

## 2013 THREE MILE LAKE WATER TESTING SUMMARY

**Water testing committee members:** Jim Douey, Wendy Bristow, Dan & Barb Leonard, Arnie & Nancy Pundsack, Tim Taylor and Rod Ward plus other **volunteers** of Mitchell Taylor & Megan Bundjar

**Overview:** The water testing committee members measured the *E.coli*, coliform, water temperature and phosphorus levels in the lake several times during the summer. The water clarity was also measured using the sechi disk. In addition, students from the University of Waterloo expanded their Three Mile Lake testing program this summer and tested the lake twice in July. The results of all of these water measurements follows.

**Executive Summary:** In general, the water quality appears to be stable.

The *E coli*. and coliform levels were below the Ontario recreational water use thresholds of 100cfus for *E.Coli* and 1000 cfus for coliform. TML *E. Coli* levels were between 0-19 cfus and the coliform values were between 13-94 cfus. CFU is the abbreviation for colony forming units.

The measured *phosphorus* levels as determined by the Lake Partner Program and the U of Waterloo testing program were all below 21 ug/L. This is important because phosphorus levels above 20ug/L is often the tripping/point for the possibility of having toxic algae blooms.

The dissolved oxygen is important for the abundance and health of aquatic life (e.g. fish). TML values ranged between 5.7 and 8.8 mg/L which are acceptable values for a warm water lake like ours.

A healthy lake pH range is typically 6.5 – 8.5. TML average value is 7.03.

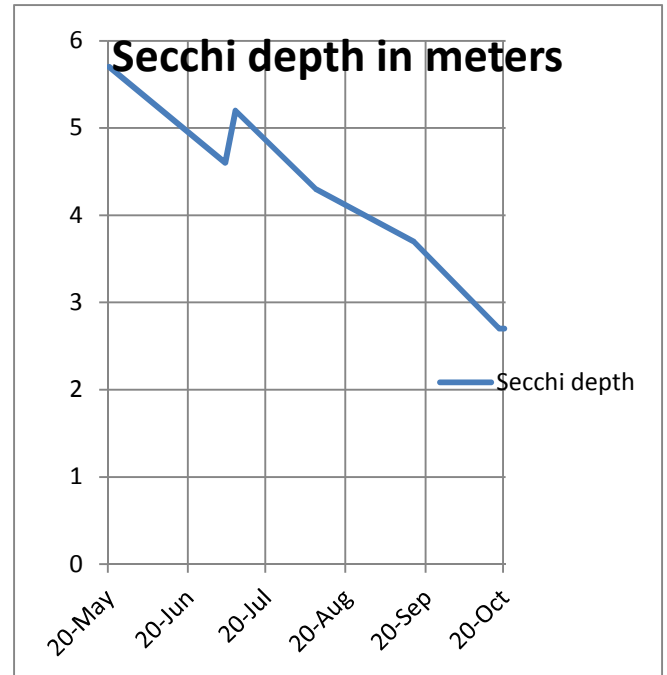
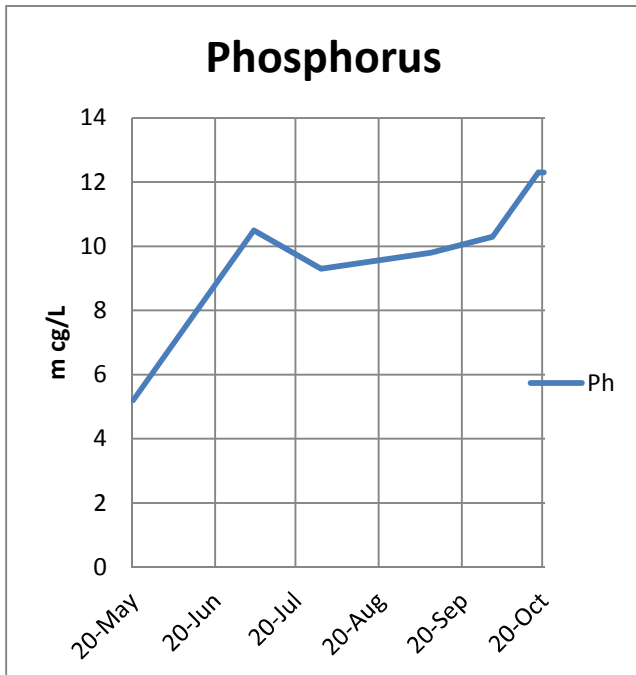
Nitrite and nitrate are nutrients used by plants. Our levels of these nutrients is relatively low. High levels of these nutrients combined with high phosphorus levels often leads to increased algae growth.

The water clarity as measured with a Secchi disk started at 5.7 m in May and decreased to 2.7m in October. Fortunately no severe surface algae blooms were observed but you could see that the water became less clear as the summer progressed.

The water temperature ranged between 16C in May, 29C in mid-July and back down to 9C in October. It's nice for swimming when the water is 29C!

The detailed results of the water testing by the TML water testing committee and the summary results of the U of Waterloo test follow. In addition the full U of Waterloo testing results including discussion of the importance of various testing parameters is attached.

## 2013 TML Phosphorus vs. Secchi Depths



### E. coli and coliform data

Coliform	TML-1	TML-2	TML-3	TML-4	TML-5
5/20/2013	33	16	25	25	13
7/21/2013	25	87	94	72	16

E.Coli	TML-1	TML-2	TML-3	TML-4	TML-5
5/20/2013	<3	<3	<3	<3	<3
7/21/2013	<3	19	16	11	<3

\*TML-2 is Bear Trap Bay, TML-1 is NW corner of lake, TML-3 is SW corner of lake, TML-4 is boat launch area and TML-5 is middle of lake between Garden and Gameja Islands.

## 2013 summary of University of Waterloo testing data at Three Mile Lake as shown in Table 3

**Table 3:** Lab data from both sample days. Averages, standard deviations, and t-tests comparing set 1 and 2 are found at bottom of table.

Three Mile Lake								
Site	Secchi Depth (m)	DO (mg/L)	pH	Conductivity ( $\mu\text{S}/\text{cm}$ )	TP ( $\mu\text{g}/\text{L}$ )	PO <sub>4</sub> (mg/L)	NO <sub>3</sub> (mg/L)	NO <sub>2</sub> (mg/L)
A1	5.5	5.72	6.87	37.7	21	0.09	0.1	0.003
A2	5.75	5.75	6.93	38.4	14	0.11	0.2	0.001
B1	4.6*	8.78	6.95	38.7	17	0.17	0.2	0.001
B2	4.0*	8.20	6.93	39.1	12	0.14	0.3	0.002
C1	4.7*	8.63	6.92	38.8	15	0.13	0.1	0.003
C2	6.0	8.26	7.04	38.7	12	0.1	0.3	0.002
D1	4.0*	8.10	6.94	39.1	15	0.07	0.2	0.002
D2	3.5*	8.27	7.16	38.8	12	0.09	0.3	0.002
E1	5.0*	8.64	7.09	38.4	15	0.05	0.2	0.002
E2	5.5*	8.19	7.08	38.9	8	0.08	0.4	0.002
F1	5.5*	8.81	7.27	37.9	11	0.10	0.2	0.003
F2	4.5	8.15	7.18	38.9	10	0.06	0.3	0.002
<b>Average</b>	4.88	7.96	7.03	38.62	13.50	0.10	0.23	0.002
<b>Standard Deviation</b>	0.791	1.069	0.126	0.443	3.451	0.034	0.089	0.001
<b>T-Test</b>	0.986	0.640	0.546	0.160	0.0206	0.815	0.00252	0.209

\* Asterix indicates lake bottom was reached with Secchi disk.

**A** is deepest part of lake between two islands (TML-5), **B** is boat launch area (TML-4), **C** is SW corner of lake (TML-3), **D** is NW corner of lake (TML-1), **E** is Northern part of lake (near picnic area) and **F** is Bear Trap Bay (TML-2)