

From: Panel Registry

From: Virtue,Robyn-Lynne [CEAA] **On Behalf Of** DGR Review / Examen DFGP [CEAA]

Sent: June 13, 2014 12:15 PM

To: DGR Review / Examen DFGP [CEAA]

Subject: Requested Lake Huron Water Quality Reports

To: 'Stella Swanson' ; 'Gunter Muecke'; James Archibald)

Cc:

Subject: Great Lakes Report

Panel Members,

As per your request to Environment Canada for updated information on the state of Lake Huron during the public hearing in the Fall of 2013, enclosed are two reports - Lake Huron Binational Partnership Annual Report 2013 and Lake Huron Binational Partnership 2008-2010 Action Plan - for your information.

Thank you,

Robyn

Robyn-Lynne Virtue

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LAKE HURON BINATIONAL PARTNERSHIP Annual Report 2013

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What is the Lake Huron Binational Partnership?

The Lake Huron Binational Partnership was formed in 2002 to meet commitments in the Canada-United States Great Lakes Water Quality Agreement for lakewide management. The Partnership facilitates information sharing, sets priorities, and coordinates binational environmental protection and restoration activities.

The U.S. Environmental Protection Agency, Environment Canada, Michigan Departments of Natural Resources and Environmental Quality, and the Ontario Ministries of Environment and Natural Resources form the core of the Partnership.

The Partnership promotes a flexible membership which may include all levels of government, Métis, Tribes, First Nations, environmental non-government organizations and the public. These broader partnerships take on initiatives on an issue by issue basis that cannot be accomplished by individual agencies alone.

Overview

The Lake Huron Binational Partnership is an effort that focuses on key priorities and on the ground actions that help to improve and protect the overall quality of Lake Huron. The Partnership's 2013 Annual Report provides information on the following topics:

- Accomplishments: Controlling non-point source pollution in the Lake Huron watershed; Improving Lake Huron fish spawning and nursery habitat;
- Challenges: Lake Huron water levels; Controlling the invasive common reed (*Phragmites*);
- Next Steps: Analyzing and reporting on results from the Lake Huron Cooperative Science and Monitoring Initiative (2012); Coordinating Lake Huron restoration efforts and implementing the Lake Simcoe/South-eastern Georgian Bay Clean-Up Fund and the Great Lakes Restoration Initiative; and
- Contacts: Information on how to obtain more detailed information on any of the Partnership activities.

We encourage you to learn more about Lake Huron and the collaborative approaches taken to understand its ecosystem, how we are protecting high quality areas and restoring areas that have been degraded. For more information visit: www.binational.net.



Georgian Bay
Photo Credit: Parks Canada

Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) of 2012

On February 12, 2013, the Governments of Canada and the United States ratified the Great Lakes Water Quality Agreement of 2012. The Agreement facilitates binational action on threats to water quality and ecosystem health. More information on the Agreement can be found on the following websites: www.ec.gc.ca/grandslacs-greatlakes/ and www.epa.gov/glnpo/glwqa.



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Accomplishments

Nonpoint Source Pollution Control in the Lake Huron Watershed

Sources of nutrients to the aquatic ecosystem remain a high priority for the Lake Huron Binational Partnership. The U.S. Environmental Protection Agency and the Natural Resource Conservation Service have targeted grants to implement Best Management Practices (BMPs) in key Saginaw Bay subwatersheds, including the Flint, Pigeon/Pinnebog and Kawkawlin Rivers. In 2012, the Bay County Drain Commission office received a \$995,000 Great Lakes Restoration Initiative (GLRI) grant to implement the Kawkawlin River Watershed Management Plan. Michigan State University received \$189,000 (GLRI) to provide electronic mapping technology to agricultural conservation technicians to identify and target farm fields prone to high rates of phosphorus discharge.

The Michigan Agriculture Environmental Assurance Program (MAEAP) has also been working with farmers in the Saginaw Bay watershed to identify and manage environmental risks by implementing best management practices on farmland since 2002. To date, more than 240 verifications (i.e., environmental-related assessments) have been completed in the watershed. For 2013, 11 MAEAP technicians will provide local technical assistance to the Saginaw Bay watershed.



Lake Huron Southeast Shores
Photo Credit: Ausable Bayfield Conservation Authority

In Canada, government agencies and local organizations continue to advance efforts on the *Healthy Lake Huron – Clean Waters, Clean Beaches Campaign* to ensure that beaches between Sarnia and Tobermory are safe and clean. Reducing beach postings due to bacteria levels and limiting the growth of nuisance algae are key priorities. The implementation of BMPs defined by new subwatershed management plans and community-based efforts at five priority subwatersheds (Lambton Shores, Main and North Bayfield, the Garvey/Glenn Drain and Pine River) will be the focus for 2013.

A new Rural Stormwater Management Model is being developed to better understand and manage stormwater and limit the impact of runoff on water quality. The model will also prioritize stewardship projects that have the most benefit in reducing impacts on Lake Huron watersheds. Ongoing monitoring of priority watersheds will be facilitated by five newly established hydrometric and water quality monitoring stations. Funding was provided by a \$750,000 grant from the Province of Ontario's Showcasing Water Innovation Program. For more information, visit www.healthylakehuron.com.

Improving Lake Huron Fisheries

The Lake Huron Technical Committee completed *The State of Lake Huron* report that describes the fish community (2004-2010), evaluates progress towards achieving the Fish Community Objectives, and identifies new and emerging issues that may affect future management http://www.glfc.org/pubs/SpecialPubs/Sp13_01.pdf.

Restoring high quality fish spawning and nursery habitat are priorities of the Partnership's Lake Huron Biodiversity Conservation Strategy. In Michigan, numerous agencies and organizations continue to implement feasibility, planning/design and construction projects in key subwatersheds and locations. The Eastern Upper Peninsula Regional Planning and Development Commission is conducting a feasibility study to increase fish passage in the remaining available rapids habitat in the St. Marys River. The Huron Pines Conservation and Development Council is working with private landowners in the northern Saginaw Bay watershed to restore aquatic connectivity and improve wetlands. Ducks Unlimited, the U.S. Fish and Wildlife Service and their partners are implementing projects to restore habitat between the Shiawassee River and thousands of acres of riparian wetlands at Shiawassee National Wildlife Refuge. For the first time ever, a team of fisheries experts is considering restoring nearshore spawning reef habitat in Saginaw Bay.

In Ontario, the Ministry of Natural Resources, the Eastern Georgian Bay Stewardship Council and partners rehabilitated fish spawning habitat on the Moon and Musquash Rivers that flow into eastern Georgian Bay. Focusing on Walleye (Pickerel) and Lake Sturgeon, riverine habitat was modified to accommodate fluctuating water flow regimes due to historic changes to drainage patterns and upstream hydroelectric needs.

In the Moon River, new spawning habitat was created in 2009 to respond to this altered flow regime and lower Georgian Bay water levels. Survey results show successful spawning of Walleye and Lake Sturgeon. New habitat was also created in the Musquash River in 2012 downstream of a constriction where the combination of strong spring flows with low water levels in Georgian Bay made it challenging for Walleye and Sturgeon to move upstream to traditional spawning habitats. Monitoring



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in 2013 confirmed the use of new spawning habitat by Walleye. This work is an ongoing collaborative effort with funding from the province, municipalities and private donors. The Key River is the next tributary being considered for Walleye spawning bed improvement.



Moon River habitat restoration project
Photo Credit: Ontario Ministry of Natural Resources

Challenges

Lake Huron Water Levels

While water levels remain below average, Lake Huron has moved above record low monthly mean water levels observed in December 2012 and January 2013. Low levels are impacting a range of lake interests including: commercial navigation, hydropower producers, shoreline property owners, municipal and industrial water uses, the ecosystem and recreational boaters. Reduced water levels also modify critical wetland habitat that functions to maintain shoreline integrity, reduce erosion, filter contaminants, absorb excess storm water, and provide fish and wildlife habitat. Protected embayments with nutrient and algal problems may experience new challenges if water circulation and natural flushing is decreased.

Fluctuations of water levels and flows on the Great Lakes are expected to continue due to natural and human influences. Water levels on Lake Huron are influenced primarily by changes in water supplies with less precipitation, warmer winters, less ice cover and more evaporation contributing to the current low water levels.

Adaptive management has been identified as an effective way to address the uncertainty of future conditions. [The Great Lakes-St. Lawrence River System Adaptive Management Task Team](#) submitted an Adaptive Management Plan for the Great Lakes-St. Lawrence River system to the International Joint Commission in May 2013. The Lake Huron Binational Partnership looks forward to the Commission's response to the report's recommendation to use adaptive management to monitor climate trends and support decision-making to reduce the risk of extreme water levels to communities, the economy and the environment.

Invasive Common Reed (*Phragmites australis*)

The invasive Common Reed (*Phragmites australis*), with origins in Europe and Asia, has found its way to many of Lake Huron's beaches raising much concern amongst the public and the scientific community.

Most frequently, *Phragmites* colonizes new areas from small fragments of their root system which is dispersed by water, animals and human disturbance. It spreads quickly and is very difficult to fully eradicate, sending out shoots in all directions below ground and towers five or more metres above ground with each seed head containing at least 2,000 seeds. Dense stands out-compete native vegetation causing detrimental impacts to both the natural ecological integrity of coastal wetlands, the shoreline and the recreational value of beaches. Road side ditches are a major vector that unfortunately advances the spread of *Phragmites* northward along the Lake Huron coast.

Two new organizations, the Great Lakes *Phragmites* Collaborative, based in Michigan, and the Ontario *Phragmites* Working Group, have emerged to educate the public and share techniques on managing the invasive reed. A new document by the Ontario Ministry of Natural resources called "Invasive *Phragmites*-Best Management Practices of *Phragmites* is available that provides a selection of effective and environmentally safe control practices. For more information on *Phragmites*, see <http://www.mnr.gov.on.ca/>.



Common Reed (*Phragmites*)
Photo Credit: Ontario Ministry of Natural Resources

Next Steps

- Analyzing and reporting on results from the Lake Huron Cooperative Science and Monitoring Initiative (2012).
- Continuing to implement the Lake Huron Biodiversity Conservation Strategy and nutrient management actions.
- Implementing the Government of Canada's Lake Simcoe/South-eastern Georgian Bay Clean-Up Fund.
- Continuing efforts on the U.S. Great Lakes Restoration Initiative.

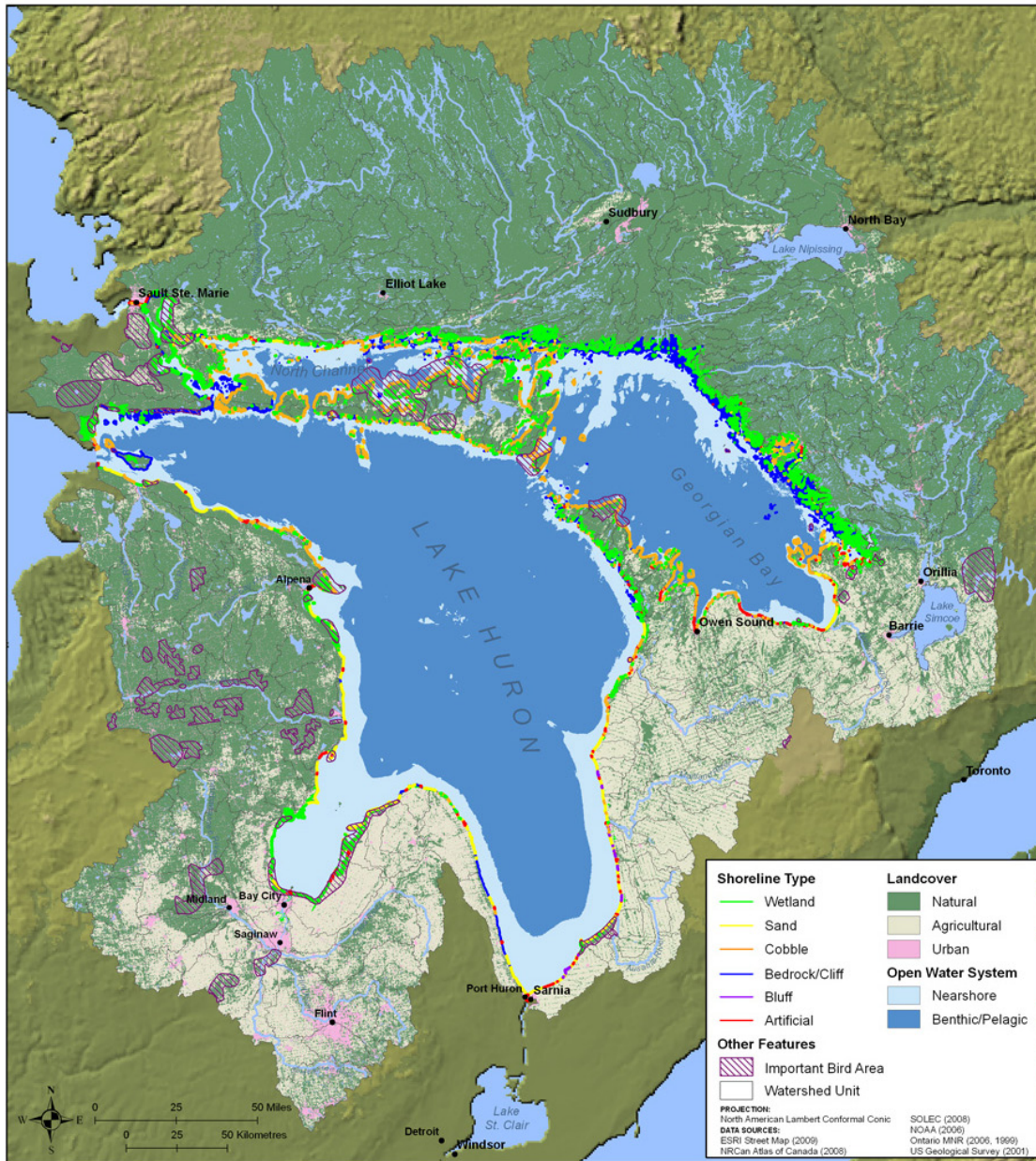


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Lake Huron's Biodiversity Features

Effective management of Lake Huron's open and nearshore waters, coastal wetland and coastal terrestrial ecosystems, islands, aerial migrants, and native migratory fish will ensure the conservation of its native biodiversity.



Lake Huron biodiversity features

Photo Credit: The Nature Conservancies of the United States and Canada

For More Information:

Web sites: www.binational.net or www.epa.gov/glnpo or www.ec.gc.ca/greatlakes

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What is the Lake Huron Binational Partnership?

The Lake Huron Binational Partnership was formed in 2002 to meet commitments in the Canada-United States Great Lakes Water Quality Agreement for lakewide management, by prioritizing and coordinating environmental activities within the Lake Huron basin.

The Partnership facilitates information sharing and priority setting for binational environmental protection and restoration. It promotes a flexible membership and the development of broader partnerships to undertake efforts, on an issue by issue basis that cannot be accomplished by individual agencies alone.

The U.S. Environmental Protection Agency, Environment Canada, Michigan Department of Natural Resources and Environment and the Ontario Ministries of Environment and Natural Resources form the core of the Partnership which also includes all levels of government, Tribes/First Nations, non-government organizations and the public.

Overview

The Lake Huron Binational Partnership is an effort that focuses on key priorities and on the ground actions that help to improve and protect the overall quality of Lake Huron. The Partnership's 2012 Annual Report provides information on the following topics:

- Accomplishments: Progress on the Healthy Lake Huron – Clean Waters, Clean Beaches Campaign; Southern Georgian Bay Coastal Initiative; International Upper Great Lakes Water Level Study and Public Outreach, and the Lake Huron Migratory Fish Barrier Project;
- Challenges: Implementing the 2012 Cooperative Science and Monitoring Initiative and Nearshore Fisheries Intensive Monitoring programs; Developing and implementing management programs to meet the objectives of the revised Great Lakes Water Quality Agreement;
- Next Steps: Upcoming activities around Lake Huron, and;
- Contacts: Information on how to obtain more detailed information on any of the Partnership activities.

The partners involved in protecting and restoring Lake Huron hope that you find this brief report informative and interesting. We encourage you to learn more about the lake and the collaborative approaches taken to understand its ecosystem, how we are protecting high quality areas and restoring areas that have been degraded.

For more information visit: www.binational.net. ♦

Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) Amendments
Negotiations to amend the 1987 GLWQA were launched in early 2010. The Governments of Canada and the United States held the final negotiation session in early 2012 and the amended GLWQA is now in the process of being finalized and approved. It is anticipated that the amended Agreement will be signed in 2012. ♦



Credit: Dave Reid, Ontario Ministry of Natural Resources



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Accomplishments

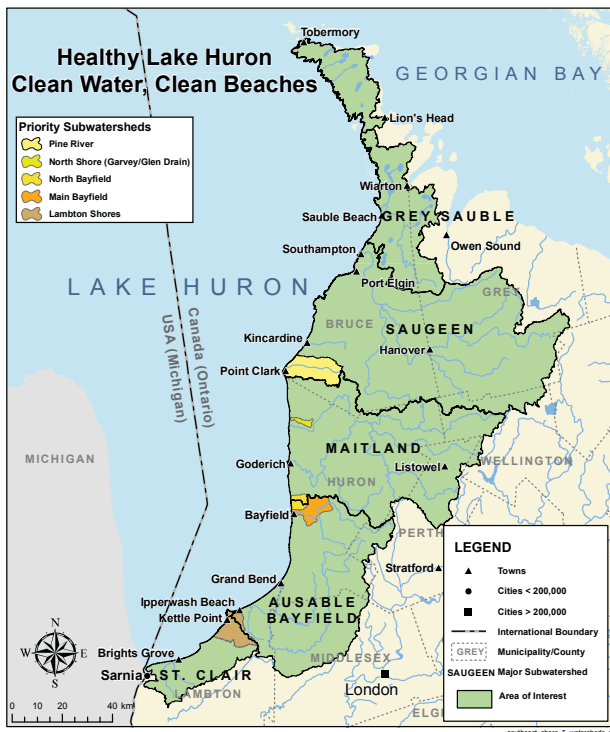
The Healthy Lake Huron – Clean Waters, Clean Beaches Campaign

Government agencies and local organizations have formed a unique partnership to ensure that popular sandy beaches on Lake Huron’s southeast shore are safe and clean. *The Healthy Lake Huron – Clean Waters, Clean Beaches* initiative focuses on reducing beach postings due to bacteria levels and the growth of nuisance algae along the coastline from north of Sarnia to Tobermory.

The partners are working together to ensure available resources are targeted at priority areas and to support the efforts of communities and groups that volunteer their time on local water quality improvement projects. Five watersheds are identified as priority areas for action, including: Lambton Shores around Ipperwash Beach; Main and North Bayfield; the North Shore (Garvey/Glen Drain) near Port Albert, and Pine River, south of Kincardine around Point Clark.

Initiatives such as developing and implementing farm stewardship plans, reducing creek bank erosion during storms, and improving septic systems are completed or underway. The plans will also identify requirements for scientific monitoring and targets to measure progress.

For more information visit: www.healthylakehuron.com.



Credit: Map of priority watersheds , Ontario Ministry of Environment



Credit: Dredging and shoreline alteration near Collingwood, Ontario. Google Earth, 2010

Southern Georgian Bay Coastal Initiative

The unique natural setting of the southern Georgian Bay coast between Tobermory and Port Severn has undergone significant human alteration. Although portions of the shoreline remain relatively intact, many areas continue to experience dense development, extensive dredging, and the construction of shoreline protection works. Left unchecked, these activities could have detrimental impacts on natural coastal processes, ecological functions, and aquatic and coastal habitats and species.

Public and agency concern over shoreline alteration spurred the formation of a Steering Committee made up of federal, provincial, and municipal representatives. To date, a great deal of work has been completed, including: a review of how agencies regulate shoreline development; an assessment of shoreline alterations between Tobermory and Port Severn, a guide that clarifies permit application requirements, and a draft stewardship guide for property owners, builders, and planners. Ultimately, the goal is to conserve and restore nearshore and coastal habitat structure and function while allowing for environmentally sustainable development.

International Upper Great Lakes Water Level Study and Public Outreach

The International Upper Great Lakes (IUGLS) Study Board and its Public Interest Advisory Group (PIAG) engaged residents around Lake Huron during the summer of 2011. The Study Board presented preliminary findings and recommendations on potential improvements to the current water level regulation plan for Lake Superior outflows at Sault Ste. Marie and an analysis of restoration scenarios for raising Lake Michigan-Huron water levels. A report discussing options for restoring Lake Michigan-Huron water levels can be found at: (<http://www.iugls.org/IndependentPeerReview.aspx>).



A progress report covering activities from April 1 through September 30, 2011 is available at: <http://www.iugls.org/Docs/10th%20IUGLS%20Progress%20Report.pdf>. Comments from the public show that preferred water levels are very much a perception of the individual, with conflicting views and interests depending on shoreline location. Future efforts to facilitate discussions between people from different regions who have contrasting views are being planned.

Lake Huron Migratory Fish Barrier Project

Migratory river-spawning fishes directly link the Great Lakes to our inland rivers. Because of the importance of these species to both the lakes and their tributaries, they were identified as a key feature for biodiversity conservation in Lake Huron. For most native river-spawning fishes, migration from the lake to tributaries has been reduced through the construction of dams and barriers and certain populations have declined or disappeared. This is particularly evident in species such as lake sturgeon whose low numbers warranted its threatened status in Michigan.

Better information on population distribution will allow managers to more effectively conserve existing migratory fish populations and to prioritize potential locations for restoration where barriers exist. To address this critical need, a list of 28 native river-spawning fish was assembled. Historic and recent information on eleven coastal or riverine fish have been obtained on the U.S. side and important connected and unconnected tributaries were identified for each species. While different parts of the basin are important to different species, some watersheds are more important to a greater number of species than others. Identification of these areas can be used to focus conservation efforts like habitat protection and restoration. ♦



Lake Huron tributary Credit: Dave Reid, Ontario Ministry of Natural Resources

Challenges

Nearshore Fisheries Intensive Sampling for the Cooperative Science and Monitoring Initiative

The 2011 State of the Great Lakes Ecosystem Conference (SOLEC) provided a status report on Lake Huron highlighting dramatic ecosystem changes affecting the open waters and nearshore aquatic ecosystems. Shifts in nutrient cycling and the distribution of nutrients within and between nearshore and offshore regions may be restructuring fish communities and impacting food chains that are critical in supporting the diversity of aquatic life in the lake. Organisms living in the offshore waters of the lake are declining in abundance while nearshore waters are experiencing nutrient enrichment favouring benthic fish communities.

Increased fish production in nearshore waters means rethinking fish community monitoring approaches. As part of the 2012 Cooperative Science and Monitoring Initiative, the United States Environmental Protection Agency (EPA) will fund the Michigan Department of Natural Resources (MiDNR) to document fish species composition and diversity (native and non-native), look for evidence of predatory controls of native and invasive prey fish, and provide information that will allow governmental agencies to better monitor and manage the commercial and recreational fisheries of Lake Huron.

Understanding nearshore fish community dynamics and predicting future changes are significant challenges; especially in the face of uncertainty and the competing public interests. ♦

Next Steps

Upcoming activities taking place on Lake Huron include:

- Implementing the Lake Huron Cooperative Science and Monitoring Initiative in the 2012 field season;
- Coordinating efforts to implement the Healthy Lake Huron – Clean Waters, Clean Beaches Plans;
- Completing a Southern Georgian Bay Coastal Stewardship Guide for Property Owners, Builders, and Planners; and
- Implementing a Lake Huron Watershed Community Collaboration and Youth Summit by the Northeast Michigan Council of Governments modeled after the Lake Huron-Georgian Bay Watershed Framework for Community Action. ♦



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Lake Huron's Biodiversity Features

Effective management of Lake Huron's open and nearshore waters, coastal wetland and coastal terrestrial ecosystems, islands, aerial migrants, and native migratory fish will ensure the conservation of its native biodiversity.



For More Information:

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