



# LAKE SUPERIOR LAKEWIDE ACTION AND MANAGEMENT PLAN

## 2018 Annual Report

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### What is the Lake Superior LAMP?

Under the 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 Lake Superior Lakewide Action and Management Plan (LAMP) is a binational ecosystem-based management strategy for protecting and restoring Lake Superior water quality. The LAMP is developed and implemented by 28 government agencies around the lake, together known as the Lake Superior Partnership.

The Partnership is led by the U.S. Environmental Protection Agency (U.S. EPA) and Environment and Climate Change Canada (ECCC) to facilitate information sharing, set priorities, and assist in coordinating binational environmental protection and restoration activities.

### Overview

Lake Superior is in good ecological condition. Lake Superior's lower-food web (e.g., *Mysis* and *Diporeia*) remains healthy with native top predator fish (e.g., Lake Trout) continuing to dominate the open waters. The lake is also a safe, high-quality source of drinking water.

Although the lake is doing well, it faces many stressors, including aquatic invasive species, climate change, reduced habitat connectivity between the open lake and tributaries, chemical contaminants, substances of emerging concern, and habitat destruction. The table below summarizes overall lake conditions in relation to the GLWQA General Objectives as found in the [State of the Great Lakes 2017 Technical Report](#).

GLWQA GENERAL OBJECTIVES	STATUS FOR LAKE SUPERIOR
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
Support healthy and productive habitats to sustain our native species.	Good
Be free from nutrients that promote growth of algae and cyanobacteria.	Good
Be free from the introduction and spread of aquatic and terrestrial invasive species.	Fair
Be free from the harmful impacts of contaminated groundwater.	Undetermined
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.	Good

To help restore and protect the lake, the Lake Superior Partnership agencies are working alongside communities and organizations to implement the 2015-2019 Lake Superior LAMP. The LAMP includes 29 projects to help protect Lake Superior waters and high-quality habitats, and to address major stressors. This annual update provides examples of accomplishments and explains how challenges continue to be addressed. 💧

### Accomplishments

#### Protecting Water Quality

Many actions around the lake have been undertaken to help maintain Lake Superior as a high-quality source of water. For example, EcoSuperior Environmental Programs (EcoSuperior), with funding from the Ontario Ministry of the Environment, Conservation and Parks (OMEC) and ECCC, continues to lead community-wide voluntary efforts to reduce the releases of toxic pollutants and help prevent new contaminants from becoming a concern.



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Microplastic pollution has become an emerging concern in Lake Superior. EcoSuperior has worked with the City of Thunder Bay and the Thunder Bay Environmental Film Network to raise awareness and generate community dialogue. Activities included free screenings of *A Plastic Ocean* and *Straws*, discussions on local actions, a presentation on the abundance and distribution of microplastics in Lake Superior, and launching the Last Straw Thunder Bay campaign. As a result, in 2017, over 1,000 people and 28 restaurants in the City of Thunder Bay pledged to reduce their use of single use plastic products, including plastic straws. In addition, through a community-wide “Your Butt Goes Here” cigarette butt recycling program and through voluntary community shoreline clean-ups, nearly 1 million cigarette butts have been properly disposed of.



A growing number of businesses in the City of Thunder Bay are testing ways to reduce their use of plastic straws. Photos: EcoSuperior.

### Protecting Habitats and Species

Lake Superior habitats and species remain relatively healthy. Many areas, however, have been altered by human activity, and continue to be affected to this day. Projects all around Lake Superior, including those mentioned below, are contributing to the ongoing protection of habitats and species.

•Parks Canada has contributed to the lakewide effort to eliminate the non-native invasive wetland plant called *Phragmites*. This invasive plant is being targeted as it is migrating north from the lower Great Lakes, where it has infested many wetlands and beaches. In 2017, Parks Canada surveyed the coastline of the Lake Superior National Marine Conservation Area and observed no non-native invasive *Phragmites*. Unfortunately, a few small patches were detected along the Trans-Canada Highway, as close as 4.5 kilometres (2.8 miles) from the shoreline. Agencies from all around Lake Superior continue to share information to combat this invasive plant in the basin.

•In an effort to protect the headwaters, lower estuary, and mouth of Frog Creek, the Red Cliff Band of Lake Superior Chippewa recently acquired more land adjacent to the existing Frog Bay Tribal National Park in Wisconsin. In 2017, two 86 acre (35 hectare) parcels were purchased in the Frog Creek watershed, one near the mouth and one near the headwaters of the creek. These acquired parcels, and the Tribal-owned land that connects them, have been formally designated as the Frog Creek Conservation Management Area (CMA). The CMA now includes close to 300 acres (121 hectares) of land, 1.08 miles (1.7 kilometres) of riparian corridor, almost 118 acres (48 hectares) of wetland and freshwater estuary habitat, along with 3,983 feet (1,214 metres) of undeveloped Lake Superior sand beach. This action will permanently protect the lower estuary and mouth of Frog Creek, while also preserving the cultural and historical use of this location into perpetuity.



The coastline of the Lake Superior National Marine Conservation Area is free of the invasive non-native plant, *Phragmites*. Photo: Parks Canada.

•Wild rice is an important habitat and food source for aquatic wildlife; it is also considered a sacred food to the Lake Superior Ojibwe. Unfortunately, its abundance has significantly decreased partially due to past degraded water quality and habitat conditions. In the St. Louis River estuary, wild rice restoration has been occurring for four years through the Manoomin Partnership. The Partnership works to coordinate efforts of many organizations including the Minnesota Land Trust, Fond du Lac Band of Lake Superior Chippewa Natural Resources (FDLNR), 1854 Treaty Authority, Great Lakes Indian Fish & Wildlife Commission, Wisconsin Department of Natural Resources, Minnesota Department of Natural Resources, St. Louis River Alliance (SLRA), University of Wisconsin, and the St. Croix Tribe. Together the Manoomin Partnership is working to establish 275 acres (111 hectares) of wild rice in the estuary over the next 10 years. In 2017, the FDLNR and Minnesota Conservation Corps seeded 207 acres (84 hectares) using a total of 10,484 pounds (4,755 kilograms) of White Earth Nation wild rice seed. While field surveys by the 1854 Treaty Authority show rice established at densities lower than the restoration target, good progress





is being made in this multiple-year seeding strategy. Douglas County and the University of Wisconsin seeded an additional 25-35 acres (10-14 hectares) in Allouez Bay and the SLRA seeded 10 acres (4 hectares) near Clough Island. The St. Louis River Wild Rice Implementation Plan determined that thousands of acres are suitable for wild rice restoration. Partnership efforts will continue to restore wild rice in identified viable areas.

In Michigan, the Partners for Watershed Restoration (PWR, <http://www.pwr-up.org/>) are celebrating 5 years of working collaboratively to restore the Lake Superior watershed through sharing information and pursuing projects of shared interest throughout the central and western Upper Peninsula. This active group of over 60 partners is working together to address LAMP-identified issues and priorities. Over the past 5 years, these partners have helped to accelerate restoration of the watershed, including implementation of projects representing over \$2 million in funding from various sources. One project, led by the U.S. Department of Agriculture (USDA) Forest Service, Michigan Natural Resources Conservation Service and Superior Watershed Partnership, and funded through the USDA Joint Chief's program, supports a Great Lakes Conservation Corps crew (GLCC). This crew is provided to PWR partners, free of charge, to assist individual organizations on LAMP-aligned projects. In 2018, the GLCC crew worked with the Keweenaw Bay Indian Community, U.S. Fish and Wildlife Service, Keweenaw Land Trust, local North Country Trail Associations, and others on stream restoration work, erosion control, invasive species removal, and native species plantings. The crew was temporarily reassigned for 1 month to provide emergency assistance (delivering water and food, clearing roads, debris clean-up) to residents affected by the flooding in Houghton County in June, 2018. 💧



Seeding wild rice by hand. Photo: Fond du Lac Resource Management.

## Addressing Challenges

### Flooding From Extreme Rain Events

Following a basin-wide drought in the 2000s through early 2010, the Lake Superior basin has recently experienced multiple extreme rain and flooding events. These events have caused significant damage to communities resulting in large plumes of sediment-rich water surging into the lake. The quick change from drought and low lake levels to extreme floods and high lake levels needs to be considered for future resilient coastal and watershed habitat restoration strategies and infrastructure repairs. Lessons learned from past events are being documented and shared. LAMP priorities include building adaptation and resilience into priority projects, especially habitat restoration and rehabilitation projects, to better prepare for extreme weather events.



Church near the Bad River during 2016 flooding. Photo: Bad River Band Natural Resources Department.

In July 2016, an extreme rain event caused 8-12 inches (20-30 centimetres) of rain to fall over an 8-hour period, causing extreme flooding in multiple tributaries to Lake Superior in Wisconsin. The flooding caused numerous evacuations and damaged hundreds of miles (hundreds of kilometres) of roads. Large plumes of sediment-rich water stretched across the southern coast of Lake Superior. A full report is available: <https://wim.usgs.gov/geonarrative/badriver2016flood/>.

Following the 2016 flood, a second monitoring gauge was installed on the Bad River to help the National Weather Service better predict future flood stages and impacts. In June 2018, flash floods hit the south shore again, severely affecting rivers and infrastructure. The new monitoring gauge on the Bad River allowed emergency personnel to get a near real time estimate of when the floodwaters would start impacting the highway.

### Watershed Management by the Red Rock Indian Band in Ontario

Watershed management plans are an effective approach to protect local water resources and address escalating



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environmental challenges from the impacts of climate change and development. The Red Rock Indian Band, an Ojibwe First Nation also known as the Opwaaganasiniing, has begun mapping valued ecosystem components and identifying vulnerabilities with respect to development and climate change. This is part of a community-led project to create a watershed management plan in a part of their traditional territory. This project is generating local dialogue about the environment and the Lake Superior watershed. It is also helping to build more capacity to monitor and manage natural resources within the First Nation's traditional territory. With funding support from the OMECP, and ECCC, work to-date has included hosting a community engagement session, defining the geography of the watershed (with the support of the Grand Portage Band of the Lake Superior Chippewa and Lakehead University), and designing a Vulnerability and Risk Analysis Methodology to support the development of a Watershed Management and Climate Change Adaptation Plan.

### Remediation of Buffalo Reef Stamp Sands, Michigan

The residual wastes left over from years of mining in the Upper Peninsula have left "stamp sands" throughout the Keweenaw Peninsula. The largest of these piles, located in the vicinity of Gay, Michigan, is affecting fish habitat and reproductive success. A number of Lake Superior Partnership agencies have committed to help investigate, evaluate, and implement remediation actions. The adverse impacts of stamp sands include leaching of mercury and copper resulting in many areas being unable to support vegetation. Concentrations of metals in water with stamp sand substrates have been found above toxicity thresholds for many animal and plant species. At Gay, stamp sand migration is threatening Buffalo Reef - an important lake trout and whitefish spawning and nursery site. The Reef is a 2,200 acre (890 hectare) shallow cobble spawning reef that provides 23% of all whitefish spawning habitat in the Michigan waters of Lake Superior. Stamp sands are also encroaching on Grand Traverse Harbor, Michigan. This harbor, located immediately southwest of Buffalo Reef, serves as a primary commercial fishing harbor for tribal boats exercising treaty-guaranteed fishing rights. It is also used by recreational boaters and resource agencies conducting fish assessments.

The U.S. EPA has endorsed the formation of a Buffalo Reef Task Force (BRTF) comprised of state, federal, and tribal agencies. The

goal is to identify and evaluate potential long-term solutions to the stamp sand migration that is impacting Buffalo Reef. An emergency dredging project is scheduled in the fall of 2018 to clear stamp sands from the Grand Traverse Harbor. Next will be the dredging of a deep water "trough" located in the nearshore lakebed between the spawning and nursery area of Buffalo Reef and the stamp sand deposits on the shore (planned for spring of 2019). This dredging work is buying the time needed to give consideration to a long-term solution. The BRTF is developing a document for public input that outlines several alternatives for long-term management of stamp sand.



Main stamp sand pile at Gay. Photo: Great Lakes Indian Fish and Wildlife Commission.

### Outreach and Engagement

You can keep up to date on GLWQA engagement opportunities in the [Engagement](#) section of Binational.net. Information on many of our partner organizations' upcoming outreach and engagement opportunities can also be found at the Great Lakes Commission's [Great Lakes Calendar](#). ♦

## Contact Information

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

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