



# LAKE HURON LAKEWIDE ACTION AND MANAGEMENT PLAN

## 2017 Annual Report



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### Overview

Lake Huron’s abundant natural resources and water-based industries support a strong regional economy through commercial and recreational fishing, shipping, mining, forestry, and agricultural operations. Parks and conservation areas provide tourism and recreation opportunities and nurture a connection with the natural world. To protect this resource, the Lake Huron Partnership is working with all levels of government, watershed management agencies, and the public to develop the 2017-2021 Lake Huron Lakewide Action and Management Plan (LAMP). The LAMP represents a model of binational collaboration and a shared, science-based understanding of Lake Huron. The full LAMP report will be posted at: [www.binational.net](http://www.binational.net)

### What is the Lake Huron LAMP?

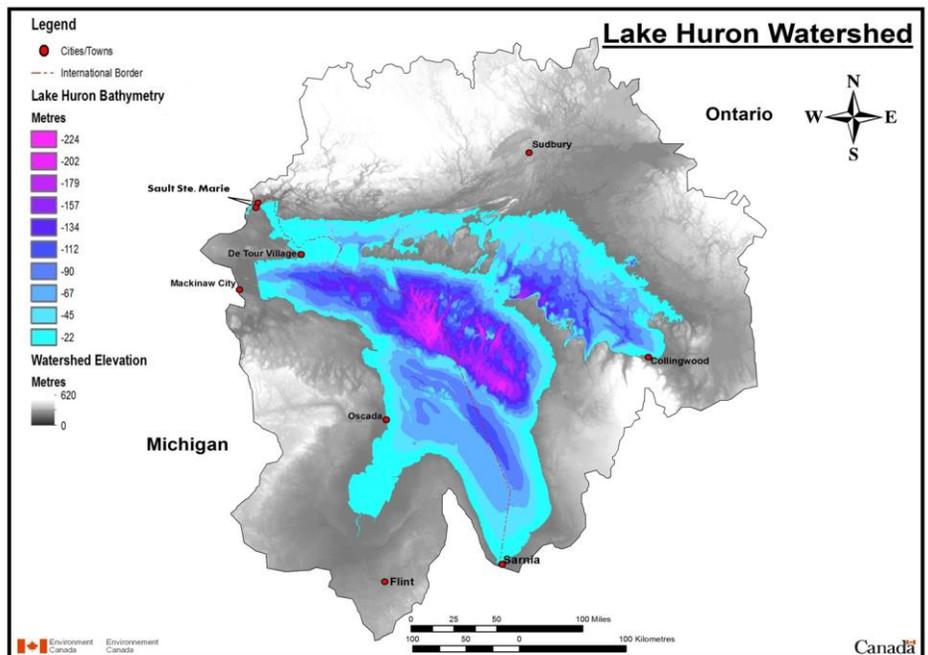
Under the 2012 Great Lakes Water Quality Agreement (GLWQA), the governments of Canada and the United States have committed to restore and maintain the physical, biological and chemical integrity of the waters of the Great Lakes.

The Draft Lake Huron Lakewide Action and Management Plan (LAMP) is a binational action plan for restoring, enhancing, and protecting the Lake Huron ecosystem. The LAMP is developed and implemented by the Lake Huron Partnership, which is led by the U.S. Environmental Protection Agency (USEPA) and Environment and Climate Change Canada (ECCC). The Partnership facilitates information sharing, sets priorities, and assists in coordinating binational environmental protection and restoration activities.

This 2017 annual report highlights accomplishments and progress in achieving lakewide management goals during the past year and identifies LAMP-related activities including outreach, monitoring, and protection and restoration actions.

This Annual Report focuses on the following topics:

- The state of Lake Huron;
- Cooperative Science and Monitoring Initiative for 2017;
- Binational strategies that address key environmental threats; and
- Outreach, engagement and education initiatives.



Lake Huron has the largest watershed and longest shoreline of the Great Lakes. The maximum depth is 229 metres (750 feet). Credit: Environment and Climate Change Canada.



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### Accomplishments

#### Creation of the Lakewide Action and Management Plan

When completed, the 2017-2021 Lake Huron LAMP will represent a significant milestone. It will provide a science-based assessment of ecosystem conditions and identify key environmental challenges, science and monitoring priorities, and management actions. The LAMP is intended for anyone interested in the water quality and ecosystem health of Lake Huron and the St. Marys River, and the actions that will help restore and protect these shared waters.

#### State of Lake Huron

Lake Huron is in “fair” condition based on an assessment of each of the General Objectives of the GLWQA (see table). The lake provides high-quality drinking water, many safe and healthy beaches, and diverse nearshore areas for swimming and other recreational activities. While chemical pollutants have decreased since the 1970s, fish and wildlife consumption advisories remain in place to protect human health. The majority of nearshore waters are of high quality; however, areas of the southeast shore, Saginaw Bay, and parts of eastern Georgian Bay experience periodic harmful or nuisance algal blooms. In the deeper waters, decreased nutrient levels and impacts to the aquatic food chain are linked with invasive Zebra and Quagga Mussels. The shrimp-like *Diporeia* has decreased in abundance, limiting a major food source for preyfish and the commercially-important Whitefish. Populations of Walleye are below historic levels in Ontario but have largely recovered in Michigan waters. Lake Trout are approaching reproduction targets in Lake Huron.

GLWQA GENERAL OBJECTIVES	STATUS
Be a source of safe, high-quality drinking water.	Good
Allow for unrestricted swimming and other recreational use.	Good
Allow for unrestricted consumption of the fish and wildlife.	Fair
Be free from pollutants that could harm people, wildlife and organisms.	Good/Fair
Support healthy and productive habitats to sustain our native species.	Fair
Be free from nutrients that promote growth of algae and cyanobacteria.	Fair
Be free from the introduction and spread of aquatic and terrestrial invasive species.	Poor
Be free from the harmful impacts of contaminated groundwater.	Good
Be free from other substances, materials or conditions that may negatively affect the chemical, physical or biological integrity of the Waters of the Great Lakes.	Fair

### Addressing Challenges and Threats

The Lake Huron Partnership consulted stakeholders and the public during 2016 and early 2017 and identified five main management challenges:

1. Chemical contaminants that trigger fish and wildlife consumption advisories;
2. Nutrients and bacterial pollution that can cause nuisance and harmful algal blooms;
3. Loss, fragmentation, and degradation of aquatic habitat and native species;
4. Invasive species such as Sea Lamprey, Dreissenid mussels, and Common Reed (*Phragmites*); and
5. Climate change impacts such as frequent and severe storms and warming temperatures that threaten water quality and native coldwater fishes.

#### Developing Binational Strategies

The Lake Huron Partnership has proposed five ecosystem-based strategies that address key environmental issues. A total of 40 actions were identified to help implement these strategies, including the following examples:

#### 1) Improving Chemical Monitoring and Management

The draft Lake Huron LAMP identifies actions that respond to chemical contaminants and management needs, including:

- Conduct a Lake Huron sediment contaminant survey in 2017 that examines legacy organic contaminants, trace metals, mercury, and selected new and emerging compounds; and
- Continue the multi-year sediment remediation project on the Tittabawassee River Floodplain.

#### 2) Improving Nutrient and Bacterial Contaminant Monitoring and Management

Nutrients and bacteria are picked up by water runoff and carried by streams and drains to nearshore waters, potentially causing nuisance and harmful algae growth. The Lake Huron LAMP includes proposed actions that respond to this environmental issue including:

- Build on existing integrated and systematic (headwaters to shoreline) planning and nutrient management initiatives that maintain and restore natural heritage features, improve soil health, and reduce overland runoff of nutrients and bacteria in priority watersheds; and
- Conduct spring and fall open lake water quality monitoring of phosphorus concentrations across the Lake Huron basin.



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Responsibly-farmed fields with grassed waterways trap sediments and nutrients. Credit: Ausable Bayfield Conservation Authority.

Michigan's Department of Agriculture and Rural Development facilitates the Michigan Agriculture Environmental Assurance Program to target the agricultural industry to ensure that producers are engaged in pollution prevention practices.

On the Canadian side of the lake where agriculture dominates the landscape of south-eastern Georgian Bay, ECCC wrapped up the 2012-2017 Lake Simcoe/South-eastern Georgian Bay Clean-Up Fund with an impressive 106 projects that targeted research and monitoring, aquatic habitat restoration, and phosphorus reduction from point and non-point sources. Approximately 10,000 kilograms (22,046 pounds) of phosphorus were diverted from entering Georgian Bay and Lake Simcoe. Over 2,600 cattle were restricted from streams and more than 115 hectares (284 acres) of vegetated buffers and 87 wetlands were established and/or improved.

### 3) *Protecting Native Species and their Habitats*

Lake Huron contains roughly 30% of all coastal wetlands in the Great Lakes basin, with many in pristine condition. The many



Saginaw Bay coastal wetlands provide critical habitat for a world class Walleye fishery. Credit: Saginaw Bay Water Trails.

ivers and streams also provide critical habitat for spawning fish, amphibians, reptiles, mammals and birdlife.

Despite Lake Huron's biological diversity, loss and degradation of habitat and native species are significant management challenges that necessitate restoration and protection actions, including:

- Restore tributary connectivity and function in targeted locations of the watershed;
- Coordinate integrated shoreline conservation measures that address ecosystem threats and encourage community-based stewardship actions; and
- Continue development of new coastal wetland decision support tools that support the identification and prioritization of restoration actions.

### 4) *Addressing Invasive Species*

The introduction, establishment and spread of invasive species are significant threats to the water quality and biodiversity of Lake Huron. The draft Lake Huron LAMP includes actions such as the continued control of the larval Sea Lamprey population using selective lampricides and the operation and maintenance of Sea Lamprey barriers. These and other techniques have been successful at reducing Sea Lamprey populations to about 10% of their historic levels; the Lake Huron population control target was achieved in 2015 for the first time in 30 years.

### 5) *Addressing Climate Change Impacts*

Climate change impacts interact with one another, alter the physical, chemical, and biological processes in the lake and surrounding watershed, and pose management challenges. Climate change actions that protect vulnerable coastal wetland habitat and fragile coldwater fish and fisheries are already underway, including:

- The U.S. Resilient Lands and Waters Initiative supports the National Fish, Wildlife, and Plants Climate Adaptation Strategy to build and maintain an ecologically-connected network of terrestrial, coastal and marine conservation areas likely to be resilient to climate change - <https://www.wildlifeadaptationstrategy.gov/partnerships.php>.
- Stream rehabilitation and enhancement projects that include modifications that provide fish refuge from thermal heating and low flow conditions (e.g., Manitoulin Streams Improvement Association); and
- Evaluation of migratory fish habitat significance, limitations under water level fluctuations, and stream habitat rehabilitation and enhancement projects in eastern Georgian Bay.



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### Improving Knowledge through Science and Monitoring

Several resource management agencies have partnered to support the 2017 Lake Huron Cooperative Science and Monitoring Initiative to address the following:

- Improve the understanding of nutrient levels, trends, and cycling throughout the lower and upper food web;
- Determine if issues of larval fish growth correspond to zooplankton prey densities; and
- Improve the understanding of water quality and biological production in relation to the different chemical, biological and physical conditions across the Lake Huron basin.

The findings from these studies will inform management initiatives and information for the next Lake Huron LAMP.



Cooperative science and monitoring is conducted on board several ships including the Lake Guardian. Credit: USEPA

### Outreach, Engagement and Education

Place-based education and citizen science bring people closer to nature and develop knowledgeable and active conservationists. Combining the two, the Northeast Michigan Great Lakes Stewardship Initiative sponsors programs that promote place-based stewardship education experiences for K-12 students. Alongside scientists and natural resource professionals, youth help to conserve Lake Huron's biodiversity. Projects sponsored by the partnership are facilitated by Michigan Sea Grant, Michigan State University Extension, the National Oceanic and Atmospheric Administration Thunder Bay National Marine Sanctuary, and other partners. For more information, see [www.nemiglsi.org](http://www.nemiglsi.org).

In Ontario, the Lake Huron-Georgian Bay Watershed: Canadian Initiative for Community Action promotes awareness, education, capacity building and actions that address environmental threats. A 2017 Lake Huron Summit will convene groups from Sarnia to the St. Marys River to share the findings

of the Lake Huron LAMP and encourage active participation of community-based and watershed groups.



Students explore their watershed while completing water quality monitoring and studying the riparian zone. Credit: Northeast Michigan Great Lakes Stewardship Initiative.

### How YOU can help improve Lake Huron

The Lake Huron Partnership, through the LAMP, encourages everyone to take an active role in helping to improve the health of Lake Huron. You can help by:

- Disposing of hazardous household materials at appropriate waste collection depots;
- Choosing phosphate-free detergents, soaps and cleaners;
- Avoiding fertilizer and pesticide application next to waterways;
- Incorporating grass swales, filter strips, and native vegetation to filter and reduce runoff to nearby waters;
- Conducting regular maintenance and inspection of septic systems;
- Working with local environmental organizations and conservation authorities to take part in community stewardship and education events; and
- Installing rain barrels to collect rainwater that can later be used to water outdoor plants and gardens.

### Contact Information

For more information please visit [www.binational.net](http://www.binational.net) or contact:

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