# OTTER LAKE LANDOWNERS ASSOCIATION
# 2007 WATER QUALITY REPORT

**Introduction:**

The Otter Lake Landowners Association, OLLA, represents approximately 150 of the 330 landowners on Otter Lake. One of the primary objectives of the organization, and as specified in the by-laws, is to monitor the environmental characteristics of the lake and the lake watershed. The water quality monitoring activities for Otter Lake are funded by OLLA and represent some of the most comprehensive testing regimes in Ontario cottage country.

OLLA coordinates monitoring with the Rideau Valley Conservation Authority. During 2007 RVCA visited the lake three times for the purpose of water quality testing and twice for the purpose of benthic biomonitoring (bugs in the mud analysis).

Samples are taken twice per year for the Lake Partners Program which is funded by the Federation of Ontario Cottage Associations and the Ontario Ministry of the Environment. Lake Partners is the largest volunteer lake monitoring system in the world and has accumulated a great deal of data over the last 10 years.

As the data accumulates for Otter Lake, it becomes easier to track trends and detect problems when they occur. Consistent funding allows OLLA to track the standard indicators such as Phosphorus and E.coli levels, and also to occasionally test for unique items as we did for Mercury in 2007.

OLLA embarked on the ambitious project of developing a Sustainable Lake Plan in 2007. This is a multi-year project which when completed, will ensure there is adequate information to make informed decisions about maintaining a healthy lake environment. The initial step is the production of a State of the Lake Report that requires many volunteer hours to collect significant information about the lake environment.

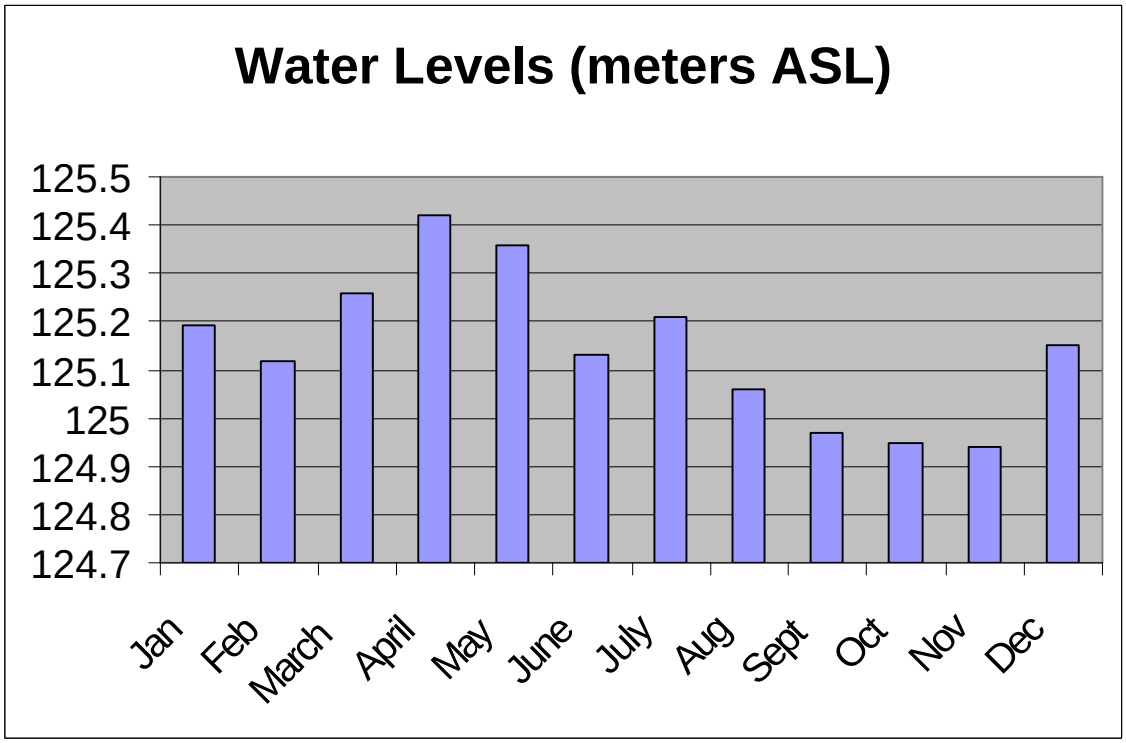
The data this year generally indicated an improvement in water quality. Phosphorus levels were down, Nitrogen levels were about the same, and coliform bacteria, namely E.coli, were not as high as the previous year.

Some data for Bass Lake is included this year. This represents an interesting comparison because Bass Lake is very similar to Otter with respect to ecological characteristics and development however Bass Lake has not experienced Zebra Mussels.

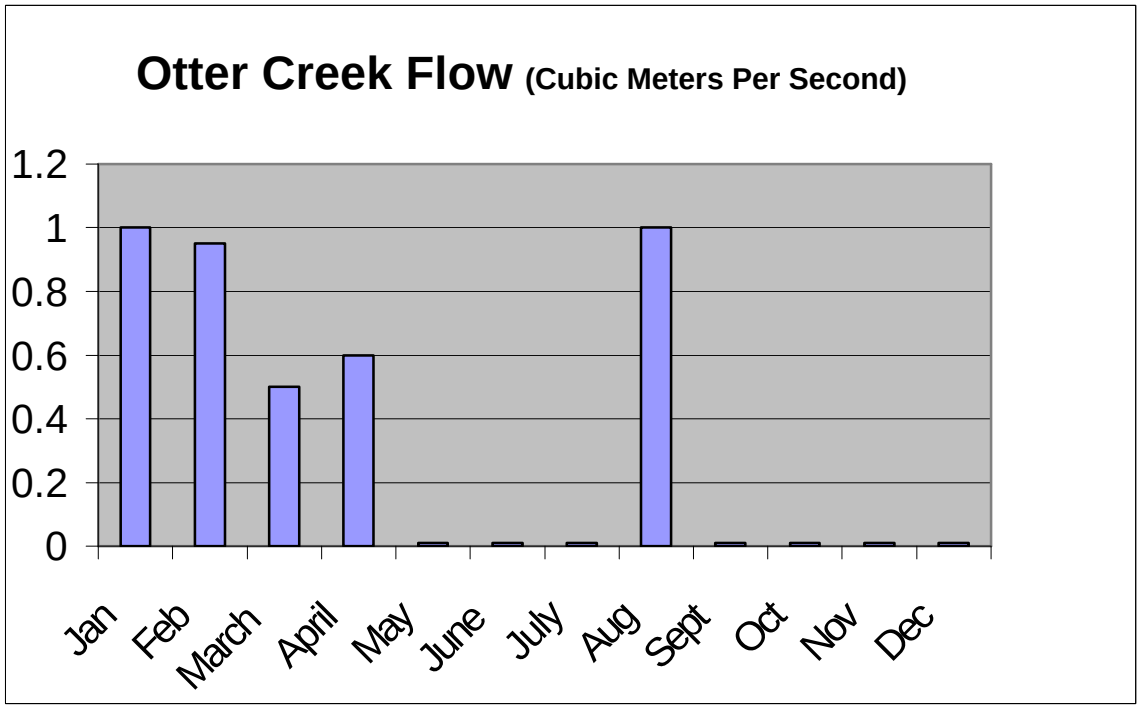
Further background on water quality issues can be found in the 2005 and 2006 annual reports which are available at www.otterlake.cyberus.ca.

**Results:**

The data is presented in a fashion similar to previous years and represents information collected by OLLA volunteers and RVCA personnel. The thermocline information which is performed on the two deep-water sites was not available from RVCA at the time of printing.




Note: Lake levels are expressed as “meters above sea level” (MASL) which is a standardized method for easy comparison with other lake records. The bottom of the Otter Creek culvert at Otter Lake Road is 124.04 meters above sea level.



## WATER QUALITY DATA 2007

| Location | Date | Phos | Nitrogen | Oxygen | E. coli | Fecal Bac | Total Coli | Mercury | Sodium |
|---|---|---|---|---|---|---|---|---|---|
| | | ug./litre | ug/litre | mg/litre | cts/100 ml | cts/100 ml | cts/100 ml | mg/litre | mg/litre |
| OLLA 2 | May-18 | 9 | 380 | 11.1 | | | | <0.0003 | |
| | Jul-09 | 8 | 430 | 9.5 | 1 | 2 | 20 | | |
| | Oct-01 | 8 | 430 | 8.6 | | | | | |
| OLLA 4 | May-18 | 2 | | 11.5 | 9 | 9 | 10 | <0.0003 | |
| | Jun-26 | 16 | | | | | | | |
| | Jul-09 | | | 8.4 | 1 | 4 | | | |
| | Aug-20 | | | | 1 | 1 | | | |
| OLLA 5 | May-18 | 8 | 360 | 10.5 | | | | | |
| 30 m depth | Jul-09 | 5 | 410 | 8.5 | | | | | 5.4 |
| | Oct-01 | 12 | 400 | 3.1 | | | | | |
| OLLA 6 | May-18 | 6 | 330 | 11 | | | | | |
| 30 m depth | Jul-09 | 10 | 410 | 8.4 | | | | | 5.5 |
| | Oct-01 | 8 | 430 | 5 | | | | | |
| OLLA 7 | May-27 | 10 | | 12 | 2 | 5 | | | |
| | Jun-26 | | | | | | | | |
| | Jul-09 | 19 | | 9 | 1 | 2 | 30 | | |
| | Aug-20 | 20 | | | 1 | 1 | | | |
| OLLA 10 | May-18 | | | | 5 | 5 | | | |
| | Jun-26 | 18 | | | | | | | |
| | Jul-09 | | | | 1 | 2 | 20 | | |
| | Aug-20 | 4 | | | 1 | 1 | | | |
| OLLA 11 | May-18 | 7 | 350 | 12 | | | | | |
| | Jul-09 | 8 | 440 | 8.5 | 6 | 6 | 90 | | |
| | Aug-20 | | | | 1 | 1 | | | |
| | Oct-01 | 10 | 430 | 8.3 | | | | | |
| OLLA 12 | Aug-20 | | | | 1 | 1 | | | |
| OLLA 13 | Aug-20 | | | | 1 | 2 | | | |
| OLLA 14 | May-27 | 8 | 360 | 11.5 | 1 | 1 | | 0.0003 | |
| | Jun-26 | 14 | | | | | | | |
| | Jul-09 | 7 | 420 | 9.5 | 1 | 2 | 10 | | |
| | Aug-20 | 5 | | | 2 | 7 | | | |
| OLLA 15 | Jul-09 | | | | 1 | 2 | 30 | | |
| | Aug-20 | | | | 1 | 1 | | | |
| OLLA 16 | Aug-20 | | | | 3 | 4 | | | |
| OLLA 17 | Jul-09 | | | | 1 | 2 | 40 | | |
| OLLA 18 | May-18 | 8 | 360 | 11.5 | | | | | |
| | Jul-09 | 7 | 420 | 9.5 | 1 | 2 | 10 | | |
| | Aug-20 | | | | 6 | 8 | | | |

**COMPARISON OF KEY QUALITY INDICATORS 1975-2006**

| | Phosphorus ug/litre | Nitrogen ug/litre | Secchi Depth meters | E.Coli per 100 ml | Trophic Status |
|---|---|---|---|---|---|
| 1975 | 7.5 | | 3.8 | | |
| 1996 | 8.1 | | 3.5 | | **Oligotrophic** |
| 2003 | 9.1 | 440 | 5.1 | | |
| 2004 | 10.1 | | 5.1 | | |
| 2005 | 13.9 | 290 | 6.6 | | **Mesotrophic** |
| 2006 | 10.5 | 390 | 7.3 | | |
| 2007 | 9.5 | 380 | 7.2 | | **Oligotrophic** |
| OTTER LAKE AVG 4 years 71 samples | 10 | 436 | 6.5 | 3 | |
| BASS LAKE AVG 4 years 106 samples | 12 | 427 | 4.2 | 32 | **Mesotrophic** |

Notes: Oligotrophic status is associated with deep, cold lakes supporting Trout.
Mesotrophic status is more productive, warmer, and supporting fish like Bass and Perch.

**Conclusions:**

The water level followed a predictable pattern this year with expected high levels in the spring which declined through the summer and into the fall. Otter Creek flow is only one factor which controls water levels. Creek flow was influenced by beaver dam activity which cut off flow entirely for several weeks. The August flow returned after the RVCA removed two dams in the creek. The beavers rebuilt in late August and the creek did not flow again until late in the year.

Phosphorus and Nitrogen levels declined from 2006 which may have resulted in a decline in algae this year which many people noticed.

Mercury was tested for the first time and resulted in very low readings. Many lakes north of Toronto are experiencing unusually high Mercury levels but the 2007 Otter Lake levels demonstrate that we have no immediate concerns.

The fecal coliform bacteria levels were well within normal ranges this year. Site 11 which is accessed by Road O4 showed the highest E.coli levels and will be monitored next year.

The test sites locations can be found the Water Quality page of the OLLA website.

For comparison purposes the RVCA data for Bass Lake is included. Phosphorus levels are 20% higher and E.coli levels are on average 10 times higher for the last four years. However, other readings are within expected range for a lake that does not have Zebra Mussels.