

LaMPs 2008

Lakewide Management Plan Updates for the Great Lakes



Photo: Lake Michigan shoreline © Frances Twitty.

Lakewide Management: An Ecosystem Approach to Protecting the Great Lakes

Lakewide Management Plans (LaMPs) are action plans that assess, restore, protect and monitor the health of the five Great Lakes. They are implemented by many governmental, tribal/First Nations and nongovernmental partners. The LaMPs are a shining example of the ecosystem approach to adaptive management that integrates environmental, economic and social considerations along ecological rather than geopolitical boundaries.

Lakewide Management Plans have their roots in the 1987 amendments to the Canada-United States Great Lakes Water Quality Agreement originally signed in 1972. This historic agreement commits both countries "to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem." To meet this commitment, the two governments agreed to develop and implement LaMPs for open lake waters.

LaMPs were originally intended to identify critical pollutants that impair beneficial uses of the lakes and to present strategies, recommendations and policy options to restore those beneficial uses. LaMPs have evolved beyond a focus on critical pollutants to encompass a broader ecosystem approach, integrating environmental protection and natural resource management in such areas as habitat restoration and protection. With leadership from the U.S. Environmental Protection Agency and Environment Canada, and in collaboration with other federal, state, provincial and tribal/First Nations agencies, LaMPs have been developed for Lakes Erie, Michigan, Ontario and Superior, and a Binational Partnership Action Plan has been developed for Lake Huron. The complete LaMP reports are being updated every two years to incorporate new scientific data, management priorities and workplans. The 2008 updates are summarized on the following pages.

Finally, important lakewide management efforts are under way for Lake St. Clair. While not considered one of the Great Lakes, Lake St. Clair is an important component of the Great Lakes ecosystem. In 1999, the U.S. Congress authorized development of a comprehensive management plan

for the lake and for the St. Clair River. The plan was completed in 2004 and priority actions are being pursued. Environment Canada is working with First Nations, provincial and local partners to complete a separate plan for the Canadian Lake St. Clair watershed.

These lakewide management initiatives represent an important binational effort to restore, protect and conserve the Great Lakes – the largest system of fresh surface water on Earth. They complement and will help advance recommendations in the *U.S. Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes*. Released in 2005, the strategy was developed pursuant to a Presidential Executive Order calling for a comprehensive restoration strategy and improved coordination of Great Lakes policies, priorities and programs. The complete strategy and associated information is available online at <http://www.gllrc.us>. The lakewide management initiatives also support key results of the *2007 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* that describes how the Canadian federal and Ontario provincial governments will cooperate and coordinate their efforts to restore, protect and conserve the Great Lakes basin ecosystem. More information is available online at <http://www.on.ec.gc.ca/coa>.

As regional restoration efforts for the Great Lakes proceed, the Lakewide Management Plans offer a wealth of data, information, policy recommendations, public input and general "lessons learned" from more than a decade of collaboration among U.S. and Canadian agencies, First Nations and tribal authorities, business and environmental organizations and many others committed to keeping the Great Lakes great.

This special feature provides a brief overview of lakewide management efforts in the Great Lakes, including their goals, progress to date, next steps, and contacts for seeking additional information or providing input. The complete LaMP documents and the 2008 Lake Huron Binational Partnership Action Plan are available online at <http://www.epa.gov/greatlakes/lamp>.





Photo: Put-In-Bay, Lake Erie, from the USEPA Great Lakes National Program Office.

Lake Erie

Lake Erie Overview



Lake Erie is the shallowest and most biologically productive of the Great Lakes, supporting major municipalities, industries, agriculture, recreation and fisheries. The Lake Erie basin is also the most populated basin of the five Great Lakes. At inception, the Lake Erie LaMP focused on establishing an “ecosystem alternative” to choose a management vision to serve as the ultimate goal for restoration priorities and actions. The 2000 Report defined four visions, and the LaMP 2002 Report presented the selected vision

chosen by consensus of LaMP participants. The selected vision emphasized land use decisions and nutrient loadings as chief mechanisms for restoring and maintaining the Lake Erie ecosystem.

The 2004 Lake Erie LaMP Report presented a more detailed vision statement and outlined a habitat strategy to support it. It also reviewed the new Great Lakes Human Health Network and presented watershed implementation activities to restore Lake Erie’s 12 Areas of Concern. The 2004 LaMP Report identified that watershed management is key to achieving LaMP goals, and that future LaMP efforts must facilitate Lake Erie communities’ adoption of watershed approaches to improve local waterways that would, in turn, improve the water quality of Lake Erie and its ecosystem. The entire Lake Erie ecosystem – from inland to waterways to the nearshore to the open lake – is interconnected, and improvement of the individual parts of the system will improve the whole system.

The Lake Erie LaMP 2006 Report contained updated information on the vision, ecosystem management objectives and indicators; habitat; human health; Remedial Action Plans in Areas of Concern and watershed implementation projects; assessment and monitoring; significant ongoing and emerging issues; and pathways to achievement.

Goals and Progress

The Lake Erie LaMP 2008 Report features information about Remedial Action Plans in Areas of Concern and watershed implementation projects; assessment and monitoring; and significant and emerging issues. The 2008 Report also sets into motion a two-year intensive focus on the state of nutrient science within the lake and development of strategies to improve the management of nutrient loadings to the lake.

Remedial Action Plans in Areas of Concern and watershed implementation projects: Remedial Action Plans in Areas of Concern and watershed implementation projects are localized initiatives that benefit the larger lake as well as surrounding communities. The involvement of local groups and agencies is critical to ultimately reducing human impacts on the lake. Over

the past two years, Remedial Action Plans in Areas of Concern and watershed implementation projects have contributed to localized improvements in the Lake Erie ecosystem by restoring and protecting significant habitats in both Canada and the United States, removing contaminated sediment, and improving stormwater management infrastructure and practices.

Assessment and monitoring: 2005 was the Binational Collaborative Research and Monitoring Year on Lake Erie. As part of this effort, research and monitoring was done to gather information to help forecast the onset, duration and extent of oxygen shortages and harmful algal blooms across the basin, and to assess the ecological consequences of oxygen shortages on the food web. The results of this work suggest that different factors influence conditions in the offshore and the nearshore. Possible influences include: zebra and quagga mussels, timing of major storms, changes in the food web, and changes in the type of phosphorus entering the lake as major causes of the lake’s current problems.

Significant ongoing and emerging issues: The Lake Erie LaMP 2008 Report presents a shift in emphasis from assessment of the lake to implementation of activities and projects. Since 2006, the Lake Erie LaMP participants have partnered with the International Joint Commission and the Lake Erie Millennium Network to hold several workshops and discussion sessions to better define implementation and direction of the LaMP. The discussions explored the challenges of jurisdictional complexity related to land use and watershed management, and how those complexities influence ongoing domestic and binational efforts to achieve LaMP goals. Through these discussions, it was agreed that nutrient management remains the highest priority for improving the lake.

Next Steps

In September 2007, Lake Erie LaMP participants were asked to assess the current state of nutrient science and knowledge for the lake and to develop a new binational nutrient management strategy including a suite of nutrient management options to achieve the lake’s desired state. Key initiatives of the Lake Erie LaMP participants over the next two years include:

- The development of a State of the Lake Nutrient (Science) Report and a subsequent Binational Nutrients Management Strategy;
- Finalized development of Lake Erie indicators for assessing progress toward the LaMP Nutrient Ecosystem Management Objective;
- A review of the effectiveness of the current LaMP structure with recommendations for change approved by the Management Committee; and,
- Lake Erie LaMP 2009 Binational Collaborative Research and Monitoring Year planning and implementation (with a focus on the nearshore).



Lake Michigan

Photo: Sailing on Lake Michigan, Chicago, Great Lakes Commission.

Contacts (*Lake Erie, continued*)

Lake Erie LaMP 2008 is available online at www.epa.gov/greatlakes/erie.html. Further information is available from Dan O’Riordan, U.S. EPA, 312-886-7981, oriordan.daniel@epa.gov; or Rick Czepita, Environment Canada, 416-739-4416, Rick.Czepita@ec.gc.ca.

Lake Michigan Overview



Lake Michigan is the second largest of the Great Lakes by volume and drains 45,600 square miles from parts of four states in the United States. The near shore communities are experiencing rapid growth with Chicago, the third largest population center in the United States, sprawling to meet Milwaukee on the north and northwest Indiana on the south. As of the 2000 Census, there were 15,351,202 residents in the Lake Michigan watershed, projected to add another two million by 2030. The lake provides

drinking water for more than 11 million residents, a robust tourist economy, the world’s largest collection of fresh water sand dunes, 28 harbors for ports and marinas, and fishing for food, sport and culture.

Goals and Progress

LaMP 2008 addresses the status, progress and next steps based on the following LaMP goals adopted in 1998.

Goal: “We can all drink the water.” The combination of population growth and climate change projections for drier basin conditions demand work on sustainable water management to ensure meeting this goal. The issues have been addressed by each state and at the local level at the Lake Michigan Watershed Academy Conference in May 2008.

Goal: “We can all swim in the water.” Beach day closings have decreased even as the amount of monitoring has increased and new tools like sanitary surveys are being used to find and control pollution sources.

Goal: “Preventing introduction of invasives.” The passage of national legislation to address the connection between Lake Michigan and the Mississippi River by constructing a barrier between the two systems to prevent movement of invasive species. The State of Michigan has also provided a model of control at the state level.

Goal: “Healthy, diverse and sustainable habitats.” Progress on terrestrial species is exemplified by: grey wolves are no longer listed as endangered, eagles are nesting in northwest Indiana and southeast Wisconsin for the first time in 100 years and black crowned night herons are nesting on Chicago’s

lakefront in an area of restored habitat. Fish restoration success is being reported in tributaries around the basin as stocking for sturgeon adds to the eight tributaries with native sturgeon populations. The Great Lakes Fishery Commission has developed fish habitat objectives for the basin and continues work on restoration of naturally reproducing lake trout populations.

Goal: “Cleaning up contaminated sediments.” All 10 of the Lake Michigan Areas of Concern (AOCs) have had contaminated sediment cleanups, thus removing a pathway for contamination entering the aquatic food web. Additional sediment work is planned as is the development of delisting targets for each AOC including targets for habitat restoration that are unique to each AOC location.

Goal: “Having enough data and information.” Five of the 11 original Lake Michigan Mass Balance tributaries in 2005-2006 were re-sampled for a 10-year update to that project. Reductions in calculated loads of both total mercury and total PCBs were observed at all five sites. In addition, Lake Michigan was selected as one of three national models to test the design of a national monitoring plan. The results will inform the design of the next re-sampling scheduled for the 2010 field year.

Goals: “Partnership and collaboration.” These are well-developed for Lake Michigan working through the Lake Michigan Watershed Academy for local and regional planning commissions, Lake Michigan Forum stakeholder group, Lake Michigan Monitoring Coordination Council and the convening of the State of Lake Michigan Conference, which has been held biennially, with the sixth planned for Milwaukee, Wis., Sept. 29, 2009.

Next Steps

Lake Michigan is in a period of changing conditions due to a wide spectrum of watershed stressors from development, toxic inputs, nonpoint source pollution, water level fluctuations, climate change and invasive species disrupting the food web and ecosystem. Degraded nearshore conditions and the fall outbreaks of botulism causing the death of thousands of shorebirds reinforces the need to focus on nutrient control.

The watershed-based data and information in LaMP 2008 will help tailor needed actions for impaired waters and achieve the LaMP goal of 125,000 acres of wetlands restored and/or protected. The Lake Michigan Forum’s Sustainable Harbors and Marinas Initiative is helping to move the basin forward to the goal of having all ports and marinas participating in a “green” program and the “Clean Boats Everyday” project. Buffers and other green infrastructure tools are a priority for the control of nutrients currently contributing to serious nearshore problems.



Photo: View of Toronto from Lake Ontario, Canada © Dennis Tangney Jr.

Lake Ontario

Contacts *(Lake Michigan, continued)*

The Lake Michigan LaMP status is online at www.epa.gov/greatlakes/michigan.html. Further information about the Lake Michigan LaMP is available from Judy Beck, 312-353-3849, beck.judy@epa.gov; or John Perrecone, 312-353-1149, perrecone.john@epa.gov.

Lake Ontario Overview



The Lake Ontario LaMP provides a framework for coordinating binational actions to address lakewide problems and restore and protect the Lake Ontario ecosystem.

The Lake Ontario Lakewide Management Plan Status 2008 is the latest comprehensive compilation of existing LaMP reports and replaces the 2006 Status. The document contains new and updated information on the state of Lake Ontario, LaMP indicators, habitat and public involvement. The report also provides an update on LaMP workplan actions and progress and next steps.

Other chapters such as beneficial use impairments, sources and loads of critical pollutants, human health, and emerging issues and partnerships will be updated at a later date as new information becomes available.

Goals and Progress

The LaMP established the following ecosystem objectives for Lake Ontario:

- Diverse, healthy aquatic and wildlife communities
- Protected human health
- Sufficient quality habitat
- Responsible stewardship

The 11 ecosystem indicators adopted in 2001 by the Lake Ontario LaMP measure progress in restoring and maintaining the health of the Lake Ontario ecosystem. Indicators include: critical pollutants in water, young fish, herring gull eggs and lake trout; lower food web indicators that track nutrients, zooplankton and prey fish; and upper food web indicators that monitor populations of herring gulls, lake trout, bald eagles, mink and otter.

Overall, according to the indicators Lake Ontario's ecosystem is mixed but improving. All the critical pollutant indicators, as well as the bald eagle, mink and otter indicators are showing progress toward achieving objectives.

Concentrations of many organic compounds and metals in open waters are present in only trace amounts, with some below available water quality objectives. PCB and dieldrin levels have declined over the past 20 years.

Overall, contaminant levels in young fish, herring gull eggs, and lake trout have continued to decline.

Upper food web indicators are showing progress. Herring gull nests are abundant. The bald eagle is considered one of the premier ecological indicators. Occupied bald eagle nesting territories increased to 23 in the basin. There are now three nests on the shoreline with the fledging rate above the target of one eaglet per nest. Significant numbers of mink and otter are present in the basin.

Lower food web and lake trout population indicators point to challenges that appear to be linked to nearshore nutrient levels and invasive exotic species. The sources of these problems were the focus of the Lake Ontario Binational Collaborative Research and Monitoring Year in 2008.

Next Steps

The LaMP parties will continue their cooperative efforts toward the restoration and protection of Lake Ontario and its ecosystem. The updated workplan became effective in January 2007 and outlines specific activities planned or under way by the LaMP participants during the next five years. Special attention will be concentrated on the following activities:

- Coordinating binational monitoring efforts and programs to better assess the health of the system
- Reducing critical pollutant loadings
- Reporting on the status of LaMP's indicators, and adopting new indicators
- Assessing the current status of the lower food web and the fisheries
- Re-evaluating the status of the lake's beneficial use impairments
- Developing a binational habitat conservation strategy and actions
- Conducting public outreach and promoting partnerships and stewardship of the lake and its watershed

Coordinated binational monitoring efforts, particularly those related to ecosystem indicators, will continue to be a special area of emphasis for future years. The Lake Ontario Binational Collaborative Research and Monitoring Year was a major sampling effort just conducted in 2008. This included sampling of emerging chemicals and investigation of the changes in the lower food web. Planning is under way to continue data analysis, disseminate results and evaluate management implications and follow-up that will come from these efforts. Proposed new indicators include physical integrity, coastal wetlands, stewardship and sediment.

Binational cooperative projects in the areas of bald eagle conservation and sediment contaminants monitoring will be continued and expanded. The Binational Biodiversity Conservation Strategy to enhance habitat management will continue. It is a collaboration of 25 agencies, universities



Lake Superior

Photo: Lake Superior shoreline, from John Marsden, Environment Canada.

(Lake Ontario, continued)

and non-profit organizations to integrate the natural resource information and habitat priorities of Ontario and New York into a binational action agenda for Lake Ontario as a single ecosystem. The process involves selecting important conservation targets, ranking threats to them, and then developing recommended strategies. The result will be a binational database, strategy and actions for conservation. The end result will be a scientifically grounded, common vision of priority strategies that partner organizations can pursue.

LaMP participants are cooperating with the International Joint Commission on its study of a possible change in water level control by the Lake Ontario-St. Lawrence River Water Control Board, and adaptive management actions that may be needed to monitor and mitigate any potential adverse impacts of water level control.

Contacts

The Lake Ontario LaMP Status is available online at www.epa.gov/greatlakes/ontario.html. Further information is available from Mike Basile, U.S. EPA, 716-551-4410, Basile.michael@epa.gov; or Pamela Finlayson, Environment Canada, 416-739-5996, Pamela.finlayson@ec.gc.ca.

Lake Superior Overview



Lake Superior contains the largest surface area of any freshwater lake in the world, and is one of the most pristine ecosystems in North America. However, the continuing effects of human influence, including invasive species, industrial pollution, shoreline development, habitat loss, and deposition of airborne contaminants are adversely affecting the Lake Superior ecosystem.

Working collaboratively under the Lake Superior Binational Program, Canadian and U.S. federal, state and provincial governments, tribes and First Nations, environmental groups, industry and the public are taking steps to protect this great legacy for generations to come. The Binational Program has grown considerably since its inception in 1991 and now benefits from the active participation of 26 agencies. The Binational Program has adopted an ecosystem approach to protection of Lake Superior, recognizing the interaction of land, air and water with all living things in the watershed. In addition to the broader ecosystem program, the Lake Superior Binational Program features the unique Zero Discharge Demonstration Program to virtually eliminate in-basin releases of nine critical chemical pollutants by 2020.

The Lake Superior LaMP Report 2000, developed by the Lake Superior Binational Program partners, lays out a management plan for restoring and protecting the Lake Superior ecosystem. The report contains ecosystem goals, targets and actions for restoration and protection according to six themes: critical pollutants, aquatic communities, terrestrial wildlife communities, habitat, human health and sustainability. The Lake Superior LaMP Report 2008 builds on previous editions, although many of the original chapters have been revised, replaced and updated. The Lake Superior LaMP Report 2008 contains 2006-2008 progress reports that include accomplishments, a summary of the restoration and protection actions completed or under way, challenges, and next steps.

Goals and Progress

To ensure ongoing progress toward achieving a sustainable and healthy Lake Superior ecosystem, the Lake Superior LaMP emphasizes these critical long-term goals:

- Achieve zero discharge of nine persistent toxic chemicals by 2020;
- Increase citizen participation in conservation, restoration, and maintenance activities and practices;
- Improve local land use planning;
- Implement protection, maintenance and restoration actions required to achieve ecosystem goals for uplands, wetlands, tributaries and inland lakes, the open lake, and the basin as a whole;
- Gather data and develop indicators for monitoring trends; and
- Disseminate information on successful community sustainability projects and initiatives.

In 2006-2008, key accomplishments were made in both the Zero Discharge and Broader Ecosystem areas of the Lake Superior Binational Program. Under the Zero Discharge Demonstration Program, a Critical Chemical Reduction Milestones report and fact sheet were produced, detailing reductions in critical pollutants from 1990 to 2005. Ongoing and special hazardous waste collection events were held in Canadian and U.S. portions of the Lake Superior basin, as well as outreach and education on the topics of burn barrel/backyard trash burning outreach and education. Two new projects, a Management Strategy for Substances of Emerging Concern in the Lake Superior basin and a Chemical Reduction and Inventory Activities matrix for 2010 Milestone Targets are under way and will help to guide future efforts to reduce pollution in the Lake Superior basin. Building on the work done in previous years, the LaMP continued to work with other organizations to address critical pollutant sources outside the Lake Superior basin.



Photo: Pinery Beach, Lake Huron, Ontario, Canada from Pamela Finlayson, Environment Canada.

Lake Huron

(Lake Superior, continued)

The Broader Ecosystem Program also made progress addressing habitat, aquatic communities and terrestrial wildlife issues. A major accomplishment was refining and revising a set of ecosystem goals that contain specific outcomes, goals and subgoals that are necessary to achieve and protect a diverse, healthy and sustainable Lake Superior ecosystem. This update was coordinated in consultation with the Lake Superior Binational Forum and many stakeholders around the basin. For the first time, the goals also address the emerging issue of climate change, advocating for mitigation and adaptation activities.

In 2007, the Government of Canada designated a National Marine Conservation Area in Lake Superior that is the largest freshwater marine protected area in the world. The Lake Superior National Marine Conservation Area extends from Thunder Cape at the tip of Sleeping Giant Provincial Park in the west, to Bottle Point just east of Terrace Bay and out to the Canada-U.S. boundary, including the waters of Black Bay and Nipigon Bay. This designation followed extensive planning as well as consultations and discussions with north shore communities, First Nations, resource users and stakeholders. With leadership from Parks Canada, work is now focused on developing an interim management plan for the area that will balance protection and sustainable use, explore opportunities to work with others in the provision of quality visitor services, and determine how to increase knowledge and appreciation of the area.

In October 2007, Lake Superior LaMP participants planned and held the *Making a Great Lake Superior 2007* conference in Duluth, Minnesota. The event attracted more than 450 participants from a variety of disciplines including educators, researchers, federal, state, provincial, First Nations, tribal and municipal managers, the public and scientists. Presentations were given on the overall ecosystem health of Lake Superior, with a focus on the effects of climate change.

Next Steps

In general, the next steps for the Binational Program are to:

- Continue to implement projects and priorities identified in the LaMP;
- Continue to support and pursue toxic chemical reduction activities and projects;
- Implement the management framework for substances of emerging concern;
- Focus on preventing the introduction and spread of invasive species;
- Focus on nearshore activities and their connection to water quality;
- Continue communication and outreach activities that will achieve measurable progress toward the Binational Program vision, goals and objectives;
- Continue with priority ecosystem monitoring, mapping, research, and restoration efforts;

- Build capacity in the Binational Program by recruiting additional partners;
- Coordinate with critical Great Lakes initiatives such as the Great Lakes Regional Collaboration, the Great Lakes Binational Toxics Strategy, Great Lakes Remedial Action Plans in Areas of Concern, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem and the Great Lakes Legacy Act; and
- Seek additional support for LaMP implementation from a wide variety of sources.

Contacts

More information about the Lake Superior LaMP is available online at www.epa.gov/glnpo/lakesuperior and through www.Binational.net. Further information is available from E. Marie Wines, U.S. EPA, 312-886-6034, wines.emarie@epa.gov; or Pamela Finlayson, Environment Canada, 416-739-5996, pamela.finlayson@ec.gc.ca.

Lake Huron Overview



Lake Huron's expansive open-lake waters, large watershed area, and relatively undisturbed nearshore areas support a high diversity of aquatic and riparian species of importance to the Great Lakes region. Lake Huron has more than 30,000 islands and has the longest shoreline of any lake in the world. The northern watershed is characterized by conifer forests and cool water streams; the southern watershed

supports extensive agriculture and warm water river systems. The entire binational watershed is home to about 2.5 million people, with relatively low human population densities on both sides of the lake. As a result, Lake Huron retains much of its historic fish and wildlife habitat. Saginaw Bay, Georgian Bay and the North Channel still support some of the most extensive, high-quality coastal habitat in the Great Lakes.

In 2002 the Binational Executive Committee, representing the U.S. and Canadian federal agencies with responsibility for managing the Great Lakes, endorsed the formation of a Lake Huron Binational Partnership to coordinate environmental activities in the Lake Huron basin. Core leadership and coordination for the partnership is provided by U.S. EPA, Environment Canada, Michigan's departments of Environmental Quality and Natural Resources, and Ontario's ministries of Environment and Natural Resources. Membership is flexible and includes other agencies and levels of government, tribes and First Nations, nongovernmental organizations and the public on an issue-by-issue basis.

Goals and Progress

The primary goals of the Lake Huron Binational Partnership effort are



Lake St. Clair

Photo: Lake St. Clair as seen from Harsens Island, Michigan © David Tuz.

(Lake Huron, continued)

pollution reduction activities in areas of obvious importance, such as Areas of Concern (AOCs), and to directly pursue on-the-ground activities to protect areas of high-quality habitat within the Lake Huron basin. In addition to supporting on-the-ground projects, the Partnership tracks the progress being made by Remedial Action Plan efforts in AOCs, the Great Lakes Fishery Commission's Lake Huron Technical Committee, and other domestic and binational efforts that support the restoration and protection of the Lake Huron ecosystem. Existing stakeholder and agency forums are used as much as possible to support the goals of the Partnership. Three issues have been given priority for immediate binational action: contaminants in fish and wildlife; biodiversity and ecosystem change; and fish and wildlife habitat. Other issues are tracked and will be addressed as the Partnership evolves and expands its activities over time.

The 2008-2010 Action Plan provides updated information on environmental trends, identifies priority issues, and promotes management actions to be implemented over the next two-year cycle to address priority issues. Consistent with the adaptive management approach, the Action Plan tracks progress on issues identified in the previous cycle, including contaminants in fish, changes in food web structure and protection of critical habitat. In addition, the Action Plan has been expanded to address emerging issues such as observed increases in nearshore algae; beaches and bacterial contamination; decline in alewife abundance; decline in growth, condition and catch rate of Chinook salmon; and the spread of diseases such as botulism and viral hemorrhagic septicemia (VHS).

Next Steps

The Partnership will be continuing its efforts to improve the state of science and the availability of information for environmental protection and natural resource management agencies working in the Lake Huron basin. Proceedings from the Lake Huron Ecosystem Symposium, a technical conference held in 2006 and sponsored by the Partnership, are now available. A binational Biodiversity Strategy for Lake Huron has been recently initiated to help identify options for protecting the remaining high-quality habitat in the watershed.

The Action Plan highlights many other activities under way that will help protect and restore the Lake Huron ecosystem. Actions are currently being initiated to assess and remove beneficial use impairments in both the Saginaw River/Bay and St. Marys River AOCs.

Contacts

The 2008 Lake Huron Binational Partnership Action Plan is available online

at www.epa.gov/greatlakes/huron.html. Further information is available from James Schardt, U.S. EPA, 312-353-5085, schardt.james@epa.gov; or Rick Czepita, Environment Canada, 416-739-4416, rick.czepita@ec.gc.ca.

Lake St. Clair Overview



Located between lakes Huron and Erie, Lake St. Clair is the smallest lake in the Great Lakes system. While it is not one of the five Great Lakes, it is a vital binational resource that provides a wide array of benefits to millions of U.S. and Canadian residents. The lake is heavily used for fishing, boating, swimming, hunting, drinking water and other purposes. It is among the most biologically diverse ecosystems in North America

and provides critical habitat for fish and migrating waterfowl, particularly in the St. Clair River delta, the largest coastal delta in the Great Lakes.

Lake St. Clair has suffered from serious human-related impacts for decades. Nonpoint source pollution, sewer overflows and leaking septic systems have caused beach closures. Shoreline modifications and agricultural activities have altered natural habitat and reduced wetland acreage. Industrial discharges have contributed toxic pollutants to the lake and its sediments. In addition, aquatic nuisance species, such as the zebra mussel, have substantially altered the lake's ecosystem.

In response to these problems, Congress authorized the U.S. Army Corps of Engineers to develop a comprehensive management plan for Lake St. Clair and the St. Clair River. The Corps began developing the management plan in 2001 in collaboration with the Great Lakes Commission and a coalition of U.S., Canadian and tribal / First Nation agencies. The Lake St. Clair Canadian Watershed Coordination Council, which includes federal, provincial, First Nations and local governments, is developing a management plan for the Canadian portion of the Lake St. Clair watershed that will complement the Corps of Engineers' plan.

Goals and Progress

Congress mandated that the management plan identify the causes of environmental problems facing Lake St. Clair and the St. Clair River; address monitoring needs; provide for timely dissemination of information on environmental concerns; and offer recommendations for restoration measures.

After extensive research and consultation with agencies and the public, the Corps of Engineers released the final management plan in 2004. While the management plan also reflects the Canadian perspective on Lake St. Clair, the document and its recommendations are primarily directed at the U.S.



(Lake St. Clair, continued)

watershed. The plan includes 110 recommendations. The recommendations have been prioritized into six key areas, and priority projects have been developed. The primary concerns include 1) *Phragmites* control; 2) habitat protection; 3) establishing a real-time monitoring system; 4) integrating modeling with monitoring; 5) eliminating illicit discharges from Lake St. Clair; and 6) a Lake St. Clair Watershed Information Management System. Implementation has already begun in several areas.

Implementation funding for the management plan has so far been provided through a combination of federal grants, congressional and state appropriations, and local cost share. The Water Resources Development Act of 2007 authorizes \$20 million to implement further recommendations from the Lake St. Clair Management Plan through appropriations and Congressional adds. Federal appropriation (funding) to support the implementation is now needed.

The Lake St. Clair Canadian Watershed Coordination Council has developed the Lake St. Clair Canadian Management Plan to complement the U.S. management plan. The proposed plan summarizes the findings from the Lake St. Clair Canadian Technical Report, identifies management issues and makes recommendations for how to improve the current state of the Lake St. Clair Canadian watershed. In Canada, local coordination is being led by the Lake St. Clair Canadian Watershed Coordination Council. Management recommendations for Lake St. Clair have been developed in consultation with First Nations residents and the public. The recommendations focus on eight key areas: 1) Land Use Management; 2) Commercial Navigation and Recreational Boating; 3) Sources of Pollution; 4) Human Health; 5) Habitat Biodiversity; 6) Fishing and Hunting; 7) Monitoring, Scientific Studies and Data Management; and 8) Governance.

The Canadian Management Plan has recently been finalized and submitted for approval to agencies representing the Canadian Watershed Coordination Council. A Public and First Nation Consultation Report was included with the Management Plan to be approved. Release of the Lake St. Clair Canadian Watershed Management Plan and the Public and First Nations Consultation Report will follow upon approval by the agencies.

Next Steps

In the near term, the priority for the U.S. Lake St. Clair watershed is to find local funding for two projects – a real-time monitoring system and control of *Phragmites*, an invasive reed. Long-term goals include soliciting local commitment, establishing sustaining funding options and a formal process for collaboration.

The development of a Lake St. Clair Canadian workplan will be the focus of Canadian efforts over the next year. Once complete, participating agencies will be asked to adopt and support priority actions identified in the workplan. These actions are: 1) support the implementation of agricultural and rural, industrial and urban beneficial management practices and programs throughout the watershed to enhance water quality, water quantity and habitat sustainability; 2) support outreach and education initiatives throughout the watershed that promote sound land use management practices, environmentally friendly boating and habitat restoration/protection projects; 3) continue to investigate the sources and effects of nonpoint source pollution where they are poorly understood, and monitor the impacts of remediation projects and current legislation (e.g., Ontario Nutrient Management Act); 4) develop remediation programs that address specific issues from a watershed-wide perspective, and involve collaborative action by local, regional, provincial and federal organizations; and 5) eliminate regulatory exceedances from point sources of pollutants.

Contacts

The U.S. St. Clair River and Lake St. Clair Comprehensive Management Plan is available online at www.glc.org/stclair. For information, contact Patrick Kuhne, U.S. Army Corps of Engineers, Detroit District, 313-226-6767, Patrick.A.Kuhne@usace.army.mil or Adam Fox, U.S. Army Corps of Engineers, Detroit District, 313-226-6710, Adam.P.Fox@usace.army.mil. Information on the U.S. Lake St. Clair Coordinating Council is available from Rose Ellison, U.S. EPA, 734-692-7689, ellison.rosanne@epa.gov. Information on the Lake St. Clair Canadian Watershed Coordination Council is available from Marie-Claire Doyle, Environment Canada, 905-336-6423, Marie-Claire.Doyle@ec.gc.ca.

For More Information

Federal Agencies

U.S. Environmental Protection Agency – <http://www.epa.gov/greatlakes>
Environment Canada - <http://www.on.ec.gc.ca/greatlakes>
Binational.Net – <http://www.binational.net>

State and Provincial Agencies

Illinois Environmental Protection Agency - www.epa.state.il.us
Indiana Dept. of Environmental Management - www.in.gov/idem
Michigan Dept. of Environmental Quality - www.michigan.gov/deq
Minnesota Pollution Control Agency - www.pca.state.mn.us
New York Dept. of Environmental Conservation - www.dec.ny.gov
Ohio Environmental Protection Agency - www.epa.state.oh.us
Ontario Ministry of the Environment - www.ene.gov.on.ca
Ontario Ministry of Natural Resources - www.mnr.gov.on.ca
Pennsylvania Dept. of Environmental Protection - www.dep.state.pa.us
Wisconsin Dept. of Natural Resources - www.dnr.state.wi.us

Regional and Binational Agencies

International Joint Commission – www.ijc.org
Great Lakes Commission – www.glc.org
Great Lakes Fishery Commission – www.glfcc.org

Information Resources

Great Lakes Information Network (GLIN) - www.great-lakes.net
Great Lakes Water Quality Agreement - www.ijc.org/rel/agree/quality.html
Great Lakes Regional Collaboration - www.glrcc.us
Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem - www.on.ec.gc.ca/coa
Great Lakes Regional Research and Information Network (GLRRIN) - www.glrin.info

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2805 S. Industrial Hwy., Suite 100
Ann Arbor, MI 48104-6791
734.971.9135 www.glc.org