

P.O. Box 1749 Halifax, Nova Scotia B3J 3A5 Canada

# Item No. Info Item 1 Environment and Sustainability Standing Committee July 6, 2023

TO: Chair and Members of Environment and Sustainability Standing Committee

SUBMITTED BY:

Cathie O'Toole, Chief Administrative Officer

**DATE:** July 4, 2023

SUBJECT: First Lake Bacterial Analysis 2023

### **INFORMATION REPORT**

#### **ORIGIN**

April 2, 2021, Budget Committee (Standing Committee of the Whole on Budget) motion (Item No.5):

MOVED by Councillor Russell, seconded by Councillor Blackburn

THAT the Budget Committee request a briefing note detailing the measures and implications for including \$150,000 in one-time funding for costs associated with a report on *E. coli* microbial analysis for First Lake within the proposed 2021/22 Planning and Development budget, to be considered in the parking lot as an operating over budget option.

MOTION PUT AND PASSED UNANIMOUSLY.

### LEGISLATIVE AUTHORITY

### Halifax Regional Municipality Charter, SNS 2008, c 39:

**Section 7A** The purposes of the Municipality are to (a) provide good government; (b) provide services, facilities and other things that, in the opinion of the Council, are necessary or desirable for all or part of the Municipality; and (c) develop and maintain safe and viable communities.

**Section 79A** (1) Subject to subsections (2) to (4), the Municipality may only spend money for municipal purposes if

- (a) The expenditure is included in the Municipality's operating budget or capital budget or is otherwise authorized by the Municipality;
- (b) the expenditure is in respect of an emergency under the Emergency Management Act; or
- (c) the expenditure is legally required to be paid.

### **EXECUTIVE SUMMARY**

The Municipality hired CBCL to conduct a bacterial study in First Lake, Lower Sackville from June to September 2022<sup>1</sup>. The purpose of this study was to determine the source of high *E. coli* bacteria concentrations observed in First Lake, which led to the removal of Kinsmen Beach from the municipality's supervised beach program. Sampling took place during five events, and samples were collected from Kinsmen Beach; 25 stormwater outfalls into First Lake; the inlet, outlet, and deepest point of First Lake, Second Lake, and Rocky Lake; and at a gully on Cavalier Drive.

The results of this study found *E. coli* in high concentrations indicating domestic wastewater is entering the stormwater system around First Lake. While avian, canine, and human markers of *E. coli* were found in samples collected as part of this study, human markers were found in the highest concentrations. Halifax Water has a Pollution Prevention program that investigates potential non-compliant connections to its systems and works with its customers to remedy these situations. During the summer of 2022 they identified two cracked wastewater laterals which were subsequently repaired in the fall. The repairs were located on the Southeastern portion of First Lake and would not directly impact bacteria levels at Kinsmen Beach.

Further investigation into the source of fecal pollution in First Lake, remediation using nature-based solutions to manage stormwater, and expansion of the Canines for Clean Water program should be pursued as next steps by municipal staff. Halifax Water continues to investigate the area surrounding First Lake, focusing primarily on areas near outfalls showing high concentrations of bacteria of human origin.

### **BACKGROUND**

First Lake is located in Lower Sackville, Nova Scotia. It is roughly 80.9 hectares (ha) in size and reaches a maximum depth of 23 metres (m). Flow into First Lake is spring fed. Other inputs into the lake come via overland flow and stormwater drains. The outlet is on the southeast end of First Lake, with water flowing downstream into Rocky Lake and Second Lake.

Until 2020, the Municipality operated a supervised beach on First Lake at Kinsmen Beach. Due to repeated exceedances of Health Canada's acceptable level of *E. coli* for recreational use<sup>2</sup> at Kinsmen Beach, the Municipality decided to end lifeguard supervision indefinitely. In 2020, Kinsmen Beach was removed from HRM's supervised beach program. Signs were posted at that time advising residents of high bacteria concentrations at the beach, and to swim at their own risk. Despite the lack of regular testing and supervision, residents continue to use Kinsmen Beach frequently throughout the summer.

In 2016, the community opened a splash pad at the Kinsmen Centre, located on Kinsmen Beach in Sackville, to provide opportunities for residents to play and cool down throughout the summer. Treated water is supplied to the splash pad, so it is still available for use during high bacteria events.

Other recreational use at First Lake includes Sackawa Canoe Club, located on the lake's north shore. There is also a popular nature trail along First Lake that was built and is maintained by the Friends of First Lake Society. The trail's newest section opened in 2022 and connects with the Sackville Lakes Trail system.

<sup>&</sup>lt;sup>1</sup> CBCL Final Report – HRM Pollution Control Study First Lake, Lower Sackville January 2023. https://www.halifax.ca/sites/default/files/documents/about-the-city/energy-environment/hrm-pollution-source-control-study.pdf

<sup>&</sup>lt;sup>2</sup> Health Canada Guidelines for Canadian Recreational Water Quality – Third Edition. The full guidelines can be found online here: Page 9: Guidelines for Canadian Recreational Water Quality – Third Edition - Canada.ca.

#### **DISCUSSION**

#### 2022 Bacterial Study

Consistently high *E. coli* levels in First Lake indicate the presence of fecal pollution. The Friends of First Lake Society started to collect samples in 2021 for *E. coli* analysis to track bacteria levels in First Lake, and an inlet channel near Kinsmen Beach. This data shows high *E. coli* levels persisted in First Lake in the years following the closure of the supervised beach.<sup>3</sup>

To determine the origin of this fecal contamination, the municipality contracted the consulting firm CBCL to conduct a pollution source control study in First Lake, as well as neighbouring Second Lake and Rocky Lake. The study sampled at Kinsmen Beach using the municipality's beach sampling protocols, in all three lakes at deep and shallow locations at the lakes' deepest points, at the inlet and outlet of First Lake, at the inlet of Rocky Lake, at the outlet of Second Lake, and at stormwater outfalls along the shoreline of First Lake. Due to the length of the study, an on-line link has been provided as Attachment 1.

The results of the *E. coli* analyses showed significant fecal contamination in First Lake, with all but two outfalls (FLN-3 and FLS-2, Figure 1.) showing concentrations exceeding the recreational guideline value of 400 colony forming units/100mL (CFU) in at least one sampling event. Tables showing all measured *E. coli* concentrations can be found in the <u>CBCL final report</u>. The *E. coli* concentration at the inlet to First Lake ranged from 167 CFU on August 10 to above the 500 CFU detection limit on September 27, after Hurricane Fiona.<sup>4</sup> All samples taken from Rocky Lake, Second Lake, and the deep station and outlet in First Lake were below the receational guideline value at all five sampling events.

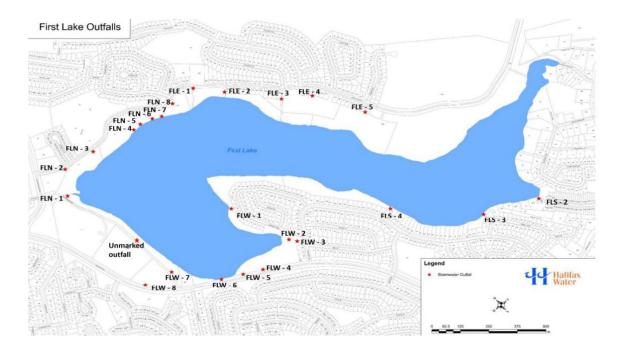


Figure 1: Halifax Water's stormwater outfalls on First Lake.

<sup>&</sup>lt;sup>3</sup> All water quality data collected by the Friends of First Lake Society is publicly available on Atlantic DataStream, and is available online here: <u>DataStream (atlanticdatastream.ca)</u>

<sup>&</sup>lt;sup>4</sup> It is noted that during and after Hurricane Fiona, Halifax Water experienced system upsets due to power and communication interruptions. In addition, during a significant rain event such as a Hurricane, there may be various other factors contributing to this result.

Several of the stormwater outfalls had low or no flow during at least one sampling event. A further eight outfalls had no flow at any sampling event. Samples were not collected for analysis from outfalls with insufficient flow.

Samples taken from Kinsmen Beach were collected and interpreted according to HRM's beach monitoring protocols. At all five sampling events, five water samples were collected at equidistant locations along the beach and analyzed to find the *E. coli* concentration. Results were reported for each sample separately, and an average, or geomean, of these results was calculated. If the geomean was above 200 CFU, or if any single sample was above 400 CFU, the beach (if supervised) would be closed. Of the five sampling events, three took place during the regular supervised beach season, from July 1 – August 31. The samples collected on August 10, a dry weather sampling event, and September 27, a wet weather sampling event, both exceeded the acceptable geomean concentration for keeping a beach open.

Stormwater with an *E. coli* concentration of 10<sup>4</sup> CFU/100mL or greater may be indicative of domestic wastewater entering the stormwater system. This is typically through cross connections, where a sanitary sewer is connected, incorrectly, to a storm sewer, or contributions from improperly functioning on-site septic systems. In First Lake, eight outfalls exceeded this threshold, described in Table 1,<sup>5</sup> indicating a potential cross connection or on-site septic contributions.

Table 1: E. coli Concentration at Stormwater	Outfalls Indicating Fecal Contamination.

E. coli Concentration, CFU/100mL					
Outfall	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep <sup>6</sup>
FLN-2	200*	14,560	1,103	5,390	25,000*
FLN-8	200*	9,691	138	515	10,589
FLW-1	200*	20,000*	140,414	26,877	2,500*
FLW-2	200*	20,000*	25,338	9,218	1,715
FLW-3	200*	5,377	2,388	20,000*	25,000*
FLW-8	200*	20,000	305	3,498	9,177
FLS-3	200*	13,064	4,873	265	25,000*
FLS-4	200*	20,000*	38,719	39,985	5,864

<sup>\*</sup> Results are above the laboratory's detection limit

#### Microbial Source Tracking

The June 15 and September 27 sampling events took place within 24 hours of a significant rainfall and are classified as wet weather sampling for the purpose of this study. Neither wet weather sampling event captured the 'first flush' of water at the beginning of a storm, which tends to contain higher concentrations of contaminants picked up from standing water and dry ground.

Samples were collected for microbial source tracking (MST) analysis at the Centre for Water Resources Studies (CWRS) at both wet weather sampling events. This is to determine whether the *E. coli* identified in First Lake came from a human, canine, or avian sources.

<sup>&</sup>lt;sup>5</sup> Values marked with an asterisk represent concentrations above the detection limit of the equipment used for analysis.

<sup>&</sup>lt;sup>6</sup> Samples were all taking prior to the cracked wastewater lateral being repaired.

This study found that 77% of samples collected on June 15 and 65% of samples collected on September 27 contained human fecal source markers. Human markers were the majority identified at 76% of sites sampled on June 15 and 69% of sites sampled on September 27. Human markers were the dominant source of contamination at Kinsmen Beach.

Most properties surrounding First Lake have been connected to centralized wastewater services since the mid-1980s. There are several properties on the southern end of the lake still using on-site septic systems for wastewater treatment. Sampling in this area does not indicate these systems are contributing to high *E. coli* concentrations in First Lake.

Staff consulted with Nova Scotia Environment & Climate Change (NSECC) to determine if historic on-site septic systems are potentially contributing fecal contamination to First Lake. According to NSECC, domestic on-site septic systems typically do not contribute fecal material to a water body more than two years after they are decommissioned if done properly. Even if an improperly decommissioned holding tank still contained human waste and was leaching into First Lake, it is likely this would appear as a non-point source contributor of *E. coli*, rather than as a high concentration from a stormwater outfall.

Canine markers of *E. coli* were found in all but two samples from the June 15 event, and all samples from the September 27 event. However, canine markers were found at relatively low concentrations at almost all sites compared to human markers. Particularly at the September sampling event, canine markers were only found in concentrations indicating significant fecal contamination at 30% of sampling locations.

Avian markers were found in 40% of samples collected on June 15 and 32% of samples collected on September 27. Avian markers were especially high in the inlets and outlets of Rocky Lake, First Lake, and Second Lake. This is consistent with where waterfowl have been observed.

### **Ongoing Actions**

Throughout the summer of 2022, Halifax Water (HW) identified a cracked lateral potentially contributing fecal contamination to First Lake. The repair was completed after the conclusion of this study, so the results shared in this report do not reflect potential improvements to water quality from the repair. The cracked lateral does not account for the extent of human fecal contamination found in the lake. Furthermore, the location of the cracked lateral identified is not near enough to Kinsmen Beach to account for the ongoing high *E. coli* concentrations that led to its removal from the supervised beach program. HW continues to investigate the area surrounding First Lake, focusing primarily on areas near outfalls showing high concentrations of bacteria of human origin. HW has a Pollution Prevention program and a catch basin cleaning program that they will continue to operate.

HW operates a wastewater pumping station upstream from the inlet into First Lake at Kingfisher Way. HW's routine monitoring does not indicate leaks from this pumping station entering the lake's inlet stream. The inlet opens into First Lake just southwest of Kinsmen Beach and has displayed consistently high *E. coli* concentrations both during this study and in ongoing monitoring by the Friends of First Lake Society, including human markers observed as part of this MST analysis. If *E. coli* concentrations from The Friends of First Lake Society's monitoring remain high, staff will consider further investigation into potential sources of fecal contamination into the inlet stream, working with HW to find solutions.

The Friends of First Lake Society has been collecting samples for *E. coli* analysis at Nova Scotia Health Authority's medical laboratory since July 2021, which provides ongoing indication of fecal loading in the inlet to First Lake. Analysis at this lab costs \$40/sample. In 2023, five samples will be submitted monthly from May-October. Currently, this sampling is being supported by discretionary funds from the local area Councillor, Paul Russell. Members of the Friends of First Lake Society have received training from qualified municipal staff on the proper methods of sample collection and are active members of the LakeWatchers baseline water quality monitoring program.

Roughly 50% of 2021 data reported by the Friends of First Lake Society on Atlantic DataStream<sup>7</sup> shows *E. coli* values above the Health Canada Recreational Water Quality Guidelines. Staff will provide funding to the Friends of First Lake Society in 2024 and 2025 to support this analysis while further remediation actions are carried out. If this analysis does not indicate a decrease in bacteria concentrations after the 2025 season is complete, staff will consider investigate potential sources of contamination in the lake.

In October 2022, staff attended events at the Sackville Lakes Trail and the First Lake Trail to promote the municipality's Canines for Clean Water program in anticipation of the detection of canine sources of bacteria in First Lake. This is a program aimed at dog owners to highlight the importance of picking up after their dogs and raise awareness of the connection between dog waste and poor water quality outcomes in lakes. This program was initially developed based on a 2019 staff report recommending management strategies for Lake Banook and Lake Micmac. Staff are continuing to expand this program across the municipality by partnering with community stewardship groups like the Friends of First Lake Society to deliver programming.

At this time, Kinsmen Beach should not be included in the supervised beach program. Before opening a supervised beach at a new location, staff must conduct two years of water quality sampling to determine if the site can conform with the recreational water quality guidelines. While steps have been taken to identify and remediate sources of fecal contamination in First Lake, *E. coli* concentrations are still too high, especially at Kinsmen Beach, to consider reopening. In addition to ongoing action by HW outlined above, further remediation should be undertaken around First Lake, so all potential sources of fecal contamination are addressed.

Land use patterns in areas surrounding urban and suburban water bodies can be significant determinants of the concentration of nutrients and other pollutants in the water column. As further development and other human activity continues around First Lake, the impacts on surface water will compound. These impacts should be considered more holistically as the population of the municipality grows, to preserve, protect, and restore the integrity of natural spaces. Creating individual strategies to manage individual lakes on a case-by-case basis will be ineffective in preventing degradation of water quality and the aquatic environment. Lakes cannot be managed in isolation as they exist as part of larger watershed systems, and impacts of human activity can cascade throughout a watershed. Without an effective management strategy at the watershed scale, the municipality can continue to expect decreasing water quality conditions in its urban lakes

In addition to the proposed and ongoing remediation actions outlined above, staff will pursue partnership opportunities to use nature-based solutions to capture stormwater flowing overland into First Lake in and around Kinsmen Beach. Enhanced vegetated swales will be considered. These are engineered depressions designed to hold water and allow for high rates of infiltration into soil. They are planted with deep-rooted, water tolerant native vegetation to reduce standing water and overland flow.

Nature-based solutions provide the added benefits of:

- 1. Increased pollinator habitat;
- 2. Improved soil permeability and bioretention;
- 3. Filtering contaminants from water as it passes through soil media;
- 4. Reduced grazing habitat for waterfowl; and,
- 5. Aesthetic interest.

<sup>&</sup>lt;sup>7</sup> Atlantic DataStream is an open-access portal for sharing water quality data collected in Atlantic Canada. More information on the portal and their other programming can be found online here: <u>Atlantic DataStream</u>

#### FINANCIAL IMPLICATIONS

To support ongoing bacteria analysis by the Friends of First Lake Society, a contribution agreement for \$500 per year will be provided for samples collected at five locations monthly for six months from May to October inclusive. Sample analysis under Environment & Climate Change's current standing offer with BV Labs costs \$16 per sample plus disposal fees, for a total of \$500 each year in 2024 and 2025. These costs can be covered with existing operating funds for water testing in D935.

The next step to continue investigations of cross-connections, sampling after upgrades to the pumping station on Kingfisher Way, and increased catch basin maintenance fall under the responsibility of HW. Municipal staff will work with HW to support these actions, but there are no financial implications for this work at this time.

#### **COMMUNITY ENGAGEMENT**

The bacterial analysis described in this report was conducted primarily at the request of the community around First Lake. Kinsmen Beach is still a popular location for swimming, and the community has voiced their concerns about the lack of water testing, and related uncertainty about the safety of using the beach.

Members of the Friends of First Lake Society were involved throughout the study. Engagement with this group included participation in an initial site visit locating sampling sites and stormwater outfalls, using their data from previous sampling events to inform the study, and obtaining anecdotal evidence on historical site conditions.

### **ENVIRONMENTAL IMPLICATIONS**

The fecal contamination observed in this study will contribute nutrients to First Lake. Excessive nutrient input into a lake can cause excess nuisance aquatic plant growth, increased instances of harmful algal blooms, and decreased dissolved oxygen concentration in the water column. Taking no further action to remediate the quality and quantity of water entering First Lake will lead to further deterioration of the lake's health. High *E. coli* concentrations pose a risk to public health. Residents continue to use First Lake recreationally, particularly at Kinsmen Beach and Sackawa Canoe Club.

Expanded programming and further investigations at First Lake will facilitate positive environmental outcomes. Reducing sources of fecal contamination will reduce the overall bacteria load in First Lake, directly improving the health of the aquatic environment. Fecal contamination also provides nutrients to a lake system, increasing the risk of eutrophication. Removing potential sources of nutrients from entering First Lake will help maintain its current trophic status, reducing the risks outlined in the Risk Consideration section of this report.

#### **ATTACHMENTS**

Attachment A. HRM Pollution Source Control Study

A copy of this report can be obtained online at <a href="https://halifax.ca">halifax.ca</a> or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Elizabeth Montgomery / Water Resources Specialist / Environment & Climate Change /

Property, Fleet & Environment / 902.943.1954



First Lake, Lower Sackville

**Final Report** 



	Draft Report		MC	12-16-2022	MF/MB
	Final Report		MC	01-20-2023	MF/MB
	Issue or	Revision	Reviewed By:	Date	Issued By:
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January 31, 2023

Emma Wattie
Manager, Environment
Environment & Climate Change: Property, Fleet & Environment
Halifax Regional Municipality
wattiee@halifax.ca

Dear Ms. Wattie:

### RE: HRM Pollution Source Control Study - First Lake

Please see attached for the final report of the HRM Pollution Source Control Study for First Lake. If you have any questions or comments, please do not hesitate to contact the undersigned.

Yours very truly,

**CBCL Limited** 

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16

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Project No: 220804.00

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- A Background Reference Review
- B In-situ Water Quality Results
- C Third-Party Accredited Laboratory Certificates
- D Project Memos



# 1 Background

## 1.1 Introduction

Kinsmen Beach, located on First Lake in Lower Sackville, was historically part of the Halifax Regional Municipality (HRM) municipal beach program. The beach was used recreationally and would have active lifeguarding during the summer months. As a HRM recreation beach, Kinsman Beach was part of the municipal beach monitoring program, which included regular bacteria sampling. With several summers of having bacteria results exceeding the recreational guidelines, the beach was removed from the monitoring program as of 2020 and no longer has a lifeguard on duty. However, the beach, surrounding parks and walking trails are regularly used by the community and the active Sackawa Canoe Club offers many programs on the lake during the summer months when the bacteria exceedances are often experienced. With the frequent use of the area there is growing public interest in reopening the beach again for recreational activities.

With bacteria sample results exceeding the Health Canada recreational guidelines, an understanding of the potential sources of contamination and the overall water quality of the lake system is needed to make recommendations for removing the sources. Previous studies on First Lake completed though Dalhousie University, Acadia University, HRM and Friends of First Lake Society worked to determine the overall water quality of the lake and to assess sources of fecal contamination that could contribute to the sample exceedances in the lake. To expand on the work already completed to investigate the sources of fecal contamination, CBCL was engaged by HRM to provide consulting services to complete a Pollution Source Control Study for First Lake.

The objective of the project was to conduct a scientific study to form the basis of recommendations or options that could be used by HRM to identify, track and reduce sources for *E. coli* into First Lake with the goal of being able to reopen Kinsmen Beach for swimming, boating and other primary contact based activities. This was completed through:

- A field sampling program to collect *E. coli* samples at 35 sampling locations including Kinsmen Beach, Halifax Water stormwater outfalls, nearshore samples and reference lake samples.
- Microbial Source Tracking (MST) study to differentiate potential *E. coli* markers between human, dog and avian sources.
- Watershed modelling to estimate surface runoff *E. coli* loading rates into First Lake.



The field sampling program was completed between June to September 2022. Sampling was completed in First Lake with reference samples collected in Second Lake and Rocky Lake for comparison purposes. Sample analysis, watershed modelling and reporting was completed in the Fall of 2022. The following report outlines the findings of the pollution control study.



# 2 Methodology

# 2.1 Location of Work

First Lake, located in Lower Sackville, is approximately 80.9 ha in size with a maximum depth of 23 m. It is approximately 22 m above sea level. First Lake is spring fed and its inlet is located at the northwest end of the lake. It also receives input from overland flow, stormwater drains along the shoreline, and small upstream road-side ditches. The outlet is positioned on the southeast end of the lake which eventually drains into Rocky Lake. Some outlet flow is also directed towards Second Lake.

Second Lake is located to the northeast of First Lake and is approximately 90.3 ha in size with a maximum depth of 14 m. Second Lake has remained more isolated from development than First Lake throughout most of its history. It is part of the Sackville Lakes Provincial Park, which is a 293-ha natural environment park that is comprised of old growth forest, wetlands, and past drumlins. Second Lake is a near-urban environment with the development of trails and canoe access for the community.

Rocky Lake is 141.6 ha in size and is fed by First Lake through its northwest inlet. It has a maximum depth of 11 m, which is typical of Nova Scotia lakes. It is located next to Bedford Industrial Park and has a causeway with a railroad that divides the lake.

A summary of the characteristics of each lake is provided in Table 1 and Figure 1 shows the locations of the lakes in Lower Sackville.



Table 1: Characteristics of Lakes in Study

	First Lake	Second Lake	Rocky Lake
Surface Area (ha)	80.9	90.3	141.6
Maximum Depth (m)	23	14	11



Figure 1: Aerial Photo of First Lake, Second Lake, and Rocky Lake

### 2.1.1 Sample Locations

Table 2 provides a summary of the locations that were sampled throughout the study. The sites to be monitored at minimum were outlined in the initial request for proposal from HRM and included stormwater outfalls around First Lake, inlet and outlet samples of the three lakes, deep lake samples in each lake and specific sampling of Kinsmen Beach. Initial site reconnaissance was conducted with HRM, Halifax Water, Friends of First Lake, and Councillor Paul Russell to locate stormwater outfalls around First Lake. Nineteen of the outfalls shown on the Halifax Water map were found and most were accessible from walking paths. Several outfalls were not located during the initial site visit, but most were later identified during sampling events. Additional sampling points were identified upstream of FLN-1, where Friends of First Lake had sampled previously and detected *E. coli*, and an unmarked outfall was found on the trail behind the Sackville Sportsplex.



Table 2: Sample Locations Descriptions

Sample ID	Location	Notes
First Lake	At depth and shallow stations where the lake is deepest, inlet and outlet, and stormwater outfalls along the shoreline.	Has experienced water quality issues in the past and the lake is used by the community through Kinsmen Beach, the Sackawa Canoe Club, and residential home lakefronts.
Kinsmen Beach	Located in First Lake, near the inlet fed by several storm water drains and road-side ditches.	Beach removed from HRM's beach supervision program due to <i>E. coli</i> levels and frequent closures, however residents continue to use it without supervision and testing.
Second Lake	At depth and shallow stations where the lake is deepest, and the outlet.	Not associated/ no connections with First Lake. Less urbanized area for comparison to First Lake water quality.
Rocky Lake	Deep and shallow stations where the lake is deepest, and the inlet.	First Lake drains into Rocky Lake, samples collected to see the degree of impact First Lake water quality may have on Rocky Lake.
Stormwater Outfalls	Urban surface water discharges into the lake. Functioning as major stormwater discharge point with baseflow from natural inputs.	24 stormwater outfalls were identified by Halifax Water. All were located but only 17 were sampled throughout the study. An additional outlet was found behind the Sackville Sportsplex which was included in the study.
Halifax Water Outfall Pipe	Chandler Drive, Lower Sackville, NS.	Included in study following initial site visit

Table 3 provides a summary of the sample location IDs that were used during the sampling events. Corresponding Halifax Water identifiers are included in the table when applicable for reference. Figure 2 shows the approximate location of the identified stormwater outfalls on First Lake.



Table 3: Sample Locations as used for Sample Identification

Lake	Sample Location ID	Halifax Water Identifier
First Lake	FLN-1	OF15068
	FLN-2	OF1755
	FLN-3	OF1754
	FLN-4	OF19611
	FLN-5	OF19571
	FLN-6	OF19551
	FLN-7	OF19631
	FLN-8	OF19511
	FLE-1	OF1753
	FLE-2	OF19512
	FLE-3	OF1751
	FLE-4	OF19491
	FLE-5	OF1747
	FLS-2	OF20071
	FLS-3	OF1701
	FLS-4	OF1592
	FLW-1	OF19552
	FLW-2	OF19553
	FLW-3	OF19592
	FLW-4	OF1596
	FLW-5	OF1599
	FLW-6	OF1598
	FLW-7	OF20031
	FLW-8	OF19988
	Inlet of First Lake	
	Outlet of First Lake	
	Deep Station First Lake (deep)	
	Deep Station First Lake (shallow)	
	Kinsmen Beach	
	Unmarked Outfall	
Second Lake	Inlet of Second Lake	
	Outlet of Second Lake	
	Deep Station Second Lake (deep)	
	Deep Station Second Lake (shallow)	
	Cavalier Gully	
Rocky Lake	Inlet of Rocky Lake	
Rocky Lake	•	



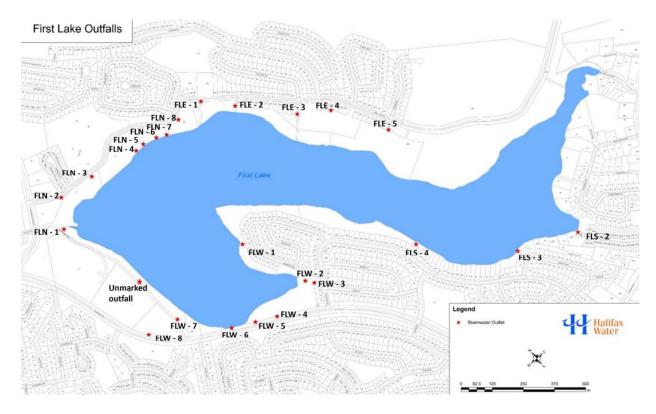


Figure 2: Stormwater Outfalls Located on First Lake

# 2.2 Sampling Events

Five sampling events took place, between June and September 2022. The sampling captured two rainfall events, in June and September, and three dry events throughout July and August. The September wet weather sampling event was selected to capture the aftermath of Hurricane Fiona. A summary of the field monitoring events is provided in Table 4.

Table 4: Field Monitoring Event Sampling Summary

Date	Field Activities Completed	Conditions
May 13, 2022	Initial Site Reconnaissance	Dry
June 15, 2022	Water Quality, MST, and Flow Monitoring	Rainfall event, before beach season
July 14, 2022	Water Quality and Flow Monitoring	Dry
August 10, 2022	Water Quality and Flow Monitoring	Dry
August 18, 2022	Water Quality and Flow Monitoring	Dry
September 27, 2022	Water Quality, MST, and Flow Monitoring	Rainfall event, after beach season



Two CBCL teams visited each location in one day for each round of sampling. One field team completed shore-based sampling, focusing on the southern portion of First Lake and sites that allowed flow gauging. The second team completed vessel-based sampling, including the mid lake sampling locations at the three lakes deepest points and the northern portion of First Lake.

# 2.3 Sample Collection

Surface water sampling was conducted in accordance with CBCL's standard operating procedures (SOPs). Special care was taken at the sampling locations not to disturb sediments to avoid water column disturbance and contamination. Sampling was completed by shore-based and vessel-based teams consisting of a minimum of two employees. Locations with no or low flow were noted, and samples were not collected if the water was stagnant. During wet weather sampling events, priority was given to locations that routinely reported no flow conditions in attempt to collect a sample from each location.

A clean, sterilized 1L Nalgene collection bottle was used to take initial samples from the flowing water, ensuring the sample was taken from the middle of the flow depth. Water was then transferred from the collection bottle into a labelled, sterile plastic bottle with  $Na_2SO_3$  preservative provided by the third-party accredited laboratory for *E. coli* analysis. Once all the *E. coli* sample bottles were filled (five per sampling location), the 1L Nalgene collection bottle was filled for MST analysis. Simultaneously, a YSI multimeter probe was used to collect standard water quality parameters in-situ. MST samples were only collected during wet weather events. All sample bottles were stored in a cooler on ice and transported to the accredited laboratory for *E. coli* analysis and the Centre for Water Resources Studies at Dalhousie University for MST analysis. For sampling events that did not require MST analysis, water samples were taken directly with the sterile plastic bottles containing  $Na_2SO_3$  preservative.

In-lake samples were taken from a small vessel at the First Lake deep-lake station, Second Lake deep-lake station and the Rocky Lake deep-lake station. Two samples were taken at each deep-lake location, one at the lake surface and one near the lake bottom using a Van Dorn water sampler. Five *E. coli* samples were taken at each sampling point to complete the geometric mean, as well as YSI sonde probe readings and an MST sample when appropriate. Lake bathymetric profiles were used to determine the location of the deep-lake station in both lakes.

*E. coli* sampling at Kinsmen Beach was conducted in accordance with the Halifax Beach Water Quality Monitoring Protocol Summer 2017. Samples were collected in a position in the water nearest to the greatest concentration of bathers and where the water was approximately 1 m deep. Open sample bottles were submerged approximately 30 cm below the water surface, with the open end facing downwards, avoiding touching the inside of the bottle or lid to prevent contaminating the water sample with bacteria from human



skin. The labelled bottles were placed in a cooler and transported to the laboratory for *E. coli* analysis.

### 2.3.1 In-situ sampling

In-situ physical water quality parameters of temperature, pH, dissolved oxygen (DO), total dissolved solids (TDS), and conductivity were measured using a YSI 556 multi meter probe. In-situ samples were measured for the tributaries and outfalls into each lake, and for the surface and deep lake sample locations.

# 2.3.2 Flow Monitoring

Flow data was gathered during all sampling events where possible for tributaries, stormwater outfalls and lake inlets and outlets to facilitate pollutant loading calculations and assist in modelling. Depending on the outlet type, site accessibility and flow quantity, several methods were used to monitor flow. Outfall locations with no flow were noted during the monitoring program and methods used at locations with flow are outlined in Table 5.

For the final sampling event in September, there was delivery issues with the flow meter as a result of hurricane Fiona. To capture the *E. coli* concentrations during the hurricane aftermath, the float area method was used to approximate flow rates for the tributaries.



Table 5: Summary of Flow Measurement Methods

Method	Locations	Method Summary
Volumetric Flow Method (Bucket Test)	FLN-3, FLN-4, FLE-5, FLW-2, FLW-6, Unmarked Outfall	A bucket of a known volume collects flow from the outlet. The time it takes to fill the bucket is measured and flow is calculated by dividing the volume by time. A minimum of three measurements were taken at each location and the average flow time to fill the bucket was used.
Velocity Meter	Inlet of First Lake, Outlet of First Lake, Outlet of Second Lake FLN-1, FLN-2, FLW-3, FLW-7, FLW-8, FLS-4	A HACH FH950 Velocity flow meter was used to collect velocity measurements. Manual measurements of the flow depth, and channel width were also collected. Using this information, flow was calculated using the continuity equation.
Float-Area Method	Used to approximate flows during September event in locations the current meter was used previously due to equipment delivery issues in the final sampling round	Manual measurements of the flow depth and channel width were collected and used with the time it took for a partially filled float bottle, or ping pong ball, to travel a designated distance of the channel to calculate flow. A roughness coefficient was incorporated to account for differences in surface and average velocities.

### 2.3.3 *E. coli* Analysis

Accredited third party laboratory *E. coli* analysis for the first four sample events was completed by AGAT Laboratories. Due to laboratory closures at AGAT following Hurricane Fiona, the *E. coli* analysis for the fifth sampling event was completed by Bureau Veritas Laboratories. The method used for analysis was the Membrane Filtration (MF) method, which is described in detail in the Standard Method 9222 H.

Five samples were collected at each location and submitted to the third-party accredited laboratory. Results were provided to CBCL, and the geometric mean for each sample location was calculated from the individual results. With the high variability of *E. coli* concentrations in stormwater systems, there were several instances where the individual *E. coli* results were reported as greater than the detection limit based on the dilutions completed by the third-party laboratory. Work was done with the labs to mitigate the risk during subsequent sampling events. For calculating the geometric mean, the results were reported as the detection limit.



### 2.3.4 MST Analysis

The Microbial Source Tracking (MST) analysis was performed in the Centre for Water Resources Laboratory at Dalhousie University. All samples were processed within 24 hours of being received. Detection of host specific genetic markers was performed using quantitative polymerase chain reaction (qPCR) methods. Taqman qPCR methods were used to analyze for human and dog-specific markers (Haugland et al. 2010; Caldwell and Levine 2009; Tambalo et al. 2012). The human specific Bacteroidales genetic marker (HF183) was quantified to assess sources of human fecal contamination (Haugland et al. 2010). The dog-specific marker (dogmt) which targets dog mitochondrial DNA was used to assess dog-associated contamination (Caldwell and Levine 2009; Tambalo et al. 2012). The Sybr Green qPCR assay was used to detect an avian-specific marker (GFD) (Green et al. 2012). A second human marker, the crAssphage bacteriophage (viral) genetic marker (Stachler et al. 2017), was also analyzed to provide additional confirmation of human fecal sources.

# 2.4 Communication

A kick-off meeting took place upon award of the project and monthly progress meetings were held with CBCL, the HRM Project Manager, and Halifax Water to summarize activities completed, note any issues or concerns, present preliminary results and discuss forecasted activities and the schedule for future work. Meeting agendas were circulated prior to each meeting to facilitate efficient use of meeting time.



# 3 Field Program Results

# 3.1 Precipitation Data

A graph of daily precipitation for June-September 2022 is provided in Figure 3. Daily precipitation data was taken from the Environment and Climate Change Canada Pockwock Lake Climate Station (Climate ID: 8204453) located approximately 12 km northwest of First Lake. This was the closest station to First Lake with daily data available during the sampling period.

For this study, a qualifying rainfall event is defined as having a minimum 3-hr duration and producing a minimum of 10 mm of rain. Sampling was to occur within 24 hours of rainfall end. The sample event on June 15 occurred within 24-hours of a recorded rainfall event of 14.2 mm. Events on July 14, August 10, and August 18 had minimal rainfall on the preceding day and were classified as dry events. The sampling event on September 27 occurred during a measured rainfall event with the associated rainfall depth of 10.8 mm the day prior to sampling and 24.3 mm on the day of. This September rain event was part of the Hurricane Fiona weather system.

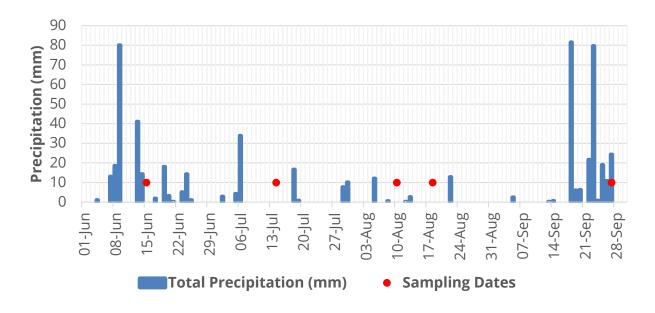


Figure 3: Precipitation Data During Study Period



# 3.2 Flow Rate Data

Flow rates were monitored during all five sampling events for tributaries, stormwater outfalls and lake inlets and outlets. Flow was monitored using either a velocity flow meter, the volumetric flow method, or the float-area method, depending on the sampling location. During some sampling events, particularly when it was dry weather, there were locations that had no flow so flow monitoring could not be completed. A summary of flow monitoring results is presented below in Table 6.

Table 6: Flow Rate Data by Sample Location

Location ID	Flow Rate (L/s)				
Location ID	15-Jun-22	14-Jul-22	10-Aug-22	18-Aug-22	27-Sep-22
FLN-1	7.466	0.915	0.922	0.439	21.718
FLN-2	6.928	1.951	0.622	0.981	12.266
FLN-3	0.060	0.003	0.004	0.012	0.133
FLN-4	-	-	-	-	0.190
FLN-5	0.600	-	-	-	-
FLN-8	1.000	-	-	-	-
FLE-2	0.110	-	-	-	-
FLE-3	0.090	0.030	-	0.100	-
FLE-5	0.090	-	0.020	-	-
FLW-1	0.240	-	-	-	-
FLW-2	0.140	0.010	0.010	0.030	0.320
FLW-3	0.260	-	-	-	-
FLW-6	0.330	0.020	0.010	0.180	0.670
FLW-7	7.770	0.070	0.010	0.180	0.750
FLW-8	1.030	0.290	0.010	0.390	-
FLS-3	0.290	0.100	0.110	0.130	2.410
FLS-4	0.130	2.744	0.100	0.190	34.956
Inlet of First Lake	57.302	3.201	2.530	0.010	-
Outlet Of First Lake	242.369	55.884	5.354	6.631	397.023
Unmarked Outfall	2.658	4.878	1.427	4.184	5.331

Sampling events in July and August took place during baseflow conditions, with no rainfall within the watershed 48 hours before sampling occurred. June and September sampling events took place during or within 24 hours of reported rainfall. From Table 6, it is shown that water flow in the majority of sampling locations was elevated following a rainfall event. The outlet of First Lake consistently had the greatest flow rate across all sampling locations and events. Furthermore, there were seven stormwater outfalls that did not have flow in either baseflow or wet weather conditions. These locations were FLN-5, FLN-6, FLN-7, FLE-1, FLE-4, FLW-4, and FLW-5.



# 3.3 Pollution Loading Study – *E. coli*

*E. coli* samples were collected during all five sampling events at deep lake stations, stormwater outfalls, Kinsmen Beach and nearshore locations (inlet and outlets of the lakes). Five (5) *E. coli* samples were taken at each location, in order to calculate a geometric mean for the sampling event. During some sampling events, particularly when it was dry weather, there were locations that were not flowing so *E. coli* samples could not be collected. A summary of *E. coli* results are presented below in Table 7.

Table 7: E. coli Data by Sample Location and Event

Leastier ID	E. coli Results (CFU/100 mL)**				
Location ID	15-Jun-22	14-Jul-22	10-Aug-22	18-Aug-22	27-Sep-22
FLN-1	200*	816	646	2,547	927
FLN-2	200*	14,560	1,103	5,390	25,000*
FLN-3	34	3	270	295	52
FLN-4	-	-	-	862	358
FLN-5	200*	-	-	-	-
FLN-8	200*	9,691	138	515	10,589
FLE-2	193	27	-	-	500
FLE-3	134	14	19	200*	2,500*
FLE-5	192	140	400	257	500*
FLW-1	200*	20,000*	140,414	26,877	25,000*
FLW-2	200*	20,000*	25,338	9,218	1,715
FLW-3	200*	5,377	2,388	20,000*	25,000*
FLW-6	200*	1243	464	7,804	2,442
FLW-7	200*	107	446	2,631	6,871
FLW-8	200*	20,000*	305	3,498	9,177
FLS-2	22	3	9	16	196
FLS-3	200*	13,064	4,873	265	25,000*
FLS-4	200*	20,000*	38,719	39,985	5,864
First Lake (Deep)	1	1	5	28	164
First Lake (Shallow)	18	2	4	3	165
Rocky Lake (Deep)	24	2	3	2	14
Rocky Lake (Shallow)	4	2	2	5	15
Second Lake (Deep)	12	20	1	1	40
Second Lake (Shallow)	9	1	1	1	30
Inlet of First Lake	200*	328	167	400	500*
Outlet Of First Lake	28	13	6	183	121
Inlet of Second Lake	13	11	1	4	66
Outlet of Second Lake	8	17	39	29	87
Inlet of Rocky Lake	-	37	17	5	113



Location ID	E. coli Results (CFU/100 mL)**							
Location id	15-Jun-22	14-Jul-22	10-Aug-22	18-Aug-22	27-Sep-22			
Kinsmen Beach	123	79	282	108	500*			
Cavalier Gully	248	25	96	2,195	3,106			
Unmarked Outfall	1	1	1	3	18			

<sup>\*</sup>Reported as above detection limit

During the first sampling event, the third party laboratory did not perform dilutions on the samples resulting in several results being reported as above the detection limit of >200 CFU/100mL. Coordination with this sampling event and the laboratory helped to mitigate the risk during subsequent sampling events, however there were still several samples that were reported above detection limits after the dilution. All sampling results were reported to CBCL, and the geometric mean was calculated from the individual results.

When looking at pollutant loads during storm and wet weather events for smaller watersheds, there is the theory of first flush. This concept assumes that the initial volumes of stormwater runoff during a wet weather event contain the highest pollutant levels. Often this is assumed to be the first half inch of runoff. With the scope of this study, the objective was to collect a representative *E. coli* sample within 24 hours of the end of the rain fall event (3 hours with minimum 10mm of precipitation). With the limited rainfall events that occurred during the study period (and majority of rainfall occurring overnight), and some of the catchment areas being small, it is anticipated that some of samples may not have captured the first flush and may not represent the highest concentrations that would have occurred during the wet weather event. To fully capture the first flush of a wet weather event, a sampling program involving multiple samples throughout the event would be required to ensure the first flush was captured, which was outside the scope of this study.

### 3.3.1 Kinsmen Beach E. coli Results

Samples collected at Kinsmen Beach were collected following the HRM beach sampling protocol for comparison to historical data. Kinsmen Beach has been regularly closed in the past due to high bacterial counts in the water exceeding the Canadian Recreational Water Quality (CRWQ) *E. coli* limits of a geometric mean concentration of  $\leq$  200 CFU/100 mL, and a maximum single sample of  $\leq$  400 CFU/100 mL for primary contact. Detailed results from the Kinsmen Beach samples are presented in Table 8.



<sup>\*\*</sup>Geometric mean

Table 8: E. coli Results for Kinsmen Beach

Kinsmen Beach	<i>E. coli</i> Results (CFU/100 mL)							
KIIISIIIEII DEACII	15-Jun-22	14-Jul-22	10-Aug-22	18-Aug-22	27-Sep-22			
Station A	135	84	292	100	> 500			
Station B	92	60	256	90	> 500			
Station C	63	60	276	86	> 500			
Station D	180	90	> 400	178	> 500			
Station E	199	110	308	106	> 500			
Geometric Mean	123	79	282	108	> 500			

The sampling events on August 10 (during typical beach season) and September 27 (during aftermath of Hurricane Fiona) exceeded the CRWQ geometric mean of < 200 CFU/100 mL. Furthermore, one sample from August 10 and all five samples from September 27 were above the maximum single sample limit of  $\leq$  400 CFU/100mL.

There is also a stormwater outfall that flows into a tributary stream, FLN-2. This is adjacent to the splashpad near Kinsmen Beach and eventually discharges into First Lake. This location reported *E. coli* concentrations well above both the Canadian Recreational Water Quality Guidelines, and in the magnitude of 10<sup>4</sup> CFU/100 mL, which could be contributing to the high *E. coli* concentrations found at Kinsmen Beach.

### 3.3.2 Deep Lake *E. coli* Results

Deep lake samples were collected at the surface and at depth in First Lake, Second Lake and Rocky Lake. The location in each lake was approximately the deepest point of the respective lake based on available bathymetric maps.

All deep lake samples (shallow and at depth were below the Canadian Recreational water quality guideline of <200 CFU/100mL, with all samples below 30 CFU/100 mL with one exception. The surface and at depth samples for First Lake during the September wet weather sampling event both had increased *E. coli* concentrations of 165 CFU/100 mL and 164 CFU/100 mL. Overall, minimal bacterial accumulation or loading was observed in any deep lake samples.

### 3.3.3 Stormwater Outfall Analysis

*E. coli* concentrations in stormwater can vary greatly depending on many factors and concentrations can vary between  $10^2$ - $10^5$  CFU/100 mL. It should be noted that it is likely difficult to meet the <200 CFU/100 mL water quality requirement at most stormwater outfalls, and dilution is expected to occur within the lake. Stormwater samples with *E. coli* concentrations in the magnitude of  $10^4$  or higher can be an indication of influences of domestic wastewater or other *E. coli* sources entering the stormwater system (Jiang et al., 2015). For this study, this threshold of  $10^4$  CFU/100 mL was used to identify stormwater outfalls with potential *E. coli* pollution that require further investigation.



There were eight (8) outfalls that exceeded this 10<sup>4</sup> CFU/100 mL threshold, at the following locations:

- ▶ FLN-2
- ▶ FLN-8
- ▶ FLW-1
- FLW-2
- FLW-3
- ▶ FLW-8
- FLS-3
- FLS-4

Of particular interest were the FLW-2 and FLW-3 locations, as they were adjacent to a domestic wastewater pumping station and regularly had the highest *E. coli* concentrations recorded. For the August 10 sampling event, the FLW-3 location had a barrier set up in front of the culvert. After consultation with Halifax Water staff, it was determined there was a water main break on Chandler Drive, so the barriers were put up in an attempt to limit contamination into the lake. The barrier was removed by the August 18 sampling event. This barrier may have been successful, as the results from August 10 were the lowest reported, but they increased substantially the following week, when the barrier was removed.

# 3.3.4 *E. coli* Loading Rates

To understand primary lake inputs of *E. coli* into the First Lake system, daily *E. coli* loading rates were calculated. *E. coli* loading rates are based on flow measurements recorded during the sampling events and the *E. coli* geometric mean concentration. Loading rates were calculated for each sampling location where flow and *E. coli* could be monitored. Blank cells indicate there was no flow, and/or no *E. coli* measurements were taken. A summary of *E. coli* loading rates in First Lake are presented below in Table 9.



Table 9: *E. coli* Loading Rates by Sampling Location

Location ID	E. coli Loading (CFU/day)							
Location id	15-Jun-22	14-Jul-22	10-Aug-22	18-Aug-22	27-Sep-22			
FLN-1	1.3.E+09	6.4.E+08	5.1.E+08	9.7.E+08	1.7.E+10			
FLN-2	1.2.E+09	2.5.E+10	5.9.E+08	4.6.E+09	2.6.E+11			
FLN-3	1.8.E+06	7.8.E+03	9.3.E+05	3.1.E+06	6.0.E+06			
FLN-4	1.0.E+08	-	-	-	5.9.E+07			
FLN-8	1.7.E+08	-	-	-	-			
FLE-2	1.8.E+07	-	-	-	-			
FLE-3	1.0.E+07	3.6.E+05	-	1.7.E+07	-			
FLE-5	1.5.E+07	-	6.9.E+06	-	-			
FLW-1	4.1.E+07	-	-	-	-			
FLW-2	2.4.E+07	1.7.E+08	2.2.E+08	2.4.E+08	4.7.E+08			
FLW-3	4.5.E+07	-	-	-	-			
FLW-6	5.7.E+07	2.1.E+07	4.0.E+06	1.2.E+09	1.4.E+09			
FLW-7	1.3.E+09	6.5.E+06	3.9.E+06	4.1.E+08	4.5.E+09			
FLW-8	1.8.E+08	5.0.E+09	2.6.E+06	1.2.E+09	-			
FLS-3	5.0.E+07	1.1.E+09	4.6.E+08	3.0.E+07	5.2.E+10			
FLS-4	2.2.E+07	4.7.E+10	3.3.E+09	6.6.E+09	1.8.E+11			
Inlet of First Lake	9.9.E+09	9.1.E+08	3.7.E+08	3.5.E+06	-			
Outlet of First Lake	5.9.E+09	6.3.E+08	2.8.E+07	1.0.E+09	4.2.E+10			
Unmarked Outfall	2.3.E+06	4.2.E+06	1.4.E+06	1.2.E+07	8.3.E+07			

*E. coli* loading rates were found to be the highest at the FLN-2, FLS-3, and FLS-4 stormwater outfall locations, with values reported at  $2.6 \times 10^{11}$ ,  $5.2 \times 10^{10}$ , and  $1.8 \times 10^{11}$  CFU/day respectively, during the September wet weather sampling event.

# 3.4 Microbial Source Tracking Study

Microbial source tracking (MST) analysis was used to distinguish between human and nonhuman fecal source markers in environmental water samples, to determine dominant sources of *E. coli* in First Lake. Specifically, the goal was to differentiate between human, canine and waterfowl sources of fecal contamination in the deep lake stations, stormwater outfalls, Kinsmen Beach and nearshore samples (inlet and outlets of the lakes). The MST method uses Quantitative Polymerase Chain Reaction (qPCR) and a library-independent, genotypic approach for analysis.

MST results are expressed as the number of log copies of a specific gene, in this case human, canine or waterfowl, in a 100 mL sample. Results greater than 1.1 log copies/100 mL are an indication of the presence of fecal contamination, with the prevalent source increasing with the number of gene copies detected. Results less than 1.1 log copies/100 mL are considered a non-detect. A summary of MST results from sampling events on June 15 and September 27 are presented in Table 10, Figure 4 and Figure 5.



Table 10: MST *E. coli* Results

	June 2022					September 27, 2022				
Sample	E. coli	Human HF183	Human CrAssphage	Avian	Dog	E. coli	Human HF183	Human CrAssphage	Avian	Dog
	CFU/100 mL		Log copies/100 mL			CFU/100 mL		Log copies/100	mL	
FLN-1	200	4.69	5.57	<1.1	2.61	927	4.45	6.27	2.11	<1.1
FLN-2	200	4.03	4.85	3.59	<1.1	>25000	6.50	4.83	2.39	2.74
FLN-3	34	2.18	3.83	<1.1	1.10	52	<1.1	<2.83	3.07	<1.1
FLN-4	-	6.15	5.62	2.42	2.53	358	3.66	4.09	2.62	<1.1
FLN-5	200	4.63	4.83	<1.1	1.49	-	-	-	-	-
FLN-8	200	3.97	4.05	<1.1	1.44	10589	6.03	7.29	2.51	3.21
FLE-2	193	3.37	3.97	<1.1	1.28	>500	3.06	2.83	3.10	4.70
FLE-3	134	6.85	7.22	2.63	1.65	>2500	3.48	3.03	1.80	3.91
FLE-5	192	7.51	6.04	<1.1	1.23	>500	5.70	4.83	1.26	4.22
FLW-1	200	7.03	6.33	2.80	1.11	>25000	6.68	5.98	2.28	<1.1
FLW-2	200	5.09	4.68	<1.1	2.59	1715	5.92	5.66	2.31	2.47
FLW-3	200	6.29	6.21	<1.1	2.04	>25000	4.72	6.22	2.56	<1.1
FLW-6	200	4.68	5.63	<1.1	1.56	2442	4.36	5.36	2.21	<1.1
FLW-7	200	4.83	6.00	<1.1	1.18	6871	<1.1	7.90	2.64	<1.1
FLW-8	200	4.60	3.97	2.24	1.58	9177	5.36	8.34	2.17	3.45
FLS-2	22	6.39	6.50	3.32	1.20	196	<1.1	<2.83	2.11	<1.1
FLS-3	200	6.74	6.43	<1.1	1.66	>25000	6.79	7.32	2.71	2.70
FLS-4	200	<1.1	<2.83	<1.1	<1.1	5864	6.72	6.25	2.21	<1.1
First Lake (Deep)	1	-	-	-	-	164	<1.1	<2.83	2.04	<1.1
First Lake (Shallow)	18	3.12	4.02	<1.1	<1.1	165	<1.1	<2.83	1.98	<1.1
Rocky Lake (Deep)	24	<1.1	<2.83	2.21	1.91	14	<1.1	<2.83	1.87	<1.1
Rocky Lake (Shallow)	4	<1.1	<2.83	2.10	1.25	15.3	<1.1	<2.83	1.38	<1.1
Second Lake (Deep)	12	<1.1	<2.83	<1.1	1.76	40	<1.1	<2.83	1.81	<1.1
Second Lake (Shallow)	9	-	-	-	-	30	3.75	3.83	1.81	<1.1
Inlet of First Lake	200	<1.1	<2.83	<1.1	<1.1	>500	4.21	6.17	1.65	<1.1
Outlet Of First Lake	28	5.66	6.14	6.67	2.45	121	3.80	4.53	2.19	<1.1
Inlet of Second Lake	13	2.89	3.99	3.31	<1.1	66	<1.1	<2.83	2.49	<1.1
Outlet of Second Lake	8	2.05	2.95	5.79	1.36	87	<1.1	<2.83	2.38	<1.1
Inlet of Rocky Lake	-	<1.1	<2.83	2.10	2.25	113	<1.1	4.45	2.75	<1.1
Kinsmen Beach	123	3.69	4.25	<1.1	1.53	>500	5.20	5.68	2.78	3.32
Cavalier Gully	248	3.63	4.21	<1.1	2.90	3106	2.70	4.10	2.67	3.38
Unmarked Outfall	1	<1.1	<2.83	<1.1	<1.1	18	<1.1	<2.83	4.06	<1.1



### MST Results - June 2022

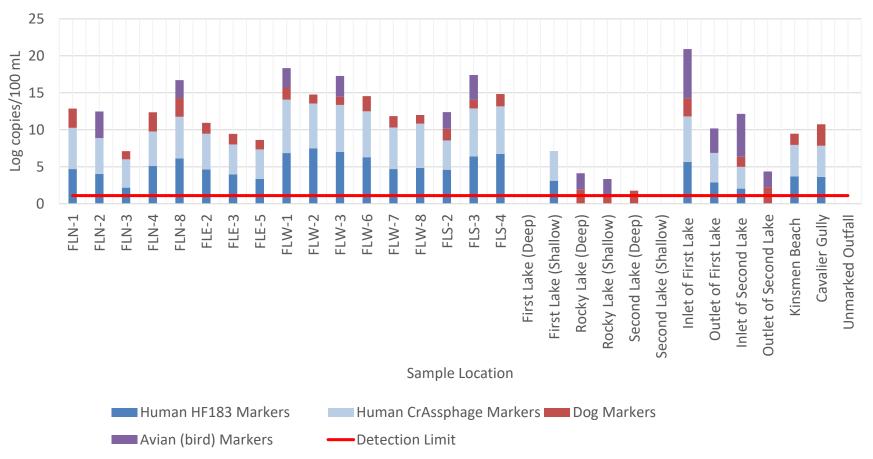


Figure 4: MST Results - June 2022

### MST Results - September 2022

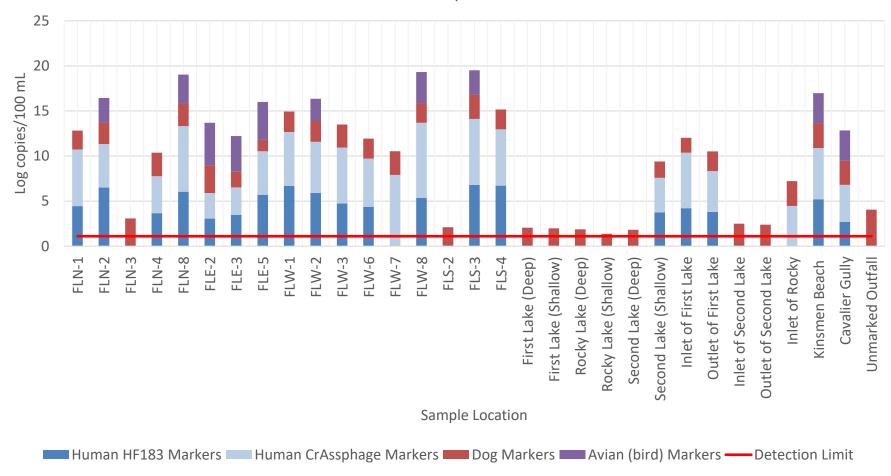


Figure 5: MST Results - September 2022



MST results indicated that human fecal source markers were detected in 77% of samples from the June 15, 2022 sampling event, and in 65% of samples from the September 27, 2022 sampling event. Both of these sampling events were during wet weather conditions, and the discrepancy between the two may be attributed to missing the first flush. The June 15 sampling event had heavy rainfall during a shorter period, and sampling occurred immediately following rainfall end. The September 27 sampling event, however, had rainfall spread out over several days, and sampling occurred 3 days after the heaviest rainfall. The percent of all samples from each MST sampling event that had a detection of human, dog, and/or avian fecal source markers are presented in Table 11. Table 1

Table 11: MST % Detection of Human, Dog or Avian Markers

	MST % Detection in Samples					
	15-Jun-22	27-Sept-22				
Human HF183	77	61				
Human CrAssphage	77	68				
Dog	80	100				
Dog Avian	40	32				

MST results from Kinsmen beach sampling indicate the dominant fecal source marker was human at this location, with values reported between 3.69 – 5.68 log gene copies/100 mL. The inlet to First Lake also saw a high detection of human markers, which is adjacent to Kinsmen Beach, with values reported between 4.21 – 6.17 log gene copies/100 mL. There were also positive detections of dog and avian fecal source markers observed at Kinsmen Beach.

MST results for deep lake monitoring stations had detection of fecal source markers, but were the lowest values observed compared to other sampling locations. The outfall locations that had the lowest detection of fecal source markers were FLE-2 and FLN-3. For the June 15 sampling event, human detection was only observed in the First Lake shallow sample. Furthermore, dog and avian fecal source markers were observed at both the shallow and deep lake locations at Rocky Lake. As for September 27 sampling event, human detection was again only observed in one sample, however this time was at the Second Lake shallow sampling location. There were also no avian markers in the deep lake samples from September 27, however, dog markers were detected in all deep lake samples. Finally, when comparing the surface sample and the deep sample for each of the deep lake monitoring stations, the MST results were the same for First Lake and Rocky Lake. However, Second Lake had human detection in the surface sample, but no human detection in the deep lake sample during the September sampling event.

For the stormwater outfalls, all sampling locations had detection of human markers in at least one of the samples. Seven (7) locations had a high number of human gene copies detected, which were as follows: FLN-8, FLW-1, FLW-2, FLW-3, FLW-7, FLW-8 and FLS-3, with values of 7.29, 7.22, 7.51, 7.03, 7.90, 8.34 and 7.32 log copies/100 mL, respectively. These



are highlighted in Figure 6. All sampling locations had detection of dog markers in at least one of the samples, but lower values were reported compared to human markers.

As previously mentioned, there were either (8) outfalls that exceeded the 10<sup>4</sup> CFU/100 mL threshold for *E. coli* concentrations, indicating possible influences of domestic wastewater or other *E. coli* sources entering the stormwater system. When comparing these locations to the MST results, six (6) of these locations had a high number of human gene copies detected. These locations include FLN-8, FLW-1, FLW-2, FLW-3, FLW-8, FLS-3 and are shown in Figure 7.

When locations are identified as high in *E. coli* concentration and have human as the dominant fecal source markers, there is evidence to suggest domestic wastewater is present in the stormwater system (Staley et al., 2016). Therefore, it is recommended that these locations be the focus areas for repairs and remediation in the future, due to their increased risk to human health.

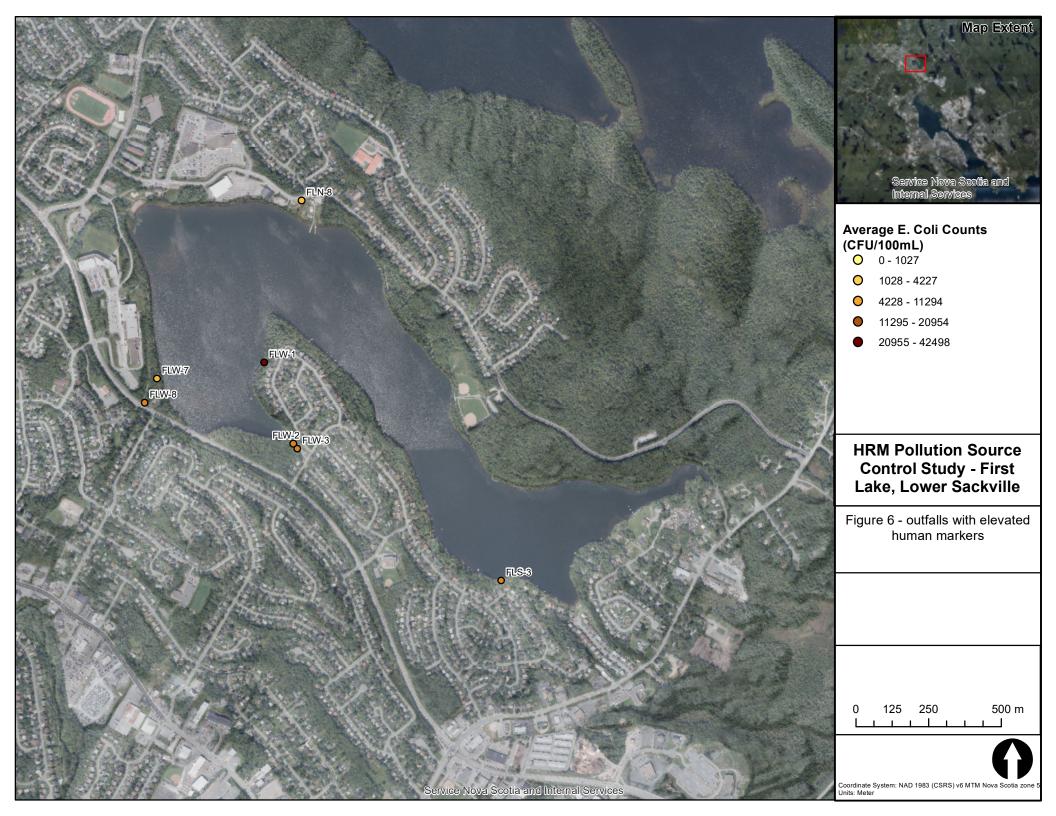
# 3.5 In-situ Water Monitoring

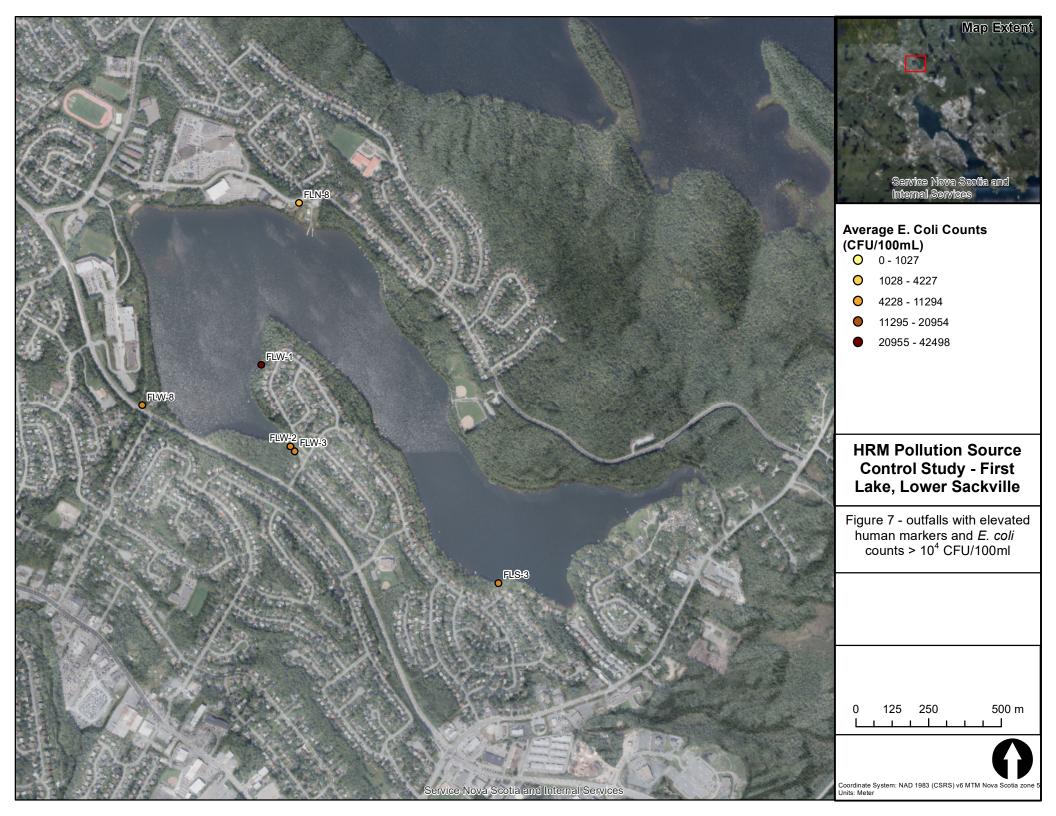
In-situ water quality monitoring was performed during all five sampling events at deep lake stations, stormwater outfalls, Kinsmen Beach and nearshore samples (inlet and outlets of the lakes). The following in-situ water quality parameters were monitored:

- ▶ pH.
- Temperature (°C).
- Dissolved oxygen (mg/L).
- Specific conductance (μS/cm).
- Total dissolved solids (mg/L).

Detailed in-situ water quality results for each sample location are presented in Appendix B.







# 4 Watershed Modelling

## 4.1 Approach

Field data collected during the sampling program was key in identifying *E. coli* concentrations associated with specific stormwater outfalls and with identifying the potential microbial sources. The data collected provides a snapshot of the loadings at the specific time of sampling, however it provides limited information of the spatial distribution of sources and pollutant loadings that may be observed during a precipitation event. To compliment the field data collected through the sampling program, a hydrologic watershed model was developed for First Lake to model estimated pollutant loadings from surface runoff. The model was used to estimate the total loading rates to First Lake on an event based and annual loading basis.

## 4.2 Hydrologic Model

CBCL developed a computer model of the site using PCSWMM, an advanced modelling software based on the EPA SWMM model, which is a Storm Water Management Model developed by the United States Environmental Protection Agency (USEPA). SWMM is a hydrologic and one-dimensional hydraulic model that is used to study semi urban drainage systems and is able to simulate hydrologic processes such as runoff, infiltration, snowmelt, evapotranspiration and low impact development measures. It is also applied for performing unsteady hydraulic flow calculations to simulate water backup, pooling, and detention ponds.

### 4.2.1 Watershed Land Use

The watershed that drains to the First Lake includes 285.48 hectares in total which is covered by various land uses including residential, commercial, roads, and undeveloped areas as shown in Figure 8.



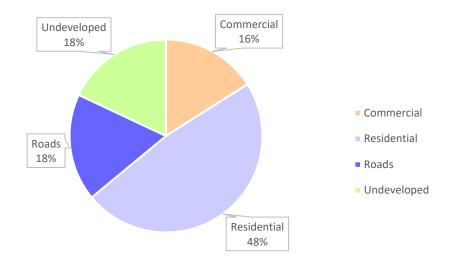


Figure 8: Land Use Breakdown of the Watershed Contributing to the First Lake

## 4.2.2 PCSWMM Model Inputs

Figure 9 illustrates the watershed area delineated with PCSWMM that drains towards the First Lake. This area was delineated using existing LIDAR information available from the province of Nova Scotia (GeoNOVA, 2019). The hydrologic characteristics of the watershed such as area, percent slope, soil conditions, surface roughness and percentage of impervious cover were obtained using LIDAR data, aerial photography, satellite imagery, and the Agriculture Canada Soil Survey of Halifax County Nova Scotia.



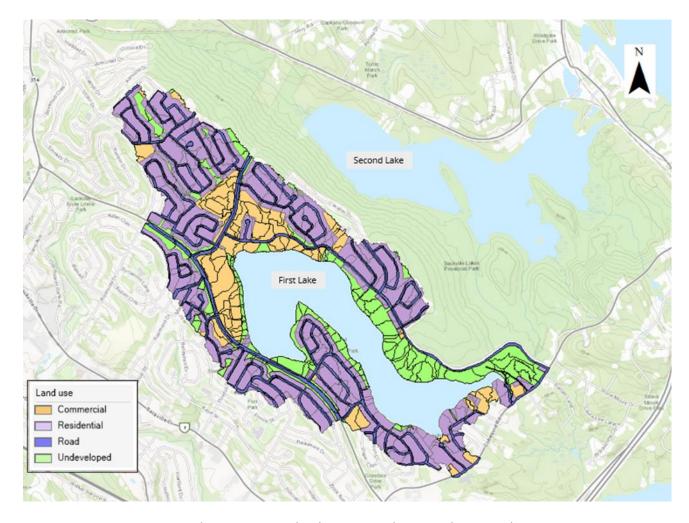


Figure 9: Contributing Watershed to First Lake Based on Land Use

The hydrologic characteristics of the First Lake watershed are summarized as follows:

- ▶ **Watershed Area:** The watershed draining to the First Lake covers an area of approximately 285.48 hectares. The watershed was first divided into subcatchments of 1 hectare. However, to demonstrate the variety of land cover throughout the watershed, various adjustments were made to the subcatchments resulting in subcatchments ranged from 0.003 to 4.5 hectares.
- ▶ **Slope:** The average overland slope varies between 0.3% and 10% with mainly higher slopes along the northern shoreline.
- ▶ Land Cover: According to the aerial photography, residential areas cover the majority of the contributing watershed (almost 48%), followed by roads, undeveloped regions, and commercial areas (18%, 18%, and 16%, respectively). Residential areas were considered to consist of 30% of impervious surface (concrete/pavement) with commercial areas estimated to consist of 80% impervious surfaces. The undeveloped areas are mainly grass or light underbrush. Table 12 lists the Manning coefficients assigned to the various types of land covers identified across the watershed.



**Soil Type:** According to the Nova Scotia Detailed Soil Survey, the predominant soil type in the area is Sandy-Clay-Loam. The Sandy-Loam soil type was observed in a few subcatchments to the east side of the lake. The infiltration parameters introduced to the model for these soil types are shown in Table 13. (Rawls, W.J. et al., (1983)).

Table 12: Manning Coefficient Assigned to Land Cover

Land Cover	Manning Coefficient
Grass	0.15
Light Underbrush	0.40
Concrete/Pavement	0.013

Table 13: Infiltration Properties (from Rawls, W.K et al 1983)

Soil Class	Suction Head (mm)	Conductivity (mm/hr)	Initial Deficit (frac.)	
Sandy-Clay-Loam	219.96	1.52	0.02	
Sandy-Loam	109.98	10.92	0.02	

Using the hydrologic characteristics of the watershed described, the PCSWMM model was used to calculate the surface runoff rates for each land use. The surface runoff rates were then used in the *E. coli* event mean concentration and annual loading calculations.

## 4.3 Event Mean Concentration Analysis

A rainfall event-based model was used to estimate the overall *E. coli* loading to First Lake due to surface runoff during a precipitation event for the watershed. This method requires the calculation of surface runoff depth for a representative rain event from the hydrologic model along with identifying literature-based event mean concentration (EMC) values for *E. coli* based on type of land use. The *E. coli* load that enters the waterbody for a specific rainfall event due to surface runoff is then calculated as the product of the runoff depth, the land use area, and the EMC, as shown below.

$$P_{event} = \sum_{l} R_d \times A_{LU} \times EMC_{LU}$$

Pevent: Total pollutant load on an event basis (Kg or CFU)

R<sub>d</sub>: Runoff depth (mm)

A<sub>LU</sub>: Area associated with specific land use (m<sup>2</sup>)

EMC<sub>LU</sub>: Pollutant event mean concentration for a specific land use (mg/L or CFU/100 mL)



## 4.3.1 Runoff Depth Determination

Runoff depth was estimated for various land uses across the watershed using the hydrologic model generated with PCSWMM. A 1 in 2-year rainfall event with a 24-hour duration was selected as a conservative approximation of a frequent event for this analysis.

The rainfall hyetograph of the selected rainfall event for the analysis was derived from the Environment and Climate Change Canada (ECCC)'s rainfall intensity-duration-frequency (IDF) data for the Shearwater RCS station in Nova Scotia. The hyetograph consists of a 24-hour duration event with 5-minute interval storm for the 1 in 2-year return period, based on the Chicago storm distribution. Figure 10 depicts the calculated time series for the 1 in 2-year event.

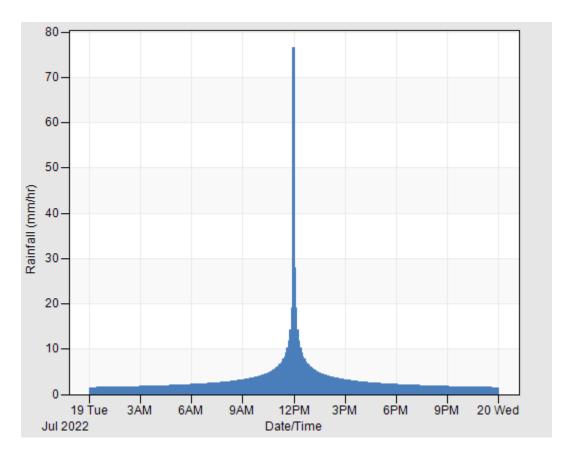


Figure 10: Chicago Rainfall Distribution for Shearwater RCS Station based on the 1 in 2-year IDF curves (dates shown represent simulation dates)

Using the PSCWWM model and inputs described in section 4.2.2, surface runoff depths were calculated based on the 1 in 2-year rainfall event. Table 14 summarizes the calculated runoff depths for different land uses across the watershed.



Table 14: Summary of Land Use Associated Parameters for Study Area

Land Use	Area (ha)	Runoff Depth (mm)
Commercial	45.47	71.93
Residential	136.81	50.46
Roads	51.89	80.62
Undeveloped	51.31	38.78
Total	285.48	-

#### 4.3.2 Total Event Mean Concentration Calculation

Event mean concentrations (EMCs) represents the average pollutant concentration for a given rainfall event and is calculated as the total mass of a pollutant divided by the total runoff volume of the rain event. As the pollutant concentration can vary throughout the rainfall event, multiple samples may be collected throughout a rainfall event at set time intervals to determine the average loading concentration. With the difficulty in sampling and monitoring stormwater runoff for different land uses, stormwater modelling often relies on established EMC for different land uses found in industry literature. As the *E. coli* sampling completed throughout the project was discrete samples during several sampling events rather than continuous sampling throughout a single rainfall event, EMCs available through literature will be used.

As fecal coliforms have historically been used as standard indicator for stormwater bacteria sampling, a large portion of industry literature is derived from fecal coliform data in stormwater. As a result, there is limited available EMC data for *E. coli* by land use. To address this gap, fecal coliform event mean concentration (FC EMC) associated with various land uses in literature were used as a reference for *E. coli* concentrations for this study. Table 15 presents values determined through literature review and used in this calculation.

Table 15: Fecal Coliform Event Mean Concentrations Based on Land Use

Land use	Fecal Coliform Event Mean Concentration (CFU/100 mL)
Commercial	4,500 <sup>1</sup>
Residential (Low to High-Density)	7,750 <sup>1</sup>
Roads	1,400 <sup>2</sup>
Undeveloped	10,365 <sup>3</sup>

<sup>&</sup>lt;sup>1</sup> Theriault, A. Duchesne, S., 2015; <sup>2</sup> CH2M HILL, 1993; <sup>3</sup> Burnhart et al. nd

Using the runoff depths per land use determined through the hydraulic model, along with the overall area and EMC for each land use, the total fecal coliform (in lieu of *E. coli*) loading entering First Lake during a 1 in 2-year rain event was calculated. The results are summarized in Table 16.



Table 16: Fecal Coliform Loading Entering First lake via Different Land Uses During a 1 in 2-Year Rainfall Event

Land Use	Total <i>E. coli</i> Load (CFU)
Commercial	1.47 x 10 <sup>12</sup>
Residential (Low to High-Density)	5.35 x 10 <sup>12</sup>
Roads	$0.59 \times 10^{12}$
Undeveloped	1.96 x 10 <sup>12</sup>
Total	9.36 x 10 <sup>12</sup>

The results indicate that, even though EMC associated with undeveloped areas are highest shown in Table 15, residential areas generate the largest concentration of fecal coliform per event due to the higher percentage of land in the watershed. This is illustrated in Table 17.

Table 17: Percentage of Total Fecal Coliform Loading in First Lake by Land Use during 1 in 2-Year Rain Event

Land Use	Land Use Percentage	Fecal Coliform Loading Percentage
Commercial	16%	16%
Residential (Low to High- Density)	48%	57%
Roads	18%	6%
Undeveloped	18%	21%

## 4.4 Annual Concentration Analysis

To determine the annual *E. coli* loading to the First lake from each land use, an annual loading model was used. For the annual model, the total pollutant loads that discharge to the waterbody on an annual basis is calculated as the product of the average annual rainfall in the study area, land use associated EMC values, area associated with each land use, and runoff coefficient. Similar to the rainfall event-based model, the fecal coliform EMC values from literature were used for this calculation.

$$L_{Annual} = \sum EMC_{LU} \times A_{LU} \times R_{ave} \times RC_{LU}$$

*L*<sub>Annual</sub>: Total pollutant load on an annual basis (kg/year or CFU/year)

*EMC<sub>LII</sub>*: Areal pollutant loading rate for a specific land use (g/m2/year or CFU/100mL/ha/year)

 $A_{LII}$ : Area associated with a specific land use (m<sup>2</sup>)

 $R_{ave}$ : Average annual rainfall (mm)

RC<sub>LII</sub>: Runoff coefficient associated to land use



### 4.4.1 Annual Concentration Model Inputs

An average annual rainfall depth of 1,322.5mm for climate normal conditions for the area was derived from the ECCC climate station data for Westphal (Climate ID: 8206250). This average was based on 30 years of rainfall data from 1981 to 2010. This station was the closest station to the study area in terms of location and elevation with available climate normal data.

Runoff coefficient associated to each type of land use were obtained from literature as shown in Table 18. The areas associated with each land type are presented in Table 14. Fecal coliform EMCs by land use are presented in Table 15.

Table 18: Runoff Coefficient for Different Land-Uses (Brown, S.A. et al., 2009)

Land Use	Runoff Coefficient
Commercial	0.95
Residential (Low to High-Density)	0.6
Roads	0.95
Undeveloped	0.25

#### 4.4.2 Annual Concentration Calculation

Using the inputs outlined in Section 4.4.1 and the hydrologic model, annual fecal coliform loading rates into First lake were calculated. The results are summarized in Table 19. Based on the results, residential areas are by far the major source of *E. coli* loading to the First Lake on an annual basis, which is followed by commercial, undeveloped and roadways, respectively.

Table 19: Annual E. coli Loading to First Lake from each type of land use

Table 13. William L. Con Louding to First Lake Horn Each type of land ase				
Land-Use	Total <i>E. coli</i> Load (CFU)			
Commercial	25.7 x 10 <sup>12</sup>			
Residential	84.13 x 10 <sup>12</sup>			
Roads	9.12 x 10 <sup>12</sup>			
Undeveloped	17.58 x 10 <sup>12</sup>			
Total	136.55 x 10 <sup>12</sup>			



# 5 Recommendations to Mitigate Bacterial Loading

## 5.1 Discussion on Sources of Contaminants

When looking at potential sources *E. coli* loadings, sources can be point sources or non-point sources. Point sources would be direct bacteria sources such as discharges from wastewater treatment plants. With the sanitary wastewater collected and treated at the Mill Cove Wastewater Treatment Plant, point sources into First Lake should be non-existent. Non-point sources would include groundwater infiltration, sanitary sewer cross connections, leaking/damaged pipes, or illegal connections to the storm water systems. Non-point sources can play a significant role in the overall loading into a receiving body of water. Table 20, adopted from the International Stormwater BMP Database, outlines potential point sources for fecal indicator bacteria and pathogens, including *E. coli*. While not all would apply, it shows the wide range of potential sources to consider.



Table 20: Potential Sources of Fecal Indicator Bacteria and Pathogens (adopted from International Stormwater BMP Database: 2020 Summary Statistics)

	Source / Activity
General Category	Source/Activity
Municipal Sanitary	Sanitary sewer overflows (SSOs)
Infrastructure (piped)	Leaky sewer pipes (Exfiltration)
	Illicit sanitary connections to storm sewers
	WWTPs (if inadequate treatment or upsets)
Other Human Sanitary Sources	Leaky or failing septic systems (may include excessive density of systems in one area or temporary overuse of the systems)
(some also attract	Homeless encampments or other human outdoor sources
urban wildlife)	Porta-potties
	Dumpsters (e.g., diapers, pet waste, urban wildlife)
	Swimmers/bathers, boaters, trail users
	RVs (mobile) and other illegal dumping
	Trash cans
	Garbage Trucks
Domestic Pets	Dogs, cats, etc.
Urban Wildlife	Rodents/vectors (rats, raccoons, squirrels)
(naturally occurring	Birds (gull, geese, ducks, pigeons, swallows, etc.)
and human attracted)	Open space (coyotes, foxes, beavers, feral cats)
Other Urban Sources	Landfills
Other Orban Sources	Food processing facilities
	Outdoor dining
	Restaurant grease bins
	Green waste, compost/mulch
	Animal related facilities (e.g., bed boarding, off-leash parks)
Urban non-	Power washing
stormwater	Excessive irrigation/overspray
discharges	Car washing
discridinges	Pools/hot tubs
Stormwater	Reclaimed water/greywater (if not properly managed)
Infrastructure	Illegal dumping Illicit sanitary connections
iiiiastiucture	
	Leaky sewer pipes
	Biofilms/regrowth
Natural Onca	Decaying plant matter
Natural Open	Wildlife populations
Space/Forested Areas	Grazing
	Natural area parks, off-leash areas
Other Naturalized Sources	Decaying plants/algae, sand, soil



With the MST results from the study, human markers were found in all samples collected from stormwater outfalls around First Lake. With comparison to the deep lake samples, it is evident that there are sanitary sources reaching the stormwater outfalls and near shore samples collected.

Elevated *E. coli* concentrations were also detected during periods of dry weather flow (during July and August). There are two main sources of dry-weather flows in storm sewers, groundwater infiltration and sanitary sewer cross-connections. With stormwater outfalls having flow during dry weather conditions that also had elevated *E. coli* results, it is surmised that those outfalls may be under the influence of sanitary cross connection. It should be noted that the outfalls FLW-3, FLW-8 and FLS-3 only had high results for one of the three dry weather events, while FLW-1, FLW-2 and FLS-4 had multiple dry weather samples exceed the 10,000 CFU/100mL threshold.

The sanitary and stormwater collection systems around First Lake are separate, so it is anticipated that there should not be any combined sewer overflows that would be directed to First Lake. This would lead to unintended cross connections, illegal connections or damaged/leaking infrastructure as possible sources contributing to the sanitary loadings that should be investigated further.

Accumulation of sediment, silt and organic matter in stormwater infrastructure can harbour bacteria and release it during stormwater events. Nutrient rich standing water in stormwater infrastructure can also lead to growth of bacteria in between storm events that could later be flushed out into the stormwater system and receiving waters. This is another possibility of how *E. coli* could be getting into the system. It is recommended that stormwater infrastructure cleaning be performed to mitigate this possible source of contamination to the system.

# 5.2 Best Practices/Methods for Reducing Stormwater Contamination

For stormwater best management practices (BMPs), the top priority is to reduce or eliminate sources of domestic wastewater from entering the stormwater collection system as it is easier to prevent the sources entering the system than to try to reduce contaminants through treatment once it has entered the stormwater system. As mentioned, it is likely that the domestic wastewater is entering the stormwater system through system cross connections with the sanitary sewers, or exfiltration into the stormwater system through damaged or leaking sanitary sewers.

Figure 11 shows a simplified approach of steps to take for reducing *E. coli* loading in a wastewater system. As a starting point, more in depth investigation for stormwater outfalls should be completed to pin-point the potential sources in areas with elevated *E. coli* results.



This could include targeted *E. coli* (or other fecal indicator bacteria) sampling through the stormwater catchment area of outfalls with exceedances, dye testing, smoke testing or CCTV inspection to identify sources. Once identified, steps should be completed to eliminate the cross connection or to repair damaged or leaking infrastructure. Stormwater outfalls that had elevated *E. coli* concentrations detected during dry-weather conditions should be the focus to start, as it could indicate the outfall is under the influence of a domestic wastewater source or groundwater that has come in contact with a domestic wastewater source. Throughout the investigations, best practices for stormwater systems should be completed, such as maintaining infrastructure, cleaning catch basins, etc.

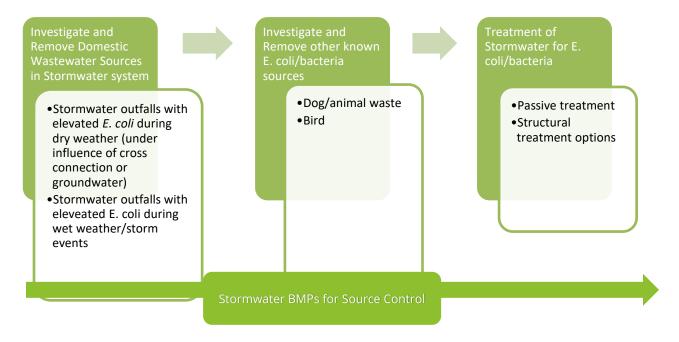
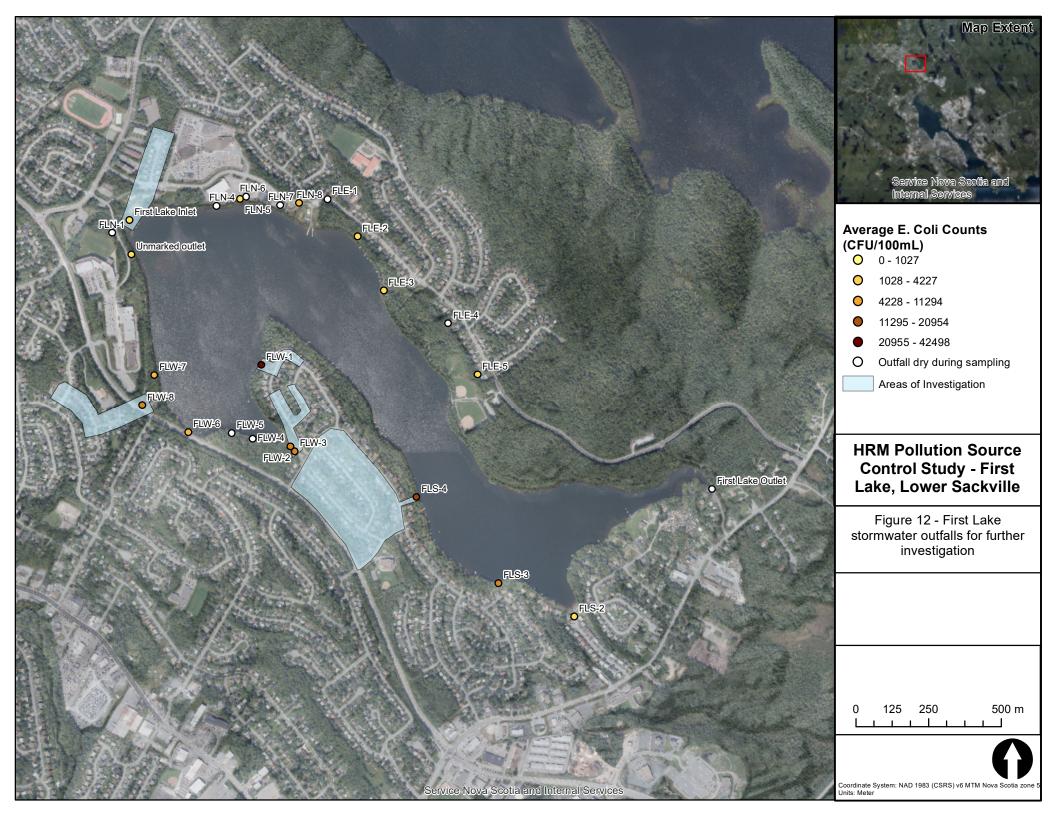


Figure 11: Approach to Reducing *E. coli* in Stormwater Collection System

From the sampling results, FLW-1, FLW-2, FLW-3, FLS4, FLW-8 and FLN-1 were identified as stormwater outfalls that had elevated *E. coli* results and could be candidates for further investigation into potential cross connections or wastewater sources. Figure 12 highlights the potential catchment areas that could be investigated through desktop assessment of existing infrastructure, additional *E. coli* testing or smoke testing.





If *E. coli* exceedances are still persistent following the investigation/remediation of sources of domestic wastewater entering the stormwater system, work can be shifted to consider other sources of *E. coli* including sources from dog/bird and wildlife. This can be difficult as it is dealing with wildlife but could include public education on the importance of proper pet waste disposal, and deterrence methods for birds to prevent them from landing in and around Kinsmen Beach, including docks that are near the beach.

If, after exhausting options for reducing potential *E. coli* sources from entering the stormwater system, there are still persistent *E. coli* or FIB present, treatment within the stormwater system may be required. With the variability of *E. coli*, especially during wet weather or storm events, consistently meeting the recreational quality guidelines is not typically realistic. Options can vary from passive stormwater structures such as grass swales to retention ponds or wetlands to more active treatment such as filters or disinfection. From industry reviews, performance monitoring of stormwater treatment for *E. coli* treatment is limited and the studies completed to date have shown that efforts to reduce sources from entering the stormwater system or options to reduce overall stormwater volumes should be implemented first. Figure 13 provides a summary of some options that can be considered as a utility works through identifying and reducing *E. coli* loadings into the stormwater system.

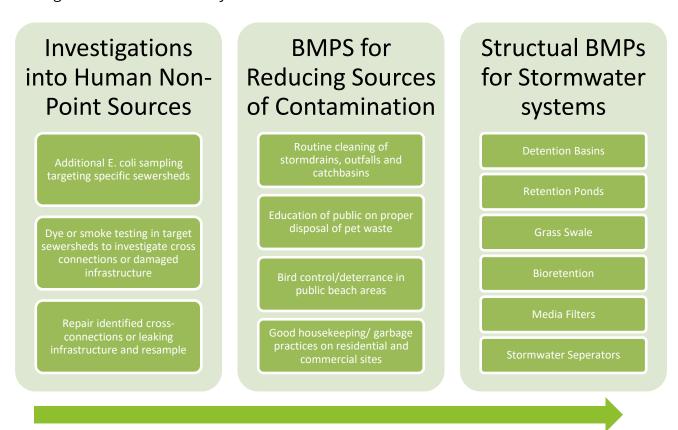


Figure 13: Summary of Options for Dealing with E. coli in Stormwater Systems



## 5.3 Recommendations

Throughout the study, elevated *E. coli* concentrations exceeding the recreational guideline were measured at many stormwater outfalls in First Lake along with Kinsmen Beach. Some stormwater outfalls had exceedances several magnitudes higher than the recreational guideline, with *E. coli* results similar to those expected in dilute domestic wastewater. MST sampling was completed to identify the potential sources of *E. coli* as human, dog or avian sources. All stormwater outfalls sampled had detectable levels of the human markers, indicating potential domestic wastewater contamination.

The following are recommendations for reducing *E. coli* loading into First Lake, in order of priority:

- Investigation of the catchment areas around the stormwater outfalls FLN-1, FLW-8, FLW-1, FLW-2 and FLS-4 for potential sanitary cross connections or leaking pipework. This could be completed through a combination of additional *E. coli* sampling, dye testing, smoke testing, cleaning or CCTV. The objective would be to identify and eliminate the sources of contamination.
- ▶ All three lakes (First, Second and Rocky), had dog markers detected. With the popular walking trails along the lake, the dog park at Eddie LeBlanc ball fields and the residential backyards along First Lake, public education on the importance of proper disposal of pet waste may aid in reduction of loadings into the lake.
- Avian markers were detected at Kinsmen Beach and the presences of birds in the area was noted during all 5 sampling events. It is difficult to implement bird management controls, especially in public areas like the beach, but there are some deterrence and dispersion measures that could be investigated at a feasibility level once the human sources of *E. coli* have been investigated.

If a similar study was to be carried forward on First Lake in the future, recommendations to the scope of work could be as followed:

- Some of the samples may not have captured the first flush and may not represent the highest concentrations of *E. coli* that would have occurred during a wet weather sampling event. To fully capture the first flush of a wet weather event, a sampling program involving multiple samples throughout the event would be required.
- If *E. coli* exceedances are still persistent following the investigation/remediation of sources of domestic wastewater entering the stormwater system (human sources), it is recommended that work be shifted to consider other sources of *E. coli* including sources from dog/bird and other wildlife, including deer.
- E. coli concentrations were variable throughout the sampling program, particularly due to time of year and weather conditions, causing dilution factors to be occasionally missed by the accredited laboratory. It is recommended that a good relationship be established with the laboratory, to ensure dilutions are performed adequately so a quantitative result can be achieved for each sample.



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# **APPENDIX A**

Background Reference Review







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#### **Background Document Review**

Assessing Sources of fecal contamination and pathogen presence at four freshwater beaches in in the Halifax Regional Municipality (2016, capstone project prepared by Centre for Water Resources Studies, Dalhousie University)

In the winter of 2016, the CWRS conducted a study assessing sources of fecal contamination and pathogen presence at four freshwater beaches in the HRM, and First Lake was included. The purpose of this study was to better understand the sources of fecal contamination and the presence of pathogens that lead to frequent beach closures. It was found that exceedances of the Health Canada guidelines were strongly correlated to heavy rainfall events after the beach season had ended. Methods including plating, microbial enrichment, and genetic microbial source tracking were used to enumerate E. coli levels and detect select pathogens and host-specific fecal contamination markers. It was found that the human marker was present primarily before beach season and the dog marker during beach season. E. Coli was determined to be an adequate indicator of microbial water quality as levels found below guidelines corresponded to lower pathogen and host-specific marker presence.

A paleolimnological record of anthropogenic impact on water quality in first lake, Lower Sackville, Nova Scotia (2013 Thesis, Drake Tymstra, Acadia University student).

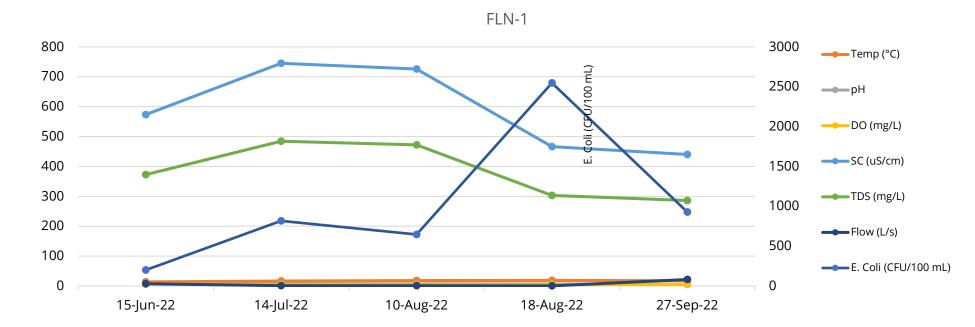
This research highlighted that First Lake was naturally variable and productive before watershed development, resulting in it being naturally susceptible to water quality degradation. This dense watershed development has resulted in increased nutrient input to the lake, leading to increased productivity and oxygen consumption, which was already scarce due to the lake's morphometry and inability to mix well during storm events. First Lake appears to be vulnerable to degrading water quality.

# **APPENDIX B**

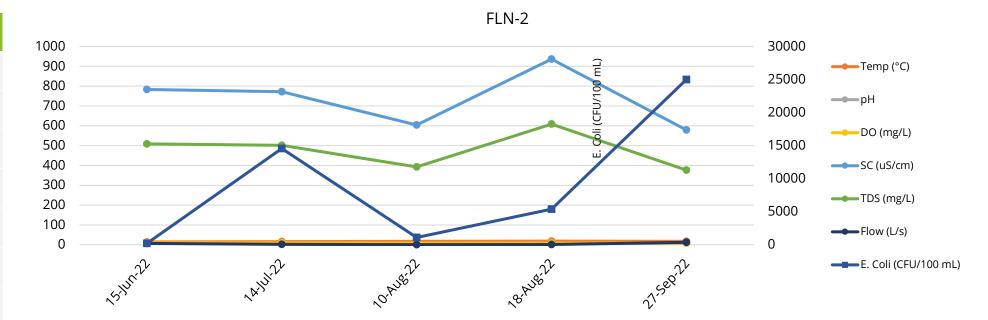
In-situ Water Quality Results



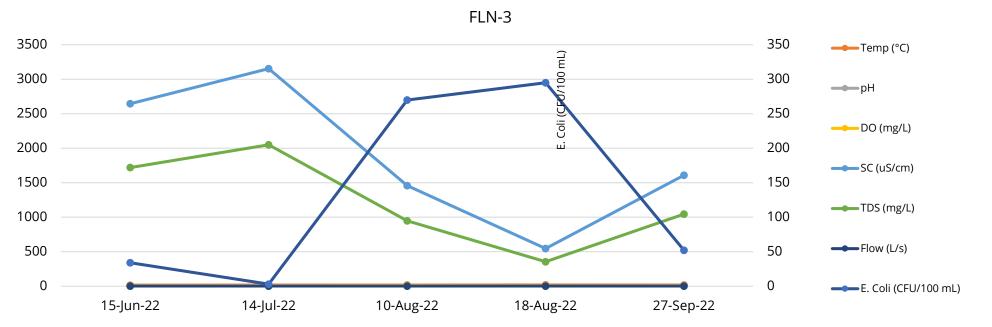
FLN-1	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	816	646	2547	927
Temp (°C)	13.8	16.4	18.1	18.7	17.7
рН	7.15	7.16	7.32	7	5.36
DO (mg/L)	7.03	3.71	3.65	3.91	6.03
SC (uS/cm)	573	745	726	466.3	440
TDS (mg/L)	372.45	484.25	471.9	303.095	286
Flow (L/s)	7.47	0.91	0.92	0.44	21.72



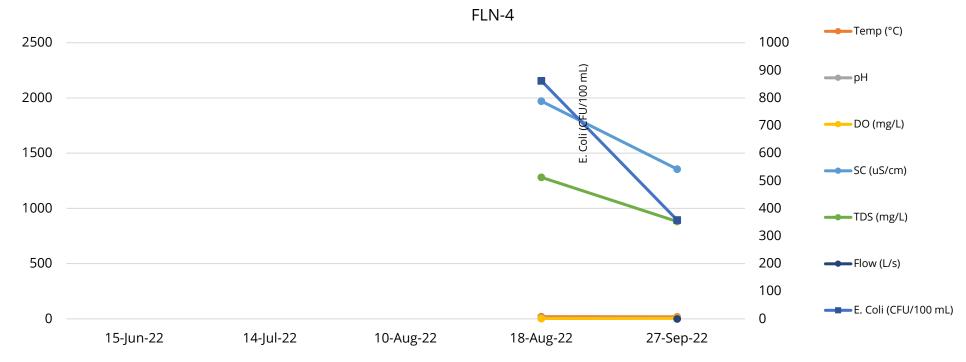
FLN-2	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	14560	1103	5390	25000
Temp (°C)	14.3	15.8	17.7	18.4	17.2
рН	7.83	8.08	8.12	8.02	7.33
DO (mg/L)	9.88	8.9	8.61	8.26	8.19
SC (uS/cm)	783	772	604	936	578.9
TDS (mg/L)	508.95	501.8	392.6	608.4	376.285
Flow (L/s)	6.93	1.95	0.62	0.98	12.27



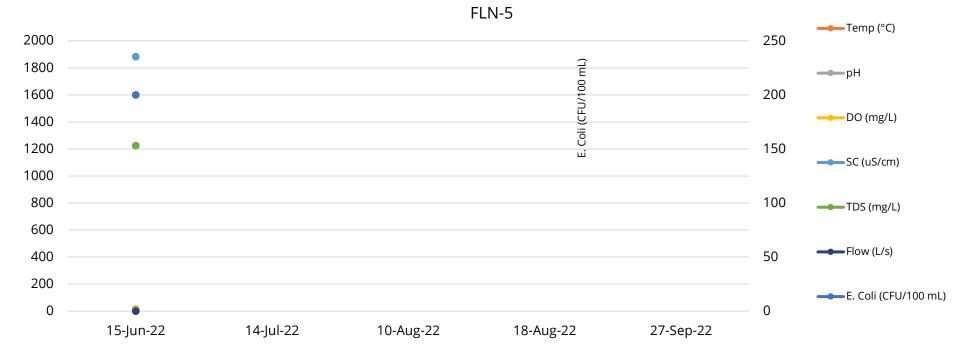
FLN-3	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	34	3	270	295	52
Temp (°C)	15.9	16.9	18.4	18.8	16.8
рН	7.3	7.47	7.57	7.27	7.01
DO (mg/L)	6.28	4.62	6.05	5.83	3.51
SC (uS/cm)	2646	3154	1458	546	1609
TDS (mg/L)	1719.9	2050.1	947.7	354.9	1045.85
Flow (L/s)	0.06	0.003	0.004	0.012	0.133



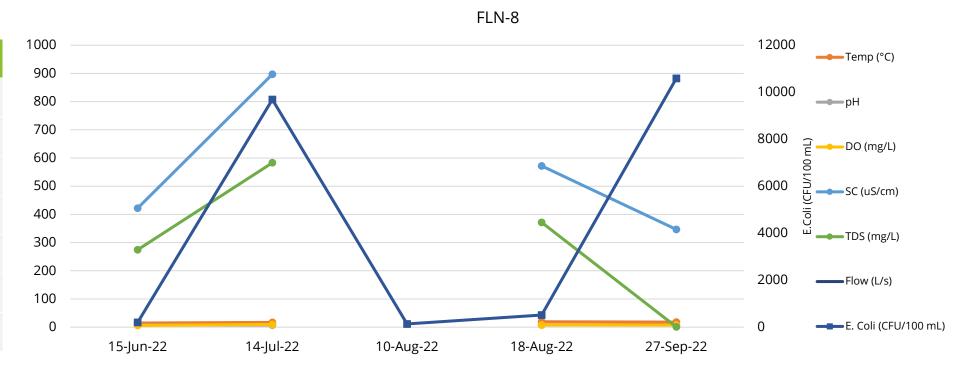
FLN-4	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	-	-	-	862	358
Temp (°C)	-	-	-	19.8	18.6
рН	-	-	-	6.76	7.63
DO (mg/L)	-	-	-	2.55	4.85
SC (uS/cm)	-	-	-	1971	1356
TDS (mg/L)	-	-	-	1281.15	881.4
Flow (L/s)	-	-	-	-	0.17



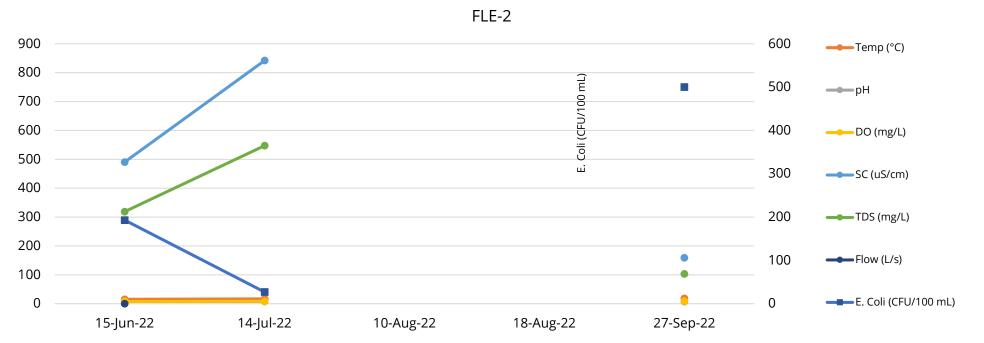
FLN-5	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	-	-	-	-
Temp (°C)	14.7	-	-	-	-
рН	7.21	-	-	-	-
DO (mg/L)	6.05	-	-	-	-
SC (uS/cm)	1883	-	-	-	-
TDS (mg/L)	1223.95	-	-	-	-
Flow (L/s)	0.60	-	-	-	-



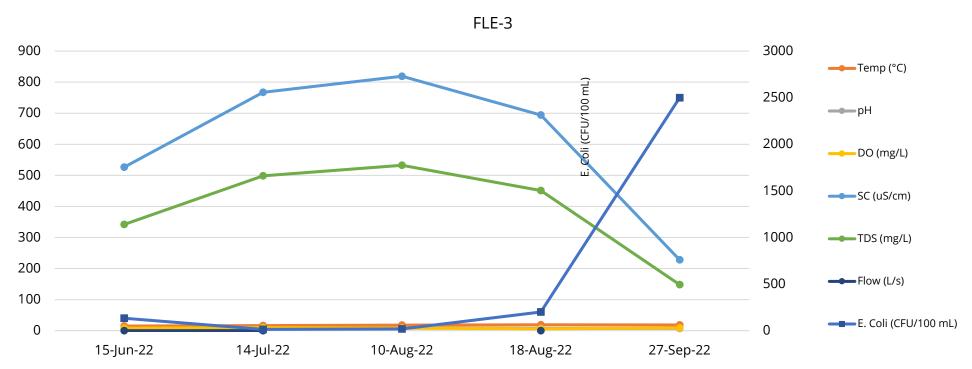
FLN-8	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	9691	138	515	10589
Temp (°C)	14.8	16.7	-	19.3	18
рН	7.64	7.2	-	7.63	7.71
DO (mg/L)	5.93	9.6	-	7.6	7.14
SC (uS/cm)	422.2	897	-	572	346.7
TDS (mg/L)	274.43	583.05	-	371.8	0.9
Flow (L/s)	1.00		-		



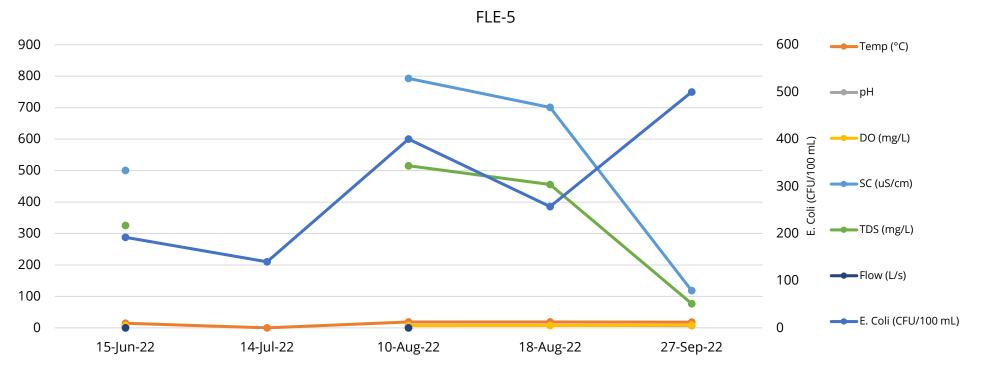
FLE-2	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	193	27	-	-	500
Temp (°C)	15.4	16.8	-	-	18.4
рН	7.75	7.73	-	-	7.32
DO (mg/L)	7.8	8.63	-	-	8.9
SC (uS/cm)	490.6	842	-	-	159.1
TDS (mg/L)	318.89	547.3	-	-	103.415
Flow (L/s)	0.11		-	-	



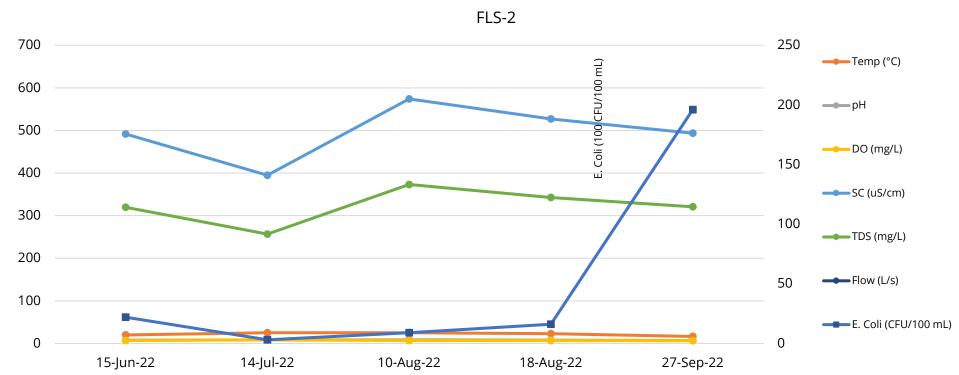
FLE-3	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	134	14	19	200	2500
Temp (°C)	14.9	16.6	17.9	19	18.2
рН	7.73	7.38	8.22	7.53	7.31
DO (mg/L)	8.12	10.04	8.3	6.14	8.51
SC (uS/cm)	526	767	819	694	227.9
TDS (mg/L)	341.9	498.55	532.35	451.1	148.135
Flow (L/s)	0.09	0.03	-	0.10	-



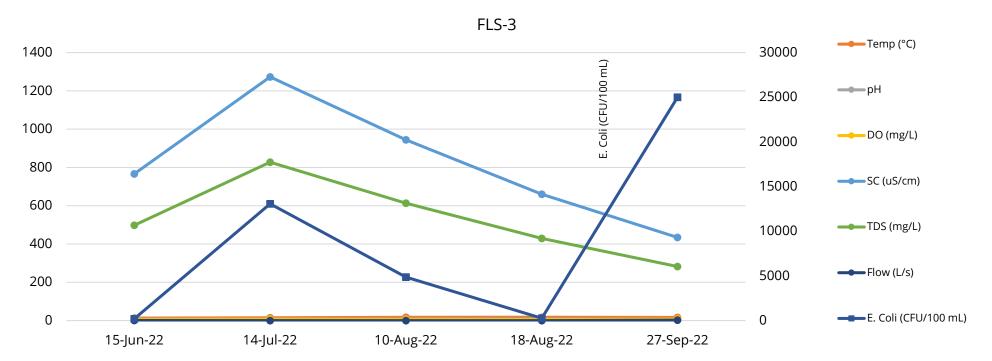
FLE-5	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	192	140	400	257	500
Temp (°C)	14.5	-	18.8	18.8	18.4
рН	7.31	-	8	7.85	7.05
DO (mg/L)	7.46	-	7.17	7.57	8.52
SC (uS/cm)	500.6	-	793	701	118.3
TDS (mg/L)	325.39	-	515.45	455.65	76.895
Flow (L/s)	0.09	-	0.02	-	-



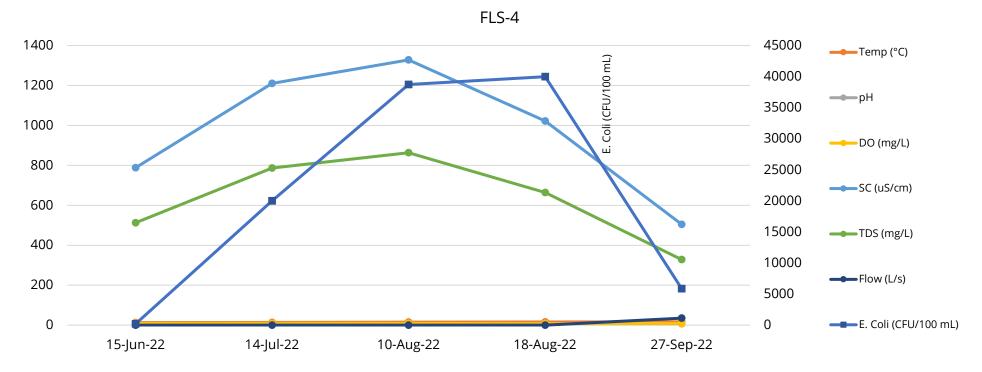
FLS-2	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	22	3	9	16	196
Temp (°C)	20	24.9	25	23	16.3
рН	7.79	8.24	8.45	7.85	6.77
DO (mg/L)	6.67	8.09	6.84	6.55	6.26
SC (uS/cm)	491.5	394.8	574	527	493.4
TDS (mg/L)	319.475	256.62	373.1	342.55	320.71
Flow (L/s)	-	-	-	-	-



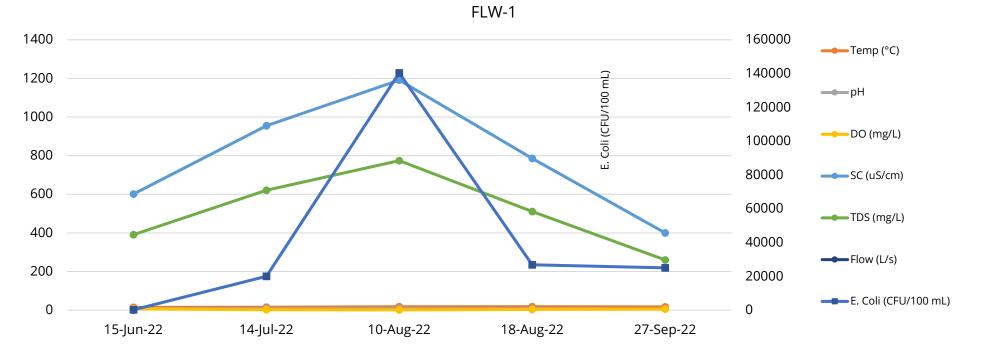
FLS-3	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	13064	4873	265	25000
Temp (°C)	13.2	14.9	17.3	17.7	16.7
рН	7.32	7.79	8.16	7.8	6.99
DO (mg/L)	6.78	7.72	6.35	5.73	7.88
SC (uS/cm)	766	1273	944	660	434.4
TDS (mg/L)	497.9	827.45	613.6	429	282.36
Flow (L/s)	0.29	0.10	0.11	0.13	2.41



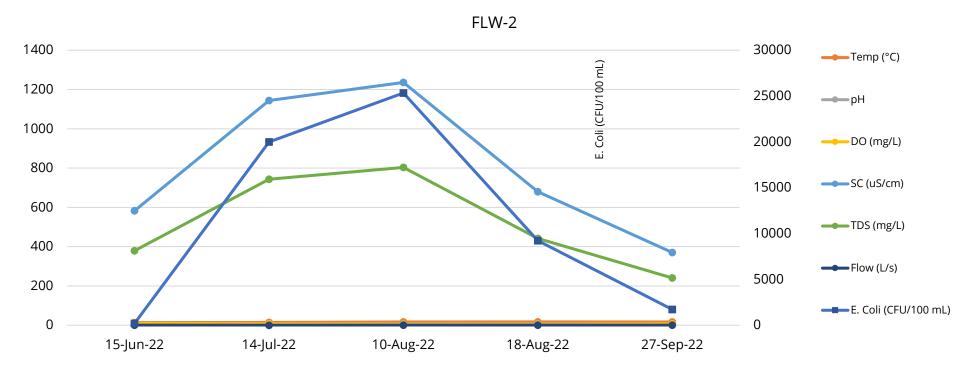
FLS-4	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	20000	38719	39985	5864
Temp (°C)	12.7	13.6	15.2	16.2	16.7
рН	7.46	7.76	7.96	7.62	6.97
DO (mg/L)	8.81	8.94	8.45	7.52	8.63
SC (uS/cm)	788	1210	1328	1022	504.7
TDS (mg/L)	512.2	786.5	863.2	664.3	328.055
Flow (L/s)	0.13	0.00	0.10	0.19	34.96



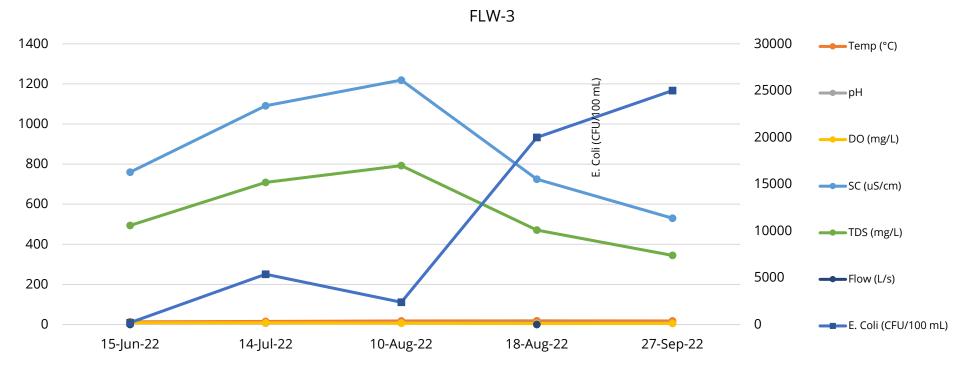
FLW-1	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	20000	140414	26877	25000
Temp (°C)	14.5	15.2	17.4	18	16.7
рН	7.44	7.39	7.65	7.43	6.5
DO (mg/L)	6.45	2	1.14	3.3	5.54
SC (uS/cm)	601	955	1191	786	400
TDS (mg/L)	390.65	620.75	774.15	510.9	260
Flow (L/s)	0.24	-	-	-	-



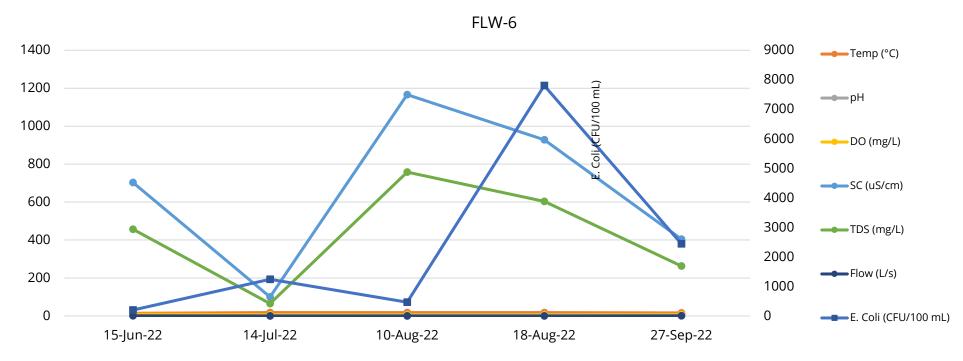
FLW-2	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	20000	25338	9218	1715
Temp (°C)	13.2	14.4	16.4	17	16.9
рН	7.53	7.69	7.92	7.59	6.83
DO (mg/L)	8.91	6.63	5.44	5.26	7.16
SC (uS/cm)	583	1144	1236	680	370.2
TDS (mg/L)	378.95	743.6	803.4	442	240.63
Flow (L/s)	0.14	0.01	0.02	0.03	0.32



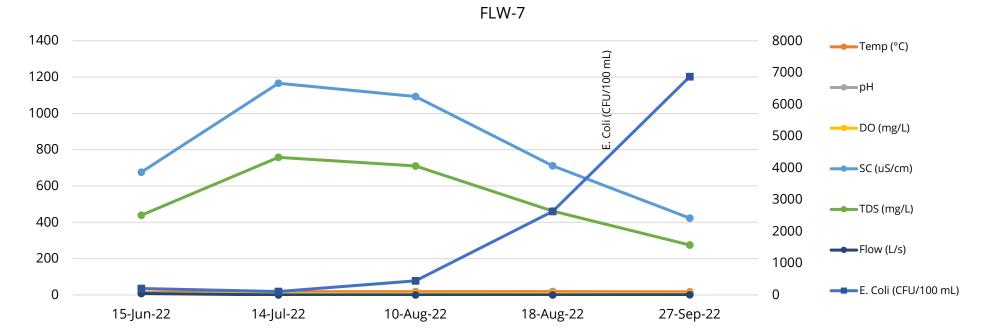
FLW-3	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	5377	2388	20000	25000
Temp (°C)	13.5	15.5	17.9	18.4	17.5
рН	7.88	7.76	8	7.64	6.89
DO (mg/L)	8.44	8.14	6.27	4.8	6.05
SC (uS/cm)	760	1091	1219	725	530.2
TDS (mg/L)	494	709.15	792.35	471.25	344.63
Flow (L/s)	0.26	-	-	0.00	-



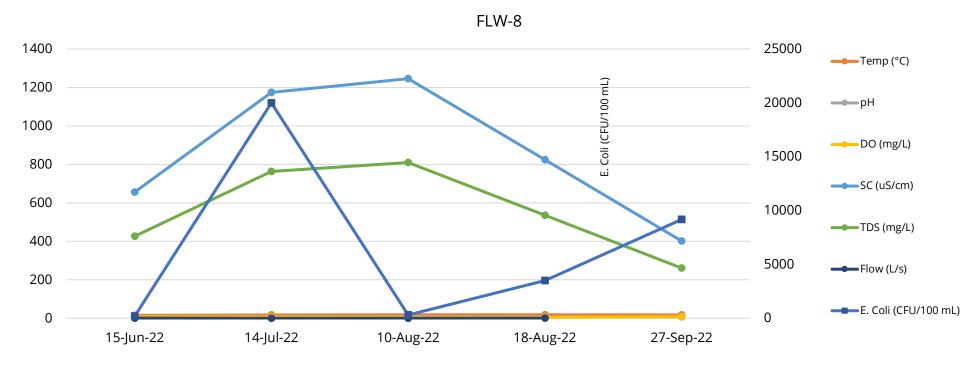
FLW-6	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	1243	464	7804	2442
Temp (°C)	13.9	17.7	17.2	17.3	16
рН	7.43	7.6	7.75	7.55	8.63
DO (mg/L)	9.51	6.65	5.76	5.5	7.26
SC (uS/cm)	703	100	1166	928	404.7
TDS (mg/L)	456.95	65	757.9	603.2	263.055
Flow (L/s)	0.33	0.02	0.01	0.18	0.67



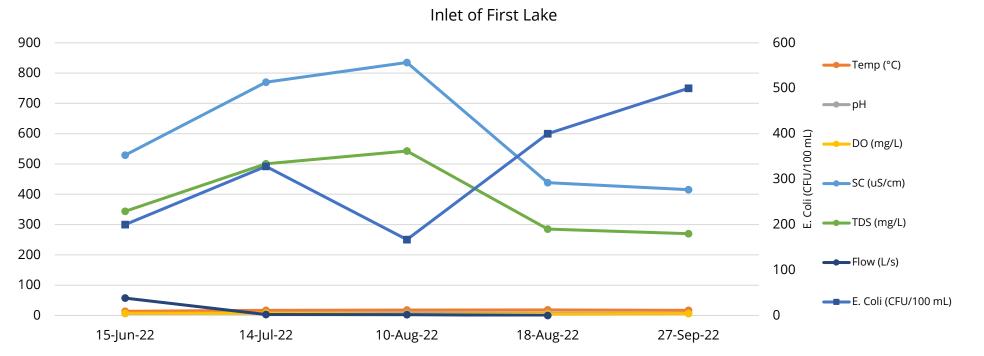
FLW-7	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	107	446	2631	6871
Temp (°C)	14.5	17.7	17.8	18.2	16.6
рН	7.95	7.91	7.69	7.79	7.25
DO (mg/L)	9.23	5.95	6.35	6.41	6.7
SC (uS/cm)	676	1166	1093	711	423
TDS (mg/L)	439.4	757.9	710.45	462.15	274.95
Flow (L/s)	7.77	0.07	0.01	0.18	0.75



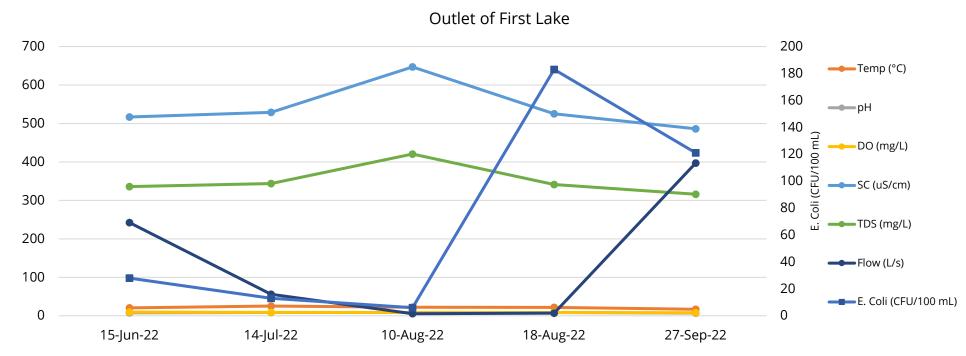
FLW-8	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	20000	305	3498	9177
Temp (°C)	15.1	17.7	17.8	18.3	16.9
рН	7.66	7.73	7.41	7.17	7.1
DO (mg/L)	8.65	5.63	5.12	4.77	7.88
SC (uS/cm)	656	1175	1246	824	401.6
TDS (mg/L)	426.4	763.75	809.9	535.6	261.04
Flow (L/s)	1.03	0.07	0.01	0.39	-



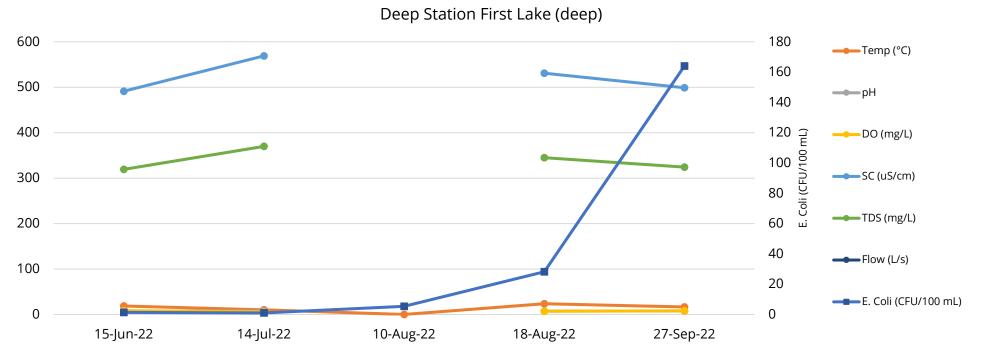
Inlet of First Lake	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	200	328	167	400	500
Temp (°C)	13.7	17	17.8	18.3	16.6
рН	7.03	7.51	7.62	7.37	6.71
DO (mg/L)	7.3	7.63	3.97	4.95	6.07
SC (uS/cm)	529	770	835	438.3	415.2
TDS (mg/L)	343.85	500.5	542.75	284.895	269.88
Flow (L/s)	57.30	3.20	2.53	0.01	-



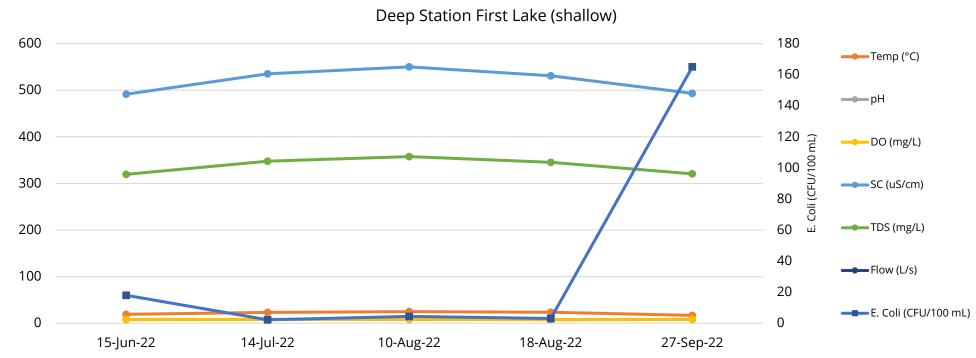
Outlet of First Lake	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	28	13	6	183	121
Temp (°C)	20.6	25.3	22.3	21.6	16.9
рН	7.73	8.34	8.66	8.4	6.85
DO (mg/L)	9.58	9.02	8.32	8.38	7.93
SC (uS/cm)	517	529	647	525	486.2
TDS (mg/L)	336.05	343.85	420.55	341.25	316.03
Flow (L/s)	242.37	55.88	5.35	6.63	397.02



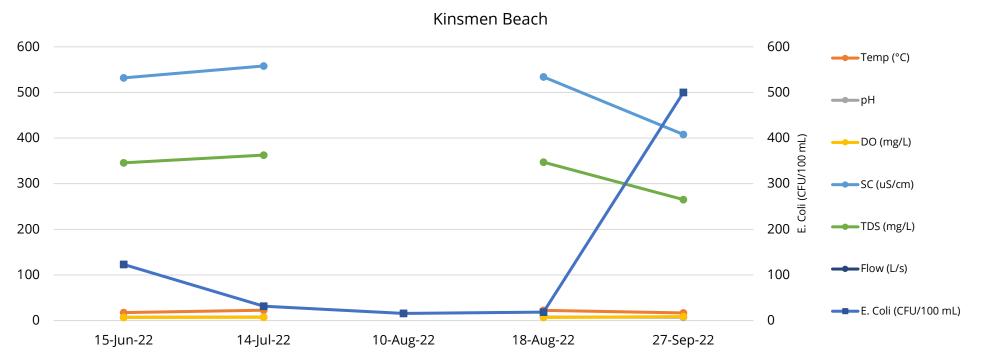
Deep Station First Lake (deep)	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	1	1	5	28	164
Temp (°C)	18.8	10.1	-	23.6	16.4
рН	7.44	7.52	-	7.4	7.7
DO (mg/L)	8.46	5.66	-	6.9	8.13
SC (uS/cm)	491.2	569	-	531	499
TDS (mg/L)	319.28	369.85	-	345.15	324.35
Flow (L/s)	-	-	-	-	-



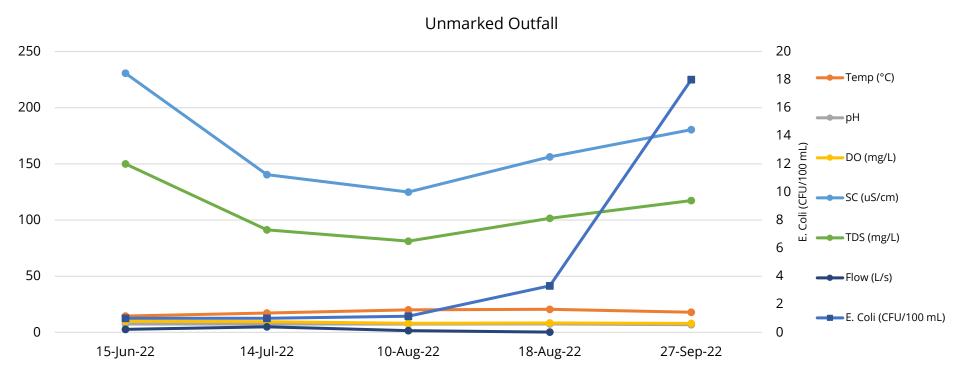
Deep Station First Lake (shallow)	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	18	2	4	3	165
Temp (°C)	18.9	23.1	24.7	23.6	16.7
рН	7.61	8.08	7.99	7.69	7.88
DO (mg/L)	8.14	8.17	8.73	7.19	8.45
SC (uS/cm)	491.3	535	550	531	493
TDS (mg/L)	319.345	347.75	357.5	345.15	320.45
Flow (L/s)	-	-	-	-	-



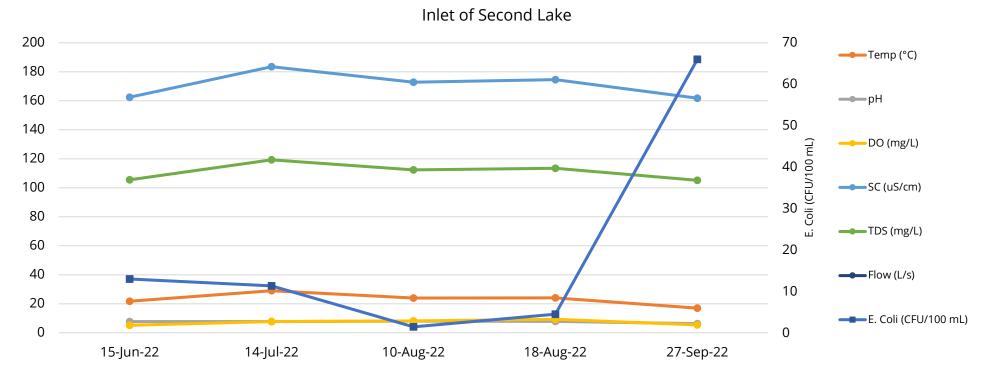
Kinsmen Beach	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	123	31.50446	15.72068	18.67653	500
Temp (°C)	17.7	22.8	-	22.6	16.8
рН	7.39	7.62	-	7.69	7.41
DO (mg/L)	7	7.4	-	6.87	8.85
SC (uS/cm)	532	558	-	534	407.9
TDS (mg/L)	345.8	362.7	-	347.1	265.135
Flow (L/s)	-	-	-	-	-



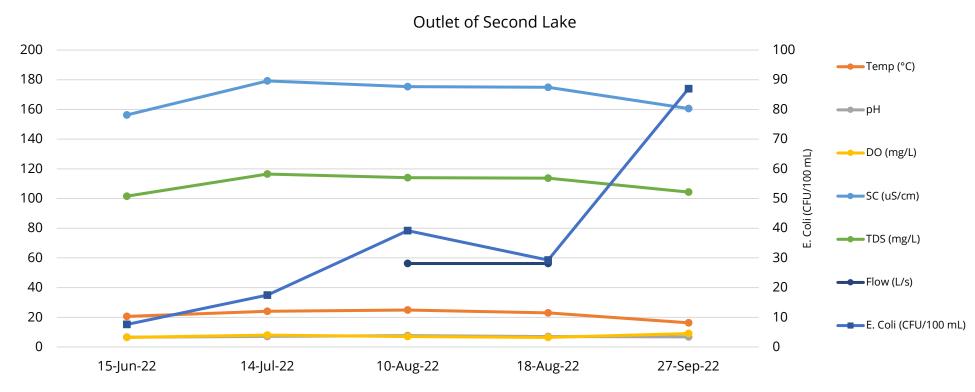
Unmarked Outfall	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	1	1	1	3	18
Temp (°C)	14.5	17.1	20	20.5	17.9
рН	7.35	7.35	7.38	7.42	6.76
DO (mg/L)	9.91	9.51	8.11	8.31	7.92
SC (uS/cm)	230.7	140.4	124.9	156.2	180.5
TDS (mg/L)	149.955	91.26	81.185	101.53	117.325
Flow (L/s)	2.66	4.88	1.43	0.18	-



Inlet of Second Lake	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	13	11	1	4	66
Temp (°C)	21.8	29	24	24.1	17
рН	7.75	7.7	8.02	7.91	6.31
DO (mg/L)	5.18	7.76	8.24	9.31	5.42
SC (uS/cm)	162.4	183.5	172.8	174.6	161.8
TDS (mg/L)	105.56	119.275	112.32	113.49	105.17
Flow (L/s)	-	-	-	-	-



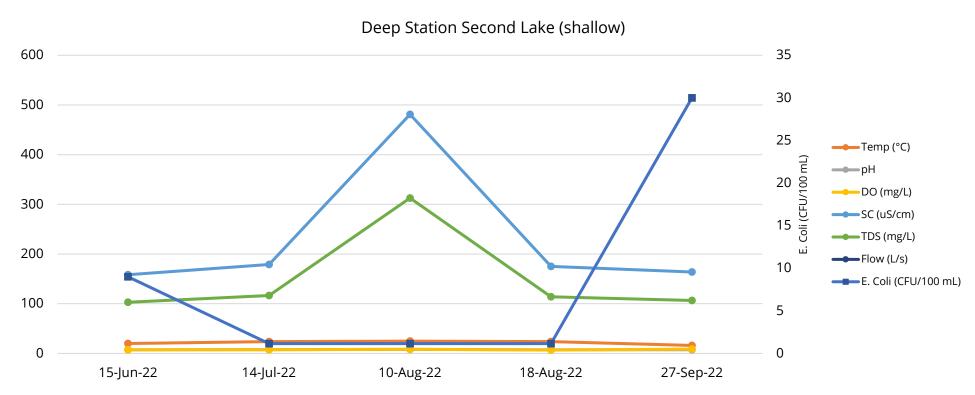
Outlet of Second Lake	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	8	17	39	29	87
Temp (°C)	20.6	24.1	24.9	23	16.3
рН	6.56	7.11	7.67	6.99	6.86
DO (mg/L)	6.51	7.95	7.05	6.45	9.03
SC (uS/cm)	156.3	179.2	175.4	174.9	160.6
TDS (mg/L)	101.595	116.48	114.01	113.685	104.39
Flow (L/s)	-	-	56.23	56.23	-



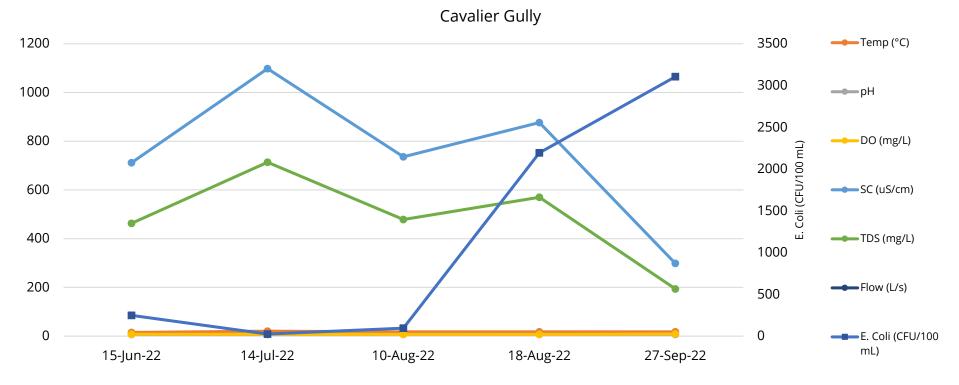
Deep Station Second Lake (deep)	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	12	20	1	1	40
Temp (°C)	19.8	10.8	-	23.7	16.9
рН	6.87	6.7	-	6.78	7.12
DO (mg/L)	7.14	0.66	-	6.4	8.5
SC (uS/cm)	158.3	186	-	176	163.8
TDS (mg/L)	102.895	120.9	-	114.4	106.47
Flow (L/s)	-	-	-	-	-

#### Deep Station Second Lake (deep) 200 45 Temp (°C) 180 40 160 35 140 30 (25 Coli (CFU/100 mL) 30 E. DO (mg/L) 120 100 SC (uS/cm) 80 TDS (mg/L) 60 10 40 Flow (L/s) 5 20 E. Coli (CFU/100 mL) 0 0 15-Jun-22 14-Jul-22 10-Aug-22 18-Aug-22 27-Sep-22

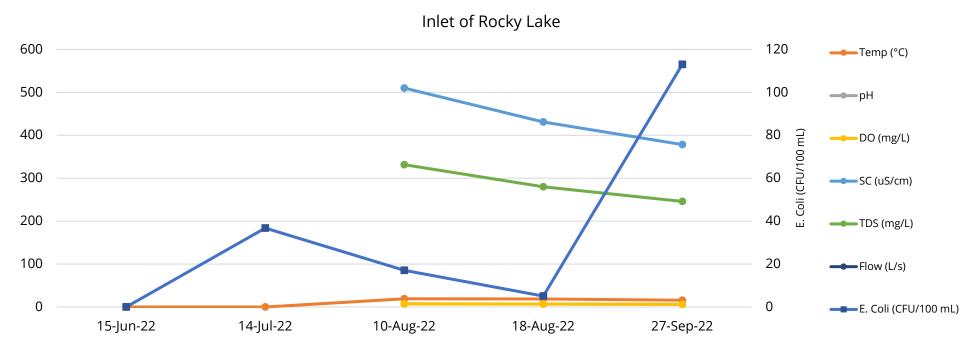
Deep Station Second Lake (shallow)	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	9	1	1	1	30
Temp (°C)	19.9	23.8	24.6	23.7	16
рН	7.19	7.55	8.07	7.41	7.21
DO (mg/L)	7.34	7.46	8.38	6.64	8.7
SC (uS/cm)	158.3	179	481	175	163.9
TDS (mg/L)	102.895	116.35	312.65	113.75	106.535
Flow (L/s)	-	-	-	-	-



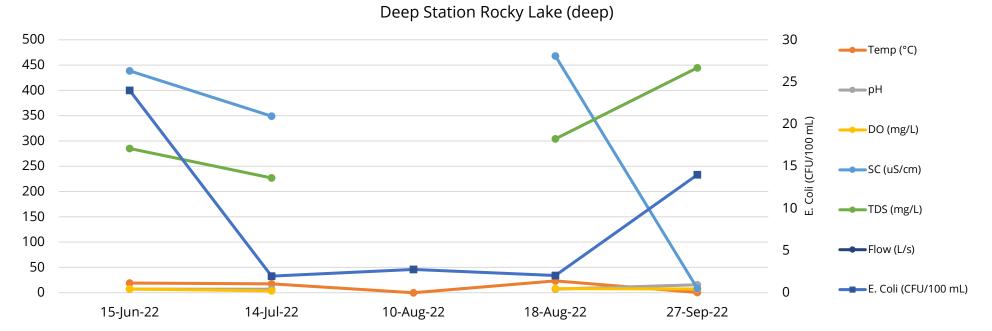
Cavalier Gully	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	248	25	96	2195	3106
Temp (°C)	15.2	20.4	17.5	17.4	17.6
рН	7.31	7.43	8.04	7.95	7.05
DO (mg/L)	7.9	7.14	7.29	7.21	8.76
SC (uS/cm)	712	1098	736	877	298.4
TDS (mg/L)	462.8	713.7	478.4	570.05	193.96
Flow (L/s)	-	-	-	-	-



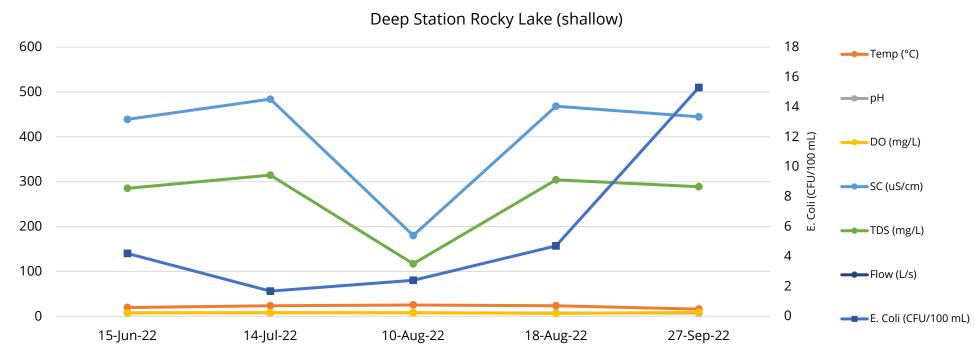
Inlet of Rocky Lake	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	-	37	17	5	113
Temp (°C)	-	-	19.1	18.6	15.7
рН	-	-	7.45	6.98	6.44
DO (mg/L)	-	-	7.07	6.97	6.09
SC (uS/cm)	-	-	510	430.9	378.3
TDS (mg/L)	-	-	331.5	280.085	245.895
Flow (L/s)	-	-	-	-	-



Deep Station Rocky Lake (deep)	15-Jun	14-Jul	10-Aug	18-Aug	27-Sep
E. coli (CFU/100 mL)	24	2	3	2	14
Temp (°C)	19.3	17.7	-	23.4	10:25
рН	7.21	6.93	-	7.23	15.8
DO (mg/L)	7.4	3.6	-	8.15	7.45
SC (uS/cm)	438.6	349	-	468	8.33
TDS (mg/L)	285.09	226.85	-	304.2	444.7
Flow (L/s)	-	-	-	-	-



#### Deep Station Rocky 15-Jun 14-Jul 10-Aug 18-Aug 27-Sep Lake (shallow) E. coli (CFU/100 mL) 2 2 5 15 Temp (°C) 19.4 23.6 25.1 23.3 15.9 рН 7.6 7.53 7.59 7.79 7.06 DO (mg/L) 7.33 7.64 6.47 8.08 8.8 SC (uS/cm) 438.9 484 180 468 444.5 TDS (mg/L) 285.285 314.6 304.2 117 288.925 Flow (L/s)



# **APPENDIX C**

Third-Party Accredited Laboratory Certificates





**CLIENT NAME: CBCL LTD** 

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

**ATTENTION TO: Michael Brophy** 

PROJECT: 220804.00

AGAT WORK ORDER: 22X908522

MICROBIOLOGY ANALYSIS REVIEWED BY: Sara Knox, Data Reviewer

**DATE REPORTED: Jun 20, 2022** 

PAGES (INCLUDING COVER): 16 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

#### Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
  incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may
  be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other
  third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the
  services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of
  merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines
  contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories (V1)

Page 1 of 16

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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**SAMPLING SITE:** 

**Certificate of Analysis** 

AGAT WORK ORDER: 22X908522

PROJECT: 220804.00

**ATTENTION TO: Michael Brophy** 

**SAMPLED BY:** 

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## **E.coli Membrane Filtration**

					on Michigian	io i iiti atioii					
DATE RECEIVED: 2022-06-15								I	DATE REPORT	ED: 2022-06-20	
	SA	AMPLE DES	CRIPTION:	FLN-1-1	FLN-1-2	FLN-1-3	FLN-1-4	FLN-1-5	FLW-7-1	FLW-7-2	FLW-7-3
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15
				08:11	08:11	08:11	08:11	08:11	10:36	10:36	10:36
Parameter	Unit	G/S	RDL	3982478	3982481	3982482	3982483	3982484	3982485	3982486	3982487
E. Coli (MF)	CFU/100 mL		1	>200	>200	>200	>200	>200	>200	>200	>200
											Kinsmen
	SA	AMPLE DES	CRIPTION:	FLW-7-4	FLW-7-5	FLW-8-1	FLW-8-2	FLW-8-3	FLW-8-4	FLW-8-5	Beach-1
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15	2022-06-15
				10:36	10:36	10:59	10:59	10:59	10:59	10:59	07:57
Parameter	Unit	G/S	RDL	3982488	3982489	3982490	3982491	3982492	3982493	3982494	3982495
E. Coli (MF)	CFU/100 mL		1	>200	>200	>200	>200	>200	>200	>200	135
				Kinsmen	Kinsmen	Kinsmen	Kinsmen	Unmarked	Unmarked	Unmarked	Unmarked
	SA	AMPLE DES	CRIPTION:	Beach-2	Beach-3	Beach-4	Beach-5	Outfall-1	Outfall-2	Outfall-3	Outfall-4
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15 07:57	2022-06-15 07:57	2022-06-15 07:57	2022-06-15 07:57	2022-06-15 10:16	2022-06-15 10:16	2022-06-15 10:16	2022-06-15 10:16
Parameter	Unit	G/S	RDL	3982496	3982497	3982498	3982499	3982500	3982501	3982502	3982503
E. Coli (MF)	CFU/100 mL		1	92	63	180	199	<1	<1	<1	<1
				Unmarked	Culvert	Culvert	Culvert	Culvert	Culvert		
	SA	AMPLE DES	CRIPTION:	Outfall-5	Upstream-1	Upstream-2	Upstream-3	Upstream-4	Upstream-5	Side Channel 1	Side Channel 2
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15 10:16	2022-06-15 09:16	2022-06-15 09:16	2022-06-15 09:16	2022-06-15 09:16	2022-06-15 09:16	2022-06-15 09:20	2022-06-15 09:20
Parameter	Unit	G/S	RDL	3982504	3982505	3982506	3982507	3982508	3982509	3982510	3982511
E. Coli (MF)	CFU/100 mL		1	<1	>200	>200	>200	>200	>200	>200	>200





# **Certificate of Analysis**

AGAT WORK ORDER: 22X908522

PROJECT: 220804.00

**ATTENTION TO: Michael Brophy** 

**SAMPLED BY:** 

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

# SAMPLING SITE: E.coli Membrane Filtration

				L.00	ii wiciibiai						
DATE RECEIVED: 2022-06-15								I	DATE REPORTI	ED: 2022-06-20	
	S	AMPLE DES	CRIPTION:	Side Channel 3	Side Channel 4	Side Channel 5	FLN 5-1	FLN 5-2	FLN 5-3	FLN 5-4	FLN 5-5
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15 09:20	2022-06-15 09:20	2022-06-15 09:20	2022-06-15 08:57	2022-06-15 08:57	2022-06-15 08:57	2022-06-15 08:57	2022-06-15 08:57
Parameter	Unit	G/S	RDL	3982512	3982513	3982514	3982515	3982516	3982517	3982518	3982519
E. Coli (MF)	CFU/100 mL		1	>200	>200	>200	>200	>200	>200	>200	>200
	S	AMPLE DES		FLN 8-1	FLN 8-2	FLN 8-3	FLN 8-4	FLN 8-5	FLE-5-1	FLE-5-2	FLE-5-3
			PLE TYPE: SAMPLED:	Water 2022-06-15 09:25	Water 2022-06-15 09:25	Water 2022-06-15 09:25	Water 2022-06-15 09:25	Water 2022-06-15 09:25	Water 2022-06-15 10:15	Water 2022-06-15 10:15	Water 2022-06-15 10:15
Parameter	Unit	G/S	RDL	3982520	3982521	3982522	3982523	3982524	3982525	3982526	3982527
E. Coli (MF)	CFU/100 mL		1	>200	>200	>200	>200	>200	199	192	188
	S	AMPLE DES	CRIPTION:	FLE-5-4	FLE-5-5	FLS-2-1	FLS-2-2	FLS-2-3	FLS-2-4	FLS-2-5	FLS-3-1
		_	PLE TYPE: SAMPLED:	Water 2022-06-15 10:15	Water 2022-06-15 10:15	Water 2022-06-15 10:37	Water 2022-06-15 10:37	Water 2022-06-15 10:37	Water 2022-06-15 10:37	Water 2022-06-15 10:37	Water 2022-06-15 10:54
Parameter	Unit	G/S	RDL	3982528	3982529	3982530	3982531	3982532	3982533	3982534	3982535
E. Coli (MF)	CFU/100 mL		1	193	186	32	18	20	24	19	>200
	S	AMPLE DES	CRIPTION: PLE TYPE:	FLS-3-2	FLS-3-3	FLS-3-4	FLS-3-5	FLS-4-1	FLS-4-2	FLS-4-3	FLS-4-4
			SAMPLED:	Water 2022-06-15 10:54	Water 2022-06-15 10:54	Water 2022-06-15 10:54	Water 2022-06-15 10:54	Water 2022-06-15 11:40	Water 2022-06-15 11:40	Water 2022-06-15 11:40	Water 2022-06-15 11:40
Parameter	Unit	G/S	RDL	3982536	3982537	3982538	3982539	3982540	3982541	3982542	3982543
E. Coli (MF)	CFU/100 mL		1	>200	>200	>200	>200	>200	>200	>200	>200





**SAMPLING SITE:** 

# **Certificate of Analysis**

AGAT WORK ORDER: 22X908522

PROJECT: 220804.00

**ATTENTION TO: Michael Brophy** 

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

### E.coli Membrane Filtration

				E.CC	on wembrar	ie Filtration					
DATE RECEIVED: 2022-06-15								j	DATE REPORT	ED: 2022-06-20	
Parameter	S <i>A</i> Unit		CRIPTION: PLE TYPE: SAMPLED: RDL	FLS-4-5 Water 2022-06-15 11:40 3982544	Deep Station First Lake (deep)-1 Water 2022-06-15 07:50 3982545	Deep Station First Lake (deep)-2 Water 2022-06-15 07:50 3982546	Deep Station First Lake (deep)-3 Water 2022-06-15 07:50 3982547	Deep Station First Lake (deep)-4 Water 2022-06-15 07:50 3982548	Deep Station First Lake (deep)-5 Water 2022-06-15 07:50 3982549	Deep Station Rocky Lake (deep)-1 Water 2022-06-15 12:45 3982550	Deep Station Rocky Lake (deep)-2 Water 2022-06-15 12:45 3982551
E. Coli (MF)	CFU/100 mL		1	>200	<1	1	3	1	2	25	43
	SA		CRIPTION: PLE TYPE: SAMPLED:	Deep Station Rocky Lake (deep)-3 Water 2022-06-15	Deep Station Rocky Lake (deep)-4 Water 2022-06-15	Deep Station Rocky Lake (deep)-5 Water 2022-06-15	Deep Station Second Lake (deep)-1 Water 2022-06-15	Deep Station Second Lake (deep)-2 Water 2022-06-15	Deep Station Second Lake (deep)-3 Water 2022-06-15	Deep Station Second Lake (deep)-4 Water 2022-06-15	Deep Station Second Lake (deep)-5 Water 2022-06-15
Parameter	Unit	G/S	RDL	12:45 3982552	12:45 3982553	12:45 3982554	13:50 3982555	13:50 3982556	13:50 3982557	13:50 3982558	13:50 3982559
E. Coli (MF)	CFU/100 mL		1	41	10	17	13	12	13	11	9
	SA	AMPLE DES	CRIPTION:	Deep Station First Lake (shallow)-1	Deep Station First Lake (shallow)-2	Deep Station First Lake (shallow)-3	Deep Station First Lake (shallow)-4	Deep Station First Lake (shallow)-5	Deep Lake Rocky Lake (shallow)-1	Deep Lake Rocky Lake (shallow)-2	Deep Lake Rocky Lake (shallow)-3
Parameter	Unit	_	PLE TYPE: SAMPLED: RDL	Water 2022-06-15 07:45 3982560	Water 2022-06-15 07:45 3982561	Water 2022-06-15 07:45 3982562	Water 2022-06-15 07:45 3982563	Water 2022-06-15 07:45 3982564	Water 2022-06-15 12:45 3982565	Water 2022-06-15 12:45 3982566	Water 2022-06-15 12:45 3982567
E. Coli (MF)	CFU/100 mL	0,0	1	18	23	20	25	9	4	2	8
				Deep Lake Rocky Lake	Deep Lake Rocky Lake	Deep Lake Second Lake	Deep Lake Second Lake	Deep Lake Second Lake	Deep Lake Second Lake	Deep Lake Second Lake	
	SA	_	CRIPTION: PLE TYPE: SAMPLED:	(shallow)-4 Water 2022-06-15 12:45	(shallow)-5 Water 2022-06-15 12:45	(shallow)-1 Water 2022-06-15 13:50	(shallow)-2 Water 2022-06-15 13:50	(shallow)-3 Water 2022-06-15 13:50	(shallow)-4 Water 2022-06-15 13:50	(shallow)-5 Water 2022-06-15 13:50	Cav-1 Water 2022-06-15 15:05
Parameter	Unit	G/S	RDL	3982568	3982569	3982570	3982571	3982572	3982573	3982574	3982575
E. Coli (MF)	CFU/100 mL		1	4	5	8	9	10	8	10	254





# **Certificate of Analysis**

3982586

10

3982587

13

**AGAT WORK ORDER: 22X908522** 

PROJECT: 220804.00

**ATTENTION TO: Michael Brophy** 

3982588

10

3982589

11

**SAMPLED BY:** 

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

DATE RECEIVED: 2022-06-15								ī	DATE REPORTE	ED: 2022-06-20	
	S		CRIPTION: PLE TYPE: SAMPLED:	Cav-2 Water 2022-06-15 15:05	Cav-3 Water 2022-06-15 15:05	Cav-4 Water 2022-06-15 15:05	Cav-5 Water 2022-06-15 15:05	Outlet of Second Lake 1 Water 2022-06-15 14:40	Outlet of Second Lake 2 Water 2022-06-15 14:40	Outlet of Second Lake 3 Water 2022-06-15 14:40	Outlet of Second Lake Water 2022-06-15 14:40
Parameter	Unit	G/S	RDL	3982576	3982577	3982578	3982579	3982580	3982581	3982582	3982583
E. Coli (MF)	CFU/100 mL		1	277	248	211	256	12	10	6	5
	s	SAM	CRIPTION: PLE TYPE: SAMPLED:	Outlet of Second Lake 5 Water 2022-06-15 14:40	Inlet of Second Lake 1 Water 2022-06-15 15:40	Inlet of Second Lake 2 Water 2022-06-15 15:40	Inlet of Second Lake 3 Water 2022-06-15 15:40	Inlet of Second Lake 4 Water 2022-06-15 15:40	Inlet of Second Lake 5 Water 2022-06-15 15:40		

3982585

25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Unit

CFU/100 mL

G/S

RDL

3982584

7

Analysis performed at AGAT Halifax (unless marked by \*)

**Parameter** 

E. Coli (MF)

**CLIENT NAME: CBCL LTD** 

**SAMPLING SITE:** 





# **Method Summary**

CLIENT NAME: CBCL LTD PROJECT: 220804.00

**SAMPLING SITE:** 

AGAT WORK ORDER: 22X908522
ATTENTION TO: Michael Brophy

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
E. Coli (MF)	MIC-121-7002	SM 9222 H	MF/INCUBATOR



Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

Laboratory	Use Only		
Hold Time: AGAT Job Nur Notes:	erature: 10.4 9.7 mber: 22.X	10.2.1	0.2
E.COli-	CTU		
	Time Require	ed (TAT)	
Turnaround	Time Require  ☐ 5 to 7 work	ing days	
Turnaround	Time Require	ing days	5:28p)

Chain of Custo	dy Record	-F- 4	10 2 Z				8.871	_	_	-	_	4	AGA		b Nu	ımbe	er: (	32	XC	10	85	2	2	
Report Information	dy Record		11	nformation (Please print):  Michael Broph			0.011	-	Repo	ort F	orma Sample	t	Not	tes:		Cf				541				
Company: CBCL						a				er pag		Ĭ	Tur	nar	oun	d Ti	ne l	Real	uired	d (T/	AT)			
			— II	: Melissc Frose	~					Aultiple er pag	Samp	les								ng da				
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Phone:	Fax:		Regulat	ory Requirements(Check):	-	-Carr			_	nclude xport	d		nus	911 I <i>1</i>	A.I		2 da			□3			_	
Client Project #: 220	804.00		☐ List Gu	idelines on Report Do not lis	Guid	elines	on Repo	rt					Date	o Do	auire	.d.								
AGAT Quotation:	, 1		□ PIRI										Date	e ne	quiit									
	s not provided client will be billed ful	I price for analy		1 ☐ Res ☐ Pot 2 ☐ Com ☐ N/Po	t		oarse ine		Drink	ing W	ater S	ampl	e: [	] Yes		No	Sa	it Wa	ater S	amp	le [	☐ Ye	s 🗌	No
Invoice To	Same	Yes □ / No	□ □ Gas	Fuel Lube	_				Reg. 1	No.: _		_					_	_	_	-				
Company: CBCL			ССМЕ				<u>e</u>													.				
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			□ Res	1 HRM 101	1		\[ \frac{4}{\pi} \]		-				low	ation										
				icultural Waste Water	ll be	/sis	Diss	1		NSS			  ÷	Fractionation	$ _{\times} $					MPN	non	NG N		
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PO/Credit Card#:				(	Filtered/Preserved	Water	□ Total		Ľ	□ TDS	Phosphorus		H/BTE	2: TPH/BTEX						D P/A	□ Ps	Coliform	9	us (Y/I
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filte	Standard Water	Metals:	□ BOD	됩	SS	TKN Total Pho	Phenois	Tier 1.: TPH/BTEX (PIRI) □ low level	Tier 2: TP	CCME-CWS	VOC	HAA	PAH	PCB	TC + EC	□ HPC	Fecal Co	Other:	Hazardous (Y/N)
FLN-1-1	June 15 8:11am	incher				1		I																
FLN-1-2																								
FLN-1-3																								
FLN-1-4					_					Ш		1					_	$\perp$			4	_		-
FLN-1-5	V											-						_						1
FLW-7-1	June 15 10.360	~		7				17			_		-51		ш		-	-			_		-	
LW-7-2					+	-		-	-	-	-	-	-			-	+	-	-	$\vdash$	-	-	$\vdash$	-
FLW-7-3			<del></del>		+	-	-	-		$\vdash$		-			-	-	+				-	-	$\vdash$	+
FLW-7-4					+	+		+	+	$\vdash$		-	-	-		$\dashv$	+	+	+		$\dashv$	-	$\vdash$	+
FLW-7-5	Juncis 10:59am	<u> </u>	1	-W-1	+	+		+	-	$\vdash$		-				$\dashv$		+	H		$\dashv$		₩	+
FLW-8-1	UNICIS TO: 574M	-4	1		╁			+	+		UII .	+				-	+	n	+-			1	<b>V</b>	+
FLW-8-2 Samples Relinquished By (Print Name);		Date,	Time	Samples Received By (Print Name):	+	_	_	_	+	Dat	e/Time	+	_				+	+	_			_	V	_
Melissa Frasi	ev	Ju	ne 15	1.53						14						ору -			Pa	ge 🗌	_	of	10	
Samples Relinquished By (Sign):		Date:	: 28pm	Samples Received By Sant:	1		FU			Dat	e/Time	Per	Y-2			Copy Copy-					73	50	)2	r <sub>N</sub>
0 V 10 X 100		-	-1	Much	0	1												- 4				-		

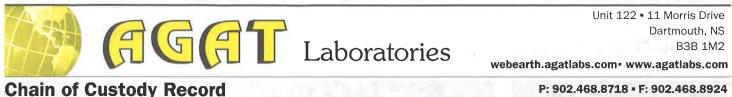


Unit 122 = 11 Morris Drive Dartmouth, NS B3B 1M2

wehearth.agatlabs.com www.agatlabs.com

Laboratory	Use 0	nly		
Arrival Cond	ition:	□Good	☐ Poor (see	notes)
Arrival Temp	erature:	ACX WI	11400	
Hold Time:			1000	
AGAT Job Nu	ımber:	2dx	(9088	2007
Notes:				
Turnaroun	d Time	Require	ed (TAT)	

Chain of Custo	dy Record	1.1	Tv - 1 )	P:	90	2.46	8.871	.8 =	F: 90	2.4	68.8	3924	-	AGAT	Job	ne: o Nu	mb	er:	á	22	X	90	30	38	52	2
Report Information	<del></del>		Report	information (Please print):	1	-		71	Rep	ort	For	mat		Note												
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PO/Credit Card#:					Filtered/Preserved	Water	Total			O TDS		sphore		H/BTE	TPH/BTEX Fractionation	VS TPH		7	S				□ Ps	liform		1/Y) su
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filt	Standard Water	Metals: □ Total	Welcay.	D BOD	□ TSS	TKN	Total Phosphorus	Phenols	Tier 1: TPH/BTEX (PIRI)	Tier 2: Ti	CCME-CWS 1	200	THM	HAA	PAH	PCB	TC + EC	O HPC	Fecal Coliform	Other:	Hazardous (Y/N)
FLW-8-3	June 15 10:59am	water	15																							
FLW-8-4			1																			1				
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Unit 122 • 11 Morris Drive

Arrival Condition:	Good	☐ Poor (see notes)
Arrival Temperature	e:	

**Laboratory Use Only** 

Chain of Custoo	dv Record		The state	P:	902.	468.	871	8 • F:	902.	468.	8924	A	GAT.		lumk	er:	2	QX	9	0	85	ja	2
Report Information  Company: Contact: Address:  Phone: Client Project #: AGAT Quotation: Please Note: If quotation number is n	Fax:not provided client will be billed ful		1. Name Email 2. Name Email Regulat List Gu PIRI PIRI Tier	nformation (Please print):  cry Requirements (Check): idelines on Report	t Guideli		irse	rt	per Mul per Exce Incl	gle Sar page tiple S page el Forn uded ort	nple amples	T R	<b>egul</b> <b>ush</b> ate F	roui ar TA TAT equi	red:	5 Si 2	to 7 ame days	<b>quire</b> worki day	ng d	<b>FAT)</b> days 1 day 3 day	y ys		□ No
Address:	Fax:	r		ustrial NSEQS-Cont Sites nmercial HRM 101 /Park Storm Water cultural Waste Water	Filtered/Preserved	Analysis	Mercury	D □ CBOD	[ 6 6 1	200	Total Phosphorus		Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX			51	Ĭ.	EC □ P/A □ MPN □ MF	C 🗆 Pseudomonas	Fecal Coliform   MPN   MF	E.coi.	Hazardous (Y/N)
Sample Identification  unmarked atfall 5  ulvert upstream-1			# Containers	Sample Containment	Field	Stanc	Mercury	0 800	Hd	TKN THE	Total	Phenols	Tier 2:	CCMI	VOC	MHT	HAA	PCB PCB	10+1	□ HPC	Feca	Other	H378
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Unit 122 • 11 Morris Drive Dartmouth, NS

webearth.agatlabs.com

rrival Condition:	□Good	☐ Poor (see notes)
rrival Temperature		4.5

P: 902.468.87:

**Laboratory Use Only** 

www.agatlal		n H	rrival old Ti GAT Jo	me:				26	×	9	0	8:	52	36	<b>)</b>
Report Fo	ormat sample e s Sample e ormat	S Tu	vrnai egula ush T	our ar TA	nd T	im. □ 5 □ 9	to ame	<b>equ</b> 7 wo e da	orkin	d ( <b>1</b>	AT)	<del>  1  </del>	j!	5.2	Ser.
Drinking Wa Reg. No.:    SSA   SQL   SSL	TKN Total Phosphorus	Phenois  Tier 4 · TDH / RTEY / DIPI)		CCME-CWS TPH/BTEX	)No	MHT	Salt	Wa Wa	ter S	TC + EC   D/A   MPN   MF	□ HPC □ Pseudomonas	Fecal Coliform   MPN   MF	Yes Other: E.co.	Other:	Hazardous (Y/N)

White Copy- AGAT No:

Report Information			Report	information (Please print):					кер	ort I	-orma	IT													
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Phone:	Fax:		Regulat	ory Requirements(Check):				٦		xport							□ 2					days			
Client Project #:				uidelines on Report	Guid	elines	on Rep	ort					Dat	o Ro	auir	ed*									
AGAT Quotation:			PIRI	4									Dat	.c ive	quii	cu.									
Please Note: If quotation number	is not provided client will be billed fu	II price for analys	sis.	r 1 ☐ Res ☐ Pot r 2 ☐ Com ☐ N/Po		☐ Fi	oarse ine		Drink	ing V	/ater S	amp	e: [	7 Yes	э Г	1No		Salt	Wat	ter Sa	amp!	e 「	l Yes		No
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Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Fifte	Standard Water Analysis	Metals: □ Total	Mercury	D BOD	C TSS	TKN Total Phosphorus	Phenols	Tier 1: TP	Tier 2: TP	CCME-CWS TPH/BTEX	VOC	THM	НАА	РАН	PCB	TC + EC	□ HPC □ Ps	Other:	Other:	Hazardous (Y/N)
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Samples Relinquished By (Print Name):		Date/	Time	Samples Received By (Print Name):						De	te/Time					. 5									

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Document ID: DIV 3 3 3 4 5 02 0

Unit 122 # 11 Morris Drive Dartmouth, NS

B3B 1M2 webearth.agatlabs.com www.agatlabs.com

Arrival Condition: ☐ Good ☐ Poor (see notes)

Arrival Temperature:\_

**Laboratory Use Only** 

Hold Time:

Chain of Custo	ody Record	110	J. Van Tie		P: 90	2.46	8.871	.8 - F	: 90	2.46	8.892	4	AGAT	Job	Num	ber:	ć	26	X	90	58	5	シミ	7
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Phone:	Fax:			☐ Agricultural ☐ Waste Water ☐ Sediment ☐ Other ☐ Sediment ☐ Sediment ☐ Other ☐ Sediment ☐ Other ☐ Sediment ☐ Other ☐ Sediment ☐ Other ☐ Sediment ☐ Sediment ☐ Other ☐ Other ☐ Sediment ☐ Other ☐				CBOD			,,		(PIRI	RTEX						ㅁ	MPN			
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Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample I Sample Containment	nfo.	Standard	Metals: ☐ Total	BoD	핌	S	TKN Total Phos	Phenois	Tier 1: TPI	ij∐i	VOC	MH	HAA	γАН	PCB	HPC	Fecal Coliform	Other: E.	Other:	Hazardous (Y/N)
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mil 1		:1		Knille	in	10.15								Wh	ite Co	ру- АС	GAT	Nº:		7:	35	06	3	



Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

	Laboratory Use C	inly	
	Arrival Condition:	$\square$ Good	☐ Poor (see notes)
ı	Arrival Temperature:		

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ays UN 15 5:29pm 3 days
UN15 5:29pm 3 days
3 days
3 days
ole Yes No
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Coliform  E.cel dous (Y/N
HPC   Pset   Fecal Coliform   Other:   Cel   Other:   Other:   Hazardous (Y/N)
AL - 1 - 1 - 1 - 1
6 of [0]
73507
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Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

Laboratory Use	Only	
Arrival Condition: Arrival Temperature		☐ Poor (see notes)
Hold Time:AGAT Job Number:	227	(908522
Notes:		
Turnaround Time	Require	L(TAT)

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Report Information	F			Information (Please print):		×-				ort F			N	otes	3:	13									
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PO/Credit Card#:			_][		ered/Preserved	d Wate	☐ Tota			2 TDS	н	osphor	S TPH/BTEX (PIRI)	PH/BT	WS TP	П	h				- P	□ □	Coliform	E.col	/X) snc
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filt	Standard Water Analysis	Metals: □ Total	Mercury	Hd	□ TSS	NAT	Total Phosphorus	Phenols Tier 1: TE	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	MHT	HAA	PAH	PCB	TC + EC	□ HPC	Fecal C	Other: Other:	Hazardous (Y/N)
Deep Station - 1.	June 15 12:45pm	water	1		Ē	Ü			Ī			9.0		Ė			Ė	Ī							
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u 1 -4.																	E								
N 1 -5								5 0															_		
Second Lake -2	June 15 1:50pm						10											30	0 1						-
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Deep Station First 1	JUNGIS 9:45cm		1	THE KILL OF																				1.	
Lakelshollow) 2	<b>V</b>	$\vee$	4						×															1	
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Samples Relinquished By (Sign):		Date/T	îme	Samples Received By (Sign)	N.			SAL	П	Da	te/Time						ру - А ру- А		Nº:	1	-	73	51	าล	1/3



Fax:

Same Yes □ / No □

Please Note: If quotation number is not provided client will be billed full price for analysis.

**Report Information** 

Client Project #:

Invoice To

AGAT Quotation:

Company:

Contact:

Address:

Phone:

**Report Information** (Please print):

Email: \_\_\_\_\_

**Regulatory Requirements**(Check):

1. Name:

Email: \_\_\_\_\_

☐ List Guidelines on Report

☐ Gas ☐ Fuel ☐ Lube

☐ Tier 1 ☐ Res

☐ Tier 2 ☐ Com

☐ PIRI

2. Name: \_\_\_\_\_

Unit 122 = 11 Morris Drive Dartmouth, NS B3B 1M2

webearth.agat

☐ Do not list Guidelines on Report

☐ Coarse

☐ Fine

☐ Pot

☐ N/Pot

h.agatlabs.com• www.agatlabs.com	Hold Time:	
P: 902.468.8718 • F: 902.468.8924	AGAT Job Number:	20X908523

**Laboratory Use Only** 

	Notes:	should	be	"Deep
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Arrival Temperature:

Re	port Format	Notes:	s should	be "Deep	
	Single Sample per page		Time Require		=
	Multiple Samples per page		☐ 5 to 7 work		
	Excel Format Included	Rush TAT	☐ Same day	☐ 1 day	
	Export		☐ 2 days	☐ 3 days	

Arrival Condition: ☐ Good ☐ Poor (see notes)

· ·	Date Red	quired: _			
Drinking Water Sam	ple: 🗌 Yes	□No	Salt Water Sample	☐ Yes	Nc
Reg. No.:					

Company:	191			☐ CDWQ ☐ NSEQS-Cont Sites			<u>e</u>																		
Contact:			111	amaraia!			Available		=					low level							□ MF	- 1	Ψ		
Address:			Res	/Park Storm Water icultural Waste Water	rved	ysis	□ Diss □ A			NSS I					Fractionation	×					MPN	Pseudomonas	MPN		
Phone:	Fax:		Sec		eser	Analysis			СВОД			ျှ		<u>×</u>		TPH/BTEX					□	opna	-1	•	
PO/Credit Card#:					ered/P	Water W	□ Total			□ TDS		sphor	K	TPH/BTEX (PIRI)		CWS TPH				Ä	□ P/A	□ Pse	Coliform	100	η/λ) sn
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments – Site/Sample Info. Sample Containment	Field Filt	Standard	Metals:	Mercury	□ B0D	SST 🗆	TKN	Total Phosphorus	힏	H		nù L	700	HAA	PAH	PCB	TC + EC	□ HPC	Fecal Co	Other:	Hazardous (Y/N)
eepLake First - 3	June 15 7:45 an	water																						1	
lake (shallow) -4		1	1					_[		×															
11 1 -5	-												_												
Deep Lake Rocky -1	June 15 12:45pm																								
ake (shellow) -2																		Y							
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Lake (shollow)	June 15 1:50pm							4							4			1						1	
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mples Relinquished By (Sign):  Mellinguished By (Sign):		Date/1	īme	Samples Received By Island:	1			II.		D	ale/Tim	e		1					Nº:			73	5	09	13



Unit 122 \* 11 Morris Drive Dartmouth, NS B3B 1M2

Laboratory	Use Only			
Arrival Cond	ition:	Good	☐ Poor (see n	otes)
Arrival Temp	erature:			
Hold Time:				
AGAT Job Nu	ımber: 2	<b>AX</b>	9085	32
Notes:				
110000				
Turnaround	d Time Red	uire	d (TAT) 22 JUN 15	
D 747			~22JUN 15	5:2
Regular TAT	□ 5 to 7	workir	ng days	
Rush TAT	☐ Same	day	☐ 1 day	

<b>Chain of Custo</b>	ody Record			9 37	: 90	2.46	8.871	L8 •	F: 90	2.46	8.89	924	AG	AGAT Job Number: Notes:			Ć	12.	X	10	85	23	2	
Report Information				Information (Please print):	WIE				Rep	ort I	Forn	nat	No	otes:										
Company:				): <sub> </sub>				-		Single ber pa		le												
Contact:						_		-		vultipl	_	nples	Tu	rnar	oun	d T	'ime	e Re	quir	ed (	JAT)	IIM 1	(E	5:29
Address:			2. Name	9:				-	LJ p	er pa	ge		Re	gula	r TA	T	<u> </u>	to 7	worl	king	days	# 2 3 £	L -L	U+Z:
			Email					_]		Excel F nclude			Ru	sh T	AT	- [	□ s	ame	day		1 da	٧		
Phone:	Fax:		Regulat	ory Requirements(Check):						xport								day			3 da			
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Please Note: If quotation number is	s not provided client will be billed ful	Il price for analy	313, [ ]	7 1 □ Res □ Pot 7 2 □ Com □ N/Po		☐ Fi	oarse ne	li	Drink	ing W	/ater	Samı	ole: [	Yes		No		Salt	Wate	r Sam	nple		es [	 ] No
Invoice To	Same	Yes □ / No	-						Reg.															
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Contact:			□ Ind	am araial			Available						evel		-					□ MF		MF		
	19		☐ Res	/Park Storm Water						<i>ω</i>			l wol [	nation	Н									
	, him		—	icultural Waste Water	Ned	lysis	Diss			SSV 🗆			<u>R</u>	action	K					MPN	HOU	MPN		
Phone:	Fax:				rese	r Ana		6	083		_	sn	N P	X	TPH/BTEX					P/A	0	0 0	-	2
PO/Credit Card#:					ered/F	Wate	) Total	(		SOT 🗆		sphor	H/BT	2: TPH/BTEX Fractionation	/S TPI				9,				.19	US (Y/
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments – Site/Sample Info. Sample Containment	Field Filtered/Preserved	Standard Water Analysis	Metals: □	Mercury	Han Ha	□ TSS	TKN	Total Phosphorus	Tier 1: TPH/BTEX (PIRI) ☐ low level	Tier 2: TF	CCME-CWS	VOC	THM	HAA	PAH	TC + EC	□ HPC	Fecal Co	Other:	Hazardous (Y/N)
Deeplake Second 5 Lake (Shallow)	June 15, 1:50pm	water	1 1 1		H																		1	
cay-1	June 153:05pm																				П		1	
Cay-2																						X		
cov-3							- 17						1		-									100
Cay-4					1								I E									$\perp$		
Cev-S					-			4					4							_			1	
outlet of Second Lake 1	June 15 2:40pm							ł	+											-			+	
u / 3																							1	
( )1 4			1																					
11 5		V	V										10										1	
Samples Relinquished By (Print Name):		Date/	Time	Samples Received By (Print Name):		7	H			Da	le/Time				Pink (				F	age	9	of	10	
Samples Relinquished By (Sign):		Date/	Time	Samples Received by (Sign):		M			19	Dat	te/Time				ellow Vhite				Nº:	_	-		10	F
ocument ID: D(V 1 33 450) 02				1 Keeles			I.R.			16								_		-			evised: M	



Fax:

Please Note: If quotation number is not provided client will be billed full price for analysis.

Date/Time Sampled

June 15 3:40 pm water

Same Yes □ / No □

Sample

Matrix

Client Project #:

Invoice To

Contact:

6 -4

**Report Information** 

Company:

AGAT Quotation:

Contact:

Address:

Phone:

Company:

Address:

Phone:

PO/Credit Card#:

Samples Relinquished By (Print Name)

Sample Identification

Inlet of Second Laker!

# Containers

Unit 122 • 11 Morris Dri Dartmouth, N

B3B 1M2

	Laboratory Use		
VS	Arrival Condition:	Good	☐ Poor (see notes

Arrival Condition.	L Good	LI POOI	(see notes
Arrival Temperature			

webearth.agatiabs.con	n- v	vwv	v.ag	gatia	aps	103.	n	Hol	d Ti	me:	_			_			_	_	-		-
P: 902.468.87	718	• F:	90	2.4	68.8	392	4			- 12	lum	ber:	اب	2	3	X	9	0	8	56	35
Report Information (Please print):  1. Name:     Email:  2. Name:     Email:  Coarse  PIRI     Tier 1    Res			S p M p E Ir	ingle er pa	Sam age ale Sa age Form ed	ample	es	Tur Reg Rus	gula sh T	our r TA	IT.	□ 5 □ 8	to Sam	7 w e da ys	orki <sub>j</sub>	d (1	ays L da 3 da	N 1	5	5:3	Øpp.
☐ Tier 2 ☐ Com ☐ N/Pot ☐ Fine ☐ Gas ☐ Fuel ☐ Lube			inki eg. N	_	Vate	r Sa	mpl	e: [	] Yes	s [	]No		Salt	t <b>W</b> a	ter S	Sam	ple	Δ,	Yes	1	10
CCME	y	□ CBOD		□ TDS □ VSS		Total Phosphorus	S	Tier 1: TPH/BTEX (PIRI) ☐ low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX					71	C P/A C MPN C MF	□ Pseudomonas	Fecal Coliform   MPN   MF	E.coli		Hazardous (Y/N)
ontainers Comments - Site/Sample Info. Sample Containment Sample	Mercury	□ B0D	Н	□ TSS	TKN	Total Ph	Phenols	Tier 1: T	Tier 2: T	CCME-C	VOC	THM	HAA	PAH	PCB	TC + EC	□ HPC	Fecal C	Other:	Other:	Hazard
											11 ,1										
						V															
Samples Received By (Print Name): Samples Received By (Sign):	(e)				ite/Tim				_ Y	Pink (	Сор	y - AG	AT	NIO	-	-	_	of	_	_	K



CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: ANDREW MACINTOSH

PROJECT: 220804.00 AGAT WORK ORDER: 22X908804

MICROBIOLOGY ANALYSIS REVIEWED BY: Sara Knox, Data Reviewer

DATE REPORTED: Jun 20, 2022

PAGES (INCLUDING COVER): 8
VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

*Notes	

### Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
  incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may
  be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other
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- The test results reported herewith relate only to the samples as received by the laboratory.
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  contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories (V1)

Page 1 of 8

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X908804

PROJECT: 220804.00

ATTENTION TO: ANDREW MACINTOSH

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

				⊑.00	ni wembrar	ie Fiitration					
DATE RECEIVED: 2022-06-16								Ī	DATE REPORTI	ED: 2022-06-20	
	SA	AMPLE DES	CRIPTION:	FLE-2-1 Water	FLE-2-2 Water	FLE-2-3 Water	FLE-2-4 Water	FLE-2-5 Water	FLE-3-1 Water	FLE-3-2 Water	FLE-3-3 Water
		_	SAMPLED:	2022-06-15 16:15	2022-06-15 16:15	2022-06-15 16:15	2022-06-15 16:15	2022-06-15 16:15	2022-06-15 16:30	2022-06-15 16:30	2022-06-15 16:30
Parameter	Unit	G/S	RDL	3985903	3985907	3985908	3985909	3985910	3985911	3985912	3985913
E. Coli (MF)	CFU/100 mL	1	1	171	211	196	203	188	119	109	163
	SA	AMPLE DES	CRIPTION:	FLE-3-4	FLE-3-5	FLS-1-1	FLS-1-2	FLW-1-1	FLW-1-2	FLW-1-3	FLW-1-4
		_	PLE TYPE: SAMPLED:	Water 2022-06-15 16:30	Water 2022-06-15 16:30	Water 2022-06-15 18:25	Water 2022-06-15 18:25	Water 2022-06-15 17:50	Water 2022-06-15 17:50	Water 2022-06-15 17:50	Water 2022-06-15 17:50
Parameter	Unit	G/S	RDL	3985914	3985915	3985916	3985917	3985918	3985919	3985920	3985921
E. Coli (MF)	CFU/100 mL	1	1	142	146	26	32	>200	>200	>200	>200
	SA	AMPLE DES	CRIPTION:	FLW-1-5	FLW-2-1	FLW-2-2	FLW-2-3	FLW-2-4	FLW-2-5	FLW-3-1	FLW-3-2
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15 17:50	2022-06-15 17:30	2022-06-15 17:30	2022-06-15 17:30	2022-06-15 17:30	2022-06-15 17:30	2022-06-15 17:50	2022-06-15 17:50
Parameter	Unit	G/S	RDL	3985922	3985923	3985924	3985925	3985926	3985927	3985928	3985929
E. Coli (MF)	CFU/100 mL	1	1	>200	>200	>200	>200	>200	>200	>200	>200
	SA	AMPLE DES	CRIPTION:	FLW-3-3	FLW-3-4	FLW-3-5	FLW-6-1	FLW-6-2	FLW-6-3	FLW-6-4	FLW-6-5
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-06-15 17:50	2022-06-15 17:50	2022-06-15 17:50	2022-06-15 16:30	2022-06-15 16:30	2022-06-15 16:30	2022-06-15 16:30	2022-06-15 16:30
Parameter	Unit	G/S	RDL	3985930	3985931	3985932	3985933	3985934	3985935	3985936	3985937
E. Coli (MF)	CFU/100 mL	1	1	>200	>200	>200	>200	>200	>200	>200	>200
	SA	AMPLE DES	CRIPTION:	FLN-2-1	FLN-2-2	FLN-2-3	FLN-2-4	FLN-2-5	FLN-3-1	FLN-3-2	FLN-3-3
		SAM	PLE TYPE:	Water							
			SAMPLED:	2022-06-15 15:05	2022-06-15 15:05	2022-06-15 15:05	2022-06-15 15:05	2022-06-15 15:05	2022-06-15 14:53	2022-06-15 14:53	2022-06-15 14:53
Parameter	Unit	G/S	RDL	3985938	3985939	3985940	3985941	3985942	3985943	3985944	3985945
E. Coli (MF)	CFU/100 mL	1	1	>200	>200	>200	>200	>200	24	32	46





# Certificate of Analysis

AGAT WORK ORDER: 22X908804

PROJECT: 220804.00

ATTENTION TO: ANDREW MACINTOSH

SAMPLED BY:

				E.cc	oli Membran	ne Filtration			
DATE RECEIVED: 2022-06-16									DATE REPORTED: 2022-06-20
	SA	AMPLE DES	CRIPTION:	FLN-3-4	FLN-3-5	FLS-1-3	FLS-1-4	FLS-1-5	
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-06-15 14:53	2022-06-15 14:53	2022-06-15 18:25	2022-06-15 18:25	2022-06-15 18:25	
Parameter	Unit	G/S	RDL	3985946	3985947	3985948	3985949	3985950	
E. Coli (MF)	CFU/100 mL	1	1	36	36	38	19	29	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2021-03

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Halifax (unless marked by \*)

CLIENT NAME: CBCL LTD

SAMPLING SITE:

Certified By:



11 Morris Drive, Unit 122

Dartmouth, Nova Scotia CANADA B3B 1M2

http://www.agatlabs.com

TEL (902)468-8718 FAX (902)468-8924



# **Method Summary**

CLIENT NAME: CBCL LTD PROJECT: 220804.00

SAMPLING SITE:

AGAT WORK ORDER: 22X908804
ATTENTION TO: ANDREW MACINTOSH

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
E. Coli (MF)	MIC-121-7002	SM 9222 H	MF/INCUBATOR

# **AGGIT** Laboratories

Document ID: DIV 133-1502-002

Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

webearth.agatlabs.com www.agatlabs.com

Arrival Condition:	Good	☐ Poor (see notes)
Arrival Temperature:	8-4	7-4, 4-4

Hold Time:

**Laboratory Use Only** 

Chain of Custo	dy Record			P	902	468.	8718	3 • F:	902.	468.	B <b>92</b> 4	AG	AT Jo	b N	uml	oer:	-6	12	Y	10	200	30	4	
Report Information  Company: 6 6 c L				nformation (Please print):  Michael Broph	<u></u>			R	eport	For			otes:						7	22.	JŲĶ	16	g:	14
Contact: M.Ch.C. Address:	el Braphy		Email 2. Name	Melissa Frose mfroser@cbe	10				per Muli per	page	amples	Re		r TA	T	≰ 5	to 7	7 wor	red (	days	S		4	
Phone:	Fax:		Regulat	ory Requirements(Check):				٦١٦	Exp					Α.			day			]3 d	-			
Client Project #: 2208	304.00			idelines on Report	Guideli	ines on	Repor			,,,,							•				u., u			
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Please Note: If quotation number is	s not provided client will be billed ful	Il price for analysis.		1 ☐ Res ☐ Pot 2 ☐ Com ☐ N/Pot		☐ Coa ☐ Fine		D	rinking	Wate	r San	nple: [	Yes	nx.	LNo		Salt	Wate	er Sar	mple	· 🗆 '	Yes	- B& N	ار ا
nvoice To	Same	Yes 🗷 / No 🗆						- 11	eg. No.						81.10°				1			100		
Company: CBCL Contact:		***	CCME	□ CDWQ  ustrial □ NSEQS-Cont Sites  mercial □ HRM 101		Available	valiable					level	-						MF		MF			
Address:			☐ Res ☐ Agri	/Park Storm Water cultural Waste Water	D.				30/4	3		) □ low level	tionation		7				NDN			A W		
Phone:	Fax:		☐ FWA	AL	serve	nalysis	5	2				(PIR	Fract	BTEX						. Ling	MPN			
PO/Credit Card#:			sea	iment Other	red/Pre	Water A	I I I I I I I I I I I I I I I I I I I	□ CBOD	941	3	sphorus	S TPH/BTEX (PIRI)	H/BTEX	/S TPH/		ţ			\d □			E. coli		(N/N) sr
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filte	Standard Water Analysis	Mercury	□ B0D	된		Total Phosphorus	Phenols Tier 1: TP	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	voc	MHT	HAA	PAH	PCB	HPC	Fecal Co	l l	Other:	Hazardous (Y/N)
FLE-2-1	June 15# 4:150	water	•		$\Box$							11						$\top$	$\top$	1	$\top$	L		
FLE-2-2																								
FLE-2-3																				The second				
FLE-2-4																								
LE - 2 - 5	1			Service of the servic																				
16-3-1	June 15th 4:30pm			AND US	100	7 3		0.1																N.
LE-3-2																								
LE-3-3																								
LE- 3-4																								
LE-3-5	<b>₩</b>										Ш													
LS-1-1	June 15th 6: 25pm																							
FLS-1-2	V		V		Ш																	V		
	ophy		ne llo	Samples Received By (Print Name):	i.	/	1	hi	Œ,	Date/Tir						- Clie y - AG			Page		of	f L	1	
oples Relinquished By (Sign):	26	Date/Time	15am	Samples Received By (Sign):	/	/	16			Date/Tir	ne	10					AT	Nº:		7	35	17	2	

# **Capture** Laboratories **Chain of Custody Record**

Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1

webearth.agatlabs.com- www.agatlabs.com-

	Arrival Condition:	□Good	☐ Poor (see	notes)
ŀ	Arrival Temperature:_	8-4	1.4.4.4	
	Hold Time:			

**Laboratory Use Only** 

n.agatlabs.c P: 902.468.		-		gati	abs		n	Hal	d Ti	mo			e:		1	1.4	.4	Ü	_	<u>3</u> L	
ilist Guidelines on	Report	R	epc	ingle er pa fultip er pa xcel nclud xport	Form Samme Same Sole Sa Be Form led	mat nple ample	è	Tur Reg Rus	rnar gula sh T	our r TA AT	Ind I	=====================================	e R 5 to 6am	equ 7 we e da	orkii yy	<b>d (1</b> ng d	ays 1 da 3 da	y ys	15	9	
Field Filtered/Preserved Standard Water Analysis		□ BOD □ CBOD	Н	□ TSS □ TDS □ VSS	TKN	Total Phosphorus	Phenols	Tier 1: TPH/BTEX (PIRI) □ low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	ТНМ	HAA	РАН	PCB	TC + EC	□ HPC □ Pseudomonas	Fecal Coliform   MPN   MF	Other: E.coll, MF	Other:	Hazardous (Y/N)
												Y									
7			)		ate/Tin				- '	Pink 'ellow White	/ Cop	y - A0	GAT	Nº:	Pa	ge [	2	] of	f C	3	

Report Information			Report I	nformation (Please print):				F	(epo	ort F	orm	at													
Company: CBCL			1. Name	Michael Brophy a cho	1	C 0		-   [		ingle S er pag		•	Too	rnar	rou.	nd 1	Tim.	- P		ired	74	AT)	HE	9	41
Contact: Michoc	Brophy		_	. Morophy & Che				-11		luitiple		oles	1												
Address:				Melissa Froser				-   -		er pag		1	Re	gula	r T/	AT	<b>X</b> 5	o to	7 wc	orkin	.g da	ıys			
			Email	mfrascr@ch	cl.	c ·	_	_  [		xcel Fo			Ru	sh T	AT			3am	e da	y	□1	day			
Phone:	Fax:		Regulat	ory Requirements(Check):				٦١٢	_ E	xport							□ 2	2 day	ys		□3	days	;		
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Please Note: If quotation number is	s not provided client will be billed ful	II price for analys	is. ☐ Tier	1 ☐ Res ☐ Pot 2 ☐ Com ☐ N/Po	\ <del>+</del>	□ C	oarse		rinki	ng W	ator 9	amr	ا بما	7 Vac	2 /2	V No		Salt	Wa	tor S	amn	ا ما	 7 Voc		No
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Company: CBCL				□ N0500 0 1 00			e e					1									<u>.</u>				-
Contact:				nmercial HRM 101			Available						level	_			100				□ MF	2	١١		
Address:			□ Res	/Park ☐ Storm Water						,,			low	atior							_	ω [	]   4	<u> </u>	
				cultural	ll pa	Sis	Diss	1-		NSS			( <del>S</del>	ction	×						MPN	omona	Í		
Phone:	Fax:		—		esen	Anal		CBOD				,	PIP)	Fra	/BTE							Pseudomonas		:	_
PO/Credit Card#:				Interior Definer	Filtered/Preserved	ater	Total	8	W.	□ TDS	o da codo		BTE	BTE	IFF.	13					100	Pse	E 6	ا ا	S N
www.ull-waterpalle					Tere!	N P		-				S	TH.	TP.	CWS			1				Ps Diform	5		Snop
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info, Sample Containment	Field F	Standard Water Analysis	Metals:	□ B0D	చ	□ TSS	TKN F	Phenols	Tier 1: TPH/BTEX (PIRI)	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	THM	HAA	PAH	PCB	TC + EC	O HPC	Other:	Other:	Hazan
FLW-1-1	June 15th 5:50	water	- l																				I		
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FLW-1-3																									
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n A I P	e al				)				7						Pink	Сору	- Clie	ent		Pac	5e	7_	of	4	



Unit 122 • 11 Morris Dri Dartmouth, N

B3B 1N

webearth.agatlabs.con

ive	Laboratory Use Only
NS	Arrival Condition: ☐ Good ☐ Poor (see notes)
<b>1</b> 12	Arrival Condition: Good Poor (see notes)  Arrival Temperature: 6474444

n• www.agatlabs.com	Hold Time:	
		201000000

Arrival Temperature: 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4														
	Reg Rus Dat	gula sh T e Re	r TA	red:	<b>#</b> 5	o to Sam P da	7 wo	orkii	ng d	ays 1 da 3 da	iy iys			0
	Tier 1: TPH/BTEX (PIRI) □ low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	NOC	THM	НАА	РАН	PCB	□ P/A □ MPN □		MPN	Other: E. ce i MF	Other:	Hazardous (Y/N)

Chain of Cust	ody Record	47.71	La Shak	-4. E. D. 100P	: 90	2.46	68.87	L8 =	F: 90	)2.4	68.89	24	AG.	AT Jo	me: ob N	lum	ber:	ó	26	×	9	0	38	301	4
Report Information			Report	Information (Please print):		- 100	-6/10		Rep	ort	Form	at		otes:											
Company: CBCL			1. Nam	e:						Single	Samp	e													
Contact: Miche			11	il:						per pa			Tue	rnai	our	nd T	im	e R	ear	lire	d (2)	Δτ	JN!	6	9:1
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Address:				il:				-11			Format		Re	guia	IF IA	1					0.75				
Dhanat	Fove		-					亅		nclud			Ru	sh T	AT							1 day			
Phone: Client Project #: 220	Fax:			tory Requirements(Check):				- 11		Export	:					[	□ 2	2 da	ys			3 day	/S		
	0804.66			uidelines on Report 🔲 Do not lis	st Guid	delines	s on Rep	ort					Dat	e Re	equir	ed:									
AGAT Quotation:	is not provided client will be billed fu	Ill price for analy		er 1 Res Pot			Coarse						<u></u>												
			□ Tie	er 2 Com N/Po	t				Drink	ing V	Vater	Samı	ole:	Yes	s [	]No		Sal	t Wa	iter S	Samp	ple	☐ Ye	es [	□No
Invoice To	Same	Yes □ / No	Ga	s 🗆 Fuel 🗀 Lube	F				Reg.	No.:									_			_			
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PO/Credit Card#.					ered/	1 Wat	Tota	- 1		O TDS	10	Special September 1	PH/B	3H/B	VS TE			21	-	100				3	us (7,
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filtered/Preserved	Standard Water Analysis	Metals: □ Total	Mercury	PH I	□ TSS	TKN	Iotal Priosphorus	Tier 1.: TPH/BTEX (PIRI) □ low level	Tier 2: TPH/BTEX	CCME-CWS TPH/BTEX	000	THM	HAA	PAH	PCB	TC + EC	□ HPC	Fecal Co	Other:	Hazardous (Y/N)
FLW-3-1	June 15th 5:50pm	water	1				$\top$						Ì	Ė			Ė	T					T	i	
FLW-3-2					1			1											Ħ	Т				$\vdash$	
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FLW-6-2																									
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FLW-6-5																									
FLN-2-1	June 15th 3:05pm																								
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Michael 5	Trophy	)	ine 16			/									Pink ( ellow					Pa	ge L	5	] of [	Ч	
· V	inty	Date/T	115	Samples Received By (Sign):	/	/	/	×	4	08	ite/Time		- 3	- 1	White	-			Nº:	į.		73	51	14	
ocument ID: D(V 133 1502 002	1																	-			_	_			



Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

Laboratory Use	Only
Arrival Condition: Arrival Temperature	Good Poor (see notes)
Hold Time: AGAT Job Number:	22×908804
Notes:	-4-1-22 30-1-1-1
	100.000

Chain of Custo	ody Record		W 11 1		_		s.com 88.871				-		H	old GAT	Tim Job	e: _ Nur	nbe	r: 🤇	Æ	γ×	9	0	8	30	4
Chain of Custo Report Information Company: CBC Contact: Miche Address:  Phone: Client Project #: 22 c AGAT Quotation: Please Note: If quotation number	Fax:	Il price for analy Yes □ / No	1. Name Emai 2. Name Emai  Regulat  List Gu PIRI PIRI Tie	Information (Please print):  :: :: :: :: :: :: :: :: :: :: :: ::	: <b>90</b> 2	2.46	on Repo	18	F: 90	ort O2.4 ort Oil ingle oer pa Multip oer pa Excel nclud Expor	Forres Sampage ble Samage Formalied t	mat mples	T R	GAT Note urn egu ush	Job es: aro ilar 'TAT	und TAT	Tin	ne F 5 to Sam 2 da	Requ 7 w ne da	u <b>ire</b> vorkii	d (f	ays 1 day 3 day	JN 1	80 C	9:16
A al al una a a	Fax:		Res	ustrial NSEQS-Cont Sites nmercial HRM 101 6/Park Storm Water icultural Waste Water	Field Filtered/Preserved	Water Analysis	Total		□ CBOD	TDS USS		sphorus	יייייייייייייייייייייייייייייייייייייי	Ter 1: IPR/BIEA (PIRI)   Ton 2: TPH/BIEA (PIRI)	IIEF Z: IPH/BIEA Fractionation	S ITH/BIEA			R		□ P/A □ MPN □ MF	endomonas	□ MPN	JW ite	(N/N)
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments – Site/Sample Info. Sample Containment	Field Filte	Standard \	Metals: □ Total	Melcaly	□ BOD PH	□ TSS	TKN	Total Phosphorus	Phenois	Tor 2. To	Lier Z: IP	VOC	THM	HAA	PAH	PCB	TC + EC	□ HPC	Fecal Coliform	Other: E.co 1.	Hazardous (Y/N)
FLN-2-3	June 15th 3:05pm							I																	
FLN-2-4								1		180							_					Ш			
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Document ID: DIV-133 1502 092	5.4	(	1:15am	- (De	c	1		7				3		Se.	Wh	ite Co	ру- А	AGAT	Nº:			/3	Deta :	15	lau 10, 20



CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: Michael Brophy

PROJECT: 220804

AGAT WORK ORDER: 22X920735

MICROBIOLOGY ANALYSIS REVIEWED BY: Sara Knox, Data Reviewer

DATE REPORTED: Jul 19, 2022

PAGES (INCLUDING COVER): 5 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

*Notes	

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- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
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# Certificate of Analysis

AGAT WORK ORDER: 22X920735

PROJECT: 220804

ATTENTION TO: Michael Brophy

SAMPLING SITE:							SAMPLE	OBY:	
				E.cc	oli Membrar	ne Filtration			
DATE RECEIVED: 2022-07-14									DATE REPORTED: 2022-07-19
				Rocky Lake					
	5	SAMPLE DESCRIPTION: SAMPLE TYPE:		Inlet 1	Inlet 2	Inlet 3	Inlet 4	Inlet 5	
				Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-07-14 17:10	2022-07-14 17:10	2022-07-14 17:10	2022-07-14 17:10	2022-07-14 17:10	
Parameter	Unit	G/S	RDL	4093208	4093209	4093210	4093211	4093212	
E. Coli (MF)	CFU/100 mL	1	1	33	24	53	41	39	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2021-03

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Halifax (unless marked by \*)

CLIENT NAME: CBCL LTD

Certified By:



11 Morris Drive, Unit 122

Dartmouth, Nova Scotia CANADA B3B 1M2

http://www.agatlabs.com

TEL (902)468-8718 FAX (902)468-8924



## **Exceedance Summary**

AGAT WORK ORDER: 22X920735

PROJECT: 220804

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD ATTENTION TO: Michael Brophy

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUIDEVALUE	RESULT
4093208	Rocky Lake Inlet 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	33
4093209	Rocky Lake Inlet 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	24
4093210	Rocky Lake Inlet 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	53
4093211	Rocky Lake Inlet 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	41
4093212	Rocky Lake Inlet 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	39



# **Method Summary**

CLIENT NAME: CBCL LTD PROJECT: 220804

AGAT WORK ORDER: 22X920735 ATTENTION TO: Michael Brophy

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
F. Coli (MF)	MIC-121-7002	SM 9222 H	MF/INCUBATOR



Unit 122 • 11 Morris Drive Dartmouth, NS B3B 1M2

Laboratory Use Only
Arrival Condition: Good Poor (see notes)
Arrival Temperature: 25.9, 25.5, 25.5
Hold Time:
AGAT Job Number: 22X920735
Notes: Just Sampled

Chain of Custody	Record	125			_		8.87:		_	_	_		A	GAT	ΓJol	ne: _ o Nu	ımb	er:	_6	22	X	76	205	13	5	
Report Information	1.000.01		Report	Information (Please print):	3		- Carlot	7	Rep	ort i	Fort	nat	- II	Vote	es: ,	Ju	St	5	Cly	mp	le	a	-	V		
Company: CBCL Contact: Michael Address:	Brophy		1. Name Emai	e: Michael Brophe il: mbrophya chc e: Melissa Frase	1.	a				Single per pa <sub>l</sub> Multipl per pa <sub>l</sub>	Sam ge le Sa ge	ple mples	T									l (TA				
Phono	Fow			infraserache		C	_		Excel Format Included				R	ush	1 TA	T		Sa	ame	day	y 5	22	day	14	5:2	26
Phone: Client Project #: 22080	Fax:			tory Requirements (Check): uidelines on Report	: Guid	elines	on Rep	ort	<u></u> П	Export									day				days	>		
AGAT Quotation:	74		—   □ PIRI	the second second							-	_	D	ate	Rec	quire	d: _			-		_				-
Please Note: If quotation number is not	provided client will be billed ful	l price for analys	13.	er 1 □ Res □ Pot er 2 □ Com □ N/Po		□ C	oarse	li	Drink	ing W	Vate	r San	nple:		Yes		Vo.		Salt	Wat	er S	amn	le [	□ Ye	s □ N	0
Invoice To	Same	Yes □ / No					1110	1.1	Reg.			-			100										,	
Company:COLContact:Address:Phone:PO/Credit Card#:			Con □ Res □ Agn □ FW	dustrial	Filtered/Preserved	Standard Water Analysis	Total	CBOD		□ TDS □ VSS		Phosphorus		IIET I: IPH/BIEX (PIRI) LIOW IEVE	TPH/BTEX Fractionation	S TPH/BTEX	F		5.5			□ P/A □ MPN □ MF	eudomonas	OTHER CHIPM CHIPM	00:	(N/N)
Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filter	tandard \		Mercury	Ha Ha	SS	TKN	Total Phos	Phenols	H H	Tier 2: TPF	CCME-CWS	200	MHT	НАА	ЬАН	PCB		HPC C	Pecal Centures	other C	Hazardous (Y/N)
Pockey Lake Inlet 1 3 Rocky Lake Inlet 3 Rocky Lake Inlet 4 Pocky Lake Inlet 4 Pocky Lake Inlet 5	Ely 14,5:10pm	ucter	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Sory will be above 10°C as brought to lab 20mm after sampling		65					4													4	/	
													4													
	4				╁		-		+			$\dashv$	-	+				+	=	-	$\dashv$	$\dashv$	+	+	++	_
Samples Relinquished By (Print Name):  Melissa Fra S Samples Relinquished Gr (Sign):	er	Date/T	ly 14	Samples Received By (Print Name):  Samples Received By (Sign);			617		ā		le/Tim			Ý		ink Co			- 1		Pag	<u></u> ge [_		of		I



CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: Michael Brophy

PROJECT: 220804.00

AGAT WORK ORDER: 22X920828

MICROBIOLOGY ANALYSIS REVIEWED BY: Sara Knox, Data Reviewer

DATE REPORTED: Jul 19, 2022

PAGES (INCLUDING COVER): 22 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

Notes	

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SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E coli Membrane Filtration

				E.CC	oli Membrar	ne Filtration					
DATE RECEIVED: 2022-07-1	14							[	DATE REPORT	ED: 2022-07-19	
		SAM DATE	SCRIPTION: IPLE TYPE: SAMPLED:	Deep station First Lake (deep) 1 Water 2022-07-14 07:55	Deep station First Lake (deep) 2 Water 2022-07-14 07:55	Deep station First Lake (deep) 3 Water 2022-07-14 07:55	Deep station First Lake (deep) 4 Water 2022-07-14 07:55	Deep station First Lake (deep) 5 Water 2022-07-14 07:55	Deep station Rocky Lake (deep) 1 Water 2022-07-14 10:46	Deep station Rocky Lake (deep) 2 Water 2022-07-14 10:46	Deep station Rocky Lake (deep) 3 Water 2022-07-14 10:46
Parameter E. Coli (MF)	Unit CFU/100 mL	G/S 1	RDL 1	4094491	4094492 <1	4094493 <1	4094494 <1	4094495 <1	4094496	4094497 <1	4094498
Parameter E. Coli (MF)	Unit CFU/100 mL	SAM	SCRIPTION: IPLE TYPE: SAMPLED: RDL 1	Deep station Rocky Lake (deep) 4 Water 2022-07-14 10:46 4094499	Deep station Rocky Lake (deep) 5 Water 2022-07-14 10:46 4094500	Deep station Second Lake (deep) 1 Water 2022-07-14 09:25 4094501	Deep station Second Lake (deep) 2 Water 2022-07-14 09:25 4094502 20	Deep station Second Lake (deep) 3 Water 2022-07-14 09:25 4094503	Deep station Second Lake (deep) 4 Water 2022-07-14 09:25 4094504	Deep station Second Lake (deep) 5 Water 2022-07-14 09:25 4094505	Deep station First Lake (shallow) 1 Water 2022-07-14 07:52 4094506
	SA	SAM	SCRIPTION: IPLE TYPE: SAMPLED:	Deep station First Lake (shallow) 2 Water 2022-07-14 07:52	Deep station First Lake (shallow) 3 Water 2022-07-14 07:52	Deep station First Lake (shallow) 4 Water 2022-07-14 07:52	Deep station First Lake (shallow) 5 Water 2022-07-14 07:52	Deep station Rocky Lake (shallow) 1 Water 2022-07-14 10:41	Deep station Rocky Lake (shallow) 2 Water 2022-07-14 10:41	Deep station Rocky Lake (shallow) 3 Water 2022-07-14 10:41	Deep station Rocky Lake (shallow) 4 Water 2022-07-14 10:41
Parameter	Unit	G/S	RDL	4094507	4094508	4094509	4094510	4094511	4094512	4094513	4094514
E. Coli (MF)	CFU/100 mL	SAM	1 SCRIPTION: IPLE TYPE: SAMPLED:	Deep station Rocky Lake (shallow) 5 Water 2022-07-14 10:41	Deep station Second Lake (shallow) 1 Water 2022-07-14 09:22	Deep station Second Lake (shallow) 2 Water 2022-07-14 09:22	Deep station Second Lake (shallow) 3 Water 2022-07-14 09:22	<1 Deep station Second Lake (shallow) 4 Water 2022-07-14 09:22	Deep station Second Lake (shallow) 5 Water 2022-07-14 09:22	Gully on Cavalier Drive 1 Water 2022-07-14 15:00	Gully on Cavalier Drive Water 2022-07-14 15:00
Parameter	Unit	G/S	RDL	4094515	4094516	4094517	4094518	4094519	4094520	4094521	4094522
E. Coli (MF)	CFU/100 mL	1	1	2	<1	<1	<1	<1	2	33	23





SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

				∟	ii weiibiai	ie i iitiation					
DATE RECEIVED: 2022-07-14								Γ	DATE REPORTI	ED: 2022-07-19	
				Gully on	Gully on	Gully on	Inlet of Second	Inlet of Second	Inlet of Second	Inlet of Second	Inlet of Secon
	5	SAMPLE DES	CRIPTION:	Cavalier Drive 3	Cavalier Drive 4	Cavalier Drive 5	Lake 1	Lake 2	Lake 3	Lake 4	Lake 5
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14
				15:00	15:00	15:00	14:45	14:45	14:45	14:45	14:45
Parameter	Unit	G/S	RDL	4094523	4094524	4094525	4094526	4094527	4094528	4094529	4094530
E. Coli (MF)	CFU/100 mL	1	1	22	28	23	15	8	10	13	12
				Outlet of							
	5		-	Second Lake 1	Second Lake 2		Second Lake 4	Second Lake 5		FLW-1-1	FLW-1-2
		_	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14		2022-07-14	2022-07-14
Danaga atau	I Imia	0.70	DDI	10:05	10:05	10:05	10:05	10:05	DDI	11:40	11:40
Parameter	Unit	G/S	RDL	4094531	4094532	4094533	4094534	4094535	RDL	4094536	4094537
E. Coli (MF)	CFU/100 mL	1	1	23	27	17	11	14	100	>20000	>20000
	5	SAMPLE DES	CRIPTION:	FLW-1-3	FLW-1-4	FLW-1-5	FLW-2-1	FLW-2-2	FLW-2-3	FLW-2-4	FLW-2-5
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14
				11:40	11:40	11:40	11:30	11:30	11:30	11:30	11:30
Parameter	Unit	G/S	RDL	4094538	4094539	4094540	4094541	4094542	4094543	4094544	4094545
E. Coli (MF)	CFU/100 mL	1	100	>20000	>20000	>20000	>20000	>20000	>20000	>20000	>20000
	\$	SAMPLE DES	-	FLW-6-1	FLW-6-2	FLW-6-3	FLW-6-4	FLW-6-5		FLS-2-1	FLS-2-2
		_	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-07-14 10:50	2022-07-14 10:50	2022-07-14 10:50	2022-07-14 10:50	2022-07-14 10:50		2022-07-14 13:15	2022-07-14 13:15
Parameter	Unit	G/S	RDL	4094546	4094547	4094548	4094549	4094550	RDL	4094551	4094552
E. Coli (MF)	CFU/100 mL	1	100	900	1300	1500	1300	1300	1	2	3





SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

					ni wembrar						
DATE RECEIVED: 2022-07-14								[	DATE REPORT	ED: 2022-07-19	
	SA	AMPLE DES	CRIPTION:	FLS-2-3	FLS-2-4	FLS-2-5		FLS-3-1	FLS-3-2	FLS-3-3	FLS-3-4
		SAM	PLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14		2022-07-14	2022-07-14	2022-07-14	2022-07-14
				13:15	13:15	13:15		12:30	12:30	12:30	12:30
Parameter	Unit	G/S	RDL	4094553	4094554	4094555	RDL	4094556	4094557	4094558	4094559
E. Coli (MF)	CFU/100 mL	1	1	6	<1	4	100	12400	11600	15100	14600
	SA	AMPLE DES	CRIPTION:	FLS-3-5	FLS-4-1	FLS-4-2	FLS-4-3	FLS-4-4	FLS-4-5	FLN-8-1	FLN-8-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14
				12:30	12:50	12:50	12:50	12:50	12:50	12:07	12:07
Parameter	Unit	G/S	RDL	4094560	4094561	4094562	4094563	4094564	4094565	4094566	4094567
E. Coli (MF)	CFU/100 mL	1	100	12000	>20000	>20000	>20000	>20000	>20000	10900	12000
	SA	AMPLE DES	CRIPTION:	FLN-8-3	FLN-8-4	FLN-8-5		FLE-2-1	FLE-2-2	FLE-2-3	FLE-2-4
		SAM	PLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14 12:07	2022-07-14 12:07	2022-07-14 12:07		2022-07-14 13:20	2022-07-14 13:20	2022-07-14 13:20	2022-07-14 13:20
Parameter	Unit	G/S	RDL	4094568	4094569	4094570	RDL	4094571	4094572	4094573	4094574
E. Coli (MF)	CFU/100 mL	1	100	6600	10000	9900	2	26	28	34	28
	SA	AMPLE DES	CRIPTION:	FLE-2-5	FLE-3-1	FLE-3-2	FLE-3-3	FLE-3-4	FLE-3-5	FLE-5-1	FLE-5-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14
				13:20	13:05	13:05	13:05	13:05	13:05	13:45	13:45
Parameter	Unit	G/S	RDL	4094575	4094576	4094577	4094578	4094579	4094580	4094581	4094582
E. Coli (MF)	CFU/100 mL	1	2	22	10	6	12	28	26	120	124
	SA	AMPLE DES	CRIPTION:	FLE-5-3	FLE-5-4	FLE-5-5		FLN-1-1	FLN-1-2	FLN-1-3	FLN-1-4
		SAM	PLE TYPE:	Water	Water	Water		Water	Water	Water	Water
			SAMPLED:	2022-07-14 13:45	2022-07-14 13:45	2022-07-14 13:45		2022-07-14 08:30	2022-07-14 08:30	2022-07-14 08:30	2022-07-14 08:30
							D.D.I				
Parameter	Unit	G/S	RDL	4094583	4094584	4094585	RDL	4094586	4094587	4094588	4094589





Certificate of Analysis

AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## SAMPLING SITE: E.coli Membrane Filtration

				∟	JII WEIIIDI AI	ie i iitiation					
DATE RECEIVED: 2022-07-14								[	DATE REPORTE	ED: 2022-07-19	
	SA	MPLE DES	CRIPTION:	FLN-1-5	FLN-2-1	FLN-2-2	FLN-2-3	FLN-2-4	FLN-2-5		FLN-3-1
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water		Water
		DATE	SAMPLED:	2022-07-14 08:30	2022-07-14 07:45	2022-07-14 07:45	2022-07-14 07:45	2022-07-14 07:45	2022-07-14 07:45		2022-07-14 08:50
Parameter	Unit	G/S	RDL	4094590	4094591	4094592	4094593	4094594	4094595	RDL	4094596
E. Coli (MF)	CFU/100 mL	1	100	800	13700	14000	15600	15400	14200	1	3
								Unmarked	Unmarked	Unmarked	Unmarked
	SA	MPLE DES	CRIPTION:	FLN-3-2	FLN-3-3	FLN-3-4	FLN-3-5	Outfall 1	Outfall 2	Outfall 3	Outfall 4
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-07-14 08:50	2022-07-14 08:50	2022-07-14 08:50	2022-07-14 08:50	2022-07-14 09:30	2022-07-14 09:30	2022-07-14 09:30	2022-07-1- 09:30
Parameter	Unit	G/S	RDL	4094597	4094598	4094599	4094600	4094601	4094602	4094603	4094604
E. Coli (MF)	CFU/100 mL	1	1	4	2	2	4	<1	<1	<1	<1
				Unmarked							
	SA	MPLE DES	CRIPTION:	Outfall 5		FLW-3-1	FLW-3-2	FLW-3-3	FLW-3-4	FLW-3-5	
	_	SAM	PLE TYPE:	Water		Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-07-14		2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	
				09:30		11:20	11:20	11:20	11:20	11:20	
Parameter	Unit	G/S	RDL	4094605	RDL	4094606	4094607	4094608	4094609	4094610	
E. Coli (MF)	CFU/100 mL	1	1	<1	100	4700	5800	6100	5200	5200	
	SA	MPLE DES	CRIPTION:	FLW-7-1	FLW-7-2	FLW-7-3	FLW-7-4	FLW-7-5		FLW-8-1	FLW-8-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-07-14 10:25	2022-07-14 10:25	2022-07-14 10:25	2022-07-14 10:25	2022-07-14 10:25		2022-07-14 09:50	2022-07-1- 09:50
Parameter	Unit	G/S	RDL	4094611	4094612	4094613	4094614	4094615	RDL	4094616	4094617
E. Coli (MF)	CFU/100 mL	1	2	122	106	122	84	108	100	>20000	>20000

Certified By:





SAMPLING SITE:

### Certificate of Analysis

AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

#### E.coli Membrane Filtration

				⊏.00	ni wembra	ne Filtration					
DATE RECEIVED: 2022-07-14								[	DATE REPORTE	ED: 2022-07-19	
								Outlet of First	Outlet of First	Outlet of First	Outlet of First
	S	AMPLE DES	CRIPTION:	FLW-8-3	FLW-8-4	FLW-8-5		Lake 1	Lake 2	Lake 3	Lake 4
		SAM	PLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14	2022-07-14	2022-07-14		2022-07-14	2022-07-14	2022-07-14	2022-07-14
				09:50	09:50	09:50		13:30	13:30	13:30	13:30
Parameter	Unit	G/S	RDL	4094618	4094619	4094620	RDL	4094621	4094622	4094623	4094624
E. Coli (MF)	CFU/100 mL	1	100	>20000	>20000	>20000	1	14	13	15	12
				Outlet of First		Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Inlet of First
	S	AMPLE DES	CRIPTION:	Lake 5		Α	В	С	D	E	Lake 1
		SAM	PLE TYPE:	Water		Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-07-14		2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14	2022-07-14
				13:30		08:20	08:20	08:20	08:20	08:20	08:05
Parameter	Unit	G/S	RDL	4094625	RDL	4094626	4094627	4094628	4094629	4094630	4094631
E. Coli (MF)	CFU/100 mL	1	1	12	2	84	60	60	90	110	316
				Inlet of First	Inlet of First	Inlet of First	Inlet of First				
	S	AMPLE DES	CRIPTION:	Lake 2	Lake 3	Lake 4	Lake 5				
		SAM	PLE TYPE:	Water	Water	Water	Water				
		DATE	SAMPLED:	2022-07-14 08:05	2022-07-14 08:05	2022-07-14 08:05	2022-07-14 08:05				
Parameter	Unit	G/S	RDL	4094632	4094633	4094634	4094635				
E. Coli (MF)	CFU/100 mL	1	2	240	370	336	400				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2021-03

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Halifax (unless marked by \*)

Certified By:





AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUIDEVALUE	RESULT
4094496	Deep station Rocky Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4094498	Deep station Rocky Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094499	Deep station Rocky Lake (deep) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	5
4094501	Deep station Second Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	22
4094502	Deep station Second Lake (deep) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	20
4094503	Deep station Second Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	22
4094504	Deep station Second Lake (deep) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	13
4094505	Deep station Second Lake (deep) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	26
4094506	Deep station First Lake (shallow) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4094508	Deep station First Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4094509	Deep station First Lake (shallow) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094510	Deep station First Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094512	Deep station Rocky Lake (shallow) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094513	Deep station Rocky Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094515	Deep station Rocky Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094520	Deep station Second Lake (shallow)  5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094521	Gully on Cavalier Drive 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	33
4094522	Gully on Cavalier Drive 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	23
4094523	Gully on Cavalier Drive 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	22
4094524	Gully on Cavalier Drive 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	28
4094525	Gully on Cavalier Drive 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	23
4094526	Inlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	15
4094527	Inlet of Second Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	8
4094528	Inlet of Second Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	10
4094529	Inlet of Second Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	13
4094530	Inlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	12
4094531	Outlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	23
4094532	Outlet of Second Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	27
4094533	Outlet of Second Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	17
4094534	Outlet of Second Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	11
4094535	Outlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	14
4094546	FLW-6-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	900
4094547	FLW-6-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	1300
4094548	FLW-6-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	1500
4094549	FLW-6-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	1300
4094550	FLW-6-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	1300
4094551	FLS-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4094552	FLS-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4094553	FLS-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4094555	FLS-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4094556	FLS-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	12400
4094557	FLS-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	11600



AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GU	IDEVALUE	RESULT
4094558	FLS-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	15100
4094559	FLS-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	14600
4094560	FLS-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12000
4094566	FLN-8-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	10900
4094567	FLN-8-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12000
4094568	FLN-8-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6600
4094569	FLN-8-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	10000
4094570	FLN-8-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	9900
4094571	FLE-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	26
4094572	FLE-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	28
4094573	FLE-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	34
4094574	FLE-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	28
4094575	FLE-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	22
4094576	FLE-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	10
4094577	FLE-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6
4094578	FLE-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4094579	FLE-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	28
4094580	FLE-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	26
4094581	FLE-5-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	120
4094582	FLE-5-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	124
4094583	FLE-5-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	190
4094584	FLE-5-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	122
4094585	FLE-5-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	156
4094586	FLN-1-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	800
4094587	FLN-1-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	900
4094588	FLN-1-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	900
4094589	FLN-1-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	700
4094590	FLN-1-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	800
4094591	FLN-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	13700
4094592	FLN-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	14000
4094593	FLN-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	15600
4094594	FLN-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	15400
4094595	FLN-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	14200
4094596	FLN-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3
4094597	FLN-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4
4094598	FLN-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2
4094599	FLN-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2
4094600	FLN-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4
4094606	FLW-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4700
4094607	FLW-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5800
4094608	FLW-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6100
4094609	FLW-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5200
4094610	FLW-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5200



AGAT WORK ORDER: 22X920828

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT G	UIDEVALUE	RESULT
4094611	FLW-7-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	122
4094612	FLW-7-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	106
4094613	FLW-7-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	122
4094614	FLW-7-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	84
4094615	FLW-7-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	108
4094621	Outlet of First Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	14
4094622	Outlet of First Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	13
4094623	Outlet of First Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	15
4094624	Outlet of First Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4094625	Outlet of First Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4094626	Kinsmen Beach A	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	84
4094627	Kinsmen Beach B	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	60
4094628	Kinsmen Beach C	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	60
4094629	Kinsmen Beach D	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	90
4094630	Kinsmen Beach E	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	110
4094631	Inlet of First Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	316
4094632	Inlet of First Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	240
4094633	Inlet of First Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	370
4094634	Inlet of First Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	336
4094635	Inlet of First Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	400



11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## Method Summary

CLIENT NAME: CBCL LTD PROJECT: 220804.00

SAMPLING SITE:

AGAT WORK ORDER: 22X920828 ATTENTION TO: Michael Brophy

SAMPLED BY:

PARAMETER AGAT S.O.P LITERATURE REFERENCE ANALYTICAL TECHNIQUE

Microbiology Analysis

E. Coli (MF) MIC-121-7002 SM 9222 H MF/INCUBATOR



# CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

	Laboratory use Only  Arrival Condition: Good Poor (complete 'notes')  Arrival Temperature: 59,6-7,51 AGAT Job Number:
	Notes:
	Drinking Water Sample (y/n): Reg. No
1	Waterworks Number:

							V	ater	WOFK:	s ivui	nber												
Report To: Company: CBCL Contact: Michael Brophy Address: Halifax NS B3J 2R7 Phone: 902-421-7241 FAX: PO#: AGAT Quotation Client Project #: 220804.00  Invoice to: Same (Yes) - C	n:		1. Name; Email; 2. Name: Email; Regulato PIRI	Information Michael Brophy mbrophy@cbcl Melissa Fraser mfraser@cbcl. ry Requirement: Site Info (check r 1 Res. Fr	ca ca s (Ch k all tha	at ap □ Co	ply): parse			Mul sam per Exc For	ple ple page tiple page page		Turna Regula Rush 1 C Date Re Time Re	or TA  CAT:	<b>T:</b> 5 to 24 48 ed:	o 7 to 4		king d			red		
Company: Same as above Contact: Address:  Phone: Fax: PO#:  SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	☐ Ind. ☐ Con ☐ Res/µ ☐ Ag ☐ FWAL	NSDFOSP Other	ered / Preserve	Standard Water Analysis + TMS	TKN	CRD	Chlorophyll A	TSS	E.Coli	Enterococci								Other:	Other:	Hazardous (Y/N)	Lab Sample #
Deep Station First Lake (deep) 1	July 7:55a	n						1															
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Deep Station Rocky Lake (deep) 5	1						1						8 9							$\vdash$		Н	
Deep Station Second Lake (deep) 1	July 9:25a	~										$\neg$					-			$\vdash$		$\vdash$	
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Sample Relinquished By (sign)	linquished By (sign)			Samples Receive	d By	(sigr	1)	7				Dat	e/Time			by - AG by - AG	AT	NO:					



59,67,51

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

### **CHAIN OF CUSTODY RECORD**

						-	Total Committee		_	_						_	_									
Report to: Company: Same as COC#:				-		Field Filtered / Preserve	Water Analysis +				yll A			Sci											(N/A) sr	Lab Sample
SAMPLE IDENTIFICATION		E / TIME MPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filte	Standard \	TKN	ТР	SRP	Chlorophyll	TSS	E.Coli	Enterococci									Other:	Other:	Hazardous (Y/N)	#
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Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

#### **CHAIN OF CUSTODY RECORD**

Report to: Company: Same as COC#:			_		Field Filtered / Preserv	Water Analysis +				ıyıl A			cci											Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX		COMMENTS - Site/Sample Info/Contaminant	Field Filt	Standard Water	TKN	ТР	SRP	Chlorophyll A	TSS	E.Coli	Enterococci						10		Y )	Other:	Other:	Hazardo	#
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Sample Relinquished By (sign)			Date/Time	Samples Receive	ed By	(sit	n)		1	N.			Date,	Time	Yellov White	w Cop	y - ΑG y - AG	SAT	NO;						

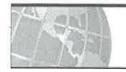


# CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

11111111111	□Poor (complete 'notes') GAT Job Number:
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

Report To:  Company: CBCL  Contact: Michael Brophy Address: Suite 901, 1505 Barrington St.  Halifax NS B3J 2R7  Phone: 902-421-7241 FAX:  PO#: AGAT Quotation:  Client Project #: 220804.00  Invoice to: Same (Yes) - Circle  Company: Same as above	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mfraser@cbcl.ca  Regulatory Requirements (Check):  PIRI Site Info (check all that apply):  Tier 1 Res. Pot. Coarse Tier 2 Comm. N/Pot. Fine  CCME CDWQ	Report Format Single sample per pag Multiple samples per pag Excel Format Included	Date Required:
Contact: Address:  Phone: Fax: PO#:  SAMPLE IDENTIFICATION DATE / TIME SAMPLED MATRIX	☐ Ind. ☐ MAC/IMAC + STATE + STATE   HOPE   HOPE	SRP Chlorophyll A TSS E.Coli	Enterococci Other:  # Razardous (V/N)  # azardous (V/N)
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Sample Reiniquished by (sign)	Date/Time Samples Received By (sign)		Date/Time White Copy - AGAT White Copy - AGAT NO:



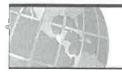
# AGAT Laboratories



Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

#### **CHAIN OF CUSTODY**

Report to: Company: Same as COC#:			i i		Field Filtered / Preserved	Standard Water Analysis +				Chlorophyll A			zocci	The state of the s							TO NOT THE		THE REAL	Hazardous (Y/N)	Lab Sample #
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# AGAT Laboratories



Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

### **CHAIN OF CUSTODY**

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Report to: Company: CBCL Same as COC#:			<b>a</b> ). ⊒g		Field Filtered / Preserve	Standard Water Analysis +				A llyr		100 mm	occi											Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filt	Standard	TKN	TP	SRP	Chlorophyll	TSS	E.Coli	Enterococci								TI CO	Other:	Other:	Hazardo	"
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# CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Н			
J	Laboratory use Only		
	Arrival Condition: 🔲 Good	☐ Poor (complete 'notes')	
1	Arrival Temperature: 5-7, 8 3	_AGAT Job Number:	
ı	Notes bollice 10-7		
	Drinking Water Sample (y/n):	Reg. No	
١	Waterworks Number:		

	Lvv	vacerworks Number.
Report To:  Company: CBCL  Contact: Michael Brophy Suite 901, 1505 Barrington St.  Halifax NS B3J 2R7  Phone: 902-421-7241 FAX:  PO#: AGAT Quotation:  Client Project #: 220804.00  Invoice to: Same (Yes) - Circle	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mlraser@cbcl.ca  Regulatory Requirements (Check):  PIRI Site Info (check all that apply):  Tier 1 Res. Pot. Coarse Tier 2 Comm. N/Pot. Fine	Report Format  Single sample per page per page  Multiple samples per page per page Excel Format  Turnaround Time (TAT) Required  Regular TAT:  5 to 7 working days  Rush TAT:  24 to 48 hours  48 to 72 hours  Date Required:
Company: Same as above Contact: Address:  Phone: Fax: PO#:	☐ CCME ☐ CDWQ ☐ Ind, ☐ MAC/IMAC ☐ Com ☐ A / O ☐ Res/p ☐ NSDFOSP	(2) Lab
SAMPLE IDENTIFICATION  DATE / TIME SAMPLED MATRIX  FLN - 4 - 1	# OF CONTAINERS Site/Sample Info/Contaminant	SRP Chlorophyll / TSS E.Coli Enterococci Cother: Other: Hazardous (
FLN - 4 - 2  FLN - 4 - 3  FLN - 4 - 5  FLN - 5 - 1  FLN - 5 - 2		
FLN - 5 - 3  FLN - 5 - 4  S  FLN - 6 - 1  FLN - 6 - 2		
Sample Relinquished By (print name) Sample Relinquished By (sign)	Date/Time Samples Received By (print nam  Date/Time Samples Received By (sign)	Date/Time July   Pink Copy - Client Yellow Copy - AGAT White Copy - AGAT NO:







Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

#### **CHAIN OF CUSTODY RECORD**

CBCL Same as COC#:			-		ered / Preserve	Vater Analysis +				yll A			Sci											(N/X) SI	Lab Sample
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filtered	Standard \	TKN	TP	SRP	Chlorophyll A	TSS	E.Coli	Enterococci									Othor:	Other:	Hazardous (Y/N)	#
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FLE - 1 - 5					П	nu (X				700		Ì			ı					7/		Н			
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FLE - 2 - 4					П		7	W	7			1		)3			- 10		-	10	8.0		70		
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FLE - 3 - 2	į.					210		100			T	V		5	-		- 18					Н		1	
Sample Relinquished By (print name)				Samples Receive		2		me)			- 19		Date	e/Time Ly /Ψ	е	Pink (	Сору -	Clien		Pac	je_	Ц В		f	
Sample Relinquished By (sign)			Date/Time	Samples Receive	11	(sigr	"	7					Date	Time 36	e Y	ellow White	Copy - Copy Copy	- AGA - AGA	T	10:					





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

### **CHAIN OF CUSTODY RECORD**

Report to: Company: Same as COC#:			_		Field Filtered / Preserve	Standard Water Analysis +				hyll A			occi											Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIN	ME SAMPLE MATRIX	# OF	COMMENTS - Site/Sample Info/Contaminant	Field FII	standard	TKN	TP	SRP	Chlorophyll A	TSS	E.Coli	Enterococci									Other:	Other:	azardo	,,
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FLE - 4 = 4											$\neg$						ZV.						1159	$\dashv$	
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Sample Relinquished By (print name)			Date/Time	Samples Receive	d By	(prir	nt na	me)			- 19	_	Date	/Time ( <b>Y</b>	Pinl	k Cons	ı - Clie	ent	D.		a				
Sample Relinquished By (sign)			Date/Time	Samples Receive	d By	(s)gr	1)		7		7		Date	Time	Yello Whit	w Cop te Cop	y - Clie by - Ac by - Ac	GAT GAT	NO	age_	9		of		





### **CHAIN OF CUSTODY RECORD**

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition: Arrival Temperature: 4-4, 3.6, 6.0 Notes:	Poor (complete 'notes') AGAT Job Number:
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

	waterv	works Number:
Client Project #: 220804.00  Invoice to: Same (Yes) - Circle	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mfraser@cbcl.ca  Regulatory Requirements (Check):  □ PIRI Site Info (check all that apply): □ Tier 1 □ Res. □ Pot. □ Coarse □ Tier 2 □ Comm. □ N/Pot.□ Fine	Report Format  Single sample per page  Multiple samples samples samples samples per page Excel Format Included  Turnaround Time (TAT) Required  Regular TAT:  5 to 7 working days Rush TAT:  24 to 48 hours  48 to 72 hours  Date Required: Time Required:
Company: Same as above  Contact: Address:  Phone: Fax: PO#:  SAMPLE IDENTIFICATION  DATE / TIME SAMPLE	□ CCME □ CDWQ □ Ind. □ MAC/IMAC □ Com □ A / O □ Res/p □ NSDFOSP □ Ag □ Other □ FWAL □ FWAL ■ OF COMMENTS - Site/Sample	Chlorophyll A TSS E.Coli Enterococci Other:  # PS ald de PT ald de PT
	# OF CONTAINERS Site/Sample Info/Contaminant III V A A A S	Chlore TSS E.Coli Entere Other:
FLN - 1 - 1 Jul 14 8:30un FLN - 1 - 2		
FLN - 1 - 3		
FLN - 1 - 4		
FLN - 1 - 5		
FLN - 2 - 1 Juli 4 7:45am		
FLN - 2 - 2		
FLN - 2 - 3		
FLN - 2 - 4		
FLN - 2 - 5		
IN - 3 - 1 July 8:50an		
ELN - 3 - 2		
	Date/Time Samples Received By (print name)	Date/Time
	Date/Time Samples Received By (sign)	Pink Copy - Client Yellow Copy - AGAT White Copy - AGAT NO:



# AGAT Laboratories

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Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

### **CHAIN OF CUSTODY**

				_																				
Report to: Company: CBCL Same as COC#:		_		Field Filtered / Preserve	Water Analysis +				II A			ci											s (Y/N)	Lab Sample
SAMPLE IDENTIFICATION	DATE / TIME SAME SAMPLED MATE		COMMENTS - Site/Sample Info/Contaminant	Field Filter	Standard W	TKN	T.P	SRP	Chlorophyll	TSS	E.Coli	Enterococci						1			Other:	Other:	Hazardous (Y/N)	#
FLN - 3 - 3											1		3	M				100		104				
FLN - 3 - 4											1											44		
FLN - 3 - 5	₩				6.71				lina.									W.		19		)XIII		
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Unmarked Outfall 3											1		10											
Unmarked Outfall 4											1						CO-CO			153		ion!		
Unmarked Outfall 5	V								259					100		531						1975		
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FLW - 3 - 3									6X1										$\neg$			0		
FLW - 3 - 4											1			100	H			-6						
FLW - 3 - 5	1										1			14.60					7					
FLW - 7 - 1	July 10:25am														Н			×I	$\exists$				-	
FLW - 7 - 2								7	65.7						H				$\neg$	3.1		lan.	-	
FLW - 7 - 3							1-10	-1							H				$\neg$	93		2,44	-	
FLW - 7 - 4								_							H				-		_			
FLW - 7 - 5	V				40			- 1							$\vdash$		7		-				-	
FLW - 8 - 1	July 4:50am			$\dagger$	5.8										H				-					
FLW - 8 - 2												$\dashv$							-					
FLW - 8 - 3					2011				9					310	H		12							
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FLW - 8 - 5					90					T									-			5610		
Outlet of First Lake 1	Juli4 1:30 pm					$\dashv$				$\dashv$		$\dashv$												
Outlet of First Lake 2	2			+		$\dashv$					1	$\dashv$												
Sample Relinquished By (print r		Date/Time	Samples Receiv	ed By	(pri	nt na	me)					Dat Ju	e/Time	Pir	nk Copy	/ - Clie	nt	Pa	age_	11		of		
Sample Relinquished By (sign)		Date/Time	Samples Receiv	ed By	(sig	n)	1	7				Dat	e/Time	Yell	ow Cop ite Cop	y - AC	AT -	NO						



# AGAT Laboratories

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Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

### **CHAIN OF CUSTODY**

				-																				
Report to: Company: CBCL Same as COC#:				Field Filtered / Preserve	Standard Water Analysis +				yll A			cci											(N/N) sr	Lab Sample #
SAMPLE IDENTIFICATION		SAMPLE # OF MATRIX CONTAINER	COMMENTS - Site/Sample Info/Contaminant	Field Filte	Standard V	TKN	TP TP	SRP	Chlorophyll	155	E.Coli	Enterococci								15.	Other:	Other:	Hazardous (Y/N)	#
Outlet of First Lake 3	1				QUIII)				180		9					nejj.								
Outlet of First Lake 4							0		N-Y		1			100				ĮUŠ.		10				
Outlet of First Lake 5					T g				n,						П									
Kinsmen Beach A	Jul 14 8: 20an				477		(m)		9				5,8		П			101	T					
Kinsmen Beach B	1						1.3				1		100											
Kinsmen Beach C					12-11				3 1				,42		H			774		118	$\neg$			
Kinsmen Beach D					16		311.18							Lin.			T							
Kinsmen Beach E	V										d							100		-8	$\neg$			
Inlet of First Lake 1	July 8:05an									$\neg$	1		816				T			XII				
Inlet of First Lake 2													- 1								_	1		
Inlet of First Lake 3					110				8-1							231								
Inlet of First Lake 4					76					$\dashv$	1	$\neg$		100				200	7	-	7		-	
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Sample Relinquished By (sign)		Date/Time	Samples Receiv	ed By	Sign	n)		7				Dat	e/Time	Yello	w Cop te Copy	y - AC	GAT -	NO:		10				•
				1 2 1	-							111										$\overline{}$		



11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: Michael Brophy

PROJECT: 220804.00 AGAT WORK ORDER: 22X931131

MICROBIOLOGY ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganics Supervisor

DATE REPORTED: Aug 12, 2022

PAGES (INCLUDING COVER): 18 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

Notes	

#### Disclaimer:

\*\*\*\*\*

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
  incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may
  be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other
  third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the
  services.
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- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of
  merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines
  contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories (V1)

Page 1 of 18

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SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

### E.coli Membrane Filtration

					ii ivioiiibiai	o i iiti ation					
DATE RECEIVED: 2022-08-10								D	ATE REPORTI	ED: 2022-08-12	
	SA	AMPLE DES	CRIPTION:	FLN-1-1	FLN-1-2	FLN-1-3	FLN-1-4	FLN-1-5	FLN-2-1	FLN-2-2	FLN-2-3
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-08-10 07:40	2022-08-10 07:40	2022-08-10 07:40	2022-08-10 07:40	2022-08-10 07:40	2022-08-10 07:27	2022-08-10 07:27	2022-08-10 07:27
Parameter	Unit	G/S	RDL	4185154	4185175	4185176	4185177	4185178	4185179	4185180	4185181
E. Coli (MF)	CFU/100 mL	1	100	400	900	600	400	1300	1700	1000	1000
							Unmarked	Unmarked	Unmarked	Unmarked	Unmarked
	SA	AMPLE DES	CRIPTION:	FLN-2-4	FLN-2-5		Outfall 1	Outfall 2	Outfall 3	Outfall 4	Outfall 5
		SAM	PLE TYPE:	Water	Water		Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10 07:27	2022-08-10 07:27		2022-08-10 08:36	2022-08-10 08:36	2022-08-10 08:36	2022-08-10 08:36	2022-08-10 08:36
Parameter	Unit	G/S	RDL	4185182	4185183	RDL	4185184	4185185	4185186	4185187	4185188
E. Coli (MF)	CFU/100 mL	1	100	600	1600	1	<1	<1	<1	<1	2
	SA	AMPLE DES	CRIPTION:	FLW-3-1 Above	FLW-3-2 Above	FLW-3-3 Above	FLW-3-4 Above	FLW-3-5 Above		FLW-7-1	FLW-7-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-10 10:01	2022-08-10 10:01	2022-08-10 10:01	2022-08-10 10:01	2022-08-10 10:01		2022-08-10 09:13	2022-08-10 09:13
Parameter	Unit	G/S	RDL	4185189	4185190	4185191	4185192	4185193	RDL	4185194	4185195
E. Coli (MF)	CFU/100 mL	1	100	2800	1600	2300	2600	2900	2	472	492
	SA	AMPLE DES	CRIPTION:	FLW-7-3	FLW-7-4	FLW-7-5	FLW-8-1	FLW-8-2	FLW-8-3	FLW-8-4	FLW-8-5
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-08-10 09:13	2022-08-10 09:13	2022-08-10 09:13	2022-08-10 08:57	2022-08-10 08:57	2022-08-10 08:57	2022-08-10 08:57	2022-08-10 08:57
Parameter	Unit	G/S	RDL	4185196	4185197	4185198	4185199	4185200	4185201	4185202	4185203
E. Coli (MF)	CFU/100 mL	1	2	470	458	494	328	246	334	260	376

Certified By:

Jasar Coaghtry



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

#### E.coli Membrane Filtration

					on women	io i iiti ation					
DATE RECEIVED: 2022-08-10								j	DATE REPORT	ED: 2022-08-12	
				Inlet of First		Outlet of First	Outlet of Firs				
	SA	AMPLE DES	CRIPTION:	Lake 1	Lake 2	Lake 3	Lake 4	Lake 5		Lake 1	Lake 2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10		2022-08-10	2022-08-10
				07:40	07:40	07:40	07:40	07:40		11:50	11:50
Parameter	Unit	G/S	RDL	4185204	4185205	4185206	4185207	4185208	RDL	4185209	4185210
E. Coli (MF)	CFU/100 mL	1	2	192	180	198	152	124	1	7	7
				Outlet of First	Outlet of First	Outlet of First					
	SA	AMPLE DES	CRIPTION:	Lake 3	Lake 4	Lake 5		FLS-4-1	FLS-4-2	FLS-4-3	FLS-4-4
		SAM	PLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10		2022-08-10	2022-08-10	2022-08-10	2022-08-10
_				11:50	11:50	11:50		10:59	10:59	10:59	10:59
Parameter	Unit	G/S	RDL	4185211	4185212	4185213	RDL	4185214	4185215	4185216	4185217
E. Coli (MF)	CFU/100 mL	1	1	9	5	4	1000	35000	37000	35000	40000
	SA	AMPLE DES	CRIPTION:	FLS-4-5		FLW-3-1 Below	FLW-3-2 Below	FLW-3-3 Below	FLW-3-4 Below	FLW-3-5 Below	
		SAM	PLE TYPE:	Water		Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-08-10		2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	
				10:59		09:59	09:59	09:59	09:59	09:59	
Parameter	Unit	G/S	RDL	4185218	RDL	4185219	4185220	4185221	4185222	4185223	
E. Coli (MF)	CFU/100 mL	1	1000	48000	100	5500	5800	4800	4700	6000	
	SA	AMPLE DES	CRIPTION:	FLN-3-1	FLN-3-2	FLN-3-3	FLN-3-4	FLN-3-5		FLN-8-1	FLN-8-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-10 09:28	2022-08-10 09:28	2022-08-10 09:28	2022-08-10 09:28	2022-08-10 09:28		2022-08-10	2022-08-10
Parameter	Unit	G/S	RDL	4185224	4185225	4185226	4185227	4185228	RDL	4185249	4185250
E. Coli (MF)	CFU/100 mL	1	1	266	274	250	247	317	2	NDOGT	176

Certified By:

Josephan Coaghtray



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

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#### E.coli Membrane Filtration

				⊏.00	ni wembrar	ie Fillialion					
DATE RECEIVED: 2022-08-10								[	DATE REPORT	ED: 2022-08-12	
	SA	MPLE DES	CRIPTION:	FLN-8-3 Water	FLN-8-4 Water	FLN-8-5 Water		FLE-3-1 Water	FLE-3-2 Water	FLE-3-3 Water	FLE-3-4 Water
		_	SAMPLED:	2022-08-10	2022-08-10	2022-08-10		2022-08-10 09:45	2022-08-10 09:45	2022-08-10 09:45	2022-08-10 09:45
Parameter	Unit	G/S	RDL	4185251	4185252	4185253	RDL	4185264	4185265	4185266	4185267
E. Coli (MF)	CFU/100 mL	1	2	102	140	146	1	22	22	12	18
	SA	AMPLE DES	CRIPTION:	FLE-3-5		FLE-5-1	FLE-5-2	FLE-5-3	FLE-5-4	FLE-5-5	
		SAM	PLE TYPE:	Water		Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-08-10 09:45		2022-08-10 10:30	2022-08-10 10:30	2022-08-10 10:30	2022-08-10 10:30	2022-08-10 10:30	
Parameter	Unit	G/S	RDL	4185268	RDL	4185274	4185275	4185276	4185277	4185278	
E. Coli (MF)	CFU/100 mL	1	1	23	2	>400	>400	>400	>400	>400	
	SA	AMPLE DES	CRIPTION:	FLW-1-1	FLW-1-2	FLW-1-3	FLW-1-4	FLW-1-5		FLW-2-1	FLW-2-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-10 10:25	2022-08-10 10:25	2022-08-10 10:25	2022-08-10 10:25	2022-08-10 10:25		2022-08-10 10:11	2022-08-10 10:11
Parameter	Unit	G/S	RDL	4185279	4185280	4185281	4185282	4185283	RDL	4185284	4185285
E. Coli (MF)	CFU/100 mL	1	1000	159000	137000	137000	118000	155000	100	28500	24300
	SA	MPLE DES	CRIPTION:	FLW-2-3	FLW-2-4	FLW-2-5		FLW-6-1		FLW-6-2	FLW-6-3
		SAM	PLE TYPE:	Water	Water	Water		Water		Water	Water
		DATE	SAMPLED:	2022-08-10 10:11	2022-08-10 10:11	2022-08-10 10:11		2022-08-10 09:20		2022-08-10 09:20	2022-08-10 09:20
Parameter	Unit	G/S	RDL	4185286	4185287	4185288	RDL	4185289	RDL	4185290	4185291
E. Coli (MF)	CFU/100 mL	1	100	24000	23100	27200	1	335	2	472	520
	SA	AMPLE DES	CRIPTION:	FLW-6-4	FLW-6-5		FLS-2-1	FLS-2-2	FLS-2-3	FLS-2-4	FLS-2-5
		SAM	PLE TYPE:	Water	Water		Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10 09:20	2022-08-10 09:20		2022-08-10 11:31	2022-08-10 11:31	2022-08-10 11:31	2022-08-10 11:31	2022-08-10 11:31
Parameter	Unit	G/S	RDL	4185292	4185293	RDL	4185306	4185307	4185308	4185309	4185310
E. Coli (MF)	CFU/100 mL	1	2	594	442	1	32	11	10	6	3

Certified By:

Jasar Coaghtry



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

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#### E.coli Membrane Filtration

				⊏.00	ni wembiai	ie riitiation					
DATE RECEIVED: 2022-08-10									DATE REPORTI	ED: 2022-08-12	
										Inlet of Rocky	Inlet of Rocky
	S	SAMPLE DES	CRIPTION:	FLS-3-1	FLS-3-2	FLS-3-3	FLS-3-4	FLS-3-5		Lake 3	Lake 4
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-10 11:09	2022-08-10 11:09	2022-08-10 11:09	2022-08-10 11:09	2022-08-10 11:09		2022-08-10 11:00	2022-08-10 11:00
Parameter	Unit	G/S	RDL	4185311	4185312	4185313	4185314	4185315	RDL	4185317	4185318
E. Coli (MF)	CFU/100 mL	1	100	5400	5500	3300	5500	5100	1	13	12
				Inlet of Rocky	Inlet of Second	Outlet of	Outlet of				
	S	SAMPLE DES	CRIPTION:	Lake 5	Lake 1	Lake 2	Lake 3	Lake 4	Lake 5	Second Lake 1	Second Lake 2
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-08-10 11:00	2022-08-10 07:30	2022-08-10 07:30	2022-08-10 07:30	2022-08-10 07:30	2022-08-10 07:30	2022-08-10 11:41	2022-08-10 11:41
Parameter	Unit	G/S	RDL	4185319	4185320	4185321	4185322	4185323	4185324	4185325	4185326
E. Coli (MF)	CFU/100 mL	1	1	12	3	1	<1	1	2	39	50
				Outlet of	Outlet of	Outlet of	Gully on				
	S	SAMPLE DES	CRIPTION:	Second Lake 3	Second Lake 4	Second Lake 5	Cavalier Drive 1	Cavalier Drive 2	Cavalier Drive 3	Cavalier Drive 4	Cavalier Drive 5
		SAM	PLE TYPE:	Water							
		DATE	SAMPLED:	2022-08-10 11:41	2022-08-10 11:41	2022-08-10 11:41	2022-08-10 07:58	2022-08-10 07:58	2022-08-10 07:58	2022-08-10 07:58	2022-08-10 07:58
Parameter	Unit	G/S	RDL	4185327	4185328	4185329	4185330	4185331	4185332	4185333	4185334
E. Coli (MF)	CFU/100 mL	1	1	43	25	44	93	77	108	105	99
	S	SAMPLE DES	CRIPTION:	Inlet of Rocky 1	Inlet of Rocky 2						
		SAM	PLE TYPE:	Water	Water						
		DATE	SAMPLED:	2022-08-10 11:00	2022-08-10 11:00						
Parameter	Unit	G/S	RDL	4185335	4185336						
E. Coli (MF)	CFU/100 mL	1	1	20	39						

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2022-07

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4185249 No Data: Overgrown with Target Analysis performed at AGAT Halifax (unless marked by \*)

Certified By:

Josan Coaghtry



AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

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OLILINI INAIVIL				ATTENTION TO: MICI			
SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
4185154	FLN-1-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	400
4185175	FLN-1-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	900
4185176	FLN-1-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	600
4185177	FLN-1-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	400
4185178	FLN-1-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1300
4185179	FLN-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1700
4185180	FLN-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1000
4185181	FLN-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1000
4185182	FLN-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	600
4185183	FLN-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1600
4185188	Unmarked Outfall 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	2
4185189	FLW-3-1 Above	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	2800
4185190	FLW-3-2 Above	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	1600
4185191	FLW-3-3 Above	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	2300
4185192	FLW-3-4 Above	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	2600
4185193	FLW-3-5 Above	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	2900
4185194	FLW-7-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	472
4185195	FLW-7-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		492
4185196	FLW-7-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	470
4185197	FLW-7-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	458
4185198	FLW-7-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	. 1	494
4185199	FLW-8-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		328
4185200	FLW-8-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		246
4185201	FLW-8-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		334
4185202	FLW-8-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		260
4185203	FLW-8-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		376
4185204	Inlet of First Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		192
4185205	Inlet of First Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		180
4185206	Inlet of First Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		198
4185207	Inlet of First Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		152
4185208	Inlet of First Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		124
4185209	Outlet of First Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		7
4185210	Outlet of First Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		7
4185211	Outlet of First Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		9
4185212	Outlet of First Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		5
4185213	Outlet of First Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		4
4185214	FLS-4-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		35000
4185215	FLS-4-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		37000
4185216	FLS-4-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL		35000
4185217	FLS-4-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		40000
4185218	FLS-4-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL		48000
4185219	FLW-3-1 Below	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		5500
4185220	FLW-3-2 Below	NS-CDWQ excl [AO]	=.com momorano i madon	E. Coli (MF)	O. O, 100 III	. 1	5800



AGAT WORK ORDER: 22X931131

PROJECT: 220804.00

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUI	DEVALUE	RESULT
4185221	FLW-3-3 Below	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4800
4185222	FLW-3-4 Below	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4700
4185223	FLW-3-5 Below	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6000
4185224	FLN-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	266
4185225	FLN-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	274
4185226	FLN-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	250
4185227	FLN-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	247
4185228	FLN-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	317
4185250	FLN-8-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	176
4185251	FLN-8-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	102
4185252	FLN-8-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	140
4185253	FLN-8-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	146
4185264	FLE-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	22
4185265	FLE-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	22
4185266	FLE-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4185267	FLE-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	18
4185268	FLE-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	23
4185279	FLW-1-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	159000
4185280	FLW-1-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	137000
4185281	FLW-1-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	137000
4185282	FLW-1-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	118000
4185283	FLW-1-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	155000
4185284	FLW-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	28500
4185285	FLW-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	24300
4185286	FLW-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	24000
4185287	FLW-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	23100
4185288	FLW-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	27200
4185289	FLW-6-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	335
4185290	FLW-6-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	472
4185291	FLW-6-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	520
4185292	FLW-6-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	594
4185293	FLW-6-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	442
4185306	FLS-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	32
4185307	FLS-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	11
4185308	FLS-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	10
4185309	FLS-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6
4185310	FLS-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3
4185311	FLS-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5400
4185312	FLS-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5500
4185313	FLS-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3300
4185314	FLS-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5500
4185315	FLS-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5100
4185317	Inlet of Rocky Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	13



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PROJECT: 220804.00

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUI	DEVALUE	RESULT
4185318	Inlet of Rocky Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4185319	Inlet of Rocky Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	12
4185320	Inlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3
4185324	Inlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2
4185325	Outlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	39
4185326	Outlet of Second Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	50
4185327	Outlet of Second Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	43
4185328	Outlet of Second Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	25
4185329	Outlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	44
4185330	Gully on Cavalier Drive 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	93
4185331	Gully on Cavalier Drive 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	77
4185332	Gully on Cavalier Drive 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	108
4185333	Gully on Cavalier Drive 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	105
4185334	Gully on Cavalier Drive 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	99
4185335	Inlet of Rocky 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	20
4185336	Inlet of Rocky 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	39



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## Method Summary

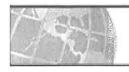
CLIENT NAME: CBCL LTD PROJECT: 220804.00

SAMPLING SITE:

AGAT WORK ORDER: 22X931131 ATTENTION TO: Michael Brophy

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
E Coli (ME)	MIC-121-7002	SM 9222 H	ME/INCLIBATOR





### **CHAIN OF CUSTODY RECORD**

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

1	1 No.
	Laboratory use Only
ı	Arrival Condition: Good Poor (complete 'notes')
_	Arrival Condition: Good Poor (complete 'notes')  Arrival Temperature: 3.1.7.7.4 AGAT Job Number: 22X931131
	Notes:
	Drinking Water Sample (y/n): Reg. No
	Waterworks Number:

	l	
Report To: Company: CBCL Contact: Michael Brophy Address: Suite 901, 1505 Barrington St. Halifax NS B3J 2R7 Phone: 902-421-7241 FAX: PO#: AGAT Quotation: Client Project #: 220804.00 Invoice to: Same (Yes) - Circle	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mfraser@cbcl.ca  Regulatory Requirements (Check):  □ PIRI Site Info (check all that apply): □ Tier 1 □ Res. □ Pot. □ Coarse	Report Format  Single Sample per page Proper page Prop
Company: Same as above Contact: Address:  Phone: Fax: PO#:	☐ Tier 2 ☐ Comm. ☐ N/Pot.☐ Fine  ☐ CCME ☐ CDWQ ☐ Ind. ☐ MAC/IMAC ☐ Com ☐ A / O ☐ Res/p ☐ NSDFOSP ☐ Ag ☐ Other ☐ FWAL ☐ FWAL ☐ COMMENTS	Lab Sample
SAMPLE IDENTIFICATION  DATE / TIME SAMPLE MATRIX  FLN - 1 - 1 . Aug 10 7:40am		Chlorophyll TSS TSS E.Coll Enterococci Other: Other Hazardous
FLN - 1 - 2 FLN - 1 - 3 FLN - 1 - 4		
FLN - 1 - 5. FLN - 2 - 1 FLN - 2 - 2		
FLN - 2 - 3 FLN - 2 - 4 FLN - 2 - 5		
Unmarked Outfall 1  Unmarked Outfall 2  Sample Relinquished By (print name)  Lichael Broth  Sample Relinquished By (sigp)	Date/Time Samples Received By (print name)  Date/Time Samples Received By (sign)	Pink Copy - Client Yellow Copy - AGAT Page of of
Mindry But	ALGIO Maceyerbur	Mhite Copy - AGAT NO:



# AGAT Laboratories

Unit 122 - 11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs:com

22×931131

. "22 AUG 10 1=29 PM

CHAIN OF CUSTODY	,			:•	0	+		# 0				25 16	-		Y.		60		Su				[ N	П	
Report to: Company: Same as COC#;					Field Filtered / Preserve	rd Water Analysis				Chlorophyll A			Enterococci	4										Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field F	Standard	TKN	ТР	SRP	Chlore	TSS	E.Coli	Enter									Other:	Other	Haza	
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Outlet of First Lake 2	V				10 - 1 .	Dv. /	print	nac	20)			1		ate/T	ime				-		100				~
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Sample Relinquished By (sign)			Date/Tin	ne Samples Recei	l on	By (	sign)	1	لمر					ate/T	ıme	Whit	e Copy	y - AG.		NO:					



# AGAT Laboratories

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

'22 AUG 10 1:29pm

### **CHAIN OF CUSTODY**

Report to: Company:	CBCL	
Same as COC#:		

Company: CBCL Same as COC#:					tered / Prese	J Water Analysi				hyll A			occi	1	A STATE OF									Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX CO	# OF ONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filtered	Standard	TKN	TP	SRP	Chlorophyll A	TSS	E.Coli	Enterococci					ı			100	Other:	Other:	lazardo	
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PLW-103-3 bean								202			Ī										88		-		
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Sample Relinquished By (sign)		Da	ite/Time	Samples Received	d By	(sig	18	ls	له				Date/⊺	ime	Whil	ow Cop te Cop	y - AG y - AG	AT	NO:						

initial CCC was submitted wet therefore new copies. were submitted the next day



# CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718

Laboratory use Only	
Arrival Condition: Good	☐ Poor (complete 'notes')
Arrival Temperature: 8.8,9,1,8,1	AGAT Job Number: 22×931131
Notes:	:
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

· · ·									Waterworks Number:															
Report To:           Company:         CBCL           Contact:         Michael Brophy           Address:         Suite 901, 1505 Barring           Halifax NS         B3J 2R7           Phone:         902-421-7241 FAX:           PO#:         AGAT Quotation:           Client Project #:         220804.00           Invoice to:         Same (Yes) - Cir		1. Name: Email: 2. Name: Email: Regulato PIRI Tiel	Information Michael Brophy mbrophy@cbc Melissa Fraser mIraser(@cbcl, ry Requirement Site Info (chec	Ca Ca S (Ch k all th	at ap □ Co	ply): parse			Fo	eport rmat Single sample per pag Aultiple sample per pag excel format nclude	je S	Rus Date	rnai	TAT:	: 5 to 24 to 48 to	7 wo	(TA orking hour hour	g da		uire	ed			
Company: Same as above Contact: Address:  Phone: Fax: PO#:	□ Res/p	☐ MAC/IMAC  ☐ A / O  ☐ NSDFOSP ☐ Other	ered / Preser	1 Water Analysis + TMS				hyll A		occi					7/			一大田田田			<del>-</del>	Lab Sample #		
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Fleld FI	Standard 1	TKN	<u>P</u>	SRP	Chlorophyll	TSS	Enterococci			Vij						Other:	Other:	azard	
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Unitize-11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs.com
Next down.

Next down.

Call Laboratories



CHAIN OF CUSTODY RECORD

CBCL

D ze amē2	#C
Company:	
Report to:	

ON White Copy - AGAT Sample Relinquished By (sign) Date/Time Date/Time Samples Received By (sign) Yellow Copy - AGAT Date/Time Samples Received By (print name) Page\_ Pink Copy - Client Sample Relinquished By (print name) Date/Time 2 2 373 <del>1 7 373</del> 1 8 NII EFN - 8 3 EFN - 8 - 5 FEN 8 I S - L N7= E-LN 7-3 E-1-1 S - 9 N73 t-9 N73 EIN - 6 3 EFN - 6 5 EFN 2 - 3 CONTAINERS Site/Sample SRP Hazardous (Y/N) Enterococci Chlorophyll A Field Filtered / Preserved Standard Water Analysis XIATAM DATE \ TIME SAMPLED SAMPLE IDENTIFICATION SAMPLE COMMENTS -Sample

initial Cos Submitted
Wet therefore new Copy Submitted

Next day

Unit 122-11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2

http://webearth.agatlabs.com

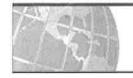
22×931131

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com





Report to: Company; Same as COC#;			<b>.</b> .		Field Filtered / Preserved	Standard Water Analysis + 1				Chlorophyll A		STATE OF THE STATE	cocci		1000							No. of the No.	Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field F	Standar	TKN	TP	SRP	Chloro	TSS	E.Coli	Enterococci		.sa	5					Other:	Other:	Hazar	
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Sample Relinquished By (sign)		Date/Time	Samples Receiv	ed B	y (sig	gn)						Da	te/Time	Whit	e Copy	- AGAT								



## T Laboratories CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2

Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition: □Good Arrival Temperature: 88 6 2 7 . 7	□ Poor (complete 'notes') AGAT Job Number: 23X931131
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

http://webearth.agatlabs.com	·	www.agat	labs.com				L	Wate	erwo	rks N	lumber	:							_				_			
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Client Project #: 220804.00	1.0			1 Res. D							ormat			e Required: e Required:												
<b>Invoice to:</b> Same (Yes) - Circle Company: Same as above	ie		□ CCME	2 □ Comm. □ N	I/Pot.	(O )	ne	100000	_	I I	ncluded		Time R	equir	ed:				T.		-		Ť			
Contact: Address: Phone: Fax:			□ Ind □ Com □ Res/p	□ MAC/IMAC	Preser	er Analysis + TM				A													(A/N)	Lat Samı		
PO#:			- FWAL		Filtered /	Wat				hyll	100	occi				150			1		- 1	12.	SI O	#		
SAMPLE IDENTIFICATION	DATE / TIME CAN					Standard	TKN	TP	SRP	Chlorophyll A	TSS E.Coll	Enterococci									Other:	Other:	Hazardous (Y/N)			
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# AGAT Laboratories

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Unit 122 - 11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs.com
22AUG 10 1 28PM

Report to: Company: Same as COC#:	<b>-</b> } <b>-</b> 3	= Filtered / Preserv	Water Analysis +				hyll A	80		occi		i									Service Services	Hazardous (Y/N)	Lab Sample #				
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Fit	Standard	TKN	ТР	SRP	Chlorophyll A	TSS	E.Coli	Enterococci										Other:	Other:	Hazard		
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## 8.8,9.1,8.1

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

## · 22×931131

CHAIN OF	CUSTODY	RECORD
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Report to: Company: Same as COC#:	-1 -1	- Filtered / Preserve	Standard Water Analysis +		10 P 20 P		hyll A			occi		- 100				122	A	Hazardous (Y/N)	Lab Sample #	
SAMPLE IDENTIFICATION	DATE / TIME SAMPLE SAMPLED MATRIX	# OF COMMENTS - Site/Sample Info/Contaminant	Field Filt	Standard	TKN	ТР	SRP	Chlorophyll A	TSS	E.Coli	Enterococci						Other:	Other:	Hazard	
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Inlet of Rocky Lake 4	i					Wing.				1			10			U.M		130		
Inlet of Rocky Lake 5						33		11 10		1	81. 1				123					
Intet of Second Lake 1	7:30am			15						1	1500		100		THE STATE OF					
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Gully on Cavalier Drive 2						UVIII C=0		1/8					-							
Gully on Cavalier Drive 3-				1181		1				197			101	Î						
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						33		V S		1	654		14			10				
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Sample Relinquished By (print name)	While Bul.	Date/Time Samples Received Acq 10							- '		Date/Time	Pink	Copy - (		Pag	ą,	4	_ of	4	9
Sample Relinquished By (sign)	Date/Time Samples Received	red By	P/V	3n) 女人	Μ.	)				Date/Time		v Сору - e Сору -		NO:	,					



11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: Michael Brophy

PROJECT: 220804.00 AGAT WORK ORDER: 22X931314

MICROBIOLOGY ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganics Supervisor

DATE REPORTED: Aug 12, 2022

PAGES (INCLUDING COVER): 7 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

Notes	

### Disclaimer:

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- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may
  incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may
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- The test results reported herewith relate only to the samples as received by the laboratory.
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  contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

AGAT Laboratories (V1)

Page 1 of 7

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SAMPLING SITE:

# Certificate of Analysis

AGAT WORK ORDER: 22X931314

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

				E.co	oli Membrar	ne Filtration					
DATE RECEIVED: 2022-08-10								ļ	DATE REPORT	TED: 2022-08-12	
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Statio
				First Lake	First Lake	First Lake	First Lake	First Lake	Rocky Lake	Rocky Lake	Rocky Lake
	S	SAMPLE DES	CRIPTION:	(deep) 1	(deep) 2	(deep) 3	(deep) 4	(deep) 5	(deep) 1	(deep) 2	(deep) 3
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10
				13:27	13:27	13:27	13:27	13:27	14:24	14:24	14:24
Parameter	Unit	G/S	RDL	4186956	4186958	4186959	4186960	4186961	4186962	4186963	4186964
E. Coli (MF)	oli (MF) CFU/100 mL 1		1	9	6	3	7	4	5	1	4
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station
				Rocky Lake	Rocky Lake	Second Lake	Second Lake	Second Lake	Second Lake	Second Lake	First Lake
	S	SAMPLE DES	CRIPTION:	(deep) 4	(deep) 5	(deep) 1	(deep) 2	(deep) 3	(deep) 4	(deep) 5	(shallow) 1
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10
				14:24	14:24	15:26	15:26	15:26	15:26	15:26	13:27
Parameter	Unit	G/S	RDL	4186965	4186966	4186967	4186968	4186969	4186970	4186971	4186972
E. Coli (MF)	CFU/100 mL	1	1	4	2	<1	1	2	<1	<1	5
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station
				First Lake	First Lake	First Lake	First Lake	Rocky Lake	Rocky Lake	Rocky Lake	Rocky Lake
	S	SAMPLE DES	CRIPTION:	(shallow) 2	(shallow) 3	(shallow) 4	(shallow) 5	(shallow) 1	(shallow) 2	(shallow) 3	(shallow) 4
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10
_				13:27	13:27	13:27	13:27	14:24	14:24	14:24	14:24
Parameter	Unit	G/S	RDL	4186973	4186974	4186975	4186976	4186977	4186978	4186979	4186980
E. Coli (MF)	CFU/100 mL	1	1	3	4	5	5	2	1	4	2
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station		
				Rocky Lake	Second Lake	Second Lake	Second Lake	Second Lake	Second Lake	Kinsmen Beach	
	S	SAMPLE DES	CRIPTION:	(shallow) 5	(shallow) 1	(shallow) 2	(shallow) 3	(shallow) 4	(shallow) 5	Α	
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	2022-08-10	
				14:24	15:26	15:26	15:26	15:26	15:26	13:20	
Parameter	Unit	G/S	RDL	4186981	4186982	4186983	4186984	4186985	4186986	4186987	
E. Coli (MF)	CFU/100 mL	1	1	5	<1	1	2	<1	<1	292	

Certified By:

Josephan Coaghtray



Certificate of Analysis

AGAT WORK ORDER: 22X931314

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

### E.coli Membrane Filtration

				∟.00	ii wiciiibi ai	ic i iitiation		
DATE RECEIVED: 2022-08-10								DATE REPORTED: 2022-08-12
				Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	
	SA	MPLE DES	CRIPTION:	В	С	D	E	
		SAM	PLE TYPE:	Water	Water	Water	Water	
		DATE	SAMPLED:	2022-08-10 13:20	2022-08-10 13:20	2022-08-10 13:20	2022-08-10 13:20	
Parameter	Unit	G/S	RDL	4186988	4186989	4186990	4186991	
E. Coli (MF)	CFU/100 mL	1	2	256	276	>400	308	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2022-07

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Halifax (unless marked by \*)

CLIENT NAME: CBCL LTD

SAMPLING SITE:

Certified By:

Joseph Coughtry



# **Exceedance Summary**

AGAT WORK ORDER: 22X931314

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD ATTENTION TO: Michael Brophy

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
4186956	Deep Station First Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	9
4186958	Deep Station First Lake (deep) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	6
4186959	Deep Station First Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	3
4186960	Deep Station First Lake (deep) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	7
4186961	Deep Station First Lake (deep) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	4
4186962	Deep Station Rocky Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	5
4186964	Deep Station Rocky Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	4
4186965	Deep Station Rocky Lake (deep) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	4
4186966	Deep Station Rocky Lake (deep) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	2
4186969	Deep Station Second Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	2
4186972	Deep Station First Lake (shallow) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	5
4186973	Deep Station First Lake (shallow) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	3
4186974	Deep Station First Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	4
4186975	Deep Station First Lake (shallow) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	5
4186976	Deep Station First Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	5
4186977	Deep Station Rocky Lake (shallow) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	2
4186979	Deep Station Rocky Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	4
4186980	Deep Station Rocky Lake (shallow) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	2
4186981	Deep Station Rocky Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	5
4186984	Deep Station Second Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	2
4186987	Kinsmen Beach A	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	292
4186988	Kinsmen Beach B	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	256
4186989	Kinsmen Beach C	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	276
4186991	Kinsmen Beach E	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	. 1	308



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# **Method Summary**

CLIENT NAME: CBCL LTD PROJECT: 220804.00

SAMPLING SITE:

AGAT WORK ORDER: 22X931314 ATTENTION TO: Michael Brophy

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
E. Coli (MF)	MIC-121-7002	SM 9222 H	MF/INCUBATOR





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition: ローGood Arrival Temperature: リリーコーク Notes: 24.7	Poor (complete 'notes')  AGAT Job Number: 72735  L-22×931314
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

							, la													=		
Report To:			Report	Information				$\neg$		R	eport	1	Turna	roun	d Tir	ne (	ΤΔΊ	[) R4	ani	red		
Company: CBCL				Michael Brophy					٠ ا		ormat	1	ı			,	(17)	,	-qu			
Contact: Michael Brophy				mbrophy@cbcl	.ca						Single sample	1	Regula	TAT:	<b>to</b> 7	14101	م مایا،		- 10	5 81	100.27	4 3-77
Address: Suite 901, 1505 Barrin Halifax NS B3J 2R7	gton St.			Melissa Fraser mfraser@cbcl.d	20			-			per pag		Rush T	о <b>ЛТ</b> •	10 /	wor	KING	uay	5	SHU	5 18	4:21
Phone: 902-421-7241 FAX:				y Requirements		eck	١٠	-		1000	Multiple		□ 24 to 48 hours									
								- 1		_	sample	s	I 7		8 to							
			PIRI	Site Info (check				- 1			per pag Excel	je	_			/ 2 11	louis	•				1
Client Project #: 220804.00			4	1 Res. D				- 1			Format		Date Re									
Invoice to: Same (Yes) - Circ	cle		_	<i>12</i> □ Comm. □ N	I/Pot.I	□ Fir	ne				Include	d	Time Re	quired	:	_						
Company: Same as above			☐ CCME		٦	TMS		8.1			10	3			300				0	182		
Contact:			□ Ind.	□ MAC/IMA©	Prve	+ si				5 8	2	1	18		-51	П	93	10	10	333		
Address:			☐ Com		Preserved	Analysis				s in	60	1	-12	100		1 1	W =	17	6	1000	9	Lab
Phone; Fax:			ed .	□ NSDFOSP □ Other	I < I					4	( ]	<b>≥</b> ()	199	1	100		103	Ear.	0	338	]	Sample
PO#:			FWAL		Filtered	Water				hyll		occi	40			Н	29			31	Sno	#
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Fil	Standard	TKN	4	SRP	Chlorophyll	TSS	Enterococci		ME					Other:	Other:	Hazardous (Y/N)	
Deep Station First Lake (deep) 1	13:27							0.8		7.7	à	0	3.4		0.0		THE PERSON NAMED IN	10				
Deep Station First Lake (deep) 2								Tills-			1	8										
Deep Station First Lake (deep) 3						2151														Ju.		
Deep Station First Lake (deep) 4										3.8				112			31					
Deep Station First Lake (deep) 5	V									1700												
Deep Station Rocky Lake (deep) 1	14:24									123					13/1			100		1		
Deep Station Rocky Lake (deep) 2	1																					
Deep Station Rocky Lake (deep) 3														U.S.								
Deep Station Rocky Lake (deep) 4										Syl									S.	10		
Deep Station Rocky Lake (deep) 5	<b>→</b>					9 0		Sir.		-12								8				
Deep Station Second Lake (deep) 1	15:20													300					0			
Deep Station Second Lake (deep) 2	١							10				V	no fi	11/3.3	302		15	E		1		
Sample Relinquished By (print name)			Date/Time	Samples Receive	d By	(pri	nt na	me)	_			D	ate/Time						ì			$\overline{}$
Melisse Frager			4:16pm			/									Copy - C		Pa	ige_		0	f	<u>d</u>
Sample Relinquished By (sign)			Date/Time	Samples Receive	d By	(Sig	n)	/	1			D	ate/Time		Copy - A			112				
Malach				1	1	10	-	1									NO:					



# AGAT Laboratories

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

CHAIN OF	CUSTODY RECORD
eport to:	
ompany:	CBCL

Report to: Company: Same as COC#:	62		•a	-	Field Filtered / Preserv	rd Water Analysis +				Chlorophyll A		(MF /C						72. S. S. S. S. S.					Hazardous (Y/N)	Lab Sample #	ž
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field F	Standard	TKN	ТР	SRP	Chloro	TSS	E.Coli	Enterococ							× 1	Other:	Other:	Hazar		
Deep Station Second Lake (deep) 3	15:25			Jan oy Southanning I				8				1						0							1
Deep Station Second Lake (deep) 4						闦						1	T				CH.	188		275		311			1
Deep Station Second Lake (deep) 5	<b>1</b>							100								T	2/	100		5					1
Deep Station First Lake (shallow) 1	13:27			_						U.S		1		72			-	V		10		123			1
Deep Station First Lake (shallow) 2	L							- 500						78			- 24								1
Deep Station First Lake (shallow) 3						QE											W	100		198	99	ΔH	541	4.00	1
Deep Station First Lake (shallow) 4						18				II,								13					14	412	1
Deep Station First Lake (shallow) 5	1														to A										1
Deep Station Rocky Lake (shallow) 1	14:24																9.0								1
Deep Station Rocky Lake (shallow) 2												1		9.0				1							1
Deep Station Rocky Lake (shallow) 3						2											577		Ñ						1
Deep Station Rocky Lake (shallow) 4						195						18		V			310	3		ROOM					1
Deep Station Rocky Lake (shallow) 5	V							EZ:														IIE.			1
Deep Station Second Lake (shallow) 1	15:26							NI B				1 10		120			~ 0	2	i i		$\Box$	10			1
Deep Station Second Lake (shallow) 2	1				$\top$			1		Jan Wi	$\Box$							8		17	$\Box$	200			1
Deep Station Second Lake (shallow) 3						188		116		100		1		100			-10	1		14					1
Deep Station Second Lake (shallow) 4						(we)		love.		-		1									$\Box$				1
Deep Station Second Lake (shallow) 5	<b>V</b>					188				7		1								100	$\Box$				1
Kinsmen Beach	13:20							11/5						MS.				1							1
Kinsmen Beach	100							B		78										80					1
Kinsmen Beach															1 20										1
Kinsmen Beach						nces				Me					1,50		20	0		100					1
Kinsmen Beach	1									-50				600	1531		- 10	60		100					1
Inlet of Rocky Lake-1-														III.				1							
Inlet of Rocky Lake 2										PIV		A						8							1
Sample Relinquished By (print name)				Samples Receive		/	)	ame	)	/	' }		Dat	e/Time			· - Clien	nt nt	Pag	e	7	_ of		2	
Sample Relinquished By (sign)			Date/Time	Samples Receive	ed By	Link	10	n	1	/			Dat	e/Time			y - AGA	AT	10:	- 2	·			5	



11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD

1505 BARRINGTON STREET, SUITE 901

HALIFAX, NS B3J 2R7

(902) 421-7241

ATTENTION TO: Michael Brophy

PROJECT: 220804.00 AGAT WORK ORDER: 22X934525

MICROBIOLOGY ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganics Supervisor

DATE REPORTED: Aug 29, 2022

PAGES (INCLUDING COVER): 21 VERSION\*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

Notes	

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- The test results reported herewith relate only to the samples as received by the laboratory.
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SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

I				E.CC	di Membrar	ie Filtration					
DATE RECEIVED: 2022-08-18	3							[	DATE REPORTE	ED: 2022-08-29	
	SA	MPLE DES	CRIPTION:	FLW-1-1	FLW-1-2	FLW-1-3	FLW-1-4	FLW-1-5	FLW-2-1	FLW-2-2	FLW-2-3
I		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
I		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18
I				10:00	10:00	10:00	10:00	10:00	09:55	09:55	09:55
Parameter	Unit	G/S	RDL	4215824	4215826	4215827	4215828	4215829	4215830	4215831	4215832
E. Coli (MF)	CFU/100 mL	1	1000	31000	29000	25000	26000	24000	22000	5000	11000
1	SA	SAMPLE DESCRIPTION:			FLW-2-5		FLW-6-1	FLW-6-2	FLW-6-3	FLW-6-4	FLW-6-5
		SAM	PLE TYPE:	Water	Water		Water	Water	Water	Water	Water
I		DATE	SAMPLED:	2022-08-18	2022-08-18		2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18
		0.10		09:55	09:55		09:20	09:20	09:20	09:20	09:20
Parameter	Unit	G/S	RDL	4215833	4215834	RDL	4215835	4215836	4215837	4215838	4215839
E. Coli (MF)	CFU/100 mL	1	1000	11000	5000	100	8300	8400	7100	7400	7900
1	SA	MPLE DES	CRIPTION:	FLS-2-1	FLS-2-2	FLS-2-3	FLS-2-4	FLS-2-5		FLS-3-1	FLS-3-2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE SAMPLED:		2022-08-18 10:50	2022-08-18 10:50	2022-08-18 10:50	2022-08-18 10:50	2022-08-18 10:50		2022-08-18 10:25	2022-08-18 10:25
Parameter	Unit	G/S	RDL	4215840	4215841	4215842	4215843	4215850	RDL	4215855	4215856
E. Coli (MF)	CFU/100 mL	1	1	26	12	16	11	20	2	258	304
L. Con (Wil )	OI O/ 100 IIIL	'		20	12	10		20	2	250	304
	SA	MPLE DES	CRIPTION:	FLS-3-3	FLS-3-4	FLS-3-5		FLN-3-1		FLN-3-2	FLN-3-3
I		SAM	PLE TYPE:	Water	Water	Water		Water		Water	Water
		DATE	SAMPLED:	2022-08-18 10:25	2022-08-18 10:25	2022-08-18 10:25		2022-08-18 11:20		2022-08-18 11:20	2022-08-18 11:20
Parameter	Unit	G/S	RDL	4215857	4215858	4215859	RDL	4215860	RDL	4215861	4215862
E. Coli (MF)	CFU/100 mL	1	2	238	270	260	1	291	2	310	264
1	SA	MPLE DES	CRIPTION:	FLN-3-4	FLN-3-5		FLN-4-1	FLN-4-2	FLN-4-3	FLN-4-4	FLN-4-5
I			PLE TYPE:	Water	Water		Water	Water	Water	Water	Water
I		DATE	SAMPLED:	2022-08-18 11:20	2022-08-18 11:20		2022-08-18 10:46	2022-08-18 10:46	2022-08-18 10:46	2022-08-18 10:46	2022-08-18 10:46
Parameter	Unit	G/S	RDL	4215863	4215864	RDL	4215865	4215866	4215867	4215868	4215869
E. Coli (MF)	CFU/100 mL	1	2	300	312		1100	600	1200	500	
E. Coli (IVIF)	CFU/100 ML	ı	2	300	312	100	1100	OUU	1200	500	1200

Certified By:

Joseph Coaghtry



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

				E.CC	oli Membrar	ne Filtration					
DATE RECEIVED: 2022-08-18								I	DATE REPORTI	ED: 2022-08-29	
	SA	AMPLE DES	CRIPTION:	FLN-8-1	FLN-8-2	FLN-8-3	FLN-8-4	FLN-8-5		FLE-3-1	FLE-3-2
		SAM	IPLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18		2022-08-18	2022-08-18
				11:05	11:05	11:05	11:05	11:05		12:15	12:15
Parameter	Unit	G/S	RDL	4215870	4215871	4215872	4215873	4215874	RDL	4215875	4215876
E. Coli (MF)	CFU/100 mL	1	2	466	494	604	440	592	1	>200	>200
	SA	AMPLE DES	CRIPTION:	FLE-3-3	FLE-3-4	FLE-3-5		FLE-5-1	FLE-5-2	FLE-5-3	FLE-5-4
		SAM	IPLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18		2022-08-18	2022-08-18	2022-08-18	2022-08-18
				12:15	12:15	12:15		12:40	12:40	12:40	12:40
Parameter	Unit	G/S	RDL	4215877	4215878	4215879	RDL	4215880	4215881	4215882	4215883
E. Coli (MF)	CFU/100 mL	1	1	>200	>200	>200	2	246	240	256	264
						Deep Station					
						First Lake	Rocky Lake				
	SA	AMPLE DES	CRIPTION:	FLE-5-5		(deep) 1	(deep) 2	(deep) 3	(deep) 4	(deep) 5	(deep) 1
		SAM	IPLE TYPE:	Water		Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18 12:40		2022-08-18 07:30	2022-08-18 07:30	2022-08-18 07:30	2022-08-18 07:30	2022-08-18 07:30	2022-08-18 09:20
Parameter	Unit	G/S	RDL	4215884	RDL	4215885	4215886	4215887	4215888	4215889	4215890
E. Coli (MF)	CFU/100 mL	1	2	280	1	40	29	22	28	25	2
				Deep Station							
				Rocky Lake	Rocky Lake	Rocky Lake	Rocky Lake	Second Lake	Second Lake	Second Lake	Second Lake
	SAMPLE DESCRIPTION SAMPLE TYP				(deep) 3	(deep) 4	(deep) 5	(deep) 1	(deep) 2	(deep) 3	(deep) 4
					Water	Water Water Water		Water	Water	Water	Water
		DATE SAMPLED:		2022-08-18 09:20	2022-08-18 09:20	2022-08-18 09:20	2022-08-18 09:20	2022-08-18 08:30	2022-08-18 08:30	2022-08-18 08:30	2022-08-18 08:30
Parameter	Unit	G/S	RDL	4215891	4215892	4215893	4215894	4215895	4215896	4215897	4215898
E. Coli (MF)	CFU/100 mL	1	1	<1	6	1	3	2	<1	2	<1

Certified By:

Jasan Coaghtray



SAMPLING SITE:

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AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

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## E.coli Membrane Filtration

				E.cc	oli Membrar	ne Filtration					
DATE RECEIVED: 2022-08-18								[	DATE REPORTI	ED: 2022-08-29	
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station
				Second Lake	First Lake	First Lake	First Lake	First Lake	First Lake	Rocky Lake	Rocky Lake
	5	SAMPLE DES	CRIPTION:	(deep) 5	(shallow) 1	(shallow) 2	(shallow) 3	(shallow) 4	(shallow) 5	(shallow) 1	(shallow) 2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18
				08:30	07:30	07:30	07:30	07:30	07:30	09:30	09:30
Parameter	Unit	G/S	RDL	4215899	4215900	4215901	4215902	4215903	4215904	4215905	4215906
E. Coli (MF)	CFU/100 mL	1	1	<1	2	3	3	3	5	6	6
				Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station	Deep Station
				Rocky Lake	Rocky Lake	Rocky Lake	Second Lake	Second Lake	Second Lake	Second Lake	Second Lake
	5	SAMPLE DES	CRIPTION:	(shallow) 3	(shallow) 4	(shallow) 5	(shallow) 1	(shallow) 2	(shallow) 3	(shallow) 4	(shallow) 5
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	DATE SAMPLED: 2022-08-18 2022-08-18 09:30 09:30		2022-08-18 09:30	2022-08-18 08:30	2022-08-18 08:30	2022-08-18 08:30	2022-08-18 08:30	2022-08-18 08:30	
Parameter	Unit	G/S	RDL	4215907	4215908	908 4215909 4215910 4215911			4215912	4215913	4215914
E. Coli (MF)	CFU/100 mL	1	1	4	4	4	<1	2	1	1	1
				Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Kinsmen Beach	Kinsmen Beach		Inlet of Rocky	Inlet of Rocky
	5	SAMPLE DES	CRIPTION:	Α	В	С	D	E		Lake 1	Lake 2
		SAM	PLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18		2022-08-18	2022-08-18
				07:15	07:15	07:15	07:15	07:15		13:30	13:30
Parameter	Unit	G/S	RDL	4215915	4215916	4215917	4215918	4215919	RDL	4215920	4215921
E. Coli (MF)	CFU/100 mL	1	2	100	90	86	178	106	1	6	5
				Inlet of Rocky	Inlet of Rocky	Inlet of Rocky	Inlet of Second	Inlet of Second	Inlet of Second	Inlet of Second	Inlet of Second
	Ş	SAMPLE DES	CRIPTION:	Lake 3	Lake 4	Lake 5	Lake 1	Lake 2	Lake 3	Lake 4	Lake 5
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
			SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18
				13:30	13:30	13:30	12:20	12:20	12:20	12:20	12:20
Parameter	Unit	G/S	RDL	4215922	4215923	4215924	4215925	4215926	4215927	4215928	4215929
E. Coli (MF)	CFU/100 mL	1	1	4	7	4	5	6	5	3	4

Certified By:



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

## E.coli Membrane Filtration

DATE RECEIVED: 2022-08-18								D	ATE REPORT	TED: 2022-08-29	
				Outlet of		Gully on	Gully on				
	SA	AMPLE DES	SCRIPTION:	Second Lake 1	Second Lake 2	Second Lake 3	Second Lake 4	Second Lake 5		Cavalier Drive 1	Cavalier Drive
		SAM	IPLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-18 08:45	2022-08-18 08:45	2022-08-18 08:45	2022-08-18 08:45	2022-08-18 08:45		2022-08-18 12:40	2022-08-18 12:40
Parameter	Unit	G/S	RDL	4215930	4215931	4215932	4215933	4215934	RDL	4215944	4215945
E. Coli (MF)	CFU/100 mL	1	1	27	39	34	25	24	100	2100	2800
				Gully on	Gully on	Gully on					
	SA	AMPLE DES	SCRIPTION:	•	Cavalier Drive 4	•	FLN-1-1	FLN-1-2	FLN-1-3	FLN-1-4	FLN-1-5
		SAM	IPLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18
				12:40	12:40	12:40	08:00	08:00	08:00	08:00	08:00
Parameter	Unit	G/S	RDL	4215946	4215947	4215948	4215949	4215950	4215951	4215952	4215953
E. Coli (MF)	CFU/100 mL	1	100	2400	1900	1900	2800	2600	2300	3200	2000
										Unmarked	Unmarked
	SA	AMPLE DES	SCRIPTION:	FLN-2-1	FLN-2-2	FLN-2-3	FLN-2-4	FLN-2-5		Outfall 1	Outfall 2
		SAM	IPLE TYPE:	Water	Water	Water	Water	Water		Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18		2022-08-18	2022-08-18
				07:20	07:20	07:20	07:20	07:20		08:35	08:35
Parameter	Unit	G/S	RDL	4215954	4215955	4215956	4215957	4215958	RDL	4215959	4215960
E. Coli (MF)	CFU/100 mL	1	100	6300	5800	5600	3900	5700	1	3	3
				Unmarked	Unmarked	Unmarked					
	SA	AMPLE DES	SCRIPTION:	Outfall 3	Outfall 4	Outfall 5		FLW-7-1	FLW-7-2	FLW-7-3	FLW-7-4
		SAM	IPLE TYPE:	Water	Water	Water		Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18 08:35	2022-08-18 08:35	2022-08-18 08:35		2022-08-18 09:00	2022-08-18 09:00	2022-08-18 09:00	2022-08-18 09:00
Parameter	Unit	G/S	RDL	4215961	4215962	4215963	RDL	4215964	4215965	4215966	4215967
E. Coli (MF)	CFU/100 mL	1	1	11	2	2	100	3900	2800	2500	2200

Certified By:

Josephan Coaghtray



SAMPLING SITE:

Certificate of Analysis

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

ATTENTION TO: Michael Brophy

SAMPLED BY:

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### E coli Membrane Filtration

				E.CC	nı wembrar	ie Fiitration					
DATE RECEIVED: 2022-08-18								ſ	DATE REPORT	ED: 2022-08-29	
											Inlet of First
		SAMPLE DES	CRIPTION:	FLW-7-5	FLW-8-1	FLW-8-2	FLW-8-3	FLW-8-4	FLW-8-5		Lake 1
		SAM	PLE TYPE:	Water	Water	Water	Water	Water	Water		Water
		DATE	SAMPLED:	2022-08-18 09:00	2022-08-18 08:50	2022-08-18 08:50	2022-08-18 08:50	2022-08-18 08:50	2022-08-18 08:50		2022-08-18 08:00
Parameter	Unit	G/S	RDL	4215968	4215969	4215970	4215971	4215972	4215973	RDL	4215974
E. Coli (MF)	CFU/100 mL	. 1	100	2100	4100	3000	3500	3200	3800	2	>400
				Inlet of First	Inlet of First	Inlet of First	Inlet of First		Outlet of First	Outlet of First	Outlet of First
		SAMPLE DES	CRIPTION:	Lake 2	Lake 3	Lake 4	Lake 5		Lake 1	Lake 2	Lake 3
		SAM	PLE TYPE:	Water	Water	Water	Water		Water	Water	Water
		DATE	SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18		2022-08-18	2022-08-18	2022-08-18
				08:00	08:00	08:00	08:00		11:00	11:00	11:00
Parameter	Unit	G/S	RDL	4215975	4215976	4215977	4215978	RDL	4215979	4215980	4215981
E. Coli (MF)	CFU/100 mL	. 1	2	>400	>400	>400	>400	1	169	196	216
				Outlet of First	Outlet of First						
		SAMPLE DES	CRIPTION:	Lake 4	Lake 5		FLS-4-1	FLS-4-2	FLS-4-3	FLS-4-4	FLS-4-5
		SAM	PLE TYPE:	Water	Water		Water	Water	Water	Water	Water
		DATE	SAMPLED:	2022-08-18 11:00	2022-08-18 11:00		2022-08-18 10:15	2022-08-18 10:15	2022-08-18 10:15	2022-08-18 10:15	2022-08-18 10:15
Parameter	Unit	G/S	RDL	4215982	4215983	RDL	4215984	4215985	4215986	4215987	4215988
E. Coli (MF)	CFU/100 mL	. 1	1	160	178	1000	42000	39000	39000	40000	40000
		SAMPLE DES	CRIPTION	FLW-3-1 After	FLW-3-2 After	FLW-3-3 After	FLW-3-4 After	FLW-3-5 After			
			PLE TYPE:	Water	Water	Water	Water	Water			
			SAMPLED:	2022-08-18	2022-08-18	2022-08-18	2022-08-18	2022-08-18			
		DATE	O/ (IVII LLD.	09:45	09:45	09:45	09:45	09:45			
Parameter	Unit	G/S	RDL	4215989	4215990	4215991	4215992	4215993			
E. Coli (MF)	CFU/100 mL	. 1	100	>20000	>20000	>20000	>20000	>20000			

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Canadian Drinking Water Quality - updated 2022-07

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Halifax (unless marked by \*)

Certified By:

Casar Coaghtry



# **Exceedance Summary**

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

ATTENTION TO: Michael Brophy

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	LINIT	GUIDEVALUE	RESULT
4215824	FLW-1-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		31000
4215826	FLW-1-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		29000
4215827	FLW-1-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		25000
4215828	FLW-1-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		26000
4215829	FLW-1-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		24000
4215830	FLW-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		22000
4215831	FLW-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	5000
4215832	FLW-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		11000
4215833	FLW-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		11000
4215834	FLW-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		5000
4215835	FLW-6-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	8300
4215836	FLW-6-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	8400
4215837	FLW-6-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	7100
4215838	FLW-6-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	7400
4215839	FLW-6-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	7900
4215840	FLS-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	26
4215841	FLS-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	12
4215842	FLS-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	16
4215843	FLS-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	11
4215850	FLS-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	20
4215855	FLS-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	258
4215856	FLS-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	304
4215857	FLS-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	238
4215858	FLS-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	270
4215859	FLS-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	260
4215860	FLN-3-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	291
4215861	FLN-3-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	310
4215862	FLN-3-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	264
4215863	FLN-3-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	300
4215864	FLN-3-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	312
4215865	FLN-4-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	1100
4215866	FLN-4-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	600
4215867	FLN-4-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	1200
4215868	FLN-4-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	500
4215869	FLN-4-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	1200
4215870	FLN-8-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	466
4215871	FLN-8-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	494
4215872	FLN-8-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	604
4215873	FLN-8-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	440
4215874	FLN-8-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	592
4215880	FLE-5-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	_ 1	246
4215881	FLE-5-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml	L 1	240
4215882	FLE-5-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 ml		256



# **Exceedance Summary**

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

CLIENT NAME: CBCL LTD ATTENTION TO: Michael Brophy

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUIDEVALUE	RESULT
4215883	FLE-5-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	264
4215884	FLE-5-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	280
4215885	Deep Station First Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	40
4215886	Deep Station First Lake (deep) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	29
4215887	Deep Station First Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	22
4215888	Deep Station First Lake (deep) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	28
4215889	Deep Station First Lake (deep) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	25
4215890	Deep Station Rocky Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4215892	Deep Station Rocky Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4215894	Deep Station Rocky Lake (deep) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4215895	Deep Station Second Lake (deep) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4215897	Deep Station Second Lake (deep) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4215900	Deep Station First Lake (shallow) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4215901	Deep Station First Lake (shallow) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4215902	Deep Station First Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4215903	Deep Station First Lake (shallow) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4215904	Deep Station First Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	5
4215905	Deep Station Rocky Lake (shallow) 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4215906	Deep Station Rocky Lake (shallow) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4215907	Deep Station Rocky Lake (shallow) 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215908	Deep Station Rocky Lake (shallow) 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215909	Deep Station Rocky Lake (shallow) 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215911	Deep Station Second Lake (shallow) 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	2
4215915	Kinsmen Beach A	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	100
4215916	Kinsmen Beach B	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	90
4215917	Kinsmen Beach C	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	86
4215918	Kinsmen Beach D	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	178
4215919	Kinsmen Beach E	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	106
4215920	Inlet of Rocky Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4215921	Inlet of Rocky Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	5
4215922	Inlet of Rocky Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215923	Inlet of Rocky Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	7
4215924	Inlet of Rocky Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215925	Inlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	5
4215926	Inlet of Second Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	6
4215927	Inlet of Second Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	5
4215928	Inlet of Second Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	3
4215929	Inlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	4
4215930	Outlet of Second Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	27
4215931	Outlet of Second Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	39
4215932	Outlet of Second Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	34
4215933	Outlet of Second Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL 1	25



# **Exceedance Summary**

AGAT WORK ORDER: 22X934525

PROJECT: 220804.00

11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

ATTENTION TO: Michael Brophy

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT GUI	DEVALUE	RESULT
4215934	Outlet of Second Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	24
4215944	Gully on Cavalier Drive 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2100
4215945	Gully on Cavalier Drive 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2800
4215946	Gully on Cavalier Drive 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2400
4215947	Gully on Cavalier Drive 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	1900
4215948	Gully on Cavalier Drive 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	1900
4215949	FLN-1-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2800
4215950	FLN-1-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2600
4215951	FLN-1-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2300
4215952	FLN-1-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3200
4215953	FLN-1-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2000
4215954	FLN-2-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	6300
4215955	FLN-2-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5800
4215956	FLN-2-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5600
4215957	FLN-2-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3900
4215958	FLN-2-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	5700
4215959	Unmarked Outfall 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3
4215960	Unmarked Outfall 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3
4215961	Unmarked Outfall 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	11
4215962	Unmarked Outfall 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2
4215963	Unmarked Outfall 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2
4215964	FLW-7-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3900
4215965	FLW-7-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2800
4215966	FLW-7-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2500
4215967	FLW-7-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2200
4215968	FLW-7-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	2100
4215969	FLW-8-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	4100
4215970	FLW-8-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3000
4215971	FLW-8-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3500
4215972	FLW-8-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3200
4215973	FLW-8-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	3800
4215979	Outlet of First Lake 1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	169
4215980	Outlet of First Lake 2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	196
4215981	Outlet of First Lake 3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	216
4215982	Outlet of First Lake 4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	160
4215983	Outlet of First Lake 5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	178
4215984	FLS-4-1	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	42000
4215985	FLS-4-2	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	39000
4215986	FLS-4-3	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	39000
4215987	FLS-4-4	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	40000
4215988	FLS-4-5	NS-CDWQ excl [AO]	E.coli Membrane Filtration	E. Coli (MF)	CFU/100 mL	1	40000
				` '			



11 Morris Drive, Unit 122 Dartmouth, Nova Scotia CANADA B3B 1M2 TEL (902)468-8718 FAX (902)468-8924 http://www.agatlabs.com

# **Method Summary**

CLIENT NAME: CBCL LTD PROJECT: 220804.00

SAMPLING SITE:

AGAT WORK ORDER: 22X934525 ATTENTION TO: Michael Brophy

SAMPLED BY:

PARAMETER AGAT S.O.P LITERATURE REFERENCE ANALYTICAL TECHNIQUE

Microbiology Analysis

E. Coli (MF) MIC-121-7002 SM 9222 H MF/INCUBATOR





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition: Good	□ Poor (complete 'notes')
Arrival Condition: Good  Arrival Temperature: 5, 10, 9, 8, 9  Notes:	AGAT Job Number: 22 x 934525
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

Report To:								Wa	terw	orks	Nun	nber	:											
Report To:           Company:         CBCL           Contact:         Michael Brophy           Address:         Suite 901, 1505 Barr           Halifax NS         B3J 2R7           Phone:         902-421-7241 FAX:           PO#:         AGAT Quotation:           Client Project #:         220804.00           Invoice to:         Same (Yes) - Color			1. Name: Email: 2. Name: Email: Regulato PIRI Tie	Michael Brophy  mbrophy@cbcl  Melissa Fraser  mfraser@cbcl.  ry Requirements  Site Info (check  r 1 Res. Fraser  C Comm. No	ca (Cl (all t	hat a	pply) oars			F	Mult	at ple ple page ples page plage plage		Rush	ar TA TAT: acquire	7: 5 to 24 48 ed:	o 7 <sup>s</sup> to 4	ne (* work 18 ho 12 ho	ing o	davs	•			2.22
Company: Same as above Contact: Address:  Phone: Fax: PO#:			□ Ind. □ Com □ Res/µ □ Ag □ FWAL	CDWQ  MAC/IMAC  A / O  NSDFOSP  Other  COMMENTS -	Filtered / Preserved	ird Water Analysis + TMS				Chlorophyll A			ococci										Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION FLW - 1 - 1	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	Cito/Cample	Field	Standard	TKN	d.	SRP	Chlore	TSS	- E.Coli	Enterococci						21 =11		Other:	Other:	Hazar	
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Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

CHAIN OF CUSTO	DY																		20	(x	93	45	525
Report to: Company: CBCL Same as COC#:				Field Filtered / Preserve	Standard Water Analysis +				A llyll A			occi		100		THE REAL PROPERTY.					AT T	(N/)	Lab Samp
SAMPLE IDENTIFICATION	DATE / TIME S SAMPLED M	AMPLE # OF LATRIX CONTAINERS	COMMENTS - Site/Sample	ield Filt	tandard	TKN	ТР	SRP	Chlorophyll A	TSS	E.Coli	Enterococci	J.					3)		Other:	Other:	azardo	#
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# Laboratories CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition:  Arrival Temperature:	□ Poor (complete 'notes') AGAT Job Number: 22 x 934525
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

mep.//webcartinagatiabs.com	Nadabs.com	/aterworks Number:	
Report To:  Company: CBCL  Contact: Michael Brophy  Address: Suite 901, 1505 Barrington St.  Halifax NS B3J 2R7  Phone: 902-421-7241 FAX:  PO#: AGAT Quotation:  Client Project #: 220804.00  Invoice to: Same (Yes) - Circle	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mfraser@cbcl.ca  Regulatory Requirements (Check):  PIRI Site Info (check all that apply): Tier 1 Res. Pot. Coarse Tier 2 Comm. N/Pot. Fine	Report Format Single sample per page Multiple samples per page Excel Format Included	Turnaround Time (TAT) Required  Regular TAT: 122 AUG 18 2:1 5 to 7 working days  Rush TAT: 24 to 48 hours 48 to 72 hours  Date Required: Time Required:
Company: Same as above Contact: Address:  Phone: Fax: PO#:	☐ CCME ☐ CDWQ ☐ Ind. ☐ MAC/IMAC ☐ Com ☐ A / O ☐ Ress/p ☐ NSDFOSP ☐ Ag ☐ Other ☐ FWAL ☐ FWAL ☐ COMMENTS	ohyll A	Other:  # dazardous (Y/N)  # dep 7
SAMPLE IDENTIFICATION  DATE / TIME SAMPLED MATRIX  FLN - 3 - 1  DATE / TIME MATRIX	# OF Site/Sample P Z	SRP Chlorophyll TSS E.Coli	Other: Hazard
FLN - 3 - 2			
FLN - 3 - 3 FLN - 3 - 4			
FLN - 3 - 5		0 00 20	
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FLN - 4 - 3 FLN - 4 - 4			
FLN - 4 - 5			
FLN 5 1			
FLN - 2			
Sample Relinquished By (print name) Sample Relinquished By (sign)	Date/Time Samples Received By (print nar Date/Time Samples Received By (sign)		Pink Copy - Client Yellow Copy - AGAT White Copy - AGAT NO:





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

## CHAIN OF CUSTODY DECORD

CHAIN OF CUSTODY RECOF	RD					_													d	2	x C	134	15	25
Report to: Company: CBCL Same as COC#:					Field Filtered / Preserver	Standard Water Analysis +				ıyıl A			icci										(N)	Lab Sample
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample	ield Filt	tandard	TKN	TP.	SRP	Chlorophyll A	TSS	E.Coli	Enterococci								Other:	Other:	azardo	71"
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ample Refinquished By (sign)			Date/Time	Samples Receive	д Ву	(sigr	1	1		1	1		Date/Tim	Yel	low Cop lite Cop	y - AG	AT -	Pa NO:	ge_			of _		

Unit 122 - 11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs.com

2:1Hpm

## CHAIN OF CUSTODY RECORD

SAMPLE IDENTIFICATION  DATE / Tr SAMPLE  FLE - 2 - 3  FLE - 2 - 4  FLE - 3 - 1  FLE - 3 - 2  FLE - 3 - 3  FLE - 3 - 4  FLE - 3 - 5  ELE - 4 - 3  FLE - 4 - 5  FLE - 5 - 1  FLE - 5 - 2  FLE - 5 - 3	MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filtered / Preserver	Standard Water Analysis +	TKN	qT.	SRP	Chlorophyll A TSS	F.Coli	Enterococci							Other:	Other:		Sample #
FLE - 2 - 3  FLE - 2 - 4  FLE - 2 - 5  FLE - 3 - 1  FLE - 3 - 2  FLE - 3 - 4  FLE - 3 - 5  FLE - 4 - 1  FLE - 4 - 5  FLE - 5 - 1  FLE - 5 - 2  FLE - 5 - 3	MATRIX	# OF CONTAINERS	Site/Sample Info/Contaminant	Field	Stand	TKN	<u>a</u>	SRP	Chlor TSS	E.COI	Enter							Other	Other:		22 AUI
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FLE - 2 - 5  FLE - 3 - 1  FLE - 3 - 2  FLE - 3 - 4  FLE - 3 - 5  FLE - 4 - 1  FLE - 4 - 5  FLE - 5 - 1  FLE - 5 - 2  FLE - 5 - 3																				32	12 AU
FLE - 2 - 5  FLE - 3 - 1  FLE - 3 - 2  FLE - 3 - 2  FLE - 3 - 4  FLE - 3 - 5  FLE - 4 - 1  FLE - 4 - 5  FLE - 4 - 5  FLE - 5 - 1  FLE - 5 - 2  FLE - 5 - 3																				-	282
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ample Relinquished By (print name)		Date/Time	Samples Receive	ad By	Inc	or n	(200				Date	/Time		0	1	100	Δı				
ample Relinquished By (sign)		Jace, mile	Samples Necelve	ed by	(pr	The Ha	nie)	/	1		Date	:/Time	Pink	Copy - w Copy e Copy -	Client		age_	5	_ of		



# Laboratories CHAIN OF CUSTODY RECORD

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only Arrival Condition: Good Arrival Temperature: 14.3 136 B Notes:	Poor (complete 'notes') AGAT Job Number: 22x 934525
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

	waterwor	orks Number:	
Report To:  Company: CBCL  Contact: Michael Brophy Address: Suite 901, 1505 Barrington St. Halifax NS B3J 2R7  Phone: 902-421-7241 FAX: PO#: AGAT Quotation: Client Project #: 220804.00  Invoice to: Same (Yes) - Circle	Report Information  1. Name: Michael Brophy Email: mbrophy@cbcl.ca  2. Name: Melissa Fraser Email: mfraser@cbcl.ca  Regulatory Requirements (Check):  PIRI Site Info (check all that apply):  Tier 1 Res. Pot. Coarse Tier 2 Comm. N/Pot. Fine	Single sample per page Multiple samples per page Excel Format	curnaround Time (TAT) Required  egular TAT:
Company: Same as above Contact: Address: Phone: Fax: PO#:	CCME CDWQ  Ind. MAC/IMAC  Com A / O Res/p NSDFOSP Ag Other FWAL  # OF CONTAINERS Info/Contaminant Info/Contaminat Info/Contaminant Info/Contaminant Info/Contaminant Info/Contam	Chlorophyll A TSS E.Coli	Other:  Hazardous (Y/N)  Hazardous (Y/N)
SAMPLE IDENTIFICATION  Deep Station First Lake (deep) 1	# OF CONTAINERS Site/Sample Info/Contaminant II US P C C C C C C C C C C C C C C C C C C	Chloro TSS E.Coli	Other:
Deep Station First Lake (deep) 2 7:30			
Deep Station First Lake (deep) 3			
Deep Station First Lake (deep) 4			
Deep Station First Lake (deep) 5			
Deep Station Rocky Lake (deep) 1 9:20			
Deep Station Rocky Lake (deep) 2			
Deep Station Rocky Lake (deep) 3			
Deep Station Rocky Lake (deep) 4			
Deep Station Rocky Lake (deep) 5			
Deep Station Second Lake (deep) 1 8:30			
Deep Station Second Lake (deep) 2			
Sample Relinquished By (print name)	Date/Time Samples Received By (print name)	Date/T	Pink Copy - Client Page / of
Sample Relinquished By (sign)	Date/Time Samples Received By (sign)	Date/T	Time White Copy - AGAT NO:





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

## **CHAIN OF CUSTODY RECORD**

Report to: Company: CBCL Same as COC#:		41	-		red / Preserve	Vater Analysis +		HENNEY.		yll A		Sell Sell	cci											(N/A) sr	Lab Sample
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filtered /	Standard V	TKN	TP	SRP	Chlorophyll	TSS	E.Coli	Enterococci						HON		30	Other:	Other:	Hazardous (Y/N)	#
Deep Station Second Lake (deep) 3	830 am					Tev								8							JI6		J		
Deep Station Second Lake (deep) 4										V <sup>R</sup>											-21				
Deep Station Second Lake (deep) 5	V							Y 1		100		8		Yell			10								
Deep Station First Lake (shallow) 1	1:30 am							1						8,			ia.		ion						
Deep Station First Lake (shallow) 2						.87		155		ve.		118		191	711		i noji		20 4						
Deep Station First Lake (shallow) 3												1/2			19				13		ALE THE		a u		
Deep Station First Lake (shallow) 4								X				118							13-34						
Deep Station First Lake (shallow) 5	1					W. T.								- 20	8										
Deep Station Rocky Lake (shallow) 1	9:30am					50		i,						88	10										
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Deep Station Rocky Lake (shallow) 5	1					V.		.//		TW.					T						8 8	$\neg$			
Deep Station Second Lake (shallow) 1	6:30am													3.								$\neg$			
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Deep Station Second Lake (shallow) 5	V													LUCE TO SERVICE STATE OF THE PARTY.									15		
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Kinsmen Beach	V							4						-	03	T	110		(58)		4		11 .		
Inlet of Rocky Lake 1	1:30pm					m				180						$\vdash$	100					$\neg$	2.00		
Inlet of Rocky Lake 2	1				1 1	(8)		100				1	$\neg$		100				.03		92	$\neg$			
Sample Relinquished By (print name)				Samples Receiv	1	1		ime)	-				Dat	e/Tim	Pi	Pink Copy - Client Yellow Copy - AGAT					7	1	of		
Sample Religinguished By (sign)			Date/Time	Samples Receiv	ed By	(Sig	n)		7				Dat	e/Tim			opy - A0		NO						





Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2

http://webearth.agatlabs.com 22, 934525

# **CHAIN OF CUSTODY RECORD**

CBCL Same as COC#:					tered / Preservi	Water Analysis +				hyll A			occi											Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Filtered	Standard	TKN	TP	SRP	Chlorophyll	TSS	E.Coli	Enterococci		N.	3						Other:	Other:	lazardo	
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Inlet of Rocky Lake 4	1					Ų				la la		T				V.									
Inlet of Rocky Lake 5	V							-3%		inj									124				u I		
Inlet of Second Lake 1	12:20				$\top$					-170		T													
Inlet of Second Lake 2	1				T	50		2.3		No.					2		380		1112		084				
Inlet of Second Lake 3					1		T			38		1		181	Q.				lun I						
Inlet of Second Lake 4					T			1		1		T	$\neg$		19		20.1				8,7		- 1		
Inlet of Second Lake 5	1				1							Ħ	$\neg$	3	193			$\vdash$							
Outlet of Second Lake 1	8:45											H		83(1	0				The state of				1		
Outlet of Second Lake 2					1					- 10		T													
Outlet of Second Lake 3											$\neg$	T	_									$\neg$	160		
Outlet of Second Lake 4															18							$\neg$	218		
Outlet of Second Lake 5	1										$\neg$	T	7		Ĭ.						18	$\dashv$			
Gully on Cavalier Drive 1	12:40				Т						7	Ħ		189											
Gully on Cavalier Drive 2	1				H							T	7		is,		7.01								
Gully on Cavalier Drive 3												Ħ	7				8,4		1,9				115		
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Sample Relinguished By (sign)			Date/Time	Samples Receive	ed By	(sig	n)		1	1			Date	e/Tim	e W	now Co	ору - А ору - А	GAT GAT	NO						





# **CHAIN OF CUSTODY RECORD**

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

Phone: 902-468-8718 Fax: 902-468-8924 Toll free: 888-468-8718 www.agatlabs.com

Laboratory use Only	
Arrival Condition: Good	☐ Poor (complete 'notes')
Arrival Condition: Good  Arrival Temperature: 5.5.15.1155A	GAT Job Number: 22y 934525
Notes: polerice	
Drinking Water Sample (y/n):	Reg. No
Waterworks Number:	

								Wa	CCIVV	UIKS	Null	ibei	•											
Report To:  Company: CBCL  Michael Brophy Address: Suite 901, 1505 Bard Halifax NS B3J 2R7  Phone: 902-421-7241 FAX:  PO#: AGAT Quotation  Client Project #: 220804.00			1. Name: Email: 2. Name: Email: Regulato	Information Michael Brophy mbrophy@cbcl Melissa Fraser mfraser@cbcl  ry Requirements Site Info (check	ca (CI (all ti	hat a	pply): Coars			F	Repo Form Sing sam per Multi sam	rt at le ple page iple ples page		Rush 1	ar TA	<b>T:</b> 5 to 24 48	o 7 <sup>s</sup> to 4	worl	king ours	-	•	ired	-	
Invoice to: Same (Yes) - (	Circle		□ Tiei	r2 ☐ Comm. ☐ N	V/Pot	F	ine				Inclu	ıded		Time R	equir	ed:								
Company: Same as above Contact: Address:			□ Ind. □ Com	☐ CDWQ ☐ MAC/IMAC ☐ A / O ☐ NSDFOSP	Preserved	Analysis + TMS											50 50 15						(N	Lab
Phone: Fax:				☐ Other	/ pa.	ater ,				4			<u></u>	. 00								3	3	Sample #
PO#:			□ FWAL		Filtered	ard Water				phy		541	0000		-81					18.		-11-	ğ	"
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field F	Standa	TKN	란	SRP	Chlorophyll	TSS	E.Coli	Enterococci								Other:	Other:	Hazardous (Y/N)	
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Melit			Date/ Hille	Joannpies Received	и Бу	(sig	, i i )						Dat	te/Time	Whi	te Copy	y - AG	AT	NO:					



# **AGGIT** Laboratories

## **CHAIN OF CUSTODY**

	AG		<mark>ľ</mark> La	aborator	ies	5										Dart B3B	mouth 1M2	11 Mo , Nova earth.	Scot	ia	m 12	* C	134	1525
CHAIN OF CUSTOD	Υ																			C	~~			
Report to: Company: Came as COC#;					- Filtered / Preserve	Standard Water Analysis +		on the		hyll A			occi										Hazardous (Y/N)	Lab Sample #
SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info/Contaminant	Field Fil	Standard	TKN	ТР	SRP	Chlorophyll A	TSS	E.Coli	Enterococci	10 <sup>1</sup>							Other:	Other:	lazardo	
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mple Relinquished By (print nar	ne)		Date/Time	Samples Receive	By	(prin	nt na	me)	$\rightarrow$	6		0400	Date	/Time				PER ST	L					
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mple Relinguished By (sign)	_		Jate/ Time	Samples Receive	a By	(sigr	1)						Date	/Time		е Сору			D:					



# **AGGIT** Laboratories

Unit 122 - 11 Morris Dr. Dartmouth, Nova Scotia B3B 1M2 http://webearth.agatlabs.com

22×934525

## **CHAIN OF CUSTODY** Report to: Field Filtered / Preserve Company: CBCL Same as COC#: Hazardous (Y/N) Lab Chlorophyll A Sample COMMENTS -E.Coli DATE / TIME # OF Other: SAMPLE IDENTIFICATION Site/Sample SAMPLED MATRIX CONTAINERS Info/Contaminant Outlet of First Lake 3 Outlet of First Lake 4 Outlet of First Lake 5 FLS - 4 - 1 10:15 am FLS - 4 - 2 FLS - 4 - 3 FLS - 4 - 4 FLS - 4 - 5 FLW-3-1 After 9:4541 FLW-3-2 After FLW-3-3 After PLW-3-4 After FLW-3-5 After Sample Relinquished By (print name) Date/Time Samples Received By (print name) Date/Time Page | Pink Copy - Client Sample Relinquished By (sign) Yellow Copy - AGAT Date/Time Samples Received By (sign) Date/Time White Copy - AGAT NO:



Your C.O.C. #: N/A

**Attention: Melissa Fraser** 

CBCL Limited
Halifax - Standing offer
1505 Barrington Street
Suite 901 / PO Box 606
Halifax, NS
CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330296 Version: 1 - Final

## **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9325 Received: 2022/09/27, 16:07

Sample Matrix: Water # Samples Received: 50

		Date	Date		
Analyses	Quantity	/ Extracted	Analyzed	<b>Laboratory Method</b>	Analytical Method
E.coli in water (CFU/100mL)	25	N/A	2022/09/27	ATL SOP 00097	MOE E3371 R2 (2018)
E.coli in water (CFU/100mL)	25	N/A	2022/09/28	ATL SOP 00097	MOE E3371 R2 (2018)

### Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

 $Reference\ Method\ suffix\ "m"\ indicates\ test\ methods\ incorporate\ validated\ modifications\ from\ specific\ reference\ methods\ to\ improve\ performance.$ 

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your C.O.C. #: N/A

## **Attention: Melissa Fraser**

CBCL Limited
Halifax - Standing offer
1505 Barrington Street
Suite 901 / PO Box 606
Halifax, NS
CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330296 Version: 1 - Final

## **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9325 Received: 2022/09/27, 16:07

**Encryption Key** 

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keri Mackay, Customer Experience Team Lead Email: Keri.MACKAY@bureauveritas.com Phone# (902)420-0203 Ext:294

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Report Date: 2022/10/06

# **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT632	TVT633	TVT634	TVT635		
Campling Data		2022/09/27	2022/09/27	2022/09/27	2022/09/27		
Sampling Date		07:30	07:30	07:30	07:30		
COC Number		N/A	N/A	N/A	N/A		
	UNITS	DEEP STATION FIRST LAKE (DEEP) 1	DEEP STATION FIRST LAKE (DEEP) 2	DEEP STATION FIRST LAKE (DEEP) 3	DEEP STATION FIRST LAKE (DEEP) 4	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	170	150	180	170	2.0	8250374

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVT636		TVT637	TVT638		
Sampling Date		2022/09/27		2022/09/27	2022/09/27		
Sampling Date		07:30		10:30	10:30		
COC Number		N/A		N/A	N/A		
	UNITS	DEEP STATION FIRST LAKE (DEEP) 5	QC Batch	DEEP STATION ROCKY LAKE (DEEP) 1	DEEP STATION ROCKY LAKE (DEEP) 2	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	150	8250374	18	8.0	2.0	8251521
RDL = Reportable Detect QC Batch = Quality Cont						•	

Bureau Veritas ID		TVT639	TVT640	TVT641		
Sampling Date		2022/09/27	2022/09/27	2022/09/27		
		10:30	10:30	10:30		
COC Number		N/A	N/A	N/A		
	UNITS	DEEP STATION ROCKY LAKE (DEEP) 3	DEEP STATION ROCKY LAKE (DEEP) 4	DEEP STATION ROCKY LAKE (DEEP) 5	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	24	16	10	2.0	8251521
RDL = Reportable Detect	tion Limit					
OC Batch = Quality Cont	15.1					

QC Batch = Quality Control Batch



Report Date: 2022/10/06

# **MICROBIOLOGY (WATER)**

	TVT643	TVT644	TVT645	TVT646		
	2022/09/27	2022/09/27	2022/09/27	2022/09/27		
	09:15	09:15	09:15	09:15		
	N/A	N/A	N/A	N/A		
UNITS	DEEP STATION SECOND LAKE (DEEP) 1	DEEP STATION SECOND LAKE (DEEP) 2	DEEP STATION SECOND LAKE (DEEP) 3	DEEP STATION SECOND LAKE (DEEP) 4	RDL	QC Batch
CFU/100mL	36	34	38	36	2.0	8250374
Limit						
	CFU/100mL	2022/09/27 09:15  N/A  DEEP STATION SECOND LAKE (DEEP) 1  CFU/100mL 36  Limit	2022/09/27   2022/09/27   09:15   09:15   N/A   N/A	2022/09/27   2022/09/27   2022/09/27   09:15   09:15   09:15     N/A   N/A   N/A   N/A     DEEP STATION   DEEP STATION   DEEP STATION   SECOND LAKE   (DEEP) 1   (DEEP) 2   (DEEP) 3      CFU/100mL   36   34   38     Limit   2022/09/27   2022/09/27   2022/09/27   09:15     OP:15   OP:15   OP:15   OP:15     OP:15   OP:15   OP:15     OP:15   OP:15   OP:15     OP:15   OP:15   OP:15     OP:15   OP:15   OP:15     OP:15   OP:15   OP:15     OP:15	2022/09/27   2022/09/27   2022/09/27   2022/09/27   09:15   09:15   09:15   09:15     N/A	2022/09/27   2022/09/27   2022/09/27   2022/09/27   09:15   09:15   09:15     N/A

Bureau Veritas ID		TVT647	TVT648	TVT649	TVT650		
Sampling Date		2022/09/27 09:15	2022/09/27 07:30	2022/09/27 07:30	2022/09/27 07:30		
COC Number		N/A	N/A	N/A	N/A		
	UNITS	DEEP STATION SECOND LAKE (DEEP) 5	DEEP STATION FIRST LAKE (SHALLOW) 1	DEEP STATION FIRST LAKE (SHALLOW) 2	DEEP STATION FIRST LAKE (SHALLOW) 3	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	62	160	180	140	2.0	8250374
DDI Damantahla Dataa	Alam Illusia	•					

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVT651	TVT652		TVT653		
Sampling Date		2022/09/27 07:30	2022/09/27 07:30		2022/09/27 10:45		
COC Number		N/A	N/A		N/A		
	UNITS	DEEP STATION FIRST LAKE (SHALLOW) 4	DEEP STATION FIRST LAKE (SHALLOW) 5	QC Batch	DEEP STATION ROCKY LAKE (SHALLOW) 1	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	190	160	8250374	6.0	2.0	8251521
RDL = Reportable Detection	ı Limit						

QC Batch = Quality Control Batch

**CBCL Limited** 

Report Date: 2022/10/06

# **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT654	TVT655	TVT656	TVT657		
Sampling Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27		
Jamping Date		10:45	10:45	10:45	10:45		
COC Number		N/A	N/A	N/A	N/A		
	UNITS	DEEP STATION ROCKY LAKE (SHALLOW) 2	DEEP STATION ROCKY LAKE (SHALLOW) 3	DEEP STATION ROCKY LAKE (SHALLOW) 4	DEEP STATION ROCKY LAKE (SHALLOW) 5	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	14	24	30	14	2.0	8251521
RDL = Reportable Detection QC Batch = Quality Con							

	TVT658	TVT659	TVT660	TVT661		
	2022/09/27 08:50	2022/09/27 08:50	2022/09/27 08:50	2022/09/27 08:50		
	N/A	N/A	N/A	N/A		
UNITS	DEEP STATION SECOND LAKE (SHALLOW) 1	DEEP STATION SECOND LAKE (SHALLOW) 2	DEEP STATION SECOND LAKE (SHALLOW) 3	DEEP STATION SECOND LAKE (SHALLOW) 4	RDL	QC Batch
CFU/100mL	32	28	40	22	2.0	8250374
		2022/09/27 08:50  N/A  DEEP STATION SECOND LAKE (SHALLOW) 1	2022/09/27 08:50 08:50 08:50 N/A N/A DEEP STATION UNITS SECOND LAKE (SHALLOW) 1 (SHALLOW) 2	2022/09/27   2022/09/27   2022/09/27   08:50   08:50   08:50   08:50	2022/09/27   2022/09/27   2022/09/27   2022/09/27   08:50   08:50   08:50   08:50	2022/09/27   2022/09/27   2022/09/27   2022/09/27   08:50   08:50   08:50   08:50

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVT662			TVT663	TVT664		
Sampling Date		2022/09/27 08:50			2022/09/27 13:20	2022/09/27 13:20		
COC Number		N/A			N/A	N/A		
	UNITS	DEEP STATION SECOND LAKE (SHALLOW) 5	RDL	QC Batch	GULLY ON CAVALIER DRIVE 1	GULLY ON CAVALIER DRIVE 2	RDL	QC Batch
Microbiological								
Escherichia coli	CFU/100mL	30	2.0	8250374	3100	2400	100	8251867
RDL = Reportable Detec	tion Limit							

RDL = Reportable Detection Limit QC Batch = Quality Control Batch



Report Date: 2022/10/06

# **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT665	TVT666	TVT667		
Sampling Date		2022/09/27	2022/09/27	2022/09/27		
Sampling Date		13:20	13:20	13:20		
COC Number		N/A	N/A	N/A		
	UNITS	GULLY ON CAVALIER DRIVE 3	GULLY ON CAVALIER DRIVE 4	GULLY ON CAVALIER DRIVE 5	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	3500	3700	3000	100	8251867
RDL = Reportable Detec	tion Limit					
QC Batch = Quality Cont	rol Batch					

Bureau Veritas ID		TVT668	TVT669	TVT670		
Sampling Date		2022/09/27	2022/09/27	2022/09/27		
Sampling Date		15:20	15:20	15:20		
COC Number		N/A	N/A	N/A		
	UNITS	INLET OF ROCKY LAKE 1	INLET OF ROCKY LAKE 2	INLET OF ROCKY LAKE 3	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	100	150	88	2.0	8251636
RDL = Reportable Detect	tion Limit					
QC Batch = Quality Cont	rol Batch					

Bureau Veritas ID		TVT671	TVT672		TVT673		
Sampling Date		2022/09/27 15:20	2022/09/27 15:20		2022/09/27 13:50		
COC Number		N/A	N/A		N/A		
	UNITS	INLET OF ROCKY LAKE 4	INLET OF ROCKY LAKE 5	QC Batch	INLET OF SECOND LAKE 1	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	100	140	8251636	80	2.0	8251867

QC Batch = Quality Control Batch



Report Date: 2022/10/06

# **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT674	TVT675	TVT676		
Compline Date		2022/09/27	2022/09/27	2022/09/27		
Sampling Date		13:50	13:50	13:50		
COC Number		N/A	N/A	N/A		
	UNITS	INLET OF SECOND LAKE 2	INLET OF SECOND LAKE 3	INLET OF SECOND LAKE 4	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	60	62	64	2.0	8251867
RDL = Reportable Detection	on Limit					
QC Batch = Quality Contro	ol Batch					

Bureau Veritas ID		TVT677		TVT678	TVT679		
Sampling Date		2022/09/27 13:50		2022/09/27 07:45	2022/09/27 07:45		
COC Number		N/A		N/A	N/A		
	UNITS	INLET OF SECOND LAKE 5	QC Batch	KINSMEN BEACH A	KINSMEN BEACH B	RDL	QC Batch
Microbiological							
Escherichia coli	CFU/100mL	66	8251867	>500	>500	2.0	8250374
RDL = Reportable Detec	tion Limit		•		•		

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVT680	TVT681	TVT682		
Sampling Date		2022/09/27 07:45	2022/09/27 07:45	2022/09/27 07:45		
COC Number		N/A	N/A	N/A		
	UNITS	KINSMEN BEACH C	KINSMEN BEACH D	KINSMEN BEACH E	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	>500	>500	>500	2.0	8250374
RDL = Reportable Detect QC Batch = Quality Conti						



Results relate only to the items tested.

**CBCL Limited** 

## **GENERAL COMMENTS**

ach temperature is the	average of up to	three cooler tem	peratures ta	iken at receip	t		
Package 1	14.7°C	$\neg$					
Package 1 amples received >10°C		or campling time					



Bureau Veritas Job #: C2R9325 Report Date: 2022/10/06 **CBCL Limited** 

#### **QUALITY ASSURANCE REPORT**

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8250374	MAA	Method Blank	Escherichia coli	2022/09/29	<1.0		CFU/100m	L
8251521	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0		CFU/100m	L
8251636	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0		CFU/100m	L
8251867	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0		CFU/100m	L
Method E	Blank: A	blank matrix containi	ng all reagents used in the analytical pro	cedure. Used to identify laboratory	contamination	1.		



#### **VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by:

Robyn Edwards, Bedford Micro Supervisor



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited Halifax - Standing offer 1505 Barrington Street Suite 901 / PO Box 606 Halifax, NS CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330301 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9359 Received: 2022/09/27, 16:05

Sample Matrix: Water # Samples Received: 30

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	Laboratory Method	Analytical Method
E.coli in water (CFU/100mL)	30	N/A	2022/09/27	7 ATL SOP 00097	MOE E3371 R2 (2018)

#### Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited
Halifax - Standing offer
1505 Barrington Street
Suite 901 / PO Box 606
Halifax, NS
CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330301 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9359 Received: 2022/09/27, 16:05

**Encryption Key** 

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keri Mackay, Customer Experience Team Lead Email: Keri.MACKAY@bureauveritas.com Phone# (902)420-0203 Ext:294

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#### **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT846	TVT847	TVT848	TVT849	TVT850	TVT851				
Compling Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27				
Sampling Date		08:25	08:25	08:25	08:25	08:25	08:15				
COC Number		N/A	N/A	N/A	N/A	N/A	N/A				
	UNITS	FLW-1-1	FLW-1-2	FLW-1-3	FLW-1-4	FLW-1-5	FLW-2-1	RDL	QC Batch		
Microbiological											
Escherichia coli	CFU/100mL	>25000	>25000	>25000	>25000	>25000	1900	100	8250374		
RDL = Reportable Detection	Limit										
OC Batch = Quality Control F	) at ab										

QC Batch = Quality Control Batch

Bureau Veritas ID		TVT852	TVT853	TVT854	TVT855		TVT856	TVT857		
Sampling Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27		2022/09/27	2022/09/27		
Sampling Date		08:15	08:15	08:15	08:15		07:55	07:55		
COC Number		N/A	N/A	N/A	N/A		N/A	N/A		
	UNITS	FLW-2-2	FLW-2-3	FLW-2-4	FLW-2-5	QC Batch	FLW-6-1	FLW-6-2	RDL	QC Batch
Microbiological										
Escherichia coli	CELI/100ml	1700	1100	2200	1000	0250274	2000	1600	100	0250446

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVT859	TVT860	TVT861		TVT862	TVT863	TVT864				
Sampling Date		2022/09/27 07:55	2022/09/27 07:55	2022/09/27 07:55		2022/09/27 08:45	2022/09/27 08:45	2022/09/27 08:45				
COC Number		N/A	N/A	N/A		N/A	N/A	N/A				
	UNITS	FLW-6-3	FLW-6-4	FLW-6-5	RDL	FLS-2-1	FLS-2-2	FLS-2-3	RDL	QC Batch		
Microbiological												
Escherichia coli   CFU/100mL   2600   2400   2900   100   190   200   160   2.0   8250446												
RDL = Reportable Detection Limit												
QC Batch = Quality Control Batch												

			1		1	1				
Bureau Veritas ID		TVT865	TVT866		TVT867	TVT868	TVT869	TVT870		
Compling Date		2022/09/27	2022/09/27		2022/09/27	2022/09/27	2022/09/27	2022/09/27		
Sampling Date		08:45	08:45		09:23	09:23	09:23	09:23		
COC Number		N/A	N/A		N/A	N/A	N/A	N/A		
	UNITS	FLS-2-4	FLS-2-5	RDL	FLS-3-1	FLS-3-2	FLS-3-3	FLS-3-4	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	240	200	2.0	>25000	>25000	>25000	>25000	100	8250446

RDL = Reportable Detection Limit QC Batch = Quality Control Batch



## **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVT871	TVT872	TVT873	TVT874	TVT875	TVT876		
Sampling Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27		
Sampling Date		09:23	09:02	09:02	09:02	09:02	09:02		
COC Number		N/A	N/A	N/A	N/A	N/A	N/A		
	UNITS	FLS-3-5	FLS-4-1	FLS-4-2	FLS-4-3	FLS-4-4	FLS-4-5	RDL	QC Batch
Microbiological									
Escherichia coli	CFU/100mL	>25000	5900	5500	5600	5300	7200	100	8250446
RDL = Reportable Detection L	imit								
QC Batch = Quality Control Ba	atch								



#### **GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt  $% \left( 1\right) =\left( 1\right) \left( 1$ 

Package 1 9.3°C

Results relate only to the items tested.



Bureau Veritas Job #: C2R9359 CBCL Limited Report Date: 2022/10/06

#### **QUALITY ASSURANCE REPORT**

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8250374	MAA	Method Blank	Escherichia coli	2022/09/29	<1.0		CFU/100m	L
8250446	RED	Method Blank	Escherichia coli	2022/09/27	<1.0		CFU/100m	L
Method E	Blank: A	blank matrix conta	ining all reagents used in the analytical pro	ocedure. Used to identify laboratory	ontamination	1.		



#### **VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by:

Royn Edwards
Robyn Edwards, Bedford Micro Supervisor



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited
Halifax - Standing offer
1505 Barrington Street
Suite 901 / PO Box 606
Halifax, NS
CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330307 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9426 Received: 2022/09/27, 16:04

Sample Matrix: Water # Samples Received: 50

		Date	Date		
Analyses	Quantity	Extracted	Analyzed	<b>Laboratory Method</b>	<b>Analytical Method</b>
E.coli in water (CFU/100mL)	20	N/A	2022/09/27	ATL SOP 00097	MOE E3371 R2 (2018)
E.coli in water (CFU/100mL)	30	N/A	2022/09/28	ATL SOP 00097	MOE E3371 R2 (2018)

#### Remarks:

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

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This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited Halifax - Standing offer 1505 Barrington Street Suite 901 / PO Box 606 Halifax, NS CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330307 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9426 Received: 2022/09/27, 16:04

**Encryption Key** 

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keri Mackay, Customer Experience Team Lead Email: Keri.MACKAY@bureauveritas.com Phone# (902)420-0203 Ext:294



## **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVU352	TVU353	TVU354	TVU355	TVU356		TVU357		
Sampling Data		2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27		2022/09/27		
Sampling Date		10:45	10:45	10:45	10:45	10:45		10:15		
COC Number		N/A	N/A	N/A	N/A	N/A		N/A		
	UNITS	FLN-1-1	FLN-1-2	FLN-1-3	FLN-1-4	FLN-1-5	QC Batch	FLN-2-1	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	1000	1000	700	700	1400	8251521	>25000	100	8250637
RDL = Reportable Detection	Limit			•					•	

QC Batch = Quality Control Batch

Bureau Veritas ID		TVU358	TVU359	TVU360	TVU361		TVU362	TVU363		
Campling Data		2022/09/27	2022/09/27	2022/09/27	2022/09/27		2022/09/27	2022/09/27		
Sampling Date		10:15	10:15	10:15	10:15		10:20	10:20		
COC Number		N/A	N/A	N/A	N/A		N/A	N/A		
	UNITS	FLN-2-2	FLN-2-3	FLN-2-4	FLN-2-5	RDL	FLN-3-1	FLN-3-2	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	>25000	>25000	>25000	>25000	100	46	62	2.0	8250637
RDL = Reportable Detec	tion Limit		•					•		
QC Batch = Quality Cont	trol Batch									

Bureau Veritas ID		TVU364	TVU365	TVU366		TVU367		
Compling Data		2022/09/27	2022/09/27	2022/09/27		2022/09/27		
Sampling Date		10:20	10:20	10:20		11:30		
COC Number		N/A	N/A	N/A		N/A		
	UNITS	FLN-3-3	FLN-3-4	FLN-3-5	QC Batch	UNMARKED OUTFALL 1	RDL	QC Batch
Microbiological								
Escherichia coli	CFU/100mL	36	58	62	8250637	24	2.0	8251521
RDL = Reportable Detection	Limit					_	-	

Bureau Veritas ID		TVU368	TVU369	TVU370		
Sampling Date		2022/09/27 11:30	2022/09/27 11:30	2022/09/27 11:30		
COC Number		N/A	N/A	N/A		
	UNITS	UNMARKED OUTFALL 2	UNMARKED OUTFALL 3	UNMARKED OUTFALL 4	RDL	QC Batch
Microbiological	-					
Escherichia coli	CFU/100mL	20	28	14	2.0	8251521
DDI Damantalila Datas	Alam Himsia					
RDL = Reportable Detec	tion Limit					



## **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVU371			TVU372	TVU373	TVU374		
Compling Date		2022/09/27			2022/09/27	2022/09/27	2022/09/27		
Sampling Date		11:30			12:30	12:30	12:30		
COC Number		N/A			N/A	N/A	N/A		
	UNITS	UNMARKED OUTFALL 5	RDL	QC Batch	FLW-3-1	FLW-3-2	FLW-3-3	RDL	QC Batch
Microbiological	Microbiological								
Escherichia coli	CFU/100mL	10	2.0	8251521	>25000	>25000	>25000	100	8251636
Escherichia coli  RDL = Reportable Detection I		10	2.0	8251521	>25000	>25000	>25000	100	8251636

Bureau Veritas ID		TVU375	TVU376	TVU377	TVU378	TVU379	TVU380	TVU381		
Compline Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27		
Sampling Date		12:30	12:30	12:05	12:05	12:05	12:05	12:05		
COC Number		N/A								
	UNITS	FLW-3-4	FLW-3-5	FLW-7-1	FLW-7-2	FLW-7-3	FLW-7-4	FLW-7-5	RDL	QC Batch
Microbiological					<u> </u>					
Microbiological Escherichia coli	CFU/100mL	>25000	>25000	7200	7700	5200	7700	6900	100	8251636

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Bureau Veritas ID		TVU382	TVU383	TVU384		TVU385	TVU386		
Sampling Date		2022/09/27 11:45	2022/09/27 11:45	2022/09/27 11:45		2022/09/27 11:45	2022/09/27 11:45		
COC Number		N/A	N/A	N/A		N/A	N/A		
	UNITS	FLW-8-1	FLW-8-2	FLW-8-3	QC Batch	FLW-8-4	FLW-8-5	RDL	QC Batch
Microbiological									
c. obiologica.									
Escherichia coli	CFU/100mL	8900	8900	11000	8251636	9700	7700	100	8251521

Bureau Veritas ID		TVU387	TVU388	TVU389		
Sampling Date		2022/09/27 09:50	2022/09/27 09:50	2022/09/27 09:50		
COC Number		N/A	N/A	N/A		
	UNITS	OUTLET OF FIRST LAKE 1	OUTLET OF FIRST LAKE 2	OUTLET OF FIRST LAKE 3	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	110	140	100	2.0	8250446
RDL = Reportable Detec	tion Limit				•	
QC Batch = Quality Cont	trol Batch					



## **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVU390	TVU391		TVU392		
Sampling Date		2022/09/27	2022/09/27		2022/09/27		
Sampling Date		09:50	09:50		10:35		
COC Number		N/A	N/A		N/A		
	UNITS	OUTLET OF FIRST	OUTLET OF FIRST	QC Batch	INLET OF FIRST	PDI	QC Batch
	ONITS	LAKE 4	LAKE 5	QC Batcii	LAKE 1	NDL	QC Battii
Microbiological							
Escherichia coli	CFU/100mL	130	130	8250446	>500	2.0	8251521
RDL = Reportable Detection	on Limit	_			_		•
QC Batch = Quality Contro	ol Batch						

Bureau Veritas ID		TVU393	TVU394	TVU395		
Sampling Date		2022/09/27 10:35	2022/09/27 10:35	2022/09/27 10:35		
COC Number		N/A	N/A	N/A		
	UNITS	INLET OF FIRST LAKE 2	INLET OF FIRST LAKE 3	INLET OF FIRST LAKE 4	RDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	>500	>500	>500	2.0	8251521
RDL = Reportable Detec					·	
QC Batch = Quality Cont	rol Batch					

Bureau Veritas ID		TVU396		TVU794		TVU796		
Sampling Date		2022/09/27 10:35		2022/09/27 09:50		2022/09/27 09:50		
COC Number		N/A		N/A		N/A		
	UNITS	INLET OF FIRST LAKE 5	QC Batch	OUTLET OF SECOND LAKE 1	QC Batch	OUTLET OF SECOND LAKE 2	RDL	QC Batch
Microbiological								
Microbiological Escherichia coli	CFU/100mL	>500	8251521	100	8250374	82	2.0	8250615

Bureau Veritas ID		TVU797		TVU798	TVU799		
Sampling Date		2022/09/27 09:50		2022/09/27 09:50	2022/09/27 09:50		
COC Number		N/A		N/A	N/A		
	UNITS	OUTLET OF SECOND LAKE 3	QC Batch	OUTLET OF SECOND LAKE 4	OUTLET OF SECOND LAKE 5	RDL	QC Batch
Microbiological	·		<u> </u>		•		<u></u>
Escherichia coli	CFU/100mL	78	8250615	88	88	2.0	8250374
RDL = Reportable Detection						•	



#### **GENERAL COMMENTS**

Each temperature is the average	of up to	three coole	r temperatures	taken at receipt	

Package 1 16.0°C

Samples received >10°C more than 1hr after sampling time.

Results relate only to the items tested.



Bureau Veritas Job #: C2R9426 CBCL Limited Report Date: 2022/10/06

#### **QUALITY ASSURANCE REPORT**

QA/QC			_			
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery UNITS QC Limits
8250374	MAA	Method Blank	Escherichia coli	2022/09/29	<1.0	CFU/100mL
8250446	RED	Method Blank	Escherichia coli	2022/09/27	<1.0	CFU/100mL
8250615	MAA	Method Blank	Escherichia coli	2022/09/27	<1.0	CFU/100mL
8250637	JWA	Method Blank	Escherichia coli	2022/09/27	<1.0	CFU/100mL
8251521	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0	CFU/100mL
8251636	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0	CFU/100mL
Method E	Blank: A	blank matrix contain	ing all reagents used in the analytical pro	ocedure. Used to identify laboratory	contamination	1.



#### **VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by:

Royn Edwards
Robyn Edwards, Bedford Micro Supervisor



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited
Halifax - Standing offer
1505 Barrington Street
Suite 901 / PO Box 606
Halifax, NS
CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330295 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9496 Received: 2022/09/27, 16:09

Sample Matrix: Water # Samples Received: 25

	ı	Date	Date		
Analyses	Quantity I	Extracted	Analyzed	<b>Laboratory Method</b>	Analytical Method
E.coli in water (CFU/100mL)	25 I	N/A	2022/09/28	ATL SOP 00097	MOE E3371 R2 (2018)

#### Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your C.O.C. #: N/A

#### **Attention: Melissa Fraser**

CBCL Limited Halifax - Standing offer 1505 Barrington Street Suite 901 / PO Box 606 Halifax, NS CANADA B3J 3Y6

Report Date: 2022/10/06

Report #: R7330295 Version: 1 - Final

#### **CERTIFICATE OF ANALYSIS**

BUREAU VERITAS JOB #: C2R9496 Received: 2022/09/27, 16:09

**Encryption Key** 

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Keri Mackay, Customer Experience Team Lead Email: Keri.MACKAY@bureauveritas.com Phone# (902)420-0203 Ext:294

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## **MICROBIOLOGY (WATER)**

Bureau Veritas ID		TVU641	TVU642	TVU643	TVU644	TVU645		TVU646		
Compline Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27	2022/09/27		2022/09/27		
Sampling Date		11:30	11:30	11:30	11:30	11:30		11:50		
COC Number		N/A	N/A	N/A	N/A	N/A		N/A		
	UNITS	FLN-4-1	FLN-4-2	FLN-4-3	FLN-4-4	FLN-4-5	RDL	FLN-8-1	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	360	370	350	370	340	10	10000	100	8251521
RDL = Reportable Detection Limit										

Bureau Veritas ID		TVU647	TVU648	TVU649	TVU650			TVU651		
Sampling Date		2022/09/27 11:50	2022/09/27 11:50	2022/09/27 11:50	2022/09/27 11:50			2022/09/27 13:20		
COC Number		N/A	N/A	N/A	N/A			N/A		
	UNITS	FLN-8-2	FLN-8-3	FLN-8-4	FLN-8-5	RDL	QC Batch	FLE-2-1	RDL	QC Batch
Microbiological			1		1	ı		1	ı	
Microbiological Escherichia coli	CFU/100mL	11000	11000	11000	10000	100	8251521	>500	2.0	8251867

Bureau Veritas ID		TVU652	TVU653	TVU654	TVU655		TVU656	TVU657		
Sampling Date		2022/09/27	2022/09/27	2022/09/27	2022/09/27		2022/09/27	2022/09/27		
Sampling Date		13:20	13:20	13:20	13:20		13:40	13:40		
COC Number		N/A	N/A	N/A	N/A		N/A	N/A		
	UNITS	FLE-2-2	FLE-2-3	FLE-2-4	FLE-2-5	RDL	FLE-3-1	FLE-3-2	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	>500	>500	>500	>500	2.0	>2500	>2500	10	8251867
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Bureau Veritas ID		TVU658	TVU659	TVU660		TVU661	TVU662	TVU663		
Compline Data		2022/09/27	2022/09/27	2022/09/27		2022/09/27	2022/09/27	2022/09/27		
Sampling Date		13:40	13:40	13:40		14:30	14:30	14:30		
COC Number		N/A	N/A	N/A		N/A	N/A	N/A		
	UNITS	FLE-3-3	FLE-3-4	FLE-3-5	RDL	FLE-5-1	FLE-5-2	FLE-5-3	RDL	QC Batch
Microbiological										
Escherichia coli	CFU/100mL	>2500	>2500	>2500	10	>500	>500	>500	2.0	8251867

RDL = Reportable Detection Limit QC Batch = Quality Control Batch





MICROBIOLOGY (WATER)

		•	•						
Bureau Veritas ID		TVU664	TVU665						
Compling Data		2022/09/27	2022/09/27						
Sampling Date		14:30	14:30						
COC Number		N/A	N/A						
	UNITS	FLE-5-4	FLE-5-5	RDL	QC Batch				
Microbiological									
Escherichia coli	CFU/100mL	>500	>500	2.0	8251867				
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



#### **GENERAL COMMENTS**

Each to	emperature is the	average of up to	three co	cool	ole	ler te	emp	erat	tures	tak	en	at re	ceip	t								
	Package 1	14.7°C																				
Sample	es received >10°C	more than 1hr aft	er samp	nplir	ling	ng tir	me.															

Results relate only to the items tested.



#### **QUALITY ASSURANCE REPORT**

QA/QC							
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery UNIT	QC Limits
8251521	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0	CFU/10	)mL
8251867	MAA	Method Blank	Escherichia coli	2022/09/28	<1.0	CFU/10	0mL
Method E	Blank: A	blank matrix conta	ining all reagents used in the analytical pro	cedure. Used to identify laboratory co	ontaminatio	n.	



#### **VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by:

Royn Edwards
Robyn Edwards, Bedford Micro Supervisor

# APPENDIX D

**Project Memos** 



Date	June 21, 2022
Memo to	Emma Wattie (HRM)
Project name	220804.00 HRM Pollution Control – First Lake
Subject	Progress Report – June 2022
From	Michael Brophy
Copies to	Melissa Fraser, Alyssa Chiasson(CBCL); Elizabeth Montgomery (HRM)

#### **PREAMBLE**

The following progress report summarizes the activities completed in June 2022 for the HRM Pollution Control Study on First Lake. This report will include a summary of work completed, any noted issues or concerns, preliminary results and forecasted activities and schedule for future work.

#### **SUMMARY OF WORK COMPLETED**

The first sampling event occurred on June 15, 2022. There was 18.1 mm of continuous precipitation between June 13-14, preceded by a dry period of 48 hrs, meeting the criteria of a wet weather event. Samples were collected within 24 hours of rainfall end.

31 different locations were sampled throughout this sampling event. Samples were taken for *E. coli*, Microbial Source Tracking (MST), YSI probe measurements (pH, DO, temperature, specific conductance and TDS), and flow (where applicable). A total of 5 samples for *E. coli* were taken at each location to calculate the geometric mean.

Samples were successfully taken at the deep station and at the surface from First Lake, Second Lake and Rocky Lake. The inlet and outlet were sampled at both First Lake and Second Lake, however the inlet to Rocky Lake was not sampled, due to issues with accessibility.

Of the 25 outfalls identified in the attached map from Halifax Water, 20 were successfully located and 18 were sampled. Two of the culverts, FLE-1 and FLN-7 had no flow therefore could not be sampled. We will continue to monitor these locations for flow in future sampling events. Additionally, there was an outfall/gully off Cavalier Drive that feeds into Second Lake that was identified (by Friends of First Lake) and it was added to the sampling program.

#### **ISSUES AND CONCERNS**

No major issues and concerns were identified from the first sampling event. Our sampling team is working on a safe and accessible course of action to sample the inlet to Rocky Lake in future sampling events.

The following outfalls were not located at both the initial site visit and the first sampling event:

- FLN-5
- FLN-6
- FLE-4
- FLW-4
- FLW5

We informed the accredited laboratory in advance that these samples were lake/stormwater outfalls, however the laboratory did not perform any dilutions on the samples. This led to most of the results reported as >200 CFU/100mL, instead of an actual value. This will be corrected for future sampling events.

#### **PRELIMINARY RESULTS**

The Guidelines for Canadian Recreational Water Quality report a geometric mean concentration of ≤ 200 CFU/100mL, and a maximum single sample of ≤ 400 CFU/100mL. No E. coli concentrations were above these limits in any samples collected from Second Lake and Rocky Lake. As for First Lake, no in-lake samples had *E. coli* concentrations above these limits, however a number of outfalls did have E. coli detections >200 CFU/100 mL. These locations include:

**Table 1.** Sample locations with *E. coli* concentrations >200 CFU/100mL

ocaciói	15 With L. con conce	i i ci a		15 200 Cl 0/ 1001112.
-	Inlet First Lake		-	FLW-1
-	FLN-1		-	FLW-2
-	FLN-2		-	FLW-3
-	FLN-5		-	FLW-6
-	FLN-8		-	FLW-7
-	FLS-3		-	FLW-8
-	FLS-4		_	Gully off Cavalier Drive

The locations with *E. coli* detection were compared to previous results from Friends of First Lake from 2021. E. coli results for these locations are presented in Table 2.

**Table 2.** First Lake *E. coli* results for 2021 and 2022

Location	ID		E. coli Results							
	Friends of		CBCL		Friends of First Lake					
CBCL	First Lake	Date	(CFU/100 mL)	Date	(MPN/100 mL)					
FLW-6	FLEC-1	2022-06-15	> 200	2021-08-11	1095					
FLN-1	FLEC-3A	2022-06-15	> 200	2021-08-11	651					
FLN-1	FLEC-3A		-	2021-09-08	3466					
Kinsmen Beach A	FLEC-3B	2022-06-15	135	2021-08-11	250					
Kinsmen Beach B	FLEC-3B	2022-06-15	92	2021-09-08	167					
Kinsmen Beach C		2022-06-15	63		-					
Kinsmen Beach D		2022-06-15	180		-					
Kinsmen Beach E		2022-06-15	199		-					
FLS-4	FLEC-7	2022-06-15	> 200	2021-10-18	2407					
FLN-1	FLECD-1	2022-06-15	> 200	2021-11-01	3973					

#### **FORECASTED ACTIVITIES AND SCHEDULE**

Weather dependent, our next sampling event is scheduled for the week of July 11-15. This is one week later than the initial proposed schedule, due to staff availability during this time. Future sampling events might vary from the proposed schedule, due to the need to sample during specific weather criteria. Furthermore, the water sampling team is doing their best to ensure sampling events are staggered to represent the entire length of the summer season.



#### **CONCLUSION**

CBCL is pleased to provide this progress report and should you have any questions or comments, please do not hesitate to reach out to the undersigned.

Yours very truly,

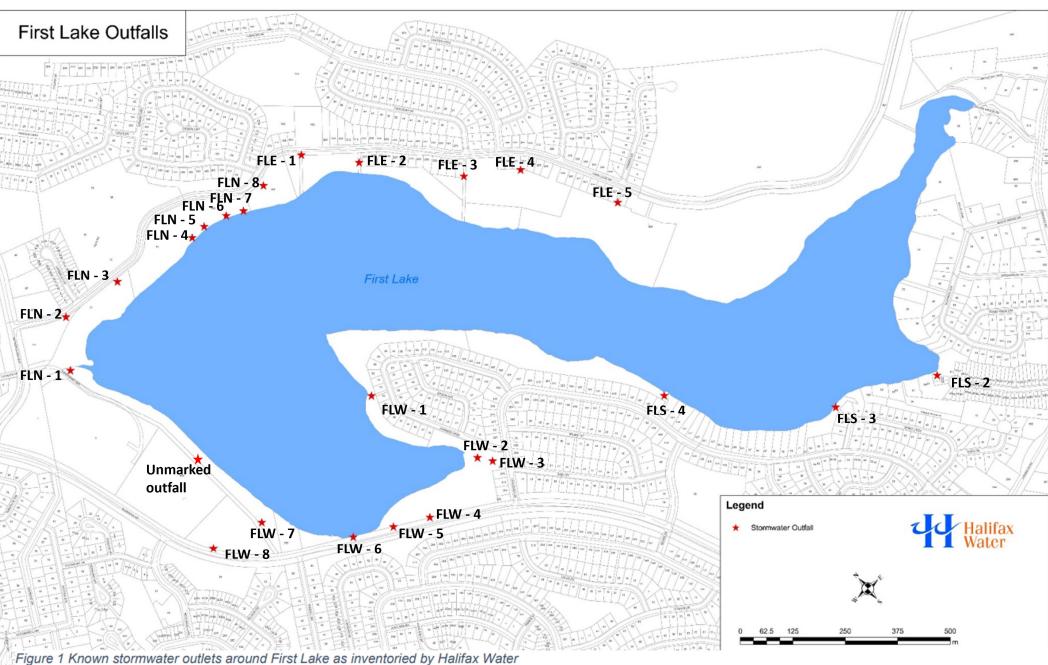
**CBCL** Limited

Michael Brophy, M.A.Sc.

**Process Specialist** 

E-Mail: mbrophy@cbcl.ca

Milal Buly.



Date	July 21, 2022
Memo to	Emma Wattie (HRM)
Project name	220804.00 HRM Pollution Control – First Lake
Subject	Progress Report – July 2022
From	Michael Brophy
Copies to	CBCL: Melissa Fraser, Alyssa Chiasson; HRM: Elizabeth Montgomery

### Preamble

The following progress report summarizes the activities completed in July 2022 for the HRM Pollution Control Study on First Lake. This report will include a summary of work completed, any noted issues or concerns, preliminary results, and forecasted activities and schedule for future work.

# Summary of Work Completed

The second sampling event occurred on July 14, 2022. There was no precipitation leading up to the event, meeting the criteria of dry/low flow conditions.

Twenty-nine (29) different locations were sampled throughout this event. Samples were taken for *E. coli*, YSI probe measurements (pH, dissolved oxygen, temperature, specific conductance, and total dissolved solids), and flow (where applicable). A total of 5 samples for *E. coli* were taken at each location to calculate the geometric mean.

Samples were successfully taken at the deep station and at the surface for First Lake, Second Lake, and Rocky Lake. Furthermore, samples were taken at the inlet and outlet from First Lake and Second Lake, as well as the inlet to Rocky Lake.

Of the 25 outfalls identified in the map from Halifax Water in Appendix A, 24 were successfully located and 17 were sampled. FLE-4 was found but was in the backyard of

residential property and no one was home to ask permission to cross the property to access the outfall. Outfalls FLW-4, FLW-5, FLN-6 were located during this sampling event following input from Halifax Water, however, had no flow and could not be sampled. Culverts FLE-1, FLN-4, FLN-5, and FLN-7 also had no flow and could not be sampled. We will continue to monitor these locations in future sampling events.

### **Issues and Concerns**

No major issues and concerns were identified from the second sampling event.

Dilutions were performed on the *E. coli* samples from the July sampling event. After a discussion with the accredited laboratory and comparing with previous results from Friends of First Lake, we determined that a 100x dilution should be sufficient. Unfortunately, there were still 4 sampling locations that were above the detection limit for this dilution of > 20,000 CFU/100 mL.

# **Preliminary Results**

#### E. coli

The Guidelines for Canadian Recreational Water Quality report a geometric mean concentration of  $\leq 200$  CFU/100mL, and a maximum single sample of  $\leq 400$  CFU/100mL. *E. coli* concentrations detected in Second Lake and Rocky Lake were below these limits, along with in-lake samples for First Lake and Kinmen Beach samples. However, there were a number of outfalls into First Lake that did have *E. coli* detections in exceedance of 200 CFU/100 mL.

The locations with *E. coli* detection for the July 14<sup>th</sup> sampling event with dry/low flow conditions were compared to the results from the first round of sampling in June that was following a wet weather event. *E. coli* results for these locations are presented in Table 1.



Table 1: First Lake *E. coli* results for June and July 2022

Location ID	E. coli Results							
CBCL	June 15, 202	22 (Wet)	July 14, 2	022 (Dry)				
CBCL	Date	(CFU/100 mL)	Date	(CFU/100 mL)				
FLW-1	2022-06-15	> 200	2022-07-14	> 20000				
FLW-2	2022-06-15	> 200	2022-07-14	> 20000				
FLW-3	2022-06-15	> 200	2022-07-14	5377				
FLW-6	2022-06-15	> 200	2022-07-14	1243				
FLW-7	2022-06-15	> 200	2022-07-14	107				
FLW-8	2022-06-15	> 200	2022-07-14	> 20000				
Kinsmen Beach A	2022-06-15	135	2022-07-14	84				
Kinsmen Beach B	2022-06-15	92	2022-07-14	60				
Kinsmen Beach C	2022-06-15	63	2022-07-14	60				
Kinsmen Beach D	2022-06-15	180	2022-07-14	90				
Kinsmen Beach E	2022-06-15	199	2022-07-14	110				
FLN-1	2022-06-15	> 200	2022-07-14	816				
FLN-2	2022-06-15	> 200	2022-07-14	14560				
FLN-5	2022-06-15	> 200	2022-07-14	-				
FLN-8	2022-06-15	> 200	2022-07-14	9691				
FLS-3	2022-06-15	> 200	2022-07-14	13064				
FLS-4	2022-06-15	> 200	2022-07-14	> 20000				
Inlet First Lake	2022-06-15	> 200	2022-07-14	328				
Gully on Cavalier Drive	2022-06-15	248	2022-07-14	25				

# Microbial Source Tracking

Samples for Microbial Source Tracking (MST) were not taken during the July 14,2022 sampling event.

We received the MST results from the June 15, 2022, MST sampling from Dalhousie, and the raw data is presented in Appendix B. Further analysis of this data will be completed as the project progresses.

# Forecasted Activities and Schedule

Weather dependent, our next sampling event is scheduled for the week of August 2-5. This is one week later than the initial proposed schedule, due to staff availability during this time. Future sampling events might vary from the proposed schedule, due to the need to sample during specific weather criteria.



# Conclusion

CBCL is pleased to provide this progress report and should you have any questions or comments, please do not hesitate to reach out to the undersigned.

Yours very truly,

**CBCL Limited** 

Michael Brophy, M.A.Sc.

**Process Specialist** 

E-Mail: mbrophy@cbcl.ca

# **APPENDIX A**

Outfall Map Supplied by Halifax Water



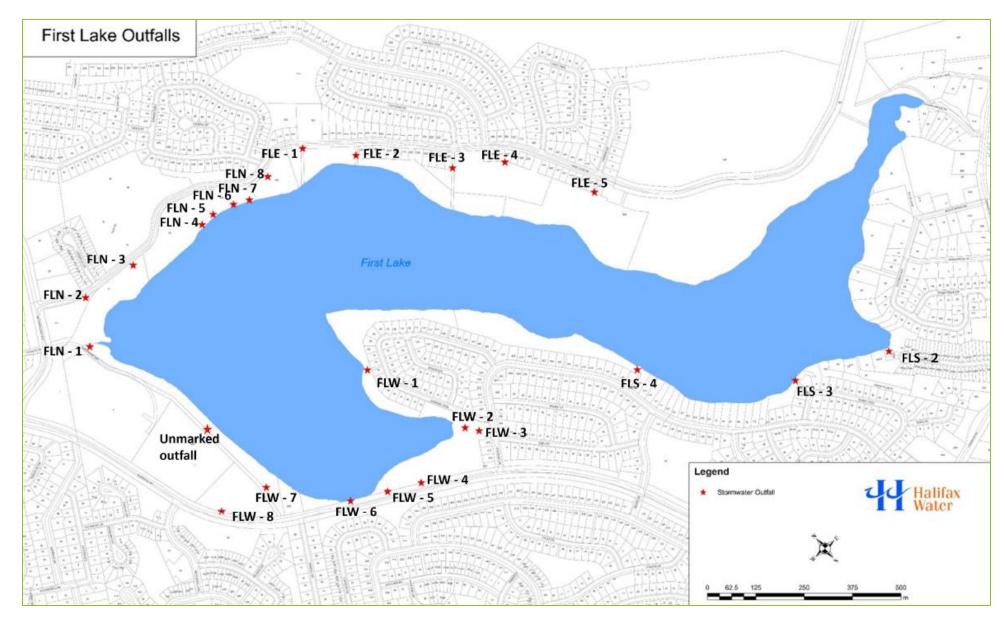


Figure 1: Known Stormwater Outlets around First Lake as Inventoried by Halifax Water



### **APPENDIX B**

**MST Sampling Results** 



Table 1: MST Sampling

Sample name	Human HF183 markers (Log copies/100 mL)	Human CrAssphage markers (Log copies/100 mL)	Avian (bird) markers (Log copies/100 mL)	Dog markers (Log copies/100 mL)
Rock lake deep	<1.1	<2.83	1.91	2.21
Rock lake shallow	<1.1	<2.83	1.25	2.10
Second lake deep station	<1.1	<2.83	1.76	<1.1
Second lake shallow	<1.1	<2.83	<1.1	<1.1
FLN-1	5.66	6.14	2.45	6.67
FLN-2	4.03	4.85	<1.1	3.59
FLN-3	2.18	3.83	1.10	<1.1
FLN-8	6.15	5.62	2.53	2.42
FLE-2	4.63	4.83	1.49	<1.1
FLE-3	3.97	4.05	1.44	<1.1
FLE-5	3.37	3.97	1.28	<1.1
FLW-1	6.85	7.22	1.65	2.63
FLW-2	7.51	6.04	1.23	<1.1
FLW-3	7.03	6.33	1.11	2.80
FLW-5	5.09	4.68	2.59	<1.1
FLW-6	6.29	6.21	2.04	<1.1
FLW-7	4.68	5.63	1.56	<1.1
FLW-8	4.83	6.00	1.18	<1.1
FLS-2	4.60	3.97	1.58	2.24
FLS-3	6.39	6.50	1.20	3.32
FLS-4	6.74	6.43	1.66	<1.1
First lake shallow	3.12	4.02	<1.1	<1.1
First lake deep	<1.1	<2.83	<1.1	<1.1
Second lake inlet	2.05	2.95	1.36	5.79
Culvert upstream	4.69	5.57	2.61	<1.1
Rocky lake outlet	<1.1	<2.83	2.25	2.10
Kinsmen beach	3.69	4.25	1.53	<1.1
Cavalier Gully	3.63	4.21	2.90	<1.1
Unmarked Outfall	<1.1	<2.83	<1.1	<1.1
Outlet of First lake	2.89	3.99	<1.1	3.31

<sup>\*</sup>Samples reported as < 1.1 log copies/100 mL indicate a non-detect.



Date	August 26, 2022
Memo to	Emma Wattie (HRM)
Project name	220804.00 HRM Pollution Control – First Lake
Subject	Progress Report – August 2022
From	Michael Brophy
Copies to	HRM: Elizabeth Montgomery; Halifax Water: Joel Haley; CBCL: Melissa Fraser, Alyssa Chiasson, Zack Levisky

#### Preamble

The following progress report summarizes the activities completed in August 2022 for the HRM Pollution Control Study on First Lake. This report will include a summary of work completed, any noted issues or concerns, preliminary results, and forecasted activities and schedule for future work.

#### Summary of Work Completed

The third sampling event occurred on August 10, 2022. There was minimal precipitation leading up to the event, meeting the criteria of dry/low flow conditions. The fourth sampling event took place on August 18, 2022 and was scheduled to follow a weather event. According to Environment Canada, there was 12.8mm of precipitation the day prior to the sampling event.

Twenty-eight (28) different locations were sampled on August 10, and twenty-nine (29) on August 18. Samples were taken for *E. coli*, YSI probe measurements (pH, dissolved oxygen, temperature, specific conductance, and total dissolved solids), and flow (where applicable). A total of 5 samples for *E. coli* were taken at each location to calculate the geometric mean.

Samples were successfully taken at the deep station and at the surface for First Lake, Second Lake, and Rocky Lake. Furthermore, samples were taken at the inlet and outlet from First Lake and Second Lake, as well as the inlet to Rocky Lake.

Of the 25 outfalls identified on the map from Halifax Water in Appendix A, 24 were successfully located and 15 were sampled on the August 10 sampling event. Outfalls FLW-4, FLW-5, FLE-1, FLE-2, FLE-4 FLN-4, FLN-5, FLN-6, and FLN-7 had no flow and could not be sampled. FLN-8 had some flow but was too shallow for water quality measurement with the YSI probe. Cavalier Gully had flow too low for flow gauging.

During the August 18 sampling event, 16 outfalls were sampled; outfalls FLW-4, FLW-5, FLE-1, FLE-2, FLE-4, FLN-4, FLN-6, and FLN-7 had no flow and could not be sampled. FLN-5 had some flow but was too shallow for water quality measurement with the YSI probe and Cavalier Gully had flow too low for flow gauging.

#### Issues and Concerns

No major issues and concerns were identified from the August 10 sampling event. YSI probe measurements were not collected for the deep lake samples at First, Second and Rocky Lake but this was corrected for the August 18 sampling event.

Results for sample location FLN-8-1 had a string of algae present from the August 10 sampling event, which caused colonies to group together which restricted effective counting. This one sample was reported as "No Data – Overgrown Target."

On the August 10 sampling event, the FLW-3 location had a barrier set up in front of the culvert. After consultation with HRM staff, it was determined there was a water main break on First Lake, so these were put up in an attempt to limit what went into the lake. Samples were taken above and below the barrier, for comparison. The barrier was removed by the August 18 sampling event.

#### **Preliminary Results**

#### E. coli

The Guidelines for Canadian Recreational Water Quality report a geometric mean concentration of  $\leq$  200 CFU/100mL, and a maximum single sample of  $\leq$  400 CFU/100mL. *E.* coli concentrations detected in Second Lake and Rocky Lake were below these limits, along with in-lake samples for First Lake. However, there were several outfalls into First Lake that did have E. coli detections in exceedance of 200 CFU/100 mL, as did Kinsmen Beach. Comparison of *E. coli* results from the first three sampling events are presented in Table 1.



Table 1: First Lake E. coli results for June, July, and August 2022

Location ID	E. con results for ju					
CBCL	June 15, 2022 (Wet) (CFU/100 mL)	July 14, 2022 (Dry) (CFU/100 mL)	esults August 10, 2022 (Dry) (CFU/100 mL)		August 18, 2022 (CFU/100 mL)	
FLW-1	> 200	> 20000		414	26877	
FLW-2	> 200	> 20000	25338		9218	
FLW-3	> 200	5377	Above Barrier	2388	>20000	
			Below Barrier	5334		
FLW-6	> 200	1243	46	54	7804	
FLW-7	> 200	107	446		2631	
FLW-8	> 200	> 20000	305		3498	
Kinsmen Beach A	135	84	292		100	
Kinsmen Beach B	92	60	256		90	
Kinsmen Beach C	63	60	276		86	
Kinsmen Beach D	180	90	>400		178	
Kinsmen Beach E	199	110	308		106	
FLN-1	> 200	816	646		2547	
FLN-2	> 200	14560	1103		5390	
FLN-3	34	3	270		295	
FLN-4	-	-	-		862	
FLN-5	> 200	-	-		-	
FLN-8	> 200	9691	138		515	
FLS-3	> 200	13064	4873		265	
FLS-4	> 200	> 20000	38719		39985	
FLE-3	134	14	19		>200	
FLE-5	192	140	>400		257	
Inlet First Lake	> 200	328	16	57	>400	
Outlet First Lake	28	13	(	6 183		
Cavalier Gully	248	25	96 2195		2195	

This information was then superimposed onto a map from Google Earth, to determine where locations with *E. coli* exceedances were located around the lake. This is presented in Figure 1.

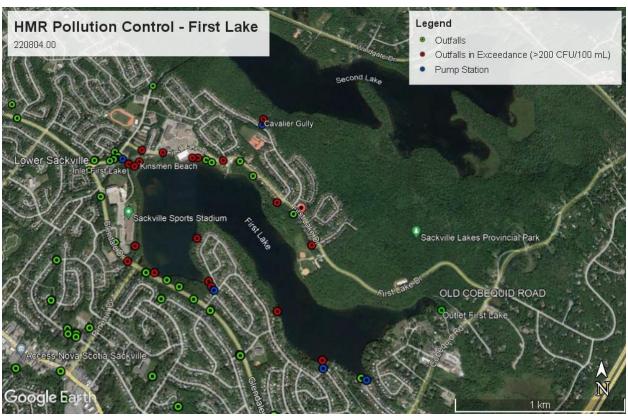


Figure 1: Outfalls and pump stations with *E. coli* exceedances around First Lake.

#### Microbial Source Tracking

Samples for Microbial Source Tracking (MST) were not taken during the August 10 or August 18 sampling events. MST samples will be taken during the September sampling event, in conjunction with a rain event.

#### Forecasted Activities and Schedule

Weather dependent, our next sampling event is scheduled for mid-September, when the beach season is over. This event will be a wet weather event and MST samples will be taken.



#### Conclusion

CBCL is pleased to provide this progress report and should you have any questions or comments, please do not hesitate to reach out to the undersigned.

Yours very truly,

**CBCL Limited** 

Michael Brophy, M.A.Sc.

**Process Specialist** 

E-Mail: mbrophy@cbcl.ca

### **APPENDIX A**

Outfall Map Supplied by Halifax Water



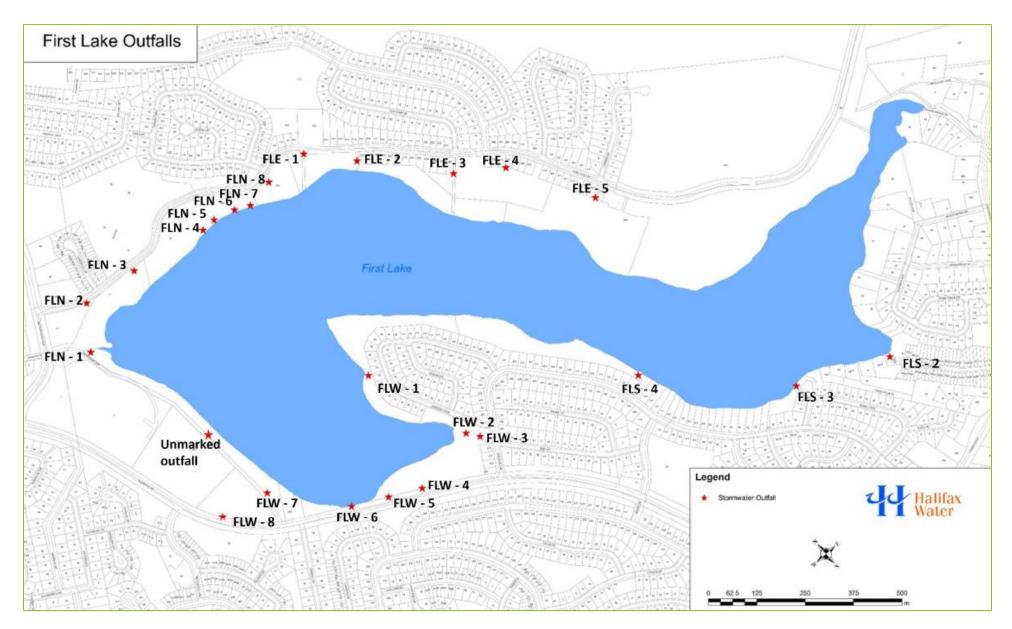


Figure 1: Known Stormwater Outlets around First Lake as Inventoried by Halifax Water



Date	October 7, 2022
Memo to	Emma Wattie (HRM)
Project name	220804.00 HRM Pollution Control – First Lake
Subject	Progress Report – September 2022
From	Michael Brophy
Copies to	HRM: Elizabeth Montgomery; Halifax Water: Joel Haley; CBCL: Melissa Fraser, Alyssa Chiasson, Zack Levisky

#### **Preamble**

The following progress report summarizes the activities completed in September 2022 for the HRM Pollution Control Study on First Lake. This report will include a summary of work completed, any noted issues or concerns, preliminary results, and forecasted activities and schedule for future work.

#### Summary of Work Completed

The fifth and final sampling event occurred on September 27, 2022. There was 29.8 mm of continuous precipitation between September 25-26, preceded by 24.3 mm of precipitation on the day of sampling, meeting the criteria for wet weather conditions.

Thirty-one (31) different locations were sampled throughout this sampling event. Samples were collected for *E. coli*, Microbial Source Tracking (MST), YSI probe measurements (pH, dissolved oxygen, temperature, specific conductance, and total dissolved solids), and water flow (where applicable). A total of 5 samples for *E. coli* were taken at each location to calculate the geometric mean.

Deep station and surface samples were collected for First Lake, Second Lake, and Rocky Lake along with the inlet and outlet of First Lake and Second Lake, as well as the inlet to Rocky Lake.

Of the 25 outfalls identified on the map from Halifax Water in Appendix A, 17 locations were sampled. Outfalls FLW-4, FLW-5, FLE-1, FLE-4, FLN-5, FLN-6, and FLN-7 had no flow and could not be sampled.

*E.coli* samples were collected for outfall FLN-8, however the flow was too shallow for water quality measurement with the YSI probe. *E.coli* samples were collected at Cavalier Gully and FLW-1, however flow was unable to be measured due to limited access.

#### Issues and Concerns

For the previous sampling events, AGAT was used as the accredited laboratory for *E.coli* analysis. Due to the aftermath of Hurricane Fiona, the laboratory did not have the ability to accept the samples and perform analysis. As a result, the samples were sent to Bureau Veritas (Bedford) for analysis.

To aid in determining the necessary dilutions for the *E.coli* analysis, the highest concentrations detected at each location from the previous sampling events were provided to ensure a reportable value was provided from the analysis. Unfortunately, even with the previous data to inform dilutions, there were still several samples that were reported above detection limits after the dilution.

#### **Preliminary Results**

#### E. coli

The Guidelines for Canadian Recreational Water Quality report a geometric mean concentration of  $\leq$  200 CFU/100mL, and a maximum single sample of  $\leq$  400 CFU/100mL. E. *coli* concentrations detected in Second Lake and Rocky Lake were below these limits, along with in-lake samples for First Lake. However, there were several outfalls into First Lake that did have *E. coli* detections in exceedance of 200 CFU/100 mL, as did Kinsmen Beach. Comparison of *E. coli* results from the five sampling events are presented in Table 1.



Table 1: First Lake E. coli results for the entire sampling program

Location ID	E. coli Results					
CBCL	June 15, 2022 (Wet) (CFU/100 mL)	July 14, 2022 (Dry) (CFU/100 mL)	22 August 10, 2022 (Dry)		August 18, 2022 (Dry) (CFU/100 mL)	September 27, 2022 (Wet) CFU/100 mL)
FLW-1	> 200	> 20000	140414		26877	>25000
FLW-2	> 200	> 20000	25338		9218	1715
FLW-3	> 200	5377	Above Barrier Below Barrier	2388 5334	>20000	>25000
FLW-6	> 200	1243	464		7804	2442
FLW-7	> 200	107	446		2631	6871
FLW-8	> 200	> 20000	305		3498	9177
Kinsmen Beach A	135	84	292		100	>500
Kinsmen Beach B	92	60	256		90	>500
Kinsmen Beach C	63	60	276		86	>500
Kinsmen Beach D	180	90	>400		178	>500
Kinsmen Beach E	199	110	308		106	>500
FLN-1	> 200	816	646		2547	927
FLN-2	> 200	14560	1103		5390	>25000
FLN-3	34	3	270		295	52
FLN-4	-	-	-		862	358
FLN-5	> 200	-	-		-	-
FLN-8	> 200	9691	138		515	10589
FLS-2	22	3	9		16	196
FLS-3	> 200	13064	4873		265	>25000
FLS-4	> 200	> 20000	38719		39985	5864
FLE-2	193	27	-		-	>500
FLE-3	134	14	19		>200	>2500
FLE-5	192	140	>400		257	>500
Inlet First Lake	> 200	328	167		>400	>500
Outlet First Lake	28	13	6		183	121
Cavalier Gully	248	25	96		2195	3106

The E.coli sample results were then superimposed onto a map from Google Earth, to illustrate where locations with E. coli exceedances were located around First Lake. This is presented in Figure 1.



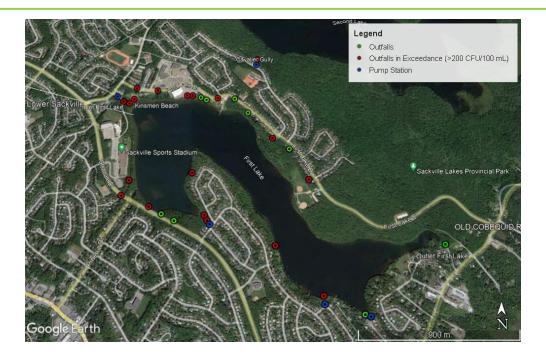


Figure 1: Outfalls and pump stations with *E. coli* exceedances around First Lake.

#### Microbial Source Tracking

Samples for Microbial Source Tracking (MST) were taken during the September 27 sampling event. The previous sample collection for MST was during the first sampling event on June 15. MST results from the September 27 sampling event are expected next week from the Centre for Water Resources Studies laboratory at Dalhousie University, and will be provided once received.

#### Forecasted Activities and Schedule

All fieldwork activities have now been completed for the HRM First Lake pollution control study. The next steps include completing the water modelling and preparing the draft report with the findings.



#### Conclusion

CBCL is pleased to provide this progress report and should you have any questions or comments, please do not hesitate to reach out to the undersigned.

Yours very truly,

**CBCL Limited** 

Michael Brophy, M.A.Sc.

**Process Specialist** 

E-Mail: mbrophy@cbcl.ca

### **APPENDIX A**

Outfall Map Supplied by Halifax Water



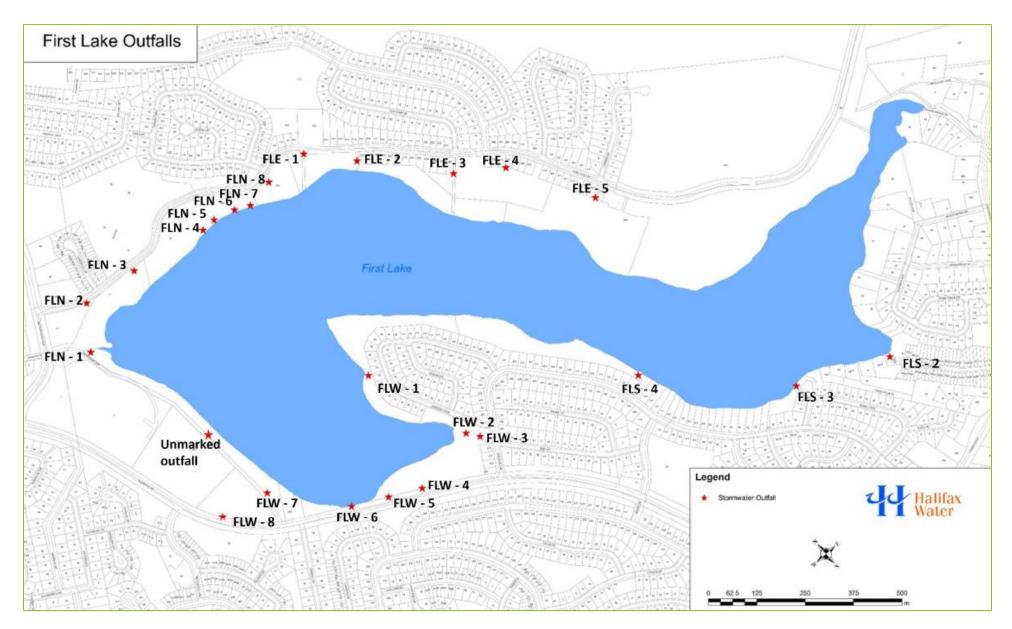


Figure 1: Known Stormwater Outlets around First Lake as Inventoried by Halifax Water



Table 1: *E. coli* and MST Data for September 27, 2022

	September 27, 2022						
Sample Name	E. Coli (CFU/100 mL)	Human HF183 markers (Log copies/100 mL)	Human CrAssphage markers (Log copies/100 mL)	Avian (bird) markers (Log copies/100 mL)	Dog markers (Log copies/100 mL)		
FLN-1	927	4.45	6.27	2.11	<1.1		
FLN-2	>25000	6.50	4.83	2.39	2.74		
FLN-3	52	<1.1	<2.83	3.07	<1.1		
FLN-4	358	3.66	4.09	2.62	<1.1		
FLN-8	10589	6.03	7.29	2.51	3.21		
FLE-2	>500	3.06	2.83	3.10	4.70		
FLE-3	>2500	3.48	3.03	1.80	3.91		
FLE-5	>500	5.70	4.83	1.26	4.22		
FLW-1	>25000	6.68	5.98	2.28	<1.1		
FLW-2	1715	5.92	5.66	2.31	2.47		
FLW-3	>25000	4.72	6.22	2.56	<1.1		
FLW-6	2442	4.36	5.36	2.21	<1.1		
FLW-7	6871	<1.1	7.90	2.64	<1.1		
FLW-8	9177	5.36	8.34	2.17	3.45		
FLS-2	196	<1.1	<2.83	2.11	<1.1		
FLS-3	>25000	6.79	7.32	2.71	2.70		
FLS-4	5864	6.72	6.25	2.21	<1.1		
First Lake (Deep)	164	<1.1	<2.83	2.04	<1.1		
First Lake (Shallow)	165	<1.1	<2.83	1.98	<1.1		
Rocky Lake (Deep)	14	<1.1	<2.83	1.87	<1.1		
Rocky Lake (Shallow)	15.3	<1.1	<2.83	1.38	<1.1		
Second Lake (Deep)	40	<1.1	<2.83	1.81	<1.1		
Second Lake (Shallow)	30	3.75	3.83	1.81	<1.1		
Inlet of First Lake	>500	4.21	6.17	1.65	<1.1		
Outlet Of First Lake	121	3.80	4.53	2.19	<1.1		
Inlet of Second Lake	66	<1.1	<2.83	2.49	<1.1		
Outlet of Second Lake	87	<1.1	<2.83	2.38	<1.1		
Inlet of Rocky Lake	113	<1.1	4.45	2.75	<1.1		
Kinsmen Beach	>500	5.20	5.68	2.78	3.32		
Cavalier Gully	3106	2.70	4.10	2.67	3.38		
Unmarked Outfall	18	<1.1	<2.83	4.06	<1.1		

Unmarked Outfall 18 <1.1 <2.83
\*Samples reported as < 1.1 log copies/100 mL indicate a non-detect.

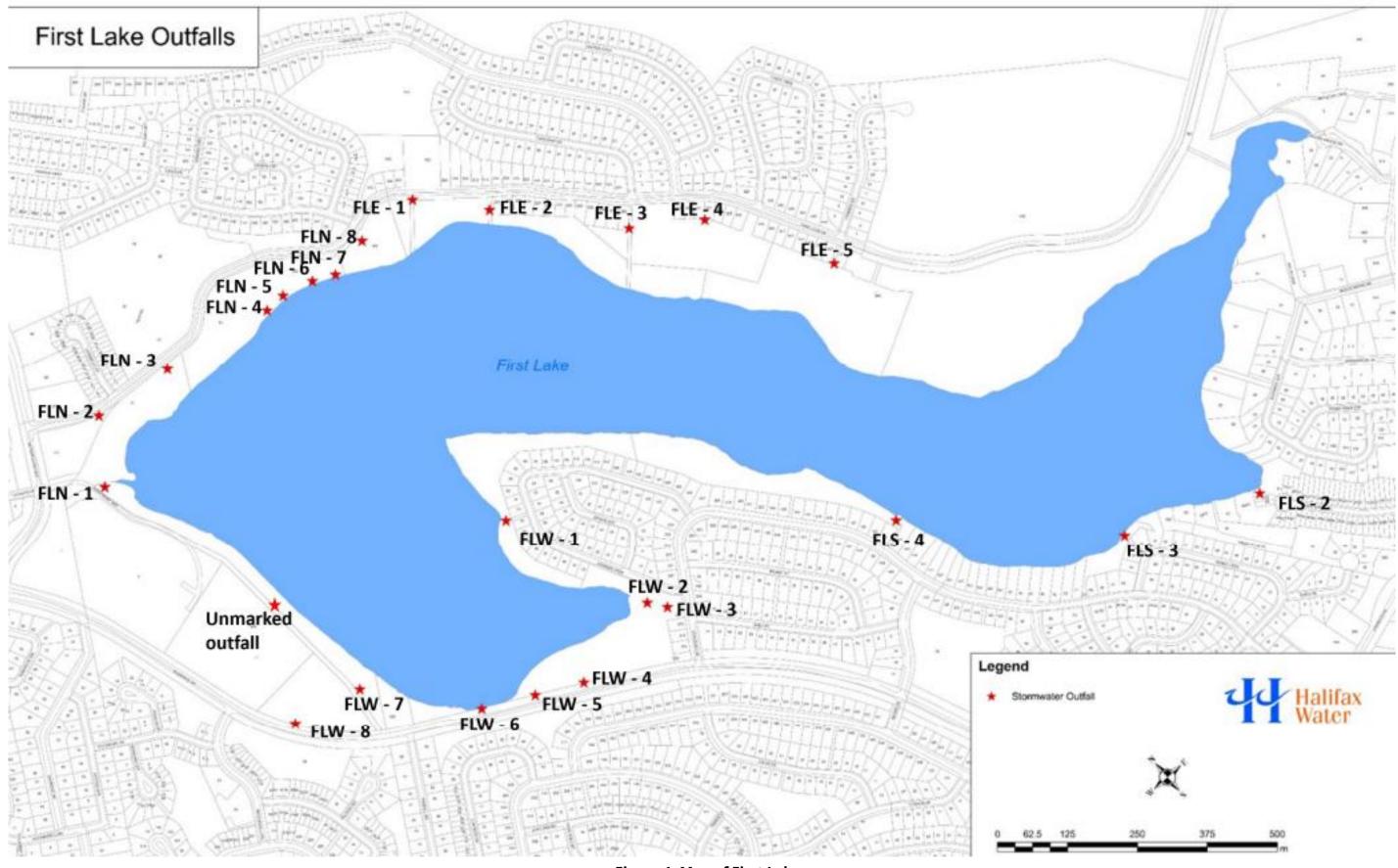


Figure 1: Map of First Lake



# CBCL

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