



# **STURGEON BAY**

## *Water Quality Update*

*August 2006*

---

### **Water Quality Studies and Monitoring Continues**

Water quality monitoring in the Sturgeon Bay basin, in the late summers of 2001 and 2002, identified exceptionally high total phosphorus levels in surface waters which coincided with greatly-reduced water clarity, depletion of dissolved oxygen and heavy plankton blooms. Of significance, areas of Sturgeon Bay experienced blue-green algae blooms in early September of those years. Although with varying degrees of severity, these signs and symptoms of degraded water quality continue.

Considerable effort has been placed on background research and science. Lake systems are complex entities which are influenced by factors within the watershed (i.e. shoreline development) and by external factors (i.e. weather, past and present climate and water levels). As such, research has been and continues to be necessary to ensure that potential solutions are focused and will result in a desirable outcome for Sturgeon Bay and the surrounding area.

To that end, the Township of The Archipelago has been working for three years with Provincial and Federal agencies to define the research and monitoring required to better understand the issue and will help outline the best strategies for mitigation and remediation. Since 2002, the Township of The Archipelago has undertaken a focused water quality monitoring program in Sturgeon Bay with volunteers and hired consultants. This program remains in effect today and will continue into the foreseeable future.

Most recently, a winter water quality assessment and a sediment coring analysis, from the deep basin of Sturgeon Bay, have been undertaken. The results from these two studies indicate first, that due to water mixing in some of the narrower channels between islands, the reduced oxygen in Sturgeon Bay appears to be a late spring, summer and early fall phenomenon and is unlikely to result in winter fish kills. Second, the sediment analysis illustrated that historically the total phosphorus concentrations in Sturgeon Bay have been elevated for at least the past 200 to 300 years. However since 1940, a change has occurred which, despite slightly reduced total phosphorus levels from pre-1940, allows increased productivity and a shift toward increased blue-green algae. The cause of this change since 1940 has not yet been determined.

In addition to these studies, monitoring continues. Volunteers take monthly phosphorus and algae samples and biweekly water clarity and bacteria measurements. The Provincial Ministry of Environment, in collaboration with Environment Canada, has been monitoring water quality for a suite of parameters each month throughout the summer. It is only through

continued research and monitoring that we can differentiate between natural, degraded, and improved conditions.

## **Working Toward Solutions**

Mitigation and remediation of Sturgeon Bay water quality requires diverse approaches and a network of partnerships including community members, associations and non-governmental organizations. Strategies include stewardship, regulatory and intervention approaches.

Many of the stewardship approaches have already been implemented. The Sturgeon Bay – Pointe au Baril Ratepayers Association, as well as local businesses and individuals have been encouraging a variety of “best-practices” for land use such as shifting toward the use of phosphate-free products, maintaining and enhancing shoreline vegetation, and regular septic system pump-outs etc...

With respect to regulation, the Township of The Archipelago is exploring options of increased setbacks for structures and in particular septic systems. Consideration of these options will be included in the Township’s review of its Comprehensive Zoning By-law. Lake health research has shown links between the maintenance of shoreline vegetation, the development of near shore areas and the quality of water. The proposal being put forward would attempt to limit further development in the near shore area and encourage septic systems to be further back resulting in increased phosphorus retention potential, as well as provide increased opportunity for maintenance of shoreline vegetation.

Engineered solutions, such as intervention strategies may, with careful consideration, be a possibility for Sturgeon Bay. Several organizations, companies and researchers have weighed in on this issue and have offered a variety of potential solutions. The use of such strategies requires careful consideration of several factors such as: the significance of the problem; the extent that a strategy would solve the problem; unintended and/or undesirable outcomes if intervention is implemented; timelines and costs. Essentially, a viability assessment is required to determine the best option and its viability. A Request for Proposals has been drafted and will be presented to the Minister of Environment to seeking support and commitment for this type of project is garnered from Provincial authorities.

The Township of The Archipelago, along with its partners, has been working on a proposal for this viability assessment and we hope to solicit funding from other levels of government to facilitate its completion. It remains that the Township is concerned about the water quality in all bodies of water within the Township and will continue to work toward solutions.

***All the water quality monitoring and background research reports are available through the Township of The Archipelago offices.***

***[www.thearchipelago.on.ca](http://www.thearchipelago.on.ca)***