

**CALA Water Quality
for CALA Web Site**
March 13, 2016

Ontario Ministry of the Environment and Climate Change's (MOE) website contains Ontario Lake Partner Program total phosphorus and water transparency (Secchi disc readings) data for Ontario inland lakes. The data is collected from volunteer monitoring efforts. The data can be accessed via the following internet links if you wish to review the phosphorus and Secchi disc readings for your area on our lake system.

<https://www.ontario.ca/data/ontario-lake-partner>

<http://www.ontario.ca/environment-and-energy/map-lake-partner>

The first site will bring you to two (2) links, one to download Total Phosphorus and the other to download Water Transparency (Secchi readings). When on either of these sites, type your lake into the search key and it will bring you to your lake. It will provide you with a number of test sites and the year they were tested. The second link will bring you to a map of Ontario. The green circles (and there's a lot of them) are sites that have been tested in Ontario. With the scroll key you may zoom in on your lake to where the test sites were taken. When you click on the circle you're interested in, a box will pop up and identify the exact location of the test site. In the center of the box, there will be two titles, one for Secchi depth and the other for Total Phosphorus. Clicking on either of these will bring you to a page and by scrolling down the page will provide the data that has been recorded on the MOE web site.

The following is a description of these tests.

Phosphorus: Phosphorus is considered to be the most important nutrient regulating primary biological activity (algae growth). The addition of phosphorus to a lake ultimately leads to a deterioration of water quality. Increasing quantities of algae decrease water clarity and, upon decay, deplete the oxygen supplies needed to support fish populations. Phosphorus concentrations below 10.0 ug/l provide a high level of protection against aesthetic deterioration of lakes against excessive plant growth. They are classified as follows:

Level 1 - Excellent Water Quality -

Springtime phosphorus concentrations are between 0 and 0.99 ug/l. These lakes are well suited for body contact recreation because of extremely clear water and a low order of biological productivity. In deep lakes, the dissolved oxygen concentration, in the hypolimnetic (bottom) waters will remain favourable to support cold water fish species like lake trout.

Level 2 - Good Water Quality -

The springtime phosphorus concentrations range from 10.0 to 18.5 ug/l. Lakes in this category are suitable for water-based recreation and support a mixed fishery. The viability of cold water fisheries in these lakes is not guaranteed. Level 2 lakes are less clear with moderate primary biological activity.

Level 3 - Fair Water Quality -

Springtime phosphorus concentrations vary between 18.5 and 29.9 ug/l. Level 3 lakes toward the upper range of the classification are characterized by reduced suitability for body contact aquatic recreation because of high concentrations of suspended algae and associated nuisances, such as odours and turbid waters. Oxygen depletion in the deep basins will be common and there may be a problem with winterkill of fish in very shallow lakes. This level generally supports productive warm water fisheries (northern pike, bass, pickerel).

Level 4 - Poor Water Quality -

Springtime phosphorus concentrations are greater than 30.0 ug/l. Such lakes are suitable only for warm water fisheries and there is considerable danger of the winterkill of fish. Other recreational uses like swimming, boating and water skiing may not be pleasant.

Secchi Disc: A Secchi disk is a round plate that's painted black and white. The disk is attached to a rope. The rope is lowered into the lake until it's at a depth where it can no longer be seen. This is called the 'Secchi depth'. It helps to measure the clarity of the water and the general 'health' of the lake. Clear water lets light penetrate more deeply into the lake than murky water. Sunlight is needed for the growth of phytoplankton. Phytoplankton is the basic food source in a lake. It needs sunlight, phosphorus and nitrogen to grow. A deep Secchi reading indicates clear water while a low Secchi reading indicates turbid or coloured water.

Secchi disk readings in the individual lakes may have smaller or higher depth readings depending on several factors including:

- the amount of dissolved organic carbon in the lake,
- the geology of the lake,
- size, location and amount of algae present in the water column.

Due to the fact that these conditions can be very different in various lakes it is difficult to compare Secchi disk readings as good or bad between different lakes.

What Secchi readings can tell us is if changes are occurring within an individual lake. For example if a lake that historically had very shallow or small readings changed into having very deep or large readings we would be able to tell that the clarity in the lake has increased. This may have been influenced by something like an invasive species, such as the Zebra Mussel. If a lake that has historically had high readings starts to display shallow small readings there may have been an increase in Total Phosphorus and therefore an increase in algae in the lake.

Should you have any comments or concerns, please feel free to contact Martin Nighbor at martin.nighbor@gmail.com or 705-474-7594.

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