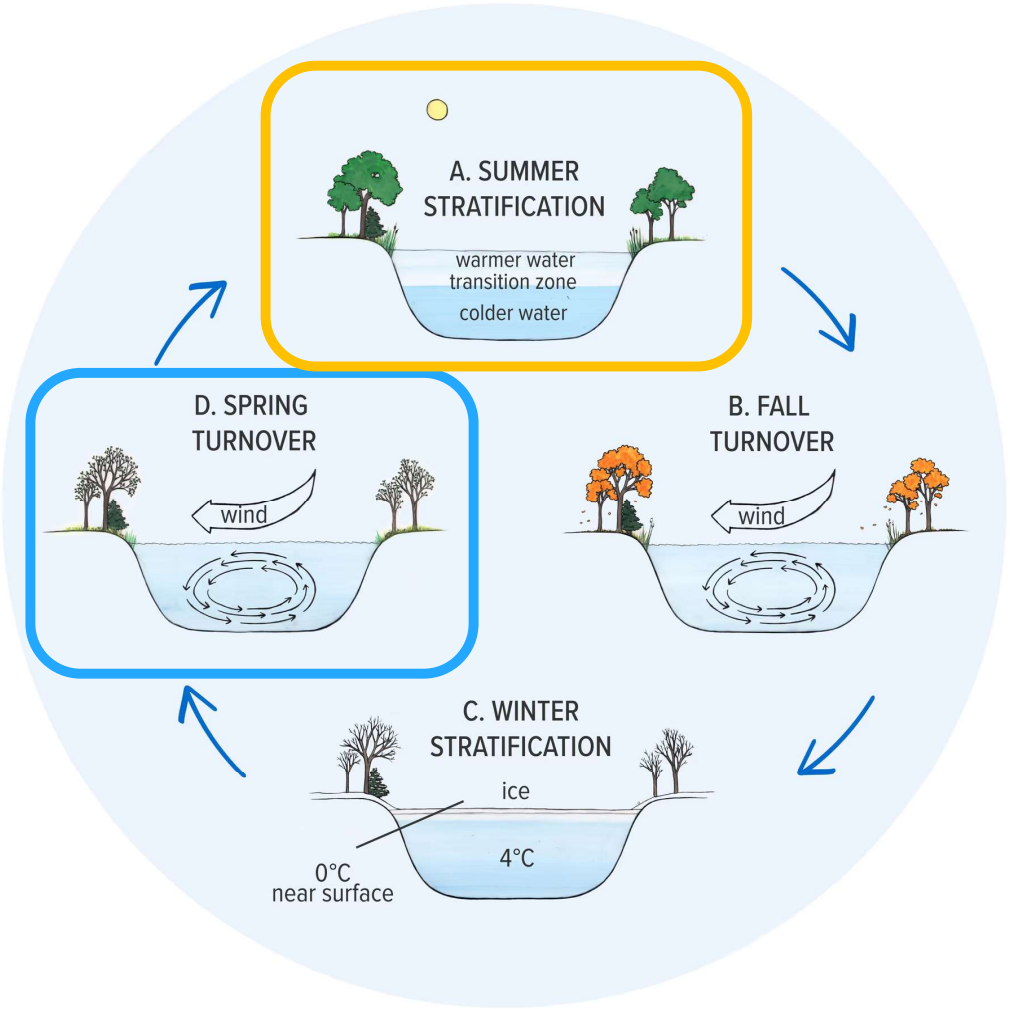
Re: Item No. 15.3.2

Regional Council – November 12, 2024

HALIFAX

What is Lakewatchers?

- a community-based lake water quality monitoring program initiated by the HRM in 2022.
- Spring and Summer lake water quality sampling at 73 lakes across the region.
- Growing team of volunteers dedicated to lake water monitoring & stewardship.



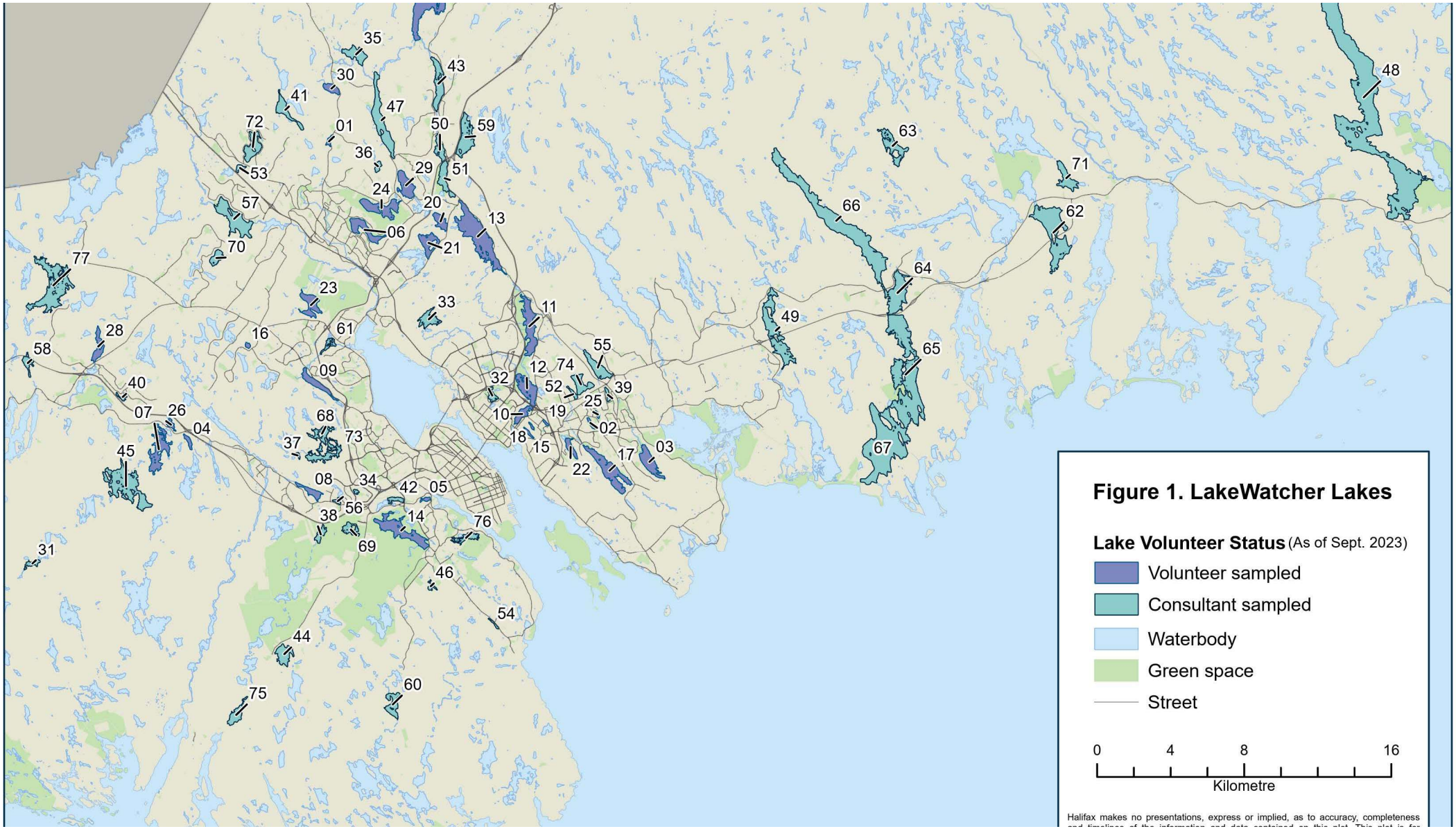
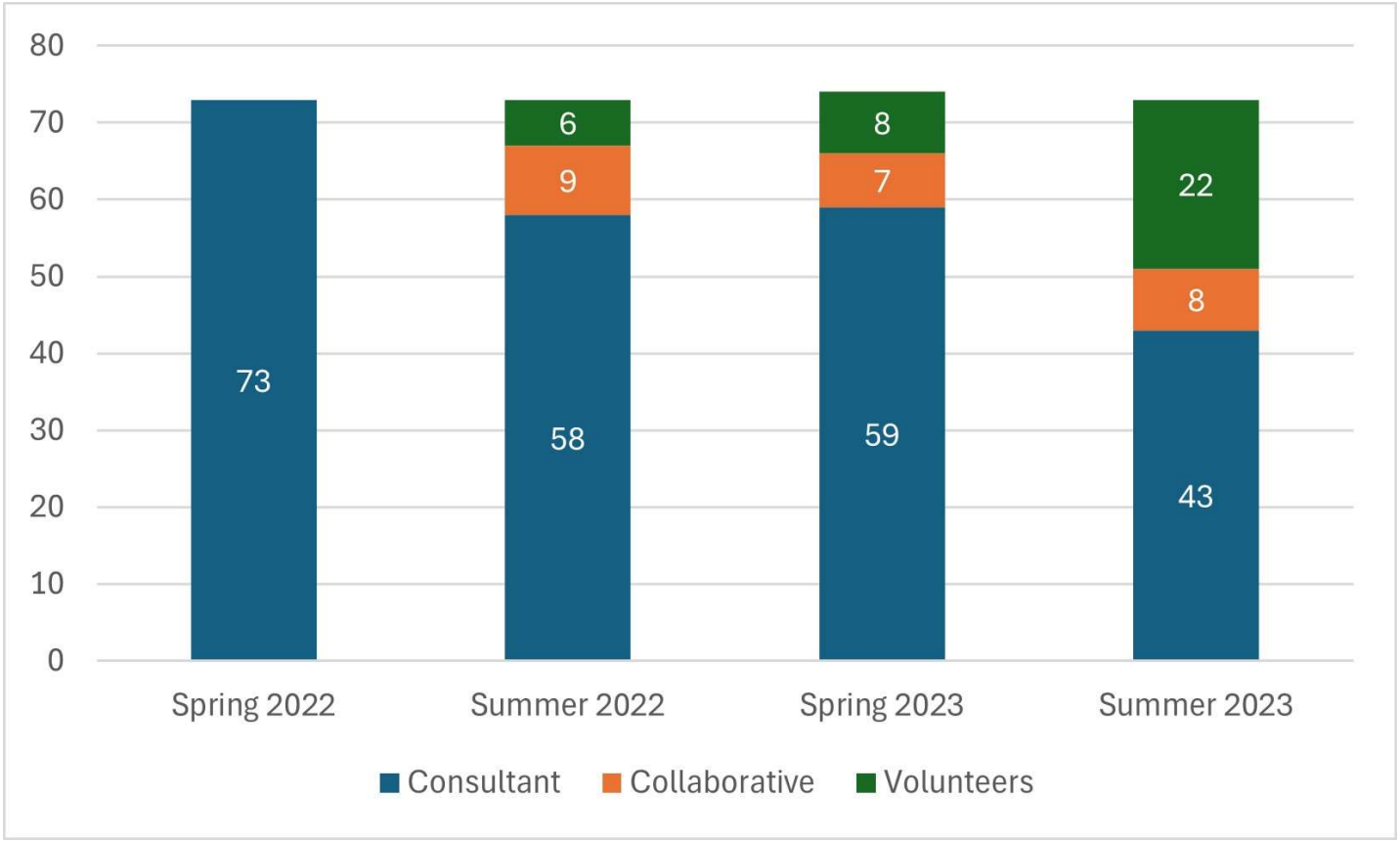


Figure 1. LakeWatcher Lakes
Lake Volunteer Status (As of Sept. 2023)
Volunteer sampled
Consultant sampled
Waterbody
Green space
Street
0
4
8
16
Kilometre
Halifax makes no presentations, express or implied, as to accuracy, completeness

Growing the LakeWatchers Team



What types of water quality issues are we monitoring for?

1) Eutrophication

- the process of increased primary production (i.e., aquatic plants and algae) and is typically caused by excess nutrients.

2) Chloride Enrichment

- the process of increasing salinity or saltiness of a fresh waterbody and is generally caused by de-icing salts used for winter road maintenance.

3) Bacterial Contamination

- is the result of fecal pathogens being introduced to the aquatic environment and is indicated by the presence of *E. coli*.

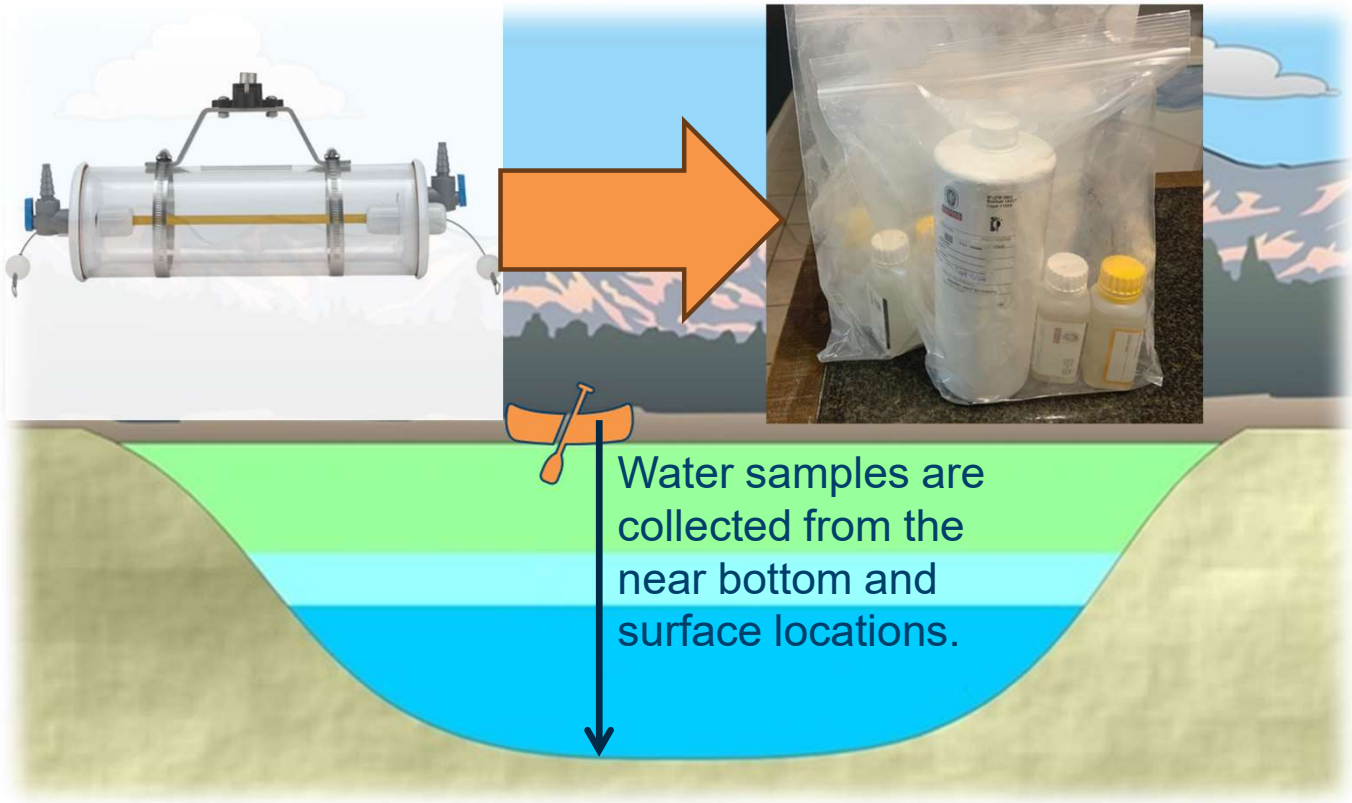
How are these monitored?

Laboratory Analysis:

- Total Phosphorus
- Chlorophyll-α
- Dissolved Chloride
- *E. coli*

Field collected data:

- Temperature;
- pH;
- Dissolved oxygen;
- Specific conductivity; and
- Secchi depth



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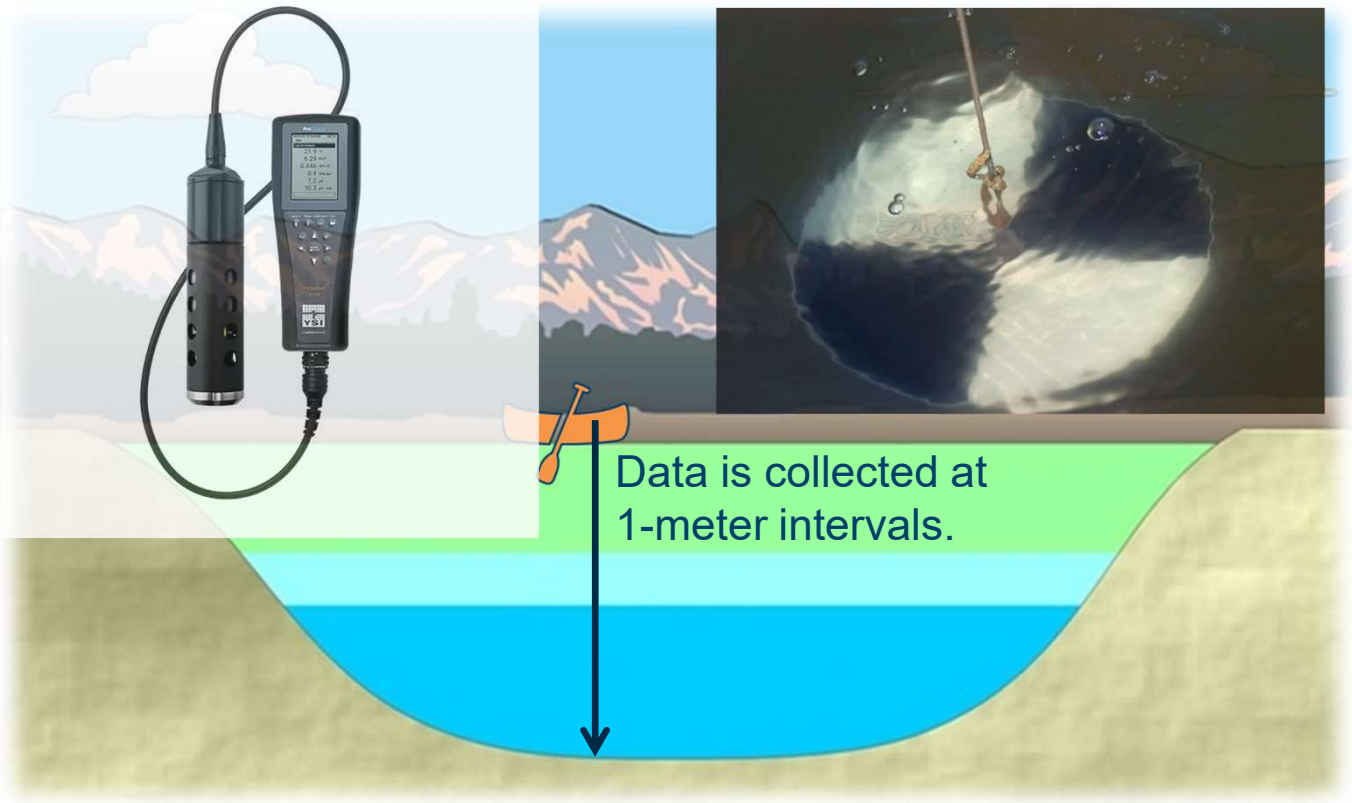


What has the data shown us so far?

1) Eutrophication

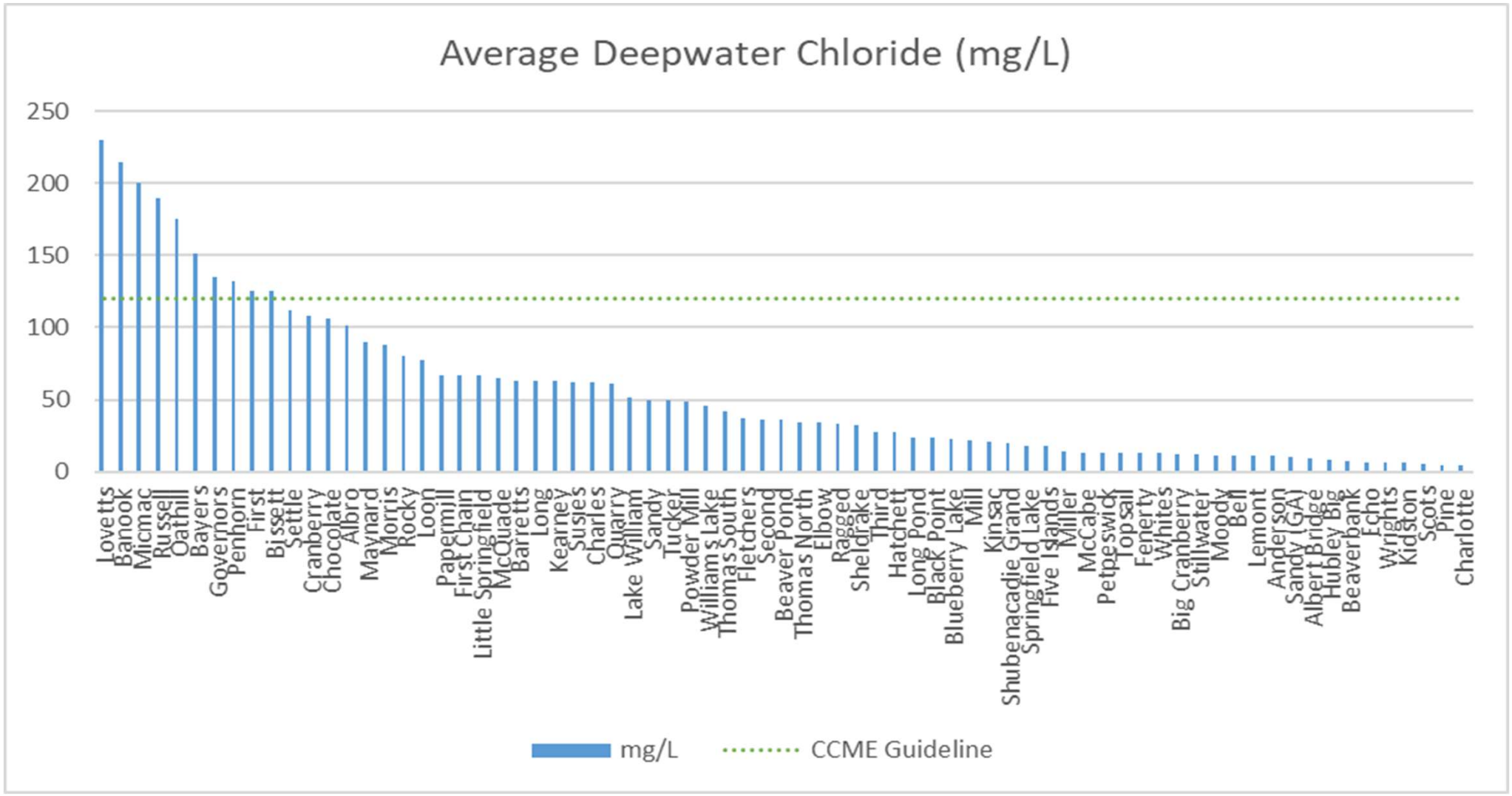
- Compared to 2006-2011, average Total Phosphorus levels in surface water were lower than anticipated.
- Chlorophyll-α results suggest lakes are experiencing higher nutrient levels than those observed in the averaged TP data.
- Evidence of nutrient release from lakebed sediments during peak summer stratification at many lakes.

What has the data shown us so far?

2) Chloride Enrichment

- 10 of 72 freshwater lakes monitored had average deep-water chloride concentrations above long–term federal guidelines (i.e. ≥120 mg/L).

- These include: Lovett Lake, Lake Banook, Lake Micmac, Russell Lake, Oathill Lake, Bayers Lake, Governor Lake, Penhorn Lake, First Lake and Bissett Lake.

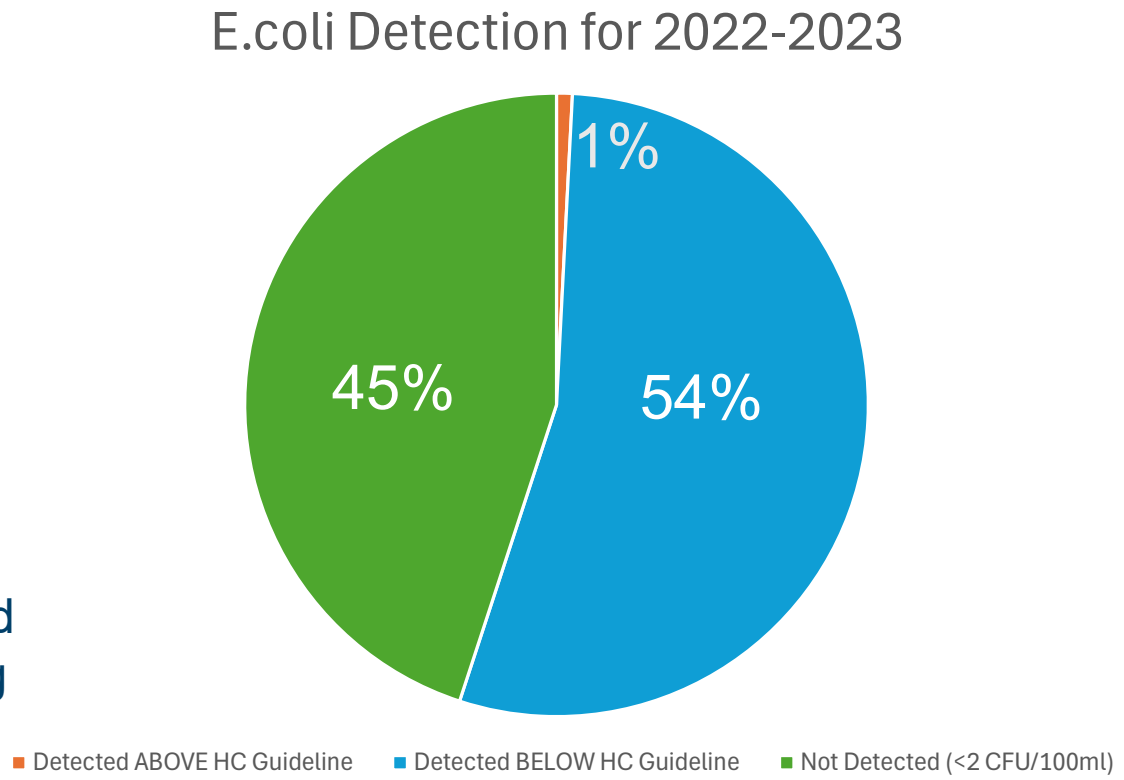

Average Deepwater Chloride (mg/L)
250
200
150
100
50
0
Lovetts
Banook
Micmac
Russell
Oathill
Bayers
Governors
Penhorn
First
Bissett
Settle
Cranberry
Chocolate
Albro
Maynard
Morris
Rocky
Loon
Papermill
First Chain
Little Springfield
McQuade
Barretts
Long
Kearney
Susies
Charles
Quarry
Lake William
Sandy
Tucker
Powder Mill
William's Lake
Thomas South
Fletchers
Second
Beaver Pond
Thomas North
Elbow
Ragged
Sheldrake
Third
Hatchett
Long Pond
Black Point
Blueberry Lake
Mill
Kinsac
Shubenacadie Grand
Springfield Lake
Five Islands
Miller
McCabe
Petpeswick
Topsail
Fenerty
Whites
Big Cranberry
Stillwater
Moody
Bell
Lemont
Anderson
Sandy (GA)
Albert Bridge
Hubley Big
Beaverbank
Echo
Wrights
Kidston
Scots
Pine
Charlotte
mg/L
CCME Guideline

What has the data shown us so far?

3) Bacterial Contamination

- E.coli was detected above the Health Canada guideline for recreational activity on only 5 occasions out 616 samples collected (<1% of the time).

- E.coli was detected more frequently and at higher counts at near-shore sampling locations compared to mid-lake sampling locations.



Recommendation #1

Initiate a review of the Municipality's current Salt Management Plan guided by the Syntheses of Best Practices of Road Salt Management (Transport Assoc. of Canada).

- The Municipality last reviewed Best Management Practices (BMPs) related to Road Salt in 2011 out of concern for lake water quality.
- As a result, some snow-clearing equipment has been upgraded and other improvements have been implemented, but more up-to-date guidance and BMPs are now available.
- Our initial findings suggest that additional salt-vulnerable areas can be identified, and strategies could be developed to continue to mitigate the impact of roadway de-icing salt on lake water quality.

Recommendation #2

Investigate policy options for setbacks for new stormwater discharge locations into natural waterbodies and consider options for naturalization and Low Impact Development (LID) features at existing stormwater discharge locations around priority lakes.

- There are many locations throughout the Municipality where stormwater is discharged directly into lakes, streams, and rivers.
- By requiring stormwater discharge locations to be setback from natural waterbodies, the flow of nutrients, salts, and other contaminants can be mitigated by infiltration and uptake by naturally occurring vegetation.
- In already densely developed watersheds, a select number of discharge locations around priority lakes could be identified for municipal-led naturalization projects or installation of LID features designed to buffer the impacts of stormwater.

Recommendation #3

Ask the Mayor to write a letter to Province of Nova Scotia's Minister of Environment and Climate Change and Halifax Water supporting the development of Provincial stormwater Quality Standards.

- Provincial regulation is needed to mandate water quality objectives for stormwater entering natural water bodies.
- In 2021, the Nova Scotia Government passed the Environmental Goals and Climate Change Reduction Act. Included in the Act is the Government's goal to develop provincial water quality objectives to guide activities that affect water quality by 2026.
- Until the Province acts, Halifax Water cannot invest in infrastructure designed to improve stormwater quality


Questions?