



Contaminated Sediment Project

St. Clair River Area of Concern



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www.friendsofstclair.ca

The St. Clair River flows 64 km south from Lake Huron to Lake St. Clair and forms the border between the State of Michigan and the Province of Ontario.

The St. Clair River was designated as an Area of Concern (AOC) in 1987 under the Canada-United States Great Lakes Water Quality Agreement following a long history of industrial and urban development along both shores.

The Agreement identifies shared priorities and coordinates actions to restore and protect the chemical, physical and biological integrity of the waters of the Great Lakes.

The progress towards restoring an AOC is measured through the status of 14 Beneficial Use Impairments (BUIs). A BUI is a common use or feature of a waterway that has been impacted by local pollution. The 14 BUIs cover a range of aquatic health indicators including contaminant levels in local fish, habitat quality, and water quality.

BUIs are identified as Impaired (impacted by local pollution), Not Impaired (not impacted by local pollution) or Requiring Further Assessment (RFA) (additional research and study required to determine status). Once all BUIs are identified as Not Impaired, an AOC can be removed from the list of Great Lakes AOCs (a process referred to as "delisting").

Five BUIs remain to be addressed in the St. Clair River. One of the remaining restorative actions required to advance the status of two of the BUIs is the management of mercury-contaminated sediment which is expected to reduce the risk of contaminant exposure to sediment-dwelling organisms, fish, and wildlife.





Addressing Contaminated Sediment in the St. Clair River

Sediment quality in the St. Clair River was impacted by historical loadings of nutrients, metals, and chlorinated organic compounds associated with a long history of industrial development along the shoreline.

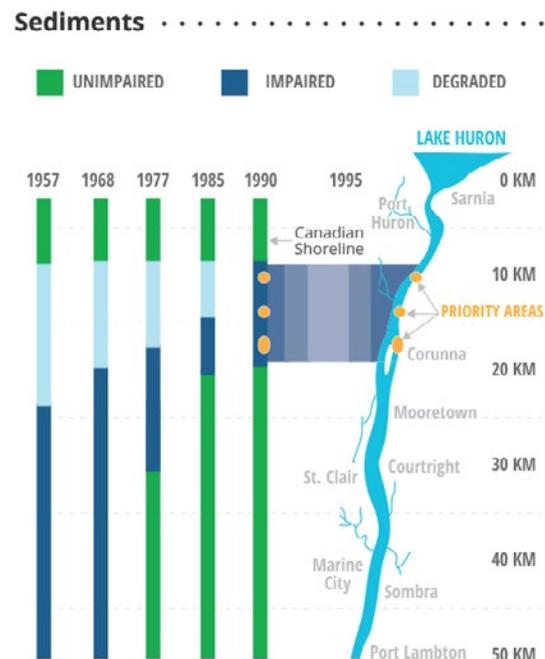
As a result, local industry instituted effluent controls in the 1950s and 1960s, and again in 1985 to reduce chemical discharges to the river. Additional effluent controls were implemented in the early 1990's when the province put regulations in place to further reduce the discharge of contaminants into Ontario waterways from nine industrial sectors.

In addition, two significant sediment clean-up projects were completed - one in 1996 that involved the clean-out of a drain impacted by industrial discharges, and the second in 2005 that saw the removal of over 13,000 cubic meters of contaminated sediment from the St. Clair River.

Although these measures resulted in improvements to sediment quality over time, an assessment of sediment in 2009 concluded there were three remaining areas where management actions were required due to the presence of mercury contaminated sediment.

Sediment Recovery

This graphic represents sediment recovery over time along the St. Clair River.





Mercury and It's Impact on Aquatic Systems

Mercury has the potential to be converted into methylmercury by bacteria that exist in conditions where there is no oxygen within the sediment. Methylmercury has the ability to accumulate in the bodies of aquatic and terrestrial organisms including sediment-dwelling microorganisms and fish. This process drives consumption restrictions for fish found throughout the Great Lakes and other areas of Ontario.

The need to address remaining mercury contaminated sediment in the three identified priority areas in the St. Clair River prompted a study to identify potential management options. The study was completed in 2013 and after consulting local communities, hydraulic dredging was identified as the preferred option for managing the three remaining areas of contaminated sediment.

Between 2014 and 2016, analysis of more recent data was completed and a restoration goal was set. Additional sampling and sediment stability studies were conducted in 2019 and 2020 to facilitate the completion of a detailed engineering and design plan for the three areas. The management of these three priority areas of contaminated sediment remain a significant priority for the St. Clair River AOC program.

Recent Actions

The detailed Engineering and Design Plan for managing the contaminated sediment was completed in 2021. The data collected when preparing the plan showed that:

Mercury concentrations in surface sediment have significantly decreased over time.

The restoration goal of achieving the 3 mg/kg restoration goal in the top 15 cm of sediment has been achieved.

There are no measurable risks presented to fish based on the level of mercury contamination in the top 15 cm of sediment.

The design plan recommends construction of an Erosion Resistant Cover in focused areas to enhance erosion protection and further decrease mercury concentrations in surface sediment.



Summary of Progress Towards Managing Contaminated Sediment in the St. Clair River

- **1987** St. Clair River Designated as Area of Concern due to adverse impacts on beneficial uses.
- **1996** Chlorinated organics cleaned up from the Cole Drain in Sarnia that discharges into the St. Clair River.
- **2005** 13,370 m³ of contaminated sediment removed along shoreline of Dow Canada property.
- **2009** Three remaining priority areas identified in St. Clair River for sediment management based on risks to fish from biomagnification of mercury, using Canada-Ontario Decision-Making Framework for assessing contaminated sediment.
- **2013** Assessment of options for managing contaminated sediment in the three priority areas completed — preferred option identified as hydraulic dredging.
- **2016** An assessment of more recent data on mercury levels in sediment, worms and fish completed — remedial objective identified — achieve Surface Weighted Average Concentration of 3 mg/kg in the surface sediment in each priority area.
- **2019** Initiation of work to prepare detailed design information on how the contaminated sediment is to be managed in each of the three priority areas.
- **2020** Additional sediment sampling completed in each priority area to collect current information on distribution of contaminated sediment to support engineering and design plan.
- **2021** Review of sediment sampling results indicates significant decreases in mercury concentrations in surface sediment due to natural recovery, with clean-up objective of 3 mg/kg already met in each priority area — recommendation is Erosion Resistant Cover in focused areas to enhance erosion protection and further decrease mercury concentrations in surface sediment.

Final Engineering and Design Plan completed with details on how Erosion Resistant Cover to be constructed in each priority area.



Next Steps

The engineering and design plan will help support discussions around implementation. The roles and responsibilities of the various parties during the implementation phase and the timing for implementation have not yet been determined.

Beneficial Use Impairments

Implementing the engineering design plan will be an important step towards addressing two Beneficial Use Impairments that remain in the St. Clair River AOC - Degradation of Benthos and Restrictions on Fish and Wildlife Consumption. Being able to restore these to “Not Impaired” will support the on-going efforts to ultimately delist the St. Clair River as an Area of Concern.

Additional information on the recent actions to address contaminated sediment in the St. Clair River can be found by visiting:

www.stclairsediment.ca

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TO LEARN ABOUT OTHER PROJECTS UNDERWAY TO RESTORE THE ST. CLAIR RIVER

