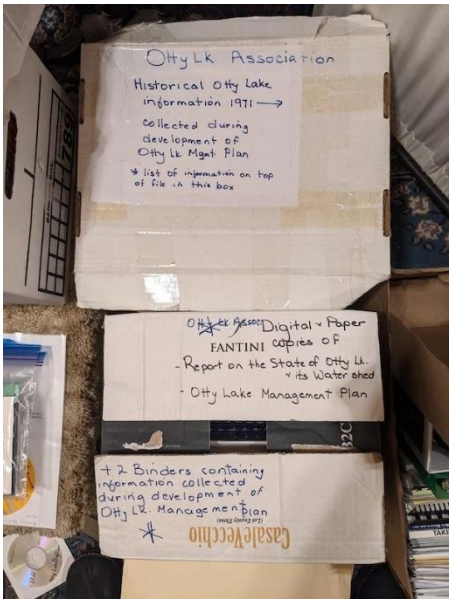
A Half-Century of Data: Otty Lake Invests in the Future of Water Quality Monitoring

Since 1975, the Otty Lake Association has built one of the longest-running water quality data records in the province—carefully preserved in boxes of binders and folders by dedicated volunteers. Now the Board is investing to digitize and consolidate this rich historical information.

In this Q&A, we speak with Past OLA President Kirsten Brouse to explore why water quality monitoring matters, what the data is telling us, and why the Board is committed to protecting Otty Lake for generations to come.



Q: What role does the OLA play in water quality monitoring and lake stewardship?

A: Over multiple surveys, water quality has consistently been the top priority for Otty Lake Association members - and ensuring the long-term health of our lake ecosystem is at the centre of the OLA mandate. Naturally, this is a major area of focus for the Board. We actively monitor the quality of water around the lake to understand the impact we are having on the lake. Our goal is to observe early warning signs that might indicate water quality decline and use that information to mobilize lake users as stewards of the shoreline and watershed.

Q: How does the Otty Lake Association monitor water quality today?

A: We currently participate in three water quality sampling programs to ensure Otty Lake data contributes to provincial and watershed level monitoring, in addition to our own efforts:

- Lake Partners Program – Ministry of the Environment (Dorset Environmental Science Centre)
- Rideau Valley Conservation Authority – Sampling and Profiling Program
- Otty Lake Association Bacteria/Nutrient Sampling Program

Otty Lake is a “phosphorus-limited system,” meaning phosphorus largely determines the amount of plant and algae growth in the lake. Across these programs, we monitor total phosphorus, total nitrogen (including TKN and nitrates), dissolved oxygen, Secchi depth

(water clarity), E. coli levels, temperature, pH, and occasionally other metals or contaminants depending on the program.

Q: Why did the OLA Board choose to invest in the Water Quality Data Consolidation Project?

A: Otty Lake has one of the longest continuous water quality data sets in Ontario, allowing us to observe long-term trends across different stages of lake development, including the implementation of policies like the mandatory septic inspection program. However, much of this valuable data is in paper format making it difficult to use. Digitizing the data secures its legacy and makes it accessible for future analysis and research collaborations aimed at protecting Otty Lake's long-term health.

Q: Describe how the money will be used and what outcomes we can expect?

A: Caraline Billotte, who has a Master's in Science (Biology) at Carleton University and Bachelor of Science (Zoology and Ecology) at University of Guelph, has been hired to organize and digitize historical water sample data. She will identify where we have data of sufficient quality to be useful for understanding long-term trends, and where we might have gaps in our data. Finally, she will provide expert advice to the Board on options for a future sustainable water sampling and monitoring program. The goal will be to ensure we continue to collect data that is most useful to our objective of understanding the quality of water and health of the Otty Lake ecosystem - while not unnecessarily duplicating other sampling efforts on the lake.

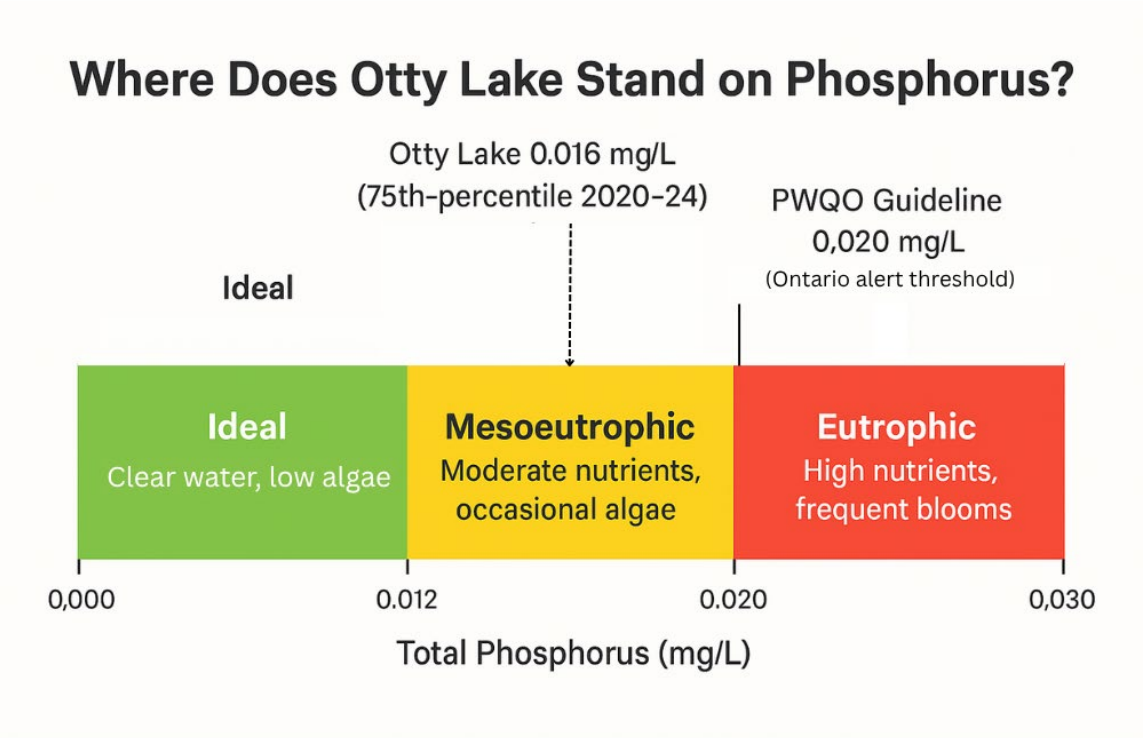
Q: What long-term trends have been observed on Otty Lake regarding pollution and water quality?

A: Early data shows a significant reduction in phosphorus during the 1970s and 80s—likely due to improved septic systems reducing direct nutrient flow into the lake. Over the past 10–15 years, our phosphorus levels have remained fairly stable around 0.016 mg/L. This consistency is a key reason the RVCA water quality index continues to rate Otty Lake's water quality as steady.

Q: Should we be happy with our water quality? Is 0.016mg/L of phosphorus "good"?

A: Phosphorus levels in Otty Lake are currently **about 20% below the provincial water quality guideline**, which sets a threshold of 0.020 mg/L to help prevent nuisance algae growth. Our most recent 75th percentile measurement is **0.016 mg/L** — within the

"mesoeutrophic" range. That means our lake is moderately nutrient-rich: not in crisis, but not immune to the risks.



Q: What can we all do to help?

A: Remember, the provincial guideline is a **limit, not a goal**. It's designed to flag when there's too much phosphorus, but **climate change is moving the goalposts**. Warmer water, heavier rainfall, and lower summer water levels all make lakes more sensitive to nutrient loading — and increase the chance of harmful algae blooms, even at lower phosphorus levels than in the past.

For long-term lake health, many sources suggest we should aim to **lower phosphorus levels closer to 0.010–0.012 mg/L**, in the mesotrophic-oligotrophic range. Getting there will take time, but every naturalized shoreline, every reduced fertilizer use, and every improved septic system helps protect the clarity, beauty, and biodiversity of Otty Lake for future generations.

Nancy Lynn and Kirsten Brouse