

Water Quality Monitoring – A Lower Beverley Lake 2026 Report

Monitoring lake water quality is an important part of our lake stewardship activities. Volunteers have for 20 some years sampled lake water nutrients and water clarity. A key partner is the Ontario Lake Partner Program (LLP) which provides laboratory analysis and maintains the data for all the inland lakes in Ontario.

Lake monitoring helps us understand the quality or “health” of a lake. Healthy lakes are good for us - both lakefront residents and visitors – supporting activities that we enjoy, such as fishing, swimming, and boating.

Water quality is more than a matter of casual interest. Research shows that it can directly affect property values around the lake. Lakes with better water quality, or those that show improvements over time, are often associated with higher property values.

Everyone who owns property near the lake has both environmental and financial reasons to protect and maintain the lake’s water quality.

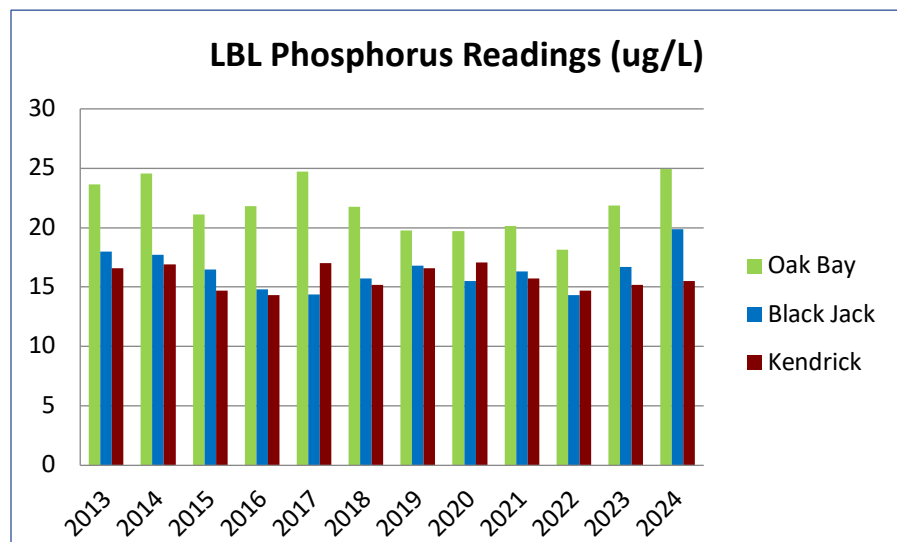
The Ontario Lake Partner Program

(LPP) is a province-wide, volunteer-based, water-quality monitoring program. Each year, from May to October, hundreds of volunteers across Ontario sample water clarity and nutrients (phosphorus, calcium, chloride). The samples are analyzed by the Lake Partner Program *and* form a long-term dataset for scientists, government, and community groups.

Phosphorus

Phosphorus, a common ingredient in fertilizers, is one of the most important nutrients in freshwater recreational lakes. It plays a key role in the growth of aquatic plants and algae. When phosphorus levels are low, the growth of weeds and algae is limited, which can reduce the food supply for fish and other aquatic animals. However, when phosphorus levels are too high, excessive algae growth can occur. This can affect water quality for people using the lake and reduce oxygen levels in deeper water, which is harmful to cold-water fish.

The phosphorus graph shows phosphorus levels measured in micrograms per litre ($\mu\text{g/L}$) from 2013 to 2024. This is the most recent data available from Lake Partners, as of March 2026. Volunteers collect this data from three locations, each with different characteristics. Kendrick Bay is one of the deepest



areas of the lake. Black Jack is an area of intermediate depth located near the inflow of Corbett Creek. Oak Bay is a relatively shallow area near the inflow of Morton Creek.

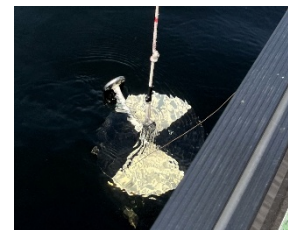
Above 20 ug/L is generally considered undesirable from a nutrient viewpoint.

Results

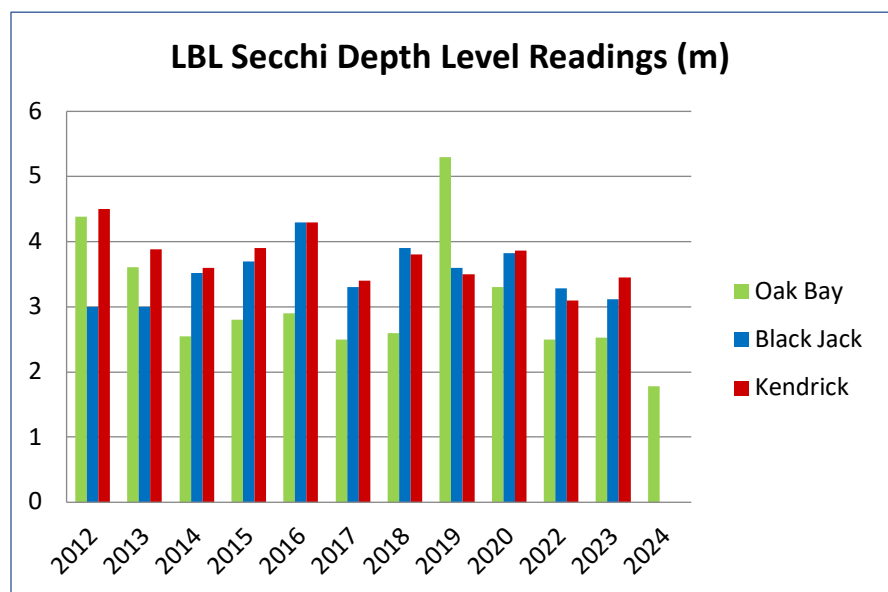
Oak Bay’s relatively higher phosphorus levels are not unexpected because it is a shallow and somewhat isolated area. The other two locations have remained steady or have slightly declined over time, except for a spike in 2024. Phosphorus levels in a single year can be affected by unusual weather conditions, such temperature changes or heavy precipitation.

Water Clarity

Lake clarity is measured by lowering a patterned “Secchi” disc into the lake water until the disc pattern can no longer be seen. That depth is reported in meters.



In general, greater water clarity is considered positive because clear water contains fewer floating or suspended particles and organisms that can make the water appear cloudy. However, increased clarity sometimes indicates the presence of invasive mussels. These mussels feed on floating and suspended materials, which can make the water appear clearer. While this may seem beneficial, it can lead to unwanted effects. With clearer water, sunlight can penetrate deeper, which may encourage excessive growth of aquatic weeds and algae.



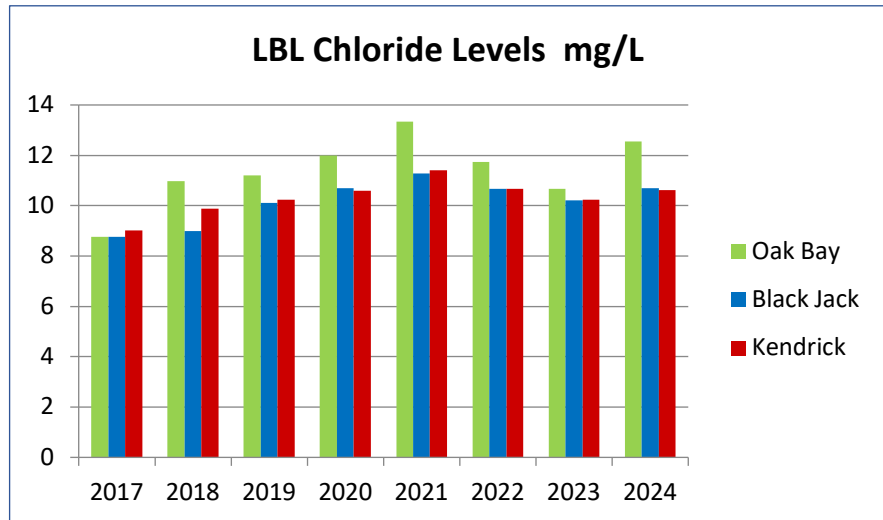
Chloride

Chloride is basically a measure of common salt. Weathering of rocks and soils can release chloride naturally, usually a low background level.

Higher levels are caused by human activity. The largest contributor is road salt applied in winter. Road salt dissolves and flows into waterways. Wastewater from water softening systems can also contribute to chloride levels.

Results

The Association began sampling (measured in milligrams per liter) about a decade ago. So far, our results show low levels and a modest increase over our sampling time.



Calcium

While we all generally understand the value of calcium to humans, what you may not know is that calcium is a critical element in freshwater systems. Reduced levels can have negative impacts on lake health.

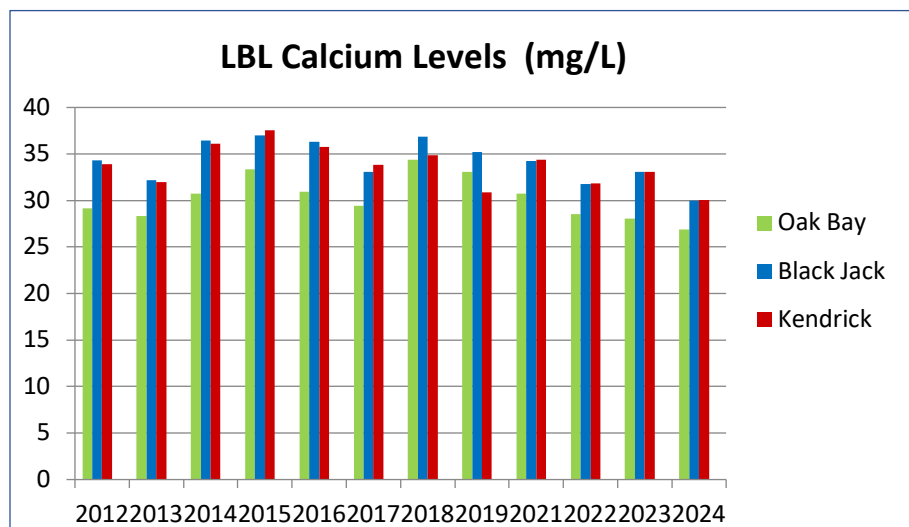
Calcium enters freshwater lakes mainly through the slow weathering of the surrounding watershed. Streams and runoff carry calcium that has been leached from soils and rocks, especially in areas off the Canadian Shield.

Many aquatic organisms depend on calcium. Invertebrates such as snails and mussels need calcium to build their protective shells, and fish require calcium for strong bones. Fish obtain calcium through their diet, while algae and many invertebrates absorb it directly from the water. Calcium also provides buffering for the effects of acid rain.

Studies have shown that acid rain can reduce calcium levels in lakes. This decline can have significant effects on organisms that depend on calcium.

Results

The calcium level in Lower Beverley Lake is moderate, and has been fairly steady over the last ten plus years.

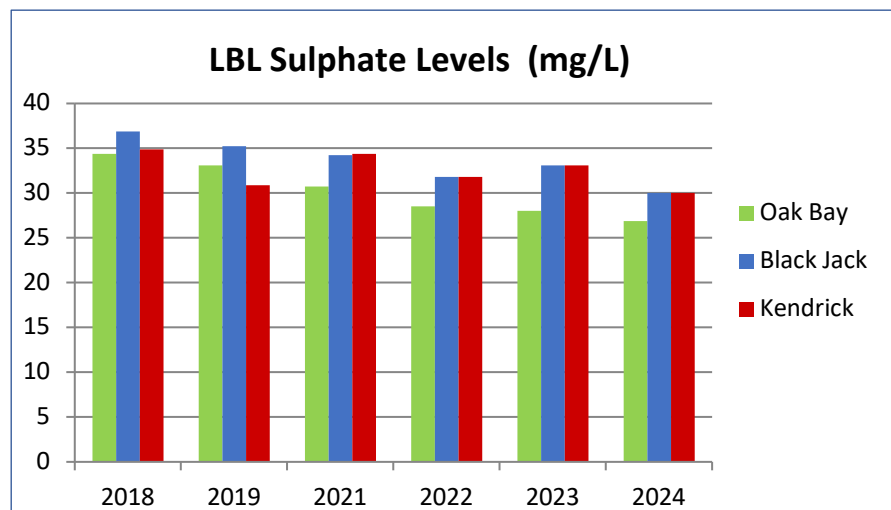


Sulphate

Sulphate is a component of acid rain that can travel long distances through the atmosphere. It can also come from certain mining operations and other industrial activities. High levels of sulphate can lower the pH of freshwater ecosystems, leading to lake acidification.

Results

Sulphate, measured in milligrams per liter, is fortunately, not an issue for Lower Beverley Lake.



Dissolved Oxygen

Dissolved oxygen in water is important for fish species. Over the last ten years, our volunteers have monitored dissolved oxygen, taking samples in the deepest parts of the lake to measure the deep oxygen levels. Dissolved oxygen tends to decrease - especially in deep waters - as the summer progresses. Our testing was first done with a field kit, but recently we have been using new equipment that measures water temperature and dissolved oxygen from the water surface to the lake bottom in meter-by-meter intervals.

Stratification

The profile of water temperature and dissolved oxygen from the top to the bottom has shown us how the dissolved oxygen varies seasonally and with depth. The lake water becomes layered into temperature zones as summer progresses. This is called stratification.

Nutrient Load

Deep-water oxygen levels are influenced by algae growth.

Algae growth, in turn, is affected by the amount of nutrients in the water. This is called nutrient load where nutrient levels increase as substances such as phosphorus and nitrogen enter lake water. Most of the nutrients that enter recreational lakes come from shoreline septic systems, shoreline development and the use of fertilizers; there is also agricultural runoff from the use of fertilizers.

Lake stratification occurs when lake water separates into three distinct horizontal layers due to differences in water density caused by temperature changes, typically during the summer. The top layer is warm and rich in oxygen. The middle layer has rapid temperature changes. The bottom layer is colder, isolated, and in nutrient rich lakes, it contains lower levels of oxygen.

Scientifically, lakes are classified into three categories based on nutrient levels, ranging from very low to very high. Lower Beverley Lake falls into the middle category.

Results

Our monitoring shows that late in the summer season, the oxygen levels in the deeper parts of the lake are poor due to the excessive algae and other vegetation. Our phosphorus monitoring shows a gradual lowering of phosphorus. However, it is not enough to eliminate algae blooms and improve deep-water oxygen.

For More Information

For more detail on our monitoring results go to the Ontario Lake Partners website which has considerable information on Ontario inland lakes and these testing programs. Much of the raw data are available on the Lake Partners website, with the exception of dissolved oxygen.

Conclusion

Everyone who owns property near the lake has both an environmental and a financial reason to help protect and maintain the lake's water quality. By working together, we can help ensure the lake remains healthy and enjoyable for years to come.

Thank you for reading this report.

Dave Champagne

Water Quality Monitoring – Lower Beverley Lake