Naomi Lake	Green		1					
		Unknown				6			
	Clearwater Creek	Green						2	
		Ripe				1		182	
		Ripe Running				1		2	
		Spent				8		1	
		Unknown				1		32	
	Clearwater River Nearfield	Green				1		11	
		Ripe			1	16	2	39	
		Ripe Running				5		10	
		Spent			4	17	2	18	
		Unknown				1		1	
	E Creek	Ripe				1			
	G Creek	Non Spawner				1			
		Ripe Running				1			
		Unknown				2			

Appendix C, Table 43

Fish Capture Results and Spawning Condition from Spring and Fall Surveys in the Aquatic Study Area, 2018

Season	Waterbody	Spawning Condition	Lake Trout[a]	Lake Whitefish[a]	Longnose Sucker[b]	Northern Pike[b]	Walleye[b]	White Sucker[b]	Yellow Perch[b]
Fall	Jed Creek	Green		8					
		Ripe		146					
		Ripe Running		12					
		Spent		2					
	Patterson Lake	Green		1					
		Ripe		32					
		Spent		7					
		Unknown		3		6		2	
	Patterson Creek	Green		2					
		Ripe		104					
		Ripe Running		67					
		Spent		6					
		Unknown		5		5			
	Forrest Lake	Ripe	1	14					
		Ripe Running		5					
		Spent	6						
		Unknown		8		6		2	
	Beet Lake	Green		2					
		Ripe		4					
		Ripe Running		7					
		Unknown				2			
	Naomi Lake	Green		3					
		Ripe		9					
		Ripe Running		28					
		Unknown		4		5		1	

a) Fall spawning species.

b) Spring spawning species.

Appendix C, Table 44

Fish Species Abundance and Richness from Fishing Efforts in the Aquatic Study Area, 2018 and 2019

Waterbody	Large-Bodied Fish Species											Small-Bodied Fish Species						Total Abundance	Species Richness
	Arctic Grayling	Burbot	Cisco	Lake Trout	Lake Whitefish	Longnose Sucker	Northern Pike	Sucker spp.[a]	Walleye	White Sucker	Yellow Perch	Johnny Darter	Lake Chub	Ninespine Stickleback	Slimy Sculpin	Spottail Shiner	Trout Perch		
Broach Lake[b,c]		5	32	14	16	200	14	18		136	55			3	8	14		**515**	**11**
Hodge Lake[b,c]		32		1	17		16			6	122	2		4	7	1	9	**217**	**11**
Jed Creek[b,d]		1			170	10	18		297	90						37	64	**687**	**8**
Patterson Lake[b,c,d]		18		3	109	46	22	4	10	105	75		58	37	43	183	984	**1697**	**13**
Patterson Creek[b,d]		1			208	7	69		1	10			7		2	14	1	**320**	**10**
Forrest Lake[b,c,d]		21		14	44	32	30		1	6	6		102	9	50	14	345	**674**	**13**
Beet Channel[b,d]					1		26	1		5	43			2		217		**295**	**6**
Beet Lake[b,c,d]		21		0[5]	24	5	27		4	16	40		59		8	109	91	**404**	**12**
Beet Creek[b,d]					15	145	21		5	4	1				1			**192**	**7**
Naomi Creek[b,c,d]		1			2	9	5		5									**22**	**5**
Naomi Lake[b,c,d]		4			48		42		6	40	67				0[e]	75	20	**302**	**9**
Clearwater Creek[b,d]		2					16			187								**205**	**3**
Clearwater River Nearfield[b,c,]	1	6				5	66	16	6	83	5			1		14		**203**	**9**
Clearwater River Midfield[b]		2					4							1	5			**12**	**4**
Lloyd Lake Inlet[b,c]		1		1	16		11		18	5	12			55	4	1	1	**125**	**11**
Lake G[b,d]		1					21											**22**	**2**
Lake H[b]		3					7				47					90		**147**	**4**
E Creek[d]							1											**1**	**1**
G Creek[d]		1					4											**5**	**2**
Total Abundance	**1**	**120**	**32**	**33**	**670**	**459**	**420**	**39**	**353**	**693**	**473**	**2**	**226**	**112**	**128**	**769**	**1515**	**6045**	**-**
Total Waterbodies	**1**	**16**	**1**	**6**	**12**	**9**	**19**	**4**	**10**	**13**	**11**	**1**	**4**	**8**	**10**	**12**	**8**	**-**	**16**

a) Sucker spp. could be white sucker, longnose sucker, or both and were excluded from species richness calculations.
b) Community surveys conducted in this waterbody.
c) Chemistry surveys conducted in this waterbody.
d) Spawning surveys conducted in this waterbody.
e) No fish were caught, but eggs were found.

Appendix C, Table 45

Fish Morphometry and Catch Data from Fishing Efforts in the Aquatic Study Area, 2018 and 2019

Waterbody	Data[1]	Large-Bodied Fish Species											Small-Bodied Fish Species						Grand Total
		Arctic Grayling	Burbot	Cisco	Lake Trout	Lake Whitefish	Longnose Sucker	Northern Pike	Sucker sp.	Walleye	White Sucker	Yellow Perch	Johnny Darter	Lake Chub	Ninespine Stickleback	Slimy Sculpin	Spottail Shiner	Trout Perch	
Broach Lake[b,c]	Average of Length (cm)	-	8.4	7.3	53.4	38.0	13.4	65.3	2.9	-	20.6	8.6	-	-	5.3	5.6	7.1	-	-
	Max of Length (cm)	-	17.3	8.5	69.8	48.3	45.3	103.5	3.3	-	48.5	15.5	-	-	5.7	7.5	8.6	-	-
	Min of Length (cm)	-	2.2	5.7	47.5	4.1	5.4	12.4	2.2	-	5.4	3.3	-	-	4.7	3.7	5.0	-	-
	SD of Length (cm)	-	6.1	0.7	6.6	13.6	5.8	22.6	0.3	-	13.8	3.1	-	-	0.6	1.2	1.1	-	-
	Average of Weight (g)	-	-	-	1750	1057	731	3231	-	-	729	15.38	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	4050	1420	1180	9200	-	-	1130	24.03	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	940	640	540	580	-	-	380	8.93	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	904	225	218	2547	-	-	167	5.59	-	-	-	-	-	-	-
	# of Fish	-	5	32	14	16	200	14	19	-	136	55	-	-	3	8	14	-	516
	% of Total Catch	-	0.97	6.20	2.71	3.10	38.76	2.71	3.68	-	26.36	10.66	-	-	0.58	1.55	2.71	-	100.00
Hodge Lake[b,c]	Average of Length (cm)	-	14.1	-	51.0	33.1	-	42.7	-	-	16.7	6.0	4.3	-	5.1	7.1	4.7	5.8	-
	Max of Length (cm)	-	31.2	-	51.0	39.8	-	94.3	-	-	21.5	11.2	4.3	-	5.6	8.6	4.7	7.0	-
	Min of Length (cm)	-	5.5	-	51.0	29.6	-	9.2	-	-	10.0	3.2	4.2	-	4.7	5.2	4.7	3.8	-
	SD of Length (cm)	-	5.9	-	-	2.8	-	26.5	-	-	3.8	1.9	0.1	-	0.4	1.2	-	1.0	-
	Average of Weight (g)	-	-	-	1540	495	-	1926	-	-	-	-	-	-	-	-	-	2.63	-
	Max of Weight (g)	-	-	-	1540	900	-	6260	-	-	-	-	-	-	-	-	-	3.82	-
	Min of Weight (g)	-	-	-	1540	320	-	125	-	-	-	-	-	-	-	-	-	1.41	-
	SD of Weight (g)	-	-	-	-	166	-	1879	-	-	-	-	-	-	-	-	-	0.89	-
	# of Fish	-	32	-	1	17	-	16	-	-	6	122	2	-	4	7	1	9	217
	% of Total Catch	-	14.75	-	0.46	7.83	-	7.37	-	-	2.76	56.22	0.92	-	1.84	3.23	0.46	4.15	100.00
Jed Creek[b,d]	Average of Length (cm)	-	5.1	-	-	37.1	43.6	58.1	-	50.3	43.7	-	-	-	-	-	7.5	6.6	-
	Max of Length (cm)	-	5.1	-	-	55.3	46.6	71.0	-	71.3	50.7	-	-	-	-	-	8.8	7.9	-
	Min of Length (cm)	-	5.1	-	-	32.7	39.4	26.8	-	31.2	38.6	-	-	-	-	-	3.7	5.3	-
	SD of Length (cm)	-	-	-	-	2.8	2.4	11.7	-	6.1	2.4	-	-	-	-	-	0.8	0.6	-
	Average of Weight (g)	-	-	-	-	675	1166	1847	-	1559	1361	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1420	1520	3000	-	3860	2340	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	440	860	520	-	420	940	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	149	205	682	-	562	235	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	-	170	10	18	-	298	90	-	-	-	-	-	37	64	688
	% of Total Catch	-	0.15	-	-	24.71	1.45	2.62	-	43.31	13.08	-	-	-	-	-	5.38	9.30	100.00
Patterson Lake[b,c,d]	Average of Length (cm)	-	16.6	-	58.6	35.3	6.5	49.9	2.6	47.0	19.6	9.2	-	8.5	5.1	5.5	4.2	6.7	-
	Max of Length (cm)	-	24.8	-	59.4	48.2	41.4	82.6	3.0	66.5	47.8	19.7	-	12.8	7.3	8.2	8.5	9.6	-
	Min of Length (cm)	-	4.8	-	57.7	15.1	1.7	5.9	2.1	26.6	4.8	2.5	-	2.5	2.0	3.6	2.0	2.4	-
	SD of Length (cm)	-	5.9	-	0.9	5.3	8.6	22.8	0.5	14.7	13.3	4.4	-	2.4	1.4	1.1	1.8	1.1	-
	Average of Weight (g)	-	-	-	3033	598	820	1813	-	1267	1292	32.26	-	14.08	-	-	-	5.09	-
	Max of Weight (g)	-	-	-	3300	1260	1400	4220	-	2720	1880	70.00	-	17.87	-	-	-	8.36	-
	Min of Weight (g)	-	-	-	2620	20	100	760	-	140	560	9.52	-	9.22	-	-	-	3.85	-
	SD of Weight (g)	-	-	-	363	230	564	1123	-	935	329	18.49	-	3.04	-	-	-	1.11	-
	# of Fish	-	18	-	3	109	46	22	4	10	105	75	-	58	37	43	183	984	1697
	% of Total Catch	-	1.06	-	0.18	6.42	2.71	1.30	0.24	0.59	6.19	4.42	-	3.42	2.18	2.53	10.78	57.98	100.00
Patterson Creek[b,d]	Average of Length (cm)	-	21.2	-	-	41.8	43.0	55.8	-	61.3	39.9	-	-	8.5	-	7.0	7.2	7.0	-
	Max of Length (cm)	-	21.2	-	-	440.2	48.9	100.0	-	61.3	53.7	-	-	9.1	-	7.5	11.4	7.0	-
	Min of Length (cm)	-	21.2	-	-	18.0	35.4	18.3	-	61.3	24.6	-	-	7.8	-	6.4	5.4	7.0	-
	SD of Length (cm)	-	-	-	-	28.0	4.5	15.7	-	-	7.5	-	-	0.5	-	0.8	1.4	-	-
	Average of Weight (g)	-	-	-	-	741	1263	1549	-	1560	1094	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1240	1640	7880	-	1560	2240	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	80	920	66	-	1560	160	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	189	263	1103	-	-	511	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	-	208	7	69	-	1	10	-	-	7	-	2	14	1	320
	% of Total Catch	-	0.31	-	-	65.00	2.19	21.56	-	0.31	3.13	-	-	2.19	-	0.63	4.38	0.31	100.00

Appendix C, Table 45

Fish Morphometry and Catch Data from Fishing Efforts in the Aquatic Study Area, 2018 and 2019

Waterbody	Data[1]	Large-Bodied Fish Species											Small-Bodied Fish Species						Grand Total
		Arctic Grayling	Burbot	Cisco	Lake Trout	Lake Whitefish	Longnose Sucker	Northern Pike	Sucker sp.	Walleye	White Sucker	Yellow Perch	Johnny Darter	Lake Chub	Ninespine Stickleback	Slimy Sculpin	Spottail Shiner	Trout Perch	
Forrest Lake[b,c,d]	Average of Length (cm)	-	15.2	-	57.4	40.7	20.2	54.1	-	52.5	32.1	6.7	-	7.0	4.9	5.6	5.1	5.3	-
	Max of Length (cm)	-	23.6	-	66.0	49.0	52.0	105.0	-	52.5	57.3	8.7	-	10.9	5.9	9.0	8.0	8.3	-
	Min of Length (cm)	-	3.0	-	46.2	3.9	7.0	7.8	-	52.5	11.8	5.4	-	3.8	4.3	3.9	3.0	2.4	-
	SD of Length (cm)	-	5.0	-	5.8	6.5	12.3	24.0	-	-	20.6	1.4	-	1.6	0.5	1.1	1.8	0.9	-
	Average of Weight (g)	-	-	-	1949	1017	1360	2044	-	1700	2027	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	2620	1960	2120	9060	-	1700	2620	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	1080	500	740	60	-	1700	1400	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	455	311	648	2117	-	-	611	-	-	-	-	-	-	-	-
	# of Fish	-	21	-	14	44	32	30	-	1	6	6	-	102	9	50	14	345	674
	% of Total Catch	-	3.12	-	2.08	6.53	4.75	4.45	-	0.15	0.89	0.89	-	15.13	1.34	7.42	2.08	51.19	100.00
Beet Channel[b,d]	Average of Length (cm)	-	-	-	-	40.6	-	31.5	7.5	-	42.4	9.4	-	-	4.6	-	4.5	-	-
	Max of Length (cm)	-	-	-	-	40.6	-	78.5	7.5	-	49.7	31.6	-	-	4.9	-	8.9	-	-
	Min of Length (cm)	-	-	-	-	40.6	-	8.7	7.5	-	30.0	5.2	-	-	4.3	-	1.6	-	-
	SD of Length (cm)	-	-	-	-	-	-	21.6	-	-	8.9	4.6	-	-	0.4	-	1.0	-	-
	Average of Weight (g)	-	-	-	-	680	-	1084	-	-	1614	200	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	680	-	3800	-	-	2420	200	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	680	-	70	-	-	460	200	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	1074	-	-	919	-	-	-	-	-	-	-	-
	# of Fish	-	-	-	-	1	-	26	1	-	5	43	-	-	2	-	217	-	295
	% of Total Catch	-	-	-	-	0.34	-	8.81	0.34	-	1.69	14.58	-	-	0.68	-	73.56	-	100.00
Beet Lake[b,c,d]	Average of Length (cm)	-	14.0	-	-	39.8	48.6	55.1	-	35.7	33.1	7.1	-	6.4	-	5.8	6.5	6.5	-
	Max of Length (cm)	-	23.9	-	-	48.2	56.3	73.9	-	49.4	53.7	15.0	-	11.2	-	6.7	10.6	8.5	-
	Min of Length (cm)	-	9.8	-	-	25.6	43.8	10.9	-	12.7	11.4	2.0	-	2.4	-	4.9	2.8	4.1	-
	SD of Length (cm)	-	3.5	-	-	5.6	5.5	15.3	-	15.9	15.9	2.5	-	2.7	-	0.7	1.3	0.8	-
	Average of Weight (g)	-	-	-	-	880	1644	1521	-	847	1465	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1520	2400	2660	-	1240	2760	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	120	1120	630	-	560	120	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	361	534	598	-	352	816	-	-	-	-	-	-	-	-
	# of Fish	-	21	-	-	24	5	27	-	4	16	40	-	59	-	8	109	91	404
	% of Total Catch	-	5.20	-	-	5.94	1.24	6.68	-	0.99	3.96	9.90	-	14.60	-	1.98	26.98	22.52	100.00
Beet Creek[b,d]	Average of Length (cm)	-	-	-	-	42.1	46.1	53.8	-	54.1	45.2	2.3	-	-	-	6.9	-	-	-
	Max of Length (cm)	-	-	-	-	45.0	56.3	68.8	-	62.1	49.8	2.3	-	-	-	6.9	-	-	-
	Min of Length (cm)	-	-	-	-	38.4	29.7	6.4	-	46.5	38.5	2.3	-	-	-	6.9	-	-	-
	SD of Length (cm)	-	-	-	-	1.9	3.8	16.7	-	7.7	4.8	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	-	-	-	1071	1402	1463	-	1844	1475	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1600	2600	2140	-	2420	2100	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	740	740	780	-	1200	820	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	224	347	374	-	549	524	-	-	-	-	-	-	-	-
	# of Fish	-	-	-	-	15	145	21	-	5	4	1	-	-	-	1	-	-	192
	% of Total Catch	-	-	-	-	7.81	75.52	10.94	-	2.60	2.08	0.52	-	-	-	0.52	-	-	100.00
Naomi Creek[b,d]	Average of Length (cm)	-	10.1	-	-	44.3	1.9	41.8	-	48.4	-	-	-	-	-	-	-	-	-
	Max of Length (cm)	-	10.1	-	-	44.3	2.1	58.0	-	55.6	-	-	-	-	-	-	-	-	-
	Min of Length (cm)	-	10.1	-	-	44.2	1.5	32.6	-	41.8	-	-	-	-	-	-	-	-	-
	SD of Length (cm)	-	-	-	-	0.1	0.2	10.2	-	5.1	-	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	-	-	-	1190	-	596	-	1416	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1220	-	1220	-	2080	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	1160	-	320	-	720	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	42	-	369	-	483	-	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	-	2	9	5	-	5	-	-	-	-	-	-	-	-	22
	% of Total Catch	-	4.55	-	-	9.09	40.91	22.73	-	22.73	-	-	-	-	-	-	-	-	100.00

Appendix C, Table 45

Fish Morphometry and Catch Data from Fishing Efforts in the Aquatic Study Area, 2018 and 2019

Waterbody	Data[1]	Large-Bodied Fish Species											Small-Bodied Fish Species						Grand Total
		Arctic Grayling	Burbot	Cisco	Lake Trout	Lake Whitefish	Longnose Sucker	Northern Pike	Sucker sp.	Walleye	White Sucker	Yellow Perch	Johnny Darter	Lake Chub	Ninespine Stickleback	Slimy Sculpin	Spottail Shiner	Trout Perch	
Naomi Lake[b,c,d]	Average of Length (cm)	-	10.7	-	-	42.8	-	35.5	-	42.9	43.5	5.6	-	-	-	-	5.7	5.3	-
	Max of Length (cm)	-	18.6	-	-	48.3	-	72.9	-	50.0	117.7	15.0	-	-	-	-	8.3	7.2	-
	Min of Length (cm)	-	5.8	-	-	35.8	-	6.6	-	29.0	24.0	2.3	-	-	-	-	1.7	2.8	-
	SD of Length (cm)	-	6.0	-	-	2.3	-	18.0	-	7.5	13.1	3.3	-	-	-	-	1.8	1.1	-
	Average of Weight (g)	-	-	-	-	1071	-	834	-	677	1138	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	1620	-	2500	-	1080	1700	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	740	-	80	-	80	210	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	176	-	499	-	402	323	-	-	-	-	-	-	-	-
	# of Fish	-	4	-	-	48	-	42	-	6	40	67	-	-	-	-	75	20	302
	% of Total Catch	-	1.32	-	-	15.89	-	13.91	-	1.99	13.25	22.19	-	-	-	-	24.83	6.62	100.00
Clearwater Creek[b,d]	Average of Length (cm)	-	5.6	-	-	-	-	40.4	-	-	45.8	-	-	-	-	-	-	-	-
	Max of Length (cm)	-	6.4	-	-	-	-	64.0	-	-	53.4	-	-	-	-	-	-	-	-
	Min of Length (cm)	-	4.7	-	-	-	-	15.2	-	-	28.7	-	-	-	-	-	-	-	-
	SD of Length (cm)	-	1.2	-	-	-	-	14.1	-	-	3.5	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	-	-	-	-	-	632	-	-	1519	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	-	-	1680	-	-	2500	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	-	-	90	-	-	660	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	455	-	-	359	-	-	-	-	-	-	-	-
	# of Fish	-	2	-	-	-	-	16	-	-	189	-	-	-	-	-	-	-	207
	% of Total Catch	-	0.97	-	-	-	-	7.73	-	-	91.30	-	-	-	-	-	-	-	100.00
Clearwater River Nearfield[b,c,d]	Average of Length (cm)	28.7	16.6	-	-	-	50.2	48.9	2.3	42.1	44.0	10.3	-	-	3.0	-	5.0	-	-
	Max of Length (cm)	28.7	27.7	-	-	-	53.5	68.5	2.6	46.8	53.2	14.5	-	-	3.0	-	6.4	-	-
	Min of Length (cm)	28.7	5.7	-	-	-	44.8	18.3	1.9	28.6	14.9	3.1	-	-	3.0	-	3.8	-	-
	SD of Length (cm)	-	9.5	-	-	-	3.3	7.7	0.2	6.8	5.5	4.3	-	-	-	-	0.9	-	-
	Average of Weight (g)	300	-	-	-	-	1636	891	-	761	1334	-	-	-	-	-	-	-	-
	Max of Weight (g)	300	-	-	-	-	1980	2900	-	980	2600	-	-	-	-	-	-	-	-
	Min of Weight (g)	300	-	-	-	-	1220	300	-	280	155	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	304	388	-	260	374	-	-	-	-	-	-	-	-
	# of Fish	1	6	-	-	-	5	66	16	6	83	5	-	-	1	-	14	-	203
	% of Total Catch	0.49	2.96	-	-	-	2.46	32.51	7.88	2.96	40.89	2.46	-	-	0.49	-	6.90	-	100.00
Clearwater River Midfield[b]	Average of Length (cm)	-	5.6	-	-	-	-	12.5	-	-	-	-	-	-	3.4	4.5	-	-	-
	Max of Length (cm)	-	5.6	-	-	-	-	20.5	-	-	-	-	-	-	3.4	5.8	-	-	-
	Min of Length (cm)	-	5.5	-	-	-	-	8.7	-	-	-	-	-	-	3.4	2.7	-	-	-
	SD of Length (cm)	-	0.1	-	-	-	-	5.5	-	-	-	-	-	-	-	1.5	-	-	-
	Average of Weight (g)	-	-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-
	# of Fish	-	2	-	-	-	-	4	-	-	-	-	-	-	1	5	-	-	12
	% of Total Catch	-	16.67	-	-	-	-	33.33	-	-	-	-	-	-	8.33	41.67	-	-	100.00
Lloyd Lake Inlet[b,c]	Average of Length (cm)	-	18.3	-	68.3	39.2	-	43.4	-	42.0	34.5	7.9	-	-	4.2	6.2	2.4	8.2	-
	Max of Length (cm)	-	18.3	-	68.3	49.2	-	87.6	-	51.0	45.9	9.2	-	-	11.2	7.9	2.4	8.2	-
	Min of Length (cm)	-	18.3	-	68.3	28.6	-	8.7	-	33.5	6.9	4.4	-	-	2.3	4.3	2.4	8.2	-
	SD of Length (cm)	-	-	-	-	6.2	-	22.9	-	5.6	15.9	1.6	-	-	1.1	1.7	-	-	-
	Average of Weight (g)	-	-	-	3680	1006	-	1359	-	954	1000	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	3680	1820	-	5120	-	1820	1320	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	3680	360	-	230	-	400	580	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	451	-	1498	-	387	337	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	1	16	-	11	-	18	5	12	-	-	55	4	1	1	125
	% of Total Catch	-	0.80	-	0.80	12.80	-	8.80	-	14.40	4.00	9.60	-	-	44.00	3.20	0.80	0.80	100.00

Appendix C, Table 45

Fish Morphometry and Catch Data from Fishing Efforts in the Aquatic Study Area, 2018 and 2019

Waterbody	Data[1]	Large-Bodied Fish Species											Small-Bodied Fish Species						Grand Total
		Arctic Grayling	Burbot	Cisco	Lake Trout	Lake Whitefish	Longnose Sucker	Northern Pike	Sucker sp.	Walleye	White Sucker	Yellow Perch	Johnny Darter	Lake Chub	Ninespine Stickleback	Slimy Sculpin	Spottail Shiner	Trout Perch	
Lake G[b]	Average of Length (cm)	-	15.0	-	-	-	-	29.5	-	-	-	-	-	-	-	-	-	-	-
	Max of Length (cm)	-	15.0	-	-	-	-	54.8	-	-	-	-	-	-	-	-	-	-	-
	Min of Length (cm)	-	15.0	-	-	-	-	11.8	-	-	-	-	-	-	-	-	-	-	-
	SD of Length (cm)	-	-	-	-	-	-	16.0	-	-	-	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	-	-	-	-	-	620	-	-	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	-	-	1240	-	-	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	342	-	-	-	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	-	-	-	21	-	-	-	-	-	-	-	-	-	-	22
	% of Total Catch	-	4.55	-	-	-	-	95.45	-	-	-	-	-	-	-	-	-	-	100.00
Lake H[b]	Average of Length (cm)	-	13.2	-	-	-	-	38.6	-	-	-	5.1	-	-	-	-	4.5	-	-
	Max of Length (cm)	-	16.7	-	-	-	-	55.6	-	-	-	10.6	-	-	-	-	8.9	-	-
	Min of Length (cm)	-	8.9	-	-	-	-	15.6	-	-	-	2.5	-	-	-	-	1.8	-	-
	SD of Length (cm)	-	4.0	-	-	-	-	16.2	-	-	-	1.8	-	-	-	-	2.0	-	-
	Average of Weight (g)	-	-	-	-	-	-	464	-	-	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	-	-	960	-	-	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	387	-	-	-	-	-	-	-	-	-	-	-
	# of Fish	-	3	-	-	-	-	7	-	-	-	47	-	-	-	-	93	-	150
	% of Total Catch	-	2.00	-	-	-	-	4.67	-	-	-	31.33	-	-	-	-	62.00	-	100.00
E Creek[d]	Average of Length (cm)	-	-	-	-	-	-	37.3	-	-	-	-	-	-	-	-	-	-	-
	Max of Length (cm)	-	-	-	-	-	-	37.3	-	-	-	-	-	-	-	-	-	-	-
	Min of Length (cm)	-	-	-	-	-	-	37.3	-	-	-	-	-	-	-	-	-	-	-
	SD of Length (cm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	# of Fish	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
	% of Total Catch	-	-	-	-	-	-	100.00	-	-	-	-	-	-	-	-	-	-	100.00
G Creek[d]	Average of Length (cm)	-	61.4	-	-	-	-	47.9	-	-	-	-	-	-	-	-	-	-	-
	Max of Length (cm)	-	61.4	-	-	-	-	73.0	-	-	-	-	-	-	-	-	-	-	-
	Min of Length (cm)	-	61.4	-	-	-	-	22.7	-	-	-	-	-	-	-	-	-	-	-
	SD of Length (cm)	-	-	-	-	-	-	35.6	-	-	-	-	-	-	-	-	-	-	-
	Average of Weight (g)	-	1220	-	-	-	-	1388	-	-	-	-	-	-	-	-	-	-	-
	Max of Weight (g)	-	1220	-	-	-	-	2680	-	-	-	-	-	-	-	-	-	-	-
	Min of Weight (g)	-	1220	-	-	-	-	95	-	-	-	-	-	-	-	-	-	-	-
	SD of Weight (g)	-	-	-	-	-	-	1828	-	-	-	-	-	-	-	-	-	-	-
	# of Fish	-	1	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	5
	% of Total Catch	-	20.00	-	-	-	-	80.00	-	-	-	-	-	-	-	-	-	-	100.00

Note: Only large-bodied fish and small-bodied fish kept for chemistry were weighed, and not all fish were measured or weighed in all cases.

a) Max = maximum, Min = minimum, SD = standard deviation.

b) Community surveys conducted in this waterbody.

c) Chemistry surveys conducted in this waterbody.

d) Spawning surveys conducted in this waterbody.

Appendix C, Table 46

Electrofishing Catch Per Unit Effort in the Aquatic Study Area, 2018 and 2019

Waterbody	Species	Total Number of Fish	Total Effort (s)	CPUE (# fish/minute)
Broach Lake	Burbot	4	7320	0.033
	Cisco	32	7320	0.262
	Lake Whitefish	1	7320	0.008
	Longnose Sucker	192	7320	1.574
	Ninespine Stickleback	3	7320	0.025
	Northern Pike	2	7320	0.016
	Slimy Sculpin	8	7320	0.066
	Spottail Shiner	14	7320	0.115
	Sucker sp.	93	7320	0.762
	White Sucker	90	7320	0.738
	Yellow Perch	55	7320	0.451
	Total	**494**	**7320**	**4.049**
Hodge Lake	Burbot	32	5923	0.324
	Johnny Darter	2	5923	0.020
	Ninespine Stickleback	3	5923	0.030
	Northern Pike	11	5923	0.111
	Slimy Sculpin	7	5923	0.071
	Spottail Shiner	1	5923	0.010
	Trout Perch	9	5923	0.091
	White Sucker	6	5923	0.061
	Yellow Perch	122	5923	1.236
	Total	**193**	**5923**	**1.955**
Jed Creek	Burbot	1	266	0.226
	Northern Pike	1	266	0.226
	Spottail Shiner	37	266	8.346
	Trout Perch	59	266	13.308
	Total	**98**	**266**	**22.105**
Patterson Lake	Burbot	18	20591	0.052
	Lake Chub	57	20591	0.166
	Longnose Sucker	42	20591	0.122
	Ninespine Stickleback	18	20591	0.052
	Northern Pike	4	20591	0.012
	Slimy Sculpin	40	20591	0.117
	Spottail Shiner	182	20591	0.530
	Sucker sp.	4	20591	0.012
	Trout Perch	901	20591	2.625
	White Sucker	75	20591	0.219
	Yellow Perch	52	20591	0.152
	Total	**1393**	**20591**	**4.059**

Appendix C, Table 46

Electrofishing Catch Per Unit Effort in the Aquatic Study Area, 2018 and 2019

Waterbody	Species	Total Number of Fish	Total Effort (s)	CPUE (# fish/minute)
Patterson Lake (DSA and Camp Area)	Burbot	6	7308	0.049
	Lake Chub	19	7308	0.156
	Longnose Sucker	1	7308	0.008
	Ninespine Stickleback	11	7308	0.090
	Slimy Sculpin	16	7308	0.131
	Spottail Shiner	118	7308	0.969
	Trout Perch	202	7308	1.658
	White Sucker	11	7308	0.090
	Yellow Perch	34	7308	0.279
	Total	**418**	**7308**	**3.432**
Patterson Creek	Burbot	1	742	0.081
	Lake Chub	7	742	0.566
	Lake Whitefish	1	742	0.081
	Northern Pike	6	742	0.485
	Slimy Sculpin	2	742	0.162
	Spottail Shiner	14	742	1.132
	Trout Perch	1	742	0.081
	Total	**32**	**742**	**2.588**
Forrest Lake	Burbot	21	9714	0.130
	Lake Chub	101	9714	0.624
	Lake Whitefish	1	9714	0.006
	Longnose Sucker	27	9714	0.167
	Ninespine Stickleback	9	9714	0.056
	Northern Pike	8	9714	0.049
	Slimy Sculpin	50	9714	0.309
	Spottail Shiner	14	9714	0.086
	Trout Perch	345	9714	2.131
	White Sucker	3	9714	0.019
	Yellow Perch	6	9714	0.037
	Total	**585**	**9714**	**3.613**
Beet Channel	Ninespine Stickleback	2	2914	0.041
	Northern Pike	19	2914	0.391
	Spottail Shiner	216	2914	4.447
	Sucker sp.	1	2914	0.021
	White Sucker	2	2914	0.041
	Yellow Perch	43	2914	0.885
	Total	**283**	**2914**	**5.827**
Beet Lake	Burbot	21	4144	0.304
	Lake Chub	59	4144	0.854
	Northern Pike	2	4144	0.029
	Slimy Sculpin	8	4144	0.116
	Spottail Shiner	108	4144	1.564
	Trout Perch	91	4144	1.318
	Walleye	1	4144	0.014
	White Sucker	5	4144	0.072
	Yellow Perch	39	4144	0.565
	Total	**334**	**4144**	**4.836**

Appendix C, Table 46

Electrofishing Catch Per Unit Effort in the Aquatic Study Area, 2018 and 2019

Waterbody	Species	Total Number of Fish	Total Effort (s)	CPUE (# fish/minute)
Beet Creek	Northern Pike	6	358	1.006
	Slimy Sculpin	1	358	0.168
	Yellow Perch	1	358	0.168
	Total	**8**	**358**	**1.341**
Naomi Creek	Longnose Sucker	9	278	1.942
	Northern Pike	3	278	0.647
	Total	**12**	**278**	**2.590**
Naomi Lake	Burbot	4	3378	0.071
	Northern Pike	26	3378	0.462
	Spottail Shiner	75	3378	1.332
	Trout Perch	20	3378	0.355
	Yellow Perch	67	3378	1.190
	Total	**192**	**3378**	**3.410**
Clearwater Creek	Burbot	1	255	0.235
	Northern Pike	5	255	1.176
	Total	**6**	**255**	**1.412**
Clearwater River Nearfield	Arctic Grayling	1	2660	0.023
	Burbot	6	2660	0.135
	Ninespine Stickleback	1	2660	0.023
	Northern Pike	17	2660	0.383
	Spottail Shiner	14	2660	0.316
	Sucker sp.	16	2660	0.361
	Walleye	2	2660	0.045
	White Sucker	3	2660	0.068
	Yellow Perch	5	2660	0.113
	Total	**65**	**2660**	**1.466**
Clearwater River Midfield[a]	Burbot	2	1116	0.108
	Ninespine Stickleback	1	1116	0.054
	Northern Pike	4	1116	0.215
	Slimy Sculpin	5	1116	0.269
	Total	**12**	**1116**	**0.645**
Lloyd Lake Inlet	Burbot	1	1786	0.034
	Ninespine Stickleback	52	1786	1.747
	Northern Pike	2	1786	0.067
	Slimy Sculpin	4	1786	0.134
	White Sucker	1	1786	0.034
	Yellow Perch	12	1786	0.403
	Total	**72**	**1786**	**2.419**
Lake G	Burbot	1	2131	0.028
	Northern Pike	19	2131	0.535
	Total	**20**	**2131**	**0.563**
Lake H	Burbot	3	680	0.265
	Northern Pike	3	680	0.265
	Spottail Shiner	90	680	7.941
	Yellow Perch	47	680	4.147
	Total	**143**	**680**	**12.618**

Note: CPUE = catch per unit effort.

a) Backpack electrofishing method was used at this location. Boat electrofishing method was used at all other waterbodies.

Appendix C, Table 47

Fish Abnormalities Encountered During all Fish Surveys in the Aquatic Study Area, 2018 and 2019

Abnormality			Broach Lake	Hodge Lake	Jed Creek	Patterson Lake	Patterson Creek	Forrest Lake	Beet Channel	Beet Lake	Beet Creek	Naomi Creek	Naomi Lake	Clearwater Creek	Clearwater River	Lloyd Lake	Lake G	Lake H	E Creek	G Creek	Total
External	Body	Deformed	-	-	-	1	-	1	-	-	-	-	-	3	-	-	-	-	-	-	**5**
		Emaciated	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	**3**
		Enlarged	1	-	-	1	-	5	-	-	-	-	-	-	-	-	-	-	-	-	**7**
		Growths	-	-	-	-	-	-	-	-	-	-	-	-	1	8	-	-	-	-	**9**
		Lesion	1	-	-	-	1	-	-	-	1	-	-	-	2	-	-	-	-	-	**5**
		Parasite	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	**3**
		Scarring	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	**5**
		Scoliosis	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	**3**
	Eyes	Hemorrhagic	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Missing Eye	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Opaque/Cloudy Eye	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**1**
	Skin	Black Spots	-	-	-	-	3	-	48	5	5	-	15	2	15	-	-	-	-	-	**93**
		Deformed	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	**6**
		Discoloured	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Growths	-	-	1	1	-	-	-	-	-	-	-	11	4	-	-	-	-	-	**17**
		Hemorrhagic	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**
		Lesion	-	-	1	1	1	1	1	1	1	-	5	3	5	-	-	-	-	-	**20**
		Scarring	-	-	-	-	3	-	-	1	-	-	1	-	1	-	-	-	-	-	**6**
	Snout	Deformed	-	-	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	**3**
		Hemorrhagic	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Lesion	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	**2**
		Scarring	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	**1**
	Fin	Cyst	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**1**
		Deformed	-	-	-	-	1	2	-	-	-	-	-	2	-	-	-	-	-	-	**5**
		Growths	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**
		Hemorrhagic	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Light Erosion	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
		Lightly Frayed Fins	6	-	-	-	1	-	1	-	1	-	2	-	2	-	-	-	-	-	**13**
		Moderate Erosion	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
		Severe Erosion	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**
		Severely Frayed Fins	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	1	-	-	**4**
	Gills	Deformed	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	**2**
		Frayed Gills	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**1**
		Growths	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
		Hemorrhagic	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Internal	Digestive System	Cyst	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
		Growths	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	**3**
		Parasite	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	**1**
	Gonad	Growths	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	**1**
	Liver	Growths	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	**3**
Total			**16**	**2**	**9**	**13**	**18**	**13**	**51**	**9**	**10**	**0**	**31**	**28**	**34**	**8**	**0**	**3**	**0**	**0**	**245**

Appendix C, Table 48

Summary of Fish Submitted for Chemical Analysis of Flesh and Bone from the Aquatic Study Area, 2018 and 2019

Waterbody	Sample #	Method	Fish Number[a]	Length (cm)	Weight (g)	Age (yr)
Broach Lake	1	GN3-1	NP20	55.4	1340	4
	2	GN3-1	NP7	69.6	2540	5
	3	GN3-1	NP8	49.4	1040	2
	4	GN1-1	NP4	78.6	3720	6
	5	GN3-1	NP19	48.2	840	2
	1	GN3-1	LW13	48.2	1240	24
	2	GN3-1	LW1	38.4	800	7
	3	GN3-1	LW14	40.3	1140	20
	4	GN3-1	LW5	43.3	880	25
	5	GN3-1	LW6	40.2	980	7
Patterson Lake	1	GN26-1	NP1	49.3	760	2
	2	GN32-1	NP1	81.4	4220	7
	3	GN10-1	NP1	59.2	1580	6
	4	GN24-1	NP1	49.5	840	2
	5	GN26-1	NP2	66.8	2220	5
	1	GN36-1	LW1	43.1	800	26
	2	GN13-1	LW1	40.2	760	13
	3	GN9-1	LW2	48.2	1260	22
	4	GN12-1	LW1	33.8	440	12
		GN13-1	LW3	35.2	520	13
	5	GN13-1	LW2	39.5	840	12
Forrest Lake	1	HG1-1	NP6	54.4	1320	6
	2	HG2-1	NP2	53.8	1220	4
	3	HG3-1	NP17	62.5	2060	5
	4	GN5-1	NP1	57.3	1320	5
	1[b]	AN3-1	NP1	65	2020	9
	1	HG1-1	LW1	35	1300	19
	2	HG1-1	LW2	45.5	1420	18
	3	HG1-1	LW3	45.2	1960	26
	4	HG1-1	LW4	41.4	1080	27
	5	HG1-1	LW5	40.4	960	13
Beet Lake	1	GN6-1	NP1	43.4	630	2
	2	GN6-1	NP2	46.3	860	2
	1[b]	HG 4-1	NP4	68.3	2080	10
	2[b]	HG 5-1	NP1	54.6	1020	7
	3[b]	AN2-1	NP1	50.1	960	6
	1	GN4-1	LW3	41.2	1020	14
	2	GN4-1	LW5	42.3	1050	26
	3	GN4-1	LW6	43	1120	17
	4	GN4-1	LW7	47	1480	21
	5	GN4-1	LW8	45.8	1320	20
Naomi Lake	1	GN6-1	NP5	53.8	1840	5
	2	GN6-1	NP6	46.5	760	3
	3	GN8-1	NP5	33.4	420	2
		GN8-1	NP6	49.2	920	5
	4	GN3-1	NP1	54.7	1240	8
	1[b]	HG 2-1	NP38	53.6	1140	8
	1	GN7-1	LW1	43.5	1080	13
	2	GN7-1	LW4	40.8	1000	18
	3	GN7-1	LW6	42	1060	12
	4	GN7-1	LW7	44	1200	22
	5	GN7-1	LW8	42.3	1140	14
Clearwater River Nearfield	1	GN2-1	NP1	52.7	920	8
	2	GN1-1	NP1	44.1	620	3
	3	AN1-1	NP1	51.9	940	6
	4	AN1-1	NP3	51.6	920	8
	5	GN3-1	NP1	49.6	760	6

Appendix C, Table 48

Summary of Fish Submitted for Chemical Analysis of Flesh and Bone from the Aquatic Study Area, 2018 and 2019

Waterbody	Sample #	Method	Fish Number[a]	Length (cm)	Weight (g)	Age (yr)
Lloyd Lake	1	HG5-1	NP4	21	1060	6
	2	HG5-1	NP5	47.6	800	2
	3	HG4-1	NP9	66.7	1960	7
	4	HG4-1	NP8	54.4	1020	6
	5	HG4-1	NP10	87.6	5120	10
	1	HG1-1	LW19	46.1	1820	12
	2	HG1-1	LW20	41.7	1120	5
	3	HG1-1	LW21	40.2	1080	5
	4	HG2-1	LW5	45.4	1260	15
	5	HG2-1	LW6	44.5	1430	15
Hodge Lake	1[b]	AN1-1	NP1	70	2900	8
	2[b]	AN1-1	NP2	76.6	3920	11
	3[b]	AN1-1	NP3	63.8	2200	6
	4[b]	AN1-1	NP4	63.7	1960	16
	5[b]	HG4-1	NP18	94.3	6260	12
	1[b]	HG 5-1	LW 5	39.8	900	13
	2[b]	HG 5-1	LW 6	30.9	420	11
		HG 5-1	LW 7	31.8	400	19
	3[b]	HG 5-1	LW 8	32.1	420	11
		HG 5-1	LW 9	33.7	460	13
	4[b]	HG 5-1	LW 11	34.7	560	18
		HG 5-1	LW 12	29.6	400	10
	5[b]	HG 6-1	LW2	37.9	900	26

a) LW = lake whitefish, NP = northern pike.

b) Captured in 2019. The remaining fish were captured in 2018.

Appendix C, Table 49

Summary of Northern Pike Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter[a]	Broach Lake					Hodge Lake					Patterson Lake					Forrest Lake					Beet Lake					Naomi Lake					Clearwater River Nearfield					Lloyd Lake Inlet				
	N=5					N=5					N=5					N=5					N=5					N=5					N=5					N=5				
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean		Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min
Metals and Trace Elements																																							
Aluminum	5	**1**	-	<2	<2	5	**1**	-	< 2	< 2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	4	**1.4**	0.89	3	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2
Antimony[b]	5	**0.1**	-	<0.1	<0.1	5	**0.005**	-	< 0.01	< 0.01	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1	5	**0.02**	-	<0.1	<0.01	5	**0.04**	-	<0.1	< 0.01	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1
Arsenic[b]	-	**0.08**	0.02	0.10	0.06	-	**0.11**	0.028	0.14	0.08	-	**0.08**	0.03	0.14	0.05	-	**0.10**	0.02	0.12	0.08	-	**0.08**	0.019	0.10	0.05	-	**0.12**	0.03	0.16	0.09	-	**0.11**	0.04	0.17	0.06	1	**0.05**	0.02	0.07	<0.05
Barium	2	**0.09**	0.07	0.18	<0.05	-	**0.11**	0.066	0.22	0.06	1	**0.07**	0.05	0.15	<0.05	-	**0.15**	0.08	0.24	0.07	-	**0.10**	0.088	0.26	0.05	-	**0.08**	0.03	0.12	0.05	-	**0.10**	0.07	0.22	0.06	1	**0.11**	0.08	0.21	<0.05
Beryllium	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Boron	5	**0.5**	-	<1	<1	5	**0.5**	-	< 1	< 1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1
Cadmium	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Chromium[b]	5	**0.3**	-	<0.5	<0.5	2	**0.1**	0.091	0.24	< 0.05	5	**0.3**	-	<0.5	<0.5	5	**0.2**	-	<0.5	<0.05	4	**0.15**	0.114	0.18	<0.05	5	**0.2**	-	<0.5	<0.05	5	**0.3**	-	<0.5	<0.5	5	**0.3**	-	<0.5	<0.5
Cobalt	4	**0.006**	0.0022	0.01	<0.01	3	**0.009**	0.007	0.02	< 0.01	4	**0.006**	0.0022	0.01	<0.01	5	**0.006**	0.0022	0.01	<0.01	5	**0.005**	-	<0.01	<0.01	3	**0.008**	0.0027	0.02	<0.01	5	**0.005**	-	<0.01	<0.01	3	**0.007**	0.0027	0.01	<0.01
Copper	-	**0.88**	0.126	1.00	0.70	-	**1.2**	0.58	2.2	0.84	-	**1.07**	0.248	1.30	0.75	-	**1.24**	0.264	1.60	0.92	-	**1.1**	0.49	1.9	0.61	-	**1.5**	0.54	2.10	0.76	-	**0.85**	0.174	1.10	0.65	-	**0.84**	0.217	1.20	0.66
Iron	-	**7.60**	2.70	12	5	-	**13**	8.2	27	8	-	**8.20**	1.92	11	6	-	**12.4**	4.39	18	8	-	**7**	1.9	10	5	-	**17**	9.3	29	9	-	**9.60**	3.05	13	6	-	**8.80**	4.21	16	6
Lead	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	4	**0.01**	0.0112	0.03	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Manganese	-	**0.50**	0.235	0.8	0.3	-	**0.5**	0.1	0.6	0.3	-	**0.54**	0.182	0.8	0.3	-	**0.72**	0.23	1.00	0.40	-	**0.4**	0.164	0.7	0.3	-	**0.5**	0.22	0.9	0.4	-	**0.64**	0.261	1.1	0.5	-	**0.76**	0.391	1.4	0.4
Mercury	-	**0.23**	0.143	0.48	0.13	-	**1.7**	1.6	4.4	0.43	-	**0.41**	0.236	0.65	0.17	-	**0.40**	0.263	0.85	0.19	-	**0.53**	0.418	1.20	0.17	-	**0.73**	0.354	1.20	0.25	-	**0.82**	0.534	1.60	0.26	-	**1.38**	0.732	2.30	0.32
Molybdenum[b]	5	**0.05**	-	<0.1	<0.1	5	**0.01**	-	< 0.02	< 0.02	5	**0.05**	-	<0.1	<0.1	5	**0.04**	-	<0.1	< 0.02	5	**0.03**	-	<0.1	<0.02	5	**0.02**	-	<0.1	< 0.02	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Nickel	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Selenium[b]	-	**0.63**	0.099	0.74	0.50	-	**1.5**	0.29	1.8	1.1	-	**0.84**	0.044	0.88	0.77	-	**0.73**	0.044	0.79	0.68	-	**0.58**	0.151	0.81	0.44	-	**0.51**	0.0515	0.57	0.44	-	**0.50**	0.080	0.64	0.44	-	**0.65**	0.050	0.74	0.61
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Strontium[b]	-	**1.4**	0.731	2.5	0.5	-	**3.5**	1.3	5.8	2.6	-	**1.2**	0.561	2.1	0.6	-	**1.6**	0.760	2.4	0.86	-	**1.4**	0.998	3.2	0.86	-	**1.2**	0.35	1.6	0.8	-	**1.3**	0.760	2.6	0.7	-	**1.8**	1.212	3.3	0.5
Thallium[b]	5	**0.03**	-	<0.05	<0.05	-	**0.011**	0.0013	0.012	0.009	5	**0.03**	-	<0.05	<0.05	5	**0.02**	-	<0.05	< 0.005	5	**0.03**	-	<0.05	<0.05	4	**0.02**	0.008	<0.05	0.008	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Tin	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.011	0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Titanium[b]	5	**0.03**	-	<0.05	<0.05	5	**0.1**	-	< 0.2	< 0.2	5	**0.03**	-	<0.05	<0.05	5	**0.04**	-	< 0.2	<0.05	5	**0.07**	-	<0.2	<0.05	4	**0.07**	0.076	0.06	<0.05	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.0157	0.06	<0.05
Uranium	5	**0.003**	-	<0.005	<0.005	4	**0.003**	0.002	0.007	< 0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005
Vanadium	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Zinc	-	**23**	3.6	28	20	-	**30**	6.8	36	20	-	**37**	8.5	46	28	-	**60**	20.9	82	38	-	**37**	15.4	61	22	-	**37**	8.3	47	30	-	**38**	18.5	70	23	-	**32**	10.2	47	21
Physical Properties																																							
Moisture (%)	-	**77.24**	0.81	78.09	75.94	-	**77.69**	1.389	79.79	76.05	-	**76.69**	0.72	77.68	75.72	-	**78.33**	1.379	79.68	76.54	-	**78.26**	0.568	79	77	-	**79.20**	1.3	80.35	77.47	-	**78.44**	1.70	80.14	75.65	-	**77.99**	0.86	78.71	76.62
Radionuclides																																							
Lead-210 (Bq/g)	5	**0.002**	-	<0.004	<0.004	5	**0.002**	-	< 0.005	< 0.004	5	**0.002**	-	<0.004	<0.004	5	**0.002**	0.0003	<0.005	<0.004	5	**0.002**	-	<0.005	<0.004	5	**0.002**	-	<0.005	<0.004	5	**0.002**	0.0002	<0.005	<0.004	5	**0.002**	0.0003	<0.005	<0.004
Polonium-210 (Bq/g)	-	**0.007**	0.0047	0.013	0.002	-	**0.006**	0.003	0.009	0.002	-	**0.009**	0.0057	0.018	0.002	-	**0.013**	0.0016	0.015	0.01	-	**0.011**	0.0064	0.018	0.004	-	**0.016**	0.0090	0.027	0.006	-	**0.006**	0.0027	0.010	0.004	-	**0.010**	0.0090	0.025	0.002
Radium-226 (Bq/g)	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0001**	-	< 0.0004	< 0.0002	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0002**	-	<0.0003	<0.0003	5	**0.0002**	-	<0.0003	<0.0003	5	**0.0002**	-	<0.0003	<0.0003	5	**0.0002**	-	<0.0004	<0.0003	5	**0.0002**	-	<0.0004	<0.0002
Thorium-230 (Bq/g)	5	**0.0002**	-	<0.0005	<0.0004	5	**0.0003**	-	< 0.0007	< 0.0005	5	**0.0003**	-	<0.0006	<0.0005	5	**0.0003**	-	<0.0006	<0.0006	5	**0.0003**	-	<0.0005	<0.0005	5	**0.0003**	-	<0.0007	<0.0006	5	**0.0003**	-	<0.0007	<0.0006	5	**0.0003**	-	<0.0008	<0.0005

Note: All values are in µg/g on a dry weight basis, unless specified otherwise.

Note: SD = standard deviation; Min = Minimum; Max = Maximum; N<RDL = number of samples below the reportable detection limit (RDL).

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs.

Means are **bolded** for ease of data comparison.

a) RDLs vary per sample depending on the amount of material available for analyses.

b) RDLs vary for samples collected in 2018 versus 2019 due to a change in laboratory methods.

Appendix C, Table 50

Summary of Northern Pike Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter[a]	Broach Lake					Hodge Lake					Patterson Lake					Forrest Lake					Beet Lake					Naomi Lake					Clearwater River Nearfield					Lloyd Lake Inlet				
	N=5					N=5					N=5					N=5					N=5					N=5					N=5					N=5				
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min
Metals and Trace Elements																																							
Aluminum	5	**1**	-	<2	<2	5	**1**	-	< 2	< 2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2
Antimony	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2
Arsenic	3	**0.09**	0.07	0.2	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	2	**0.12**	0.08	0.2	<0.1	3	**0.11**	0.13	0.3	<0.1	4	**0.06**	0.02	0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Barium	-	**15.2**	6.10	25.0	10.0	-	**9.6**	3.4	15	6	-	**10.6**	2.07	13.0	7.8	-	**13**	1.9	15	10	-	**11**	4.3	16.0	4.9	-	**16**	4.9	21	9.3	-	**17.6**	2.19	20.0	14.0	-	**10.3**	1.19	12.0	9.1
Beryllium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Boron	5	**1**	-	<2	<2	5	**1**	-	< 2	< 2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2
Cadmium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Chromium	4	**0.6**	0.22	1	<1	5	**0.5**	-	< 1	< 1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1
Cobalt	-	**0.21**	0.036	0.25	0.17	-	**0.18**	0.042	0.22	0.12	-	**0.31**	0.057	0.39	0.24	-	**0.25**	0.045	0.30	0.20	-	**0.14**	0.038	0.18	0.10	-	**0.26**	0.081	0.32	0.12	-	**0.25**	0.032	0.28	0.20	-	**0.28**	0.031	0.32	0.24
Copper	-	**0.76**	0.313	1.1	0.5	-	**0.66**	0.39	1.3	0.3	-	**0.60**	0.187	0.9	0.4	-	**0.8**	0.45	1.5	0.3	-	**0.8**	0.34	1.2	0.4	-	**0.9**	0.26	1.3	0.6	-	**0.88**	0.217	1.1	0.6	-	**0.52**	0.045	0.6	0.5
Iron	-	**11**	5.4	18	6	-	**7**	3	10	4	-	**8**	3.4	12	4	-	**7**	3.3	10	2	-	**7**	2.6	10	4	-	**11**	3.3	15	8	-	**11**	3.8	17	7	-	**7**	3.1	12	4
Lead	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	-	**0.140**	0.0123	0.16	0.13	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	1	**0.14**	0.008	0.15	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Manganese	-	**59**	20.4	93	44	-	**28**	8.6	39	18	-	**50**	8.1	56	36	-	**39**	7.8	51	31	-	**33**	12.2	47	20	-	**54**	24.4	96	34	-	**66**	14.9	83	43	-	**46**	18.8	74	28
Mercury	3	**0.04**	0.022	0.07	0.05	-	**0.33**	0.37	0.96	0.06	2	**0.06**	0.047	0.14	0.05	2	**0.07**	0.059	0.17	0.05	-	**0.12**	0.06	0.22	0.06	-	**0.22**	0.116	0.36	0.07	1	**0.23**	0.237	0.62	0.05	-	**0.31**	0.167	0.48	0.07
Molybdenum	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2
Nickel	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Selenium	-	**0.26**	0.089	0.4	0.2	-	**0.5**	0.2	0.8	0.3	-	**0.28**	0.084	0.4	0.2	-	**0.3**	0.09	0.4	0.2	-	**0.3**	0.08	0.4	0.2	-	**0.2**	0.04	0.3	0.2	-	**0.22**	0.045	0.3	0.2	-	**0.22**	0.045	0.3	0.2
Silver	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Strontium	-	**188**	42.1	230	130	-	**430**	110	530	260	-	**176**	35.1	210	120	-	**196**	32.1	240	170	-	**144**	50	190	84	-	**202**	46.6	270	140	-	**242**	42.1	280	170	-	**200**	15.8	220	180
Thallium	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Tin	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	4	**0.1**	0.11	0.3	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Titanium	3	**0.13**	0.115	0.30	<0.1	2	**0.1**	0.06	0.2	< 0.1	5	**0.05**	-	<0.1	<0.1	3	**0.09**	0.065	0.2	<0.1	4	**0.44**	0.872	0.20	<0.1	4	**0.08**	0.067	0.20	<0.1	3	**0.07**	0.027	0.10	<0.1	2	**0.10**	0.061	0.20	<0.1
Uranium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Vanadium	5	**0.10**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.10**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	4	**0.1**	0.04	0.2	<0.2	4	**0.18**	0.18	0.50	<0.2	5	**0.10**	-	<0.2	<0.2
Zinc	-	**117**	28.2	140	78	-	**100**	30	150	72	-	**126**	11.4	140	110	-	**134**	43.9	200	88	-	**109**	14.9	130	96	-	**140**	60.7	220	69	-	**138**	19.2	170	120	-	**104**	21.2	130	72
Physical Properties																																							
Moisture (%)	-	**56.57**	4.506	61.50	50.21	-	**54.53**	4.43	58.35	47.26	-	**55.34**	5.773	63.44	47.70	-	**57.12**	7.609	64.21	44.33	-	**61.09**	3.760	55.86	66.01	-	**60.66**	3.369	64.16	55.64	-	**62.32**	3.872	68.57	58.28	-	**58.96**	3.604	64.27	54.35
Radionuclides																																							
Lead-210 (Bq/g)	5	**0.002**	0.0003	<0.005	<0.004	5	**0.002**	-	< 0.005	< 0.004	5	**0.002**	0.0003	<0.005	<0.004	5	**0.003**	-	<0.006	<0.004	5	**0.003**	-	< 0.004	< 0.006	5	**0.003**	-	< 0.006	<0.004	5	**0.003**	0.0002	<0.006	<0.005	5	**0.003**	0.0004	<0.006	<0.004
Polonium-210 (Bq/g)	1	**0.001**	0.0007	0.002	<0.001	-	**0.003**	0.002	0.005	0.001	-	**0.002**	0.0012	0.004	0.001	-	**0.004**	0.0020	0.007	0.002	-	**0.006**	0.0055	0.015	0.001	-	**0.006**	0.0033	0.009	0.002	1	**0.003**	0.0013	0.004	<0.001	1	**0.003**	0.0024	0.007	<0.001
Radium-226 (Bq/g)	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	< 0.003	< 0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.002**	-	<0.004	<0.002
Thorium-230 (Bq/g)	5	**0.002**	-	<0.006	<0.004	5	**0.003**	-	< 0.006	< 0.004	5	**0.003**	-	<0.006	<0.004	5	**0.003**	-	<0.006	<0.004	2	**0.003**	-	<0.006	< 0.004	5	**0.003**	-	<0.006	< 0.004	5	**0.003**	-	<0.006	<0.004	5	**0.003**	-	<0.008	<0.004

Note: All values are in µg/g on a dry weight basis, unless specified otherwise.
Note: SD = standard deviation; Min = Minimum; Max = Maximum; N<RDL = number of samples below the reportable detection limit (RDL).
Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs.
Means are **bolded** for ease of data comparison.
a) RDLs vary per sample depending on the amount of material available for analyses.

Appendix C, Table 51

Summary of Lake Whitefish Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter[a]	Broach Lake					Hodge Lake					Patterson Lake					Forrest Lake					Beet Lake					Naomi Lake					Lloyd Lake Inlet				
	N=5					N=5					N=5					N=5					N=5					N=5					N=5				
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min
Metals and Trace Elements																																		
Aluminum	5	**1**	-	<2	<2	5	**1**	-	< 2	< 2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2
Antimony	5	**0.1**	-	<0.1	<0.1	5	**0.005**	-	< 0.01	< 0.01	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1	5	**0.1**	-	<0.1	<0.1
Arsenic	-	**0.26**	0.19	0.47	0.06	-	**0.088**	0.022	0.11	0.06	-	**0.21**	0.16	0.49	0.08	1	**0.11**	0.08	0.24	<0.05	1	**0.12**	0.06	0.18	<0.05	-	**0.14**	0.03	0.17	0.10	-	**0.10**	0.05	0.19	0.06
Barium	-	**0.12**	0.06	0.19	0.1	-	**0.052**	0.034	0.11	0.03	1	**0.10**	0.07	0.20	<0.05	3	**0.04**	0.02	0.08	<0.04	2	**0.06**	0.04	0.12	<0.05	4	**0.04**	0.03	0.10	<0.05	5	**0.03**	0.00	0.05	<0.05
Beryllium	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Boron	5	**0.5**	-	<1	<1	5	**0.5**	-	< 1	< 1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1	5	**0.5**		<1	<1	5	**0.5**	-	<1	<1	5	**0.5**	-	<1	<1
Cadmium	4	**0.008**	0.01	0.02	0.01	2	**0.02**	0.02	0.05	< 0.01	4	**0.014**	0.02	0.05	0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Chromium	5	**0.3**	-	<0.5	<0.5	5	**0.03**	-	< 0.05	< 0.05	5	**0.3**	-	<0.5	<0.5	5	**0.3**	-	<0.5	<0.5	5	**0.3**	-	<0.5	<0.5	5	**0.3**	-	<0.5	<0.5	5	**0.3**	-	<0.5	<0.5
Cobalt	1	**0.02**	0.010	0.03	<0.01	-	**0.03**	0.01	0.04	0.01	2	**0.01**	0.006	0.02	<0.01	3	**0.01**	0.007	0.02	<0.01	4	**0.01**	0.007	0.02	<0.01	1	**0.01**	0.002	0.01	<0.01	-	**0.02**	0.013	0.04	0.01
Copper	-	**1.16**	0.441	1.90	0.84	-	**1.1**	0.34	1.7	0.89	-	**1.12**	0.270	1.50	0.86	-	**1.15**	0.402	1.80	0.79	-	**0.99**	0.24	1.40	0.80	-	**1.08**	0.519	2.00	0.76	-	**0.89**	0.250	1.30	0.67
Iron	-	**29**	25.2	72	11	-	**21**	7.2	28	9	-	**17**	6.0	27	11	-	**14**	4.7	22	11	-	**18**	6.0	25	10	-	**17**	6.3	28	12	-	**14**	10.8	33	6
Lead	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	4	**0.006**	0.002	0.01	<0.01	5	**0.005**	-	<0.01	<0.01	4	**0.012**	0.02	0.04	<0.01
Manganese	-	**0.5**	0.15	0.7	0.3	-	**0.7**	0.25	1	0.3	-	**0.5**	0.09	0.6	0.4	-	**0.4**	0.18	0.7	0.3	-	**0.4**	0.09	0.4	0.2	-	**0.3**	0.06	0.4	0.3	-	**0.3**	0.07	0.4	0.2
Mercury	-	**0.20**	0.115	0.35	0.08	-	**0.32**	0.13	0.51	0.2	-	**0.33**	0.195	0.58	0.14	-	**0.30**	0.093	0.43	0.21	-	**0.12**	0.04	0.18	0.08	-	**0.18**	0.060	0.25	0.12	-	**0.35**	0.173	0.54	0.12
Molybdenum	5	**0.05**	-	<0.1	<0.1	5	**0.01**	-	< 0.02	< 0.02	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**		<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Nickel	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	4	**0.05**	0.06	0.16	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Selenium	-	**1.11**	0.708	2.00	0.46	-	**2.4**	0.91	3.4	1.2	-	**1.12**	0.513	2.00	0.73	-	**1.12**	0.464	1.80	0.58	-	**1.03**	0.31	1.50	0.75	-	**0.68**	0.135	0.83	0.54	-	**0.55**	0.089	0.68	0.45
Silver	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	< 0.01	< 0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**		<0.01	<0.01	5	**0.005**	-	<0.01	<0.01	5	**0.005**	-	<0.01	<0.01
Strontium	-	**4.2**	1.78	6.4	2.3	-	**4.0**	1.60	6.8	2.6	-	**1.9**	0.48	2.6	1.3	-	**1.0**	0.13	1.2	0.9	-	**1.1**	0.37	1.7	0.7	-	**1.3**	0.35	1.6	0.8	-	**1.3**	0.32	1.6	0.9
Thallium	5	**0.03**	-	<0.05	<0.05	-	**0.01**	0.0016	0.012	0.008	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**		<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Tin	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Titanium	5	**0.03**	-	<0.05	<0.05	5	**0.1**	-	< 0.2	< 0.2	4	**0.03**	0.020	0.07	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.016	0.06	<0.05	4	**0.03**	0.0200	0.07	<0.05
Uranium	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	< 0.005	< 0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**		<0.005	<0.005	5	**0.003**	-	<0.005	<0.005	5	**0.003**	-	<0.005	<0.005
Vanadium	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**		<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Zinc	-	**29**	8.6	39	20	-	**25**	6.7	34	19	-	**41**	28.2	90	22	-	**23**	7.8	37	18	-	**16**	1.8	18	14	-	**19**	2.7	23	16	-	**20**	3.1	24	17
Physical Properties																																		
Moisture (%)	-	**78.86**	2.960	83.89	76.36	-	**78.20**	1.085	79.3	76.38	-	**77.08**	1.910	78.99	74.23	-	**76.70**	2.390	79.72	74.18	-	**74.24**	2.510	76.41	71.38	-	**75.69**	2.060	77.36	72.51	-	**75.08**	1.840	78.02	73.54
Radionuclides																																		
Lead-210 (Bq/g)	4	**0.003**	0.0017	0.006	<0.004	5	**0.002**	-	< 0.005	< 0.004	5	**0.002**	-	<0.005	<0.004	5	**0.002**	-	<0.005	<0.004	5	**0.002**	-	<0.004	<0.003	5	**0.002**	-	<0.004	<0.004	5	**0.002**	-	<0.004	<0.004
Polonium-210 (Bq/g	-	**0.003**	0.0019	0.006	0.001	-	**0.009**	0.0093	0.021	0.001	-	**0.004**	0.0026	0.008	0.002	1	**0.003**	0.0021	0.006	<0.0008	-	**0.007**	0.0093	0.024	0.002	-	**0.003**	0.0021	0.006	0.001	3	**0.001**	0.0007	0.002	<0.0008
Radium-226 (Bq/g)	5	**0.0002**	-	<0.0004	<0.0003	5	**0.0001**	-	< 0.0003	< 0.0002	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0001**	-	<0.0003	<0.0002	5	**0.0001**	-	<0.0003	<0.0002
Thorium-230 (Bq/g)	5	**0.0003**	-	<0.0009	<0.0006	5	**0.0003**	-	< 0.0006	< 0.0005	5	**0.0003**	-	<0.0007	<0.0005	5	**0.0003**	-	<0.0006	<0.0005	5	**0.0002**	-	<0.0006	<0.0004	5	**0.0003**	-	<0.0006	<0.0004	5	**0.0003**	-	<0.0006	<0.0005

Note: All values are in µg/g on a dry weight basis, unless specified otherwise.

Note: SD = standard deviation; Min = Minimum; Max = Maximum; N<RDL = number of samples below the reportable detection limit (RDL).

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs.

Means are **bolded** for ease of data comparison.

a) RDLs vary per sample depending on the amount of material available for analyses.

Appendix C, Table 52

Summary of Lake Whitefish Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter[a]	Broach Lake					Hodge Lake					Patterson Lake					Forrest Lake					Beet Lake					Naomi Lake					Lloyd Lake Inlet				
	N=5					N=5					N=5					N=5					N=5					N=5					N=5				
	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min	N<RDL	Mean	SD	Max	Min
Metals and Trace Elements																																		
Aluminum	3	**2**	1.10	3	<2	1	**4**	2	6	< 2	5	**1**	-	<2	<2	3	**2**	1.73	5	<2	1	**2**	1.14	4	<2	4	**1**	-	<2	<2	3	**1**	0.55	2	<2
Antimony	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2
Arsenic	2	**0.16**	0.13	0.30	<0.1	4	**0.08**	0.07	0.2	< 0.1	1	**0.13**	0.07	0.20	<0.1	3	**0.09**	0.07	0.20	<0.1	4	**0.06**	0.02	0.10	<0.1	2	**0.10**	0.06	0.20	<0.1	4	**0.06**	0.02	0.10	<0.1
Barium	-	**9.8**	2.97	13.0	6.8	-	**8.5**	1.6	11	6.9	-	**13.9**	2.66	16.0	9.5	-	**12.7**	3.15	16.0	7.5	-	**11.5**	1.9	14.0	8.7	-	**6.3**	3.19	9.9	2.0	-	**8.9**	2.09	12.0	6.9
Beryllium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Boron	5	**1**	-	<2	<2	5	**1**	-	< 2	< 2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2	5	**1**	-	<2	<2
Cadmium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Chromium	5	**0.5**	-	<1.0	<1.0	5	**0.5**	-	< 1	< 1	5	**0.5**	-	<1.0	<1.0	5	**0.5**	-	<1.0	<1.0	5	**0.5**	-	<1.0	<1.0	5	**0.5**	-	<1.0	<1.0	4	**0.6**	0.22	1	<1.0
Cobalt	-	**0.24**	0.061	0.32	0.17	-	**0.16**	0.025	0.2	0.14	-	**0.29**	0.072	0.36	0.17	-	**0.26**	0.027	0.30	0.24	-	**0.20**	0.03	0.24	0.16	-	**0.22**	0.114	0.33	0.07	-	**0.29**	0.067	0.38	0.21
Copper	-	**0.3**	0.089	0.4	0.2	-	**0.5**	0.1	0.7	0.4	-	**0.5**	0.152	0.6	0.3	-	**0.5**	0.228	0.8	0.3	-	**0.5**	0.11	0.6	0.4	-	**0.4**	0.114	0.5	0.2	-	**0.4**	0.122	0.5	0.2
Iron	-	**11**	4.3	16	6	-	**21**	8.7	34	13	-	**11**	2.0	13	8	-	**10**	2.9	14	6	-	**17**	2.8	20	13	-	**6**	2.6	10	4	-	**11**	2.2	14	9
Lead	4	**0.04**	0.025	0.08	<0.05	5	**0.03**	-	< 0.05	< 0.05	1	**0.12**	0.055	0.16	<0.05	5	**0.03**	-	<0.05	<0.05	4	**0.03**	0.016	0.06	<0.05	5	**0.03**	-	<0.05	<0.05	3	**0.07**	0.067	0.16	<0.05
Manganese	-	**27**	10.4	44	16	-	**33**	16.0	60	19	-	**42**	8.9	56	33	-	**41**	15.0	55	24	-	**37**	13.3	56	27	-	**24**	18.7	54	5	-	**21**	4.7	28	16
Mercury	3	**0.05**	0.031	0.09	<0.05	-	**0.08**	0.02	0.09	0.06	1	**0.10**	0.056	0.16	<0.05	1	**0.09**	0.045	0.13	<0.05	4	**0.04**	0.03	0.08	<0.05	1	**0.07**	0.034	0.12	<0.05	5	**0.03**	-	<0.05	<0.05
Molybdenum	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2
Nickel	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Selenium	1	**0.3**	0.24	0.6	<0.1	-	**1.0**	0.35	1.4	0.5	-	**0.4**	0.11	0.5	0.2	-	**0.4**	0.23	0.8	0.2	-	**0.5**	0.21	0.7	0.3	-	**0.2**	0.08	0.3	0.1	-	**0.3**	0.09	0.4	0.2
Silver	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Strontium	-	**424**	139.6	630	290	-	**710**	89	850	600	-	**304**	72.3	360	180	-	**312**	34.2	360	270	-	**302**	61	380	230	-	**308**	160.6	470	98	-	**342**	63.8	420	260
Thallium	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Tin	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	< 0.1	< 0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1	5	**0.05**	-	<0.1	<0.1
Titanium	3	**0.13**	0.115	0.3	<0.1	3	**0.09**	0.07	0.2	< 0.1	4	**0.10**	0.11	0.3	<0.1	4	**0.08**	0.067	0.2	<0.1	3	**0.09**	0.07	0.2	<0.1	5	**0.05**	-	0.1	<0.1	5	**0.05**	-	0.1	<0.1
Uranium	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	< 0.05	< 0.05	4	**0.03**	0.02	0.06	<0.05	4	**0.03**	0.02	0.06	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05	5	**0.03**	-	<0.05	<0.05
Vanadium	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	< 0.2	< 0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2	5	**0.1**	-	<0.2	<0.2
Zinc	-	**77**	10.7	93	68	-	**63**	13	79	50	-	**71**	5.4	75	62	-	**78**	8.6	91	69	-	**64**	10	76	54	-	**58**	22.3	78	24	-	**69**	17.9	97	49
Physical Properties																																		
Moisture (%)	-	**56.09**	5.264	63.37	48.97	-	**57.53**	1.563	59.15	55.48	-	**59.23**	7.796	69.28	50.09	-	**56.60**	4.807	64.64	52.76	-	**51.63**	3.147	54.79	47.90	-	**52.89**	8.125	60.65	42.69	-	**52.03**	4.122	55.50	45.12
Radionuclides																																		
Lead-210 (Bq/g)	5	**0.002**	0.0003	<0.005	<0.004	4	**0.004**	0.004	0.01	< 0.004	5	**0.003**	0.0005	<0.006	<0.004	4	**0.003**	0.0012	0.006	<0.004	4	**0.003**	0.002	0.006	<0.004	5	**0.002**	0.0004	<0.005	<0.003	4	**0.003**	0.0013	0.005	<0.004
Polonium-210 (Bq/g)	2	**0.003**	0.00314	0.008	<0.001	-	**0.007**	0.0020	0.009	0.003	-	**0.004**	0.0013	0.005	0.002	-	**0.004**	0.0020	0.006	0.002	-	**0.008**	0.0037	0.014	0.005	1	**0.001**	0.0007	0.002	<0.001	-	**0.005**	0.0006	0.005	0.004
Radium-226 (Bq/g)	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	< 0.002	< 0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.002	<0.002	5	**0.001**	-	<0.003	<0.002	5	**0.001**	-	<0.002	<0.002
Thorium-230 (Bq/g)	5	**0.003**	-	<0.006	<0.004	5	**0.002**	-	< 0.005	< 0.003	5	**0.002**	-	<0.006	<0.004	5	**0.002**	-	<0.006	<0.004	5	**0.002**	-	<0.005	<0.004	5	**0.002**	-	<0.005	<0.003	5	**0.002**	-	<0.005	<0.004

Note: All values are in µg/g on a dry weight basis, unless specified otherwise.

Note: SD = standard deviation; Min = Minimum; Max = Maximum; N<RDL = number of samples below the reportable detection limit (RDL).

Note: Values less than the RDL were set equal to half the RDL for computations of means and SDs.

Means are **bolded** for ease of data comparison.

a) RDLs vary per sample depending on the amount of material available for analyses.

Appendix C, Table 53

Detailed Northern Pike Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Broach Lake					Patterson Lake					Forrest Lake					Beet Lake				
	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP1	NP 01	NP 02	NP 01	NP 02	NP 03
	11-Oct-2018					10-Oct-2018	12-Oct-2018	11-Oct-2018	10-Oct-2018		10-Oct-2018		11-Oct-2018	12-Oct-2018	20-Jul-2019	09-Oct-2018		30-Jul-2019		
Metals																				
Aluminum	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	<2	<2	< 2	< 2	3
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.01	<0.1	<0.1	< 0.01	< 0.01	< 0.01
Arsenic	0.1	0.08	0.08	0.06	0.1	0.05	0.14	0.07	0.07	0.08	0.08	0.08	0.11	0.12	0.11	0.05	0.08	0.1	0.09	0.08
Barium	0.1	0.12	<0.05	<0.05	0.18	0.15	<0.05	0.06	0.07	0.05	0.07	0.24	0.23	0.15	0.07	0.26	0.07	0.07	0.05	0.07
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Boron	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	< 1	<1	<1	< 1	< 1	< 1
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.05	<0.5	<0.5	< 0.05	< 0.05	0.18
Cobalt	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Copper	1	0.7	0.87	0.83	1	1.3	0.75	1.1	1.3	0.88	1.6	1.4	1.1	1.2	0.92	0.92	1.9	0.61	0.89	1.2
Iron	8	12	7	5	6	11	7	8	9	6	16	18	9	11	8	5	8	6	8	10
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Manganese	0.4	0.8	0.3	0.3	0.7	0.8	0.3	0.5	0.5	0.6	0.6	0.8	1	0.8	0.4	0.7	0.3	0.4	0.4	0.3
Mercury	0.17	0.2	0.48	0.13	0.16	0.19	0.65	0.65	0.17	0.38	0.38	0.19	0.26	0.3	0.85	0.17	0.19	1.2	0.59	0.49
Molybdenum	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.02	<0.1	<0.1	< 0.02	< 0.02	< 0.02
Nickel	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Selenium	0.74	0.58	0.63	0.5	0.72	0.85	0.77	0.87	0.88	0.82	0.7	0.68	0.71	0.75	0.79	0.81	0.66	0.5	0.44	0.5
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01
Strontium	1.2	1.6	0.5	1.2	2.5	2.1	0.6	1	1.3	1	0.9	2.4	2.4	1.6	0.86	3.2	1.2	0.93	0.86	0.96
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.005	<0.05	<0.05	< 0.005	< 0.005	< 0.005
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Titanium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.2	<0.05	<0.05	< 0.2	< 0.2	< 0.2
Uranium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Zinc	28	26	21	20	21	46	29	37	45	28	49	82	38	82	47	22	29	61	29	42
Physical Properties																				
Moisture (%)	77.2	77.69	75.94	78.09	77.3	76.57	75.72	77.68	76.5	76.97	79	79.23	77.18	76.54	79.68	78.13	78.6	78.24	78.92	77.41
Radionuclides																				
Lead-210 (Bq/g)	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.005	<0.004	<0.004	< 0.005	<0.004	<0.005	< 0.004	< 0.005	< 0.004
Polonium-210 (Bq/g)	0.011	0.002	0.004	0.005	0.013	0.01	0.002	0.008	0.018	0.009	0.012	0.014	0.012	0.015	0.011	0.018	0.013	0.004	0.005	0.016
Radium-226 (Bq/g)	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0002	<0.0003	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	< 0.0003	<0.0003	<0.0003	< 0.0003	< 0.0003	< 0.0003
Thorium-230 (Bq/g)	<0.0005	<0.0005	<0.0004	<0.0005	<0.0005	<0.0006	<0.0005	<0.0006	<0.0005	<0.0005	<0.0006	<0.0006	<0.0006	<0.0006	< 0.0006	<0.0005	<0.0005	< 0.0005	< 0.0006	< 0.0006

Appendix C, Table 53

Detailed Northern Pike Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Naomi Lake					Clearwater River Nearfield					Lloyd Lake Inlet					Hodge Lake				
	NP 01	NP 02	NP 03	NP 04	NP 01	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05
	06-Oct-2018		08-Oct-2018	06-Oct-2018	25-Jul-2019	04-Aug-2018					12-Aug-2018					20-Jul-2019				
Metals																				
Aluminum	<2	<2	<2	<2	< 2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	< 2	< 2	< 2	< 2
Antimony	<0.1	<0.1	<0.1	<0.1	< 0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Arsenic	0.12	0.09	0.16	0.14	0.11	0.17	0.1	0.13	0.09	0.06	0.06	<0.05	0.07	0.05	0.06	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Barium	0.08	0.11	0.12	0.05	0.06	0.1	0.07	0.06	0.06	0.22	0.05	0.12	0.15	0.21	<0.05	6	10	9.5	15	7.5
Beryllium	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	<1	<1	<1	<1	< 1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	< 2	< 2	< 2	< 2	< 2
Cadmium	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chromium	<0.5	<0.5	<0.5	<0.5	< 0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 1	< 1	< 1	< 1	< 1
Cobalt	0.01	<0.01	0.02	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	0.12	0.19	0.21	0.22	0.15
Copper	2.1	1.2	1.9	1.4	0.76	0.65	0.93	0.76	1.1	0.79	0.68	1.2	0.86	0.66	0.82	1.3	0.3	0.4	0.7	0.6
Iron	24	9	29	12	9	10	6	7	13	12	16	6	6	9	7	10	5	4	8	9
Lead	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	0.4	0.9	0.6	0.4	0.4	0.6	0.5	0.5	0.5	1.1	0.5	0.8	0.7	1.4	0.4	18	28	34	39	22
Mercury	0.57	0.25	0.89	1.2	0.73	1.1	0.26	0.48	0.66	1.6	1.6	0.32	1.1	1.6	2.3	0.31	0.07	0.06	0.27	0.96
Molybdenum	<0.1	<0.1	<0.1	<0.1	< 0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nickel	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Selenium	0.57	0.5	0.55	0.44	0.49	0.48	0.46	0.44	0.48	0.64	0.74	0.65	0.61	0.63	0.64	0.8	0.3	0.4	0.4	0.8
Silver	<0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Strontium	1	1.6	1.5	0.8	1	1	1.4	0.7	0.9	2.6	0.5	2.1	2.6	3.3	0.7	260	490	480	530	370
Thallium	<0.05	<0.05	<0.05	<0.05	0.008	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tin	<0.05	0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Titanium	<0.05	<0.05	<0.05	0.06	< 0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	< 0.1	0.2	0.1	< 0.1	0.1
Uranium	<0.005	<0.005	<0.005	<0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Vanadium	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Zinc	45	47	32	31	30	23	30	36	70	31	24	34	34	47	21	72	86	110	150	100
Physical Properties																				
Moisture (%)	80.35	77.47	78.37	79.55	80.27	78.68	75.65	79.33	78.38	80.14	78.51	77.66	76.62	78.71	78.45	53.55	47.26	56.41	57.09	58.35
Radionuclides																				
Lead-210 (Bq/g)	<0.005	<0.004	<0.005	<0.005	< 0.005	<0.005	<0.004	<0.005	<0.005	<0.005	<0.005	<0.004	<0.004	<0.005	<0.005	< 0.004	< 0.004	< 0.004	< 0.005	< 0.005
Polonium-210 (Bq/g)	0.006	0.027	0.021	0.008	0.02	0.005	0.01	0.008	0.004	0.004	0.007	0.009	0.005	0.025	0.002	0.001	0.001	0.003	0.005	0.004
Radium-226 (Bq/g)	<0.0003	<0.0003	<0.0003	<0.0003	< 0.0003	<0.0003	<0.0003	<0.0004	<0.0003	<0.0003	<0.0003	<0.0003	<0.0004	<0.0004	<0.0002	< 0.002	< 0.003	< 0.002	< 0.002	< 0.002
Thorium-230 (Bq/g)	<0.0007	<0.0006	<0.0006	<0.0006	< 0.0006	<0.0006	<0.0006	<0.0007	<0.0006	<0.0006	<0.0005	<0.0006	<0.0008	<0.0007	<0.0005	< 0.005	< 0.006	< 0.005	< 0.005	< 0.004

Note: Results are presented on a dry weight basis.

Note: All values are in µg/g unless specified otherwise.

Note: NP = nothern pike.

Appendix C, Table 54

Detailed Northern Pike Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Broach Lake					Patterson Lake					Forrest Lake					Beet Lake				
	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP1	NP 01	NP 02	NP 01	NP 02	NP 03
	11-Oct-2018					10-Oct-2018	12-Oct-2018	11-Oct-2018	10-Oct-2018		10-Oct-2018		11-Oct-2018	12-Oct-2018	20-Jul-2019	09-Oct-2018		30-Jul-2019		
Metals																				
Aluminum	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	<2	<2	< 2	< 2	< 2
Antimony	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2
Arsenic	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	0.1	0.2	0.2	< 0.1
Barium	17	10	25	13	11	11	9.4	13	7.8	12	14	14	10	13	15	12	4.9	16	8	12
Beryllium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Boron	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	<2	<2	< 2	< 2	< 2
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Chromium	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	< 1	<1	<1	< 1	< 1	< 1
Cobalt	0.25	0.17	0.24	0.22	0.18	0.34	0.28	0.31	0.24	0.39	0.21	0.2	0.3	0.29	0.25	0.17	0.1	0.18	0.1	0.15
Copper	0.5	0.6	1.1	0.5	1.1	0.6	0.6	0.5	0.9	0.4	1.5	0.8	0.6	0.3	0.6	1	1.2	0.4	0.7	0.5
Iron	6	7	18	15	8	4	10	8	12	5	7	6	10	2	10	10	9	4	5	6
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	0.14	0.14	0.13	0.13	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Manganese	44	44	93	62	52	49	36	52	56	55	37	31	34	51	42	25	20	47	28	45
Mercury	<0.05	<0.05	0.07	<0.05	0.06	<0.05	0.14	0.07	0.06	<0.05	0.06	0.07	<0.05	<0.05	0.17	0.06	0.08	0.12	0.22	0.14
Molybdenum	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2
Nickel	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Selenium	0.2	0.2	0.3	0.2	0.4	0.3	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.4	0.2	0.3	0.2
Silver	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Strontium	230	130	200	220	160	210	170	180	120	200	170	170	180	220	240	180	84	190	98	170
Thallium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1
Titanium	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	< 0.1	0.2	< 0.1
Uranium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05
Vanadium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2
Zinc	140	96	78	130	140	130	120	140	110	130	200	100	140	88	140	100	120	100	130	96
Physical Properties																				
Moisture (%)	53.89	57.96	50.21	59.28	61.5	57.57	53.37	54.64	63.44	47.7	58.3	57.64	64.21	44.33	61.13	59.72	62.85	55.86	66.01	60.99
Radionuclides																				
Lead-210 (Bq/g)	<0.004	<0.005	<0.004	<0.005	<0.005	<0.005	<0.004	<0.004	<0.005	<0.004	<0.005	<0.005	<0.006	<0.004	< 0.005	<0.005	<0.005	< 0.004	< 0.006	< 0.005
Polonium-210 (Bq/g)	0.001	<0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.004	0.001	0.002	0.003	0.005	0.003	0.007	0.015	0.006	0.001	0.002	0.007
Radium-226 (Bq/g)	<0.002	<0.003	<0.003	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.002	<0.003	<0.002	<0.003	<0.002	< 0.003	<0.002	<0.003	< 0.003	< 0.003	< 0.002
Thorium-230 (Bq/g)	<0.005	<0.006	<0.005	<0.004	<0.004	<0.005	0.006	<0.005	<0.006	<0.004	<0.005	<0.005	<0.006	<0.004	< 0.006	<0.005	<0.006	< 0.006	< 0.006	< 0.004

Appendix C, Table 54

Detailed Northern Pike Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Naomi Lake					Clearwater River Nearfield					Lloyd Lake					Hodge Lake				
	NP 01	NP 02	NP 03	NP 04	NP 01	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05	NP 01	NP 02	NP 03	NP 04	NP 05
	06-Oct-2018		08-Oct-2018	06-Oct-2018	25-Jul-2019	04-Aug-2018					12-Aug-2018					20-Jul-2019				
Metals																				
Aluminum	<2	<2	<2	<2	< 2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	< 2	< 2	< 2	< 2
Antimony	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Arsenic	0.3	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.08	0.09	0.14	0.1	0.14
Barium	20	13	21	17	9.3	18	18	20	18	14	11	9.1	9.7	12	9.6	0.06	0.09	0.1	0.22	0.06
Beryllium	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Boron	<2	<2	<2	<2	< 2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 1	< 1	< 1	< 1	< 1
Cadmium	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chromium	<1	<1	<1	<1	< 1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	< 0.05	0.24	0.14	0.08	< 0.05
Cobalt	0.31	0.25	0.32	0.28	0.12	0.24	0.26	0.27	0.28	0.2	0.29	0.24	0.26	0.32	0.27	< 0.01	0.01	< 0.01	0.02	< 0.01
Copper	0.8	1.3	1	0.8	0.6	0.6	0.7	1	1	1.1	0.5	0.6	0.5	0.5	0.5	0.88	0.84	1	2.2	0.97
Iron	15	8	14	8	11	9	12	12	7	17	12	4	5	6	6	8	13	8	27	8
Lead	0.15	0.14	0.13	0.14	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Manganese	41	52	96	47	34	74	83	63	65	43	48	49	28	74	29	0.4	0.5	0.6	0.6	0.3
Mercury	0.14	0.07	0.26	0.28	0.36	0.28	<0.05	0.09	0.14	0.62	0.48	0.07	0.27	0.29	0.46	0.91	1.2	0.43	1.6	4.4
Molybdenum	<0.2	<0.2	<0.2	<0.2	< 0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	1.8	1.6	1.3	1.1	1.7
Silver	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Strontium	190	200	270	210	140	250	280	260	250	170	180	210	190	220	200	3.3	2.7	3.3	5.8	2.6
Thallium	<0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.012	0.012	0.012	0.009	0.012
Tin	<0.1	0.3	<0.1	<0.1	< 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Uranium	<0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.005	< 0.005	< 0.005	0.007	< 0.005
Vanadium	<0.2	<0.2	0.2	<0.2	< 0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Zinc	130	180	100	220	69	130	130	170	140	120	110	110	99	130	72	27	20	35	36	34
Physical Properties																				
Moisture (%)	55.64	60.1	63.36	60.06	64.16	62.9	60.52	58.28	61.31	68.57	64.27	54.35	59.25	59.45	57.48	77.56	77.01	76.05	79.79	78.06
Radionuclides																				
Lead-210 (Bq/g)	<0.004	<0.005	<0.005	<0.005	< 0.006	<0.005	<0.005	<0.005	<0.005	<0.006	<0.006	<0.004	<0.005	<0.005	<0.005	< 0.004	< 0.004	< 0.004	< 0.005	< 0.004
Polonium-210 (Bq/g)	0.002	0.009	0.006	0.003	0.009	<0.001	0.004	0.003	0.003	0.002	0.003	0.003	0.002	0.007	<0.001	0.007	0.005	0.007	0.009	0.002
Radium-226 (Bq/g)	<0.002	<0.003	<0.003	<0.003	< 0.002	<0.002	<0.002	<0.002	<0.003	<0.003	<0.004	<0.002	<0.004	<0.003	<0.003	< 0.0003	< 0.0002	< 0.0002	< 0.0003	< 0.0004
Thorium-230 (Bq/g)	<0.005	<0.005	<0.005	<0.006	< 0.004	<0.004	<0.005	<0.005	<0.006	<0.005	<0.008	<0.004	<0.005	<0.005	<0.006	< 0.0007	< 0.0005	< 0.0005	< 0.0007	< 0.0007

Note: Results are presented on a dry weight basis.

Note: All values are in µg/g unless specified otherwise.

Note: NP = nothern pike.

Appendix C, Table 55

Detailed Lake Whitefish Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Broach Lake					Patterson Lake					Forrest Lake					Beet Lake				
	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05
	11-Oct-2018					12-Oct-2018		11-Oct-2018	12-Oct-2018		10-Oct-2018					08-Oct-2018				
Metals																				
Aluminum	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.06	0.46	0.47	0.11	0.2	0.13	0.19	0.49	0.08	0.17	0.09	0.24	0.08	<0.05	0.1	0.18	0.09	0.13	<0.05	0.16
Barium	0.19	0.07	0.05	0.15	0.15	0.2	0.08	<0.05	0.1	0.07	<0.05	0.08	<0.05	0.04	<0.05	0.12	0.09	0.06	<0.05	<0.05
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	0.02	0.01	0.02	0.03	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Copper	0.84	1	1.2	1.9	0.84	0.94	1	1.5	1.3	0.86	1.8	1.1	0.79	0.85	1.2	1	0.8	0.85	0.88	1.4
Iron	24	11	26	72	11	11	16	27	15	15	13	11	12	22	11	18	25	22	10	14
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Manganese	0.5	0.4	0.5	0.7	0.3	0.4	0.5	0.4	0.6	0.4	0.3	0.3	0.3	0.7	0.5	0.4	0.4	0.4	0.2	0.4
Mercury	0.23	0.081	0.26	0.35	0.092	0.49	0.19	0.58	0.24	0.14	0.43	0.29	0.34	0.21	0.21	0.13	0.087	0.13	0.078	0.18
Molybdenum	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	2	0.48	0.9	1.7	0.46	0.92	0.83	0.73	2	1.1	1.8	0.58	0.81	1.2	1.2	0.86	1.5	0.84	1.2	0.75
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Strontium	5.1	2.4	2.3	4.6	6.4	2.6	1.8	1.3	2.1	1.8	0.9	1	0.9	1.2	1.1	1.1	1.7	1	0.7	1
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Uranium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	23	20	39	37	25	24	30	90	22	38	21	19	18	37	21	18	17	14	14	16
Physical Properties																				
Moisture (%)	78.89	76.36	77.86	83.89	77.29	78.37	76.15	77.66	78.99	74.23	76.24	74.18	74.77	78.57	79.72	75.4	76.35	71.38	71.67	76.41
Radionuclides																				
Lead-210 (Bq/g)	<0.005	<0.004	<0.004	<0.006	0.006	<0.005	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.005	<0.005	<0.004	<0.004	<0.003	<0.004	<0.004
Polonium-210 (Bq/g)	0.003	0.002	0.001	0.006	0.002	0.002	0.004	0.002	0.008	0.002	<0.0008	0.002	0.006	0.002	0.003	0.004	0.024	0.003	0.004	0.002
Radium-226 (Bq/g)	<0.0003	<0.0003	<0.0003	<0.0004	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002
Thorium-230 (Bq/g)	<0.0006	<0.0006	<0.0006	<0.0009	<0.0006	<0.0005	<0.0006	<0.0006	<0.0007	<0.0005	<0.0005	<0.0005	<0.0006	<0.0006	<0.0006	<0.0005	<0.0006	<0.0004	<0.0004	<0.0005

Appendix C, Table 55

Detailed Lake Whitefish Flesh Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Naomi Lake					Lloyd Lake Inlet					Hodge Lake				
	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05
	06-Oct-2018					10-Aug-2018			11-Aug-2018		21-Jul-2019				
Metals															
Aluminum	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	< 2	< 2	< 2	< 2
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Arsenic	0.14	0.17	0.1	0.14	0.16	0.06	0.1	0.06	0.08	0.19	0.11	0.07	0.1	0.06	0.1
Barium	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.03	0.11	0.05	0.03	0.04
Beryllium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Boron	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	< 1	< 1	< 1	< 1	< 1
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	0.01	0.03	< 0.01	0.05
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cobalt	<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.01	0.03	0.04	0.03	0.03
Copper	0.99	0.76	2	0.81	0.86	0.67	0.89	0.88	0.71	1.3	0.91	1	0.97	0.89	1.7
Iron	18	15	28	14	12	6	10	10	11	33	9	23	28	19	24
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Manganese	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.3	0.3	1	0.7	0.6	0.7
Mercury	0.13	0.24	0.12	0.18	0.25	0.54	0.12	0.23	0.44	0.44	0.39	0.23	0.2	0.51	0.28
Molybdenum	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium	0.54	0.82	0.83	0.64	0.58	0.51	0.45	0.68	0.52	0.6	1.2	3	3.4	2.8	1.8
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Strontium	1.4	1.1	0.8	1.6	1.6	1	1.5	1.6	1.5	0.9	3.4	6.8	3.4	3.9	2.6
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.011	0.008	0.01	0.009	0.012
Tin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.07	<0.05	<0.05	<0.05	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Uranium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Zinc	16	18	18	23	20	17	17	22	24	20	34	31	19	22	21
Physical Properties															
Moisture (%)	74.71	76.82	72.51	77.04	77.36	73.85	75.68	74.31	78.02	73.54	76.38	78.51	78.41	78.42	79.3
Radionuclides															
Lead-210 (Bq/g)	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	< 0.004	< 0.005	< 0.005	< 0.005	< 0.005
Polonium-210 (Bq/g)	0.002	0.001	0.005	0.003	0.006	<0.0008	0.002	<0.0008	<0.0009	0.0008	0.001	0.021	0.018	0.003	0.004
Radium-226 (Bq/g)	<0.0002	<0.0003	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0002	<0.0003	<0.0002	< 0.0003	< 0.0003	< 0.0002	< 0.0002	< 0.0002
Thorium-230 (Bq/g)	<0.0004	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	<0.0005	< 0.0005	< 0.0006	< 0.0005	< 0.0005	< 0.0005

Note: Results are presented on a dry weight basis.

Note: All values are in µg/g unless specified otherwise.

Note: LW = lake whitefish.

Appendix C, Table 56

Detailed Lake Whitefish Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Broach Lake					Patterson Lake					Forrest Lake					Beet Lake				
	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05
	11-Oct-2018					12-Oct-2018		11-Oct-2018	12-Oct-2018		10-Oct-2018					08-Oct-2018				
Metals																				
Aluminum	3	<2	<2	3	<2	<2	<2	<2	<2	<2	5	<2	<2	2	<2	2	4	2	3	<2
Antimony	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	<0.1	0.3	0.1	<0.1	0.3	0.1	<0.1	0.2	0.2	0.1	<0.1	0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1
Barium	13	7.8	8.5	13	6.8	14	14	9.5	16	16	14	13	7.5	16	13	12	14	12	11	8.7
Beryllium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	0.27	0.19	0.24	0.32	0.17	0.29	0.28	0.36	0.17	0.33	0.25	0.24	0.28	0.3	0.24	0.2	0.24	0.22	0.16	0.19
Copper	0.2	0.4	0.4	0.4	0.3	0.5	0.6	0.3	0.6	0.3	0.7	0.8	0.3	0.3	0.5	0.6	0.4	0.4	0.4	0.6
Iron	11	7	14	16	6	12	12	10	13	8	10	6	10	14	9	19	20	13	16	16
Lead	<0.05	<0.05	<0.05	0.08	<0.05	0.15	0.13	0.14	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
Manganese	25	25	23	44	16	36	44	33	56	43	24	55	26	53	48	27	30	27	47	56
Mercury	<0.05	<0.05	0.09	0.07	<0.05	0.16	0.06	0.14	0.11	<0.05	0.11	0.13	0.12	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
Molybdenum	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	0.6	0.1	0.3	0.5	<0.1	0.5	0.4	0.2	0.4	0.3	0.8	0.2	0.4	0.5	0.3	0.3	0.7	0.3	0.7	0.4
Silver	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Strontium	500	330	370	630	290	310	320	360	180	350	330	270	300	360	300	330	380	320	250	230
Thallium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	0.2	<0.1	<0.1	0.3	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2
Uranium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc	72	68	69	93	83	75	75	73	62	70	91	69	78	79	71	62	76	72	55	54
Physical Properties																				
Moisture (%)	56.38	48.97	57.74	63.37	54.01	69.28	58.01	54.04	64.72	50.09	57.37	64.64	53.94	52.76	54.28	47.9	53.9	48.64	52.9	54.79
Radionuclides																				
Lead-210 (Bq/g)	<0.004	<0.004	<0.005	<0.005	<0.004	<0.006	<0.005	<0.004	<0.006	<0.004	<0.005	<0.006	0.005	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.006
Polonium-210 (Bq/g)	0.004	<0.001	0.002	0.008	<0.001	0.005	0.005	0.002	0.004	0.005	0.002	0.004	0.002	0.006	0.006	0.008	0.014	0.005	0.008	0.005
Radium-226 (Bq/g)	<0.003	<0.002	<0.002	<0.003	<0.002	<0.003	<0.003	<0.002	<0.002	<0.002	<0.002	<0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Thorium-230 (Bq/g)	<0.006	<0.004	<0.005	<0.006	<0.004	<0.006	<0.005	<0.005	<0.004	<0.004	<0.005	<0.006	<0.005	<0.004	<0.004	<0.005	<0.005	<0.004	<0.004	<0.004

Appendix C, Table 56

Detailed Lake Whitefish Bone Chemistry Results from the Aquatic Study Area, 2018 and 2019

Parameter	Naomi Lake					Lloyd Lake					Hodge Lake				
	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05	LW 01	LW 02	LW 03	LW 04	LW 05
	06-Oct-2018					10-Aug-2018			11-Aug-2018		21-Jul-2019				
Metals															
Aluminum	<2	<2	2	2	<2	<2	<2	<2	<2	<2	< 2	5	3	3	6
Antimony	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Arsenic	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1
Barium	9.3	7	9.1	12	6.9	4.3	2	8.6	6.6	9.9	6.9	11	7.9	9.1	7.7
Beryllium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	< 2	< 2	< 2	< 2	< 2
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chromium	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	< 1	< 1	< 1	< 1	< 1
Cobalt	0.21	0.25	0.28	0.38	0.33	0.13	0.07	0.3	0.33	0.27	0.16	0.2	0.14	0.14	0.15
Copper	0.4	0.5	0.2	0.4	0.5	0.3	0.2	0.5	0.4	0.4	0.4	0.6	0.7	0.4	0.5
Iron	9	14	12	12	9	4	4	10	7	5	17	34	15	25	13
Lead	<0.05	0.13	<0.05	<0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	16	20	19	24	28	13	5.2	21	27	54	19	60	30	35	23
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.07	0.12	0.08	0.09	0.06	0.06	0.09	0.08
Molybdenum	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nickel	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Selenium	0.2	0.4	0.3	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.5	1.2	1.4	1.1	0.8
Silver	<0.05	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Strontium	310	260	390	420	330	180	98	470	420	370	700	850	700	600	710
Thallium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Titanium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	0.2	0.1	< 0.1
Uranium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Vanadium	<0.2	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	0.2	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Zinc	49	61	97	74	66	48	24	76	62	78	79	73	50	52	62
Physical Properties															
Moisture (%)	53.7	55.5	45.12	51.54	54.3	42.69	54.64	60.65	60.19	46.3	56.29	58.43	55.48	58.3	59.15
Radionuclides															
Lead-210 (Bq/g)	<0.004	<0.004	0.005	<0.004	<0.004	<0.003	<0.004	<0.005	<0.005	<0.004	< 0.004	< 0.005	< 0.004	< 0.005	0.01
Polonium-210 (Bq/g)	0.004	0.005	0.005	0.005	0.004	0.001	<0.001	0.002	0.002	0.001	0.003	0.008	0.007	0.006	0.009
Radium-226 (Bq/g)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Thorium-230 (Bq/g)	<0.004	<0.005	<0.004	<0.004	<0.005	<0.003	<0.004	<0.005	<0.005	<0.004	< 0.004	< 0.005	< 0.003	< 0.003	< 0.005

Note: Results are presented on a dry weight basis.

Note: All values are in µg/g unless specified otherwise.

Note: LW = lake whitefish.

Appendix C, Table 57

Habitat Legend for Lakes and Rivers in the Aquatic Study Area

Zone	Category	Descriptor	Symbol/Unit	Explanation
Upland Zone	Land Use	Forest	FOR	
		Wetland	WL	
		Industrial	IND	
		None	N	
	Forest Condition	Mature	M	
		Burnt	B	
		Regenerating	R	
		None	N	
	Canopy	Coniferous Trees	C	
		Deciduous Trees	D	
		Mixed	M	
		None	N	
	Slope	Steep	S	Slope is greater than 45^{o}
		Moderate	M	Slope is between 15^{o} and 45^{o}
		Gentle	G	Slope is less than 15^{o}
Riparian Zone	Vegetation Category	Forest to Bank	FB	
		Grass to Bank	GB	
		Transition	T	Distinct change from upland
		Wetland	W	
	Vegetation Type	Tree	T	
		Shrub	S	
		Grass/Sedge	G	
	Bank Slope	Steep	S	Slope is greater than 45^{o}
		Moderate	M	Slope is between 15^{o} and 45^{o}
		Gentle	G	Slope is less than 15^{o}
	Bank Stability	Stable	S	
		Slightly Unstable	SU	>50% of banks in unit are stable
		Moderately Unstable	MU	<50% of banks in unit are stable
		Highly Unstable	HU	Massive bank slumping

Appendix C, Table 57

Habitat Legend for Lakes and Rivers in the Aquatic Study Area

Zone	Category	Descriptor	Symbol/Unit	Explanation
Littoral Zone (Lakes)	Substrate	Silt/Clay Sand Gravel Cobble Boulder Bedrock Organic	%	Relative abundance of each substrate category
	Cover	Large Woody Debris Aquatic Vegetation Rock Overhanging Vegetation Undercut Banks Surface Turbulence	A, S, M, D	Relative abundance of each cover type A = Absent S = Sparse distribution <30% M = Moderate distribution 30% to 70% D = Dense distribution >70%
	Aquatic/Wetland Vegetation	Emergent Submergent Floating Moss/Algae	A, S, M, D	Relative abundance of each aquatic vegetation type A = Absent S = Sparse distribution <30% M = Moderate distribution 30% to 70% D = Dense distribution >70%
	Bottom Slope	Steep Moderate Gentle	S M G	Slope is greater than 45° Slope is between 15° and 45° Slope is less than 15°
	Water Depth	5 m from Shore	m	Depth in metres
Riparian Zone (Creeks and Streams)	Crown Closure	Crown closure (%)	%	
Channel Habitat Feature (Creeks and Streams)	Substrate	Silt/clay Sand Gravel Cobble Boulder Bedrock Organic	%	Relative abundance of each substrate category

Appendix C, Table 57

Habitat Legend for Lakes and Rivers in the Aquatic Study Area

Zone	Category	Descriptor	Symbol/Unit	Explanation
Channel Habitat Feature (Creeks and Streams)	Cover	Large Woody Debris Aquatic Vegetation Rock Overhanging Vegetation Undercut Banks Surface Turbulence	A, S, M, D	Relative abundance of each cover type A = Absent S = Sparse distribution <30% M = Moderate distribution 30% to 70% D = Dense distribution >70%
Channel Habitat Feature (Creeks and Streams)	Aquatic/Wetland Vegetation	Emergent Submergent Floating Moss/Algae	A, S, M, D	Relative abundance of each aquatic vegetation type A = Absent S = Sparse Distribution <30% M = Moderate Distribution 30% to 70% D = Dense Distribution >70%
	Channel Characteristics	Riffles	%	Fast water, turbulent surface
		Runs	%	Fast water, non-turbulent surface
		Pools	%	Slow water, concave stream bottom
		Glides	%	Slow water, flat stream bottom
		Mean Bankful Width	m	Mean bankful width in metres
		Mean Wetted Width	m	Mean wetted width in metres
		Maximum Depth	m	Maximum depth in metres
		Mean Centre Depth	m	Mean center depth in metres
		Left Bank Mean Depth	m	Mean left bank depth in metres
		Right Bank Mean Depth	m	Mean right bank depth in metres
		Braided Channel	#	Number of braided channels present
		Obstructions	BD	Beaver dam
			WF	Waterfall
			CUL	Culvert
			LJ	Logjam
			SF	Subsurface Flow
			OT	Other

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Broach Lake (July 2019)																																			
1	FOR	M	M	M	FB	G,S,T	M	S	5	15	15	55	10	0	0	C	S	A	D	S	A	A	A	A	A	S	G	0.8	0	2	2	2	1	0	2	2
2	FOR	M	M	M	FB	G,S,T	M	S	5	5	0	45	45	0	0	C	S	A	D	A	A	A	A	A	A	S	M	2.1	0	2	2	2	0	0	2	2
3	FOR	M	M	M	FB	G,S,T	M	S	5	90	5	0	0	0	0	-	M	A	A	D	S	A	A	A	A	A	G	0.33	0	1	1	1	3	0	1	1
4	FOR	B	M	G	FB	G,S,T	G	HU	5	95	0	0	0	0	0	-	S	A	A	A	A	A	A	A	S	A	G	0.22	0	1	1	1	0	0	0	0
5	FOR	R	M	G	FB	G,S,T	S	SU	30	50	10	10	0	0	0	C	M	S	A	M	S	A	A	S	S	A	G	0.36	0	1	1	1	3	0	0	0
6	FOR	R	M	M	FB	G,S,T	S	SU	30	45	5	15	5	0	0	M	D	S	M	D	M	A	A	A	S	A	G	0.75	0	1	1	1	3	0	0	0
7	FOR	R	M	M	FB	G,S,T	M	S	20	20	0	25	35	0	0	M	S	S	M	M	S	A	A	A	S	S	M	1.12	0	1	1	2	1	0	1	1
8	FOR	R	M	M	FB	G,S,T	M	S	20	5	0	35	40	0	0	S	S	A	D	S	A	A	A	A	A	M	S	2.6	0	2	2	2	0	0	1	1
9	FOR	M	M	M	FB	G,S,T	M	S	10	5	0	25	60	0	0	S	A	A	D	S	A	A	A	A	A	S	S	2.9	0	2	2	2	0	0	2	2
10	FOR	M	M	S	FB	G,S,T	M	S	5	0	0	20	75	0	0	S	S	A	D	S	A	A	A	A	A	M	S	2.4	0	2	2	2	0	0	2	2
11	FOR	M	M	S	FB	S,T	M	S	5	5	5	25	60	0	0	S	M	S	M	D	D	A	S	A	A	A	M	1.9	0	2	2	2	3	0	0	0
12	FOR	M	M	M	FB	G,S,T	M	S	25	60	10	5	0	0	0	M	S	S	A	D	M	A	A	A	S	A	G	0.42	0	1	1	1	3	0	0	0
13	FOR	M	M	M	FB	G,S,T	G	S	10	75	5	0	0	0	10	-	S	M	A	D	A	A	M	S	S	A	G	0.18	3	0	0	0	3	0	0	0
14	FOR	M	M	M	FB	G,S,T	M	S	5	20	5	55	15	0	0	S	S	A	D	M	M	A	A	A	A	S	G	0.82	0	3	3	2	1	0	2	2
15	FOR	M	M	G	FB	S,T	M	S	5	5	0	25	65	0	0	C	S	A	D	S	S	A	A	A	A	S	S	1.82	0	2	2	2	1	0	2	2
16	FOR	M	M	M	FB	S,T	M	S	5	70	10	10	5	0	0	S	S	S	S	M	A	A	A	A	S	A	G	0.7	0	1	1	1	1	0	0	0
17	FOR	M	M	G	FB	S,T	S	S	5	5	10	75	5	0	0	M	M	S	D	D	S	A	A	A	S	A	G	0.8	0	2	2	2	3	0	3	3
18	FOR	M	M	M	FB	S,T	M	S	5	25	15	45	10	0	0	C	M	S	D	D	M	A	A	S	S	S	M	1	0	2	2	2	3	0	0	0
19	FOR	M	M	G	FB	S,T	M	HU	0	80	5	0	0	0	15	-	D	S	A	A	A	A	A	A	S	A	G	0.51	0	1	1	1	1	0	0	0
20	FOR	M	M	G	FB	S,T	S	S	0	60	10	25	5	0	0	C	S	S	S	D	M	A	A	A	A	S	G	0.6	0	1	1	1	3	0	1	1
21	FOR	M	M	G	FB	G,S,T	M	HU	5	85	10	0	0	0	0	-	S	S	A	A	A	A	A	S	S	A	G	0.35	0	1	1	1	0	0	0	0
22	FOR	M	M	M	FB	S,T	S	S	0	85	5	5	5	0	0	C	M	A	S	M	A	A	A	S	S	A	G	0.3	0	1	1	1	1	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Broach Lake (July 2019)																																		
23	FOR	M	M	G	FB	G,S,T	S	HU	0	90	10	0	0	0	0	-	S	A	A	A	A	A	A	A	A	A	G	0.2	0	1	1	1	1	0	1	1
24	FOR	M	M	S	FB	S,T	S	S	0	75	10	10	5	0	0	C	M	S	A	D	S	A	A	A	S	A	G	0.4	0	1	1	1	3	0	0	0
25	FOR	M	M	M	FB	S,T	S	S	5	20	10	60	5	0	0	C	S	M	S	M	A	A	A	A	M	M	G	0.55	0	2	2	1	2	0	0	0
26	FOR	M	M	M	FB	S,T	S	S	0	15	10	65	10	0	0	C	S	S	M	D	A	A	A	A	S	S	M	0.94	0	2	2	2	1	0	0	0
27	FOR	M	M	G	FB	S,T	S	S	0	5	10	40	45	0	0	C	S	A	D	D	A	A	A	A	A	S	M	1.6	0	2	2	2	0	0	2	2
28	FOR	M	M	M	FB	S,T	S	S	0	5	10	60	25	0	0	C	S	A	D	D	A	A	A	A	A	S	M	0.8	0	3	3	2	1	0	2	2
29	FOR	M	M	S	FB	S,T	M	S	0	5	10	60	25	0	0	C	S	A	D	D	S	A	A	A	A	S	M	1.6	0	3	3	2	1	0	2	2
30	FOR	M	M	M	FB	S,T	M	S	0	15	15	55	15	0	0	C	S	A	M	D	S	A	A	A	A	S	M	1.8	0	2	2	2	1	0	2	2
31	FOR	M	M	S	FB	S,T	M	S	0	15	10	60	15	0	0	C	S	A	D	M	A	A	A	A	A	M	S	1.9	0	2	2	2	0	0	2	2
Hodge Lake (August 2018)																																		
1	FOR	B	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	M	M	A	A	D	M	A	A	S	A	M	G	0.7	0	1	1	0	2	0	1	1
2	FOR	B	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	D	S	M	A	M	A	A	M	S	A	M	G	0.8	2	0	0	0	1	0	0	0
3	FOR	B	C	G	FB	G,S,T	G	S	0	100	0	0	0	0	0	S	S	A	A	M	A	A	A	S	A	A	G	0.7	0	1	1	0	1	0	1	1
4	FOR	B	C	G	FB	G,S,T	G	S	0	30	20	45	5	0	0	C	S	A	S	M	A	A	A	A	A	A	G	0.8	0	2	2	0	1	0	2	2
5	FOR	B	C	G	FB	S,T	G	S	0	0	20	60	20	0	0	C	S	A	D	S	A	A	A	A	A	A	G	0.8	0	2	2	3	0	0	2	2
6	FOR	B	C	G	FB	S,T	S	S	0	0	0	50	30	20	0	C	S	A	D	A	A	A	A	A	A	A	S	2.0	0	2	2	3	0	0	2	2
7	FOR	B	M	G	FB	S,T	G	S	0	10	15	70	5	0	0	C	S	A	D	S	S	A	A	A	A	A	G	1.0	0	2	2	1	1	0	2	2
8	FOR	B	M	G	FB	S,T	G	S	0	60	20	20	0	0	0	M	S	A	S	M	A	A	A	S	A	A	G	0.8	0	0	0	0	1	0	0	0
9	FOR	B	C	G	FB	G,S,T	G	S	0	95	5	0	0	0	0	C	S	A	A	S	A	A	A	A	A	A	G	0.6	0	1	1	0	0	0	1	1
10	FOR	B	C	G	FB	G,S,T	S	S	0	60	10	30	0	0	0	C	S	A	S	M	A	A	A	A	A	A	G	0.4	0	1	1	0	1	0	1	1
11	FOR	B	C	G	FB	G,S,T	G	S	0	100	0	0	0	0	0	C	A	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	1	1
12	FOR	M	C	G	FB	G,S,T	G	SU	0	70	20	10	0	0	0	C	S	A	S	S	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	1	1
13	FOR	M	C	G	FB	G,S,T	M	SU	0	95	5	0	0	0	0	C	S	A	A	S	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	1	1

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																											
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Hodge Lake (August 2018)																																				
14	FOR	M	C	G	FB	G,S,T	M	S	5	50	20	25	0	0	0	S	S	A	S	S	S	A	A	A	S	A	G	0.9	0	2	2	1	0	0	2	2
15	FOR	M	C	G	FB	G,S,T	M	SU	0	100	0	0	0	0	0	C	S	A	A	S	A	A	A	A	A	A	G	0.5	0	1	1	0	1	0	1	1
16	FOR	M	C	G	FB	G,S,T	M	S	25	25	0	25	0	0	25	D	S	S	S	S	S	A	S	S	S	M	G	0.8	2	0	0	0	0	0	0	0
17	FOR	M	C	G	FB	G,S,T	M	SU	0	80	20	0	0	0	0	S	S	A	A	M	A	A	S	S	A	S	G	0.3	0	1	1	0	1	0	1	1
18	FOR	M	C	G	FB	G,S,T	M	SU	0	40	30	30	0	0	0	C	S	A	S	S	A	A	A	A	A	A	G	0.8	0	2	2	1	0	0	2	2
19	FOR	M	C	G	FB	G,S,T	M	S	0	10	10	60	20	0	0	C	S	A	M	S	A	A	A	A	A	A	G	0.9	0	2	2	2	0	0	2	2
20	FOR	M	C	G	FB	S,T	M	S	10	10	35	35	10	0	0	D	S	A	S	M	S	A	A	A	S	A	G	0.7	0	0	0	0	1	0	0	0
21	FOR	R	C	G	FB	G,S,T	G	S	0	50	40	10	0	0	0	M	M	A	A	S	A	A	A	A	A	S	G	0.7	0	0	0	0	2	0	0	0
22	FOR	B	C	G	FB	G,S,T	G	S	0	100	0	0	0	0	0	C	A	A	A	A	A	A	A	A	A	A	G	0.6	0	1	1	0	0	0	1	1
23	FOR	B	C	G	FB	S,T	G	S	0	20	30	40	10	0	0	C	S	A	M	S	A	A	A	A	A	A	M	1.1	0	2	2	1	0	0	2	2
24	FOR	B	C	G	FB	G,S,T	G	S	0	60	20	15	5	0	0	M	S	A	A	M	S	A	A	A	A	A	G	0.6	0	0	0	0	1	0	0	0
25	FOR	B	M	G	FB	G,S,T	G	S	10	65	10	10	5	0	0	M	S	A	S	M	S	A	A	S	S	S	G	0.8	0	1	1	0	1	0	1	1
Patterson Lake (July 2019)																																				
1	FOR	M	C	G	FB	G,S,T	S	SU	0	100	0	0	0	0	0	-	A	A	A	S	A	A	A	A	A	A	G	0.35	0	1	1	0	0	0	0	0
2	FOR	R	C	G	FB	S,T	S	S	0	80	20	0	0	0	0	S	M	S	S	D	M	A	A	S	S	A	G	0.4	0	1	1	1	1	0	0	0
3	FOR	M	C	S	FB	S,T	S	S	0	0	10	80	10	0	0	S	S	A	D	D	M	A	A	A	A	S	M	0.8	0	2	2	2	0	0	2	2
4	FOR	M	C	M	FB	S,T	S	S	0	0	5	90	5	0	0	C	S	S	D	D	S	A	A	S	S	A	G	0.6	0	2	2	2	0	0	2	2
5	FOR	M	M	G	FB	S,T	S	S	0	94	0	0	1	0	5	C	D	S	S	D	M	A	A	A	S	A	G	0.3	0	1	1	0	2	0	0	0
6	FOR	M	M	G	FB	S,T	S	S	0	0	0	50	50	0	0	D	A	A	D	M	S	A	A	A	A	A	S	0.8	0	1	1	1	0	0	1	1
7	FOR	M	M	G	FB	S,T	M	S	0	0	20	75	5	0	0	D	S	A	D	M	S	A	A	A	A	A	S	0.75	0	1	1	1	0	0	1	1
8	FOR	R	C	S	FB	S,T	S	S	0	0	5	90	5	0	0	S	S	A	D	S	S	A	A	A	A	A	M	0.6	0	2	2	2	0	0	2	2
9	FOR	R	M	G	FB	S,T	S	S	0	0	33	34	33	0	0	M	S	A	D	S	M	A	A	A	A	A	G	0.6	0	1	1	1	0	0	1	1
10	FOR	M	C	M	FB	S,T	S	SU	0	0	10	65	25	0	0	C	A	A	D	A	D	A	A	A	A	S	M	0.8	0	2	2	2	0	0	2	2

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake (July 2019)																																			
11	FOR	M	C	G	FB	S,T	S	MU	0	50	0	50	0	0	0	S	S	A	M	S	A	A	A	A	A	A	G	0.6	0	1	1	0	0	0	0	0
12[a]	N	N	N	N	NA	NA	M	S	0	0	0	50	50	0	0	C	A	A	D	A	A	A	A	A	A	A	S	0.9	0	2	2	2	0	0	2	2
13[b]	N	N	N	N	NA	NA	NA	NA	0	0	0	25	75	0	0	C	A	A	D	A	A	A	A	A	A	A	M	0.8	0	3	2	3	0	0	2	2
14	FOR	M	C	G	FB	S,T	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.5	0	1	1	0	0	0	0	0
15	FOR	M	C	M	FB	S,T	S	SU	0	0	5	85	10	0	0	C	A	A	D	S	S	A	A	A	A	A	G	0.4	0	2	2	2	0	0	2	2
16	FOR	M	C	S	FB	S,T	S	SU	0	30	5	50	5	0	10	D	M	S	M	D	S	A	A	S	A	A	M	0.7	0	1	1	1	1	0	1	1
17	FOR	M	C	S	FB	S,T	S	S	0	0	0	100	0	0	0	C	A	A	D	M	S	A	A	A	A	A	G	0.5	0	2	2	2	0	0	2	2
18[c]	FOR	M	C	S	FB	S,T	S	S	0	30	0	60	0	0	10	D	D	D	D	D	S	A	D	A	A	D	S	2	2	0	0	0	1	0	0	0
19	FOR	M	C	S	FB	S,T	S	S	0	0	0	100	0	0	0	D	M	S	D	D	S	A	A	S	A	A	G	0.5	0	0	0	0	1	0	0	0
20	FOR	M	C	S	FB	S,T	S	S	0	50	0	50	0	0	0	D	M	S	M	D	S	A	A	A	A	A	S	2	0	0	0	0	1	0	0	0
21	FOR	M	C	G	FB	S,T	S	S	0	30	10	30	0	0	30	D	D	S	M	D	A	A	A	S	S	A	M	0.6	0	0	0	0	2	0	0	0
22	FOR	M	C	S	FB	S,T	S	S	0	10	0	80	0	0	10	D	D	A	D	A	S	A	A	A	A	A	S	2.5	0	0	0	0	2	0	0	0
23	FOR	R	C	G	FB	S,T	S	S	0	0	5	90	5	0	0	C	A	A	D	S	S	A	A	A	A	A	G	0.65	0	2	2	2	0	0	2	2
24	FOR	R	C	M	FB	S,T	S	S	0	30	0	30	10	0	30	D	M	A	M	A	S	A	A	A	A	A	G	0.5	0	0	0	0	1	0	0	0
25	FOR	R	C	M	FB	S,T	S	SU	0	50	0	50	0	0	0	D	M	A	D	D	S	A	A	S	A	A	G	0.6	0	0	0	0	1	0	0	0
26[d]	FOR	M	M	M	FB	S,T	S	S	0	0	0	90	10	0	0	C	A	A	D	A	M	A	A	A	A	A	G	0.5	0	2	2	2	0	0	2	2
27[d]	FOR	M	M	M	FB	S,T	S	S	0	0	0	90	10	0	0	D	A	A	D	A	M	A	A	A	A	A	G	0.5	0	1	1	1	0	0	1	1
28	FOR	R	C	G	FB	T	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
29	FOR	R	C	M	FB	T	S	S	0	0	0	50	50	0	0	S	S	A	D	M	S	A	A	A	A	S	S	0.7	0	2	2	2	0	0	2	2
30	FOR	M	C	G	FB	T	S	HU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0
31	FOR	R	C	G	FB	T	S	S	0	0	0	80	20	0	0	C	A	A	D	D	M	A	A	A	A	A	S	0.8	0	2	2	2	0	0	2	2
32	FOR	R	C	G	FB	T	S	MU	0	100	0	0	0	0	0	-	M	A	A	M	A	A	A	A	A	A	G	0.35	0	1	1	0	1	0	0	0

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake (July 2019)																																		
33[c]	N	N	N	N	NA	NA	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
34	FOR	M	C	G	FB	T	G	SU	0	100	0	0	0	0	0	-	S	A	A	A	A	A	A	A	A	A	G	0.35	0	1	1	0	0	0	0	0
35	FOR	M	C	M	FB	T	S	SU	0	75	5	20	0	0	0	D	D	A	S	D	D	A	A	A	A	A	G	0.4	0	1	1	0	2	0	0	0
36	FOR	M	C	G	FB	T	M	S	0	0	0	50	50	0	0	C	M	A	D	S	S	A	A	A	A	A	G	0.4	0	2	2	1	1	0	2	2
37	FOR	R	C	G	FB	T	S	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
38	FOR	R	C	G	FB	T	S	S	0	0	0	100	0	0	0	C	A	A	D	D	M	A	A	A	A	A	M	0.6	0	2	2	2	0	0	2	2
39	FOR	R	C	G	FB	T	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.25	0	1	1	0	0	0	0	0
40	FOR	R	M	G	FB	T	S	S	0	0	0	100	0	0	0	S	A	S	D	D	S	A	A	S	A	A	M	0.65	0	2	2	2	0	0	2	2
41	FOR	R	C	G	FB	T	M	SU	0	85	15	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.45	0	1	1	1	0	0	0	0
42	FOR	M	C	M	FB	T	M	S	0	0	0	100	0	0	0	S	A	A	D	M	M	A	A	S	A	A	G	0.6	0	2	2	2	0	0	2	2
43	FOR	R	C	G	FB	T	S	SU	0	0	0	90	10	0	0	S	A	A	D	M	M	A	A	A	A	S	G	0.6	0	2	2	1	0	0	2	2
44	FOR	R	C	M	FB	T	S	MU	0	90	10	0	0	0	0	C	A	A	S	A	A	A	A	A	A	A	G	0.35	0	1	1	1	0	0	0	0
45	FOR	R	C	M	FB	T	S	S	0	0	15	70	15	0	0	M	A	S	D	M	M	A	A	S	A	M	G	0.45	0	1	1	1	0	0	1	1
46	FOR	R	C	G	FB	T	S	S	0	30	30	10	30	0	0	M	M	S	M	D	S	A	A	S	S	A	G	0.6	0	1	1	1	1	0	0	0
47	FOR	R	M	G	FB	T	M	S	0	80	10	10	0	0	0	D	D	M	S	S	A	A	D	A	S	A	G	0.3	3	0	0	0	2	0	0	0
48	FOR	R	M	G	FB	T	M	S	0	0	0	0	0	0	100	-	D	M	A	D	S	A	A	A	A	A	G	0.3	1	0	0	0	2	0	0	0
49	FOR	R	C	G	FB	T	S	S	0	0	10	80	10	0	0	C	D	S	D	D	M	A	A	S	A	A	S	0.75	0	2	2	2	2	0	2	2
50	FOR	B	C	G	FB	T	M	SU	0	100	0	0	0	0	0	-	S	S	A	A	A	A	A	S	S	A	G	0.4	0	1	1	0	0	0	0	0
51	FOR	M	C	G	FB	T	S	MU	0	85	5	5	5	0	0	C	S	A	S	M	S	A	A	A	A	A	G	0.25	0	1	1	1	0	0	0	0
52	FOR	M	C	G	FB	T	M	MU	0	100	0	0	0	0	0	-	S	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
53	FOR	M	C	G	FB	T	S	SU	0	80	5	10	5	0	0	C	S	S	S	S	S	A	A	M	A	A	G	0.35	0	0	0	0	0	0	0	0
54	FOR	M	C	G	FB	T	S	HU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.45	0	1	1	0	0	0	0	0

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake (July 2019)																																		
55	FOR	M	C	G	FB	T	S	SU	0	0	0	80	20	0	0	C	S	A	S	M	S	A	A	A	A	A	M	0.6	0	2	2	2	0	0	2	2
56	FOR	R	C	G	FB	T	M	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.5	0	1	1	0	0	0	0	0
57	FOR	M	C	S	FB	T	S	MU	0	0	15	70	15	0	0	C	A	A	D	S	S	A	A	A	A	A	M	0.65	0	2	2	2	0	0	2	2
58	FOR	M	C	G	FB	T	M	MU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
59	FOR	M	M	S	FB	T	S	SU	0	0	0	60	40	0	0	S	S	A	D	M	S	A	A	S	A	A	G	1.6	0	1	1	1	0	0	1	1
60	FOR	M	M	S	FB	T	S	S	0	0	0	40	60	0	0	C	A	A	D	S	M	A	A	A	A	A	M	1.2	0	2	2	2	0	0	2	2
61	FOR	M	C	M	FB	T	S	S	0	0	0	35	65	0	0	M	A	A	D	M	S	A	A	A	A	A	M	1	0	1	1	1	0	0	1	1
62	FOR	M	M	G	FB	T	S	S	0	0	90	10	0	0	0	C	S	A	D	M	S	A	A	A	A	A	M	0.7	0	1	1	1	0	0	2	2
63	FOR	M	M	S	FB	T	S	S	0	0	20	40	40	0	0	C	S	A	D	D	M	A	A	A	A	A	G	0.6	0	2	2	2	0	0	2	2
64	FOR	M	D	M	FB	T	S	SU	0	0	0	10	90	0	0	C	A	A	D	M	D	A	A	A	A	A	M	1	0	2	1	2	0	0	1	1
65	FOR	M	D	G	FB	T	S	S	0	0	0	80	20	0	0	C	S	A	D	M	S	A	A	A	A	A	G	0.6	0	2	2	2	0	0	2	2
66	FOR	M	D	M	FB	T	S	SU	0	90	0	10	0	0	0	M	S	S	S	S	S	A	A	A	A	D	G	0.45	0	0	0	0	0	0	0	0
67	FOR	M	C	M	FB	T	S	S	0	0	20	60	20	0	0	D	S	S	D	D	M	S	A	S	A	A	G	0.6	0	1	1	1	0	0	1	1
68	FOR	R	M	G	FB	T	S	HU	0	50	5	40	5	0	0	C	M	A	M	D	M	A	A	A	A	A	G	0.6	0	1	1	1	1	0	1	1
69	FOR	M	C	G	FB	T	S	HU	0	90	0	0	0	0	10	-	D	S	A	M	A	A	A	S	S	A	G	0.5	0	0	0	0	2	0	0	0
70	FOR	M	D	G	FB	T	S	HU	0	33	0	33	0	0	34	D	D	S	D	D	S	A	A	A	A	A	G	0.3	0	0	0	0	2	0	0	0
71	FOR	R	D	G	FB	T	S	HU	0	0	0	75	25	0	0	C	D	A	D	D	D	A	A	A	A	A	G	0.3	0	2	2	2	2	0	2	2
72	FOR	R	D	G	FB	T	S	SU	0	0	0	50	50	0	0	M	M	A	D	D	M	A	A	A	A	A	M	0.8	0	1	1	1	1	0	1	1
73	FOR	R	C	S	FB	T	S	SU	0	0	0	50	50	0	0	D	D	A	D	D	D	A	A	A	A	S	M	0.8	0	1	1	1	2	0	1	1
74	FOR	R	D	G	FB	T	S	SU	0	0	0	60	40	0	0	C	A	A	D	D	D	A	A	A	A	A	M	0.8	0	2	2	2	0	0	2	2
75	FOR	M	C	G	FB	T	S	SU	0	0	0	50	50	0	0	D	S	A	D	M	M	A	A	A	A	A	G	0.65	0	1	1	0	0	0	1	1
76	FOR	M	C	M	FB	T	S	SU	0	0	33	33	34	0	0	C	S	A	D	M	S	A	A	A	A	A	G	0.55	0	2	2	2	0	0	2	2

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake (July 2019)																																			
77	FOR	R	D	G	FB	T	S	SU	0	0	0	25	75	0	0	D	S	A	D	D	M	A	A	A	A	A	G	0.6	0	1	1	1	0	0	1	1
78	FOR	M	C	G	FB	T	S	S	0	0	0	90	10	0	0	S	S	A	D	D	M	A	A	A	A	A	G	0.6	0	2	2	2	0	0	2	2
79	FOR	M	C	G	FB	T	S	S	0	0	0	75	25	0	0	D	S	S	D	D	D	A	A	S	A	A	G	0.65	0	1	1	1	0	0	1	1
Patterson Lake Mine Site Area (May 2018)																																			
1	FOR	M	M	G	FB	S,T	M	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.2	0	1	1	0	0	0	0	0
2	FOR	M	M	G	FB	S,T	M	S	0	90	10	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.6	0	1	1	0	0	0	1	1
4	FOR	M	M	G	FB	S,T	G	S	0	95	0	0	0	0	5	-	A	A	A	S	A	A	A	A	A	A	G	0.2	0	0	0	0	1	0	0	0
5	FOR	M	C	G	FB	S,T	G	S	0	95	0	5	0	0	0	C	A	A	A	S	A	A	A	A	A	A	G	0.2	0	1	1	0	0	0	0	0
6	FOR	M	C	G	FB	S,T	G	S	0	60	20	10	10	0	0	C	A	A	S	A	A	A	A	A	A	A	G	0.4	0	2	2	0	0	0	1	1
7	FOR	M	M	G	FB	S,T	M	S	0	0	30	40	30	0	0	C	A	A	D	A	A	A	A	A	A	A	G	0.9	0	3	3	2	0	0	3	3
8	FOR	M	M	G	FB	S,T	G	S	0	95	5	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
9	FOR	M	C	G	FB	S,T	S	S	0	0	10	60	30	0	0	S	A	A	D	A	A	A	A	A	A	A	G	0.4	0	2	2	1	0	0	2	2
10	FOR	M	M	S	FB	S,T	M	S	0	40	20	40	0	0	0	S	A	A	M	A	A	A	A	A	A	A	G	0.5	0	2	2	0	0	0	2	2
11	FOR	M	M	G	FB	S,T	M	S	0	0	30	50	20	0	0	S	A	A	D	A	A	A	A	A	A	A	G	0.4	0	2	2	1	0	0	2	2
12	FOR	R	M	M	FB	S,T	M	S	0	45	25	25	5	0	0	C	A	A	S	A	A	A	A	A	A	A	G	0.9	0	3	3	1	0	0	3	3
13	FOR	R	M	M	FB	S,T	S	S	0	20	60	20	0	0	0	S	A	A	S	A	A	A	A	A	S	A	G	0.9	0	2	2	0	0	0	2	2
14	FOR	R	M	M	FB	S,T	M	S	0	40	40	20	0	0	0	C	A	A	S	A	A	A	A	A	A	A	G	0.9	0	3	3	1	0	0	3	3
15	FOR	R	M	G	FB	S,T	M	S	0	40	0	60	0	0	0	C	A	A	D	A	A	A	A	A	A	A	M	1.0	0	3	3	2	0	0	2	2
16	FOR	R	M	G	FB	S,T	M	S	0	30	30	40	0	0	0	S	A	A	M	A	A	A	A	A	A	A	G	0.9	0	2	2	1	0	0	2	2
17	FOR	M	M	M	FB	S,T	M	S	0	60	10	30	0	0	0	S	S	A	M	S	A	A	A	A	S	A	M	1.0	0	2	2	1	2	0	1	1
18	FOR	M	M	M	FB	S,T	M	S	0	40	20	40	0	0	0	S	A	A	M	A	A	A	A	A	A	S	G	0.8	0	2	2	1	0	0	1	1
19	FOR	M	M	G	FB	S,T	G	S	0	100	0	0	0	0	0	-	A	A	A	S	A	A	A	A	A	A	G	0.8	0	1	1	0	0	0	0	0
20	FOR	R	M	G	FB	S,T	M	S	0	70	10	15	5	0	0	M	A	A	S	S	A	A	A	A	A	A	G	0.8	0	1	1	0	0	0	1	1
21	FOR	M	M	G	FB	S,T	M	S	0	60	10	20	10	0	0	M	S	A	S	S	A	A	A	A	A	A	M	1.2	0	1	1	0	2	0	1	1

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																											
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake DSA (May 2018)																																				
22	FOR	M	M	G	FB	S,T	G	S	0	40	10	40	10	0	0	S	A	A	M	A	A	A	A	A	A	A	M	1.3	0	2	2	1	0	0	2	2
23	FOR	R	M	M	FB	S,T	G	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.5	0	1	1	0	0	0	0	0
24	FOR	R	D	M	FB	S,T	G	S	0	70	0	0	0	0	30	-	A	A	A	D	A	A	S	A	A	S	G	0.4	1	0	0	0	3	0	0	0
25	FOR	R	M	G	FB	S,T	G	S	0	30	10	50	10	0	0	S	A	A	M	A	A	A	A	A	A	A	G	0.5	0	2	2	1	0	0	2	2
26	FOR	R	M	G	FB	S,T	G	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
27	FOR	M	C	G	FB	S,T	M	S	0	90	5	5	0	0	0	C	A	A	M	S	A	A	A	A	S	A	G	0.4	0	2	2	1	1	0	2	2
28	FOR	R	M	G	FB	S,T	M	S	0	10	40	40	10	0	0	S	A	A	M	A	A	A	A	A	A	A	G	0.6	0	2	2	1	0	0	1	1
29	FOR	M	C	M	FB	S,T	G	S	0	10	20	70	0	0	0	S	A	A	M	A	A	A	S	A	A	A	G	0.5	1	2	2	1	2	0	1	1
30	FOR	M	D	M	FB	S,T	G	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0
31	FOR	M	D	S	FB	S,T	S	S	0	60	20	20	0	0	0	S	A	A	S	M	A	A	A	A	A	S	G	0.5	0	2	2	0	2	0	1	1
32	FOR	M	D	M	FB	S,T	M	S	0	30	0	25	40	0	5	S	A	A	D	S	A	A	A	A	A	M	G	0.5	0	2	2	0	0	0	1	1
33	FOR	M	M	G	FB	S,T	M	S	0	20	40	30	10	0	0	S	A	A	M	S	A	A	A	A	S	S	G	0.4	0	2	2	0	1	0	1	1
34	FOR	M	M	G	FB	S,T	M	S	0	20	40	30	10	0	0	S	A	A	M	S	A	A	A	A	S	S	G	0.4	0	2	2	0	1	0	1	1
35	FOR	R	M	G	FB	S,T	M	S	0	90	10	0	0	0	0	-	A	A	A	S	A	A	S	A	A	A	G	0.3	1	1	1	0	1	0	0	0
36	FOR	M	M	G	FB	S,T	G	S	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.3	0	1	1	0	0	0	0	0
37	FOR	M	M	M	FB	S,T	M	S	0	0	0	60	40	0	0	S	A	A	D	A	A	A	A	A	A	S	S	1.2	0	2	2	2	0	0	1	1
38	FOR	M	C	M	FB	S,T	M	S	0	0	10	80	10	0	0	S	A	A	D	A	A	A	A	A	A	S	M	1.0	0	2	2	1	0	0	2	2
39	FOR	M	C	M	FB	S,T	M	S	0	0	0	60	40	0	0	S	A	A	D	A	A	A	A	A	A	S	M	1.2	0	1	1	2	0	0	1	1
40	FOR	M	C	M	FB	S,T	M	S	0	0	10	70	20	0	0	S	A	A	D	A	A	A	A	A	A	S	M	1.0	0	2	2	1	0	0	2	2
Patterson Lake Camp Area (August 2018)																																				
1	FOR	M	M	G	FB	S,T	M	S	0	96	2	2	0	0	0	M	S	A	A	M	S	A	A	S	S	A	G	0.4	0	1	1	0	1	0	0	0
2	FOR	M	M	G	FB	S,T	G	S	0	20	10	60	10	0	0	C	S	A	M	S	A	A	A	A	A	A	M	1.0	0	2	2	2	1	0	2	2
3	FOR	M	M	M	FB	S,T	S	S	0	0	10	20	70	0	0	C	S	A	M	S	A	A	A	A	A	A	S	1.3	0	2	2	3	1	0	2	2
4	FOR	M	C	M	FB	S,T	M	S	35	25	0	15	25	0	0	M	S	A	S	S	A	A	A	S	S	A	G	0.6	0	1	1	0	1	0	1	1

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																											
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Patterson Lake Camp Area (August 2018)																																				
5	FOR	M	M	G	FB	S,T	G	S	10	30	5	50	5	0	0	S	S	A	M	S	A	A	A	A	S	A	G	0.7	0	2	2	0	1	0	2	2
Forrest Lake (July 2019)																																				
1	FOR	M	C	G	FB	T	S	S	0	85	0	0	0	0	15	-	D	S	S	D	S	A	A	S	S	A	G	0.55	0	1	1	0	2	0	0	0
2	FOR	M	M	G	FB	T	S	S	0	90	0	0	0	0	10	-	A	D	A	A	A	A	D	D	A	A	G	0.4	3	0	0	0	0	0	0	0
3	FOR	M	C	G	FB	T	S	SU	0	0	0	0	0	0	100	-	M	M	A	D	S	A	A	D	S	M	G	0.3	2	0	0	0	2	0	0	0
4	FOR	R	C	G	FB	T	S	SU	0	95	0	0	0	0	5	-	A	D	A	D	S	A	D	A	A	A	G	0.4	3	0	0	0	2	0	0	0
5	FOR	R	C	G	FB	T	S	SU	0	0	0	0	0	0	100	-	S	M	A	D	M	A	A	M	A	A	G	0.4	0	0	0	0	0	0	0	0
6	FOR	M	C	G	FB	T	S	SU	0	90	0	0	0	0	10	-	A	D	A	D	S	A	D	D	S	D	G	0.35	3	0	0	0	2	0	0	0
7	WL	M	C	G	FB	T	S	SU	0	0	0	0	0	0	100	-	D	M	A	D	D	A	A	S	A	A	G	0.65	0	0	0	0	1	0	0	0
8	WL	M	C	G	FB	T	S	MU	0	75	0	25	0	0	0	D	S	S	S	D	M	A	A	S	S	A	G	0.4	0	1	1	0	0	0	0	0
9	FOR	M	C	M	FB	T	S	SU	0	100	0	0	0	0	0	-	M	A	A	D	M	A	A	A	A	A	M	0.35	0	1	1	0	1	0	0	0
10	FOR	M	C	M	FB	T	S	S	0	0	0	85	15	0	0	C	S	A	D	S	D	A	A	A	A	A	M	0.5	0	2	2	2	0	0	2	2
11	FOR	R	M	G	FB	T	S	S	0	0	20	80	0	0	0	C	S	A	D	S	S	A	A	A	A	A	M	0.45	0	2	2	2	0	0	2	2
12	FOR	M	M	M	FB	T	S	S	0	0	0	75	25	0	0	C	S	A	D	S	M	A	A	A	A	A	M	0.55	0	2	2	2	0	0	2	2
13	FOR	M	C	S	FB	T	S	SU	0	0	0	30	70	0	0	C	M	A	D	D	D	A	A	A	A	A	S	1.2	0	2	2	2	1	0	2	2
14	FOR	M	C	M	FB	T	S	SU	0	0	0	65	35	0	0	C	S	A	D	D	D	A	A	A	A	A	M	0.7	0	2	2	2	0	0	2	2
15	FOR	M	C	M	FB	T	S	S	0	0	0	85	15	0	0	C	S	A	D	D	M	A	A	A	A	A	M	0.7	0	2	2	2	0	0	2	2
16	FOR	M	M	G	FB	T	M	SU	0	0	20	80	0	0	0	M	M	S	D	D	S	A	A	S	A	A	G	0.5	0	0	0	0	1	0	1	1
17	WL	M	M	M	FB	T	M	SU	0	0	0	90	10	0	0	M	D	A	D	D	M	A	A	A	A	A	M	0.75	0	1	1	0	2	0	1	1
18	FOR	M	C	G	FB	T	S	SU	0	15	0	85	0	0	0	D	D	A	M	D	S	A	A	A	A	A	G	0.55	0	1	1	0	2	0	1	1
19	FOR	M	M	S	FB	T	S	SU	0	0	0	35	65	0	0	M	D	A	D	D	D	A	A	A	A	A	M	0.7	0	2	2	2	2	0	2	2
20	FOR	M	M	S	FB	T	S	HU	0	99	0	1	0	0	0	D	A	A	S	S	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Forrest Lake (July 2019)																																			
21	FOR	M	M	S	FB	T	S	SU	0	0	0	90	10	0	0	S	S	A	D	D	D	A	A	A	A	S	M	0.8	0	2	2	2	0	0	2	2
22	FOR	M	M	S	FB	T	G	HU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0
23	FOR	M	M	S	FB	T	S	SU	0	0	0	90	10	0	0	M	A	A	D	D	D	A	A	A	A	S	M	0.75	0	2	2	2	0	0	2	2
24	FOR	M	M	S	FB	T	S	SU	0	0	0	10	90	0	0	M	A	A	D	D	D	A	A	A	A	S	M	0.75	0	2	2	2	0	0	2	2
25	FOR	R	D	S	FB	T	S	SU	0	0	0	80	20	0	0	M	S	A	D	D	D	A	A	A	A	M	M	0.7	0	1	1	1	0	0	1	1
26	FOR	R	D	S	FB	T	S	SU	0	0	33	34	33	0	0	D	S	M	D	D	D	A	A	A	A	M	M	0.7	0	0	0	0	0	0	0	0
27	FOR	M	M	G	FB	T	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0
28	FOR	M	M	S	FB	T	S	MU	0	0	10	80	10	0	0	S	S	A	D	D	D	A	A	A	A	A	G	0.6	0	2	2	2	0	0	2	2
29	FOR	M	C	S	FB	T	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.45	0	1	1	0	0	0	0	0
30	FOR	M	M	S	FB	T	S	SU	0	0	5	75	20	0	0	M	A	A	D	D	D	A	A	A	A	A	G	0.55	0	1	1	1	0	0	1	1
31	FOR	M	C	G	FB	T	M	SU	0	0	10	80	10	0	0	C	A	A	D	D	D	A	A	A	A	A	G	0.4	0	2	2	2	0	0	2	2
32	FOR	M	D	G	FB	T	G	SU	0	0	90	10	0	0	0	C	A	A	D	D	S	A	A	A	A	A	G	0.4	0	2	2	2	0	0	2	2
33	FOR	M	D	S	FB	T	G	S	0	0	10	10	0	0	80	D	D	S	S	D	M	A	A	S	S	S	G	0.25	0	0	0	0	2	0	0	0
34	FOR	M	C	S	FB	T	M	SU	0	0	20	75	5	0	0	D	D	A	D	D	D	A	A	S	A	A	G	0.5	0	1	1	0	2	0	1	1
35	FOR	M	C	S	FB	T	S	SU	0	0	0	10	0	0	90	D	D	A	S	D	M	A	A	A	A	A	G	0.4	0	0	0	0	2	0	0	0
36	FOR	R	C	G	FB	T	M	SU	0	50	25	25	0	0	0	-	D	S	M	D	D	A	A	S	S	A	G	0.3	0	1	1	0	2	0	0	0
37	FOR	M	M	G	FB	T	M	SU	0	50	0	0	50	0	0	S	D	S	M	D	M	A	A	S	S	A	G	0.5	0	1	1	0	0	0	0	0
38	FOR	M	C	G	FB	T	G	MU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.35	0	1	1	0	0	0	0	0
39	FOR	M	C	G	FB	T	S	SU	0	100	0	0	0	0	0	-	D	A	A	D	M	A	A	A	A	A	G	0.35	0	1	1	0	2	0	0	0
40	FOR	M	C	G	FB	T	S	HU	0	0	0	0	0	0	100	-	D	S	A	D	D	A	S	S	A	A	M	0.75	0	0	0	0	2	0	0	0
41	FOR	M	C	G	FB	T	G	SU	0	100	0	0	0	0	0	-	A	S	A	A	A	A	A	A	S	A	G	0.35	0	1	1	0	0	0	0	0
42	FOR	M	C	G	FB	T	S	HU	0	70	15	15	0	0	0	S	M	S	M	D	M	A	A	S	S	A	M	0.65	0	1	1	1	1	0	1	1

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Forrest Lake (July 2019)																																		
43	FOR	M	C	G	FB	T	S	HU	0	0	0	50	50	0	0	M	S	A	D	D	D	A	A	A	A	A	M	0.6	0	2	2	2	0	0	2	2
44	FOR	M	C	G	FB	T	S	HU	0	99	0	0	0	0	1	-	A	A	A	A	A	A	A	A	A	A	G	0.5	0	1	1	0	0	0	0	0
45	FOR	M	M	G	FB	T	S	MU	0	0	0	90	10	0	0	C	S	A	D	D	M	A	A	A	A	A	M	0.55	0	2	2	2	0	0	2	2
46[d]	N	N	N	G	NA	NA	S	S	0	20	0	40	40	0	0	S	A	A	D	A	S	A	A	A	A	A	G	0.4	0	3	3	3	0	0	3	3
47	FOR	M	M	S	FB	T	S	SU	0	0	0	90	10	0	0	C	A	A	D	M	M	A	A	A	A	A	M	0.6	0	2	2	3	0	0	2	2
48	FOR	M	M	M	FB	T	S	SU	0	0	0	90	10	0	0	C	A	A	D	S	D	A	A	A	A	A	G	0.45	0	2	2	2	0	0	2	2
49	FOR	B	C	G	FB	T	S	MU	0	0	0	90	10	0	0	C	M	A	D	M	S	A	A	A	A	A	M	0.65	0	2	2	2	1	0	2	2
50	FOR	B	C	G	FB	T	S	MU	0	100	0	0	0	0	0	-	S	A	A	A	A	A	A	A	A	A	G	0.4	0	1	1	0	0	0	0	0
51	FOR	B	C	S	FB	T	S	HU	0	30	10	50	10	0	0	C	S	A	M	S	S	A	A	A	A	A	G	0.5	0	1	1	1	0	0	0	0
52	FOR	M	M	S	FB	T	S	SU	0	0	0	100	0	0	0	C	S	A	D	S	A	A	A	A	A	A	G	0.45	0	2	2	2	0	0	2	2
53	FOR	M	C	G	FB	T	S	SU	0	90	10	0	0	0	0	C	D	A	S	D	D	A	A	A	A	A	G	0.3	0	1	1	1	0	0	0	0
Beet Channel (July 2019)																																		
1[c]	N	N	N	G	NA	NA	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.35	0	1	1	0	0	0	0	0
2[c]	N	N	N	G	NA	NA	G	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.35	0	1	1	0	0	0	0	0
3	FOR	M	C	G	FB	T	G	S	0	100	0	0	0	0	0	-	D	S	A	D	D	A	S	S	A	A	G	0.35	0	1	1	0	2	0	0	0
4	FOR	M	C	G	FB	T	S	S	0	0	0	0	0	0	100	-	D	S	A	D	D	A	S	S	S	A	S	1.1	0	0	0	0	2	0	0	0
5	FOR	M	C	G	FB	T	S	S	0	0	0	0	0	0	100	-	D	S	A	D	D	A	A	S	A	A	S	1.3	0	1	1	0	2	0	0	0
6	FOR	M	C	G	FB	T	M	S	0	0	0	0	0	0	100	-	D	S	A	D	A	A	S	S	S	A	S	1.3	0	0	0	0	2	0	0	0
7	FOR	B	C	G	FB	T	S	S	0	100	0	0	0	0	0	-	D	S	A	M	D	A	A	S	A	A	S	0.7	0	0	0	0	2	0	0	0
8	FOR	B	C	G	FB	T	S	SU	0	0	0	0	0	0	100	-	D	M	A	D	D	A	A	D	S	D	G	0.5	0	0	0	0	3	0	0	0
9	FOR	M	C	M	FB	T	S	SU	0	0	0	0	0	0	100	-	M	M	A	D	D	A	D	S	A	S	G	0.5	3	0	0	0	1	0	0	0
10	FOR	M	C	M	FB	T	S	SU	0	90	0	0	0	0	10	-	S	S	A	D	D	A	A	S	A	A	G	0.4	0	1	1	0	1	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Beet Channel (July 2019)																																		
11	FOR	M	C	G	FB	T	S	SU	0	15	0	0	0	0	85	-	S	S	A	D	D	A	A	S	S	A	G	0.5	0	0	0	0	1	0	0	0
12	FOR	B	C	M	FB	T	S	SU	0	30	0	30	10	0	30	D	D	S	S	D	D	A	A	S	S	S	G	0.5	0	0	0	0	2	0	0	0
13	FOR	B	C	M	FB	T	M	S	0	90	0	0	0	0	10	-	M	S	A	S	S	A	D	A	S	S	G	0.5	3	1	1	0	1	0	0	0
14	FOR	B	M	G	FB	T	M	SU	0	50	0	0	0	0	50	-	S	S	A	D	D	A	A	S	S	A	G	0.5	0	0	0	0	1	0	0	0
15	FOR	B	C	G	FB	T	M	S	0	40	0	25	0	0	35	D	S	S	M	D	D	A	A	S	S	S	G	0.5	0	0	0	0	1	0	0	0
16	FOR	B	C	M	FB	T	S	S	0	0	0	2	2	0	96	D	M	D	S	D	D	A	A	D	S	S	M	0.65	0	0	0	0	2	0	0	0
17	FOR	M	C	G	FB	T	M	S	0	0	0	0	50	0	50	D	S	D	M	M	A	A	D	M	S	A	G	0.35	3	0	0	0	1	0	0	0
18	FOR	B	C	G	FB	T	M	S	0	25	0	25	25	0	25	D	D	S	D	D	D	A	A	A	A	A	G	0.5	0	0	0	0	2	0	0	0
19	FOR	B	C	G	FB	S,T	S	SU	0	95	0	0	0	0	5	-	D	S	A	D	D	A	A	S	A	A	G	0.35	0	1	1	0	2	0	0	0
20	FOR	B	C	G	FB	S,T	M	S	0	25	0	0	0	0	75	-	A	D	A	D	D	A	D	D	A	A	G	0.4	3	0	0	0	1	0	0	0
21	FOR	R	C	G	FB	S,T	M	S	0	50	0	0	0	0	50	-	M	D	A	D	D	A	A	D	A	A	G	0.2	0	0	0	0	1	0	0	0
22	FOR	R	C	G	FB	S,T	S	S	0	100	0	0	0	0	0	-	S	S	A	D	D	A	S	A	A	A	G	0.3	0	1	1	0	1	0	0	0
23	FOR	R	C	G	FB	S,T	S	S	0	0	0	0	0	0	100	-	D	D	A	D	D	A	S	D	S	M	G	0.5	0	0	0	0	2	0	0	0
24	FOR	M	C	G	FB	S,T	M	S	0	100	0	0	0	0	0	-	A	D	A	A	A	A	D	A	A	A	G	0.2	3	0	0	0	0	0	0	0
Beet Lake (July 2019)																																		
1	FOR	B	C	M	FB	T	M	SU	0	100	0	0	0	0	0	-	A	A	A	A	A	A	A	A	A	A	G	0.45	0	1	1	0	0	0	0	0
2	FOR	B	C	M	FB	T	S	SU	0	80	5	10	5	0	0	C	S	A	S	D	M	A	A	A	A	A	G	0.45	0	1	1	1	0	0	0	0
3	FOR	M	M	S	FB	T	S	SU	0	0	5	90	5	0	0	D	S	S	D	D	M	A	A	S	A	A	S	0.7	0	1	1	1	0	0	1	1
4	FOR	B	C	S	FB	T	S	SU	0	0	10	80	10	0	0	C	D	A	D	D	M	A	A	A	A	A	S	0.8	0	2	2	2	2	0	2	2
5	FOR	M	M	S	FB	T	S	SU	0	90	10	0	0	0	0	S	A	A	S	A	A	A	A	A	A	A	G	0.4	0	1	1	1	0	0	0	0
6	FOR	B	C	G	FB	T	S	SU	0	5	5	85	5	0	0	C	S	A	D	D	S	A	A	S	A	A	G	0.5	0	1	1	1	0	0	0	0
7	FOR	B	C	S	FB	T	S	SU	0	0	0	100	0	0	0	D	S	S	D	D	S	A	A	A	A	M	G	0.45	0	1	1	1	0	0	1	1

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Beet Lake (July 2019)																																		
8	FOR	B	C	G	FB	T	S	SU	0	100	0	0	0	0	0	-	S	S	A	S	A	A	A	S	A	A	G	0.35	0	1	1	0	0	0	0	0
9	FOR	B	C	S	FB	S,T	S	S	0	0	0	100	0	0	0	S	S	A	D	D	S	A	A	S	S	A	G	0.45	0	2	2	1	0	0	2	2
10	FOR	B	C	G	FB	S,T	S	MU	0	0	50	50	0	0	0	S	D	S	D	M	S	A	A	S	S	A	G	0.4	0	1	1	1	2	0	0	0
11	FOR	B	C	G	FB	S,T	S	MU	0	0	5	90	5	0	0	C	S	S	D	D	M	A	A	S	A	A	G	0.4	0	2	2	2	0	0	2	2
12	FOR	M	M	G	FB	S,T	M	S	0	100	0	0	0	0	0	-	D	S	S	D	S	A	A	A	S	A	G	0.2	0	1	1	0	2	0	0	0
13	FOR	M	M	G	FB	S,T	G	S	0	100	0	0	0	0	0	-	M	S	A	A	A	A	A	S	S	A	G	0.15	0	1	1	0	1	0	0	0
14	FOR	M	M	G	FB	S,T	S	SU	0	100	0	0	0	0	0	-	M	S	A	D	M	A	A	S	S	A	G	0.2	0	1	1	0	1	0	0	0
15	FOR	R	C	G	FB	S,T	G	SU	0	100	0	0	0	0	0	-	S	S	A	S	A	A	A	S	S	A	G	0.1	0	1	1	0	0	0	0	0
16	FOR	B	C	G	FB	S,T	S	HU	0	90	5	5	0	0	0	D	D	S	S	D	D	A	A	A	S	A	G	0.3	0	1	1	1	2	0	0	0
17	FOR	B	C	S	FB	S,T	S	SU	0	30	10	50	10	0	0	C	S	S	D	D	D	A	A	A	A	A	M	0.5	0	2	2	2	0	0	2	2
18	FOR	B	C	M	FB	S,T	S	SU	0	100	0	0	0	0	0	-	S	S	A	A	A	A	A	A	S	A	G	0.4	0	1	1	0	0	0	0	0
Naomi Lake (July 2019)																																		
1	FOR	M	C	G	FB	G,S,T	G	S	5	90	0	0	0	0	5	-	S	S	A	D	S	A	A	A	S	S	G	0.4	0	0	0	0	2	0	0	0
2	FOR	M	C	G	FB	G,S,T	G	S	5	90	0	0	0	0	5	-	A	M	A	S	A	A	M	S	S	A	G	0.4	2	0	0	0	1	0	0	0
3	FOR	M	C	G	FB	G,S,T	G	S	10	80	0	0	0	0	10	-	S	A	A	M	A	A	A	S	S	A	G	0.3	0	0	0	0	1	0	0	0
4	FOR	M	C	G	FB	G,S,T	G	S	15	10	5	55	15	0	0	D	D	S	M	D	S	A	A	S	S	D	G	0.8	0	0	0	0	2	0	0	0
5	FOR	B	C	G	FB	G,S,T	G	S	5	15	5	60	10	0	5	S	M	A	M	S	S	A	A	S	S	S	G	0.7	0	1	1	0	1	0	1	1
6	FOR	M	C	G	FB	G,S,T	G	S	0	75	0	15	5	0	5	S	S	A	S	S	A	A	A	S	S	S	G	0.4	0	1	1	0	1	0	1	1
7	FOR	B	C	G	FB	G,S,T	G	S	5	85	0	5	0	0	5	S	M	A	A	D	S	A	A	S	S	S	G	0.3	0	1	1	0	1	0	1	1
8	FOR	B	C	G	FB	S,T	M	S	20	60	0	0	0	0	20	D	S	A	A	D	S	A	A	M	S	S	G	0.5	0	0	0	0	1	0	0	0
9	FOR	B	C	G	FB	S,T	G	S	20	0	0	0	0	0	80	D	D	M	A	M	S	A	A	M	S	S	G	0.6	1	0	0	0	2	0	0	0
10	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	D	A	A	A	A	D	S	S	A	G	0.3	3	0	0	0	1	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Naomi Lake (July 2019)																																			
11	FOR	M	C	G	FB	G,S,T	G	S	0	0	0	0	0	0	100	-	S	D	A	A	A	A	D	D	M	S	G	0.4	3	0	0	0	1	0	0	0
12	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	A	A	D	S	A	A	S	S	S	G	0.4	0	1	1	0	1	0	0	0
13	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	D	A	A	A	A	D	S	S	A	G	0.3	3	0	0	0	1	0	0	0
14	FOR	M	C	G	FB	G,S,T	G	S	0	0	0	0	0	0	100	-	D	M	A	M	S	A	A	M	S	S	G	0.5	0	0	0	0	3	0	0	0
15	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	D	A	A	D	S	A	A	A	A	A	G	0.5	0	0	0	0	1	0	0	0
16	FOR	M	C	G	FB	G,S,T	G	S	10	45	0	0	0	0	45	-	D	M	A	D	S	A	A	M	S	S	G	0.6	0	0	0	0	1	0	0	0
17	FOR	M	C	S	FB	G,S,T	G	S	10	70	0	10	0	0	10	S	S	S	S	M	A	A	A	S	S	S	G	0.4	0	1	1	0	1	0	1	1
18	FOR	M	C	G	FB	G,S,T	G	S	20	50	0	0	0	0	30	-	A	M	A	M	A	A	A	M	S	S	G	0.5	0	0	0	0	1	0	0	0
19	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	S	A	A	M	M	S	S	G	0.2	2	0	0	0	1	0	0	0
20	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	D	S	A	A	M	S	S	G	0.3	0	0	0	0	1	0	0	0
21	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	S	A	A	M	M	S	S	G	0.2	2	0	0	0	1	0	0	0
22	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	D	S	A	A	M	S	S	G	0.3	0	0	0	0	1	0	0	0
23	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	D	A	A	A	A	D	S	S	A	G	0.3	3	0	0	0	1	0	0	0
24	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	D	S	A	A	M	S	S	G	0.3	0	0	0	0	1	0	0	0
25	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	D	A	A	A	A	D	S	S	A	G	0.3	3	0	0	0	1	0	0	0
26	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	S	M	M	A	A	S	M	S	S	G	0.3	1	0	0	0	1	0	0	0
27	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	A	D	A	A	A	A	D	S	S	A	G	0.3	3	0	0	0	1	0	0	0
28	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	M	A	D	S	A	A	M	S	S	G	0.3	0	0	0	0	1	0	0	0
29	FOR	M	C	G	FB	G,S,T	G	S	40	40	0	0	0	0	20	-	S	S	A	D	S	A	S	S	S	S	G	0.6	1	0	0	0	2	0	0	0
30	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	D	A	S	A	A	M	M	S	S	G	0.6	2	0	0	0	2	0	0	0
31	FOR	M	C	G	FB	G,S,T	G	S	10	80	0	0	0	0	10	-	S	A	A	D	S	A	A	S	S	S	G	0.5	0	0	0	0	1	0	0	0
32	FOR	M	C	G	FB	G,S,T	G	S	0	60	0	0	0	0	40	-	S	S	A	D	S	A	S	S	S	S	G	0.6	1	0	0	0	2	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Clearwater River Nearfield (July 2019)																																		
1	FOR	M	C	G	FB	G,S,T	G	S	10	85	0	0	0	0	5	-	S	S	A	D	S	A	S	S	D	D	G	0.6	0	1	1	0	1	0	1	1
2	FOR	M	C	G	FB	G,S,T	G	S	95	0	0	0	0	0	5	-	A	A	D	S	D	A	D	S	S	M	G	0.4	3	0	0	0	1	0	0	0
3	FOR	M	C	G	FB	G,S,T	G	S	85	0	0	0	0	0	15	-	S	A	A	D	A	A	A	S	S	M	G	0.4	0	0	0	0	1	0	0	0
4	FOR	M	C	G	FB	G,S,T	G	S	40	40	0	0	0	0	20	-	S	A	D	M	A	A	M	S	S	M	G	0.4	2	0	0	0	1	0	0	0
5	FOR	M	C	G	FB	G,S,T	G	S	0	80	0	0	0	0	20	-	S	S	D	D	S	A	S	S	D	M	G	0.4	1	1	1	0	1	0	1	1
6[d]	FOR	M	C	G	FB	G,S	G	S	0	80	0	0	0	0	20	-	S	M	D	D	A	A	D	S	S	M	G	0.4	3	1	1	0	0	0	1	1
7	FOR	M	C	G	FB	G,S,T	G	S	10	0	20	50	20	0	0	D	M	A	M	M	S	A	A	S	M	S	S	1	0	1	1	0	1	0	1	1
8	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	D	A	D	S	A	A	A	D	A	S	0.8	0	1	1	0	1	0	1	1
9	FOR	M	C	G	FB	G,S,T	G	S	50	30	0	0	0	0	20	-	A	D	A	A	S	A	M	A	M	M	G	0.4	3	0	0	0	0	0	0	0
10	FOR	M	C	G	FB	G,S,T	G	S	10	0	10	75	5	0	0	D	S	A	M	D	A	A	A	S	D	M	S	1.4	0	0	0	0	0	0	1	1
11	FOR	M	C	G	FB	G,S,T	G	S	10	90	0	0	0	0	0	-	S	M	A	D	S	A	A	S	M	M	S	0.8	0	1	1	0	0	0	1	1
12	FOR	M	C	G	FB	G,S,T	G	S	0	80	0	0	0	0	20	-	A	D	A	S	A	A	D	S	S	S	G	0.3	3	0	0	0	0	0	0	0
13	FOR	M	C	G	FB	G,S,T	G	S	15	70	0	0	0	0	15	-	A	M	A	D	A	A	S	S	S	S	M	1	1	0	0	0	1	0	0	0
14	FOR	M	C	G	FB	G,S,T	G	S	10	70	0	0	0	0	20	-	D	S	A	D	S	A	A	S	M	M	M	1.1	0	1	1	0	1	0	1	1
15	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
16	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	M	A	D	S	A	A	A	M	S	G	0.8	0	1	1	0	0	0	1	1
17	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
18	FOR	M	C	G	FB	G,S,T	G	S	10	70	0	0	0	0	20	-	S	S	A	S	A	A	M	A	S	S	G	0.4	2	0	0	0	0	0	0	0
19	FOR	M	C	G	FB	G,S,T	G	S	0	80	0	0	0	0	20	-	S	A	A	D	S	A	A	S	S	S	S	1.3	0	0	0	0	1	0	0	0
20	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	S	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
21	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	M	A	D	S	A	A	A	M	S	G	0.8	0	1	1	0	0	0	1	1
22	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0

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Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																				Spawning Suitability Index							
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Clearwater River Nearfield (July 2019)																																			
23	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	M	M	A	D	S	A	A	S	M	S	M	1	0	0	0	0	0	0	0	0
24[e]	FOR	M	C	G	FB	G,S,T	G	S	0	0	0	60	40	0	0	C	S	A	D	S	S	S	A	A	A	S	G	0.3	0	3	3	0	0	3	3	3
25[e]	FOR	M	C	G	FB	G,S,T	G	S	0	0	0	60	40	0	0	C	S	A	D	S	S	S	A	A	A	S	G	0.3	0	3	3	0	0	3	3	3
26	FOR	M	C	G	FB	G,S,T	G	S	20	30	0	30	5	0	15	D	S	M	S	M	A	A	S	S	M	S	G	0.3	1	1	1	0	0	0	1	1
27	FOR	M	C	G	FB	G,S,T	G	S	90	0	0	0	0	0	10	-	S	M	A	D	S	A	A	S	M	S	G	0.3	0	0	0	0	0	0	0	0
28	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
29	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	M	A	D	S	A	A	S	A	A	M	1.1	0	1	1	0	0	0	1	1
30	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
31	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	S	A	S	A	A	S	S	M	S	G	0.4	1	1	1	0	0	0	1	1
32	FOR	M	C	G	FB	G,S,T	G	HU	0	100	0	0	0	0	0	-	S	S	A	A	A	A	A	A	M	S	S	1.2	0	1	1	0	0	0	1	1
33	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
34	FOR	M	C	G	FB	G,S,T	G	HU	0	100	0	0	0	0	0	-	S	S	A	A	A	A	A	A	M	S	S	1.2	0	1	1	0	0	0	1	1
35	FOR	M	C	G	FB	G,S,T	G	S	20	50	0	0	0	0	30	-	S	D	A	D	S	A	A	S	D	S	G	0.6	0	0	0	0	0	0	0	0
36	FOR	M	C	G	FB	G,S,T	G	S	60	20	0	0	0	0	20	-	S	M	A	S	A	A	M	S	M	S	G	0.3	2	0	0	0	0	0	0	0
37	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	S	A	D	S	A	A	A	S	S	S	1.3	0	0	0	0	0	0	0	0
38	FOR	M	C	G	FB	G,S,T	G	S	30	30	0	0	0	0	40	-	S	S	A	M	S	A	S	S	S	S	G	0.4	1	1	1	0	1	0	1	1
39	FOR	M	C	G	FB	G,S,T	G	S	40	20	0	0	0	0	40	-	S	M	A	D	S	A	A	M	M	S	G	0.3	0	0	0	0	0	0	0	0
40	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
41	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	M	A	D	S	A	A	S	M	S	M	1.1	0	1	1	0	1	0	1	1
42	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
43	FOR	M	C	G	FB	G,S,T	G	S	0	90	0	0	0	0	10	-	S	M	A	D	S	A	A	S	M	S	M	1.1	0	1	1	0	1	0	1	1
44	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Clearwater River Nearfield (July 2019)																																		
45	FOR	M	C	G	FB	G,S,T	G	S	50	0	0	0	0	0	50	-	S	M	A	D	S	A	S	M	M	S	G	0.4	0	0	0	0	0	0	0	0
46	FOR	M	C	G	FB	G,S,T	G	S	50	0	0	0	0	0	50	-	S	D	A	D	A	A	S	D	D	M	G	0.3	2	0	0	0	1	0	0	0
47	FOR	M	C	G	FB	G,S,T	G	S	0	80	0	0	0	0	20	-	S	S	A	D	S	A	A	S	S	S	G	0.4	0	0	0	0	1	0	0	0
48	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
49	FOR	M	C	G	FB	G,S,T	G	S	10	85	0	0	0	0	5	-	S	M	A	D	S	A	A	M	S	S	G	0.4	0	0	0	0	1	0	1	1
50	FOR	M	C	G	FB	G,S,T	G	S	10	60	0	0	0	0	30	-	S	M	A	A	A	A	D	S	S	S	G	0.5	3	0	0	0	0	0	0	0
51	FOR	M	C	G	FB	G,S,T	G	S	10	85	0	0	0	0	5	-	S	S	A	D	S	A	S	S	D	D	G	0.6	0	1	1	0	1	0	1	1
Clearwater River Midfield (August 2018)																																		
1	FOR	M	C	S	W	G,S,T	G	S	0	100	0	0	0	0	0	-	S	D	A	A	A	A	M	A	D	M	G	0.4	3	0	0	0	0	0	0	0
2	FOR	M	C	M	FB	S,T	G	S	0	50	0	0	0	0	50	-	S	D	A	D	S	A	S	A	D	A	G	0.4	1	0	0	0	1	0	0	0
3	FOR	M	C	M	W	G,S	G	S	0	20	0	0	0	0	80	-	S	D	A	A	S	A	D	A	D	A	G	0.4	3	0	0	0	0	0	0	0
4	FOR	M	C	M	FB	G,S,T	M	S	0	30	20	40	0	0	10	M	S	M	M	D	S	A	S	A	S	A	G	0.4	0	1	1	1	0	1	1	1
5	FOR	M	C	M	W	G,S,T	M	S	0	50	0	0	0	0	50	-	S	D	A	M	S	A	M	A	D	A	M	0.6	3	0	0	0	2	0	0	0
6	FOR	M	C	S	W	G,S,T	G	S	0	50	0	0	0	0	50	-	S	D	A	A	S	A	D	S	D	A	M	0.7	2	0	0	0	0	0	0	0
7	FOR	M	C	G	W	G,S,T	G	S	0	70	10	20	0	0	0	C	A	M	M	D	S	A	M	A	S	A	G	1.5	0	2	2	2	0	2	2	2
8	FOR	M	C	S	W	G	G	S	0	60	0	0	0	0	40	-	A	D	A	A	S	A	D	S	S	A	G	1.0	3	0	0	0	0	0	0	0
9	FOR	M	C	S	FB	S,T	M	S	0	65	15	20	0	0	0	C	S	M	M	D	A	A	S	A	M	A	M	0.8	0	1	1	1	0	1	1	1
10	FOR	M	C	M	W	G	G	S	0	90	0	0	0	0	10	-	S	D	A	A	S	A	D	A	D	A	G	0.6	1	0	0	0	0	0	0	0
11	FOR	M	C	G	FB	S	M	S	0	90	0	0	0	0	10	-	A	M	A	D	S	A	M	S	M	A	S	1.5	0	0	0	0	0	0	0	0
12	FOR	M	D	G	GB	G,S	M	S	0	90	0	0	0	0	10	-	A	M	A	A	S	A	D	A	M	A	S	2.0	1	0	0	0	0	0	0	0
13	NG	M	D	G	GB	G,S	M	S	0	99	0	1	0	0	0	-	S	M	S	M	D	A	S	S	M	A	S	3.0	0	0	0	0	0	0	0	0
14	FOR	M	C	S	FB	S,T	S	MU	0	99	0	1	0	0	0	-	S	M	S	M	D	A	S	S	M	A	S	3.0	0	0	0	0	0	0	0	0
15	NG	N	D	G	GB	G,S	G	S	0	50	0	0	0	0	50	-	A	D	A	A	S	A	D	S	D	A	G	1.0	1	0	0	0	0	0	0	0
16	FOR	M	C	G	FB	S	M	S	0	90	0	0	0	0	10	-	A	M	A	D	S	A	M	S	M	A	S	1.5	0	0	0	0	0	0	0	0

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Lloyd Lake Inlet (August 2018)																																		
1	FOR	B	C	G	FB	T	M	S	0	0	15	85	0	0	0	C	S	A	D	A	M	A	A	A	A	A	M	0.8	0	2	3	3	0	0	3	3
2	WL	M	C	G	W	G,S	G	S	0	0	0	0	0	0	100	-	A	D	A	A	A	A	D	A	S	A	G	0.1	3	0	0	0	0	0	0	0
3	WL	M	D	G	W	G,S	G	SU	0	0	0	0	0	0	100	-	A	D	A	M	D	S	D	M	S	A	S	1.0	3	0	0	0	0	0	0	0
4	WL	M	D	G	W	G,S	G	SU	0	99	0	0	0	0	1	-	A	D	A	S	A	A	D	D	A	D	G	0.2	0	0	0	0	0	0	0	0
5	FOR	M	D	G	W	G,S,T	G	S	0	0	0	0	0	0	100	-	S	D	A	A	A	A	D	A	A	A	G	0.2	3	0	0	0	0	0	0	0
6	FOR	M	M	G	W	G	G	S	0	0	0	0	0	0	100	-	A	D	A	A	A	A	D	M	M	D	G	0.1	0	0	0	0	0	0	0	0
7	FOR	M	D	M	W	G,S,T	S	MU	0	0	0	0	0	0	100	-	A	D	A	M	M	A	D	A	D	S	G	0.2	0	0	0	0	0	0	0	0
8	FOR	M	D	G	FB	G,S,T	S	MU	0	0	0	0	0	0	100	-	A	D	A	S	M	A	D	D	D	A	G	0.2	3	0	0	0	0	0	0	0
9	FOR	M	M	S	FB	S,T	S	S	0	0	0	95	5	0	0	C	A	A	D	M	D	A	A	A	A	A	S	0.9	0	2	3	3	0	0	3	3
10	FOR	M	M	S	FB	S,T	S	S	0	0	0	0	100	0	0	C	A	A	D	M	D	A	A	A	A	A	S	1.1	0	2	2	2	0	0	2	2
11	FOR	M	C	S	FB	S,T	S	S	0	0	0	50	50	0	0	S	A	M	D	D	D	A	M	A	A	A	S	1.2	0	0	0	0	0	0	0	0
12	FOR	B	C	G	FB	S,T	S	S	0	0	0	100	0	0	0	C	D	A	D	S	D	A	A	A	A	A	S	0.9	0	2	3	3	3	0	3	3
13	FOR	B	C	G	FB	S,T	S	S	0	0	0	50	50	0	0	C	A	A	D	M	D	A	A	A	A	A	S	0.7	0	2	3	3	0	0	3	3
Lake G (August 2018)																																		
1	FOR	M	M	G	FB	G,S,T	S	MU	0	75	0	0	0	0	25	-	D	D	A	M	D	A	D	A	A	A	G	0.8	3	0	0	0	3	0	0	0
2	FOR	M	C	S	FB	S,T	S	SU	0	50	0	50	0	0	0	D	A	A	D	D	D	A	A	A	A	A	G	0.7	0	1	1	1	2	0	1	1
3	FOR	M	M	G	FB	G,S,T	S	SU	0	90	5	5	0	0	0	D	S	A	M	D	D	A	A	A	A	A	G	0.9	0	1	1	0	2	0	1	1
4	FOR	M	M	G	FB	G,S,T	S	MU	0	90	5	5	0	0	0	D	M	D	S	M	D	A	D	A	A	A	G	0.6	3	0	0	0	1	0	0	0
5	FOR	M	M	G	FB	G,S,T	G	MU	0	90	0	0	0	0	10	-	D	S	S	D	D	S	S	A	A	A	G	0.6	0	0	0	0	2	0	0	0
6	FOR	M	M	G	FB	G,S,T	S	SU	0	85	0	10	5	0	0	D	D	S	A	D	D	S	S	A	A	A	G	0.7	0	0	0	0	2	0	0	0
7	FOR	M	C	M	FB	G,S,T	S	MU	0	90	0	0	0	0	10	-	D	S	A	D	D	A	S	A	A	A	G	0.8	0	0	0	0	2	0	0	0

Appendix C, Table 58

Habitat Assessment Results for Lakes and Rivers in the Aquatic Study Area, 2018 and 2019

Habitat Section #	Upland Zone				Riparian Zone				Littoral Zone																									
									Substrate (%)								Cover						Aquatic Vegetation				Bottom Slope		Spawning Suitability Index							
	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Vegetation Type	Bank Slope	Bank Stability	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Slope	Depth 5m from Shore	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Lake H (August 2018)																																		
1	FOR	B	C	G	FB	S,T	M	S	0	100	0	0	0	0	0	-	S	S	A	A	A	A	A	S	A	A	G	0.2	0	1	1	0	0	0	1	1
2	FOR	B	C	G	FB	S,T	S	S	0	85	5	0	0	0	10	-	S	M	A	A	A	A	D	A	A	A	G	0.3	1	0	0	0	0	0	0	0
3	FOR	B	C	G	W	G	G	S	0	45	10	0	0	0	45	D	S	M	A	A	A	A	M	M	A	D	G	0.2	1	0	0	0	0	0	0	0
4	FOR	M	C	G	W	G	G	S	0	90	0	0	0	0	10	-	S	S	A	A	A	A	S	M	A	A	G	0.1	0	0	0	0	0	0	0	0
5	FOR	B	C	G	W	G	G	S	0	80	0	0	0	0	20	-	S	D	A	A	A	A	D	S	A	A	G	0.2	1	0	0	0	0	0	0	0
6	FOR	B	C	G	W	G	G	S	0	90	0	0	0	0	10	-	S	M	A	A	A	A	S	S	A	A	G	0.2	1	0	0	0	0	0	0	0
7	FOR	B	C	G	W	G	G	S	0	80	0	0	0	0	20	-	A	M	A	A	A	A	M	S	A	A	G	0.2	1	0	0	0	0	0	0	0
8	FOR	B	C	G	W	G	G	S	0	80	0	0	0	0	20	-	A	M	A	A	A	A	S	S	A	A	G	0.2	0	0	0	0	0	0	0	0
9	FOR	B	C	G	FB	G,S,T	M	SU	0	95	0	0	0	0	5	-	A	A	A	A	A	A	A	A	A	A	G	0.2	0	1	1	0	0	0	1	1
10	FOR	B	C	G	W	G	G	SU	0	100	0	0	0	0	0	-	A	M	A	A	A	A	M	A	A	A	G	0.2	1	0	0	0	0	0	0	0
11	FOR	B	C	G	W	G	G	SU	10	90	0	0	0	0	0	-	A	A	A	A	A	A	S	A	A	A	G	0.1	0	0	0	0	0	0	0	0
12	FOR	B	C	G	W	G,S,T	G	S	0	0	0	0	0	0	100	-	S	D	A	A	A	A	D	D	A	A	S	0.5	3	0	0	0	1	0	0	0
13	FOR	B	C	G	W	G,S,T	S	S	0	0	0	0	60	0	40	D	S	D	D	A	S	A	D	D	A	A	M	0.4	2	0	0	0	0	0	0	0
14	FOR	B	C	G	W	T,G	M	S	0	0	0	40	40	0	20	D	S	D	D	A	M	A	S	D	A	A	M	0.4	0	0	0	0	0	0	0	0
15	FOR	B	C	G	FB	G,S,T	M	S	0	0	0	60	40	0	0	S	S	S	D	S	M	S	A	A	A	A	M	0.8	0	2	2	2	0	0	2	2
16	FOR	B	C	S	FB	S,T	S	S	0	0	0	40	60	0	0	M	S	M	D	A	D	A	M	A	A	A	M	0.8	0	0	0	0	0	0	2	2
17	FOR	M	C	G	FB	G,S,T	S	S	0	50	0	0	0	0	50	-	M	D	A	A	A	A	M	S	A	A	G	0.4	2	0	0	0	2	0	0	0

a) Rocky point above water.

b) Underwater rock shoal.

c) Sand bar.

d) Island.

e) Riffles.

Appendix C, Table 59

Habitat Assessment Results for Streams and Creeks in the Aquatic Study Area, 2019

	Upland Zone				Riparian Zone							Stream Channel: Substrate								Stream Channel: Cover						Stream Channel: Aquatic Vegetation				Stream Channel: Habitat Type				Stream Channel: Channel Characteristics										Spawning Suitability							
Habitat Section #	Land Use	Forest Condition	Canopy	Slope	Vegetation Category	Slope Right	Bank Stability Right	Vegetation Type	Slope Left	Bank Stability Left	Crown Closure (%)	Silt/Clay (%)	Sand (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)	Organic (%)	Rock Cleanliness	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating	Submergent	Moss/Algae	Fast Water % - Riffles	Fast Water % - Run	Slow Water % - Pools	Slow Water % - Glide	Mean Bank Width (m)	Mean Wetted Width (m)	Max Depth (m)	Mean Center Depth (m)	Left Bank Depth (m)	Right Bank Depth (m)	Left Bank Height (m)	Right Bank Height (m)	# of Braided Channel	Obstructions	Northern Pike	Walleye	Lake Whitefish	Lake Trout	Yellow Perch	Arctic Grayling	White Sucker	Longnose Sucker
Jed Creek (July 2019)																																																			
1	FOR	B	C	G	W	M	SU	G,S	G	SU	0	25	45	10	0	0	0	20	-	S	S	A	D	M	A	M	A	M	M	0	0	5	95	10	8	1.2	0.4	0.3	0.6	0.6	0.8	-	-	3	0	0	0	3	1	0	0
2[a]	FOR	B	C	G	W	G	SU	G,S	M	SU	0	10	60	10	0	0	0	20	-	S	M	A	D	M	A	S	A	M	M	0	0	10	90	20	8	0.6	0.3	0.5	0.2	0.9	0.5	-	-	1	1	1	0	3	1	0	0
3	FOR	M	C	G	W	M	SU	G,S,T	M	SU	0	20	55	15	0	0	0	10	-	M	M	A	D	M	A	A	A	M	M	0	0	10	90	25	18	0.8	0.4	0.6	0.5	1	0.8	-	-	0	1	1	0	3	1	1	1
Patterson Creek (July 2019)																																																			
1	FOR	M	M	G	FB	G	S	T	S	SU	10	0	30	0	30	40	0	0	C	S	S	D	M	D	M	D	A	A	A	100	0	0	0	12	10	1.2	1.2	0.1	0	1	0	-	-	1	3	3	0	0	2	3	3
2	FOR	M	M	G	FB	G	S	T	G	S	10	0	95	0	5	0	0	0	C	D	M	S	D	D	S	S	A	M	A	0	90	10	0	18	15	2	0.4	0.5	0.5	0.5	0.5	-	-	2	0	0	0	1	0	0	0
3	FOR	M	C	G	FB	G	S	T	M	SU	10	0	60	0	15	25	0	0	S	D	A	M	M	D	S	A	A	A	A	0	90	10	0	15	10	1.1	0.8	0.2	0.8	0.5	0.1	-	-	1	3	3	0	0	2	3	3
4	FOR	M	C	G	FB	M	SU	T	G	S	10	0	100	0	0	0	0	0	-	M	M	S	D	D	S	S	A	M	A	0	90	10	0	16	8	2	0.5	0.1	0.8	0.5	0.1	-	-	2	0	0	0	0	0	0	0
5	FOR	M	C	G	FB	M	SU	T	G	S	10	0	100	0	0	0	0	0	-	M	M	A	D	D	S	M	A	A	A	0	90	10	0	7	3	1.8	1	0.1	0.6	0.3	0.4	-	-	2	1	1	0	0	0	0	0
6	WL	M	D	G	W	G	S	G	G	S	10	0	100	0	0	0	0	0	-	S	D	A	A	A	A	D	A	S	A	0	0	0	100	80	25	1.3	1.3	0.8	0.9	0	0	-	-	3	0	0	0	1	0	0	0
7	FOR	M	C	G	FB	M	SU	T	G	S	10	0	100	0	0	0	0	0	-	M	M	S	D	D	A	M	S	M	A	0	0	0	100	10	5	1	0.6	0.2	0.2	0.3	0.3	-	-	3	0	0	0	2	0	0	0
8	FOR	M	C	G	FB	G	S	G,S,T	G	S	10	0	50	0	0	0	0	50	-	M	D	S	D	D	S	D	S	D	A	0	0	100	0	60	15	0.5	0.4	0.4	0.3	0.5	0.1	-	-	3	0	0	0	3	0	0	0
Beet Creek (July 2019)																																																			
1	FOR	M	C	G	FB	G	S	G,S,T	S	SU	0	0	20	0	0	0	0	80	-	D	S	A	S	D	A	M	S	M	S	0	0	10	90	13	13	1.2	0.9	1	0.4	0.5	0.5	-	-	3	0	0	0	2	0	0	0
2	FOR	M	C	G	FB	G	S	G,S,T	G	S	0	5	90	0	0	0	0	5	-	A	M	A	A	A	A	D	A	A	A	0	0	10	90	20	20	0.3	0.3	0.2	0.2	0.5	0.5	-	-	3	1	1	0	1	0	1	1
3	FOR	M	C	G	FB	G	S	G,S,T	S	SU	0	0	90	0	0	0	0	10	-	D	M	A	M	D	A	M	A	M	S	0	0	10	90	20	20	1.6	1	1.2	0.3	0.5	0.5	-	-	3	1	1	0	1	0	1	1
4	FOR	M	C	G	FB	S	SU	G,S,T	G	S	0	0	90	0	0	0	0	10	-	D	M	A	M	D	A	M	A	S	S	0	0	10	90	20	20	1	1	0.2	0.8	0.5	0.5	-	-	3	1	1	0	1	0	1	1
Naomi Creek (July 2019)																																																				
1	FOR	M	M	G	FB	G	S	G,S,T	G	S	0	10	10	0	0	0	0	80	-	S	D	A	D	M	A	M	M	D	S	0	0	90	10	15	15	1	0.4	0.5	0.6	1	1	-	BD	3	1	1	0	2	0	1	1
Clearwater Creek (July 2019)																																																			
1	FOR	M	C	G	FB	G	S	G,S,T	G	S	0	0	40	0	0	0	0	60	-	S	D	A	M	S	A	M	D	D	S	0	0	90	10	22	22	0.6	0.5	0.4	0.2	1	1	-	-	2	1	1	0	2	0	1	1
2	FOR	M	C	G	FB	G	S	G,S,T	G	S	0	0	70	0	0	0	0	30	-	S	D	A	M	A	A	D	M	D	S	0	0	0	100	20	5	0.8	0.6	0.5	0.3	1	1	-	-	2	1	1	0	1	0	1	1

a) Includes a large sand island stretching nearly the entire length of this habitat section.

APPENDIX D

SEDIMENT CORE LOG SHEETS

Project Number 3008
Date September 23, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 1
Depth (m) 5.4

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Loose	Dense	N/A	N/A
2-16	Brown	Medium	Medium	N/A	N/A

Project Number 3008
Date September 24, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 2
Depth (m) 6.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-4	Brown	Loose	Dense	N/A	N/A
4-16	Brown	Medium	Medium	N/A	N/A

Broach Lake Area 1, Station 1

Broach Lake Area 1, Station 2

Project Number 3008
Date September 24, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 3
Depth (m) 6.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Loose	Dense	N/A	N/A
2-6	Brown	Medium	Medium	N/A	N/A
6-20	Brown	Medium	Medium	N/A	N/A

Project Number 3008
Date September 24, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 3 (Duplicate)
Depth (m) 5.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-3	Brown	Loose	Dense	N/A	N/A
3-7	Brown	Medium	Medium	N/A	N/A
7-22	Brown	Medium	Medium	N/A	N/A


Broach Lake Area 1, Station 3


Broach Lake Area 1, Station 3 (Duplicate)

Project Number 3008
Date September 24, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 4
Depth (m) 5.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Loose	Medium	N/A	N/A
2-12	Brown	Medium	Sparse	N/A	N/A

Project Number 3008
Date September 24, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Broach Lake
Area 1
Station 5
Depth (m) 5.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-4	Brown	Loose	Dense	N/A	N/A
4-11	Brown	Medium	Medium	N/A	N/A

Broach Lake Area 1, Station 4

Broach Lake Area 1, Station 5

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 1
Depth (m) 7.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-10	Brown	Firm	Absent	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 2
Depth (m) 7.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-10	Brown	Firm	Absent	N/A	N/A

Hodge Lake Area 2 , Station 1

Hodge Lake Area 2, Station 2

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 3
Depth (m) 8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-5	Brown	Firm	Absent	N/A	N/A
5-10	Grey-brown	Firm	Absent	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 4
Depth (m) 7.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-5	Brown	Firm	Absent	N/A	N/A
5-10	Grey-brown	Firm	Absent	N/A	N/A


Hodge Lake Area 2, Station 3


Hodge Lake Area 2, Station 4

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 5
Depth (m) 7.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-6	Brown	Firm	Absent	N/A	N/A
6-12	Light-brown	Firm	Absent	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Hodge Lake
Area 2
Station 5 (Duplicate)
Depth (m) 7.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red-brown	Medium	Absent	N/A	N/A
2-5	Brown	Firm	Absent	N/A	N/A
5-9	Light-brown	Firm	Absent	N/A	N/A

Hodge Lake Area 2, Station 5

Hodge Lake Area 2, Station 5 (Duplicate)

Project Number 3008
Date October 2, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 2
Station 1
Depth (m) 14.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown	Loose	Absent	N/A	N/A
1-12	Grey	Firm	Absent	N/A	N/A

Project Number 3008
Date October 2, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 2
Station 2
Depth (m) 14.6

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown	Loose	Absent	N/A	N/A
1-12	Grey	Firm	Sparse	N/A	N/A

Patterson Lake North East Basin Area 2, Station 1

Patterson Lake North East Basin Area 2, Station 2

Project Number 3008
Date October 2, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 2
Station 3
Depth (m) 11.2

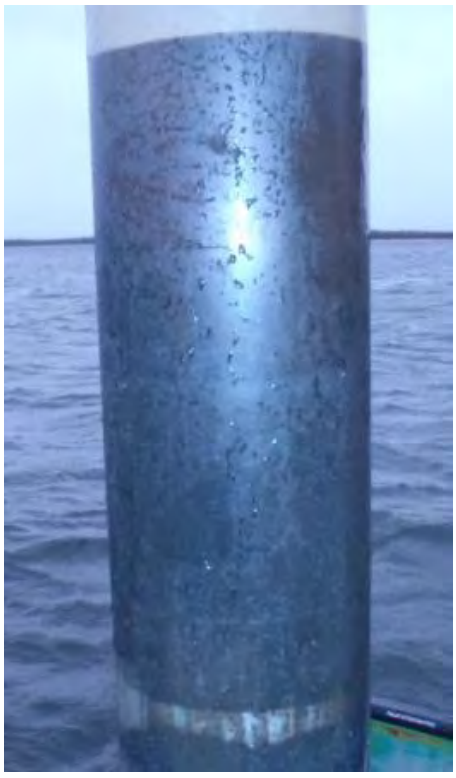
Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Medium	Absent	N/A	N/A
2-20	Grey	Firm	Sparse	N/A	N/A

Project Number 3008
Date October 2, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 2
Station 4
Depth (m) 11.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Orange brown	Medium	Absent	N/A	N/A
2-30	Dark grey	Firm	Sparse	N/A	N/A

Patterson Lake North East Basin Area 2, Station 3



Patterson Lake North East Basin Area 2, Station 4

Project Number 3008
Date October 2, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 2
Station 5
Depth (m) 10.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-4	Orange brown	Medium	Absent	N/A	N/A
4-28	Dark grey	Firm	Sparse	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 1
Depth (m) 30.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with orange specks	Medium	Absent	N/A	N/A
2-60	Greenish brown	Medium	Absent	N/A	N/A

Patterson Lake North East Basin Area 2, Station 5

Patterson Lake North West Basin Area 1, Station 1

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 2
Depth (m) 30.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-4	Brown with orange specks	Medium	Absent	N/A	N/A
4-50	Greenish brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 3
Depth (m) 29.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Absent	N/A	N/A
8-40	Greenish grey	Medium	Absent	N/A	N/A

Patterson Lake North West Basin Area 1, Station 2

Patterson Lake North West Basin Area 1, Station 3

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 3 (Duplicate)
Depth (m) 29.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Absent	N/A	N/A
8-40	Greenish grey	Medium	Absent	N/A	N/A

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 4
Depth (m) 30.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown with orange specks	Medium	Absent	N/A	N/A
1-45	Greenish grey	Medium	Sparse	N/A	N/A

Patterson Lake North West Basin Area 1, Station 3 (Duplicate)

Patterson Lake North West Basin Area 1, Station 4

Project Number 3008
Date September 22, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 5
Depth (m) 29.4

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with orange specks	Medium	Absent	N/A	N/A
2-30	Greenish grey	Medium	Sparse	N/A	N/A

Project Number 3008
Date September 23, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake South Arm
Area 2
Station 1
Depth (m) 5.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-6	Beige	Firm	Absent	N/A	N/A

Patterson Lake North West Basin Area 1, Station 5

Patterson Lake South Arm Area 2, Station 1

Project Number 3008
Date September 23, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

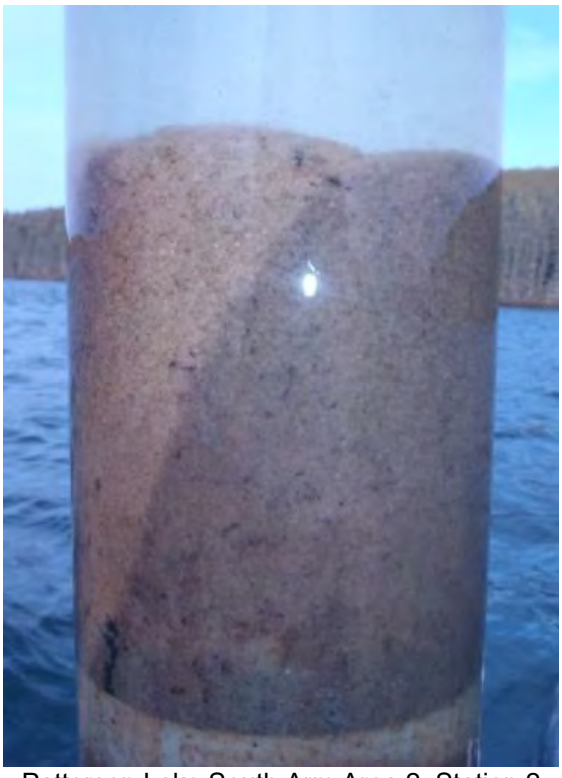
Waterbody Patterson Lake South Arm
Area 2
Station 2
Depth (m) 5.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Beige	Firm	Absent	N/A	N/A

Project Number 3008
Date September 23, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Patterson Lake South Arm
Area 2
Station 3
Depth (m) 6.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-7	Beige	Firm	Absent	N/A	N/A



Patterson Lake South Arm Area 2, Station 2

Patterson Lake South Arm Area 2, Station 3

Project Number 3008
Date September 23, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Patterson Lake South Arm
Area 2
Station 4
Depth (m) 5.6

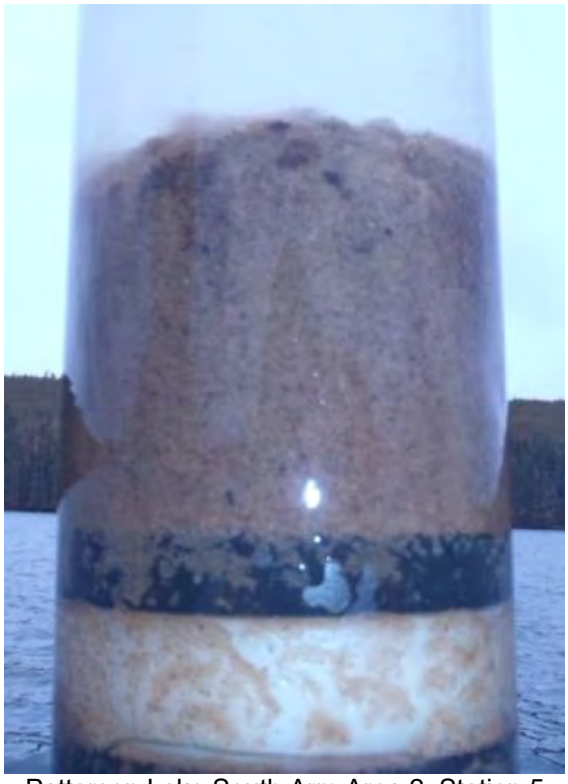
Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-7	Beige	Firm	Absent	N/A	N/A

Project Number 3008
Date September 23, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Patterson Lake South Arm
Area 2
Station 5
Depth (m) 5.2

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Beige	Firm	Absent	N/A	N/A


Patterson Lake South Arm Area 2, Station 4


Patterson Lake South Arm Area 2, Station 5

Project Number 3008
Date September 26, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 1
Station 1
Depth (m) 0.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown	Medium	Absent	N/A	N/A
1-20	Greyish brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 26, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 1
Station 2
Depth (m) 1.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-3	Brown	Medium	Absent	N/A	N/A
3-19	Greyish brown	Medium	Absent	N/A	N/A

Forrest Lake Area 1, Station 1

Forrest Lake Area 1, Station 2

Project Number 3008
Date September 26, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Forrest Lake
Area 1
Station 3
Depth (m) 1.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-20	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 26, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Forrest Lake
Area 1
Station 4
Depth (m) 1.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-20	Brown	Medium	Absent	N/A	N/A


Forrest Lake Area 1, Station 3


Forrest Lake Area 1, Station 4

Project Number 3008
Date September 29, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 1
Station 5
Depth (m) 1.2

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-27	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 29, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 3
Station 1
Depth (m) 28.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Medium	Absent	N/A	N/A
2-18	Beige	Firm	Absent	N/A	Sand

Forrest Lake Area 1, Station 5

Forrest Lake Area 3, Station 1

Project Number 3008
Date September 30, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 3
Station 2
Depth (m) 23.2

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Medium	Absent	N/A	N/A
2-4	Beige	Firm	Absent	N/A	N/A
4-28	Grey brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 30, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 3
Station 3
Depth (m) 21.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-3	Brown orange	Medium	Absent	N/A	N/A
3-7	Grey	Firm	Absent	N/A	N/A

Forrest Lake Area 3, Station 2

Forrest Lake Area 3, Station 3

Project Number 3008
Date September 30, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 3
Station 4
Depth (m) 27.4

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Firm	Absent	N/A	N/A
2-36	Grey	Firm	Absent	N/A	N/A

Project Number 3008
Date September 30, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake
Area 3
Station 5
Depth (m) 25.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-20	Brown	Medium	Sparse	N/A	N/A

Forrest Lake Area 3, Station 4

Forrest Lake Area 3, Station 5

Project Number 3008
Date September 30, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Beet Lake
Area 2
Station 1
Depth (m) 7.6

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Rusty orange brown	Firm	Absent	N/A	N/A
2-10	Beige	Firm	Absent	N/A	N/A

Project Number 3008
Date October 1, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Beet Lake
Area 2
Station 2
Depth (m) 7.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Rusty orange brown	Medium	Absent	N/A	N/A
2-12	Beige	Firm	Absent	N/A	N/A


Beet Lake Area 2, Station 1


Beet Lake Area 2, Station 2

Project Number 3008
Date October 1, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Beet Lake
Area 2
Station 3
Depth (m) 7.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Rusty orange brown	Medium	Absent	N/A	N/A
1-10	Beige	Firm	Absent	N/A	N/A

Project Number 3008
Date October 1, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Beet Lake
Area 2
Station 4
Depth (m) 6.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Rusty orange brown	Medium	Absent	N/A	N/A
2-30	Beige	Firm	Absent	N/A	N/A

Beet Lake Area 2, Station 3

Beet Lake Area 2, Station 4

Project Number 3008
Date October 1, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Beet Lake
Area 2
Station 5
Depth (m) 7.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Rusty orange brown	Medium	Absent	N/A	N/A
2-10	Beige	Firm	Absent	N/A	N/A

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Clearwater River
Area 2
Station 1
Depth (m) 0.66

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-16	Brown	Medium	Absent	N/A	N/A

Beet Lake Area 2, Station 5

Clearwater River Area 2, Station 1

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Clearwater River
Area 2
Station 2
Depth (m) 0.66

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-12	Brown	Medium	Absent	N/A	Mud
12-18	Beige	Firm	Absent	N/A	Sand

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Clearwater River
Area 2
Station 3
Depth (m) 0.84

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown	Loose	Absent	N/A	Mud
1-12	Greyish beige	Firm	Absent	N/A	Sand

Clearwater River Area 2, Station 2

Clearwater River Area 2, Station 3

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer
Waterbody Clearwater River
Area 2
Station 3 (Duplicate)
Depth (m) 0.84

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-1	Brown	Loose	Absent	N/A	Mud
1-12	Greyish beige	Firm	Absent	N/A	Sand

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer
Waterbody Clearwater River
Area 2
Station 4
Depth (m) 0.64

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-13	Brown	Medium	Sparse	N/A	Some black spots

Clearwater River Area 2, Station 3 (Duplicate)

Clearwater River Area 2, Station 4

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Clearwater River
Area 2
Station 5
Depth (m) 0.44

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-24	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 24, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Clearwater River
Area 2
Station 5 (Duplicate)
Depth (m) 0.44

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-28	Brown	Medium	Absent	N/A	N/A

Clearwater River Area 2, Station 5

Clearwater River Area 2, Station 5 (Duplicate)

Project Number 3008
Date September 25, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Lloyd Lake Inlet
Area
Station 1
Depth (m) 5.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with light orange specks	Medium	Absent	N/A	N/A
2-10	Brown	Firm	Absent	N/A	N/A

Project Number 3008
Date September 25, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Lloyd Lake Inlet
Area
Station 2
Depth (m) 5.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with orange specks	Medium	Absent	N/A	N/A
2-5	Brown with orange specks	Firm	Absent	N/A	N/A
5-12	Dark brown	Firm	Absent	N/A	N/A

Lloyd Lake Inlet, Station 1

Lloyd Lake Inlet , Station 2

Project Number 3008
Date September 25, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Lloyd Lake Inlet
Area
Station 3
Depth (m) 5.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-3	Brown with orange specks	Loose	Absent	N/A	N/A
3-6	Brown with orange specks	Medium	Absent	N/A	N/A
6-12	Dark brown	Firm	Absent	N/A	N/A

Project Number 3008
Date September 25, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Lloyd Lake Inlet
Area
Station 4
Depth (m) 5.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with orange specks	Loose	Absent	N/A	N/A
2-5	Brown with orange specks	Medium	Absent	N/A	N/A
5-9	Brown	Medium	Absent	N/A	N/A

Lloyd Lake Inlet , Station 3

Lloyd Lake Inlet , Station 4

Project Number 3008
Date September 25, 2018
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Lloyd Lake Inlet
Area
Station 5
Depth (m) 5.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown with orange specks	Loose	Absent	N/A	N/A
2-4	Brown with orange specks	Medium	Absent	N/A	N/A
4-10	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 28, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Lake G
Area 2
Station 1
Depth (m) 1.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-60	Brown	Medium	Absent	N/A	N/A


Lloyd Lake Inlet , Station 5


Lake G Area 2, Station 1

Project Number 3008
Date September 28, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake G
Area 2
Station 2
Depth (m) 1.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-32	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 28, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake G
Area 2
Station 3
Depth (m) 2.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-25	Brown	Medium	Absent	N/A	N/A

Lake G Area 2, Station 2

Lake G Area 2, Station 3

Project Number 3008
Date September 28, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake G
Area 2
Station 4
Depth (m) 2.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-20	Brown	Medium	Absent	N/A	N/A

Project Number 3008
Date September 28, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake G
Area 2
Station 5
Depth (m) 1.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-55	Brown	Medium	Absent	N/A	N/A


Lake G Area 2, Station 4


Lake G Area 2 Station 5

Project Number 3008
Date September 27, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake H
Area 2
Station 1
Depth (m) 4.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-60	Greenish brown	Loose	Absent	N/A	Flocculent

Project Number 3008
Date September 27, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake H
Area 2
Station 2
Depth (m) 6.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-65	Greenish brown	Loose	Absent	N/A	Flocculent


Lake H Area 2, Station 1


Lake H Area 2, Station 2

Project Number 3008
Date September 27, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake H
Area 2
Station 3
Depth (m) 5.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-50	Greenish brown	Loose	Absent	N/A	Flocculent

Project Number 3008
Date September 27, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake H
Area 2
Station 4
Depth (m) 5.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Greenish brown	Loose	Absent	N/A	Flocculent

Lake H Area 2, Station 3

Lake H Area 2, Station 4

Project Number 3008
Date September 27, 2018
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Core

Waterbody Lake H
Area 2
Station 5
Depth (m) 5.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-48	Greenish brown	Loose	Absent	N/A	Flocculent

Lake H Area 2, Station 5

Project Number 3008
Date February 22, 2019
Personnel Michael Hamp
Equipment Tech-Ops Extruder Core

Waterbody Naomi Lake
Area
Station 1
Depth (m) 5.4

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-35	Dark brown	Medium	Absent	N/A	N/A

Project Number 3008
Date February 22, 2019
Personnel Michael Hamp
Equipment Tech-Ops Extruder Core

Waterbody Naomi Lake
Area
Station 2
Depth (m) 5.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-30	Dark brown	Medium	Absent	N/A	N/A

Naomi Lake, Station 1

Naomi Lake, Station 2

Project Number 3008
Date February 22, 2019
Personnel Michael Hamp
Equipment Tech-Ops Extruder Core

Waterbody Naomi Lake
Area
Station 3
Depth (m) 5.8

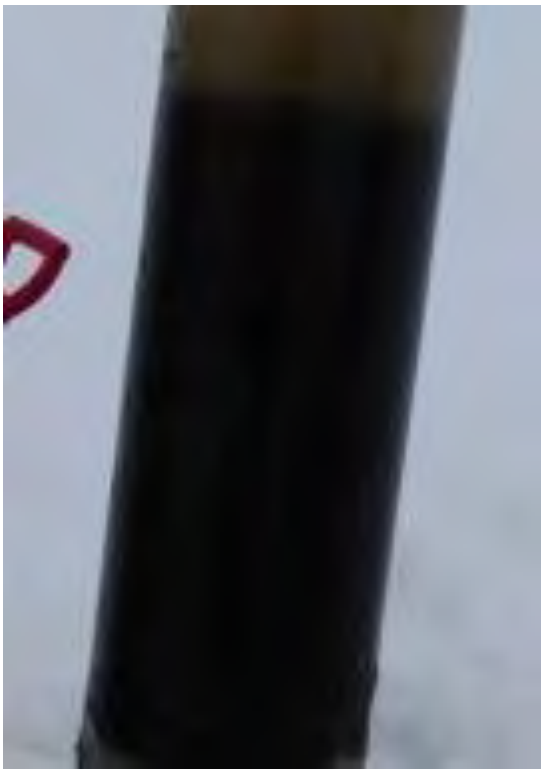
Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-30	Dark brown	Medium	Absent	N/A	N/A

Project Number 3008
Date February 22, 2019
Personnel Michael Hamp
Equipment Tech-Ops Extruder Core

Waterbody Naomi Lake
Area
Station 4
Depth (m) 5.6

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-30	Dark brown	Medium	Absent	N/A	N/A


Naomi Lake, Station 3


Naomi Lake, Station 4

Project Number 3008
Date February 22, 2019
Personnel Michael Hamp
Equipment Tech-Ops Extruder Core

Waterbody Naomi Lake
Area
Station 5
Depth (m) 5.9

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-35	Dark brown	Medium	Absent	N/A	N/A

Naomi Lake, Station 5

Project Number 3008
Date September 26, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 1
Depth (m) 30.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Absent	No	N/A
8-22	Brown gray	Medium	Absent	No	N/A

Project Number 3008
Date September 26, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 2
Depth (m) 30.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-10	Brown with orange specks	Medium	Absent	No	N/A
10-35	Brown gray	Medium	Absent	No	N/A

Patterson Lake North West Basin Area 1, Station 1

Patterson Lake North West Basin Area 1, Station 2

Project Number 3008
Date September 26, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 3
Depth (m) 29.2

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Absent	No	N/A
8-20	Gray	Medium	Absent	No	N/A

Project Number 3008
Date September 26, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 4
Depth (m) 32.6

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Moderate	No	N/A
8-25	Brown gray	Medium	Absent	No	N/A

Patterson Lake North West Basin Area 1, Station 3

Patterson Lake North West Basin Area 1, Station 4

Project Number 3008
Date September 26, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North West Basin
Area 1
Station 5
Depth (m) 30.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-8	Brown with orange specks	Medium	Absent	No	N/A
8-28	Brown gray	Medium	Absent	No	N/A

Project Number 3008
Date September 29, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake North
Area 3
Station 1
Depth (m) 27.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-9	Brown	Firm	Absent	No	Sand with thin layer (<1 cm) of loose material on top

Patterson Lake North West Basin Area 1, Station 5

Forrest Lake North Area 3, Station 1

Project Number 3008
Date September 29, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake North
Area 3
Station 2
Depth (m) 21.8

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-3	Brown	Medium	Absent	No	N/A
3-12	Brown	Firm	Absent	No	Sand

Project Number 3008
Date September 29, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake North
Area 3
Station 3
Depth (m) 20.2

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red brown	Medium	Absent	No	N/A
2-5	Tan brown	Firm	Absent	No	N/A
5-9	Brown	Firm	Absent	No	N/A

Forrest Lake North Area 3, Station 2

Forrest Lake North Area 3, Station 3

Project Number 3008
Date September 29, 2019
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake North
Area 3
Station 4
Depth (m) 25.6

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Light brown	Firm	Absent	No	Thin layer (< 1 cm) of loose material on top
2-6	Light brown with black	Firm	Absent	No	N/A
6-12	Brown	Firm	Absent	No	N/A

Project Number 3008
Date September 29, 2019
Personnel Patrick Carrier
Equipment Tech-Ops Extruder Corer

Waterbody Forrest Lake North
Area 3
Station 5
Depth (m) 24.5

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red brown	Loose	Absent	No	N/A
2-14	Brown	Firm	Absent	No	N/A

Forrest Lake Area 3, Station 4

Forrest Lake Area 3, Station 5

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Tech-Ops Extruder
Equipment Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 1
Depth (m) 5.7

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-5	Brown	Medium	Absent	No	N/A
5-17	Brown with black	Firm	Absent	No	N/A

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Tech-Ops Extruder
Equipment Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 2
Depth (m) 6.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-4	Red brown	Medium	Absent	No	N/A
4-16	Brown with black	Firm	Absent	No	N/A

Patterson Lake North East Basin Area 3, Station 1

Patterson Lake North East Basin Area 3, Station 2

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 3
Depth (m) 6.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown red	Medium	Absent	No	N/A
2-13	Brown	Firm	Absent	No	N/A

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 3 (Duplicate)
Depth (m) 6.1

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown red	Medium	Absent	No	N/A
2-10	Brown	Firm	Absent	No	N/A

Patterson Lake North East Basin Area 3, Station 3

Patterson Lake North East Basin Area 3, Station 3 (Duplicate)

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 4
Depth (m) 6.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown red	Medium	Absent	No	N/A
2-14	Brown black	Firm	Absent	No	N/A

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 4 (Duplicate)
Depth (m) 6.3

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Red brown	Medium	Absent	No	N/A
2-12	Brown	Firm	Absent	No	N/A

Patterson Lake North East Basin Area 3, Station 4

Patterson Lake North East Basin Area 3, Station 4 (Duplicate)

Project Number 3008
Date September 28, 2019
Personnel Mitch Thorarinson
Equipment Tech-Ops Extruder Corer

Waterbody Patterson Lake North East Basin
Area 3
Station 5
Depth (m) 7.0

Core Horizons (cm)	Colour	Consistency	Organics	Odour	Comments
0-2	Brown	Medium	Absent	No	N/A
2-13	Brown with black	Firm	Absent	No	N/A

Patterson Lake North East Basin Area 3, Station 5

APPENDIX E

PLANKTON IDENTIFICATION AND ENUMERATION METHODS

PLANKTON IDENTIFICATION AND ENUMERATION METHODS

Phytoplankton Sample Inventory

Upon arrival, samples are examined, and if needed, Lugols preservative is added to ensure adequate preservation of samples. An inventory form is created and verified with the client's chain of custody (COC) to ensure that all samples are accounted for, and each sample has the appropriate number of jars as indicated on the COC. Any discrepancies are reported to the client and are resolved before further sample handling.

Phytoplankton Sample Processing

Samples separated in multiple jars are thoroughly mixed by shaking and combined in equal volumes to create a composite sample from which a 10 mL subsample is dispensed into a settling chamber, diluted in 90 mL of distilled water, and allowed to settle for 48 hours in an Utermohl settling chamber. The subsample is then systematically scanned using a Zeiss Axio Vert A.1 inverted phase contrast microscope at 400x magnification. All algal cells are counted in a series of randomly located fields of view (FOV) until a minimum of 200 algal units are enumerated. Algal units represent single cell, colony, coenobia or filament. Enumerating units, rather than cells, allows for a more equal representation of algal taxa groups regardless of whether they exist as single cells or in other forms. The mean number of cells per unit (the number of individual cells for single cells, or >1 for all other algal forms) are estimated for all taxa. Only "viable" cells (those that appear to be alive at the time of collection) are identified and enumerated. All chrysophyte loricas (i.e., a wall or shell surrounding the cell) are also identified and counted.

Algae are identified to genus, where possible, following the most up-to-date taxonomic references and collaborations with international and local algal taxonomic experts. Species-level identifications are only given to identifiable taxa for which there are reliable taxonomic references available that encompass the species-level morphological diversity in North America. This approach ensures long-term consistency of datasets and is in accordance with the trend in algal taxonomic practice to be more conservative with delineation of species. Species-level identifications for some taxa are problematic due to widespread phenotypic plasticity that can artificially inflate species richness (Wehr et al. 2015). When applicable, terms "cf." (confertim, possibly for species) and "sp.1" (a single undetermined species) are employed to distinguish between different species in the same genus.

Phytoplankton Data Analysis

Phytoplankton results for the samples are reported as the number of cells per liter of sample (cells/L); biovolume is also calculated for the six dominant algal taxa by measuring at least 10 cells of each taxon and applying standard geometric formulas best fitted to the shape of the cell (Hillebrand et al. 1999). Biovolume estimates are expressed as cubic micrometers per liter (µg/L).

Zooplankton Sample Inventory

Upon arrival, samples are examined and double-checked against the client's COC. Any discrepancies are reported to the client and are resolved before further sample handling. The samples are transferred from formalin into 70% ethanol and are assigned a unique identification number.

Zooplankton Sample Processing

The zooplankton samples are analyzed in two fractions as follows:

(1) A 'coarse' fraction comprised of cladocerans, adult copepods, and copepedids, in which a minimum count of 200 organisms are obtained, and
(2) A 'fine-' or 'micro-' fraction, in which only copepod nauplii and rotifers are identified and enumerated.

Processing of the micro-fraction is completed to either a 100-count or a minimum of three subsamples. The micro-fraction is analyzed using a 1 mL Sedgewick-Rafter counting chamber.

The coarse-fraction is analyzed in a Bogorov tray through a stereo microscope at 10 to 40x magnification. All organisms are identified by taxonomic experts to the lowest taxonomic level using a compound microscope (100 to 400x magnification), appropriate dissection tools, and standard taxonomic references. For copepods, the stage of development is also recorded (copepodite stages I to V) as is the sex for mature individuals (copepod stage VI).

Subsampling for all fractions is performed using Hensen-Stempel pipettes. Generally subsamples are 1/10 of total sample volume for the coarse-fraction and 1/100 for the micro-fraction.

Zooplankton are identified to species wherever possible, although it should be noted that immature copepods often lack differentiating features required for identification beyond order (e.g. Calanoida, Cyclopoida, or Harpacticoida). All identifications are performed using taxonomic references and collaborations with external experts, where necessary.

Zooplankton Data Analysis

Zooplankton results for the samples are reported as numbers of organisms (abundance) and biomass per sample.

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APPENDIX F

BENTHIC INVERTEBRATE IDENTIFICATION AND ENUMERATION METHODS

BENTHIC INVERTEBRATE IDENTIFICATION AND ENUMERATION METHODS

The individual samples are processed separately. Each sample is divided into the coarse and the fine fractions. The coarse fractions are sorted completely and the fine fractions are subsampled independently using a modification of the subsampling method (Wrona et al. 1982). The basic methodology is provided below.

Pre-Sort Washing

Pour sample into sieves (2 mm, 1 mm, and 0.180 mm) and wash with running water to remove preservative and silt; if there are only small amounts of larger organic material, the 2-mm sieve can be omitted.

Transfer the coarse fraction (contents of the 2-mm and 1-mm sieves) into an individual container and add 70% alcohol. Label container with site number and fraction size. Now this fraction is ready for sorting.

Transfer the fine fraction (contents of 0.180-mm sieve) into a 2-L container for decanting. Add warm water to the 2-L container, swirl, and decant water and organic material into the 0.180-mm sieve, repeating until all organic material is washed out of the sand; then scan container under magnifying glass for heavy-shelled or stone-cased animals and pick them out; then discard sand and gravel. Transfer this fine fraction into an individual container and add 70% alcohol. Label container with site number and fraction size. Now this fraction is ready for sorting.

Sorting the Coarse Fraction

The coarse fraction is sorted in its entirety. Sort out all organisms from the coarse fraction by the “grid method” and place them into properly labelled vials (if there are large numbers of Ephemeroptera, Plecoptera, Trichoptera or any other group, place them in a separate vial). The grid method consists of a Petri dish with a gridded bottom (1 cm x 1 cm). Add small amounts of organic material into the Petri dish and pick out all benthic invertebrates with fine (number five) forceps under a magnification of around 6x, proceeding row by row. Once done with a dish, remix material and quickly rescan to catch any animals that were missed.

Sorting the Fine Fraction

In some situations there is very little organic material in the fine fractions and usually very few organisms, in which case subsampling as described below, is not required for the fine fractions. These samples would be picked in their entirety. When there is a lot of organic material in the fine fractions and/or large numbers of organisms, a subsampling of the fine fractions is to be done based on the Wrona et al. (1982) method:

Pour contents of 0.180-mm fraction container into the Imhoff cone and ensure that all material is transferred from the container. Fill the cone to the 1-L mark with diluted alcohol and allow bubbling for

about 5 minutes to ensure thorough mixing. Remove ten 25-ml subsamples from the Imhoff cone with the 25-ml subsampler container and pour into gridded Petri dishes (total volume of 250 ml removed). Examine each 25-ml subsample under the microscope (~12x magnification) and go through each Petri dish twice.

Generally, the recommended portion to subsample is a minimum of one-quarter (250 ml). However, if very large numbers of organisms are present the following guidelines are provided

- if each 25-ml subsample contains 35 to 50 organisms, then do all ten 25-ml subsamples (total volume of 250 ml),
- if each 25-ml subsample contains 50 to 75 organisms, then do eight 25-ml subsamples (total volume of 200 ml),
- if each 25-ml subsample contains 75 to 100 organisms, then do five 25-ml subsamples (total volume of 125 ml),
- if each 25-ml subsample contains 100 to 150 organisms, then do four 25-ml subsamples (total volume of 100 ml).

For samples with very large number of organisms

- if each 25-ml subsample contains >150 organisms, contact the project manager for confirmation, prior to doing two 25-ml subsamples (total volume of 50 ml).

For samples with very few organisms

- if each 25-ml subsample contains less than 35 organisms, then do twenty 25-ml subsamples (total volume 500 ml).

Place the sorted and the unsorted material from the subsamples into separate containers for archiving and label them properly.

Taxonomic Identification

All organisms are identified to the lowest practical taxonomic level (usually genus or species wherever feasible).

In most instances “identification to the lowest taxonomic level” is defined as:

Taxon	Taxonomic Level
Nematoda	Phylum
Oligochaeta	Family
Gastropoda	Genus/Species
Turbellaria	Family
Hirudinea	Species
Mollusca	Genus/Species
Hydracarina	Leave at this level
Cladocera	Family
Copepoda	Order
Ostracoda	Leave at this level
Amphipoda	Genus/Species
Insecta	Genus/Species
Terrestrial	Leave at this level

Organisms that cannot be identified to the desired level of taxonomic precision (e.g., immature or damaged) will be reported as a separate category (at the finest level of taxonomic resolution possible). Organisms which require detailed microscopic examination for identification (e.g., Chironomidae and Oligochaeta) will be mounted onto microscope slides using an appropriate mounting medium (e.g., Canada balsam, Permount, Hohers's). The most common species may be distinguishable on the basis of gross morphology and may require only a few mounts (5 to 10) as checks. All rare or less commonly occurring species are mounted for identification.

A reference collection is provided of all taxa identified from the samples. These collections are retained for taxonomic verification, ensuring consistent taxonomy and for quality control checks. They are stored in individual glass jars with rubber lined metal lids. All organisms will be identified to the desired taxonomic level using current nomenclature and literature. At the present time, the exact level of taxonomic identification has not been decided upon between the two options of

- identification to no lower than Family, or
- identification to the lowest practical taxonomic level (usually genus or species wherever feasible).

QA/QC for Benthic Invertebrate Taxonomic Enumeration

Dr. Jack Zloty follows the quality assurance/quality control (QA/QC) procedures outlined in "Revised guidance for sorting and subsampling protocols for EEM benthic invertebrate community surveys" by Glozier et al. (2002). In addition, reference collections are maintained and recent taxonomic keys are followed in the identification process. Details on the QA/QC methods employed are subsequently provided.

Sorting Efficiency

To assess sorting efficiency, at least 10% of all samples from each study are exhaustively re-examined of the sample residue (here referred to as a "re-sort") and any organisms found on the re-sort are enumerated. The criterion for an acceptable sort is that 90% of the total number of organisms are recovered during the initial sort (Glozier et al. 2002; EC 2002, 2012). If >10% of the total number of organisms are found during the re-sort, then all the samples within the particular group require re-sorting. The sorting efficiency will be calculated and reported for each sample.

Subsampling Accuracy and Precision

Accuracy and precision of subsampling procedures is determined in approximately 10% of the number of samples having been enumerated by subsampling. In the samples selected for subsampling accuracy and precision determination, the totality of the sample is divided into five even subsamples, in each of which benthic invertebrates are systematically enumerated. Each subsample count is multiplied by five to simulate five estimations of sample count via subsampling estimation. Accuracy is the closeness of an estimate to the real value. Each estimate is compared to the systematic count value (actual count) to determine subsampling estimate accuracy using the following formula (EC 2012): accuracy = [1 – (estimated # in sample / actual # in sample)] × 100. Precision signifies repeatability across subsamples. To estimate precision, each estimated count is compared to all four other estimated counts using the following formula (EC 2002; Glozier et al. 2002): precision of count (between estimate A and B, for example) = [1-(estimate A/estimate B)] x 100. The criteria for an adequate estimation is that the error level between the estimates and the actual count (accuracy) must be less than 20%, with the estimate of each of the five subsamples also being less than 20% different from one another. If the error level or the precision is not satisfactory, then either the subsampling technique has to be improved to achieve a 20% level of precision and accuracy, or the sample is sorted in its entirety (EC 2002).

Reference Collection

A reference collection is provided for all taxa identified from the samples. These collections are retained for taxonomic verification, ensuring consistent taxonomy, and for QC checks.

Rare and Damaged Organisms

Organisms that cannot be identified to the desired level of taxonomic precision (e.g., immatures or damaged) are reported as a separate category (at the finest level of taxonomic resolution possible). Organisms that require detailed microscopic examination for identification (e.g., Chironomidae and Oligochaeta) are mounted onto microscope slides using an appropriate mounting medium (e.g., Canada balsam, Permount, Hohers). The most common species may be distinguishable on the basis of gross morphology and may require only a few mounts (5 to 10) as checks. All rare or less commonly occurring species are mounted for identification. A list of references used in taxonomic identification is provided in the table below.

Taxonomic Key	Taxon
Alder et al. 2004	Simulidae (black flies)
Brinkhurst 1986	Oligochaeta (aquatic earthworms)
Clifford 1991	General taxa
Edmunds et al. 1976	Ephemeroptera (mayflies)
Epler 2001	Chironomidae (midges)
Maschwitz and Cook 2000	Polypedilum (midges)
Merritt and Cummins 1996	General taxa
McAlpine et al. 1981	Diptera (flies)
McCafferty and Randolph 1998	Ephemeroptera (mayflies)
Oliver and Roussel 1983	Chironomidae (midges)
Pennak 1989	General taxa
Soponis 1977	Orthocladius (midges)
Stewart and Stark 1993	Plecoptera (stoneflies)
Thorp and Covich 1991	General taxa
Wiederholm 1983	Chironomidae (midges)
Wiggins 1996	Trichoptera (caddisflies)
Westfall and May 1996	Zygoptera (damselflies)
Zloty and Pritchard 1997	Ameletus (mayflies)

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APPENDIX G

FISH SECTION FIGURES

APPENDIX G: FISH SECTION FIGURES
LIST OF FIGURES

Fishing Effort
- Net Set
- Minnow Trap
- Electrofishing Transect

Egg Searches
- Eggs Found
- No Eggs Found

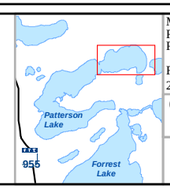
Study Areas
- Mine Site Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R36 Client: NexGen Energy Ltd.
25 / May / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-1: Spring Fishing and Egg Search Efforts in Patterson Lake, 2018

Fishing Effort
- Net Set
- Minnow Trap
- Electrofishing Transect

Egg Searches
- Eggs Found
- No Eggs Found

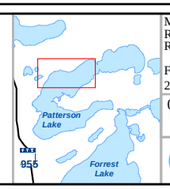
Study Areas
- Mine Site Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



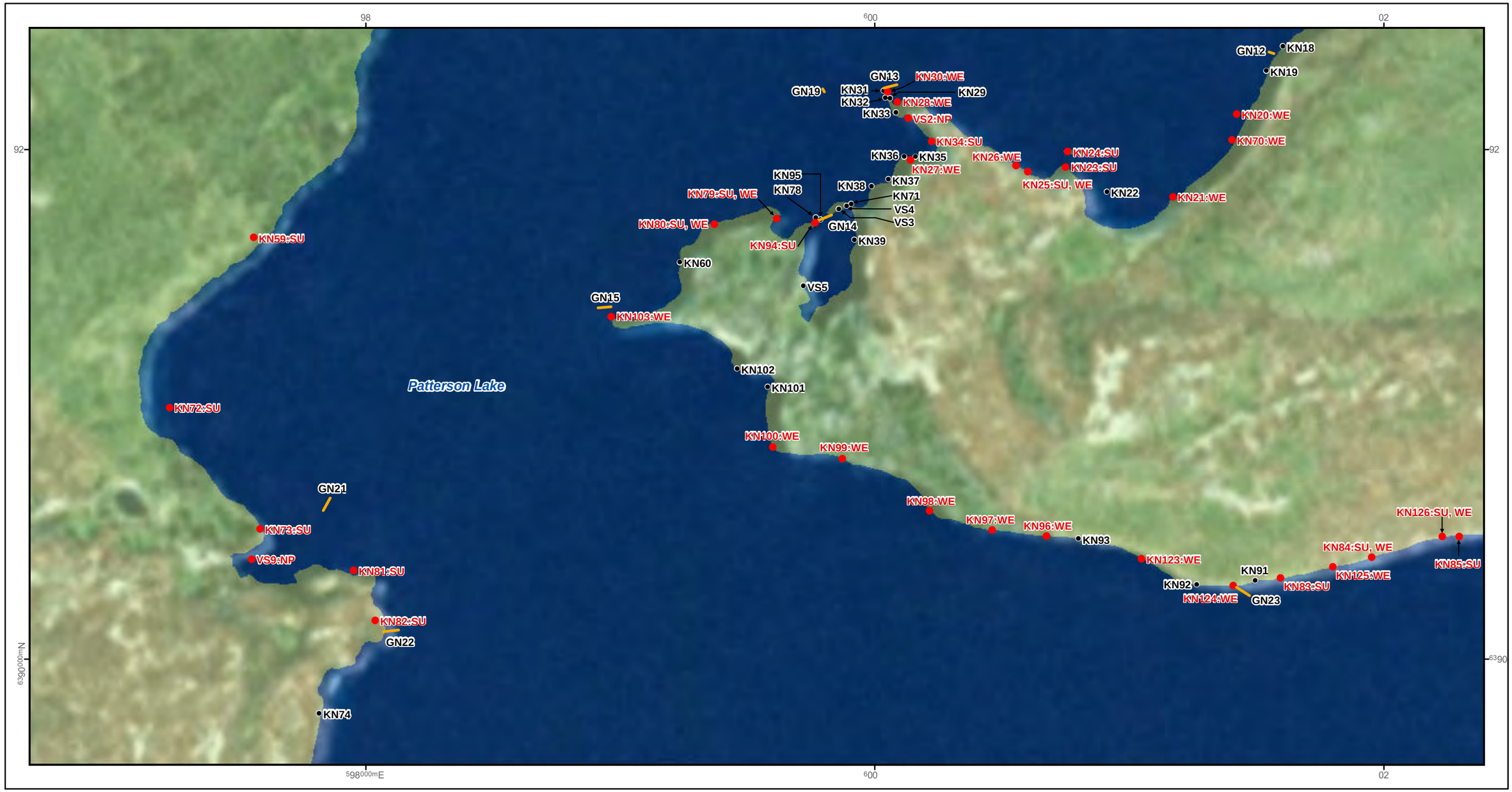
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R36 Client: NexGen Energy Ltd.
25 / May / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-2: Spring Fishing and Egg Search Efforts in Patterson Lake, 2018



Fishing Effort
- Net Set

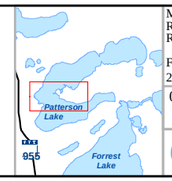
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
NP - Northern Pike
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R36 Client: NexGen Energy Ltd.
25 / May / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-3: Spring Fishing and Egg Search Efforts in Patterson Lake, 2018

Egg Searches

- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

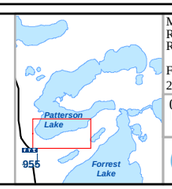
Fishing Effort
[Method][ID]
Example: GN1

Methods Key

AN - Angling	HN - Hoop Net	
BE - Boat Electrofishing	KN - Kick Net	
BP - Backpack Electrofishing	GN - Short-length Gill Net	
DN - Dip Net	MT - Minnow Trap	
ES - Egg Suctioning	VS - Vegetation Sweep	

Fish Species Key

AG - Arctic Grayling	SU - Sucker spp.
LT - Lake Trout	WE - Walleye
LW - Lake Whitefish	YP - Yellow Perch
NP - Northern Pike	
CCG - Slimy Sculpin	



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R36 Client: NexGen Energy Ltd.
25 / May / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-4: Spring Egg Search Efforts in Patterson Lake, 2018

Egg Searches
- Eggs Found
- No Eggs Found

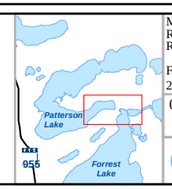
Study Areas
- Camp Study Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R36 Client: NexGen Energy Ltd.
25 / May / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-5: Spring Egg Search Efforts in Patterson Lake, 2018

Fishing Effort
- Net Set

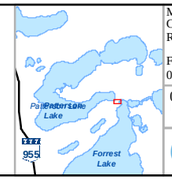
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R37 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 100 m
Original Scale 1:2,000

CanNorth

Appendix G, Figure 9.2-6: Spring Fishing and Egg Search Efforts in Patterson Creek, 2018

Fishing Effort
- Net Set

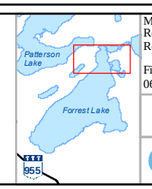
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



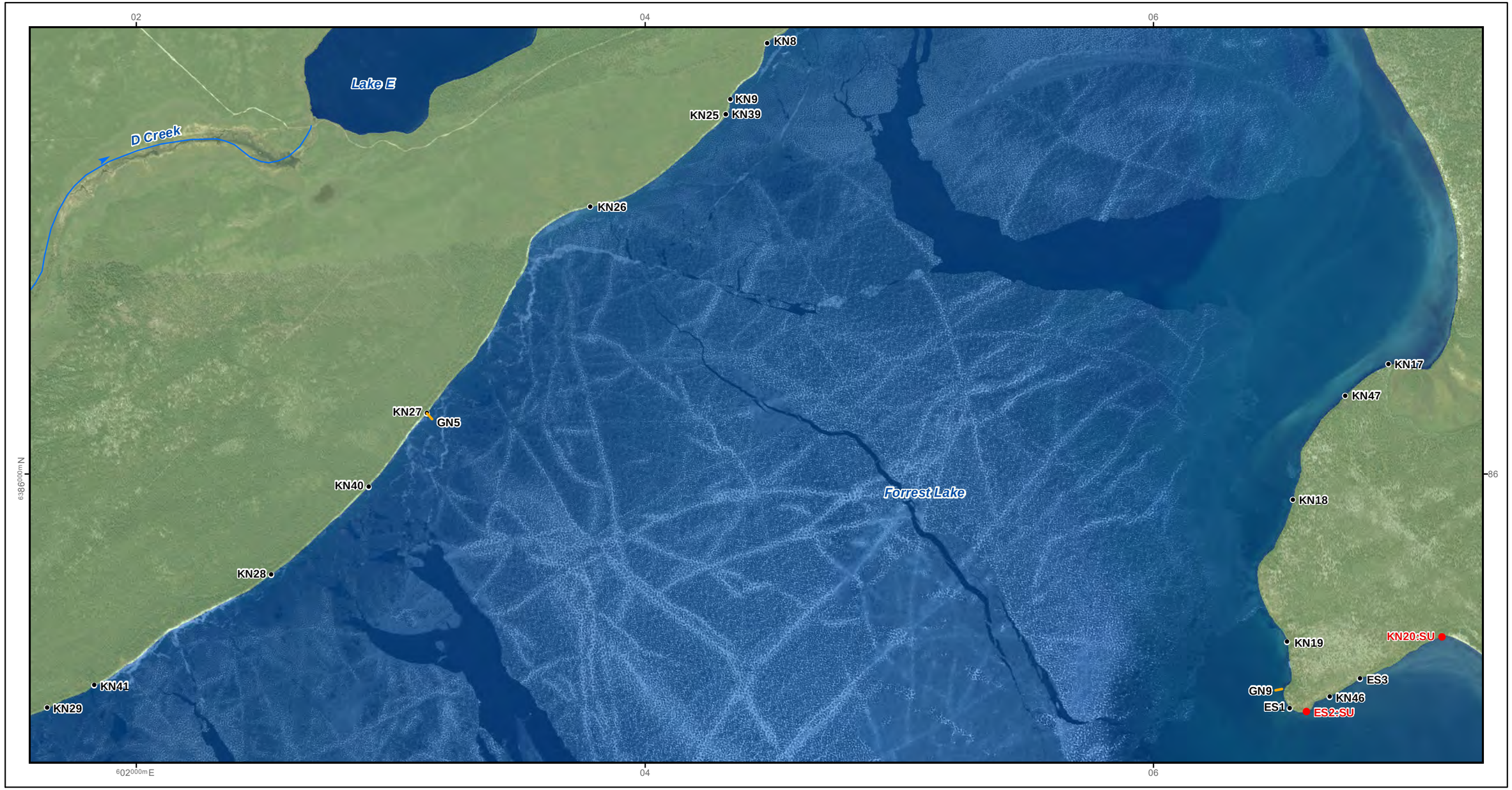
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R38 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 600 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-7: Spring fishing and egg search efforts in Forrest Lake, 2018.



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch

Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R38 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 600 m

Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-8: Spring fishing and egg search efforts in Forrest Lake, 2018.

Fishing Effort
- Net Set

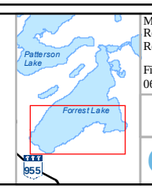
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



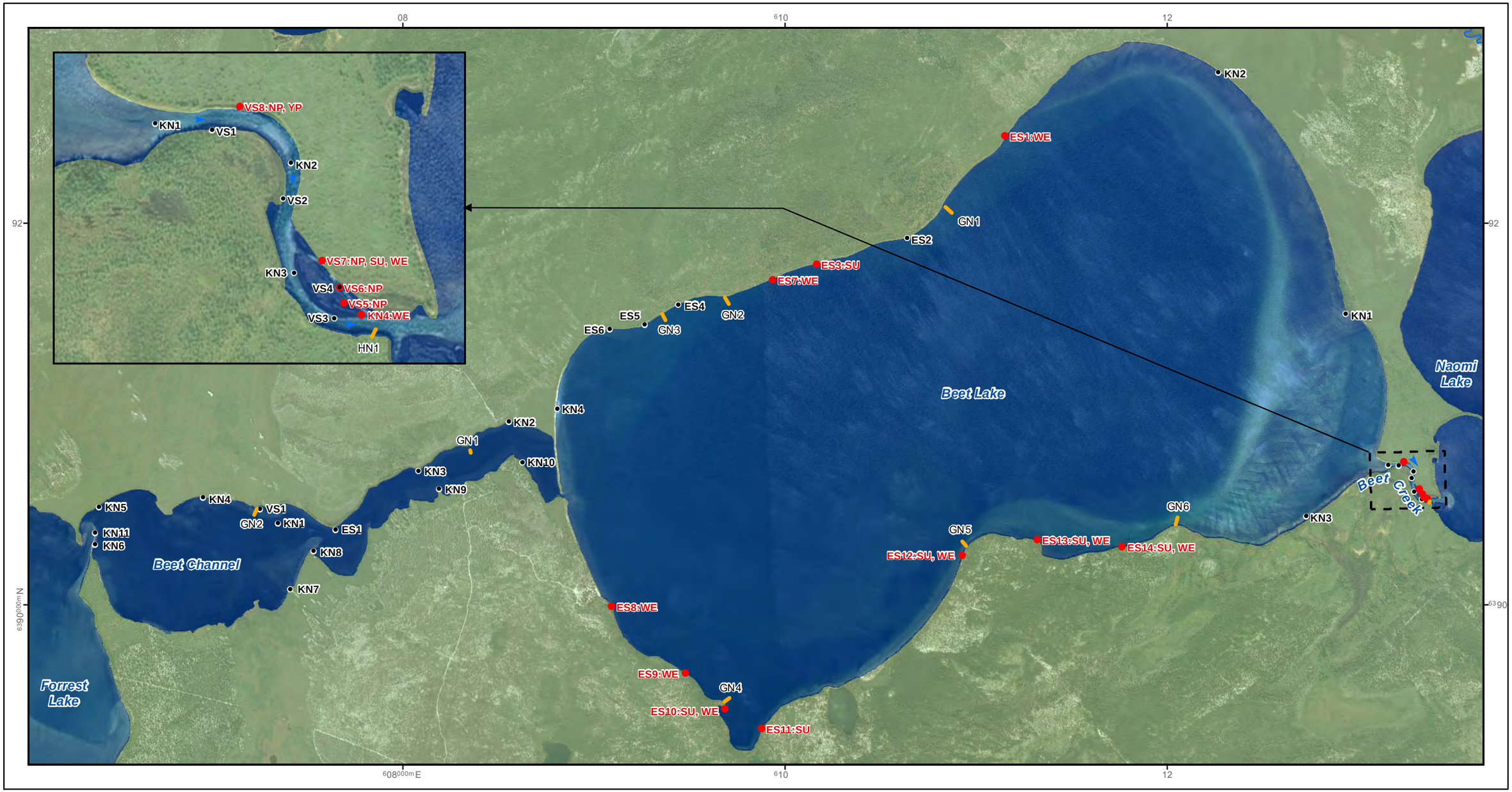
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R38 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 1,000 m
Original Scale 1:25,000

CanNorth

Appendix G, Figure 9.2-9: Spring fishing and egg search efforts in Forrest Lake, 2018.



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
NP - Northern Pike
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch

Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R39 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 1,000 m
Original Scale 1:20,000

CanNorth

Appendix G, Figure 9.2-10: Spring Fishing and Egg Search Efforts in Beet Channel, Beet Lake, and Beet Creek, 2018

Fishing Effort

Net Set

Egg Searches

Eggs Found

No Eggs Found

Egg Search Label Key

[Method][ID]:[Species]

Example: KN15:LT

Fishing Effort

[Method][ID]

Example: GN1

Methods Key

ES - Egg Suctioning

HN - Hoop Net

KN - Kick Net

GN - Short-length Gill Net

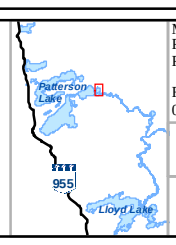
VS - Vegetation Sweep

Fish Species Key

NP - Northern Pike

SU - Sucker spp.

WE - Walleye



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural ResourcesCanada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R40 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400 m

Original Scale 1:9,000

CanNorth

Appendix G, Figure 9.2-11: Spring Fishing and Egg Search Efforts in Naomi Lake and Naomi Creek, 2018

Fishing Effort
- Angling Transect
- Net Set

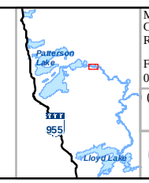
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
- AN - Angling
- BE - Boat Electrofishing
- BP - Backpack Electrofishing
- DN - Dip Net
- ES - Egg Suctioning
- HN - Hoop Net
- KN - Kick Net
- GN - Short-length Gill Net
- MT - Minnow Trap
- VS - Vegetation Sweep

Fish Species Key
- AG - Arctic Grayling
- LT - Lake Trout
- LW - Lake Whitefish
- NP - Northern Pike
- CCG - Slimy Sculpin
- SU - Sucker spp.
- WE - Walleye
- YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R41 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400 m
Original Scale 1:8,000

CanNorth

Appendix G, Figure 9.2-12: Spring Fishing and Egg Search Efforts in Clearwater River Nearfield and Clearwater Creek, 2018

Egg Searches

- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

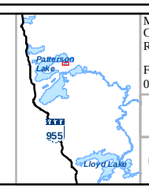
Fishing Effort
[Method][ID]
Example: GN1

Methods Key

AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key

AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



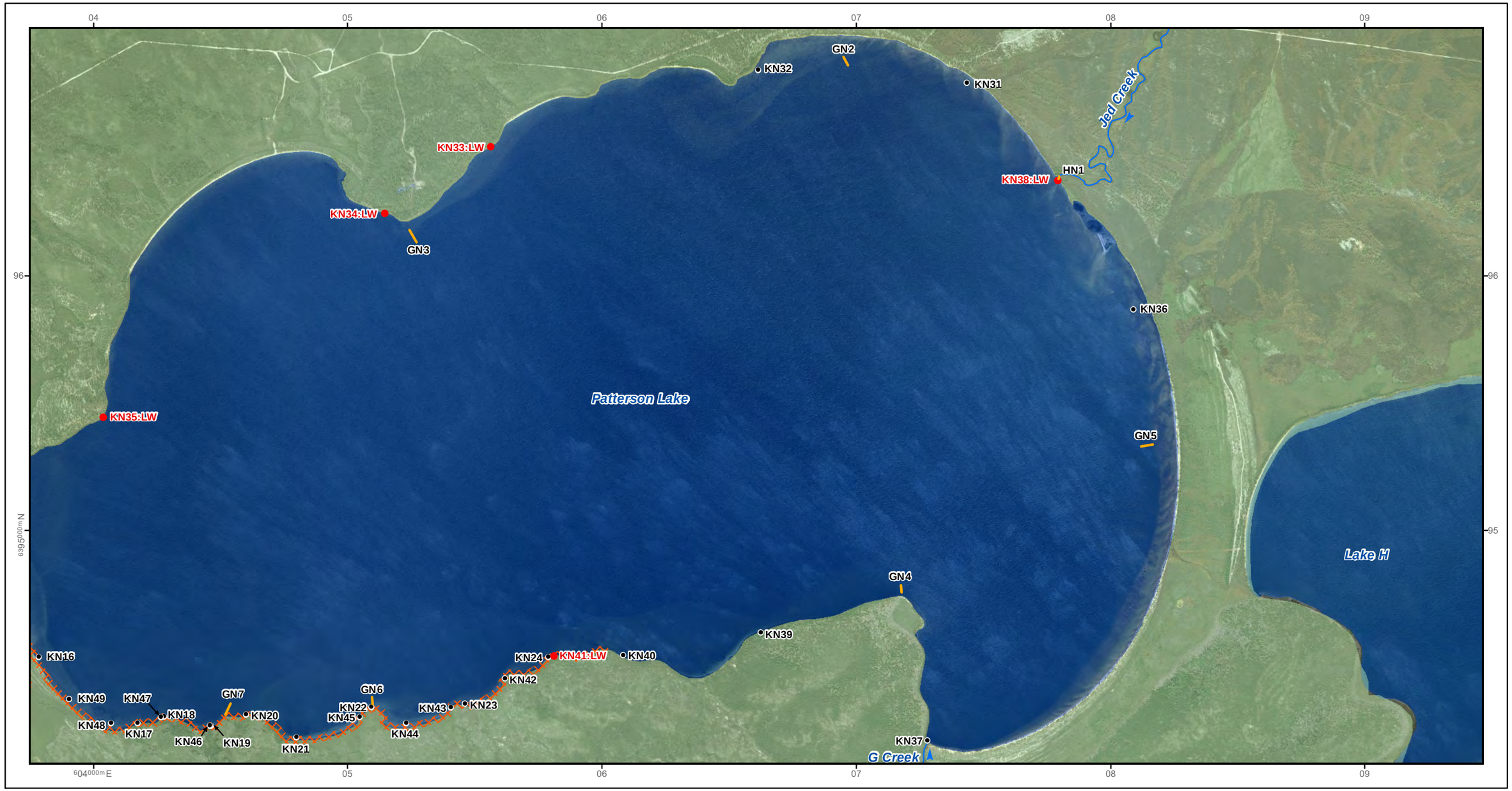
Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R41 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 250 m
Original Scale 1:5,500

CanNorth

Appendix G, Figure 9.2-13: Spring Egg Search Efforts in Lake G, 2018



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

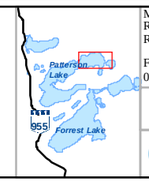
Study Areas
- Detailed Study Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



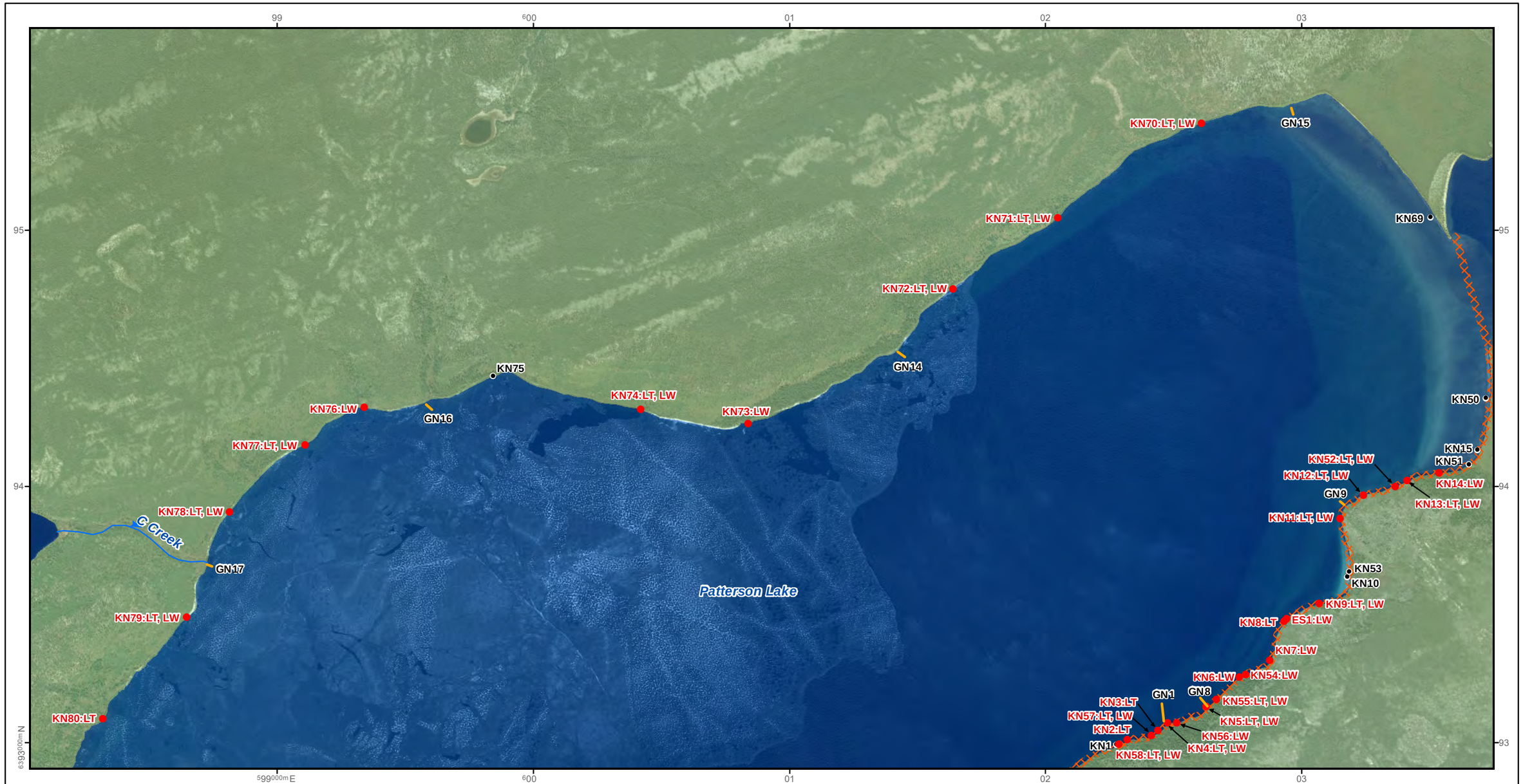
Map Sources: Esri et. al. "World Imagery (Clarity) "; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R49 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 700 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-14: Fall Fishing and Egg Search Efforts in Patterson Lake, 2018



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

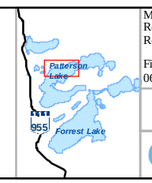
Study Areas
- Detailed Study Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



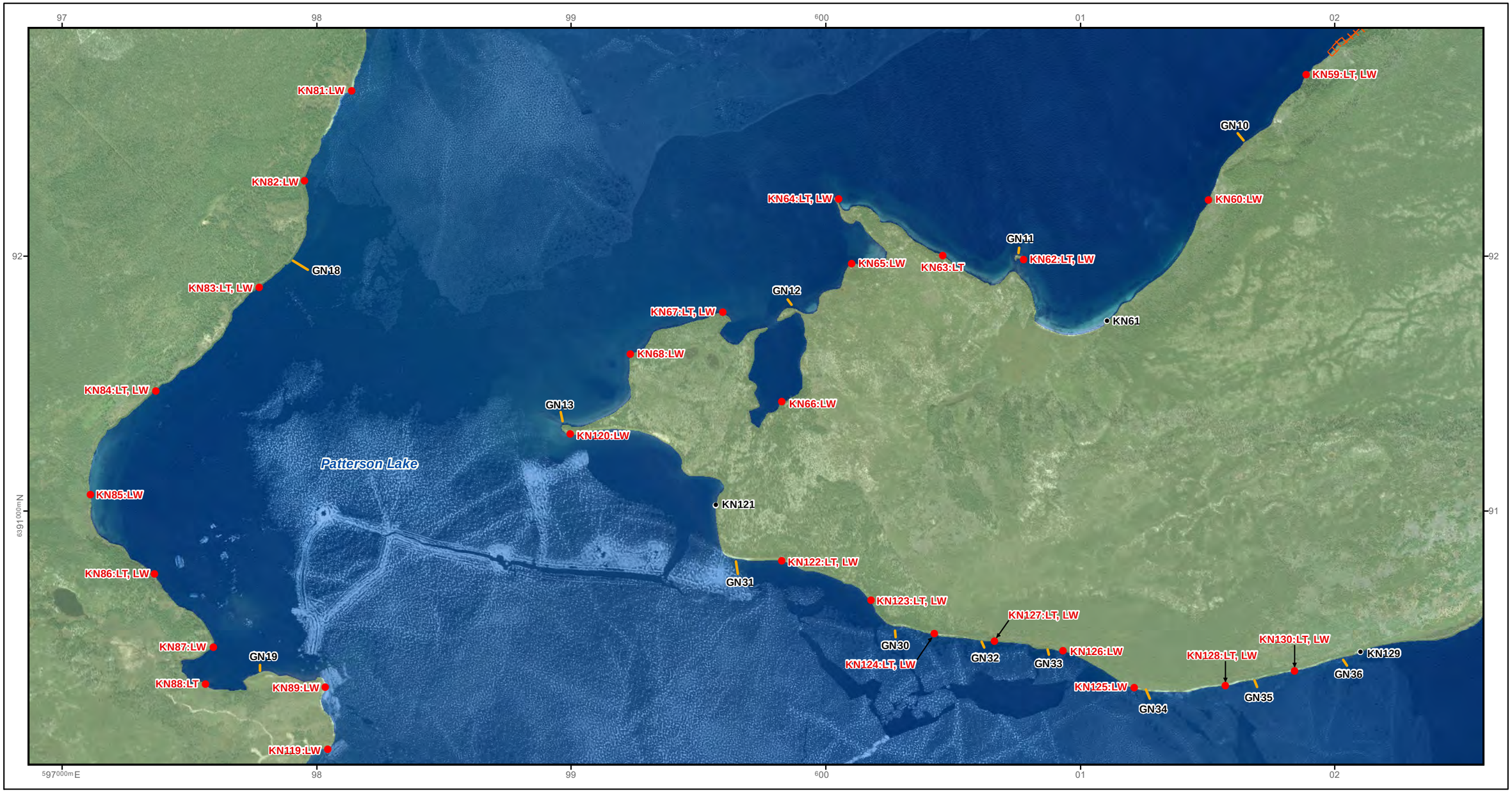
Map Sources: Esri et. al. "World Imagery (Clarity) "; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R49 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 700 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-15: Fall Fishing and Egg Search Efforts in Patterson Lake, 2018



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

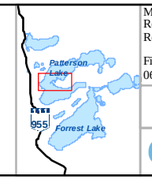
Study Areas
- Detailed Study Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery (Clarity) "; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R49 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 700 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.216: Fall Fishing and Egg Search Efforts in Patterson Lake, 2018

Fishing Effort
- Net Set

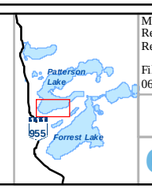
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



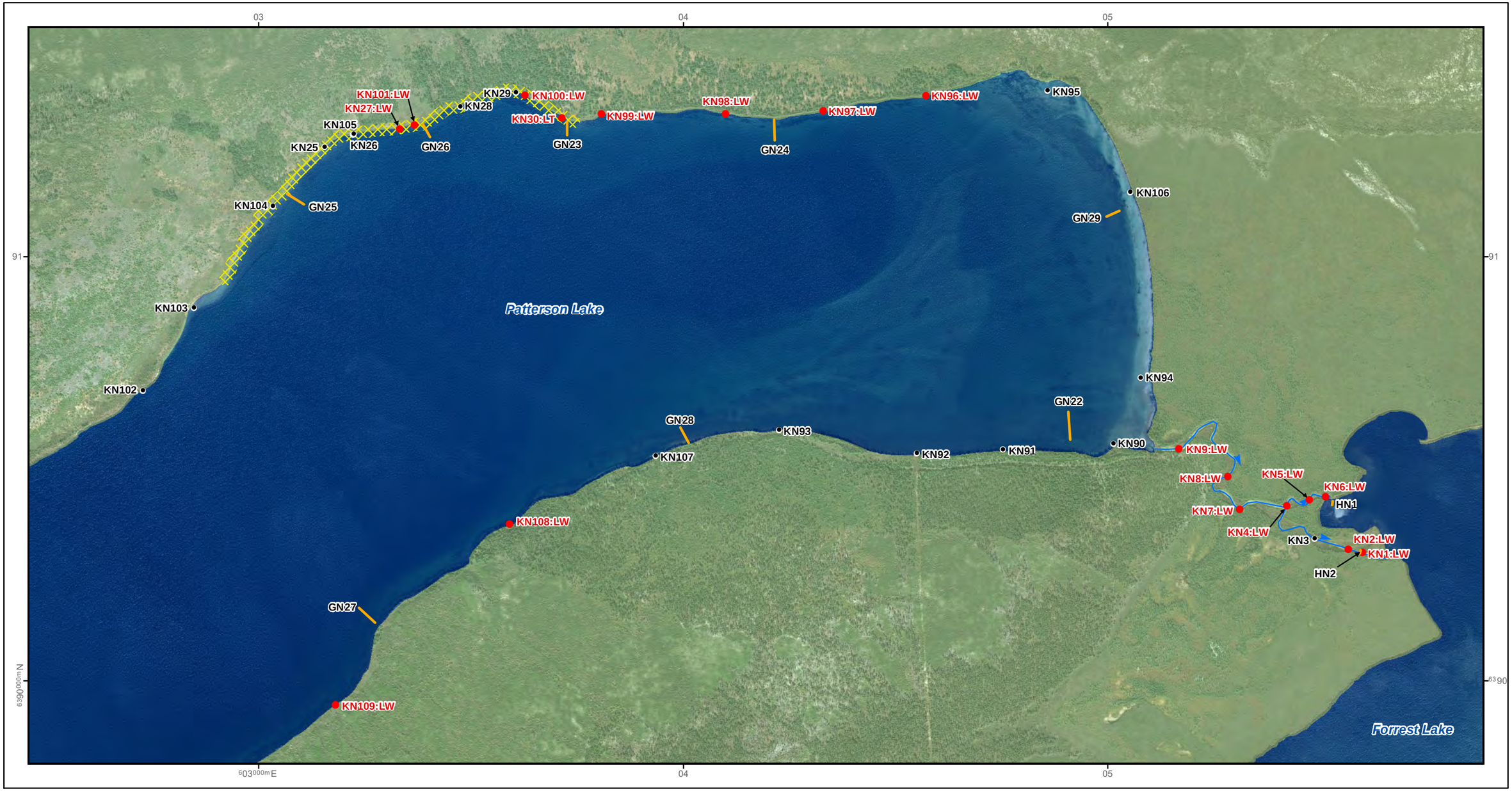
Map Sources: Esri et. al. "World Imagery (Clarity) "; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R49 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 700 m
Original Scale 1:15,000

CanNorth

Appendix G, Figure 9.2-17: Fall Fishing and Egg Search Efforts in Patterson Lake, 2018



Fishing Effort
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

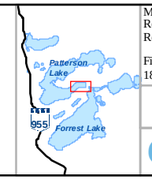
Study Areas
- Camp Study Area

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery (Clarity) "; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R49 Client: NexGen Energy Ltd.
18 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400 m
Original Scale 1:9,000

CanNorth

Appendix G, Figure 9.218: Fall Fishing and Egg Search Efforts in Patterson Lake and Patterson Creek, 2018

Fishing Effort
- Angling Transect
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
ES - Egg Suctioning
HG - Half Standard Gang Gill Net
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch

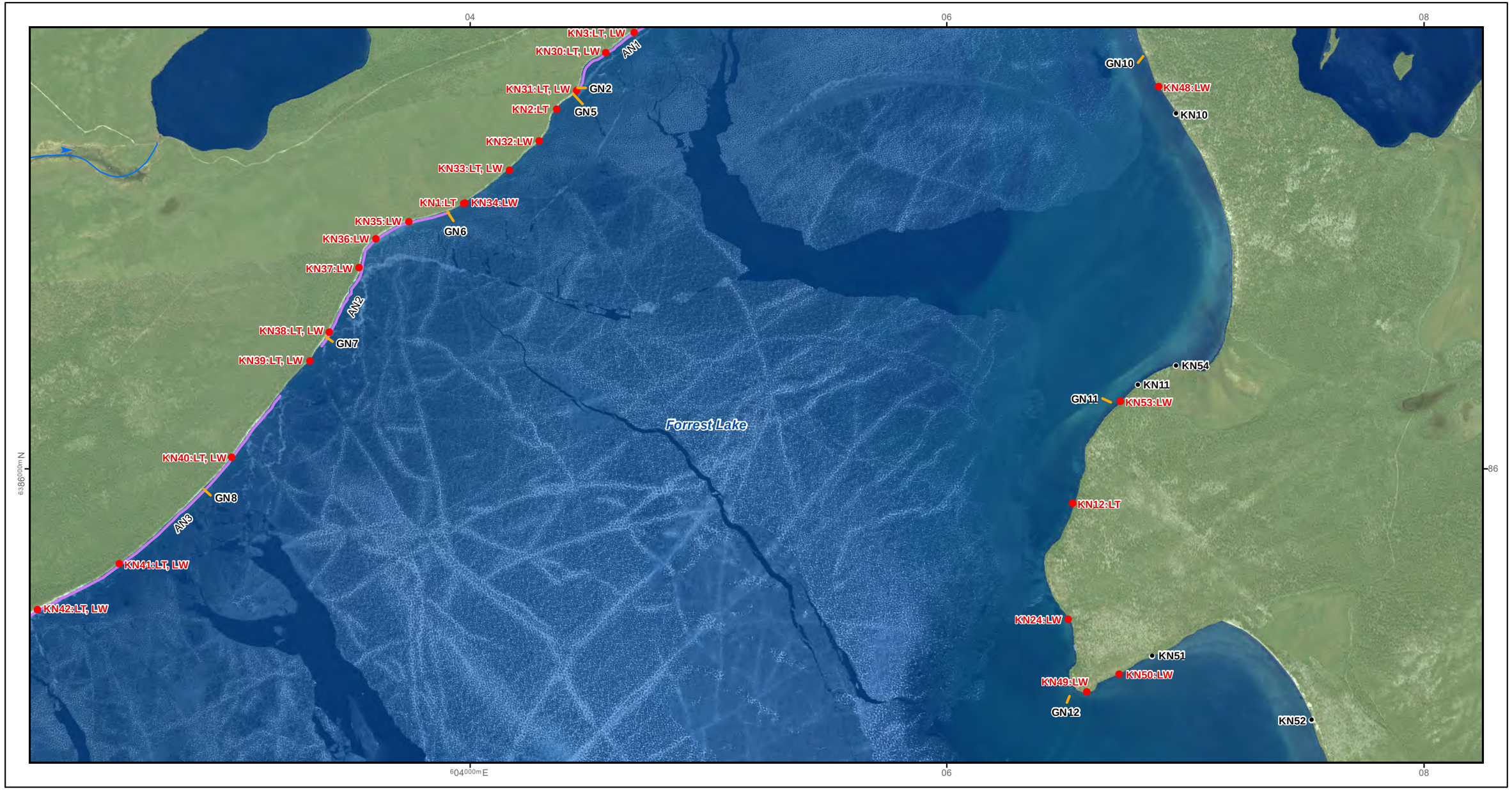
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R47 Client: NexGen Energy Ltd.
18 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 800 m
Original Scale 1:16,000

CanNorth

Appendix G, Figure 9.2-19: Fall Fishing and Egg Search Efforts in Forrest Lake, 2018



Fishing Effort
- Angling Transect
- Net Set

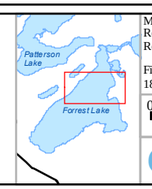
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
ES - Egg Suctioning
HG - Half Standard Gang Gill Net
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



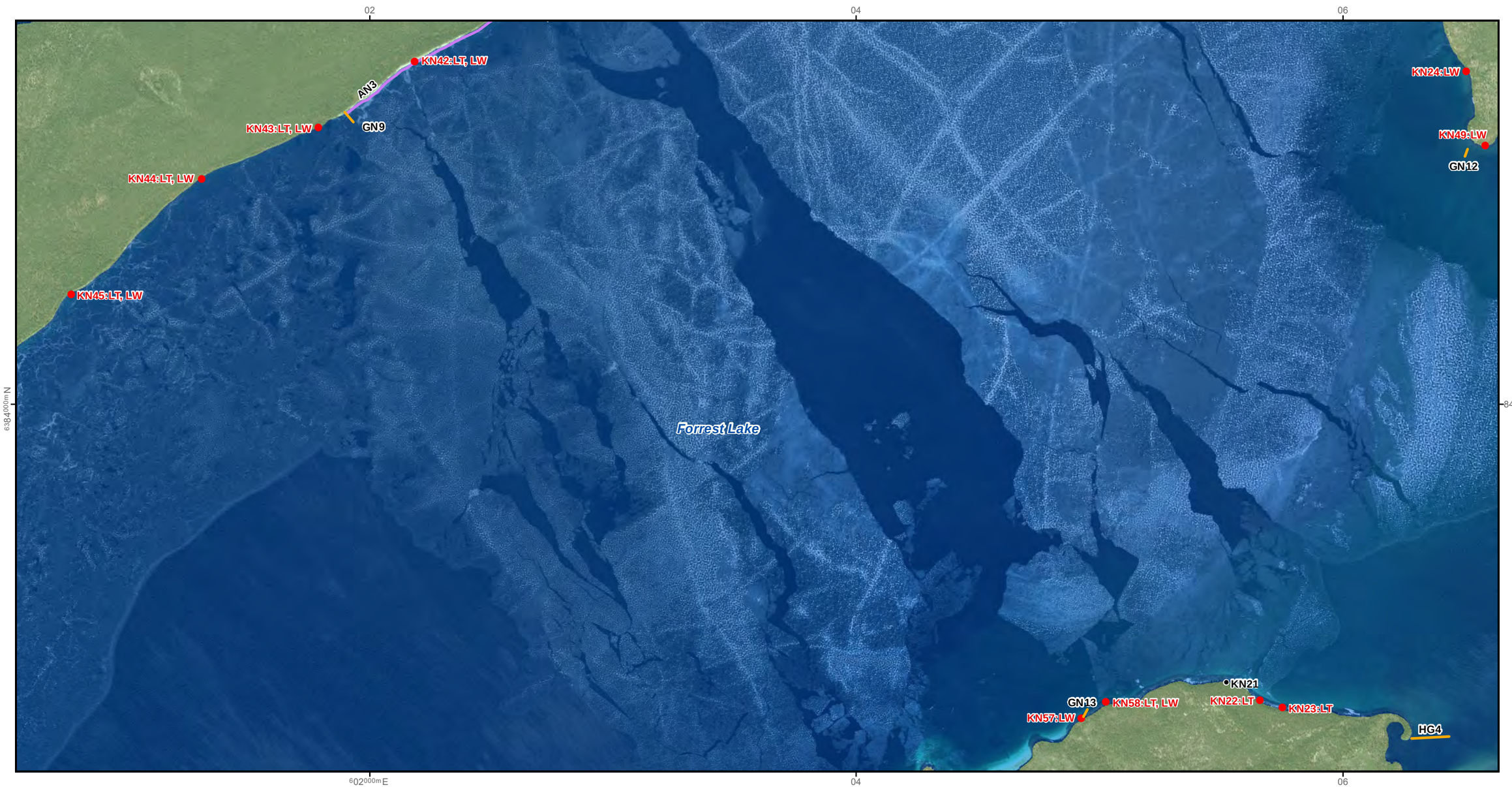
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R47 Client: NexGen Energy Ltd.
18 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 800 m
Original Scale 1:16,000

CanNorth

Appendix G, Figure 9.2-20: Fall Fishing and Egg Search Efforts in Forrest Lake, 2018



Fishing Effort
- Angling Transect
- Net Set

Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
ES - Egg Suctioning
HG - Half Standard Gang Gill Net
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch

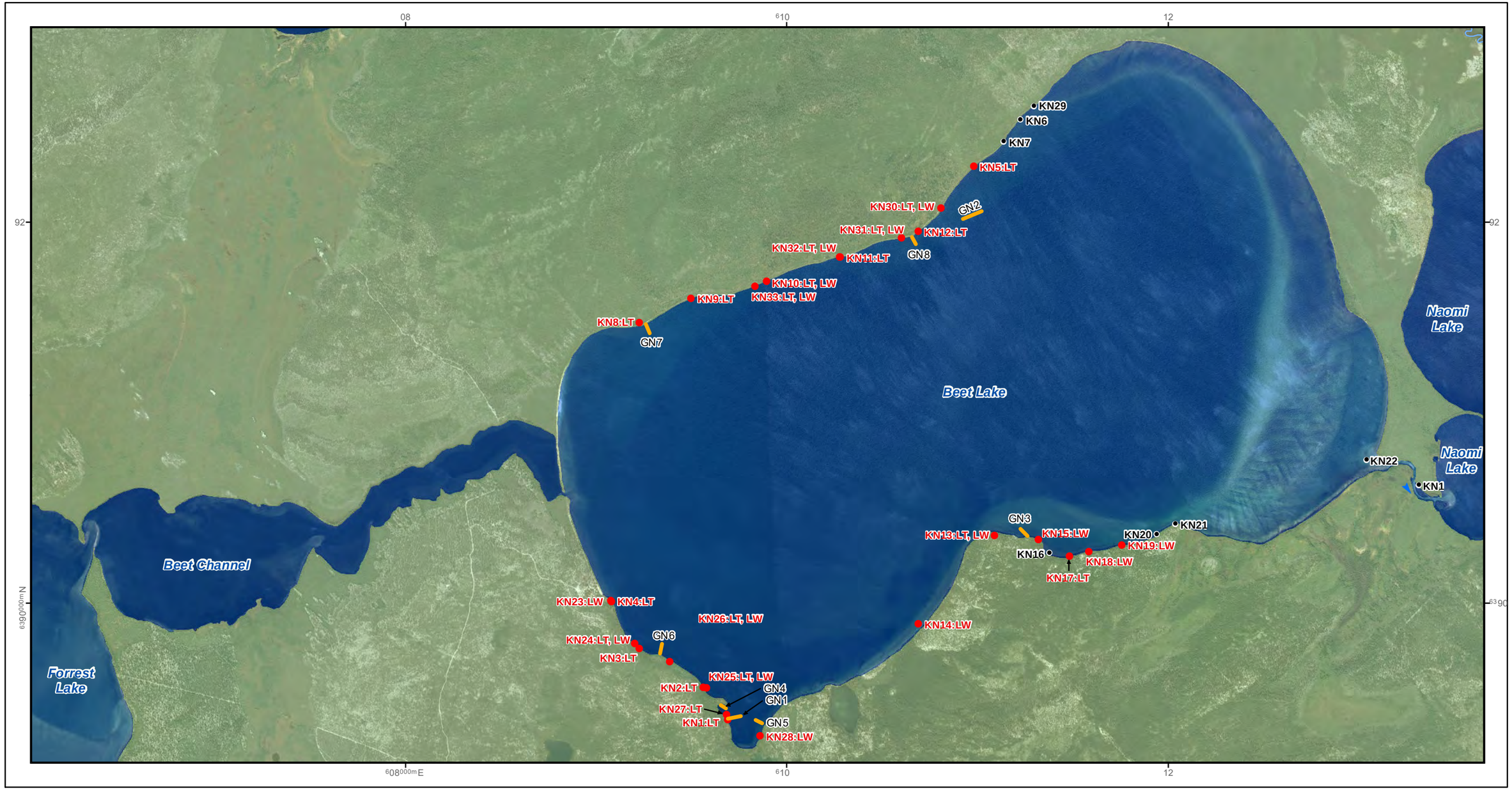
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R47 Client: NexGen Energy Ltd.
18 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 800 m
Original Scale 1:16,000

CanNorth

Appendix G, Figure 9.2-21: Fall Fishing and Egg Search Efforts in Forrest Lake, 2018



Fishing Effort
- Net Set

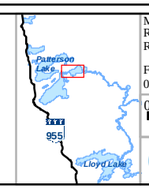
Egg Searches
- Eggs Found
- No Eggs Found

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
NP - Northern Pike
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch
CCG - Slimy Sculpin



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R46 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 1,000 m
Original Scale 1:20,000

CanNorth

Appendix G, Figure 9.2-22: Fall Fishing and Egg Search Efforts in Beet Lake and Beet Creek, 2018

Fishing Effort

Net Set

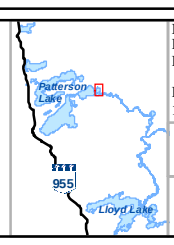
Fishing Effort Label Key

[Method][ID]

Example: GN1

Methods Key

GN - Short-length Gill Net



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

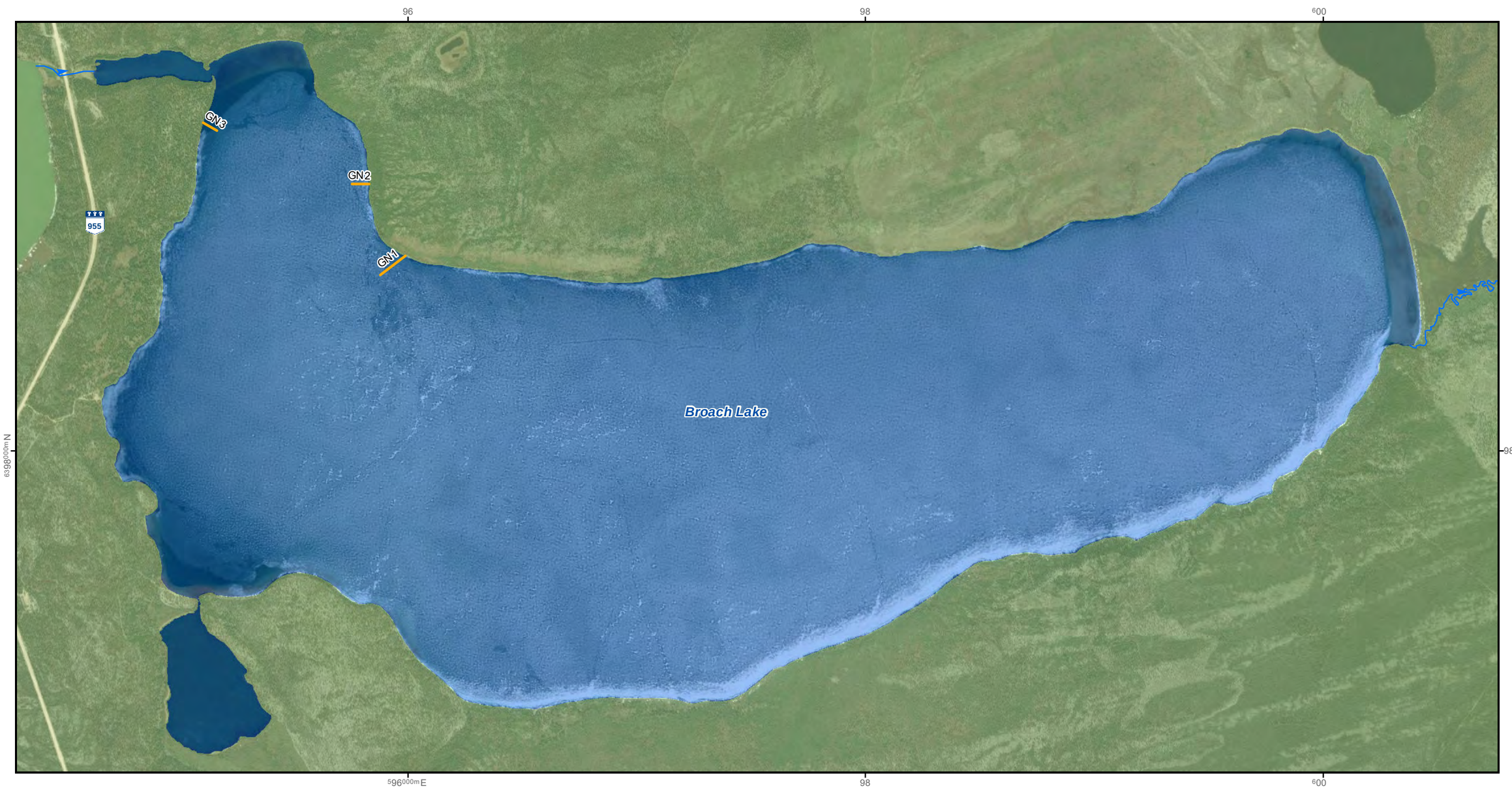
File: 3008-R48 Client: NexGen Energy Ltd.
18 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400 m

Original Scale 1:9,000

CanNorth

Appendix G, Figure 9.2-23: Fall Fishing Efforts in Naomi Lake, 2018



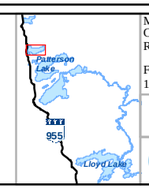
Fishing Effort
Net Set

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R45 Client: NexGen Energy Ltd.
17 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:17,000

CanNorth

Appendix G, Figure 9.2-24: Fall Fishing Efforts in Broach Lake, from the Rook I Project ASA, 2018

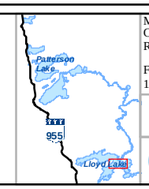
Fishing Effort
Electrofishing Transect

Egg Search Label Key
[Method][ID]:[Species]
Example: KN15:LT

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
ES - Egg Suctioning
HN - Hoop Net
KN - Kick Net
GN - Short-length Gill Net
MT - Minnow Trap
VS - Vegetation Sweep

Fish Species Key
AG - Arctic Grayling
LT - Lake Trout
LW - Lake Whitefish
NP - Northern Pike
CCG - Slimy Sculpin
SU - Sucker spp.
WE - Walleye
YP - Yellow Perch



Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R45 Client: NexGen Energy Ltd.
17 / Dec / 2020 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:16,000

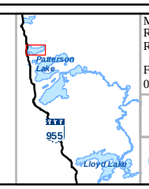
CanNorth

Appendix G, Figure 9.2-25: Fall Fishing Effots in Lloyd Lake, from the Rook I Project ASA, 2018

Fishing Effort
- Electrofishing Transect
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
- AN - Angling
- BE - Boat Electrofishing
- BP - Backpack Electrofishing
- DN - Dip Net
- HG - Half Standard Gang Gill Net
- HN - Hoop Net
- GN - Short-length Gill Net
- MT - Minnow Trap



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m

Original Scale 1:17,000

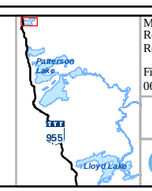
CanNorth

Appendix G, Figure 9.2-26: Summer Fishing Efforts on Broach Lake, 2018

Fishing Effort
- Electrofishing Transect
- Net Set
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HG - Half Standard Gang Gill Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 500 m
Original Scale 1:14,000

CanNorth

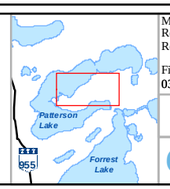
Appendix G, Figure 9.2-27: Summer Fishing Efforts on Hodge Lake, 2018

Fishing Effort
- Electrofishing Transect
- Minnow Trap

Study Areas
- Camp Area
- Mine Site Area

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Packpack Electrofishing
DN - Dip Net3
HN - Hoop Net
GN - Gill Net
MT - Minnow Trap



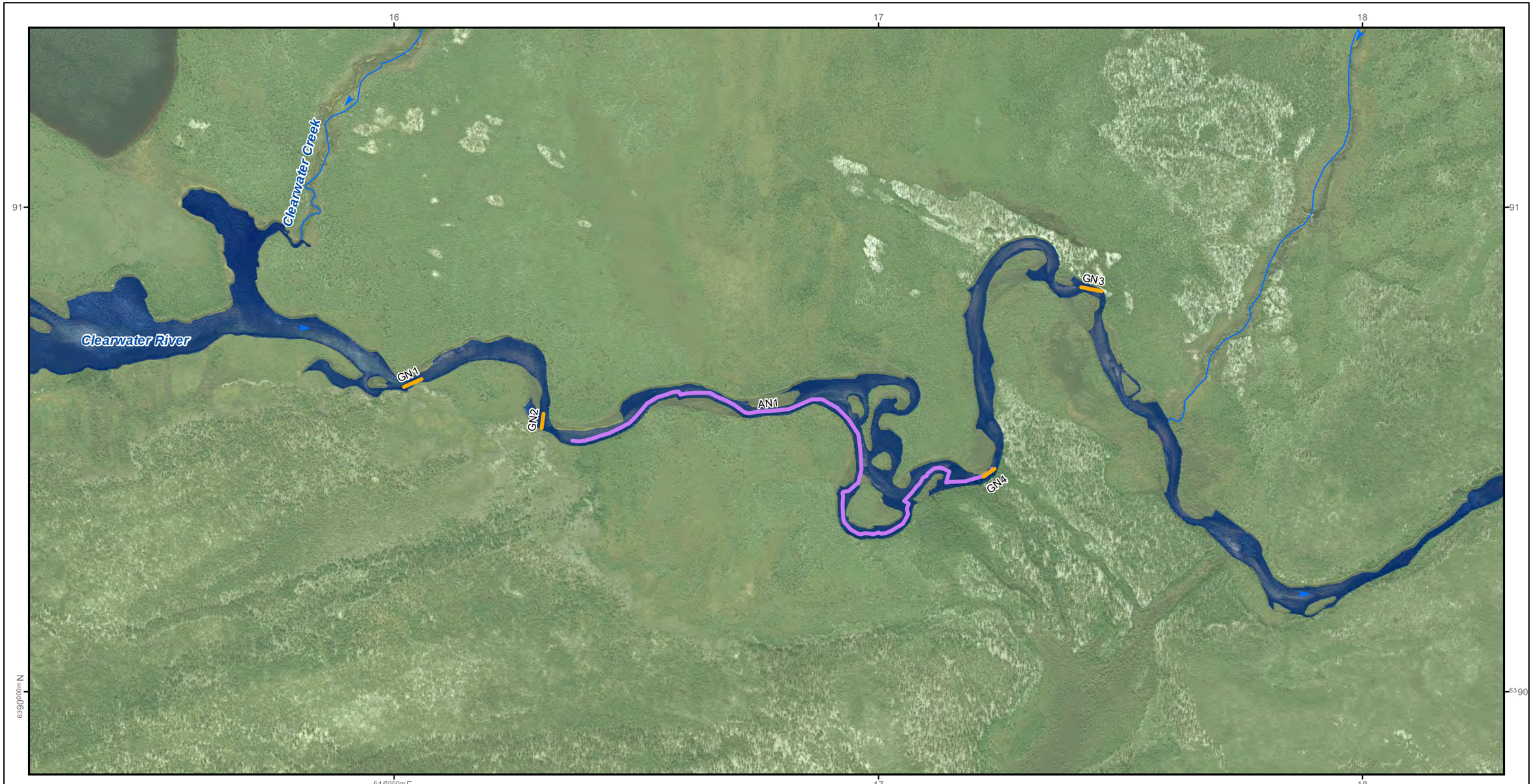
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R43 **Client: NexGen Energy Ltd.**
03 / Aug / 2021 Geomatics: CC **Reviewed by: KW**

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:16,390

CanNorth

Appendix G, Figure 9.2-28: Summer Fishing Efforts on Patterson Lake, 2018



Fishing Effort
- Angling Transect
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
- AN - Angling
- BE - Boat Electrofishing
- BP - Backpack Electrofishing
- DN - Dip Net
- HG - Half Standard Gang Gill Net
- HN - Hoop Net
- GN - Short-length Gill Net
- MT - Minnow Trap

Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 250 m

Original Scale 1:8,000

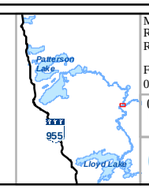
CanNorth

Appendix G, Figure 9.2-29: Summer Fishing Efforts on the Clearwater River Nearfield, 2018

Fishing Effort
- Electrofishing Transect
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HG - Half Standard Gang Gill Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 200 m
Original Scale 1:4,000

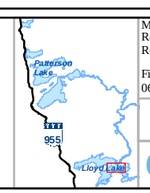
CanNorth

Appendix G, Figure 9.2-30: Summer Fishing Efforts on the Clearwater River Midfield, 2018

Fishing Effort
- Net Set
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HG - Half Standard Gang Gill Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750 m
Original Scale 1:16,000

CanNorth

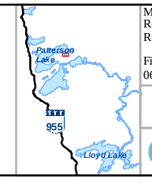
Appendix G, Figure 9.2-31: Summer Fishing Efforts on Lloyd Lake Inlet, 2018

Fishing Effort
- Electrofishing Transect
- Net Set
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key

AN - Angling	HN - Hoop Net
BE - Boat Electrofishing	GN - Short-length Gill Net
BP - Backpack Electrofishing	MT - Minnow Trap
DN - Dip Net	
HG - Half Standard Gang Gill Net	



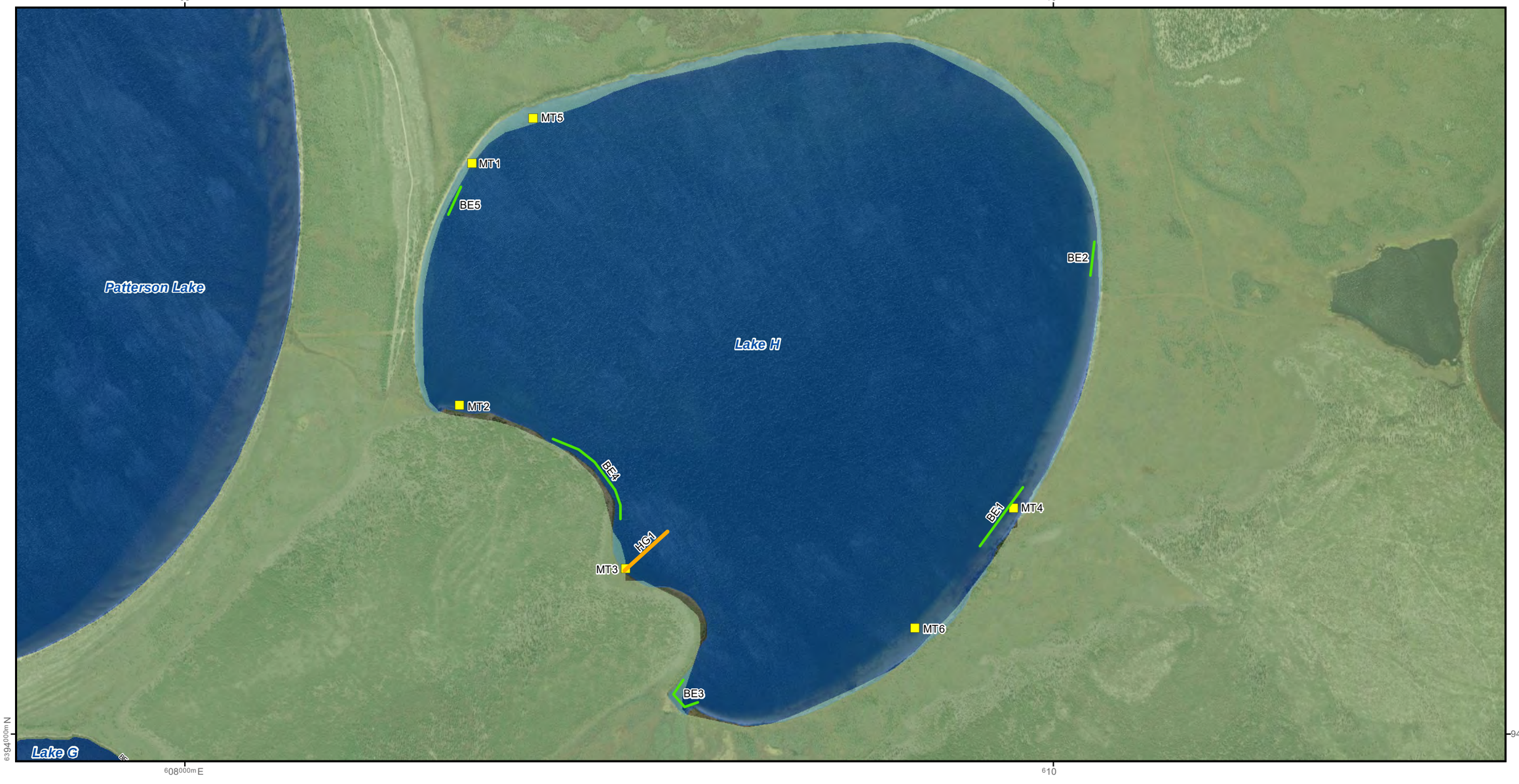
Map Sources: Esri et. al. "World Imagery (Clarity)"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R42 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 250 m
Original Scale 1:5,500

CanNorth

Appendix G, Figure 9.2-32: Summer Fishing Efforts on Lake G, 2018



Fishing Effort
- Electrofishing Transect
- Net Set
- Minnow Trap

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Packpack Electrofishing
DN - Dip Net3
HN - Hoop Net
GN - Gill Net
MT - Minnow Trap

Map Sources: Esri et. al. "World Imagery"; Natural Resources Canada,"CanVec".
Refer to text for full details & disclaimer.

File: 3008-R44 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400 m
Original Scale 1:9,000

CanNorth

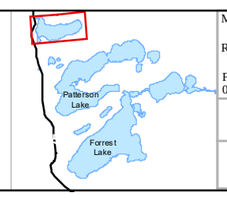
Appendix G, Figure 9.2-33: Summer Fishing Efforts on Lake H, 2018

Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 900 m
Original Scale 1:18,500

CanNorth

Figure:

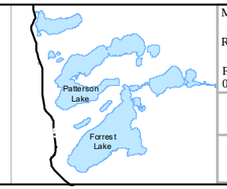
Appendix G, Figure 9.2-34: Summer Fishing Efforts in Broach Lake, 2019

Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 780 m
Original Scale 1:16,000

CanNorth

Figure:

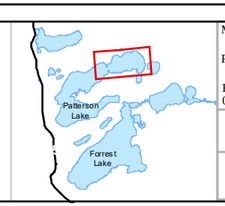
Appendix G, Figure 9.2-35: Summer Fishing Efforts in Hodge Lake, 2019

Fishing Effort

- Minnow Trap
- Detailed Study Area
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

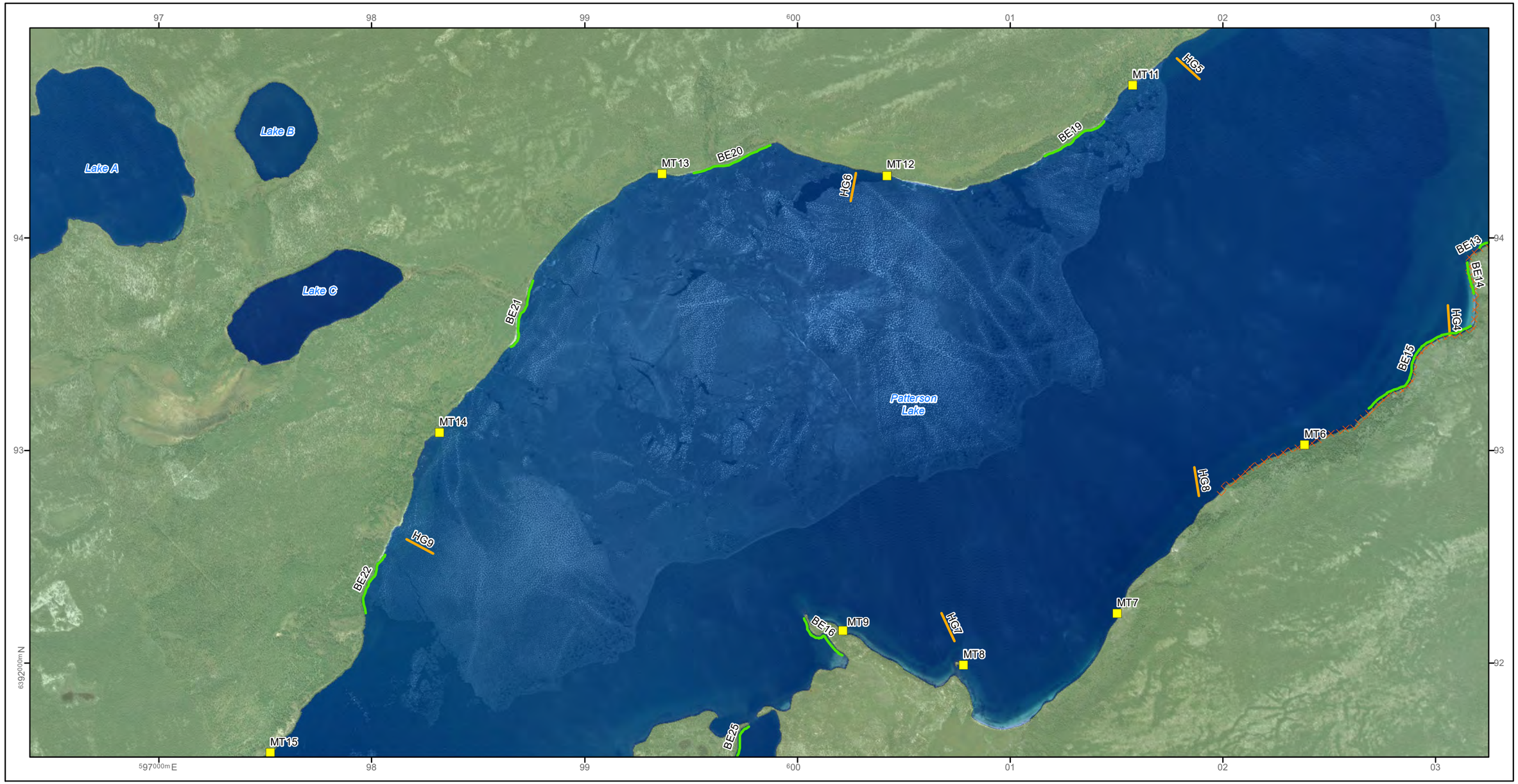
0 NAD 1983 UTM Zone 12North 900 m
Original Scale 1:18,000

CanNorth

N

Figure:

Appendix G, Figure 9.2-36: Summer Fishing Efforts in Patterson Lake and Jed Creek, 2019

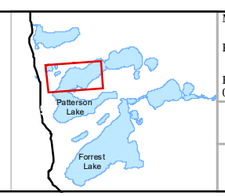


Fishing Effort

- Minnow Trap
- Angling
- Electrofishing Transect
- Net Set
- Detailed Study Area

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

NAD 1983 UTM Zone 12North

0 900 m

Original Scale 1:18,000

CanNorth

Figure:

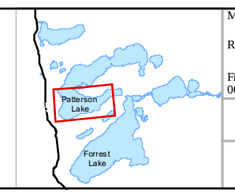
Appendix G, Figure 9.2-37: Summer Fishing Efforts in Patterson Lake, 2019

Fishing Effort

- Minnow Trap
- Camp Study Area
- Angling
- Electrofishing Transect
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

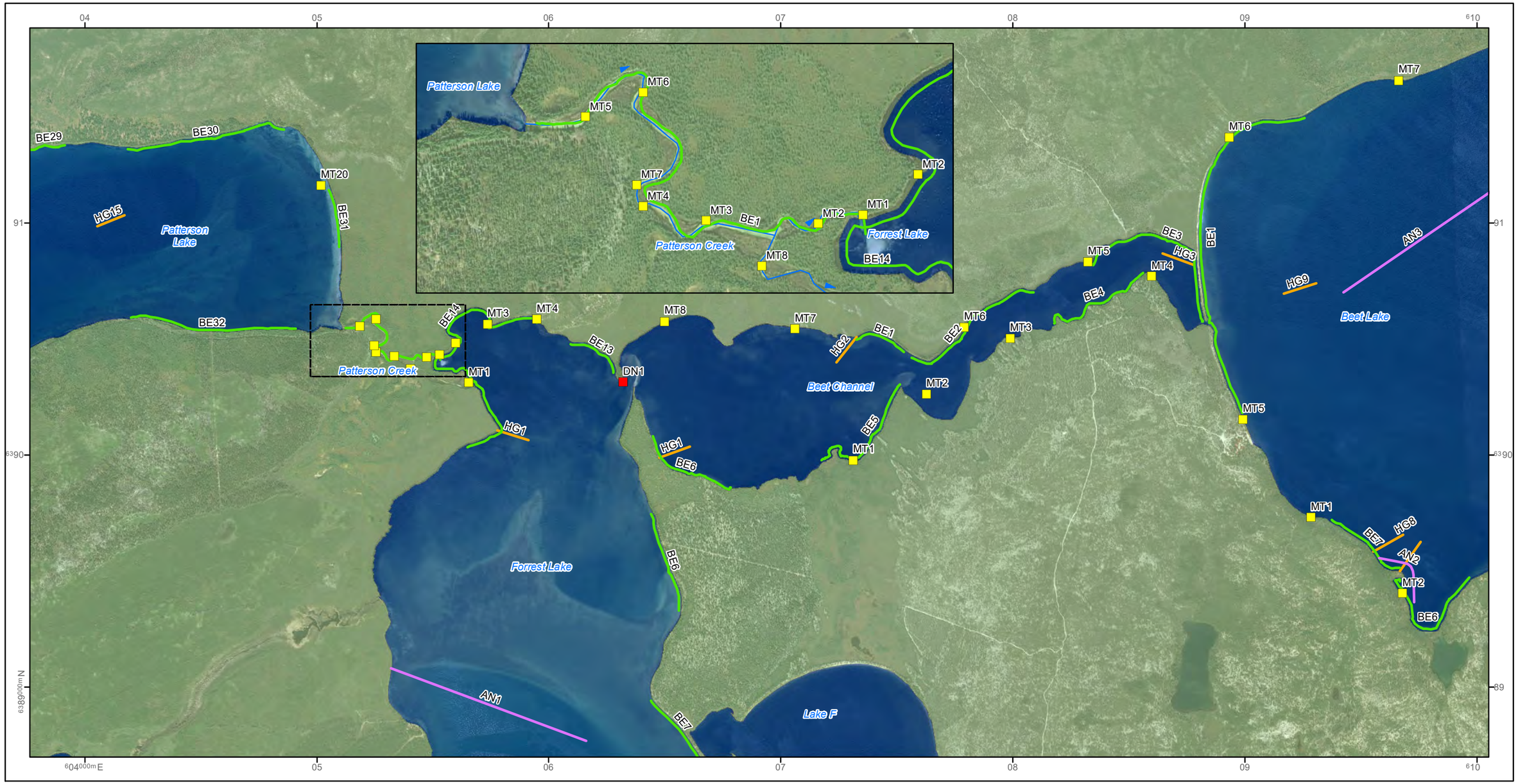
0 NAD 1983 UTM Zone 12North 1,080 m

Original Scale 1:22,500

CanNorth

Figure:

Appendix G, Figure 9.2-38: Summer Fishing Efforts in Patterson Lake, 2019

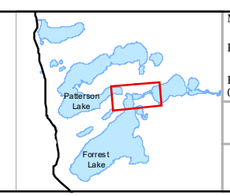


Fishing Effort

- Dip Net
- Minnow Trap
- Angling
- Net Set
- Electrofishing Transect

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

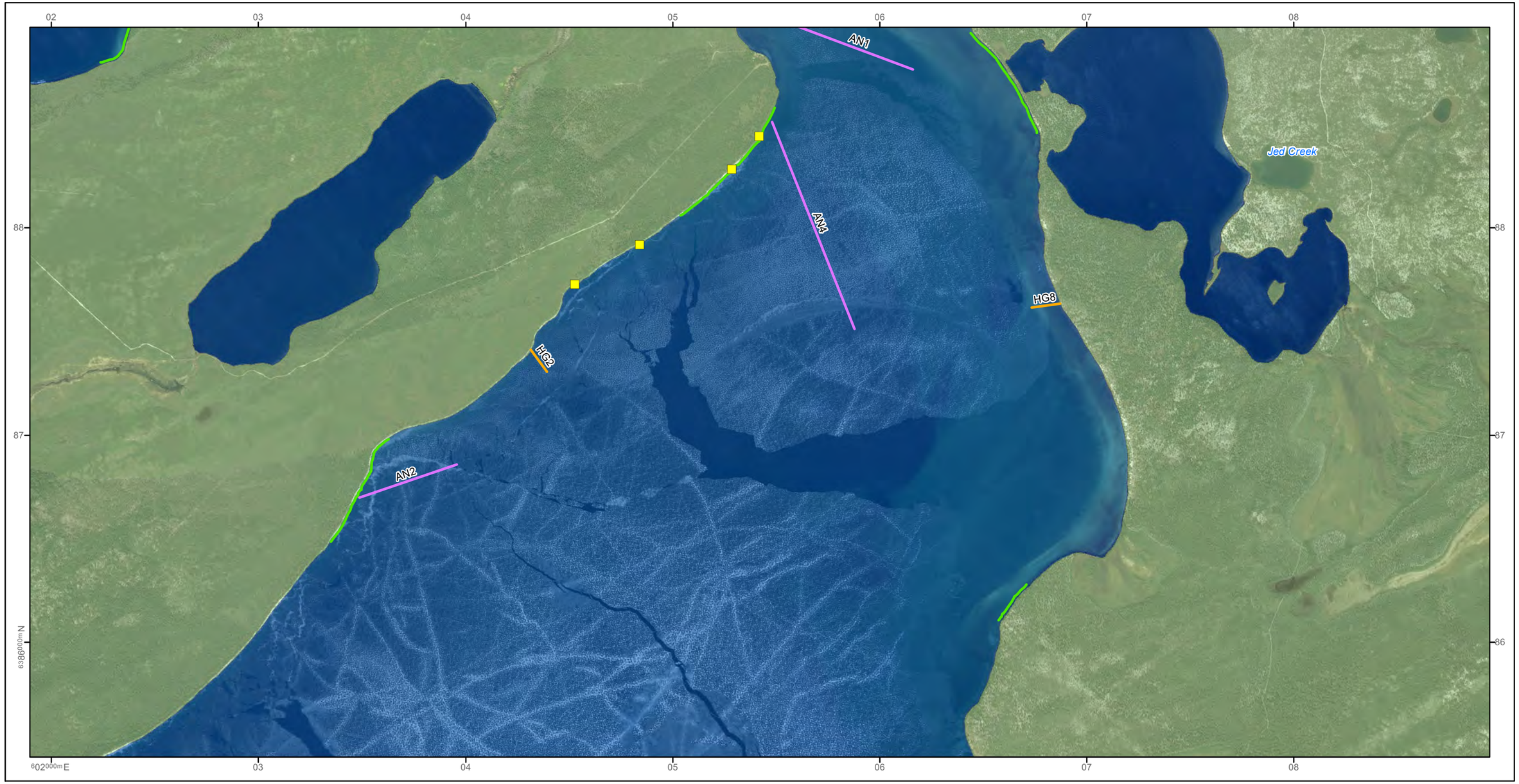
File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 825 m
Original Scale 1:16,500

CanNorth

Figure:

Appendix G, Figure 9.2-39: Summer Fishing Efforts in Patterson Lake, Patterson Creek, Forrest Lake, Beet Channel, and Beet Lake, 2019

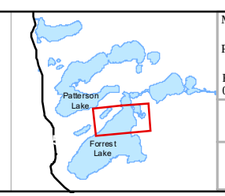


Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

NAD 1983 UTM Zone 12North

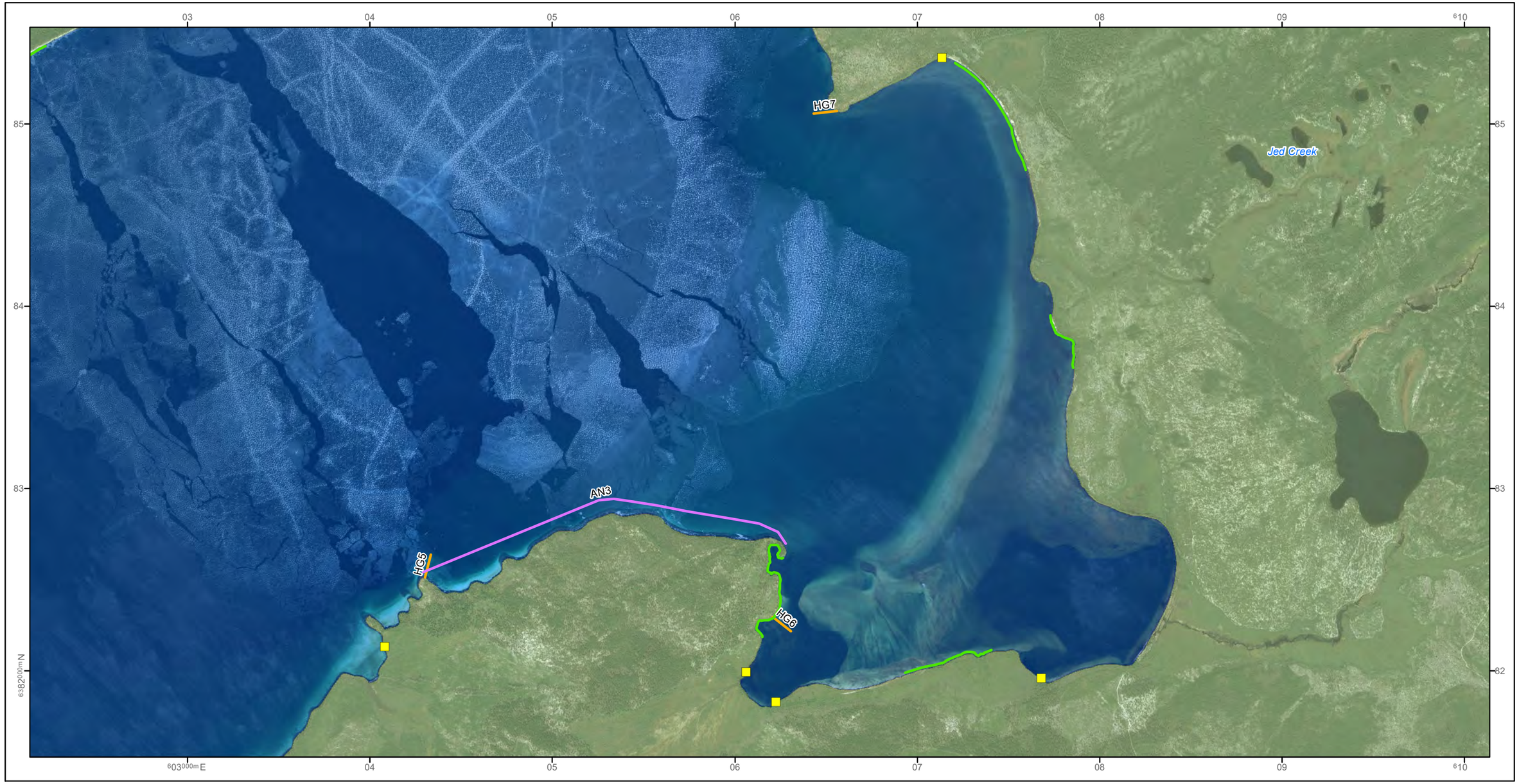
0 900 m

Original Scale 1:18,500

CanNorth

Figure:

Appendix G, Figure 9.2-40: Summer Fishing Efforts in Forrest Lake, 2019

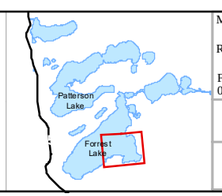


Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

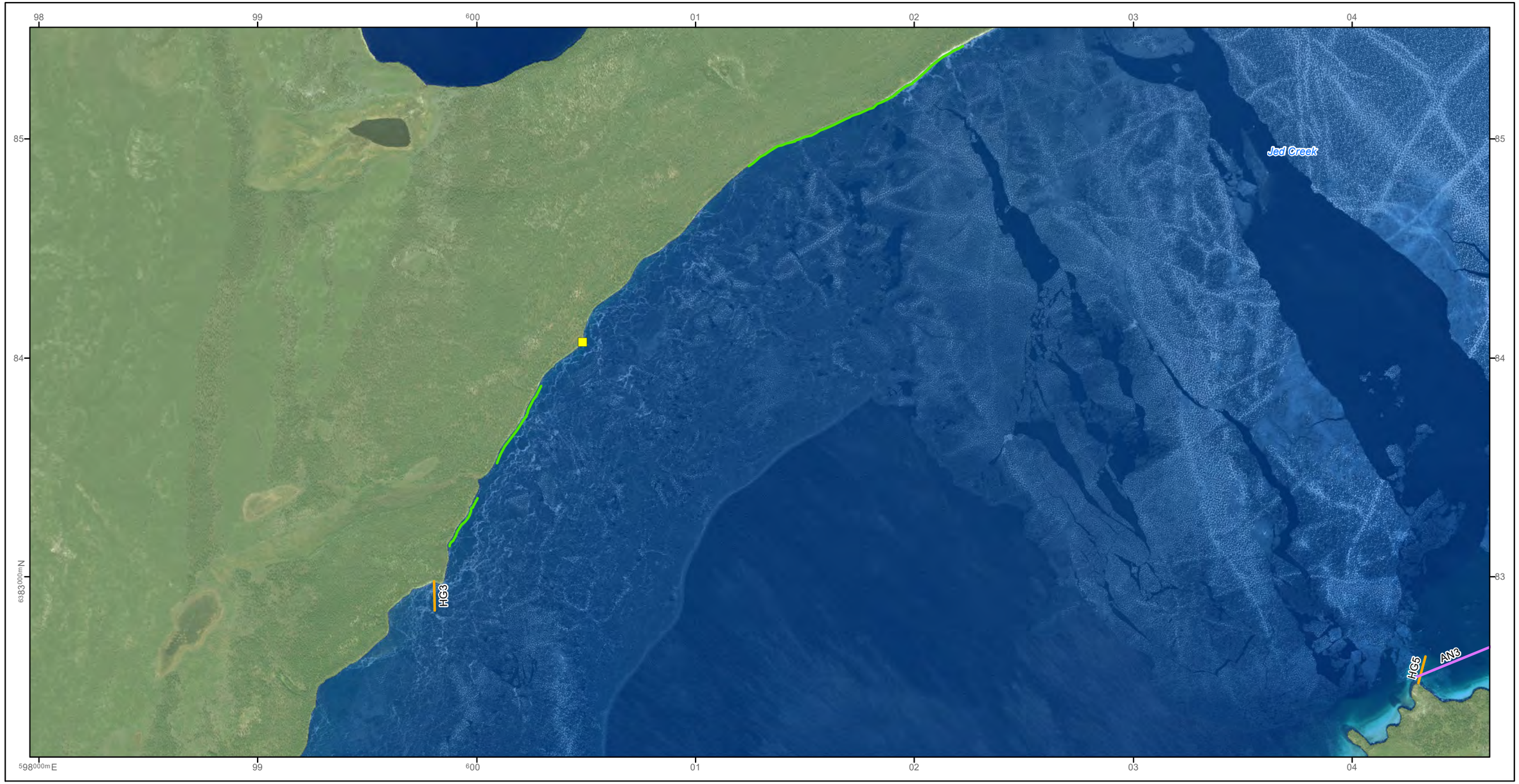
File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 1,020 m
Original Scale 1:21,000

CanNorth

Figure:

Appendix G, Figure 9.2-41: Summer Fishing Efforts in Forrest Lake, 2019

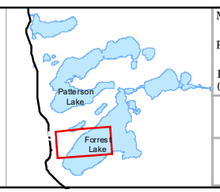


Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

NAD 1983 UTM Zone 12North

0 870m

Original Scale 1:17,500

CanNorth

Figure:

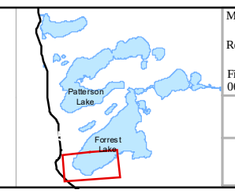
Appendix G, Figure 9.2-42: Summer Fishing Efforts in Forrest Lake, 2019

Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 870m

Original Scale 1:17,500

CanNorth

Figure:

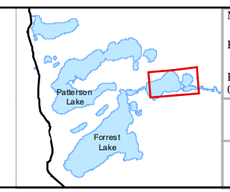
Appendix G, Figure 9.2-43: Summer Fishing Efforts in Forrest Lake, 2019

Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

File: 3008-09-07 / Jan / 2021 Client: NexGen Energy Ltd. Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 900 m

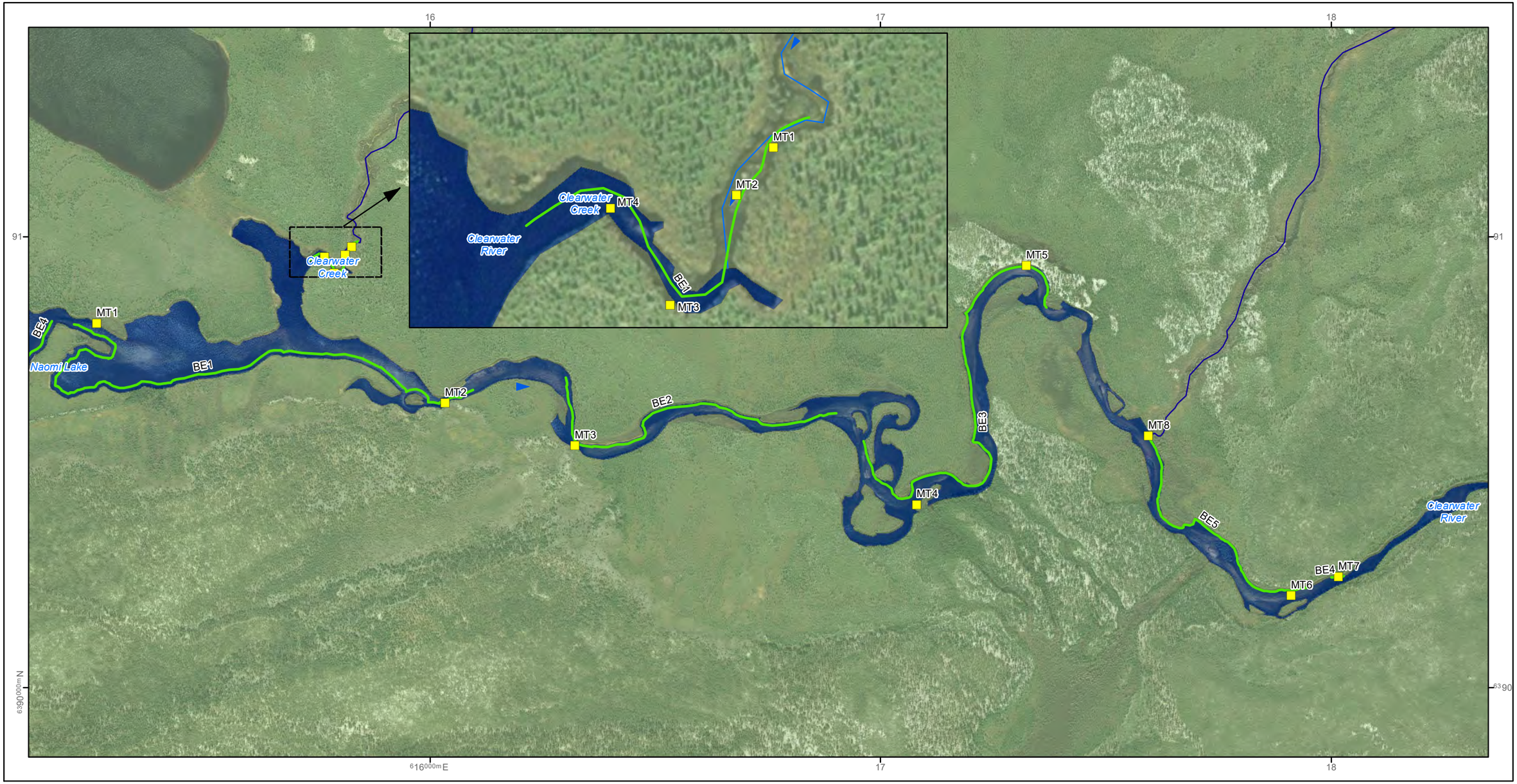
Original Scale 1:18,000

CanNorth

N

Figure:

Appendix G, Figure 9.2-44: Summer Fishing Efforts in Beet Lake, Beet Creek, Naomi Lake, Naomi Creek, and Clearwater River, 2019

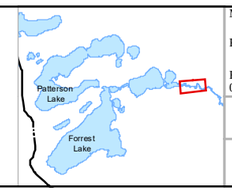


Fishing Effort

- Minnow Trap
- Angling
- Electroboat
- Net Set

Fishing Effort
[Method][ID]
Example: GN1

Methods Key
AN - Angling
BE - Boat Electrofishing
BP - Backpack Electrofishing
DN - Dip Net
HN - Hoop Net
GN - Short-length Gill Net
MT - Minnow Trap



Map Sources: Esri, et al., "World Imagery (Clarity)".

Refer to text for full details & disclaimer.

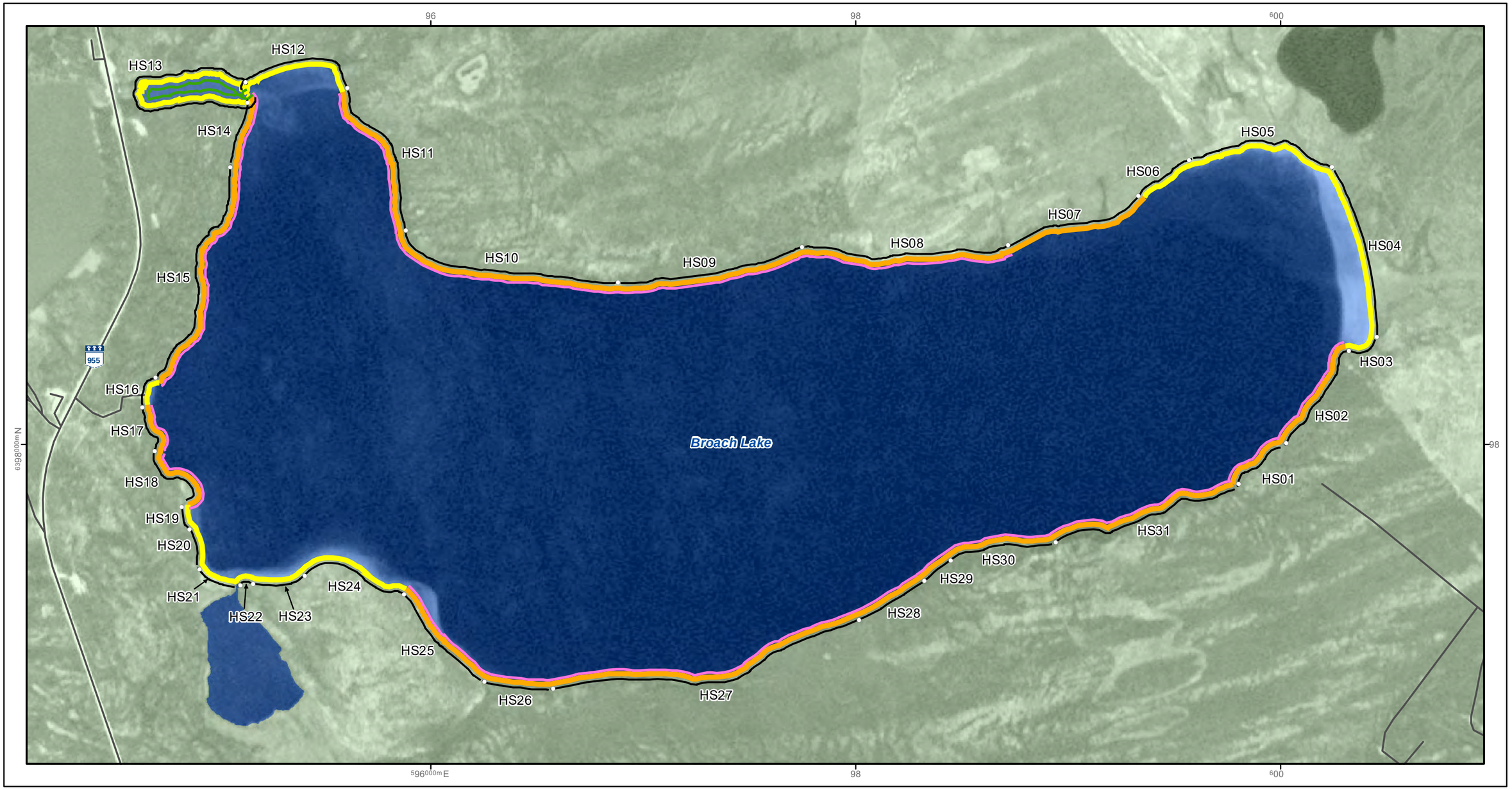
File: 3008-09-06 / Jan / 2021 Client: NexGen Energy Ltd.
Geomatics: ML Reviewed by: MT

0 NAD 1983 UTM Zone 12North 420m
Original Scale 1:8,500

CanNorth

Figure:

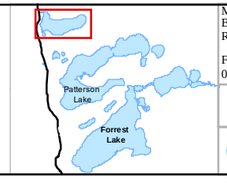
Appendix G, Figure 9.2-45: Summer Fishing Efforts in Clearwater Creek and Clearwater River, 2019



- Habitat Section
- Medium to Highly Suitable Lake Whitefish Spawning Habitat
- Medium to Highly Suitable Northern Pike Spawning Habitat

Substrate Type
- Gravel/Cobble/Boulder
- Sand/Gravel

- Roads and Trails



File: 3008-R129 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 800 m
Original Scale 1:18,000

CanNorth

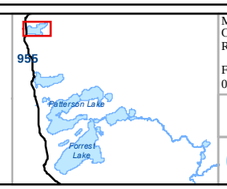
Figure:

Appendix G, Figure 9.2-46: Location of Habitat Sections on Broach Lake, July 2019

- Habitat Section
- Medium to Highly Suitable Lake Whitefish Spawning Habitat
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Roads and Trails

Substrate Type

- Gravel/Cobble/Boulder
- Sand/Gravel
- Silt/Clay/Organic



Map Sources: Esri et.al. "World Imagery"; Natural Resources Canada "CanVec"
Refer to text for full details & disclaimer.

File: 3008-R23 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 600 m
Original Scale 1:14,000

CanNorth

Figure:

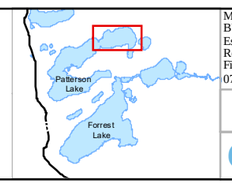
Appendix G, Figure 9.2-47: Location of Habitat Sections on Hodge Lake, July 2018

Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Medium to Highly Suitable Northern Pike Spawning Habitat
Lake Whitefish Eggs
Northern Pike Eggs

Study Areas
Detailed Study Area

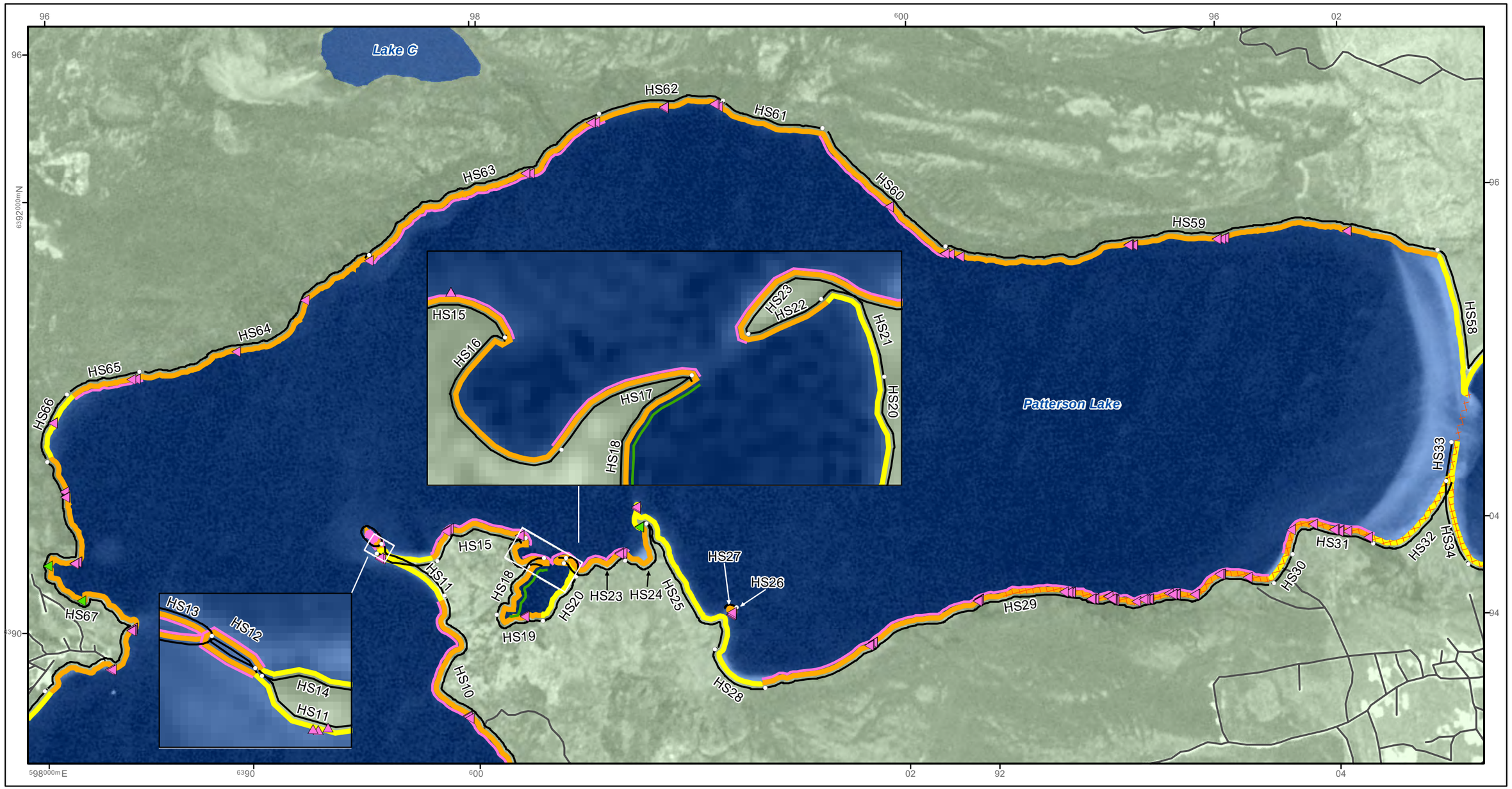
Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel
Silt/Clay/Organic

Roads and Trails



File: 3008-R130a Client: Fission Uranium Corp.
07 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW
0 NAD 1983 UTM Zone 12North 800 m
Original Scale 1:16,000
CanNorth
Figure:

Appendix G, Figure 9.248: Location of Habitat Sections on Patterson Lake and Jed Creek, July 2019

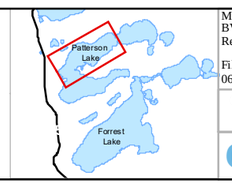


- Habitat Section
- Medium to Highly Suitable Lake Whitefish Spawning Habitat
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Lake Whitefish Eggs
- Northern Pike Eggs

Study Areas
- Detailed Study Area

Substrate Type
- Gravel/Cobble/Boulder
- Sand/Gravel

- Roads and Trails



File: 3008-R130b Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

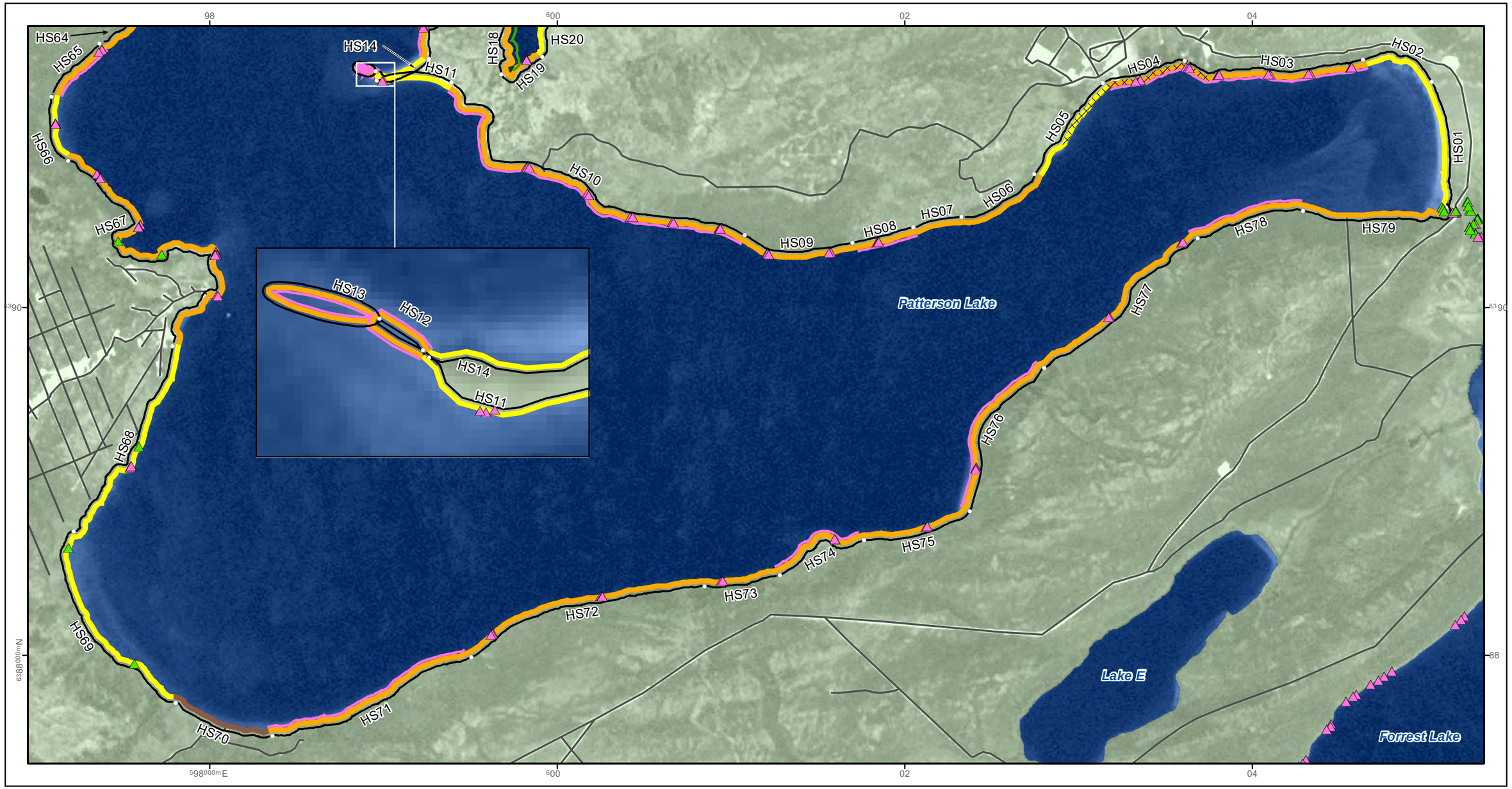
0 NAD 1983 UTM Zone 12North 1km

Original Scale 1:20,500

CanNorth

Figure:

Appendix G, Figure 9.2-49: Location of Habitat Sections on Patterson Lake, July 2019



- Habitat Section
- Medium to Highly Suitable Lake Whitefish Spawning Habitat
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Lake Whitefish Eggs
- Northern Pike Eggs

Study Areas
- Camp Study Area

Substrate Type
- Gravel/Cobble/Boulder
- Sand/Gravel
- Silt/Clay/Organic

- Roads and Trails

File: 3008-R130c Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 1km
Original Scale 1:22,000

CanNorth

Figure:

Appendix G, Figure 9.2-50: Location of Habitat Sections on Patterson Lake, July 2019

Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Medium to Highly Suitable Northern Pike Spawning Habitat
Northern Pike Eggs
Lake Whitefish Eggs

Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel

Footprint of Proposed Infrastructure
Roads and Trails

Map Sources: Esri et.al. "World Imagery"; Natural Resources Canada "CanVec"
Refer to text for full details & disclaimer.

File: 3008-R24 Client: NexGen Energy Ltd.
03 / Aug / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 500 m
Original Scale 1:12,000

CanNorth

Figure:

Appendix G, Figure 9.2-51: Location of Habitat Sections in the Patterson Lake Mine Site Area, June 2018

Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Lake Whitefish Eggs
Aquatic Feature (dock)

Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel

Site Plan Footprint

Map Sources: Esri et.al. "World Imagery"; Natural Resources Canada "CanVec"
Refer to text for full details & disclaimer.

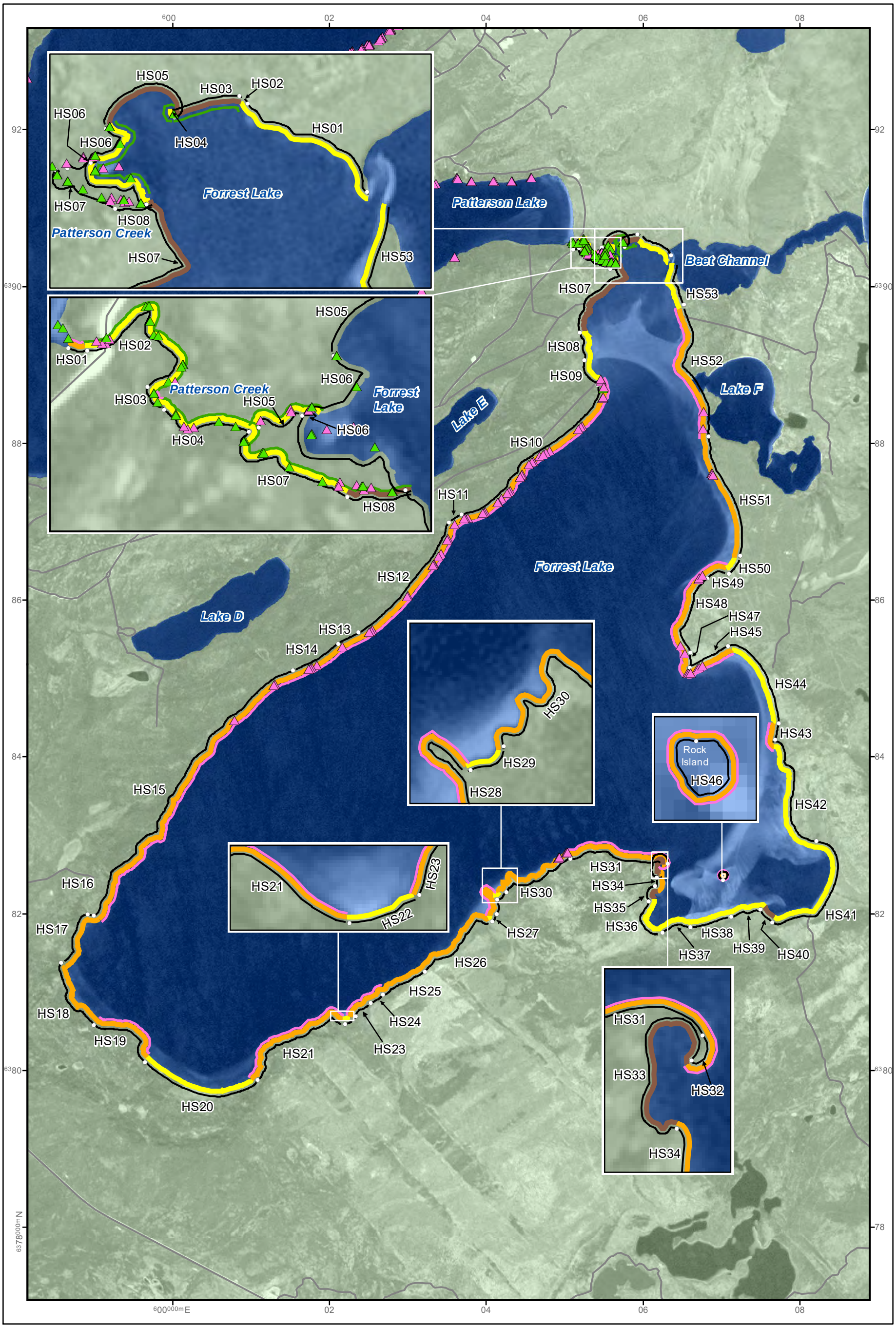
File: 3008-R25 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 250 m
Original Scale 1:5,000

CanNorth

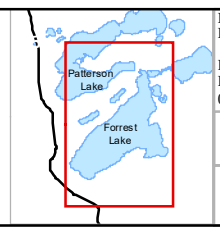
Figure:

Appendix G, Figure 9.2-52: Location of Habitat Sections in the Patterson Lake Camp Area, June 2018



Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Medium to Highly Suitable Northern Pike Spawning Habitat
Lake Whitefish Eggs
Northern Pike Eggs

Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel
Silt/Clay/Organic
Roads and_Trails



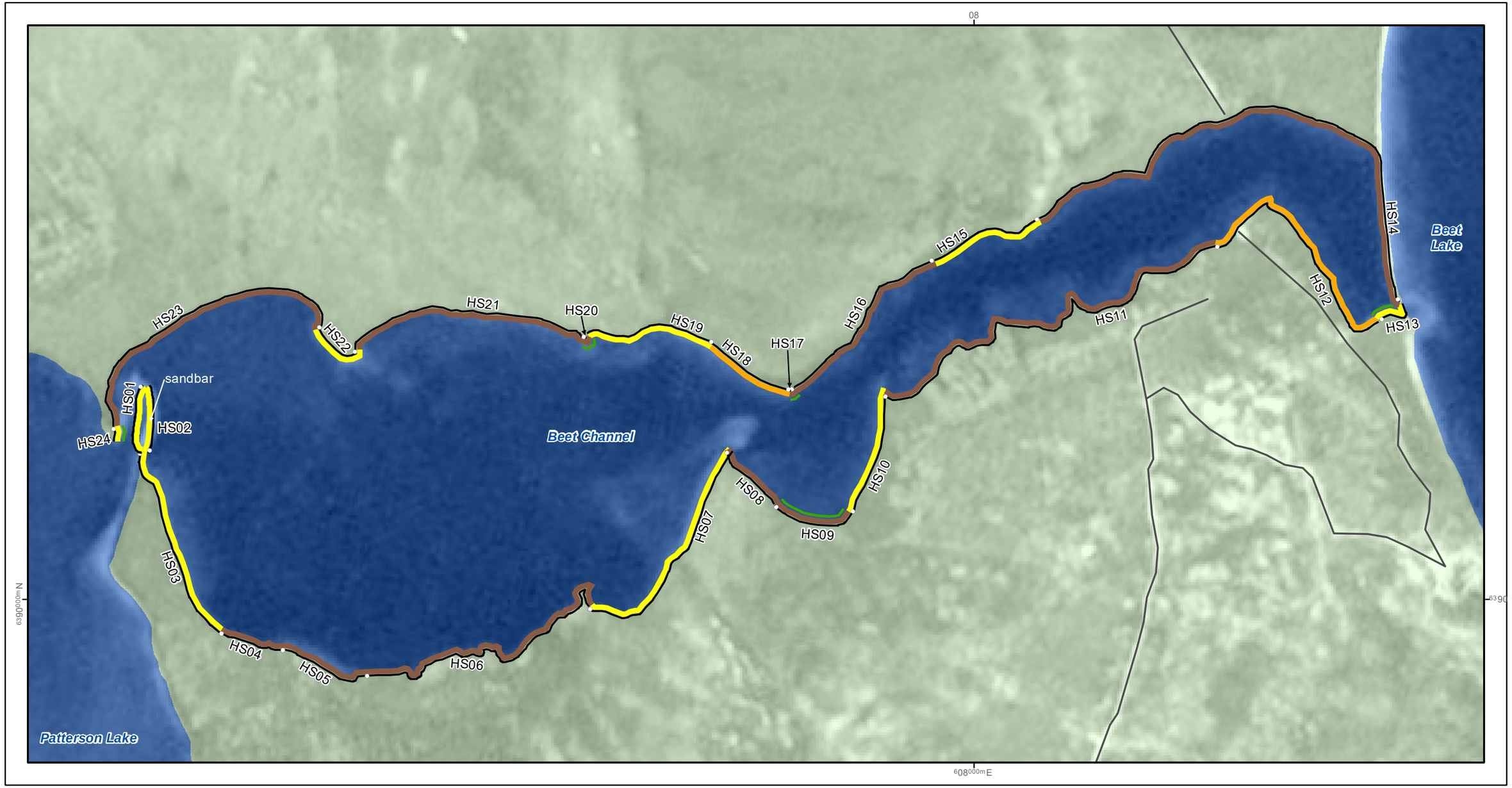
Refer to text for full details & disclaimer.
File: 3008-R131 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by:

0 NAD 1983 UTM Zone 12North 2 km
Original Scale 1:47,000

CanNorth

Figure:

Appendix G, Figure 9.2-53: Location of Habitat Sections on Forrest Lake and Patterson Creek, July 2019



Habitat Section

Medium to Highly Suitable Northern Pike Spawning Habitat

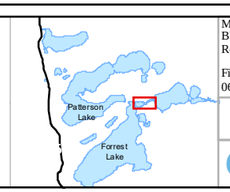
Substrate Type

Gravel/Cobble/Boulder

Sand/Gravel

Silt/Clay/Organic

Roads and Trails



File: 3008-R132 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 300 m

Original Scale 1:7,500

CanNorth

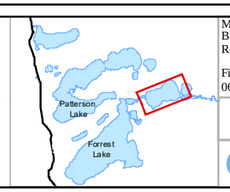
Figure:

Appendix G, Figure 9.2-54: Location of Habitat Sections on Beet Channel, July 2019

Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Medium to Highly Sustainable Northern Pike Spawning Habitat
Lake Whitefish Eggs
Northern Pike Eggs

Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel
Silt/Clay/Organic

Roads and Trails



File: 3008-R133 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 750m
Original Scale 1:16,000

CanNorth

Figure:

Appendix G, Figure 9.2-55: Location of Habitat Sections on Beet Lake and Beet Creek, July 2019

- Habitat Section
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Lake Whitefish Eggs
- Northern Pike Eggs

Substrate Type
- Gravel/Cobble/Boulder
- Sand/Gravel
- Silt/Clay/Organic

- Roads and Trails

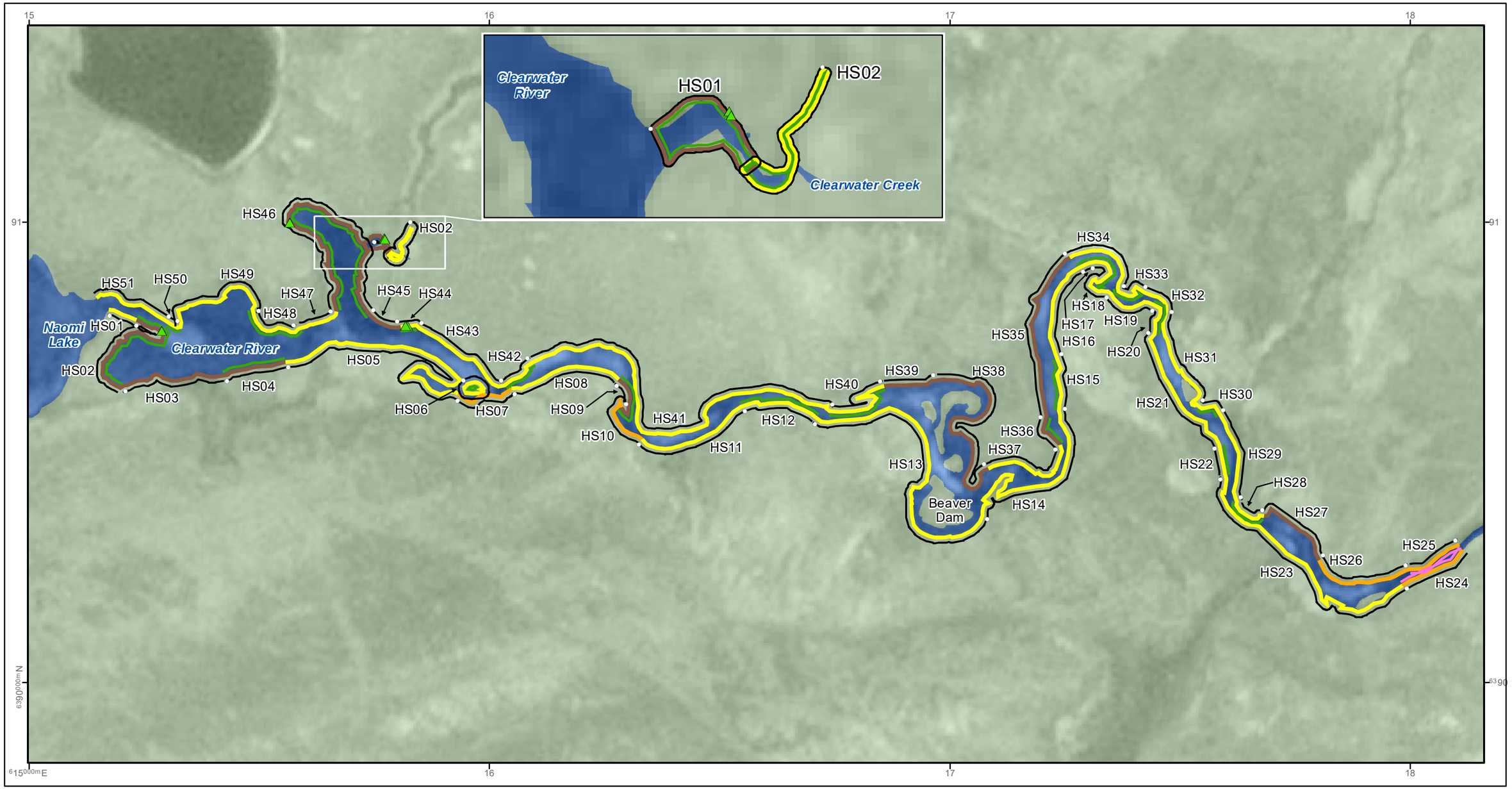
File: 3008-R134 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 600m
Original Scale 1:13,000

CanNorth

Figure:

Appendix G, Figure 9.2-56: Location of Habitat Sections on Naomi Creek and Naomi Lake, July 2019



Habitat Section
Medium to Highly Suitable Lake Whitefish Spawning Habitat
Medium to Highly Suitable Northern Pike Spawning Habitat
Northern Pike Eggs

Substrate Type
Gravel/Cobble/Boulder
Sand/Gravel
Silt/Clay/Organic

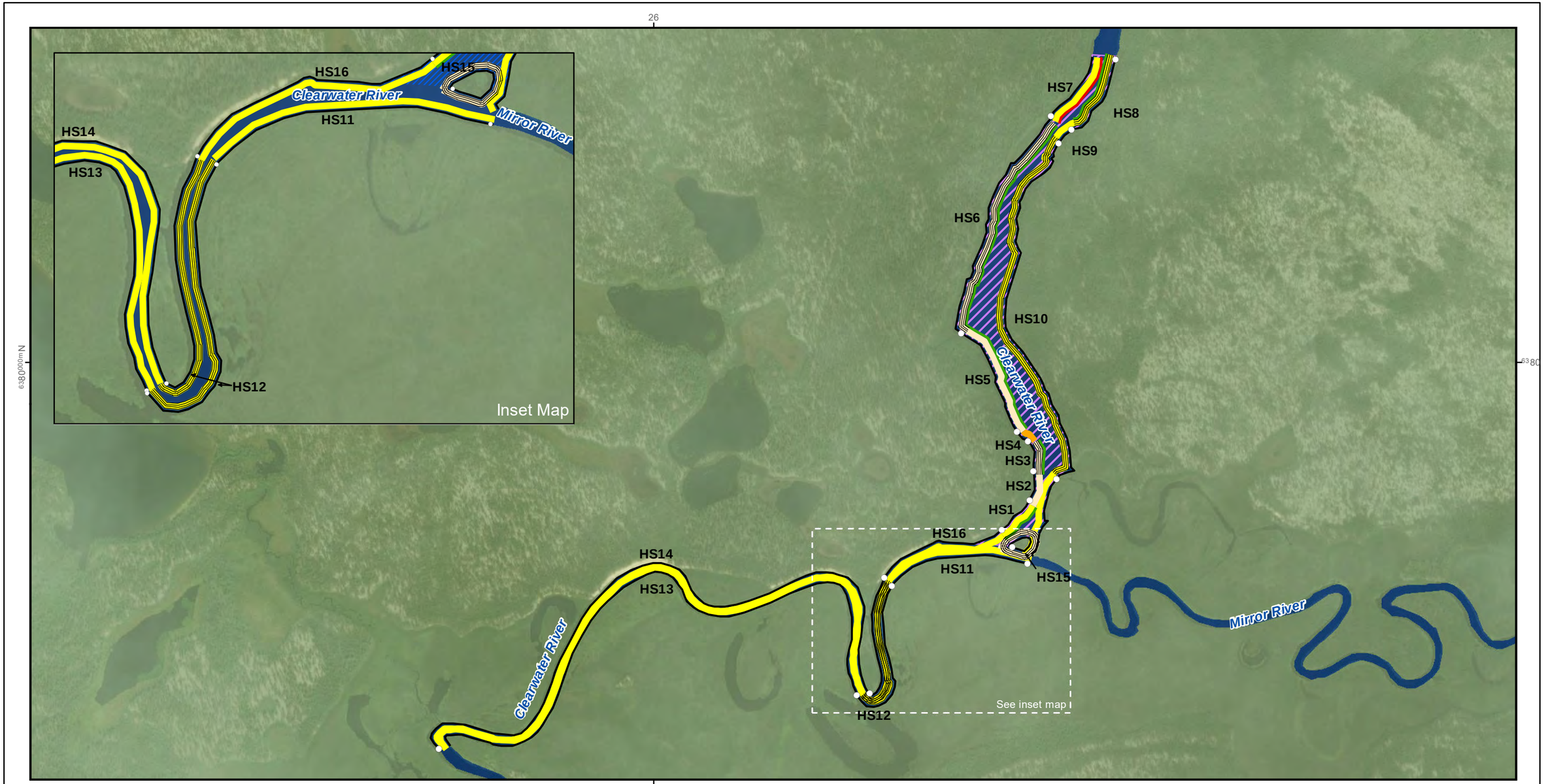
File: 3008-R135 Client: Fission Uranium Corp.
06 / Jan / 2021 Geomatics: CC/ML Reviewed by: KW

0 NAD 1983 UTM Zone 12North 400m
Original Scale 1:8,300

CanNorth

Figure:

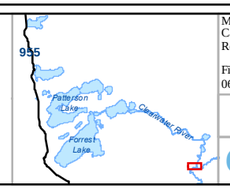
Appendix G, Figure 9.2-57: Location of Habitat Sections on Clearwater River Nearfield and Clearwater Creek, July 2019



- Habitat Section
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Medium to Highly Suitable Sucker Spawning Habitat
- Aquatic Vegetation
- Aquatic Feature (vegetation bed)

Substrate Type

- Gravel/Cobble/Boulder
- Sand/Gravel
- Silt/Clay/Organic



Map Sources: Esri et.al. "World Imagery"; Natural Resources Canada "CanVec"
Refer to text for full details & disclaimer.

File: 3008-R26 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

0 NAD 1983 UTM Zone 12North 300 m

Original Scale 1:7,000

CanNorth

Figure:

Appendix G, Figure 9.2-58: Location of Habitat Sections in the Clearwater River Midfield, July 2018

- Habitat Section
- Medium to Highly Suitable Northern Pike Spawning Habitat
- Medium to Highly Suitable Whitefish Spawning Habitat
- Aquatic Vegetation
- Aquatic Feature (vegetation bed)

Substrate Type

- Gravel/Cobble/Boulder
- Sand/Gravel
- Silt/Clay/Organic

Map Sources: Esri et.al. "World Imagery"; Natural Resources Canada "CanVec"
Refer to text for full details & disclaimer.

File: 3008-R27 Client: NexGen Energy Ltd.
06 / Jan / 2021 Geomatics: CC Reviewed by: KW

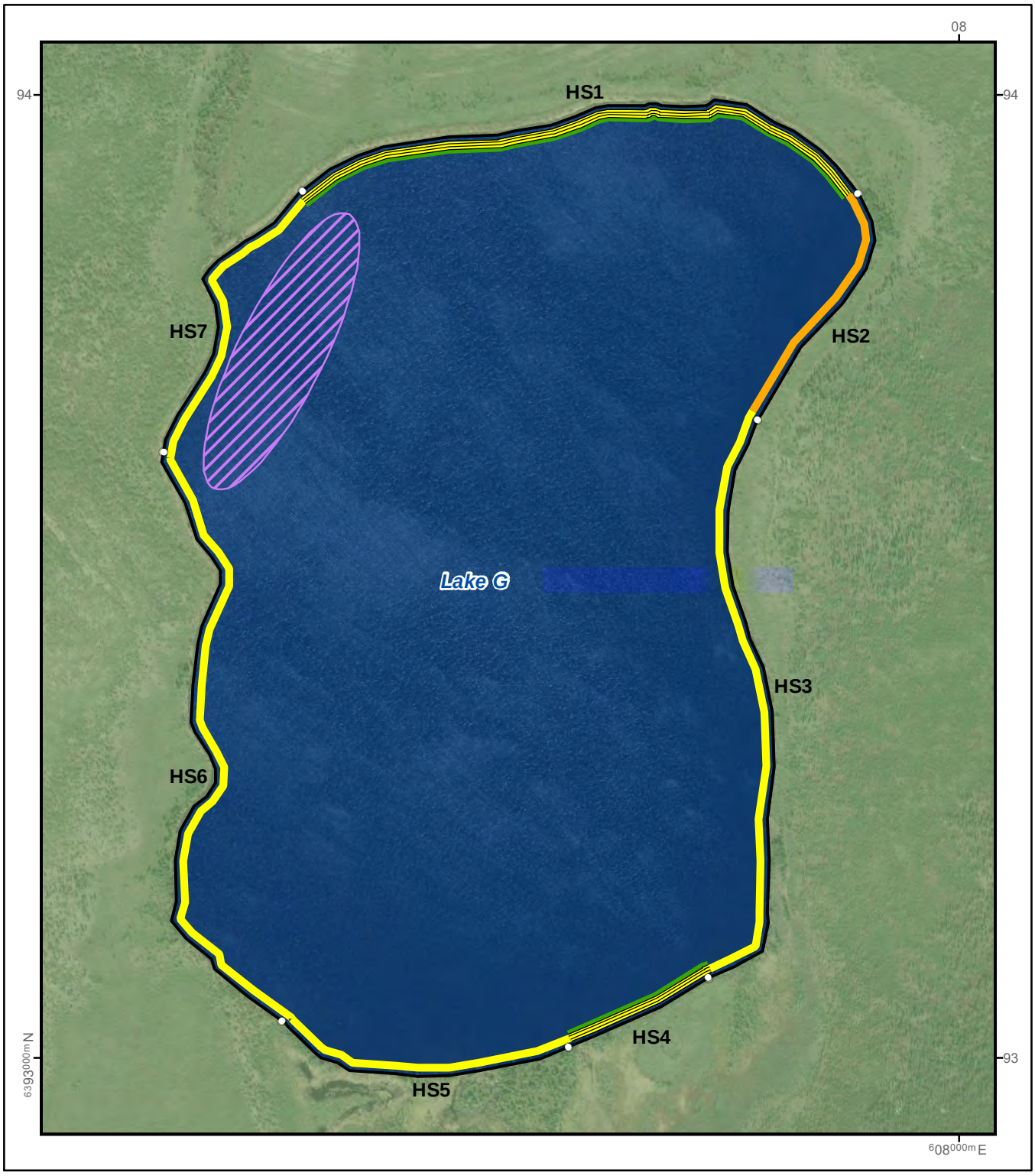
0 NAD 1983 UTM Zone 12North 1km

Original Scale 1:19,000

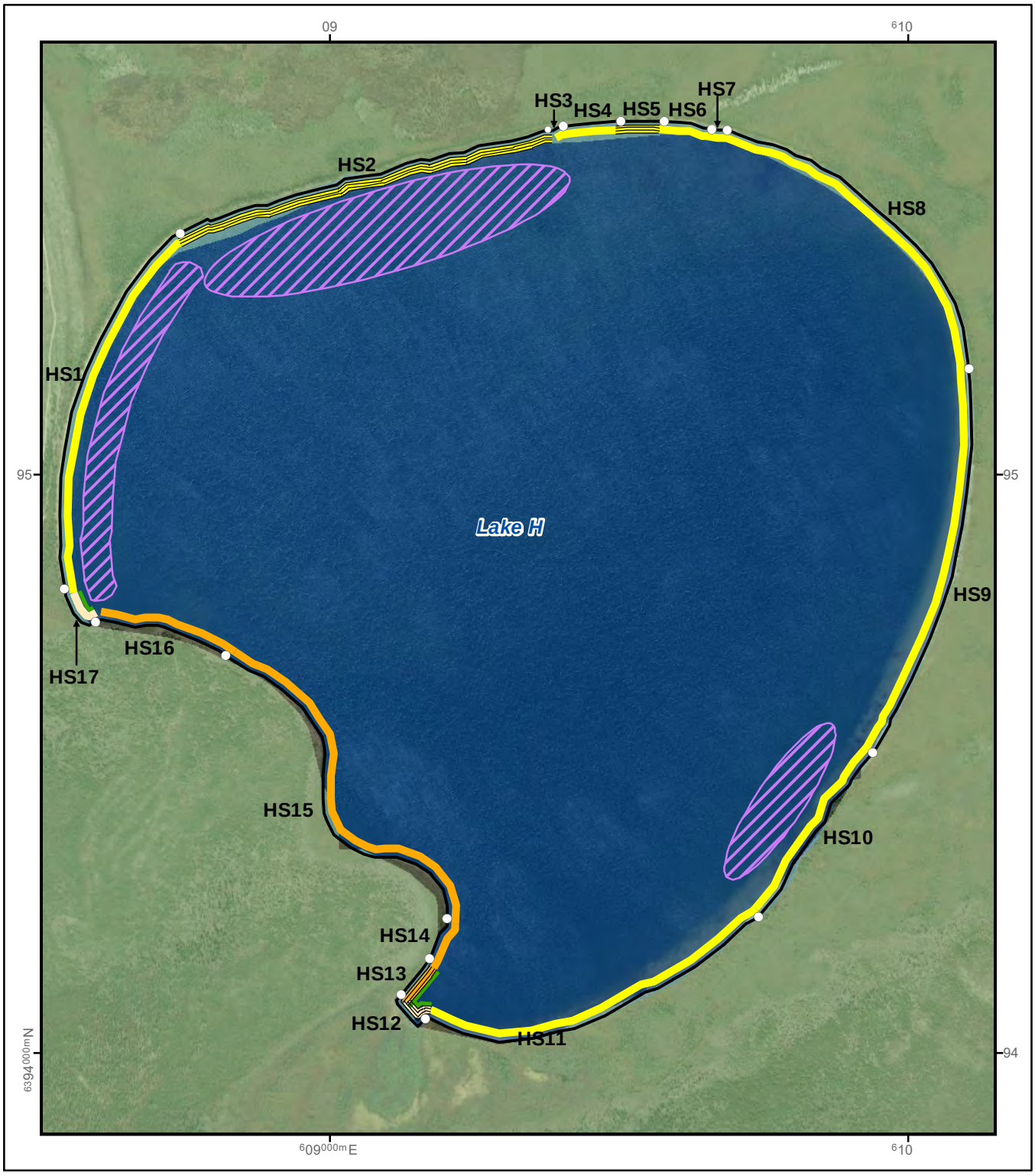
CanNorth

Figure:

Appendix G, Figure 9.2-59: Location of Habitat Sections in the Lloyd Lake Inlet, July 2018



Appendix G, Figure 9.2-60: Location of Habitat Sections on Lake G, July 2018



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APPENDIX H: AQUATIC PHOTOGRAPHS
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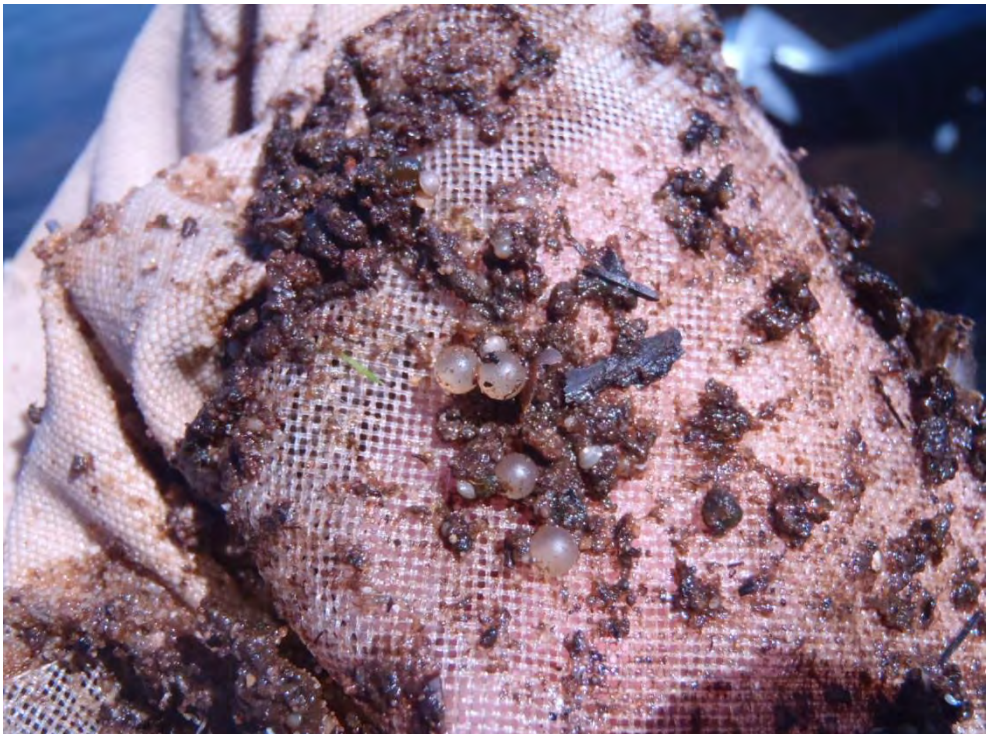

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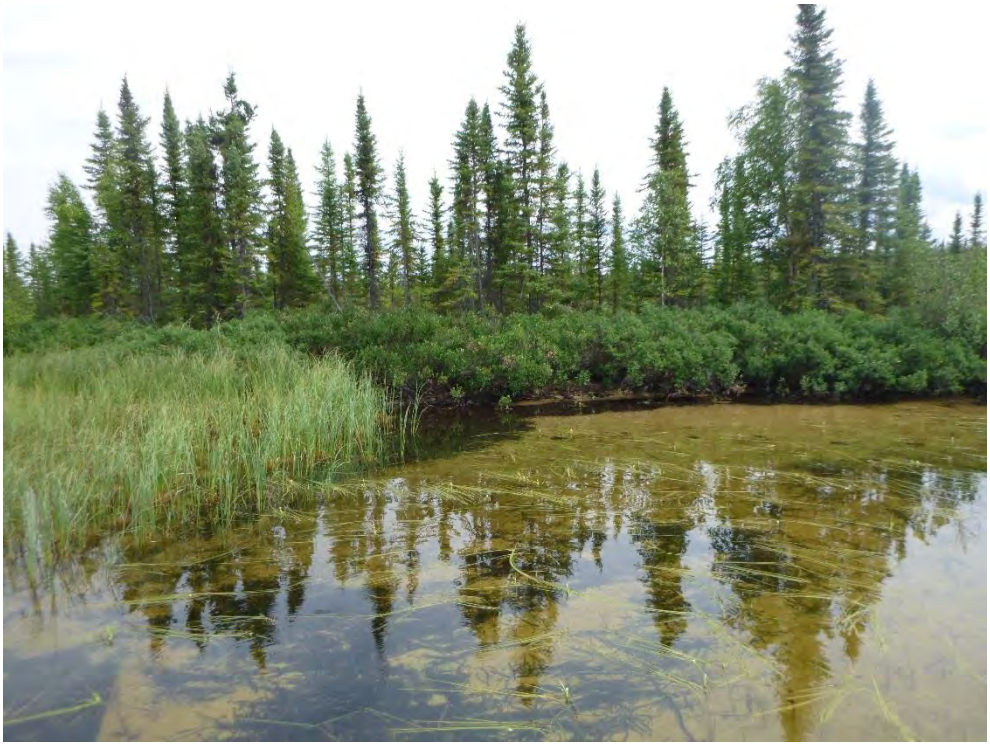

Photo 50. Naomi Lake, HS 2, sand and organic matter sediment, moderately suitable spawning habitat for northern pike, July 2019.

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Rook I Project

Environmental Impact Statement

Annex V.2: Overwintering Fish Habitat Report

GOLDER
MEMBER OF WSP

OVERWINTERING FISH HABITAT FIELD PROGRAM RESULTS SUMMARY REPORT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

Executive Summary

The overwintering fish habitat field program is a component of a comprehensive environmental baseline study for the NexGen Energy Ltd. Rook I Project (Project), a proposed uranium mining and milling operation located in northwestern Saskatchewan. This field program provided the information necessary to support the assessment of potential Project effects on fish and fish habitat in the Environmental Impact Statement.

Overwintering habitat is often one of the most critical habitat types for fish, particularly in northern regions, which may experience extended periods of ice cover and limited flow. The availability of adequate winter habitat is often an important factor affecting the distribution and abundance of fish in an environment. Indigenous Peoples have expressed concerns about the potential for effects of industrial facilities on local fish populations, habitat for fish, and traditional and commercial fishing in the anticipated area of the Project.

Existing information on overwintering habitat utilization in the area of the Project is available for waterbodies; however, prior to this study, there was very little existing overwintering fish habitat information available for watercourses. In addition, specific information regarding winter habitat conditions in Patterson Lake, in the vicinity of the potential locations for the treated effluent diffuser and freshwater intake, was not available.

The objective of the 2019 winter field program was to perform an overwintering fish habitat assessment of watercourses potentially affected by the Project. A second objective was to collect winter fish habitat data in Patterson Lake in the vicinity of potential locations for the treated effluent diffuser and intakes.

Ten sites were assessed in 2019, which included three sites on Patterson Lake and seven sites on surrounding watercourses that have the potential to be affected by the Project. The sites on Patterson Lake were situated in the general area of the proposed water intakes and diffuser. Watercourse sites included five sites on the Clearwater River mainstem and two sites on tributaries of the Clearwater River.

Parameters measured at each waterbody and watercourse site included ice thickness, snow depth, and under-ice water depth. If sufficient water depth was present, standard water quality field parameters (i.e., pH, specific conductivity, temperature, and dissolved oxygen [DO]) were measured using a calibrated water quality multi-parameter meter. At watercourse sites, the under-ice stream discharge was measured using a flow meter. Distinguishing habitat features that may influence winter habitat utilization by fish were also noted.

The results of the overwintering habitat surveys at the proposed intake and diffuser locations in Patterson Lake indicate that these areas would provide suitable overwintering habitat for large-bodied fish and forage fish due to high DO concentrations and adequate under-ice water depths measured at the surveyed stations.

The surveyed sections of the Clearwater River mainstem were open and free of ice at the time of the field program, with exception of one site with slower flow, which was ice-covered. All mainstem sites were flowing and typically had water depths in the range of 0.5 m to 1 m. Water quality sampling indicated that DO was generally high at the sampled stations. The mainstem sites were generally considered to provide good quality overwintering habitat for large-bodied and forage fish populations.

Of the two Clearwater River tributaries sampled, one was frozen to the bottom throughout the surveyed section, and the overwintering habitat potential of the site was nil. The second had sufficient under-ice water depths and adequate DO concentrations to support overwintering fish populations; however, the quality of the habitat was lower for more sensitive species or life stages that require higher DO concentrations.

The overwintering fish habitat field program achieved the objective of providing information regarding the natural variability in winter habitat conditions in the aquatic study area for the Rook I Project. The results of this baseline field program provide context for the effects assessments completed for fish and fish habitat and land and resource use, and for future operational environmental effects monitoring for the Project.

If referencing this report, please use for the following citation:

Golder (Golder Associates Ltd.). 2022. Overwintering Fish Habitat Field Program Results Summary Report for the Rook I Project. Prepared for NexGen Energy Ltd.

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Abbreviations and Units of Measure

Abbreviation	Definition
ASA	aquatic study area
CCME	Canadian Council of Ministers of the Environment
Project	Rook I Project
NexGen	NexGen Energy Ltd.
CanNorth	Canada North Environmental Services LP
DO	dissolved oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement

Unit	Definition
km	kilometre
m	metre
mg/L	milligrams per litre
°C	degrees Celsius
µS/cm	microsiemens per centimetre
m^3/s	cubic metres per second
m/s	metres per second

1.0 INTRODUCTION

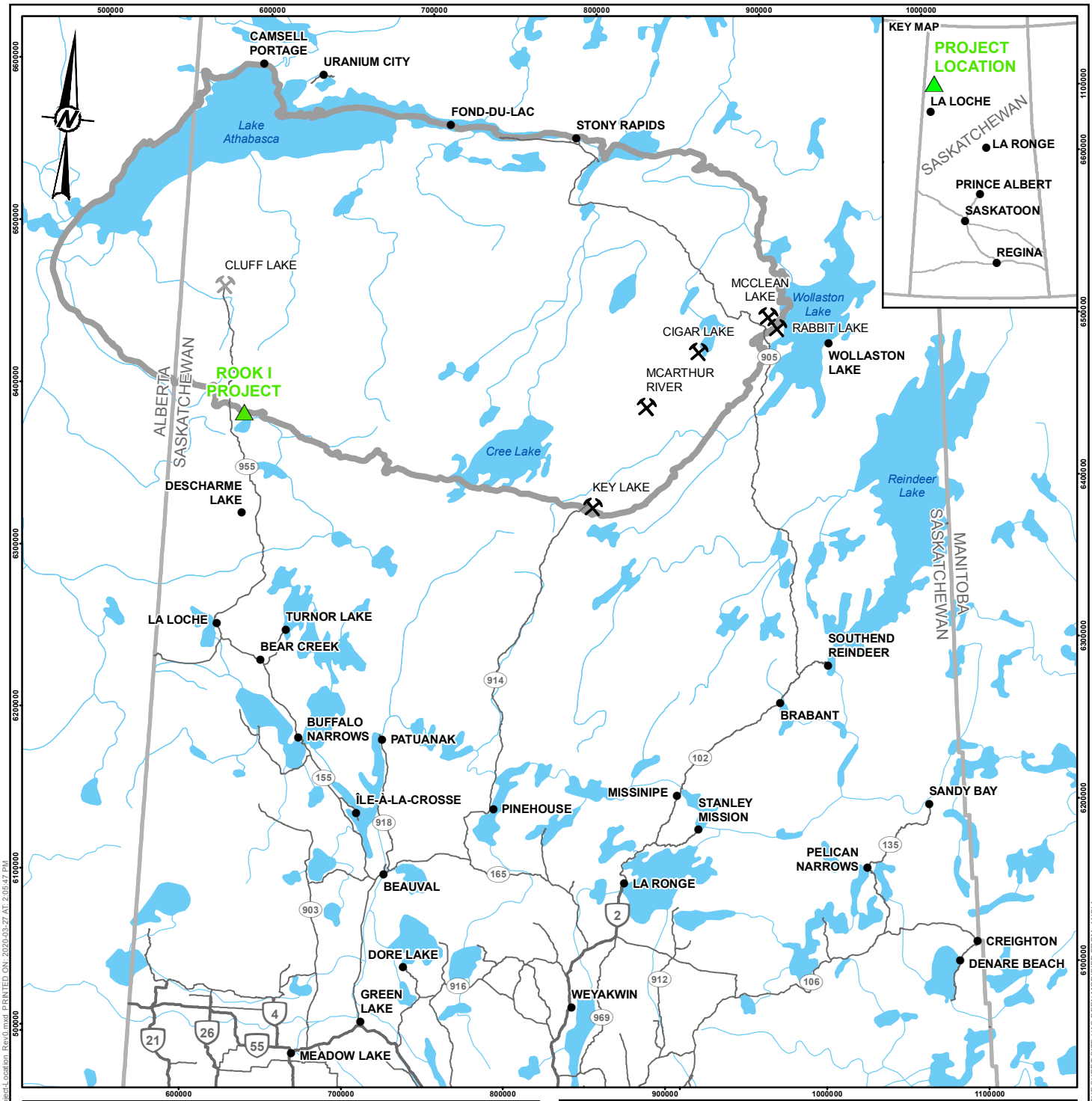
The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The overwintering fish habitat baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The overwintering fish habitat baseline program was undertaken to provide context from which Project environmental overwintering fish habitat effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nation and Métis Groups (collectively referred to as Indigenous Groups) and northern communities, specifically those closest and with greatest access to the proposed Project. NexGen engagement activities and mechanisms to date have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing joint working groups to support the gathering and incorporation of Indigenous and Local Knowledge throughout the Environmental Assessment (EA) process, and providing funding for Traditional Land Use Studies[1] to understand how the proposed Project may interact with the Indigenous communities' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the overwintering fish habitat baseline program is presented in Appendix A of the Aquatic Baseline Road Map (Annex V).

[1] Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- ATHABASCA BASIN BOUNDARY
- PROJECT LOCATION

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT, SASKATCHEWAN

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	SS
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
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25mm

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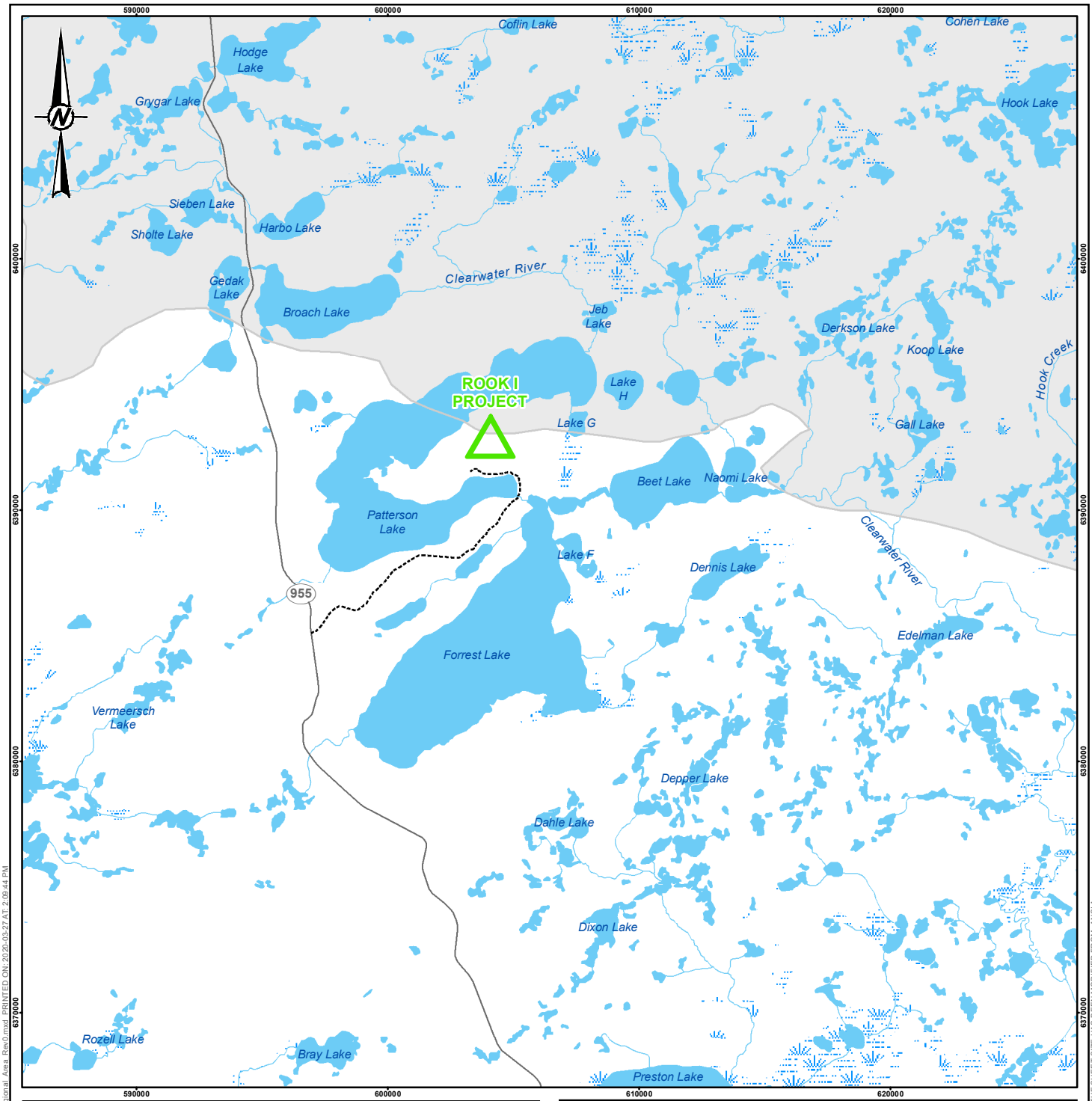

LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- PROJECT LOCATION
- EXISTING ACCESS ROAD

0 5,000 10,000

1:225,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	JMC
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

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2.0 STUDY OBJECTIVE

Overwintering habitat is often one of the most critical habitat types for fish, particularly in northern regions, which may experience extended periods of ice cover and limited flow. Adequate winter habitat is limiting in many systems and is often an important factor affecting the distribution and abundance of fish in an environment.

Under-ice water depth, flow, and dissolved oxygen (DO) are important aspects of overwintering habitat that are considered when evaluating the winter habitat potential of a waterbody or watercourse. Under-ice DO levels, in particular, can be a major limiting factor to providing overwintering habitat for fish (Shuter and Post 1990; Nurnberg 1995). Tolerance limits for low DO levels can vary by fish species, life stage, water temperature, and duration of exposure (Scott and Crossman 1973). Good quality overwintering habitat for fish is typically found in areas with adequate DO concentrations and sufficient under-ice water depth.

The objective of the 2019 winter field program was to perform overwintering fish habitat surveys of watercourses potentially affected by the Project and to provide information necessary to support assessment of potential effects of the Project on fish and fish habitat in the EIS. A second objective was to collect winter fish habitat data in Patterson Lake in the vicinity of the expected locations for the treated effluent diffuser (referred to herein as the diffuser) and freshwater intake proposed for the Project. A second intake location was also surveyed but is no longer part of the Project design.

Indigenous Peoples have expressed concerns about the potential for effects of industrial facilities on local fish populations, habitat for fish, and traditional and commercial fishing in the area of the Project (Birch Narrows Dene Nation [TSD II: BNDN]; Buffalo River Dene Nation [TSD III: BRDN]; Clearwater River Dene Nation [TSD V.1: CRDN]; Ya'thi Néné Lands and Resources Office [TSD VI: YNLRO]; Métis Nation – Saskatchewan [TSD IV: MN-S]). This feedback reinforces the importance of collecting seasonal fish habitat information to support the assessment of the potential effects of the Project on fish and fish habitat in the EIS.

3.0 STUDY AREAS

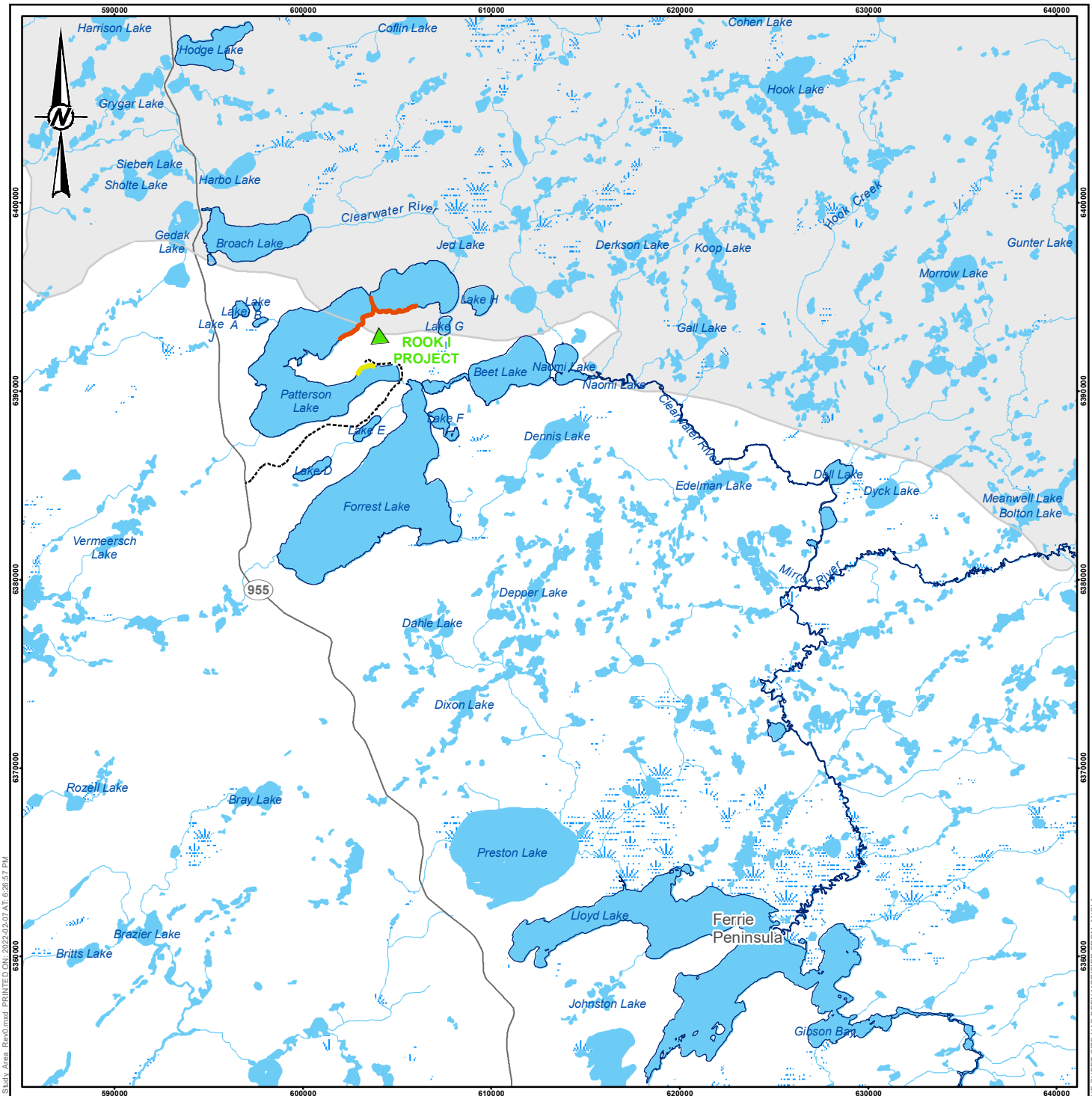
The proposed Project would be located adjacent to Patterson Lake near the headwaters of the Clearwater River system at Broach Lake. The upper reach of the Clearwater River flows from Broach Lake through a series of lakes including (in order from upstream to downstream) Patterson, Forrest, Beet, and Naomi lakes. From Naomi Lake, the Clearwater River flows another 20 km southeast before the Mirror River confluence, where the river deepens with higher flow volumes from the Mirror River. Farther downstream, the Clearwater River flows through Lloyd Lake, which is just upstream of the Clearwater River Provincial Park.

The study area used for the overwintering fish habitat field program includes the Clearwater River from its headwaters at Broach Lake and extends approximately 8 km downstream of Lloyd Lake. This study area aligns with the aquatic study area (ASA) established by Canada North Environmental Services LP (CanNorth) for the Rook I Project aquatic environmental baseline study (Annex V.1, Aquatic Environment Baseline Report; Figure 3). As described in Annex V.1:

> The ASA was selected based on the watershed designated for treated effluent release, knowledge of information needed for an Environmental Impact Assessment and long-term monitoring for similar developments, and consideration of potential cumulative impacts.

Waterbodies that are present along the Clearwater River flow path are included in the ASA (Figure 3).

The sites selected for the overwintering fish habitat surveys were located in a subset of the waterbodies and watercourses included in the ASA defined by CanNorth; however, the same study area was applied because the overwintering habitat survey is a component of the overall aquatic baseline study.



LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- EXISTING ACCESS ROAD
- PROJECT LOCATION

BASELINE AQUATIC STUDY AREA

- CAMP STUDY AREA
- DETAILED STUDY AREA
- AQUATIC SAMPLED WATERBODY

0 5,000 10,000

1:300,000 METRES

NOTE(S)

THE STUDY AREA USED FOR THE OVERWINTERING FISH HABITAT FIELD PROGRAM ALIGNS WITH THE AQUATIC STUDY AREA ESTABLISHED BY CANADA NORTH ENVIRONMENTAL SERVICES (CANNORTH) FOR THE ROOK I PROJECT AQUATIC ENVIRONMENTAL BASELINE STUDY (CANADA NORTH 2020). NOT ALL WATERBODIES AND WATERCOURSES INCLUDED IN THE AQUATIC STUDY AREA WERE SURVEYED AS PART OF THE OVERWINTERING FISH HABITAT FIELD PROGRAM.
CANNORTH (CANADA NORTH ENVIRONMENTAL SERVICES). 2020. ROOK I PROJECT AQUATIC AND TERRESTRIAL ENVIRONMENT BASELINE REPORT. PREPARED FOR NEXGEN ENERGY LTD. SASKATOON, SASKATCHEWAN.

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

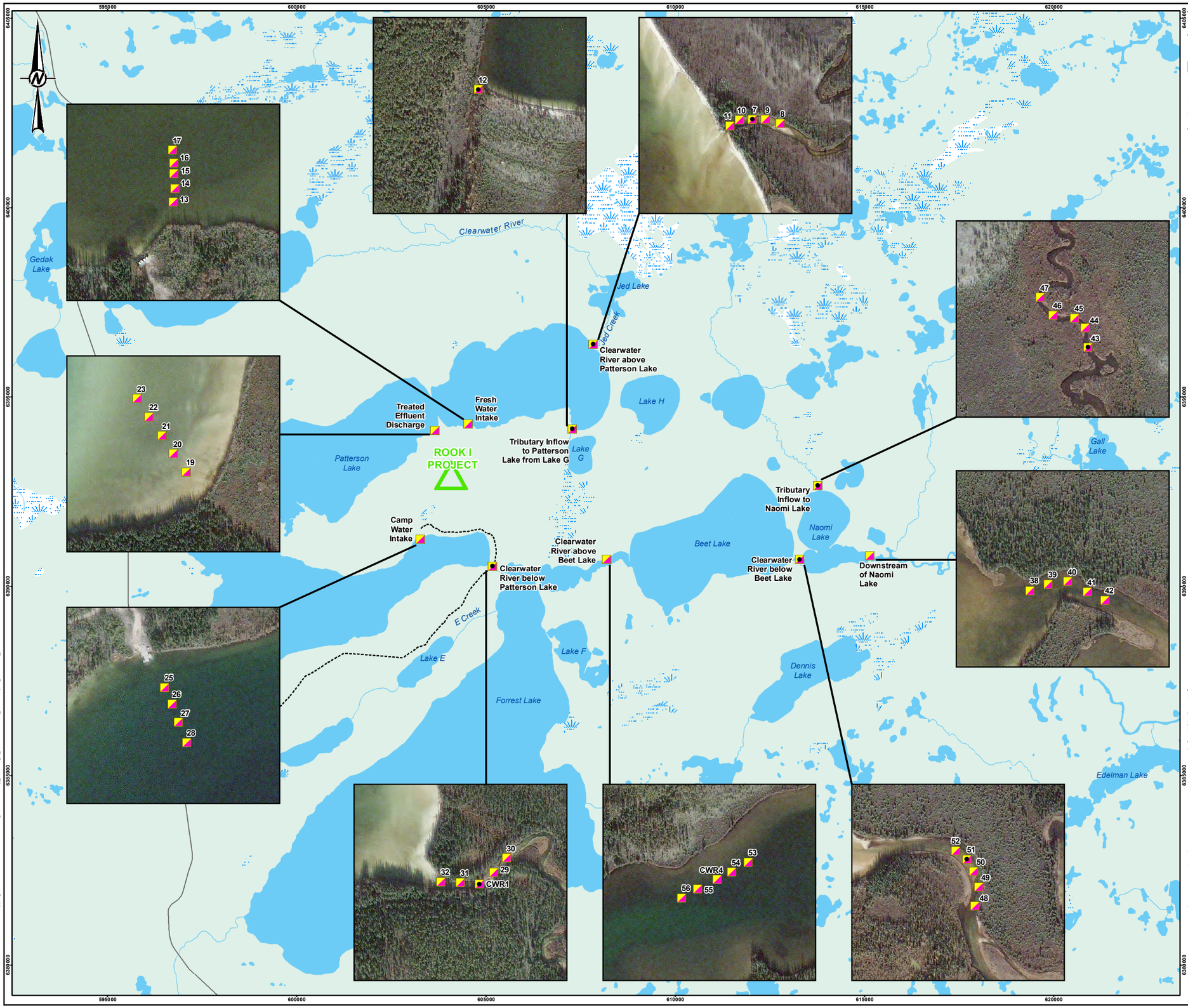
ROOK I PROJECT BASELINE AQUATIC STUDY AREA

CONSULTANT

GOLDER

YYYY-MM-DD	2022-02-07
DESIGNED	LJ
PREPARED	NO
REVIEWED	LJ
APPROVED	KM

PROJECT NO.	PHASE	REV.	FIGURE
20138965		0	3



LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED AREA

PROJECT FEATURES

- EXISTING ACCESS ROAD
- PROJECT LOCATION

SAMPLING LOCATIONS

- DISCHARGE
- OVERWINTERING HABITAT ASSESSMENT
- WATER QUALITY MEASUREMENT

0 2,000 4,000

1:100,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. IMAGERY OBTAINED FROM THE CLIENT, DATED: 2015.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

OVERWINTERING FISH HABITAT SAMPLING LOCATIONS

CONSULTANT

GOLDER

YYYY-MM-DD	2021-02-02
DESIGNED	CH
PREPARED	LMS
REVIEWED	LJ
APPROVED	KM

PROJECT NO.	PHASE	REV.	FIGURE
19114981	5000	0	4

4.0 METHODS

The baseline assessment of overwintering fish habitat in the ASA involved a review of existing information and overwintering habitat surveys in Patterson Lake and watercourse sites.

4.1 Review of Existing Information

Existing information on winter fish habitat conditions was available for waterbodies in the ASA, including Patterson Lake, Forrest Lake, Beet Lake, Naomi Lake, and Lloyd Lake, and a few small lakes (Annex V.1); however, specific information regarding overwintering habitat utilization in the immediate vicinity of the potential water intakes and diffuser was not available. In addition, there was very little existing overwintering fish habitat information available for watercourses in the ASA.

The information on winter habitat conditions in waterbodies (Annex V.1) provides a general understanding of overwintering fish habitat conditions in lentic environments. The results of the CanNorth sampling indicate that the surveyed waterbodies were generally well oxygenated with sufficient under-ice water depths and provided high quality overwintering habitat. The collection of additional information regarding winter habitat utilization in the vicinity of the diffuser and two freshwater intakes was recommended to support the assessment of effects associated with these developments in the EIS.

CanNorth completed fish habitat surveys in several watercourses during open-water conditions in 2018 and 2019. These surveys evaluated the habitat for overwintering potential; however, no winter sampling occurred. Golder recommended that additional information regarding winter habitat utilization be collected to provide a detailed understanding of overwintering conditions in the ASA and to support the EIS.

4.2 Approach

The approach taken to conduct the overwintering fish habitat surveys is discussed below. There are no standardized survey methods in Saskatchewan or in Canada for conducting overwintering fish habitat surveys; however, where applicable, sampling activities followed Golder's standard technical procedures for aquatic sampling, which were developed based on accepted protocols and sampling guidance documents available in Canada and the United States (e.g., RIC 2001; Stanfield 2017).

4.2.1 Survey Timing and Locations

The timing of the field program targeted the late-winter low flow period, which represents the most severe habitat conditions for fish in this region. To satisfy this objective, the overwintering fish habitat surveys were conducted from 25 March 2019 to 27 March 2019. This timing coincided with the winter hydrometric and snow survey sampling.

Overwintering fish habitat surveys were completed at locations in the ASA that were identified as being potentially affected by the proposed Project based on the expected development footprint and activities. In particular, the potential locations of the water intake and diffuser, and the potential for effects from treated effluent discharge were considered when selecting sites. Site access conditions during winter were also taken into consideration when selecting sites.

Ten sites were surveyed in 2019, which included three sites on Patterson Lake and seven sites on surrounding watercourses that could be potentially affected by the Project (Table 1; Figure 4). Each of the sites surveyed overlapped with habitat transects assessed by CanNorth during the 2018 and 2019 open-water fish and fish habitat baseline sampling (Annex V.1).

The survey locations in Patterson Lake included sites at the potential locations of the freshwater intake for the mine and mill and the treated effluent discharge. The location of a second intake (referred to herein as the camp freshwater intake) was also surveyed; however, this intake is no longer proposed as part of the Project design. At the time of the field program, the planning and design process for the water intake and diffuser in Patterson Lake were at an early stage, and a detailed investigation of the proposed locations for these structures had not yet occurred. Therefore, the surveyed sites were considered as conceptual locations for these developments. At the time of writing this report, the planned locations for the freshwater intake and diffuser were in the same general area as the sites surveyed in Patterson Lake. The final locations of these developments will be determined during detailed design. The data collected at the sampled locations are considered suitable for a baseline study, because winter habitat information at the sites would be generally representative of conditions at the final intake and diffuser locations.

The watercourse sites included five sites on the Clearwater River mainstem and two sites on tributaries of the Clearwater River (Table 1). Watercourse sites were selected based on a desktop review of satellite imagery, and to overlap with fish habitat sampling transects completed by CanNorth (Annex V.1). Specific sampling locations were determined in the field based on the approach described in Section 4.2.2.2.

Winter conditions prevented the field crew from safely accessing one of the transects sampled by CanNorth (referred to as “Clearwater Creek” in Annex V.1). Consequently, the site was moved to the outlet of Naomi Lake. In addition, three watercourse sites assessed for fish habitat by CanNorth during open-water conditions (Clearwater Creek, Clearwater River Midfield, and Lloyd Lake Inlet) were excluded from the overwintering sampling program because accessing and surveying these sites during winter by snowmobile was considered a safety risk. The Clearwater River Midfield and Lloyd Lake Inlet locations were not considered critical to survey because overwintering habitat is unlikely to be limiting at these locations where the riverine environment is wider, deeper, and faster flowing. Likewise, the Clearwater Creek site was also not essential for the program, as other tributary habitats sampled as part of the field program provided adequate representation of overwintering fish habitat conditions in tributary environments.

Table 1: Overwintering Fish Habitat Sampling Locations, March 2019

Type	Name	Site[a]	UTM Coordinates NAD83 12V	
			Easting	Northing
Waterbody	Patterson Lake	Camp Freshwater Intake	603254	6391271
		Treated Effluent Discharge	603649	6394120
		Freshwater Intake for Mine/Mill	604528	6394290
Watercourse	Clearwater River	Clearwater River above Patterson Lake (Jed Creek)	607828	6396398
		Clearwater River below Patterson Lake (Patterson Creek)	605167	6390536
		Clearwater River above Beet Lake (Beet Channel)	608141	6390688
		Clearwater River below Beet Lake (Beet Creek)	613296	6390648
		Downstream of Naomi Lake[b]	615128	6390832
	Clearwater River Tributaries	Tributary Inflow to Patterson Lake from Lake G (G Creek)	607275	6394155
		Tributary Inflow to Naomi Lake (Naomi Creek)	613699	6392732

a) Watercourse site names are defined in terms of their location on the Clearwater River. The corresponding watercourse naming convention used in Annex V.1 is shown in parentheses.
b) Winter conditions prevented the field crew from safely accessing the site Tributary Inflow Downstream of Naomi Lake (referred to as "Clearwater Creek" in Annex V.1). Therefore, the site was moved to the outlet of Naomi Lake.
UTM = Universal Transverse Mercator; NAD = North American Datum.

4.2.2 Overwintering Habitat Assessments

4.2.2.1 Patterson Lake

At each of the surveyed sites in Patterson Lake, five holes (stations) were drilled using an ice auger, extending outwards from the shore. One of the holes was drilled at the coordinates listed in Table 1, while the remaining four holes were drilled approximately 20 m apart, extending into the lake. The specific orientation and placement of the holes was determined in the field, based on the best judgment of the field crew. If frozen to bottom conditions were encountered at any of the holes, a deeper location was selected, as the diffuser and freshwater intake structures would need to be installed at a sufficient depth to be submerged below the ice. Parameters measured at each station included ice thickness, snow depth, and under-ice water depth. Photos were taken at each site to document the general area and fish winter habitat conditions (Appendix A).

Standard water quality field parameters (i.e., pH, specific conductivity [conductivity], temperature, and DO) were measured using a calibrated water quality multi-parameter meter (i.e., Aqua TROLL 500 multi sonde unit) at all stations. In-situ water quality sampling followed Golder's technical procedure for freshwater water quality sampling which is based on standard methods (Environment Canada 1993; Clesceri et al. 1989; Wetzel 1983). Care was taken to avoid disturbing the lake bottom with the ice auger at locations where the under-ice water depth was limited, as this could potentially affect the water quality measurements. If sufficient water depth was present, a water quality profile (i.e., measurements taken at 0.5 m depth intervals throughout the water column) was completed at the deepest station. A point measurement (i.e., a single measurement taken at the water surface) was recorded at the remaining four stations at approximately 0.2 m below the ice-water interface. The depth profile consisted of water quality measurements at intervals of 0.5 m starting just below the ice and ending just above the substrate.

Measured DO concentrations were compared to the Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life (CCME 1999), which consist of guideline values for the protection of aquatic life for both "early" life stages of fish (i.e., embryo/alevin) (9.5 mg/L) and other life stages of fish (6.5 mg/L).

4.2.2.2 Watercourses

At each site, a suitable section of the watercourse (approximately 100 m in length [longitudinally]), was selected for detailed assessment and to determine if the watercourse was frozen to the bottom. Survey sections were selected in the field, based on their representativeness of habitat conditions in the local area. A minimum of five holes were drilled at each site, approximately 20 m apart, in an attempt to locate flowing water. Parameters measured at each station included ice thickness, snow depth, and under-ice water depth. Information on bottom substrate composition was also collected. Photos were taken at each site. Any distinguishing habitat features that may influence winter habitat utilization by fish were noted, including possible areas of groundwater upwelling, and any open leads (i.e., areas without full ice cover). Standard water quality field parameters were measured at all stations as point measurements, as described in Section 4.2.2.1.

If flowing water was present at a site, the under-ice stream discharge was measured using a flow meter (i.e., Flow Tracker unit). Measurements of stream discharge followed Golder's standard technical procedure for stream discharge measurement, which is based on accepted hydrometric methods (Environment Canada 1981; Stanfield 2017).

Acquiring discharge measurements was not possible at two sites: the Clearwater River above Beet Lake site and the Downstream of Naomi Lake site. At the Clearwater River above Beet Lake site, discharge could not be effectively measured because the depth of the water and wetted width of the river within the surveyed section were not deep or wide enough, respectively. Discharge could not be measured at the Downstream of Naomi Lake site because of safety concerns related to inadequate ice thickness. In cases where a discharge measurement could not be obtained, water depth and velocity measurements were collected at one or more point locations where flowing water and safe, wadeable conditions were present. In the absence of discharge data, depth and velocity measurements provide some information on flow characteristics. The lack of discharge measurements at two sites was not considered a concern for the field program because 1) representative discharge measurements were collected at most sites; 2) discharge measurements were also collected during open-water conditions as part of the aquatic and hydrometric baseline sampling; and 3) discharge was modelled for the winter low-flow period as part of the hydrology baseline study.

5.0 RESULTS

The results of the overwintering fish habitat surveys at the three Patterson Lake sites and seven watercourse sites are presented in this section.

5.1 Patterson Lake

Descriptions of overwintering fish habitat conditions at the surveyed sites in Patterson Lake are provided below. In general, the ice thickness at the surveyed sites ranged from 0.35 m to 0.80 m, which was within the expected range for Patterson Lake during the late ice-cover season (Annex IV.2, Hydrometric Characterization Report). Under-ice water depths varied among stations, reflecting the location of each station relative to shore. The water was generally well oxygenated; however, slightly lower DO values were occasionally measured at stations closer to shore, reflecting shallower under-ice water depths encountered at these stations.

5.1.1 Camp Freshwater Intake

At the time of the survey, the camp freshwater intake was part of the Project design; however, at the time of writing this report, this intake is not proposed. The survey results for this site are reported herein to archive the information in case the Project design changes during the EIS and permitting review stages and because the results provide additional baseline information regarding fish habitat conditions in Patterson Lake.

Under-ice water depths at the Camp Freshwater Intake site (Appendix A) ranged from 0.20 m to 0.80 m across the five sampled stations (Table 2). Ice thickness was similar at the five stations, averaging 0.73 m. The water temperature at the ice-water interface averaged 0.8°C. The water was well oxygenated, with surface DO concentrations ranging from 13.2 mg/L to 14.4 mg/L (Table 2); all measurements were within guideline values. The pH of the water was slightly acidic to neutral. The conductivity of the water at the ice-water interface was highest at the station nearest to shore (60.7 microsiemens per centimetre [µS/cm]) and generally decreased with distance from shore. At the profile station, water temperature and DO were lower at the ice-water interface (0.6°C and 13.7 mg/L, respectively) and higher near the lake bottom (1.1°C and 13.9 mg/L, respectively). Overall, the surveyed area of Patterson Lake in the vicinity of the camp water intake location would provide suitable overwintering habitat for large-bodied fish and forage fish.

5.1.2 Treated Effluent Discharge

The Treated Effluent Discharge survey site (Appendix A) was situated in a shallow, sandy area. Under-ice water depths and ice thickness ranged from 0.01 m to 0.65 m and from 0.35 m to 0.55 m, respectively, across the five sampled stations (Table 2). The water temperature at the ice-water interface was generally similar across the five stations, averaging 0.5°C. Dissolved oxygen and conductivity levels at the ice-water interface were variable among the five stations and ranged from 6.8 mg/L to 12.8 mg/L and 52.1 µS/cm to 192.3 µS/cm, respectively. One DO measurement (6.8 mg/L) was below the CCME water quality guideline of 9.5 mg/L for the protection of aquatic life for early life stages but was above the guideline of 6.5 mg/L for other life stages (CCME 1999). The relatively lower DO levels recorded at this site were likely attributable to the shallower under-ice water depths at this site relative to other sites in Patterson Lake. The pH across all the stations ranged from slightly acidic to neutral. A depth profile was not taken at the Treated Effluent Discharge site due to the limited under-ice water depth. Overall, the results of the survey indicated that the area of Patterson Lake in the vicinity of the treated effluent discharge location would provide suitable overwintering habitat for large-bodied fish and forage fish at locations where under-ice water depths are adequate.

5.1.3 Freshwater Intake for Mine/Mill

Under-ice water depths at the Freshwater Intake for Mine/Mill site (Appendix A) ranged from 1.75 m to 3.60 m across the five sampled stations (Table 2). Ice thickness was similar across the five stations, averaging 0.68 m. The water temperatures at the ice-water interface averaged 1.0°C. Surface DO concentrations were high and ranged from 12.7 mg/L to 14.7 mg/L; all measurements were above both CCME guideline values. The pH of the water at the ice-water interface was slightly basic, and surface conductivity levels were similar among stations, averaging 45.3 µS/cm. At the profile station, water temperature varied slightly throughout the water column, with cooler temperatures measured near the surface (0.6°C) compared to the bottom (1.7°C). Dissolved oxygen and conductivity levels were highest (14.7 mg/L and 47.6 µS/cm, respectively) at the surface and lowest (12.7 mg/L and 41.4 µS/cm, respectively) near the bottom. Overall, the surveyed area of Patterson Lake in the vicinity of the proposed freshwater intake for the mine and mill would provide suitable overwintering habitat for large-bodied fish and forage fish.

Table 2: In Situ Waterbody Water Quality Measurements at Patterson Lake, 2019

Date	Site	Station	Frozen to Bottom (Y/N)	Point or Profile	UTM NAD83 Zone 12V		Effective Water Depth[a] (m)	Sample Depth (m)	Water Temp (°C)	DO (mg/L)	DO (%)	pH	Conductivity (µS/cm)	Ice Thickness (m)	Snow Depth (m)
					Easting	Northing									
25 March 2019	Camp Freshwater Intake	13	N	Point	604528	6394290	0.20	0.8	0.6	13.2	97.2	6.6	60.7	0.70	0
		14	N	Point	604530	6394308	0.40	0.9	0.4	13.7	100.6	6.5	53.9	0.70	0
		15	N	Point	604529	6394328	0.50	1.1	0.6	13.7	100.3	6.6	55.8	0.80	0.21
		16	N	Point	604529	6394342	0.80	1.1	1.3	14.4	107.0	7.0	39.1	0.70	0.12
		17	N	Profile	604527	6394359	0.75	1.0	0.6	13.7	101.2	7.0	38.7	0.75	0.18
		17	N		604527	6394359	0.75	1.3	1.1	13.9	103.9	6.9	41.6	0.75	0.18
26 March 2019	Treated Effluent Discharge[b]	19	Y	Point	603649	6394120	0.01	0.3	1.2	12.4	93.4	[c]	133.2	0.40	0.20
		20	Y	Point	603632	6394144	0.02	0.2	0.6	12.8	95.2	7.7	192.3	0.35	0.18
		21	N	Point	603617	6394168	0.01	0.3	0.1	6.8	48.7	6.7	70.0	0.49	0.20
		22	N	Point	603600	6394193	0.05	0.4	0.3	9.7	71.3	6.7	70.1	0.49	0.03
		23	N	Point	603584	6394217	0.65	0.5	0.1	10.9	79.7	6.6	52.1	0.55	0.15
26 March 2019	Freshwater Intake at Mine/Mill	Camp Intake	N	Point	603254	6391271	1.75	1.2	1.1	14.7	110.8	7.3	47.6	0.65	0
		25	N	Point	603263	6391242	2.75	1.7	1.2	13.8	104.0	7.3	44.7	0.65	0.01
		26	N	Point	603273	6391220	3.00	1.9	1.1	13.8	104.1	7.3	44.2	0.70	0.08
		27	N	Point	603281	6391196	3.30	2.0	1.2	13.7	103.1	7.3	43.7	0.70	0.03
		28	N	Profile	603292	6391169	3.60	1.0	0.6	14.2	105.1	7.5	46.3	0.70	0.01
		28	N		603292	6391169	3.60	1.5	0.9	14.1	105.7	7.3	44.6	0.70	0.01
		28	N		603292	6391169	3.60	2.0	1.2	13.8	103.7	7.3	43.9	0.70	0.01
		28	N		603292	6391169	3.60	2.5	1.4	13.3	100.8	7.2	42.6	0.70	0.01
		28	N		603292	6391169	3.60	3.0	1.6	13.0	98.8	7.2	42.0	0.70	0.01
		28	N		603292	6391169	3.60	3.5	1.7	12.7	97.2	7.2	41.4	0.70	0.01

Note: Point measurements were taken at a single depth. Profile measurements are taken from a series of depths at the same location.
a) Effective water depth is the depth of water below the bottom of the ice. Also referred to as “under-ice water depth.”
b) Auger hit substrate while drilling; water quality measurements may be compromised due to substrate disruption.
c) The pH value recorded at this station was 4.4. This value was deemed likely to be an error.
Y = Yes; N = No, UTM = Universal Transverse Mercator; NAD = North American Datum; DO = dissolved oxygen; µS/cm = microsiemens per centimetre.

5.2 Watercourses

Descriptions of overwintering fish habitat conditions at the surveyed sites on the Clearwater River mainstem and tributaries are provided below. In general, these watercourses tend not to have ice-coverage during the entire winter and may be open most of the winter, particularly in faster-flowing sections (Annex IV.2). Open-water conditions are maintained by groundwater inflow to the Clearwater River, which provides a source of warmer water through the winter months. The exception is the very small watercourses that do not support sufficient flow through the winter to maintain open channels and freeze to the bottom (e.g., Tributary Inflow to Patterson Lake from Lake G). Further information on winter ice formation and hydraulic conditions for the surveyed watercourse sites is provided in Golder (2021).

5.2.1 Clearwater River above Patterson Lake

The surveyed section of the Clearwater River above Patterson Lake (Appendix A) had a wetted width ranging from 12 m to 15 m. The area surveyed was predominantly ice-free and the water depth was 0.65 m at all five sampled stations (Table 3). The river bottom substrate was mainly composed of sand interspersed with areas of silt and organic material. Overhanging vegetation and ice ledges were the primary sources of overhead cover for fish. Water temperature averaged 1.4°C. Dissolved oxygen levels were high at all stations, averaging 11.3 mg/L; all measurements were within guideline values. The pH and conductivity of the water were similar across the five stations, averaging 6.3 and 33.9 µS/cm, respectively. The stream discharge was 0.60 m^3/s. The site was considered to provide good quality overwintering habitat for all life stages and species of fish because of the high DO concentrations, the abundant overhead cover, and the ice-free, flowing water conditions.

5.2.2 Clearwater River below Patterson Lake

The surveyed section of the Clearwater River below Patterson Lake (Appendix A) had a wetted width of 10 m. The site was predominantly ice-free and relatively shallow with water depths ranging from 0.40 m to 1.00 m (Table 3). The substrate was dominated by sand, silt, and organic material, with limited sections of boulder at the upstream and downstream ends of the surveyed section, which provided a source of instream cover for fish. Other sources of cover for fish included submergent vegetation, large and small woody debris, overhanging vegetation, and ice ledges. Water temperature averaged 1.0°C. Dissolved oxygen concentrations were high at all stations, averaging 13.6 mg/L (Table 3); all measurements were within guideline values. The pH and conductivity of the water averaged 7.3 and 44.4 µS/cm, respectively. The stream discharge was 0.98 m^3/s. The site was considered to provide good quality overwintering habitat for all life stages and species of fish because of the high DO concentrations and presence of ice-free, flowing water conditions.

5.2.3 Clearwater River above Beet Lake

The surveyed section of the Clearwater River above Beet Lake (Appendix A) was characterized by a slow-moving, ice-covered channel within a wetland area, with an approximate wetted width of 220 m. The river bottom substrate was dominated by silt and sand. Ice thickness was 0.5 m at all stations, and under-ice water depths ranged from 1.1 m to 1.3 m (Table 3). Water temperature averaged 1.4°C. Dissolved oxygen concentrations were high and ranged from 11.5 mg/L to 13.3 mg/L; all measurements were within guideline values. pH and conductivity were similar among stations, averaging 7.1 and 47.9 µS/cm, respectively. A discharge could not be measured at this location because water depth and wetted width at the station were too deep and wide to measure discharge safely and effectively. The site was considered to provide good quality overwintering habitat for all life stages and species of fish as there was sufficient under-ice water depth and DO concentrations were high at all stations.

5.2.4 Clearwater River below Beet Lake

The surveyed section of the Clearwater River below Beet Lake (Appendix A) had a wetted width of 25 m. The site was predominantly ice-free, and water depths ranged from 0.7 m to 1.3 m across the five stations (Table 3). The river bottom substrate was dominated by sand and organics. The maximum water depth of 1.3 m occurred in a pool located at the side of the channel. The water temperature was 0.5°C at each of the five sampled stations. Dissolved oxygen concentrations were high and ranged from 11.6 mg/L to 12.2 mg/L; all measurements were within guideline values. pH and conductivity values were similar among the stations, averaging 7.1 and 48.5 µS/cm respectively. The stream discharge was 2.14 m^3/s. Frequent water depths greater than 1 m and high DO concentrations at this site indicate the presence of good quality overwintering habitat for all life stages and species of fish within the surveyed section.

Table 3: In Situ Water Quality and Discharge Measurements at Watercourse Stations, 2019

Date	Site	Station	Frozen to Bottom (Y/N)	UTM NAD83 12V		Effective Water Depth[(a)] (m)	Sample Depth (m)	Water Temp (°C)	DO (mg/L)	DO (%)	pH	Conductivity (µS/cm)	Ice Thickness (m)	Snow Depth (m)	Discharge (m^3/s)
				Easting	Northing										
25 March 2019	Clearwater River above Patterson Lake	7	N	607828	6396398	0.65	0.25	1.4	11.2	84.6	6.3	33.9	0	0	0.60
		8	N	607866	6396386	0.65	0.38	1.3	11.2	83.8	6.4	34.3	0	0	-
		9	N	607847	6396394	0.65	0.17	1.4	11.5	86.5	6.3	33.9	0	0	-
		10	N	607809	6396394	0.65	0.32	1.5	11.3	84.8	6.3	33.8	0	0	-
		11	N	607796	6396386	0.65	0.43	1.6	11.3	85.3	6.4	33.7	0	0	-
26 March 2019	Clearwater River below Patterson Lake	32	N	605116	6390539	0.60	0.30	1.0	13.6	101.8	7.3	44.5	0	0	-
		31	N	605142	6390538	0.40	0.30	0.9	13.5	101.1	7.3	44.4	0	0	-
		CWR1	N	605167	6390536	0.50	0.30	0.9	13.6	101.4	7.3	44.4	0	0	0.98
		29	N	605186	6390551	1.00	0.30	1.1	13.7	102.7	7.3	44.2	0	0	-
		30	N	605203	6390570	0.60	0.30	1.1	13.7	103.1	7.4	44.8	0	0	-
27 March 2019	Clearwater River above Beet Lake	53	N	608182	6390711	1.10	0.80	1.8	11.5	87.1	7.1	47.7	0.5	0	[(b)]
		54	N	608160	6390698	1.10	0.80	1.5	13.2	99.2	7.1	47.9	0.5	0	
		CWR4	N	608141	6390688	1.10	0.80	1.5	13.3	100.2	7.1	47.8	0.5	0	
		55	N	608115	6390676	1.30	0.80	1.2	13.1	98.4	7.2	47.9	0.5	0	
		56	N	608094	6390664	1.30	0.80	1.2	13.2	99.1	7.2	48.3	0.5	0	
27 March 2019	Clearwater River below Beet Lake	48	N	613296	6390648	0.70	0.30	0.5	11.6	84.8	7.2	47.9	0	0	-
		49	N	613302	6390673	0.95	0.30	0.5	11.8	86.3	7.1	48.0	0	0	-
		50	N	613305	6390698	1.30	0.30	0.5	11.7	85.8	7.1	48.4	0	0	2.14
		51	N	613296	6390723	1.15	0.30	0.5	11.9	87.0	7.0	48.5	0	0	-
		52	N	613279	6390741	0.80	0.30	0.5	12.2	89.5	7.0	49.5	0	0	-
27 March 2019	Downstream of Naomi Lake	38	N	615128	6390832	0.50	0.30	0.8	7.4	54.3	6.3	36.6	0	0	[(c)]
		39	N	615152	6390840	0.50	0.30	0.7	7.8	57.5	6.3	32.2	0	0	
		40	N	615178	6390844	0.50	0.30	0.7	7.9	57.6	6.3	31.5	0	0	
		41	N	615204	6390830	0.55	0.30	0.7	7.9	58.3	6.3	31.2	0	0	
		42	N	615227	6390819	0.55	0.30	0.7	8.3	60.9	6.3	31.7	0	0	
25 March 2019	Tributary Inflow to Patterson Lake from Lake G	12	Y	607275	6394155	0	0.78	0.2	1.6	11.2	6.4	63.9	0.8	0	[(d)]

Table 3: In Situ Water Quality and Discharge Measurements at Watercourse Stations, 2019

Date	Site	Station	Frozen to Bottom (Y/N)	UTM NAD83 12V		Effective Water Depth[(a)] (m)	Sample Depth (m)	Water Temp (°C)	DO (mg/L)	DO (%)	pH	Conductivity (µS/cm)	Ice Thickness (m)	Snow Depth (m)	Discharge (m^3/s)
				Easting	Northing										
27 March 2019	Tributary Inflow to Naomi Lake	47	N	613699	6392732	0.70	0.70	0.1	9.4	67.6	6.2	24.6	0.4	0	-
		46	N	613720	6392719	0.50	0.70	0.1	8.0	64.1	6.2	23.1	0.4	0	-
		45	N	613745	6392715	0.50	0.80	0.1	8.9	64.0	6.2	16.2	0.5	0	-
		44	N	613753	6392691	0.60	0.80	0.1	8.8	63.0	6.2	21.9	0.5	0	-
		43	N	613763	6392668	0.60	0.80	0.1	9.1	65.4	6.2	16.6	0.5	0	0.56

a) Effective water depth is the depth of water below the bottom of the ice. It is also referred to as “under-ice water depth.”
b) Water depth and wetted width at the station were too deep and wide to measure discharge safely and effectively.
c) Discharge measurement not taken due to safety concerns related to inadequate ice thickness.
d) The watercourse was frozen to bottom, except at one station with over-ice flow. Water quality measurements and a spot velocity measurement (0.01 m/s) were taken from over-ice water flow.
Y = Yes; N = No, UTM = Universal Transverse Mercator; NAD = North American Datum; DO = dissolved oxygen; µS/cm = microsiemens per centimetre; m^3/s = cubic metres per second; “-” = not collected or not applicable.

5.2.5 Downstream of Naomi Lake

The surveyed section of the Clearwater River downstream of Naomi Lake (Appendix A, Photo 8) was ice-free at the time of the survey and had a wetted width of approximately 40 m. The river bottom substrate was dominated by organics and silt. Water depths were similar across the five sampled stations, averaging 0.52 m (Table 3). The average water temperature was 0.7°C, and DO concentrations ranged from 7.4 mg/L to 8.3 mg/L. All DO measurements were below the CCME guideline for the protection of early life stages of fish but remained above the guideline for other life stages. The lower DO concentrations measured at the outlet of Naomi Lake may have been influenced by lower overall DO concentrations in the lake body during ice cover, combined with the shallow depth of the lake (8.35 m). Lower flow conditions at the lake outlet, compared to at other Clearwater River sampling locations, may also have influenced the DO concentrations. The pH and conductivity of the water was similar among stations, averaging 6.3 and 32.6 µS/cm, respectively. Overall, the overwintering habitat potential was good for species and life stages of fish that are tolerant of the DO concentrations encountered at this site. The suitability of the habitat was lower, overall, for more sensitive species or life stages that require higher DO concentrations.

5.2.6 Tributary Inflow to Patterson Lake from Lake G

The surveyed section of the Clearwater River to Patterson Lake from Lake G (Appendix A) was characterized by a braided channel flowing through an open bog. The channel was frozen to the bottom throughout the surveyed section; however, there was some over-ice flow present (Appendix A), which allowed water quality measurements to be collected at a single station. The ice thickness at this station measured 0.8 m and the stream bottom substrate consisted of organic matter. There was no snow present on the ice surface at the time of the survey. Water temperature was 0.2°C. The DO measured in the over-ice flow was low (1.6 mg/L; Table 3) and below the CCME guideline for the protection of aquatic life for both early life stages and other life stages. The pH and conductivity of the water were 6.4 and 63.9 µS/cm, respectively. A discharge measurement was not possible due to frozen to bottom conditions encountered at the site; however, a spot velocity measurement of 0.01 m/s was recorded for the over-ice flow. Overall, the overwintering habitat potential of the site was nil, as the watercourse was frozen to bottom.

5.2.7 Tributary Inflow to Naomi Lake

The surveyed section of the Clearwater River Tributary Inflow to Naomi Lake (Appendix A) was characterized by a well-defined, sinuous channel with a wetted width of 7 m. The bottom substrate was dominated by fines. The average ice thickness measured 0.5 m and under-ice water depths ranged from 0.5 m to 0.7 m across the five stations. There was no snow present on the ice surface at the time of the survey. The water temperature was 0.1°C at each station. Dissolved oxygen concentrations averaged 8.8 mg/L. All DO measurements were below the CCME guideline of 9.5 mg/L for the protection of aquatic life for early life stages but remained above the guideline of 6.5 mg/L for other life stages. The average pH was 6.2. The conductivity of the water varied slightly among the five sampled stations, ranging from 16.2 µS/cm to 24.6 µS/cm. The under-ice stream discharge recorded for the site was 0.56 m^3/s. The site was considered to provide suitable habitat for forage species and non-early life stages of fish, which are tolerant of the DO conditions encountered at the site. The overwintering habitat potential for species and life stages of fish that require higher DO levels was lower overall.

6.0 SUMMARY

Overwintering habitat is often one of the most critical habitat types for fish, particularly in northern regions, which may experience extended periods of ice cover and limited flow. The availability of adequate winter habitat is often an important factor affecting the distribution and abundance of fish in an environment; potential changes to this habitat can create adverse affects on fish populations. During community engagement meetings for the Rook I Project (Project), Indigenous community members expressed concerns about the potential for effects on fish and fish habitat, and corresponding changes to cultural practices, and subsistence and commercial fishing (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD VI: YNLRO; Appendix A). Results of the overwintering fish habitat field program provide a baseline for winter habitat conditions within watercourses potentially affected by the Project, and in Patterson Lake in the vicinity of the expected locations for the treated effluent discharge and potential freshwater intakes.

Overall, the results of the winter habitat surveys completed at the proposed locations of the freshwater intakes and treated effluent discharge in Patterson Lake indicate that these areas would provide suitable overwintering habitat for both large-bodied and forage fish populations. This finding is based primarily on high dissolved oxygen (DO) concentrations measured at the surveyed stations and adequate under-ice water depths.

The surveyed sections of the Clearwater River mainstem were predominantly ice-free and open at the time of the field program, with exception of the section above Beet Lake, which was slower moving compared with other mainstem sites and had approximately 0.5 m of ice-coverage. All of the mainstem sites were flowing and typically had water depths in the range of 0.5 m to 1 m. Water quality sampling indicated that DO concentrations were high at all the sampled stations, with the exception of the site downstream of Naomi Lake, where DO values were slightly lower. In general, the mainstem sites were considered to provide suitable overwintering habitat for both large-bodied and forage fish populations. The overwintering habitat potential at the site downstream of Naomi Lake was lower overall, for species and life stages that require higher DO concentrations (i.e., greater than 9.5 mg/L).

Both of the Clearwater River tributary sites were ice covered at the time of the field program. The tributary inflow to Patterson Lake from Lake G was frozen to the bottom throughout the surveyed section, and thus, the overwintering habitat potential of the site was nil. The tributary flowing into Naomi Lake had sufficient under-ice water depths and adequate DO concentrations to support overwintering fish populations; however, the quality of the habitat was lower for more sensitive species or life stages that require higher DO concentrations.

The baseline overwintering habitat data obtained as a result of this survey provide information regarding the natural variability in winter habitat conditions in the aquatic study area (ASA). The overwintering fish habitat field program results provide context for the effects assessments completed for fish and fish habitat and land and resource use, and for future operational environmental effects monitoring for the Project.

CLOSING

Golder is pleased to submit this report to NexGen in support of the environmental assessment for the Rook I Project. For details on the limitations and use of information presented in this report, please refer to the Study Limitations section following this page. If you have any questions or require additional details related to this study, please contact the undersigned.

Golder Associates Ltd.

Leah James, M.Sc.
Aquatic Biologist

Kristine Mason, M.Sc.
Principal, Senior Fisheries Biologist

STUDY LIMITATIONS

This report has been prepared by Golder Associates Ltd. (Golder) for NexGen Energy Ltd. (Client) and for the express purpose of supporting the Environmental Assessment (EA) of the proposed Rook I Project. This report is provided for the exclusive use by the Client. Golder authorizes use of this report by other parties involved in, and for the specific and identified purpose of, the EA review process. Any other use of this report by others is prohibited and is without responsibility to Golder.

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The passage of time affects the information and assessment provided in this report. Golder's opinions are based upon information that existed at the time of the production of the report. The Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to Golder by the Client, communications between Golder and the Client, and to any other reports prepared by Golder for the Client relative to the specific site described in the report. In order to properly understand the

suggestions, recommendations and opinions expressed in this report, reference must be to the foregoing and to the entirety of the report. Golder cannot be responsible for use of portions of the report without reference to the entire report.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client and were prepared for the specific purpose set out herein. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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APPENDIX A

Photos

Photo 1: View looking away from shore at the Camp Freshwater Intake site.

Photo 2: View away from shore at the at the Treated Effluent Discharge site, from Station 19.

Photo 3: View looking towards shore at the Freshwater Intake at Mine/Mill site.

Photo 4: View looking upstream at the Clearwater River below Patterson Lake site, from Station CWR1.

Photo 5: View looking downstream at the Clearwater River above Patterson Lake site, from Station 7.

Photo 6: View looking upstream at the Clearwater River below Beet Lake site, from Station 50.

Photo 7: View upstream at Clearwater River above Beet Lake site, station CWR4.

Photo 8: View looking downstream at the Downstream of Naomi Lake site, from Station 39.

Photo 9: View looking upstream at the Tributary Inflow to Naomi Lake site, from Station 43.

Photo 10: View looking downstream at the Tributary Inflow to Patterson Lake from Lake G site, from Station 12.

Rook I Project

Environmental Impact Statement

Annex V.3: Naomi Lake Bathymetry Report

GOLDER
MEMBER OF WSP

NAOMI LAKE BATHYMETRY REPORT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

Executive Summary

Bathymetry is the measurement of depth of water within a waterbody or an area within a waterbody. The Naomi Lake bathymetry study was completed as part of the aquatic baseline program to provide site characterization information, which assists in establishing baseline conditions to support an Environmental Assessment (EA) for the Rook I Project (Project). Naomi Lake bathymetry data were collected during the winter from 21 March 2019 to 25 March 2019 using ground penetrating radar (GPR) surveys on the ice.

To address the objective of supplementing an aquatic environment baseline study with bathymetry data from Naomi Lake, the following tasks were completed:

- collecting multiple transects of GPR data across Naomi Lake to measure depth to lake bottom;
- conducting physical depth checks at several locations using an ice auger and plumb bob to calibrate and validate the GPR data; and
- post-processing the field data to calculate total water volume.

Ice auger holes were drilled at various locations within the lake to measure ice thickness and depth to lake bottom; these measurements were then used to calibrate and verify the GPR data.

The bathymetry study met the baseline study objective in that it provided information on the water depth and volume within Naomi Lake.

If referencing this report, please use for the following citation:

Golder (Golder Associates Ltd.). 2022. Naomi Lake Bathymetry Report for the Rook I Project. Prepared for NexGen Energy Ltd.

Table of Contents

Abbreviations and Units of Measure

Abbreviation	Definition
GPR	ground penetrating radar
dGPS	differential Global Positioning System
Project	Rook I Project
NexGen	NexGen Energy Ltd.
EIS	Environmental Impact Statement
EA	Environmental Assessment
TLU	Traditional Land Use
Golder	Golder Associates Ltd.
3-D	three-dimensional
ID	identification

Unit	Definition
°C	degrees Celsius
dB	decibels
km	kilometre
km/h	kilometres per hour
m	metre
m^3	cubic metre
masl	metres above sea level
mbis	metres below ice surface
MHz	megahertz
ns	nanosecond

1.0 INTRODUCTION

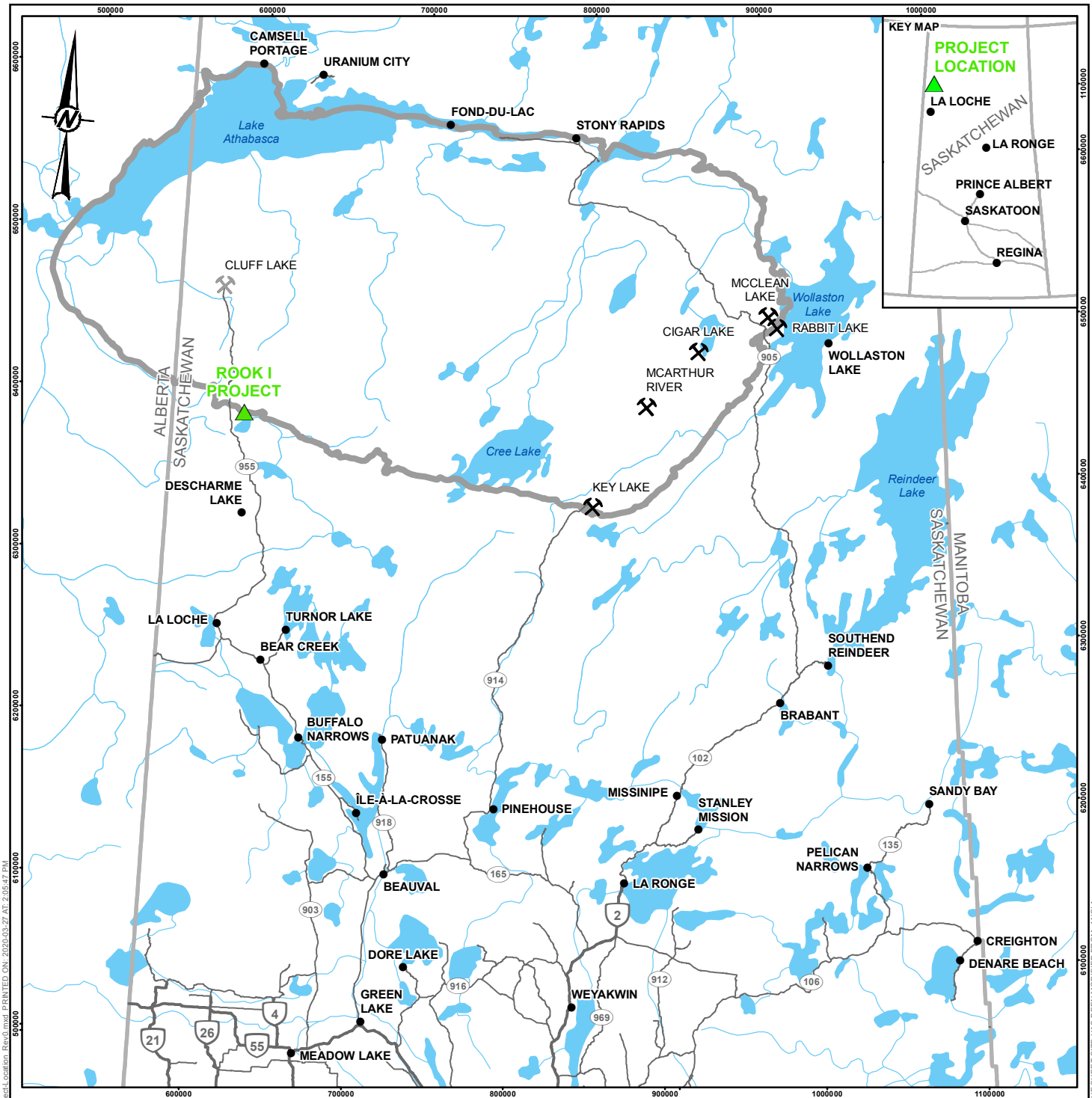
The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project is located in northwestern Saskatchewan, approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The Naomi Lake bathymetry study represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The aquatics baseline program, of which the Naomi Lake bathymetry study is a part, was undertaken to provide context from which Project environmental aquatic effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local Indigenous Groups and northern communities, specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples and the unique relationship Indigenous Peoples have with the environment, and recognizes the importance of full and open discussion with interested or potentially affected Indigenous communities regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous and northern communities who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Local Knowledge throughout the Environmental Assessment (EA) process, and providing funding for Traditional Land Use (TLU) Studies[1] to understand how the proposed Project may interact with the Indigenous communities' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the Naomi Lake bathymetry study is presented in Appendix A of the Aquatic Baseline Road Map (Annex V).

[1] Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- ATHABASCA BASIN BOUNDARY
- PROJECT LOCATION

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT, SASKATCHEWAN

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	SS
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

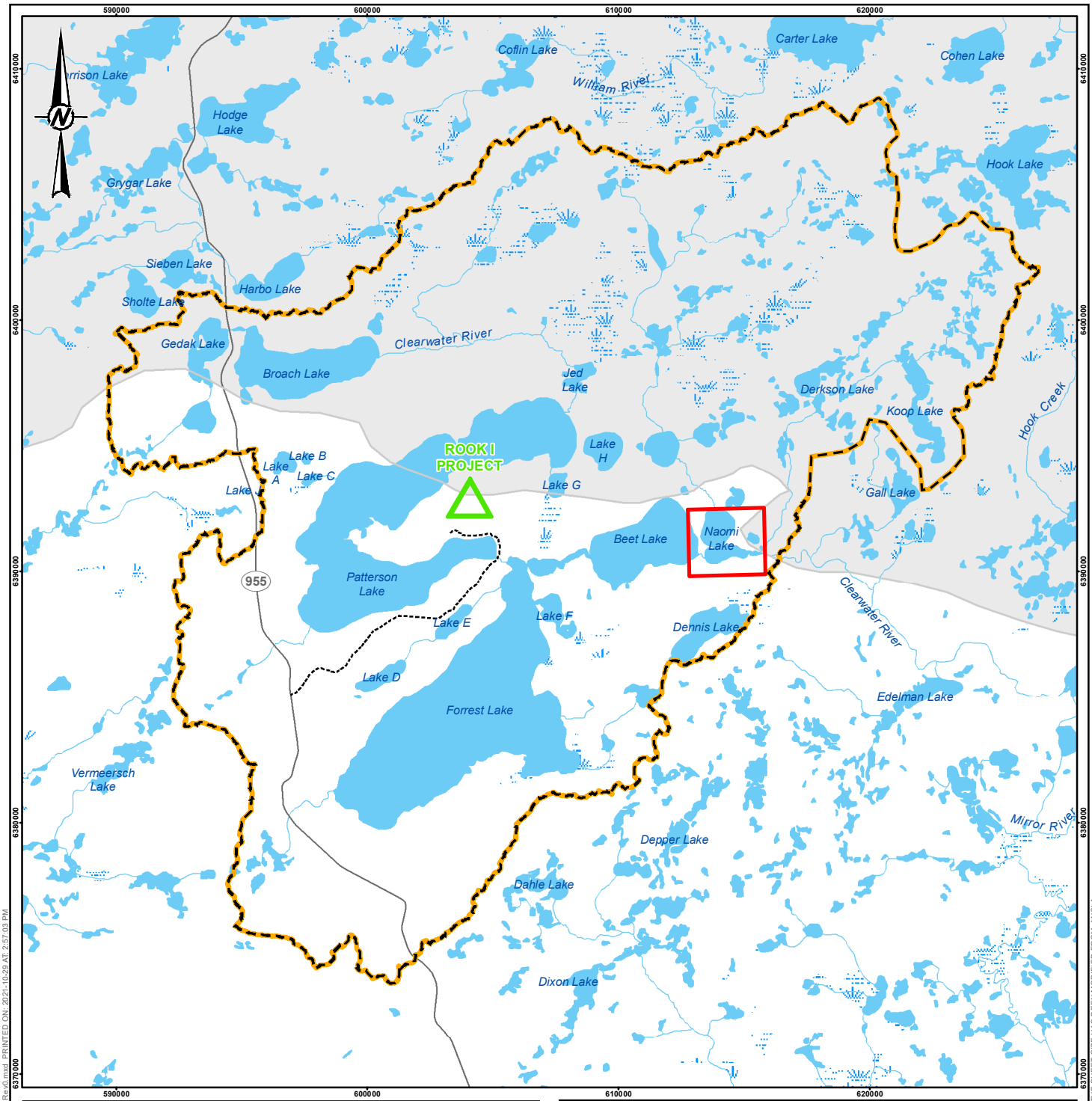
PROJECT NO.	PHASE	REV.	FIGURE
19114981		0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm

0

PATH: I:\CLIENTS\NexGen\19114981\Mapping\Products\General\Baseline_General\19114981_Fig1_RookIProjectLocation_Revised.mxd PRINTED ON: 2020-03-27 AT: 2:05:47 PM



LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- PROJECT LOCATION
- EXISTING ACCESS ROAD
- NAOMI STUDY AREA
- HYDROLOGY LOCAL STUDY AREA

0 5,000 10,000

1:225,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

GOLDER

YYYY-MM-DD	2021-10-29
DESIGNED	SG
PREPARED	NO
REVIEWED	SM
APPROVED	SM

PROJECT NO.	PHASE	REV.	FIGURE
20138965		0	2

2.0 STUDY OBJECTIVES

The objective of the Naomi Lake bathymetry study was to map the bathymetry of Naomi Lake. Bathymetry is used to map the lake bottom, and the information is then used to calculate the lake's approximate volume. The bathymetry study was completed to supplement the aquatic environment baseline program and to provide supporting information for the aquatic effects assessment of the EIS.

Bathymetry surveys for most of the lakes in the aquatic environment baseline study were conducted during the open-water period in 2018 by Canada North Environmental Services (CanNorth 2021) . No bathymetry data were collected for Naomi Lake in 2018 prior to freeze-up. To extend the range of surveyed lakes downstream from Patterson Lake, this study was conducted by Golder Associates Ltd. (Golder) the following winter (i.e., 21 March 2019 to 25 March 2019) using ground penetrating radar (GPR) surveys on the ice.

3.0 STUDY AREAS

The Naomi Lake bathymetry study targeted Naomi Lake, which is located within the local study area (LSA) defined for the aquatics environment baseline report. The aquatic study area includes nearfield waterbodies and watercourses located along the flow path of the proposed treated effluent discharge location (i.e., along the Clearwater River flowing through Patterson Lake, Forrest Lake, Beet Lake, and Naomi Lake). Beet Lake feeds into Naomi Lake via the Clearwater River system. Naomi Lake is the outflow for an extended stretch of the Clearwater River. The Clearwater River continues downstream of Naomi Lake reaching Lloyd Lake and then continuing on to Warner Rapids.

Figure 3: Detail of Aquatic Study Area Showing Naomi Lake

4.0 METHODS

This section outlines existing information, approach, equipment, and methods used to conduct the Naomi Lake bathymetry study.

4.1 Review of Existing Information

No previous studies were available for this bathymetric assessment at Naomi Lake.

4.2 Approach

Given the geographic location and size of Naomi Lake, the entire lake freezes over completely during winter. Ice cover of the lake was thick enough that it was deemed safe for travelling on. Therefore, GPR method was chosen as the preferred method for mapping the bathymetry of the lake. The GPR survey was conducted in accordance with the ASTM D6432-19 standard, and transects oriented in a grid like pattern were determined to be the most favoured design for the program.

To address the study objective, the following tasks were completed:

- collected transects of GPR data across Naomi Lake spaced approximately 300 m apart for a total linear distance of approximately 18 km;
- conducted physical depth checks at several locations using an ice auger and plumb bob to calibrate and validate the GPR data; and
- post-processed the field data to calculate total water volume.

4.3 Ground Penetrating Radar Method

Ground penetrating radar is a proven and established method used to map out vertical layers of different materials below the surface. It operates on the principle that electromagnetic waves emitted into the ice and water column by a transmitter antenna are reflected off the lake bottom and can subsequently be detected by a receiver antenna. Reflections occur at interfaces of subsurface materials with different dielectric constants (i.e., electrical properties or moisture content). Radar range, or maximum penetration, is principally controlled by the selected antenna frequency and the concentration of dissolved solids or particulates present in the water. Increasing levels of dissolved solids in water tend to increase the electrical conductivity of the water. As water conductivity increases, the effective radar sounding range is reduced (i.e., intrinsic attenuation).

The GPR system incorporates precise timing electronics to measure the reflection transit time (i.e., the time required for the radar wave to travel from transmitter to reflector to receiver), which in turn provides vertical distance measurements to different subsurface layers depends on reflector depth and radar velocity. A radar profile is acquired by moving transmitter and receiver antennas and, concurrently, recording a series of soundings at regular intervals along a traverse. Resulting data are displayed as a series of oscilloscope[2]-like traces having amplitude proportional to reflection strength. Given an estimate of radar velocity, corresponding reflector depths may be determined. Table 1 denotes typical values of GPR parameters for common geological materials.

[2] An oscilloscope is an instrument that displays variations in signal strength as a waveform on the screen.

Table 1: Typical Values of Ground Penetrating Radar Parameters for Some Common Materials

Material	Dielectric Constant (ε)	Velocity (m/ns)	Attenuation (dB/m)
Air	1	0.30	0
Dry sand	4	0.15	0.01
Water-saturated sand	25	0.06	0.03-0.3
Clays	5-40	0.047-0.13	1-300
Peat	60-80	0.034-0.039	0.3
Ice (pure)	3-4	0.16	0.01
Water (fresh)	80	0.033	0.1
Water (saline)	80	0.033	1,000

Source: Davis and Annan (1989), Hanninen (1992).
m/ns = metres per nanosecond.
dB/m = decibels per metre.

4.4 Field Data Collection

Field work was conducted by a crew consisting of two geophysicists. The field program operated from 21 March 2019 to 25 March 2019. Surface conditions consisted of frozen lake ice covered by snow, with snow depths ranging from approximately 0 m to 0.30 m. Measured ice thicknesses ranged between 0.60 m and 0.80 m. Local temperatures ranged from approximately -5°C to 17°C as measured by the Rook I Meteorological Station. Favourable weather conditions made efficient data collection possible, allowing the field crew to collect additional GPR transects in the northern portion to further define the deepest part of the lake with additional infill transect snowmobile passes at a finer grid than 300 m.

Two different GPR systems were used to collect field data. Primarily, data were collected using a Sensors and Software Inc. PulseEKKO with 200 MHz un-shielded antennae. Additional data measurements from the deepest part of the lake were collected using a Mala Geosciences GPR system with 80 MHz shielded antennae. The 200 MHz antenna was used to image the entire lake bottom. In general, lower frequency GPR antennas provide greater depth of signal penetration, and the higher frequency antennas provide greater resolution of shallow subsurface features. The GPR antennae were placed on a wooden sled and towed behind a utility sled containing the GPR system and one field crew member that operated the unit. One snowmobile was used to tow the two sleds. Ground penetrating radar data were collected at a walking speed (i.e., approximately 2 km/h to 4 km/h) and positioned in real-time with a Trimble handheld GeoXH DGPS. Figure 4 displays the field setup for towing the GPR antenna and operator with the snowmobile.

Ground penetrating radar data were recorded as time sections (i.e., nanoseconds [ns]) that require conversion to depth sections using an estimate of average velocity or a velocity-time function. At the site, the column of material that the GPR signal passed through may have included layers of air, snow, ice, and water, with each layer exhibiting a distinct velocity with the slowest velocity corresponding to water and the fastest velocity corresponding to air. Depth estimates were based on two average GPR signal velocities: 0.033 m/ns in the water column and 0.167 m/ns in the combined column of air, snow, and ice. These velocities were calibrated with physical measurements made in ice auger holes.

Ice auger holes were advanced using an 8-inch diameter gas-powered auger at 12 locations in Naomi Lake. The locations were selected to provide a dataset representative of the variable depths of the lake, which was used to provide physical water depth and ice thickness measurements to calibrate and verify the GPR results. Table 2 presents the results of the ice auger holes.

Table 2: Ice Auger Hole Results

Hole ID	Easting (m)	Northing (m)	Ice Thickness (m)	Depth to Lake Bottom (mbis)	Lake Bottom Elevation (masl)
AH01	613675	6391658	0.70	0.90	497.47
AH02	613942	6391969	0.80	7.080	491.29
AH03	614214	6392299	0.70	0.97	497.40
AH04	614237	6391682	0.63	1.13	497.24
AH05	613981	6391118	0.60	0.60	497.77
AH06	613765	6390817	0.65	1.10	497.27
AH07	613785	6390677	0.80	1.20	497.17
AH08	614256	6390908	0.70	1.10	497.27
AH09	614238	6391922	0.80	9.42	488.95
AH10	614223	6392058	0.68	6.00	492.37
AH11	614257	6390632	0.73	1.33	497.04
AH12	614722	6390743	0.74	2.10	496.27

mbis = metres below ice surface; masl = metres above sea level.

Figure 4: Ground Penetrating Radar Data Collection Configuration

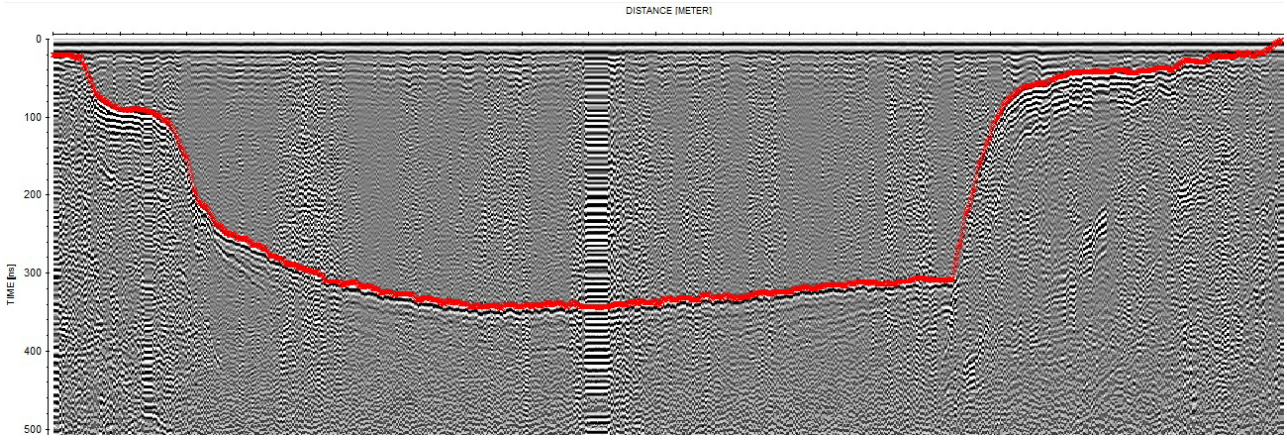
5.0 RESULTS

In total, 20 transects of GPR data were collected on Naomi Lake. Fifteen transects were spaced approximately 300 m apart, covering the entire lake. After identifying the deepest part of the lake in the initial data, five additional infill transects of GPR were collected focusing on this area at a finer spacing than 300 m (Figure 6). In total, approximately 22 km of GPR data were collected. Upon completion of the field program, GPR data were processed and depth to lake bottom results were interpreted from the processed data, which were supported and calibrated by ice auger results.

Based on the 12 ice auger holes, an average of 0.15 m of snow and 0.70 m of ice was present at the time of the field program. These averages were applied when creating the velocity model used in converting recorded GPR time sections into depth sections. The elevation of the top of ice was measured as 0.50 m below the existing elevation benchmark identified as “BM2” located on the northwest shore of the lake at 6392109.41 N, 613383.58 E and 498.85 metres above sea level (masl). For the purposes of this report, the elevation of the top of ice on Naomi Lake at the time of the survey is defined as 498.35 masl. Ground penetrating radar depth information was converted to elevations by assuming 498.35 masl as a constant ice surface elevation for the entire lake.

Figure 5 presents an example GPR data profile collected at the site. The horizontal axis is distance and the vertical axis is time/depth. The red line indicates the interpreted lake bottom. Table 2 presents the results of the ice auger holes.

Figure 5: Naomi Lake Ground Penetrating Radar Example

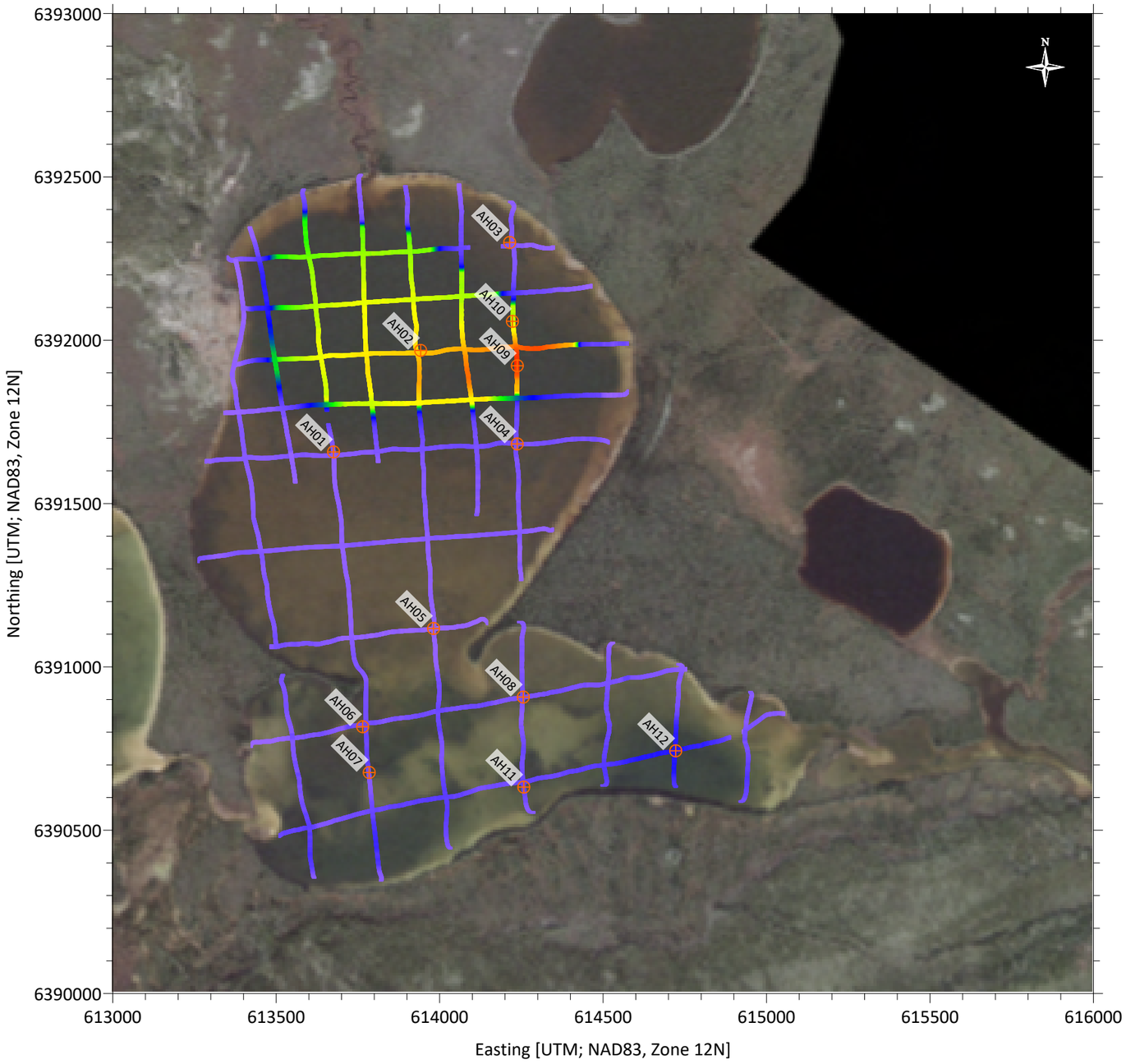


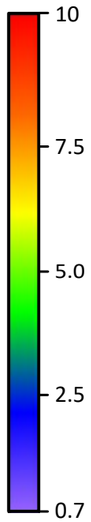
ns = nanosecond.

The results of the bathymetry survey are presented in Figure 6, Figure 7, and Figure 8. Figure 6 presents the interpreted depth to lake bottom along the GPR transects in map format. This map presents increasing depth to lake bottom by a gradation from cool colours (blues and greens) to warm colours (yellows and reds) superimposed on background imagery. Figure 7 presents the modelled bathymetry of the lake bottom, measured in masl, in map format. Modelled elevation is presented as a colour contour map and includes elevation contours measured in masl. Ice auger hole locations are presented on both maps in Figure 6 and Figure 7. Figure 8 presents a 3-D coloured contour model of Naomi Lake in terms of depth, measured in metres below ice surface (mbis).

Depth to lake bottom ranged from 0 mbis to 9.42 mbis. For most of the lake, depth to lake bottom was between 0.7 mbis and 1.35 mbis, with the exception of two areas. Most noticeably, an ovaloid depression in the northern third of the lake can be seen (Figure 8) where maximum depth (i.e., 9.42 mbis) was observed. Tight contour spacing shown in Figure 7 indicates the steep banks on all sides of the ovaloid depression. The second deep area, a moderately deep channel feature, is evident at the southern end of the lake and ranges from approximately 1.3 mbis to 2.3 mbis (Figure 8). This channel feature is oriented west to east and connects the inflow and outflow channels at the southwest and southeast boundaries of the lake.

The calculated water volume of Naomi Lake is 4,419,032 m^3. This value is based on the average ice surface elevation of 498.35 masl measured at the time of the survey and the bathymetric information collected during this investigation. Water volume at any given time of the year may vary.





Depth to Bottom
(Meters Below Ice Surface)

Auger Hole ID	Ice Thickness (m)	Depth to Bottom (mbis)
AH01	0.70	0.90
AH02	0.80	7.08
AH03	0.70	0.97
AH04	0.63	1.13
AH05	0.60	0.60
AH06	0.65	1.10
AH07	0.80	1.20
AH08	0.70	1.10
AH09	0.80	9.42
AH10	0.68	6.00
AH11	0.73	1.33
AH12	0.74	2.10

MAP LEGEND

AUGER HOLE LOCATION

GPR SURVEY LINE

DISCLAIMER

The information contained on this Figure should be used only in the context of the original report with which it was associated, and is subject to the limitations of that report.

Coordinates: NAD83, Zone 12N
Map Scale 1:15,000

CLIENT

NexGen Energy Ltd.

PROJECT

NexGen Rook I – 2019 Naomi Lake Bathymetry

TITLE

NAOMI LAKE DEPTH TO BOTTOM ALONG GROUND PENETRATING RADAR TRANSECTS

CONSULTANT

GOLDER
MEMBER OF WSP

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APPROVED	S. MAXWELL

PROJECT No.	SCALE	Rev.	FIG
19114981	AS SHOWN	2	6

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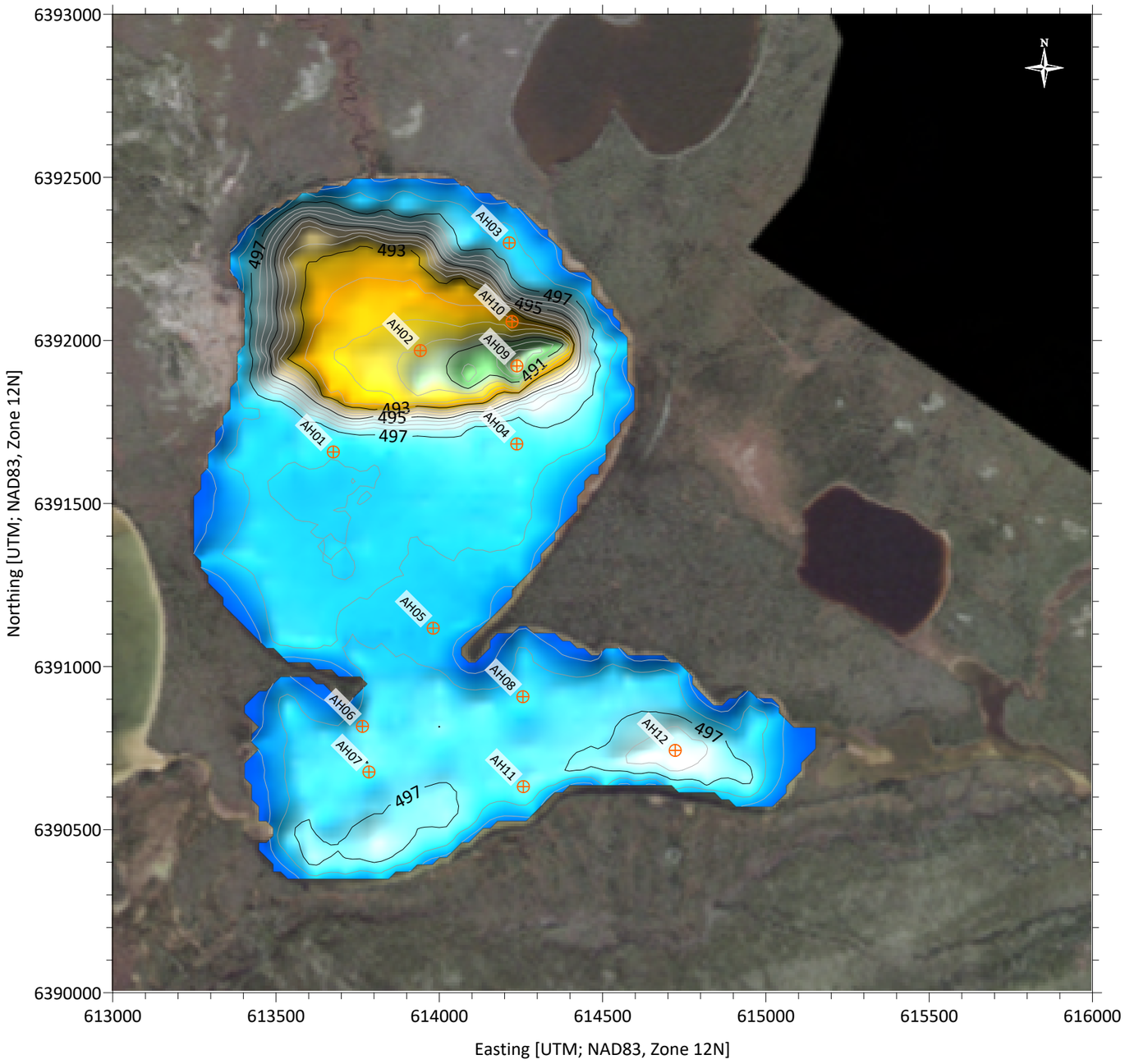

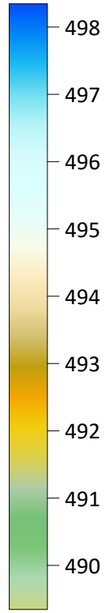

Lake Bottom Elevation (masl)

Auger Hole ID	Ice Thickness (m)	Lake Bottom Elevation (masl)
AH01	0.70	497.47
AH02	0.80	491.29
AH03	0.70	497.40
AH04	0.63	497.24
AH05	0.60	497.77
AH06	0.65	497.27
AH07	0.80	497.17
AH08	0.70	497.27
AH09	0.80	488.95
AH10	0.68	492.37
AH11	0.73	497.04
AH12	0.74	496.27

MAP LEGEND

⊕ AUGER HOLE LOCATION

DISCLAIMER

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Coordinates: NAD83, Zone 12N
Map Scale 1:15,000

CLIENT

NexGen Energy Ltd.

PROJECT

NexGen Rook I – 2019 Naomi Lake Bathymetry

TITLE

NAOMI LAKE MODELLED BATHYMETRY

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-29
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DESIGN	D. D'ANDREA
REVIEW	S. MAXWELL
APPROVED	S. MAXWELL

PROJECT No.	SCALE	Rev.	FIG
19114981	AS SHOWN	2	7

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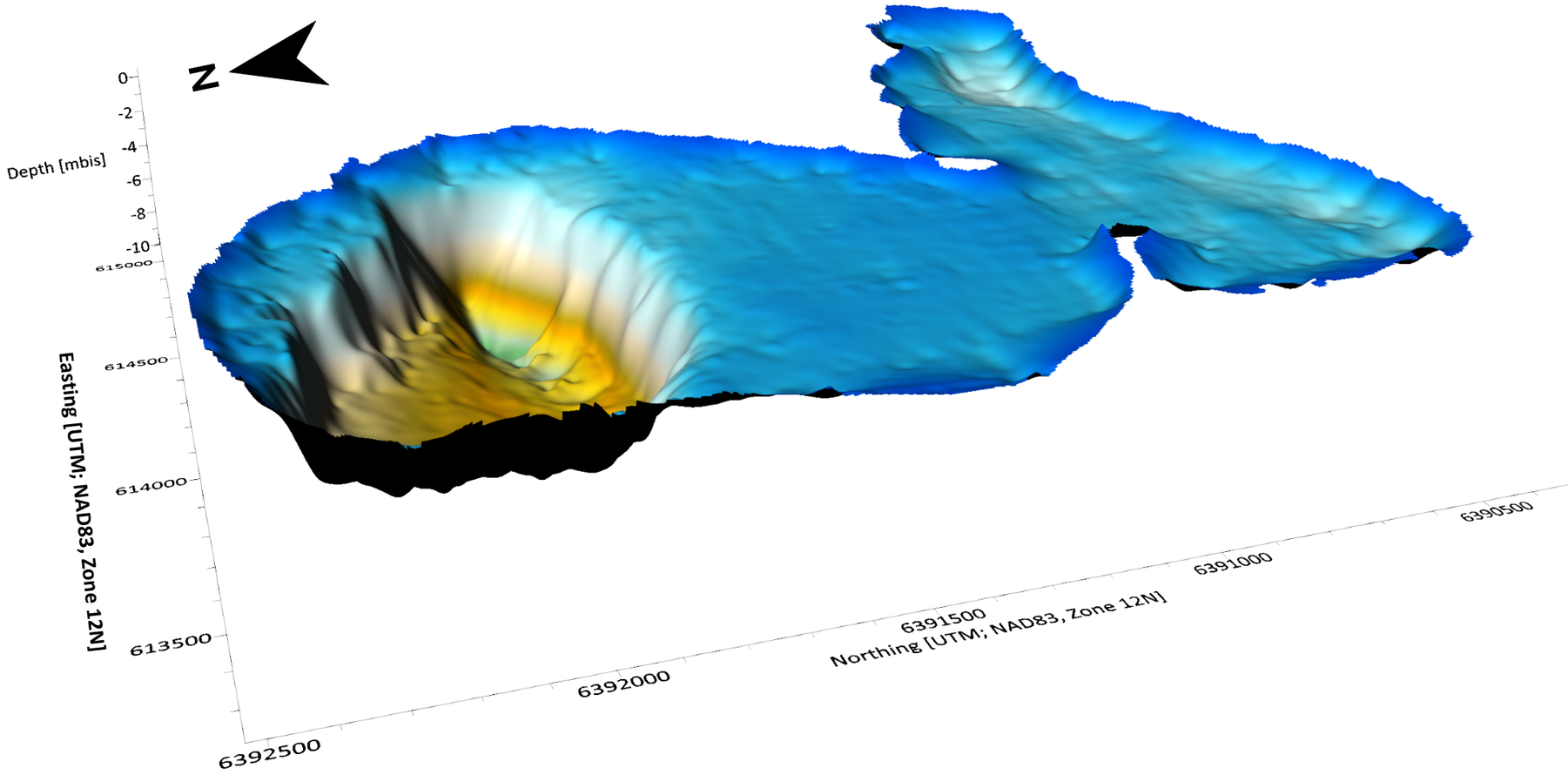

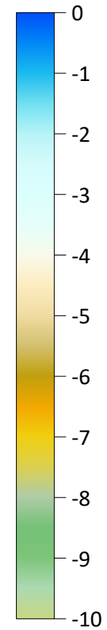

Depth [mbis]

DISCLAIMER

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Coordinates: NAD83, Zone 12N
Map Scale 1:15,000

CLIENT

NexGen Energy Ltd.

PROJECT

NexGen Rook I – 2019 Naomi Lake Bathymetry

TITLE

NAOMI LAKE 3-D MODELLED BATHYMETRY

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-29
PREPARED	D. D'ANDREA
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APPROVED	S. MAXWELL

PROJECT No.	SCALE	Rev.	FIG
19114981	AS SHOWN	2	8

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6.0 SUMMARY

The bathymetry survey conducted at Naomi Lake was designed to determine the approximate depth and volume of the lake and is part of the aquatics baseline program. Because the investigation was conducted during winter, the ground penetrating radar (GPR) method was used, which is capable of imaging the lake bottom through ice cover, whereas conventional echo sounding requires ice-free conditions. The field program ran from 21 March 2019 to 25 March 2019 and consisted of collecting approximately 22 km of GPR data along 20 transects spanning Naomi Lake. Twelve ice auger holes were drilled to measure snow, ice, and water column thickness to calibrate and confirm the GPR data, as well as provide estimates for snow and ice thickness required for developing the velocity model used to convert GPR time sections into depth sections. Average values of 0.15 m of snow and 0.70 m of ice were used in creating the velocity model. Water bottom depths were converted to lake-bed elevations by measuring the offset between a shoreline benchmark elevation and the top of ice. A constant elevation was assumed for the top of ice.

Naomi Lake ranged in depth from 0 metres below ice surface (mbis) to 9.42 mbis. Most of the lake was shallow, between 0.70 m to 1.35 m deep, with the exception of two areas of greater depth. The results showed a deep ovaloid depression in the northern third of the lake and a moderately deep channel in the south of the lake that connects the inflow and outflow at the southwest and southeast boundaries of the lake.

The main objective of the Naomi Lake bathymetry survey was to calculate the water volume of Naomi Lake. Given the information collected from the study, Naomi Lake water volume is calculated to be 4,419,032 m^3. This value is based on the average ice surface elevation of 498.35 metres above sea level (masl) measured at the time of the survey and the bathymetric information collected during this investigation. Water volume at any given time of the year may vary.

CLOSING

Golder is pleased to submit this report to NexGen in support of the environmental assessment for the Rook I Project. For details on the limitations and use of information presented in this report, please refer to the Study Limitations section following this page. If you have any questions or require additional details related to this study, please contact the undersigned.

Golder Associates Ltd.

Susan Giang
Geophysicist Specialist

Spencer Maxwell, P.Geo.
Associate, Senior Geophysicist

FILENAME * Lower \p * MERGEFORMAT https://golderassociates.sharepoint.com/sites/102262/technical work/geophysics/report/nxe_rooki_baseline_annex_v.3_naomi_lake_bathymetry.docx

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