CELEBRATING A CLEAN AND SAFE LAKE
So, jump in and enjoy!

WATER QUALITY

By Gord Moore

Another year has come and gone! I don't know about everyone else, but I found that the 2022 boating season flew by in no time. In 2022 we returned to some semblance of normalcy, as RVCA was once again able to send their team to join me in the boat for water testing for the first time since the start of the global COVID-19 pandemic. Admittedly, it was nice to get back to old routines, being your water quality director.

As I have mentioned in past reports, I am also involved in water testing for the Lake Partner Program, which is done in conjunction with FOCA (Federation of Ontario Cottagers' Associations) and the Ontario Ministry of the Environment, Conservation and Parks.

During the period 2019-2021, Water Quality Index scores for Wolfe Lake came in at "GOOD", with a score of 88.4. WQI index is not normally based on a single year's results but I have been informed that last year's figure would probably be indicative of a "GOOD" to "VERY GOOD" score.

Total Phosphorus levels:
(measured in mg/l)

Our TP levels last year were consistent with previous years. They ranged from 0.002mg/l to 0.012mg/l, whereas the provincial guidelines like to see levels below 0.02mg/l, so we are well within that range.

Phosphorus itself is an essential nutrient for organisms and the aquatic systems they inhabit. Collecting water samples and testing for phosphorus helps us track lake conditions over time, as increased phosphorus can stimulate excessive plant and algae growth, which can have negative implications for aquatic environments, such as decreased water clarity, decreased oxygenation, and increased likelihood of algal blooms, including the potential for blue green algae.

Calcium: (measured in mg/l)

As I mentioned in last year's report, the Rideau Valley Conservation Authority is keeping a close eye on other studies evaluating calcium levels in lakes, including a number in the Muskoka area, where there has been some evidence of declining calcium concentrations.

We do not appear to have that issue, as our levels are good. In comparing our results to 2021, I noted that one of the two calcium tests actually increased this past year.

Upon consultation with RVCA, I was informed that one of the results from 2021 may reflect a reporting error. It could also be the result of a change in a geological formation in the lake, which could affect the amount of calcium entering the lake. The general consensus, though, is that it was probably just a sampling error. Either way, we will continue

to monitor calcium levels. RVCA has assured me that they don't see any issues. Calcium is a vital nutrient for many organisms, including crayfish, water fleas and mollusks.

Many years of logging and acid loading have led to declining calcium levels in many Ontario shield lakes. This has not been an issue on Wolfe Lake to date, but we will continue to test and keep track of levels.

Dissolved Organic Carbon: (measured in mg/l)

DOC levels in Wolfe Lake this past season increased slightly but RVCA assures me that they are similar to those in other lakes of our size and structure within our watershed. RVCA tells me that DOC is heavily influenced by the natural conditions in the lake, such as an increase in the breakdown of organic matter or an increase of DOC from upstream systems, including wetland areas. These influences can change from year to year.

E. Coli: (measured in cfu/100ml)

Our E. coli levels in Wolfe Lake continue to be extremely low, almost non-existent. There was a small increase this year near the culvert in Fermoy. Once again, though, even with this small increase the test results were so far below the provincial guideline as to be of no concern. E. coli testing is done primarily in shallow areas and this area by the culvert in Fermoy is just downstream from a wetland on the other side of the culvert. RVCA has informed me that the slight increase in the reading may be attributable to wildlife in the wetland area.

Total Nitrogen (TKN): (measured in mg/l)

Overall, TKN levels on Wolfe Lake fall within the recommended guidelines, with the exception this past year of a single reading which was SLIGHTLY high. While the guidelines call for under 0.50 mg/l, one reading at Barr's creek was slightly over in September, at 0.54 mg/l. Upon inquiring with RVCA, I was told that, as Barr's Creek is a wetland environment and wetlands are known to be natural sinks and sources, it is possible that we are just seeing a release of nutrients from the sediment in this environment and a resulting increase in TKN levels. RVCA prefers to focus on long-term trends at nearshore sites like this one, as they are heavily influenced by the environment on the day of sampling. They have made a note and will keep a close eye on the comparative results we get at the site for 2023.

Secchi Depth: (measure of water clarity and/or turbidity in the lake)

The Secchi reading in 2022 decreased from 2021. According to RVCA, the same trend has been observed across the watershed and would suggest an increase in suspended sediment, biomass and/or phytoplankton within the water column. It may be attributable to the large decrease over the last few years in zebra mussels, which had previously clarified the water by consuming the phytoplankton in the water. The fact that the peak of the infestation is now over and fewer zebra mussels are therefore feeding on the phytoplankton may be causing the water clarity to decrease to a level a bit closer to our pre-infestation figures. These changes could also be a sign of increased algal growth within the water column. The root cause of this trend and change remains unclear.

I would like to take this opportunity to thank Haley Matschke of the Rideau Valley Conservation Authority for her generous contributions to this article, as well as her help each year with water testing and generally being my support person at RVCA. In addition, I want to give credit to the 2022 Lake Stewards Newsletter from FOCA, upon which I also relied heavily in writing this article!

In summary, overall the results are very good. I have included, as I did last year, a small map of the testing sites which can be matched to the chart of water quality results for 2022.
I look forward to seeing many of you at the AGM on July 29th!