

Green Lake Water Sampling Report April 2016

Like Wolfe Lake, there are two programs that monitor water quality in Green Lake. (Water quality has an environmental meaning in both these programs so they do not provide a substitute for testing water for drinking quality for those of us that draw our water directly from the lake.)

1. Ontario Ministry of the Environment Lake Partners Program.

Green Lake is seen a Canadian Shield lake by this program and I take water samples at a deep spot once a year (in early May) to allow measurement of total phosphorous (TP). Then twice monthly (May to October) I measure water clarity at the same spot using the Secchi Disc, and report in the fall. The deep spot is roughly at the intersection of lines from my dock to the Campbell's and from the island to the Sharpley's dock.

The results can be found at the Lake Partners websites which both give the data and an explanation.

Secchi depths:

<http://www.ontario.ca/environment-and-energy/secchi-depth-report?id=73310001>

The results here are based both on my results and those of the RVCA samplings. The annual average Secchi depth readings in metres are shown in the following table:

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Depth	6.3	7.28	6.58	6.72	6.55	6.21	6.29	6.05	6.39	7.11	5.86	6.51

Total Phosphorous

<http://www.ontario.ca/environment-and-energy/total-phosphorus-report?id=73310001>

The TP results in the following table show we are well below the recommended limits. There is one anomalous reading in 2008, probably due to me not following the sampling procedures carefully enough.

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
TP µg/l	5.21	5.35	4.61	6.29	16.39	7.77	5.2	7	5.8	5.3	7.8	4.8

2. Rideau Valley Conservation Authority

RVCA visit the lake three or four times a summer between May and October as part of their monitoring of the entire Rideau system. They take extensive samples covering invasive species as well as water quality in greater detail than the Lake Partners Program. It is not so easy to access their data, but they usually provide a brief summary report annually. These reports for the last three years follow, with a couple of additional comments.

2013

All nutrient concentrations (total phosphorus (TP) and total Kjeldahl nitrogen (TKN)) were comparable

to the period of record and the majority for results were below established standards. One TP sample taken in June did exceed the Provincial Water Quality Objective (PWQO) of 20 µg/l, however subsequent samples were all well below the PWQO. Secchi depth, dissolved organic carbon (DOC) and Calcium (Ca) were all within acceptable ranges and comparable to the period of record.

2014

Due to poor weather the fall sampling round was missed, and unfortunately the Secchi depths were not well recorded by field crews year who were trying out some new technology and this data got missed. Though the one result in July did measure approximately 7m indicating very good water clarity. Over all water quality appears good and compares fairly well to the period of record. Total phosphorus (TP) was below the Provincial Water Quality Objective of 20 micrograms/litre (µg/l), and had an average concentration of 12 µg/l. Total Kjeldahl nitrogen (TKN) was generally below the guideline of 500 µg/l though there was one slight exceedance observed in August, which is an unusual result.

2015

All nutrient results were below their respected guidelines. There were no results above the provincial water quality guideline (PWQO) for total phosphorous (20 µg/l) or the established guideline for total Kjeldahl nitrogen (500 µg/l). All secchi depth readings were above the 2m mark which is needed to support aquatic life in the lake. The calcium reading was 4.61 mg/l, indicating poor growth for zebra mussels. Calcium is a function of the geology of the lake rather than human influences.

3. Additional activities.

In July 2014 the RVCA sampling team were accompanied by two students from Carleton University who were sampling the lake as part of the *People, Aquatic Plants and Healthy Lakes* project. They took a sediment core of the lake from one of the deep spots. Their equipment was clean and Green Lake was the only lake that they sampled that day. I have not tried to track down the results.

In July 2013 a researcher from Queens University sampled the lake as part of his Zebra mussel studies. The good news from this work is that the chemistry of our lake apparently does not provide what Zebra mussels need to flourish. The RVCA results last year seem to confirm this.

Any questions, please email me at peteranderson@sympatico.ca, or on a sunny summer day call me at 613 273 8204.