# St. Marys River Remedial Action Plan

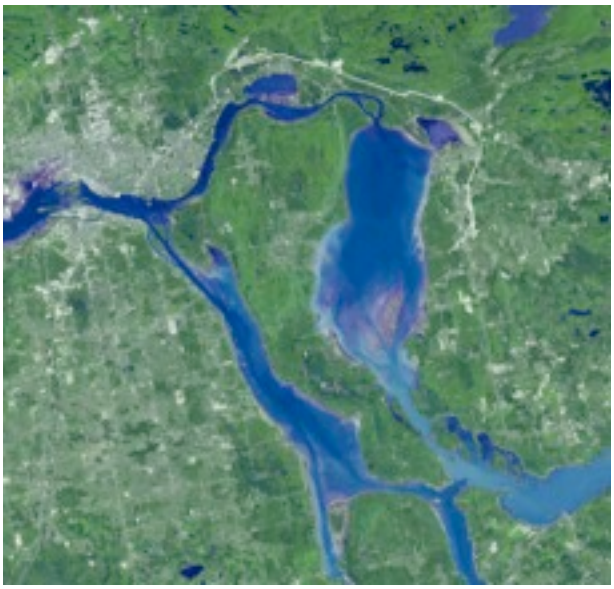
# Newsletter

## Water Quality Edition

## Assessing Environmental Challenges in the St. Marys River

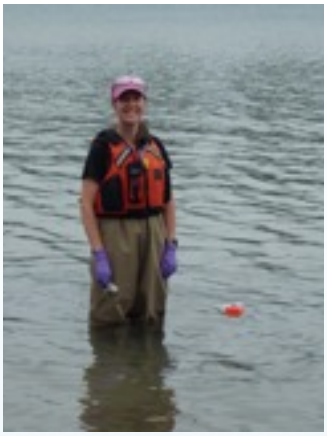
Algoma University is working with Environment Canada and the Ontario Ministry of the Environment and Climate Change to address environmental challenges, known as Beneficial Use Impairments (BUI), affecting the St. Marys River. This water quality newsletter will showcase two environmental issues under review including *Degradation of Aesthetics* and *Eutrophication and Undesirable Algae*.

Degradation of Aesthetics refers to the visible condition of the water. Physical pollution such as oil slicks, grease, garbage and sewage can impair the aesthetic values of the river. These pollution indicators were thought to have entered the river system in the past from a combination of industrial, municipal and urban sources. Natural properties can also affect the aesthetics of an area, especially when human activities stir up sediment causing changes to water colour and clarity.



St. Marys River

Eutrophication refers to a situation in which high levels of nutrients, such as nitrogen and phosphorus, are found in the water. This can lead to an undesirable increase in the growth of algae, which in turn can lead to the depletion of oxygen in the water. Low levels of dissolved oxygen can have a negative impact on fish populations and persistent algal growth can impede recreational uses of the river.



Water quality monitoring is currently underway in the St. Marys River Area of Concern. A field crew from Algoma University undertakes field sampling on a biweekly basis from late spring to early fall. They visit and photograph 5 sites along the river including Gros Cap, Topsail Island, Bell's Point, Echo Bay bridge, and W.I. Park. Key features, surrounding land uses, GPS coordinates, temperature, pH, Secchi disk and turbidity tube measurements are recorded for each site.

## Water Quality Field Monitoring (2013 - 2015)

Water quality monitoring for the St. Marys River Area of Concern (AOC) is underway for its third and final season. Samples of the river are being analyzed for water quality along with detailed shoreline observations.

*Degradation of Aesthetics:* Physical water quality parameters such as unusual colour, clarity, odour and turbidity along with oil, foam or scum deposits are possible indications of aesthetic degradation. This season has shown little to no indication of industrial or municipal pollution that would cause unfavourable aesthetics. However, a few sample sites have shown reduced water clarity and a slight change in the water's colour. This is likely due to higher recreational boat traffic and possible dog walkers/beach goers at these sites. Through preliminary observation it appears that aesthetic conditions have improved.

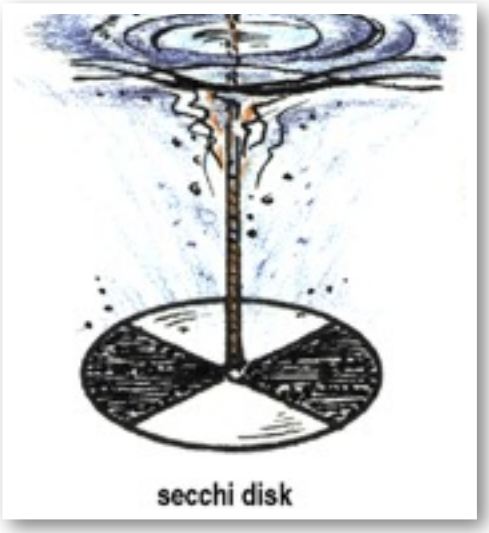
*Eutrophication and Undesirable Algae:* During the 2014 field season, phosphorus and nitrogen levels were observed to be consistently low and typical for the habitats within the St. Marys River. This would not indicate eutrophication of the river or a presence of undesirable algae.

### History of the AOC

*The St. Marys River is a 120km freshwater ecosystem that connects Lake Superior to Lake Huron and separates the twin cities of Sault Ste. Marie, Ontario and Michigan. Historically, industrial and municipal sources along with other non point urban sources were contributing factors to the degradation of the St. Marys River. Impairments to the river health and aesthetics have included:*

*- partially treated municipal and private sewage runoff;*
*- untreated storm water runoff; and*
*- physical alterations to the shoreline.*

*The St. Marys River was recognized in 1987 as one of 43 identified AOCs within the Great Lakes basin, in accordance with the Great Lakes Water Quality Agreement between Canada and the United States. This resulted in the development and implementation of a Remedial Action Plan to restore the health of the river. Stricter environmental regulations passed by the provincial and federal governments in the 1990s along with infrastructure to reduce environmental impacts have led to substantial water quality improvements for the St. Marys River.*




The Secchi disk is a device used to measure water clarity.

## What's Next for the AOC

Water quality field monitoring is scheduled to finish in September 2015. The results will be used to determine the status of the Beneficial Use Impairments (BUIs) involving *Degradation of Aesthetics* and *Eutrophication and Undesirable Algae*. Government and public stakeholders will determine whether improvements to the river have met the delisting criteria. This will provide a case for the redesignation of the BUIs to a *Not Impaired* status. The *Water Quality Final Report* is scheduled for release in 2016.

### For more information:

For more information on the St. Marys River Remedial Action Plan visit:
lssu.edu/bpac (keep posted for our new web address!)
For more information on Areas of Concern visit:
ec.gc.ca/raps-pas