

WHITE LAKE

PROPERTY OWNERS ASSOCIATION
ENVIRONMENT VOLUNTEERS



2025 Water Quality Monitoring Program and Research Activities

Summary and Highlights

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Home Sweet Home; Long Lake Creek

1.1 Introduction

2025 marked the 12th year that we have been monitoring water quality in White Lake. In our work, we keep track of changes in phosphorus concentrations, water clarity, algal blooms and much more in order to accurately assess water quality. The interpretation of this data is validated by research reports in the scientific literature. This approach forms the basis of annual [water quality reports](#). Data obtained over a period of years is valuable in detecting long and short-term trends. The more data we have the more realistic is our assessment of the changing state of White Lake.

Water quality is a term which can mean different things to different people. Depending on your interest, it could refer to clear water, good fishing, or water suitable for drinking free of toxic chemicals or pathogens. In fact, it is all of these and more. Wikipedia defines it as “the chemical, physical, and biological characteristics of water based on the standards of its usage. The most common standards used to monitor and assess water quality convey the health of ecosystems, safety of human contact, and condition of drinking water”.

In this Summary Report we provide highlights of our findings for 2025. For a complete referenced account of our work, we ask that you access the [White Lake Science Website](#) for full-length Water Quality Monitoring Reports as well as Special Reports on individual topics.

1.2 The State of White Lake Report

In 2022, we published [The State of the Lake Report; White Lake and the Environment](#). The state of White Lake is constantly changing over time. However, over the years since the arrival of settlers, certain events have made dramatic changes to lake water quality. Among these are logging operations during the 1800s, the construction of the dam at Waba Creek in 1845 (reconstructed 1948 and 1968), and the arrival of invasive species such as the Zebra Mussel in 2015.

This State of the Lake report is a snapshot of the condition of the lake today. Our Annual Reports are designed to update the 2022 report to address the condition of the lake today. It explains why and how the lake is changing and what we can do to help preserve the lake. This report, along with extensive information available on the [White Lake Science website](#), provides the reader with a comprehensive source of virtually all available data collected and reports written on the lake by government and independent sources.

The annual collection of chemical and biological data allows us to detect when significant changes to the lake occur, and guides us in our research on White Lake water quality. More changes are coming with possible invasions of more aquatic invasive species, and the increasing effects of climate change and lake overuse

1.3 Green Algal Blooms - 2025

During 2025 at least two algal blooms were observed. One algal bloom was a filamentous green alga which has been occurring in the spring of every year since zebra mussels infested White Lake. This bloom occurred starting in early June (14th) and lasted for several months. The bloom occurred throughout White Lake, especially in areas where zebra mussels thrive and/or cottage lots have been cleared of trees or other vegetation. Green algal blooms are unsightly, but do not produce any dangerous toxins.



Since 2013, blue-green algal blooms have been occurring in White Lake every year save one. Before zebra mussels arrived in White Lake, blue-green algal blooms were occurring mainly during the summer months. Once established, zebra mussels effectively altered the cycling of phosphorous. Before zebra mussels infested the lake, blue-green algal blooms were more common when total phosphorus concentrations exceeded 22 parts per billion during mid-July to mid-August. Once established, zebra mussels acted to change the conditions under which blooms would occur. Now, blue-green algal blooms occur at total phosphorus concentrations of 10 parts per billion or less and tend to occur later in the year during September into mid-October.

This year was no exception. A trusted observer reported to us that on October 5th, most of Pickerel Bay was covered with a layer of algae which was very likely a blue-green variety. On October 14th, during our regular sampling run, we recorded a major blue-green algal bloom covering all of Three Mile Bay and parts of the lake north to the entrance of Pickerel Bay. The algal bloom lasted about 5 days before weather conditions changed and dissipated the bloom.

1.4 Total Phosphorus, Water Clarity, Water Levels and Temperature

Total Phosphorus

As mentioned above, measured total phosphorus levels in White Lake changed dramatically when zebra mussels infested the lake. Prior to this event, total phosphorus concentrations reached levels of about 22 parts per billion. These concentrations were above the Provincial Water Quality Objective at the time. Once zebra mussels were

established, total phosphorus levels measured decreased by about 50% and have not changed greatly since that time.

Unfortunately, lower total phosphorus levels were not achieved by any improvement in lake usage, but rather because of a side effect related to the presence of zebra mussels. Zebra mussels filter out suspended phosphorus-containing particles leaving behind the dissolved phosphorus that algae thrive on. Also, zebra mussels eat green algae but leave blue-green algae intact making it easier for this type of toxin producing algae to bloom.

Now, algal blooms occur annually when the measured total phosphorus level is about 10 parts per billion (ppb). Ministry of the Environment scientists are now proposing using a different measure in setting its new objective for a lake at shoreline development capacity. For White Lake, the new maximum is 11 parts per billion. Total phosphorus levels in White Lake currently peak at about 14 parts per billion, which is over the new limit.

Water Clarity

Water clarity, as expressed as the Secchi depth, doubled after zebra mussels arrived in 2015. Since that time, water clarity has remained relatively stable from year to year. Any variations were likely due to weather conditions and changes in the number and size of active zebra mussels in the lake. One of the reasons why there has been an increase in aquatic plant growth and spread to deeper waters, is the greater intensity of sunlight now available at any given depth. For example, a Secchi depth of 5 m means that sunlight can reach a depth twice that; 10 m. The deepest point in White Lake is 9.1 m.

On average, water clarity for 2025 was in keeping with water clarity measurements taken in recent years. Minimum Secchi depths of about 3.7 m (lowest water clarity) were recorded in late-June and a maximum of 7.4 m recorded in early October.

Temperature

When comparing lake water temperatures measured during the past eleven years, 2025 results were about mid-range or average for the period. The maximum temperature recorded was 27.0 °C, only slightly higher than the maximum in 2024: 26.6 °C.

Water Levels

During the early part of the 2025 ice-free season, water levels were significantly higher than target depths, by as much as 10 cm. By the end of July, lake levels were generally on target. Control of water levels at the dam is complicated by weather and other factors including the number of times during the summer that adjustments are made to lake levels by the Ministry of the Environment staff.

1.5 Loon and Cormorant Counts

We can report that there were 13 loon chicks on the lake, up from 9 last year. Eleven nesting pairs were observed. Anecdotal observations suggests that the number of adults was comparable to those of recent years, but appears to be declining over the long term.

Our observations (taken every two weeks) show that there are currently about ten cormorants making White Lake their home. Considering the presence of non-reproductive juveniles, this translates to about 4 or 5 nesting pairs. Our data shows that the population is stable and not significantly changing over time.

1.6 White Lake Water Quality is in Decline: What can we do?

Over the last eleven years, we have completed many studies on White Lake in addition to monitoring changes in water quality. During this time, we have published over 1300 pages of annual and special reports. All of these are available on the [White Lake Science Website](#). We have also co-authored an academic research [paper](#) in collaboration with Carleton University, published in an international journal, which supports all of our findings with more hard evidence.

Our special reports on the history of [White Lake Water Quality](#) and on [White Lake Algal Blooms: 1860 to 2025](#) unambiguously demonstrate that White Lake water quality is in decline. A cursory reading of personal accounts on White Lake water quality in *White Lake, The Early Years*¹ (available on the members only section of the White Lake Property Owners Association [website](#)) reinforce our findings.

It may also be instructive to read our 2022 [State of the Lake Report](#) and our recent (short) report entitled [Ever-Changing White Lake](#).

Our goal is to collect and interpret data and to persuade property owners around White Lake to act responsibly. At times, this may require a change in mindset and a re-evaluation of how we are treating the lake.

Many people are not aware that septic systems do not prevent nutrients from entering the lake. The purpose of septic systems is to render human waste free of dangerous pathogens. In fact, the Ontario Ministry of the Environment clearly states that all nutrients, such as phosphorus, entering a septic system located within 300m of the lakeshore, will eventually reach and be discharged into the lake environment. The same assertion also applies to any fertilizers, pesticides, and herbicides.

White Lake water quality is being affected by climate change, invasive species, and lake overuse. We can make a difference by following the well-developed guidelines for reducing our impact on the lake.

¹ White Lake, The early Years, White Lake Property Owners Association, 2000, 64 pages.

One of the most important actions a property owner can take is to restore their shoreline to a natural state using native plants. Maintaining fully-treed lots as much as possible interrupts and/or delays movement of nutrients from septic systems to the lake. Using native plants will improve water quality, reduce shoreline erosion, enhance wildlife habitat and increase resilience to the effects of climate change and severe weather events.

Recently published reports from the Federation of Ontario Cottage Associations (FOCA) include a [Guide to Healthy Waterfronts](#) and the [Management of Waterfronts in a Changing Climate](#). Reports from [Watersheds Canada](#) both explain the [importance of vegetated shoreline buffers](#) and offer a [guide to preparing a shoreline naturalization planting plan](#). We recommend that you access and read these documents if you want to know more about how to best preserve and improve White Lake water quality.

As in any society, there is always a fraction of property owners who will not fully understand the impact that they are having on the lake. It could also be that they are not interested in knowing, and/or just want to enjoy the lake.

This is when governments can intervene and take action to protect White Lake. The people who are charged with managing the lake (with the assistance of the Ministry of the Environment Conservation and Parks), are the Councils of the [four municipalities](#) sharing White Lake. It is difficult to find evidence that White Lake is being effectively managed by any level of government.

Log on to your municipality's website. Contact your councillors by email and urge them to bring to Council our concerns and request the formulation of an action plan to preserve White Lake for future generations.



The White Lake Science Website and its contents are now archived in the Arnprior & McNab/Braeside Archives located at 21B Madawaska St., Arnprior, Ontario: amba.archives@gmail.com;
<https://www.adarchives.org/>