

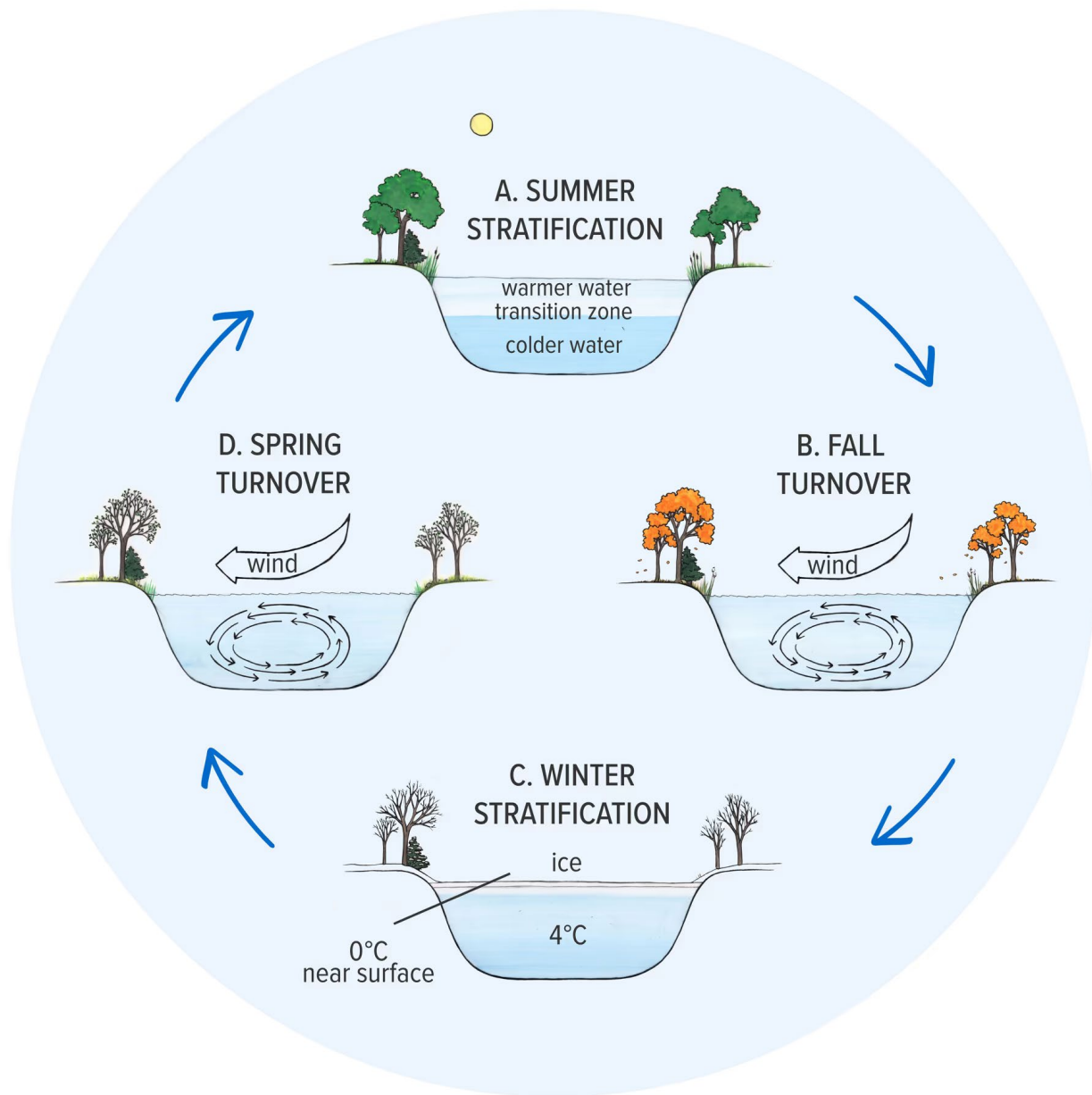
Item 13.1.2

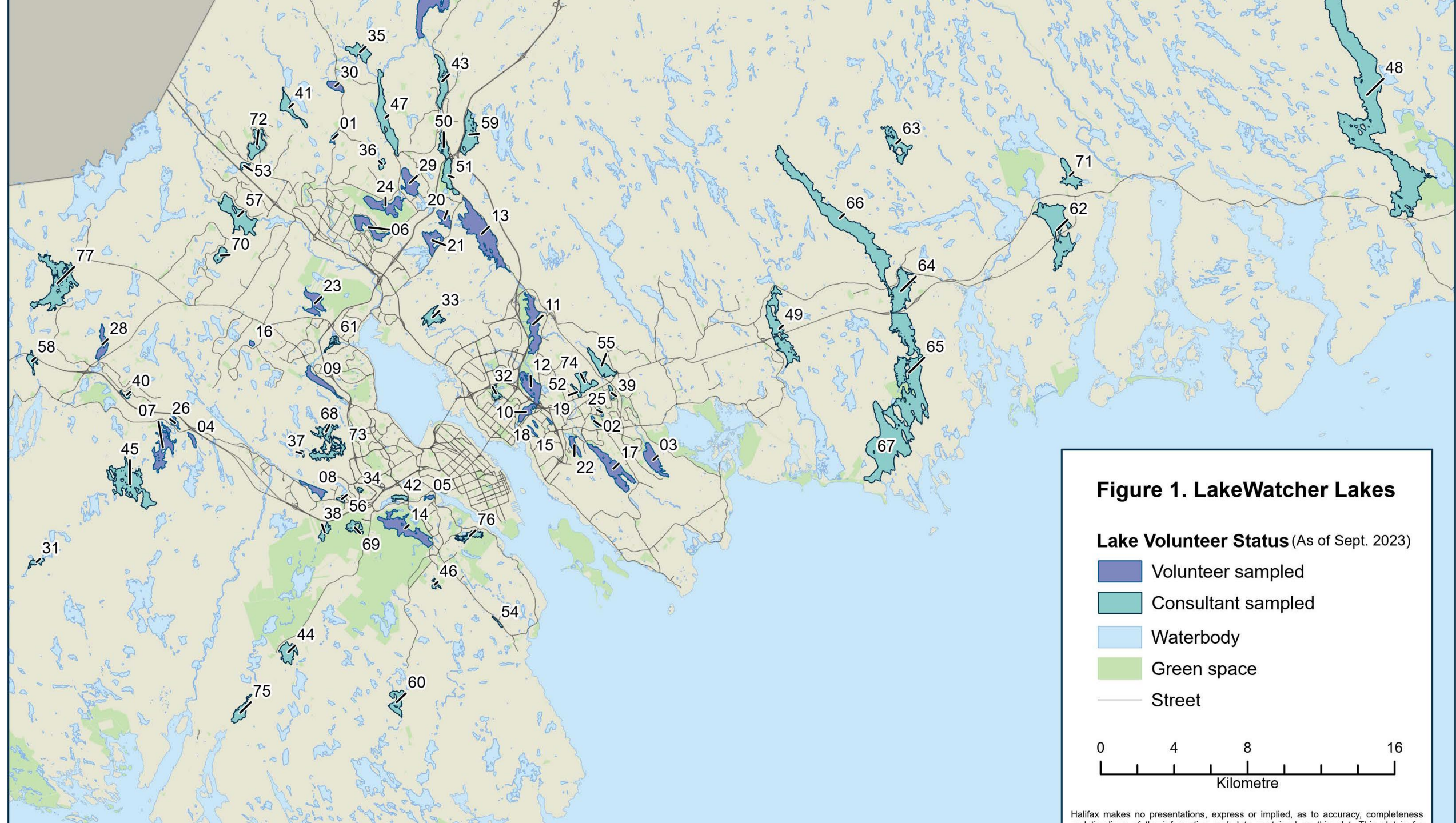
LakeWatchers

State of the Lakes Report 2022-2023

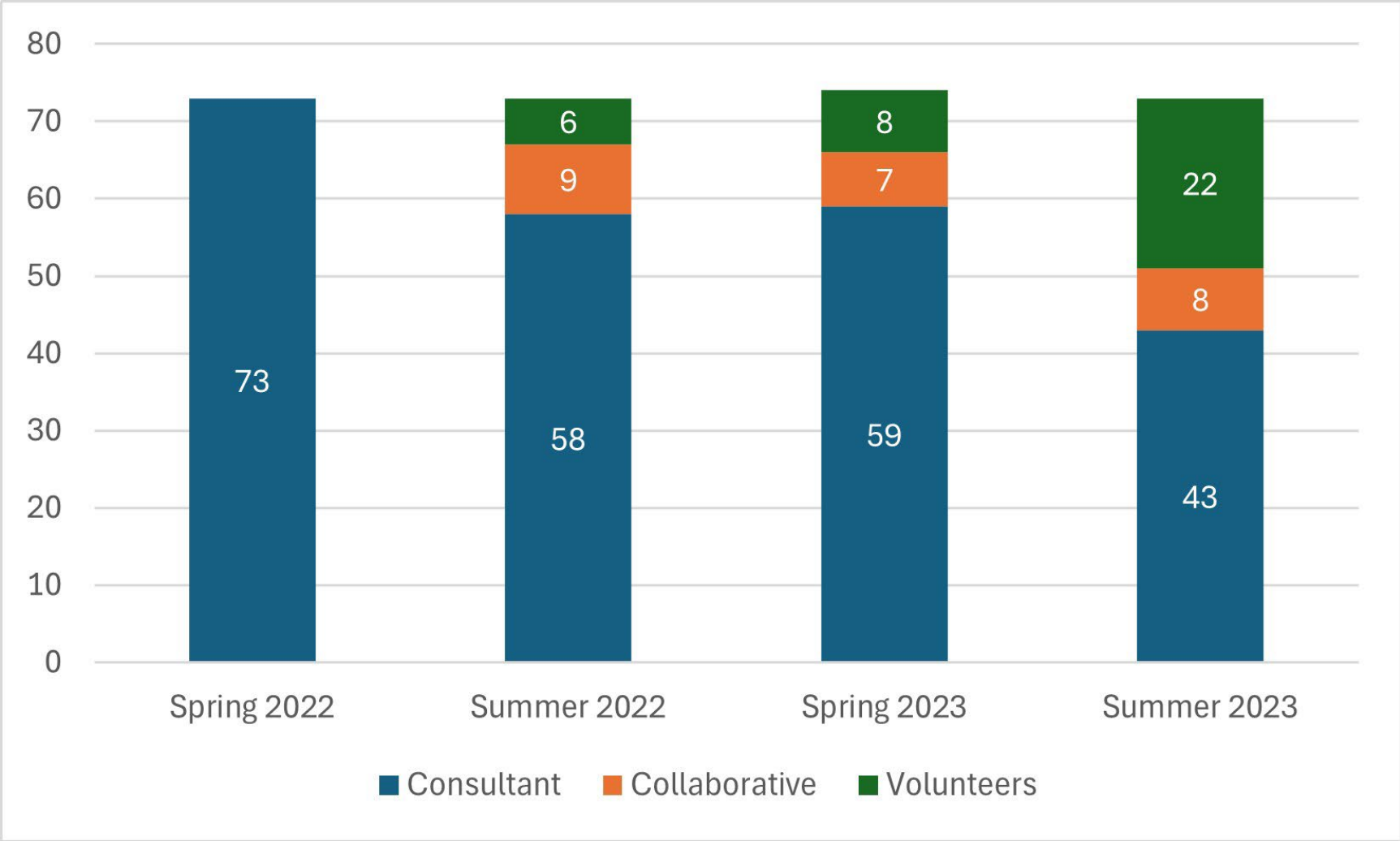
What is Lakewatchers?

- 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.





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*.



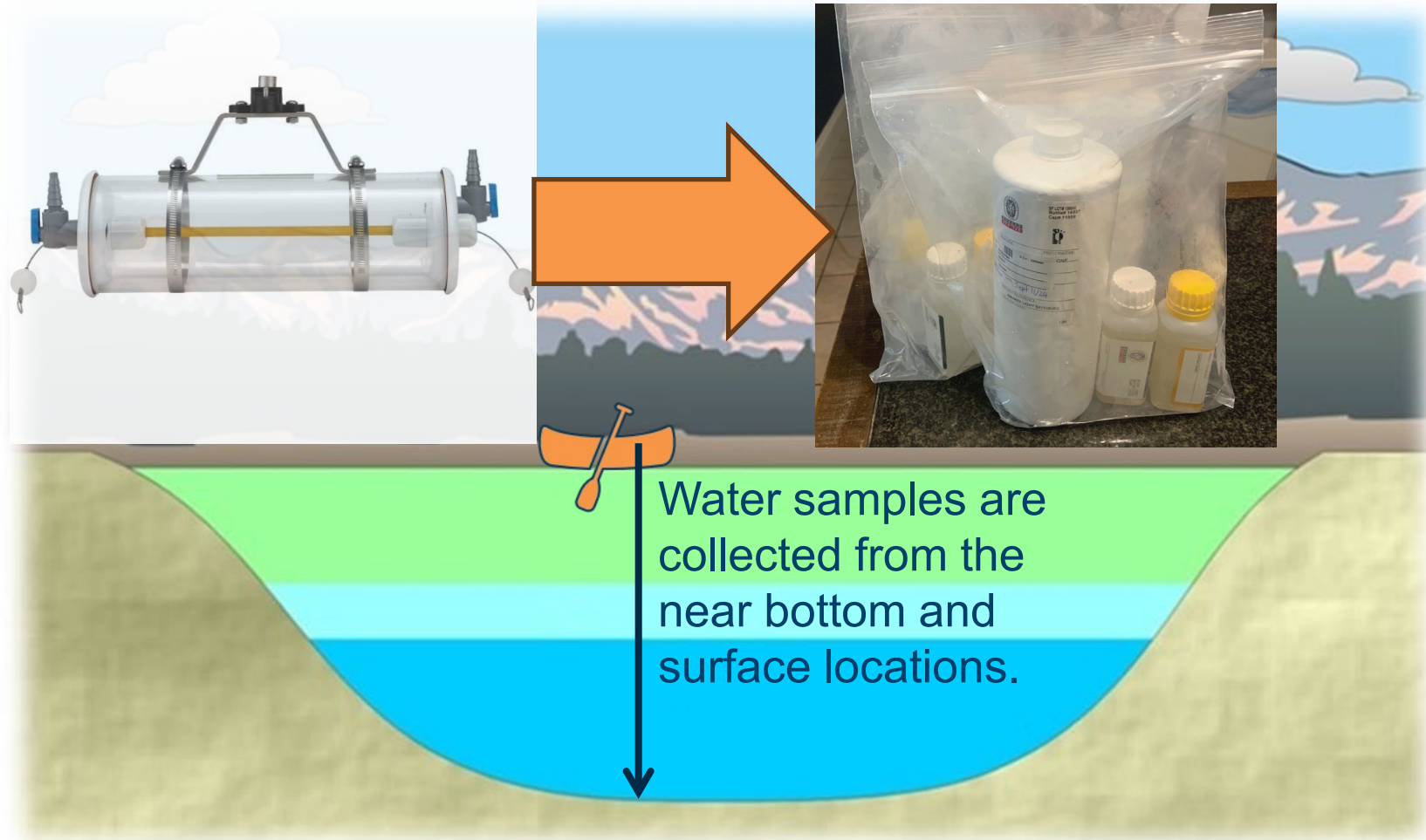
How are these monitored?

Laboratory Analysis:

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

Field collected data:

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



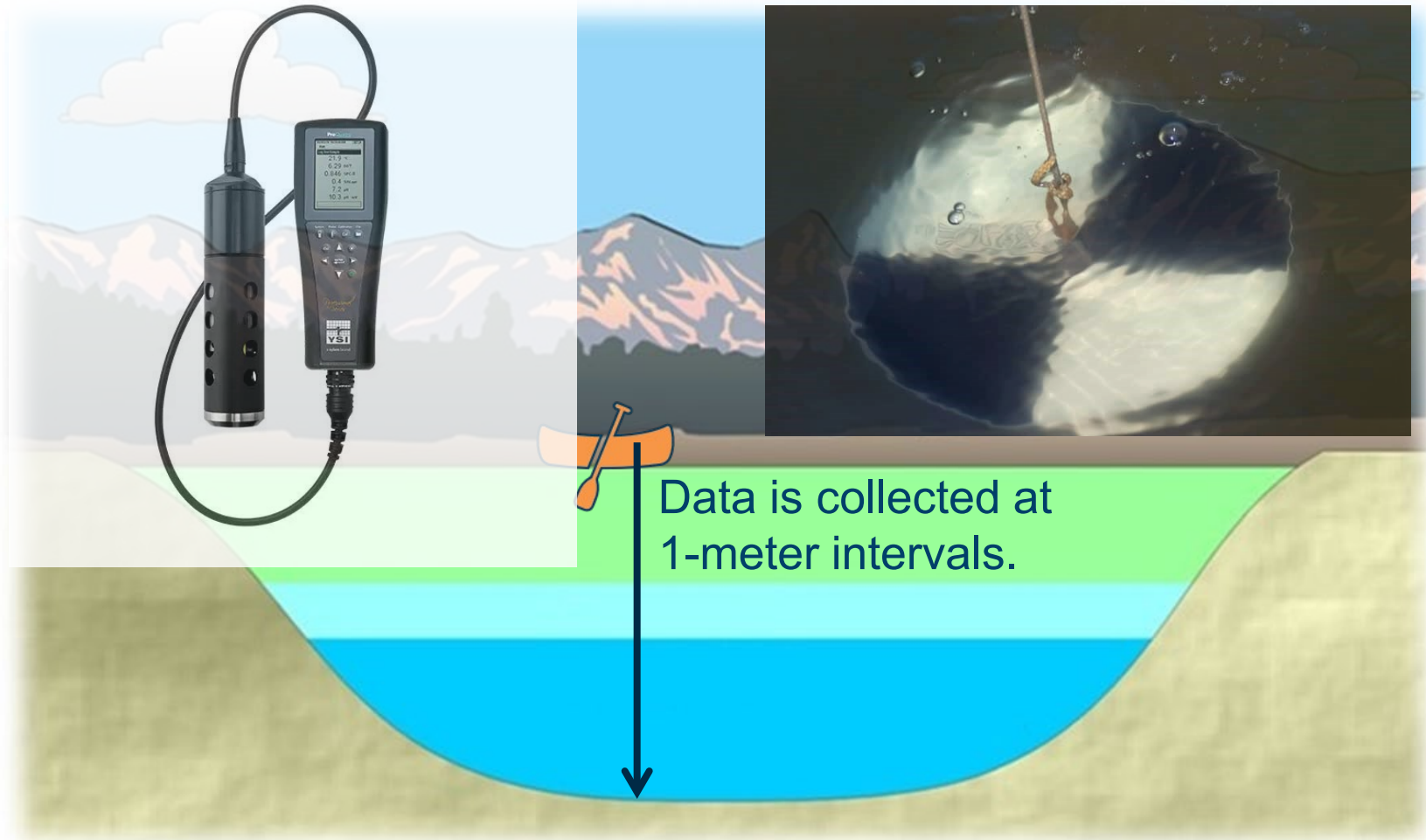
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What has the data shown us so far?

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 TP data.
- Evidence of nutrient release from lakebed sediments during summer stratification at many lakes (seasonal anoxia).



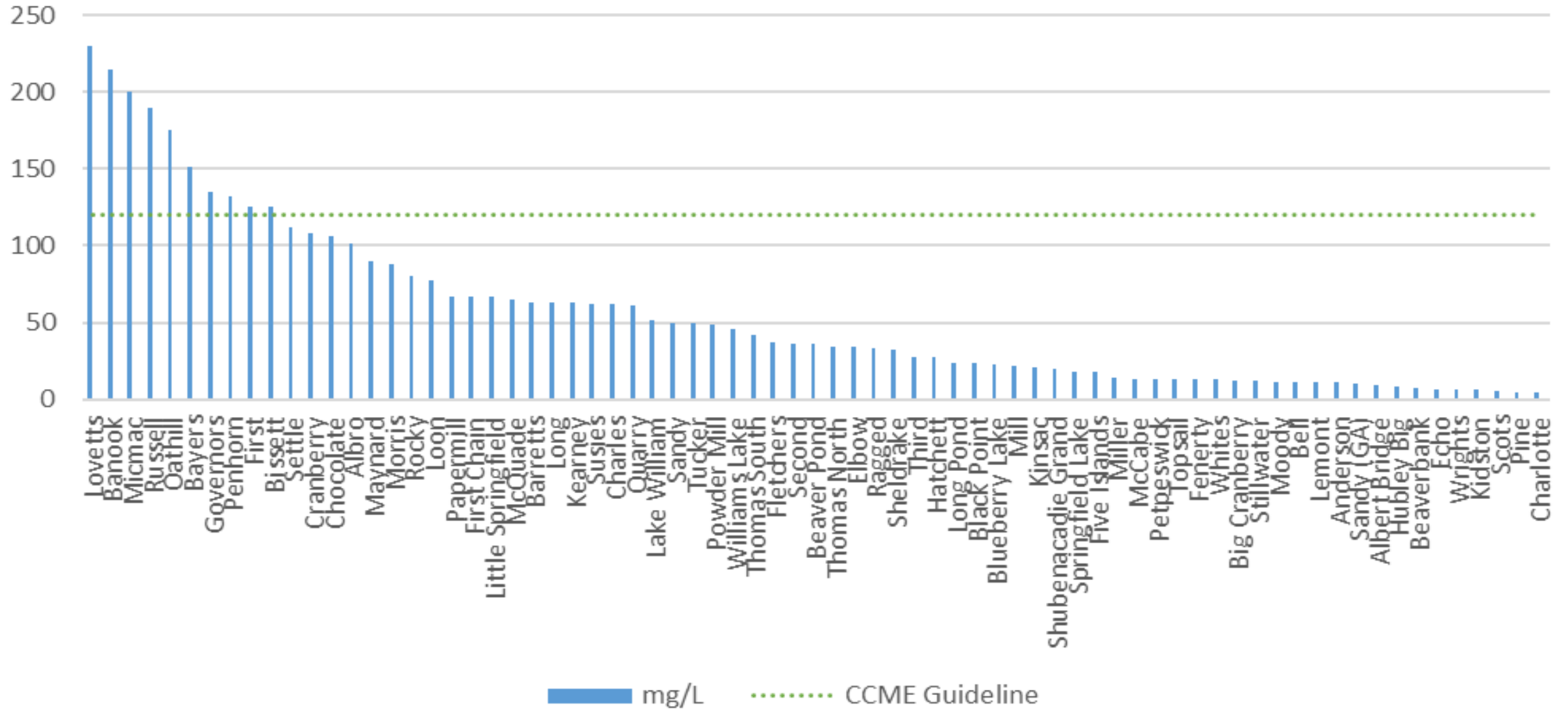
What has the data shown us so far?

2) Chloride Enrichment

- 10 of 72 freshwater lakes monitored had average deep-water chloride concentrations above federal guidelines (>120 mg/L).
- Lovetts Lake, Lake Banook, Lake Micmac, Russell Lake, Oathill Lake, Bayers Lake, Governors Lake, Penhorn Lake, First Lake and Bissett Lake.



Average Deepwater Chloride (mg/L)

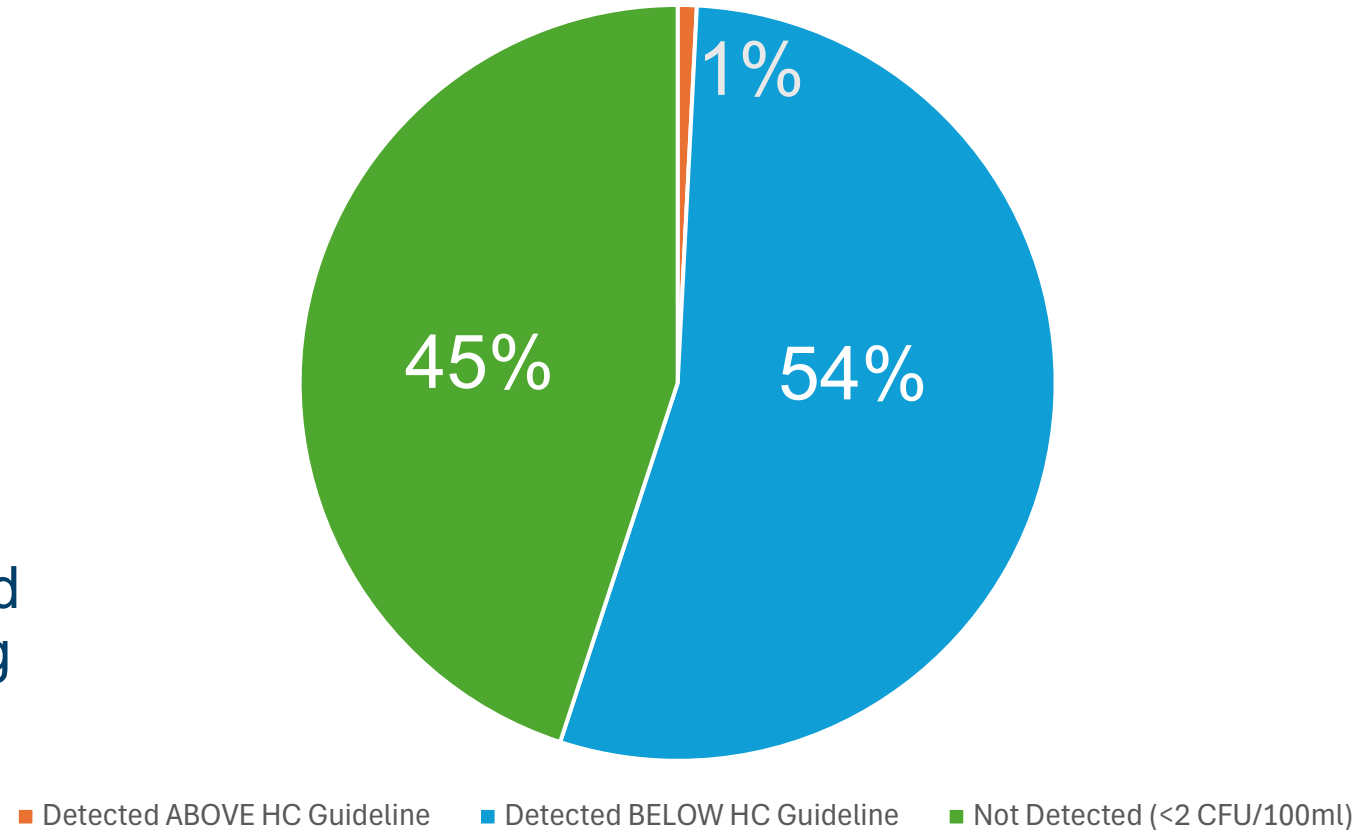


What has the data shown us so far?

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 (i.e. outlet location).
- E. coli was rarely detected above the HC guideline during spring sampling.

E.coli Detection for 2022-2023



Recommendation #1

Initiate a review of the Municipality's current Salt Management Plan guided by the Syntheses of Best Practices of Road Salt Management.

- The Municipality last reviewed Best Management Practices related to Road Salt in 2011 out of concern for lake water quality.
- Although some equipment has been upgraded and other improvements have been made since, there is now updated guidance and BMPs available.
- Our data suggests additional salt-vulnerable areas could be identified and strategies developed to mitigate the impact of de-icing materials 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/or 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 naturalization or LID features 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

A scenic view of a lake with a wooden dock in the foreground, houses and trees in the background, and a blue sky with clouds. The dock is made of weathered wood and extends from the bottom left towards the center. The water is calm and reflects the sky. In the background, there are several houses, some with blue siding, and a mix of evergreen and deciduous trees. A tall, multi-story building is visible in the distance. The sky is bright blue with scattered white clouds.

Questions?