Draft: June 17, 2016

2016 Progress Report of the Parties

U.S. spelling is used throughout this report except when referring to Canadian titles. Units are provided in both metric and U.S. customary units.

ISSN …
Cat. No.: …
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EXECUTIVE SUMMARY

The Great Lakes Water Quality Agreement of 2012 ("Agreement" or "GLWQA") included a new requirement that the United States and Canada prepare a Progress Report of the Parties (Report) "to document actions relating to this Agreement". This reporting requirement added a measure of accountability to the Agreement, as the Report is to be provided to the public and the International Joint Commission. Consistent with that requirement, the Parties are pleased to release this first Progress Report of the Parties, documenting the actions taken since the Agreement took effect.

"Standing Up" the Agreement

Even before the Agreement took formal effect in February of 2013, the Parties had already begun the work of "standing up" the new Agreement. While largely administrative in nature, this time-consuming work was essential to creating and implementing the organizational structure required under the Agreement. The Great Lakes Executive Committee had to be called to order, Annex Subcommittees and their task teams had to be staffed and organized, activities had to be prioritized, policies debated, and responsibilities assigned. Further, given the cooperative approach that underpins the Agreement, these structural activities were not limited to the Parties; they required the very active participation of the Parties' many partners, including states and provinces and indigenous nations on both sides of the border. Ultimately, as of the writing of this Report, the Parties can report that much of the necessary administrative and organizational work is finished. Consequently, in the upcoming triennial cycle of 2017-2020, the Parties will be able to concentrate more heavily on the implementation of substantive restoration and protection activities.

Key Actions Completed Under the Agreement

Notwithstanding the efforts needed to "operationalize" the 2012 Agreement, during the past three years the Parties were still able to undertake and complete (with the assistance of their many partners) a host of actions in furtherance of the Agreement's purpose: restoring and maintaining the chemical, physical, and biological integrity of the waters of the Great Lakes. These actions will be described in detail in subsequent sections of this Report. However, some actions are especially noteworthy:

- The Parties effectively implemented a new system, under Agreement Article 6(c), of providing notification to interested parties of planned activities that could lead to a pollution incident or that could have a significant cumulative impact on the waters of the Great Lakes;

- The U.S. "delisted" the Presque Isle (Pennsylvania), Deer Lake (Michigan) and White Lake (Michigan) Areas of Concern, signifying that remedial actions were completed and elimination of environmental impairments was confirmed. In addition, all necessary remedial actions were completed at other AOCs: Nipigon Bay in Canada; and Sheboygan Harbor (Wisconsin), Waukegan Harbor (Wisconsin), Ashtabula (Ohio), and St. Clair (Michigan) in the United States.

- The Parties developed a "Nearshore Framework", which provides a mechanism for undertaking a systematic, integrated and collective approach for assessing nearshore health and identifying and communicating cumulative impacts and stresses;

- The Parties developed a Lakewide Action and Management Plan for Lake Superior;

- The Parties identified eight chemicals as the first *Chemicals of Mutual Concern* so designated under the Agreement;

- The Parties set phosphorus load reduction targets for the western and central basin of Lake Erie after extensive analysis of phosphorous sources and loads and have begun to develop Domestic Action Plans loads to achieve the 40% reduction;

- The Parties significantly reduced the risk of the introduction of aquatic invasive species to the Great Lakes via ballast water discharges from saltwater vessels. Because of compatible ballast water exchange regulations between Canada and the United States and stringent binational enforcement, no new invasive species attributable to the ballast water of these ships has been reported in the Great Lakes since 2006.

- The Parties undertook a host of invasive species control and prevention measures (including the development and implementation of an AIS early detection and rapid response initiative) and no non-native species became established in the Great Lakes during the last three years.

- The Parties oversaw the development of lakewide habitat and species protection and restoration conservation strategies (i.e., Biodiversity Conservation Strategies) for all five of the Great Lakes.

- The Parties jointly developed a report on the relevant and available Great Lakes groundwater science entitled *Groundwater Science relevant to the Great Lakes Water Quality Agreement: A Status Report*;

- Canada developed a report entitled *State of Climate Change Science in the Great Lakes Basin: A Focus on Climatological, Hydrologic and Ecological Effects* report in 2015. The report synthesizes the state of climate change impacts in the Great Lakes basin and identifies key knowledge gaps

- The Parties updated and revised the suite of ecosystem indicators used to report on the state of the Great Lakes to align the indicators to the General Objectives of the 2012 GLWQA;

These highlighted actions, while significant, represent only the first concrete steps in restoring and protecting the Great Lakes under the 2012 Agreement. More importantly, they reflect the vigor with which the Parties intend to implement the Agreement over the next three years.

INTRODUCTION

The Great Lakes contain a significant portion of the world's freshwater, containing one fifth of global fresh surface water. The Great Lakes are immensely important to both Canada and the United States, environmentally, economically, and socially.

The Canada-United States Great Lakes Water Quality Agreement ("GLWQA" or "Agreement") was first signed in 1972. Over the course of its more than forty-year history, the Agreement has served as an important mechanism for coordination of actions by Canada and the United States, working in cooperation with other levels of government, non-governmental organizations, industry, Indigenous peoples, and the public to address threats to Great Lakes water quality and ecosystem health.

Over the last 45 years, Canada and the United States have taken action to address many threats to Great Lakes water quality and ecosystem health. In many locations, water quality has greatly improved. Most notably, levels of many persistent toxic substances (e.g., give example) in the Great Lakes have been reduced by more than 90 percent. As a result, the frequency of deformities in waterfowl and tumours in fish, which were commonplace in the Great Lakes in the 1980s, are now a rarity **(Everyone Agrees?).** Sentinel species such as the Bald Eagle, once extirpated from the Great Lakes, now thrive along Great Lakes shorelines. The rapid recovery of a "dead" Lake Erie in the 1980s is another globally-known success story. In the decades leading up to the 1970s, loadings of nutrients, particularly phosphorus from municipal sewage treatment plants and other anthropogenic sources, visibly degraded Lake Erie. Stirred by public concern, governments responded with vigor to the problem in the 1960s and 1970s, resulting in measurable reductions in phosphorus inputs and a steep reduction in algal blooms. These controls represented an unprecedented success in producing environmental results through international cooperation.

Despite these past successes, the lakes continue to face threats posed by nutrient discharges, releases of toxic substances, invasive species, loss of wetland and other habitat, climate change and other factors. Continued action is required to address these existing threats, and to address new threats as they are identified.

In 2012, the GLWQA was once again amended and strengthened. The 2012 Agreement: 1) updates approaches to science and management; and 2) reaffirms existing commitments to restore degraded Areas of Concern, to address the threats posed by excess nutrients, chemicals of mutual concern, and discharges from vessels, and to undertake vital scientific coordination and research. In addition, the new Agreement includes new commitments to address other significant challenges to Great Lakes water quality, including threats from aquatic invasive species and climate change, as well as the loss of habitat and species.

One of the new commitments made by Governments in the Agreement was to enhance accountability and reporting by, for the first time, requiring the production of a Progress Report of the Parties. In accordance with the GLWQA, the Progress Report of the Parties is to be prepared by Canada and the United States, in consultation with representatives of federal governments, state and provincial governments, tribal Governments, First Nations, Métis, municipal governments, watershed management agencies, and other local public agencies. The Progress Report of the Parties contains an overview of binational and domestic activities that have contributed to the achievement of GLWQA objectives.

This document represents the first Progress Report of the Parties prepared under the 2012 Great Lakes Water Quality Agreement. Subsequent Progress Report of the Parties will be issued every three years.

Binational activities are coordinated through the Great Lakes Executive Committee . Following signing of the GLWQA in September of 2012, a significant amount of effort was devoted to the establishment of

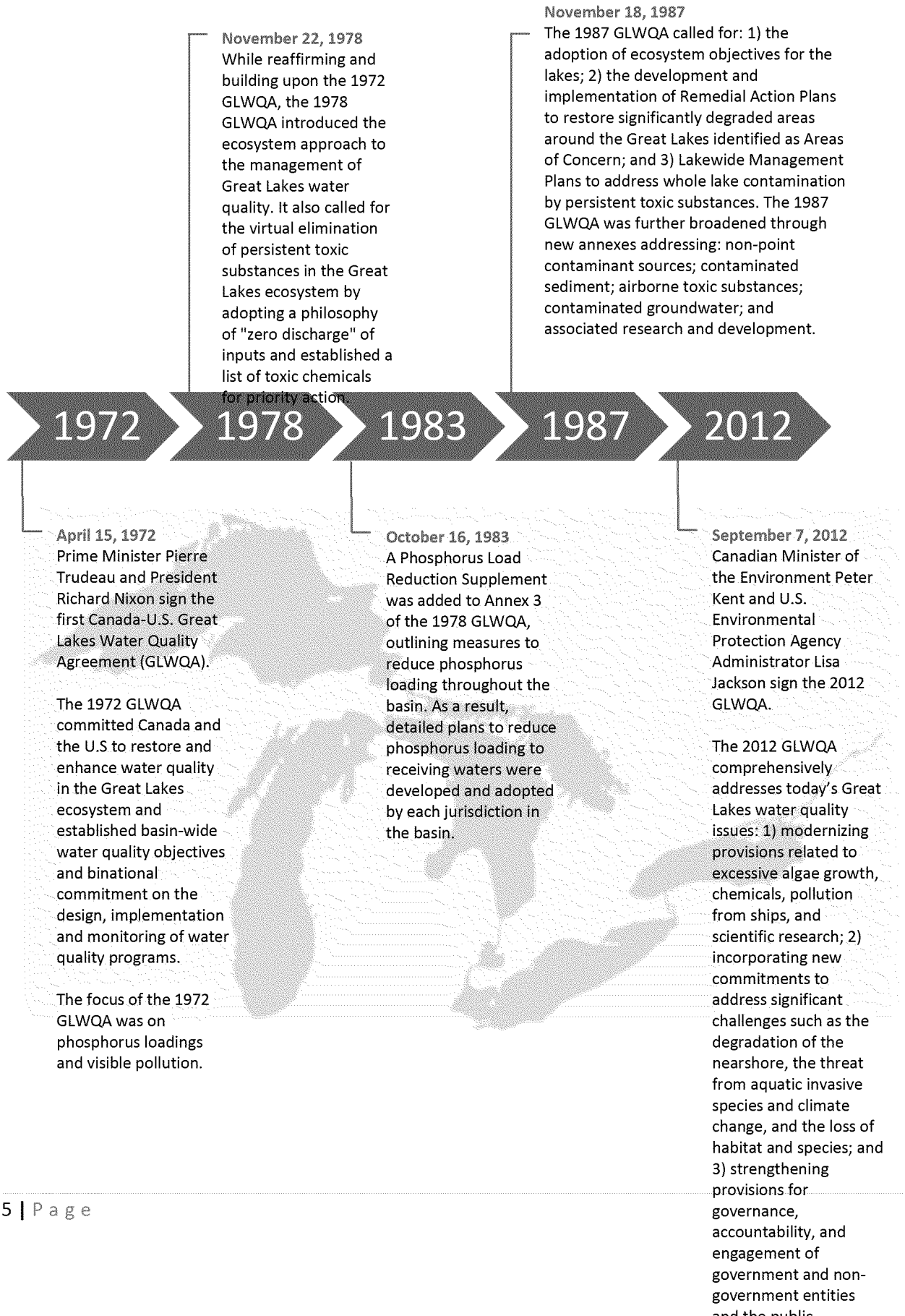
management processes and structures necessary to drive the Agreement's implementation. Annex Subcommittees and Task Teams have been created to engage a large and diverse group of organizations, institutions and experts in carrying out the necessary activities to support undertaking the commitments laid out in the Agreement.

Within Canada, the principal mechanism for coordination of Great Lakes activities is the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014 (COA), which entered into force in December, 2014. A series of Canada-Ontario Agreements date back over forty years and have provided a framework for cooperation and coordination between Ontario and Canada's activities to restore, protect and conserve Great Lakes water quality and ecosystem health, as well as identify joint priorities and actions to help deliver on commitments under the GLWQA.

Within the United States the principal mechanism for coordination and implementation of Great Lakes activities is the Great Lakes Restoration Initiative (GLRI). GLRI was initiated in 2010 through a congressional appropriation of $475,000,000 for Great Lakes restoration and protection work and the formation of an Interagency Task Force (IATF) and Regional Working Group (RWG) chaired by the U.S. Environmental Protection Agency. The IATF and RWG consists of sixteen federal departments or agencies, which work closely together to: 1) identify Great Lakes restoration and protection priorities; 2) make project funding decisions, and 3) keep track of and report on project results.

For those wishing additional information on Great Lakes activities, including how to get involved in helping to restore and protect the Great Lakes, additional information is available at the following websites: www.ec.gc.ca/greatlakes; www.epa.gov/greatlakes; and www.binational.net.

Figure 1 – The history of the Great Lakes Water Quality Agreement



The 2012 Agreement is generally divided into two parts. The first part consists of thirteen Articles, which express the aspirations of the Parties, set forth the overall goals of the Agreement, and describe the "mechanics" of the Agreement. The second part of the Agreement consist of ten Annexes, each of which addresses a particular threat (e.g., invasive species, climate change) or provides specific direction on the implementation of the Agreement (e.g., Lakewide Action and Management Plans, Science).

REPORTING AGAINST KEY COMMITMENTS FROM ARTICLES

Article 3: Progress in achieving General Objectives, Lake Ecosystem Objectives and Substance Objectives.

- The 2012 GLWQA commits Canada and the United States to maintaining a set of comprehensive, science-based ecosystem indicators in order to be able to assess and report to the public on the state of the Great Lakes. Binational reporting on the State of the Great Lakes has been ongoing since 1994. Over the past three years the Parties have updated and revised the suite of ecosystem indicators used to report on the state of the Great Lakes to align the indicators to the General Objectives of the 2012 GLWQA. This allows the State of the Lakes indicators to be used to assess whether progress is being made in relation to accomplishing the objectives set out by Governments in the 2012 GLWQA. Information on the state of the Great Lakes will be presented at the Great Lakes Public Forum in October, 2016 for public review and comment. A final State of the Great Lakes report will be available in 2017.

- The 2012 GLWQA also calls for the development of lake-specific ecosystem objectives, to serve as benchmarks against which to assess status and trends in ecosystem health. Work has begun on development of Lake Ecosystem Objectives for Lake Erie. Finalization of these objectives will include extensive consultation and engagement. Work to develop Lake Ecosystem Objectives for lakes Huron, Ontario, Michigan and Superior will follow.

Article 5: Establishing the Great Lakes Executive Committee.

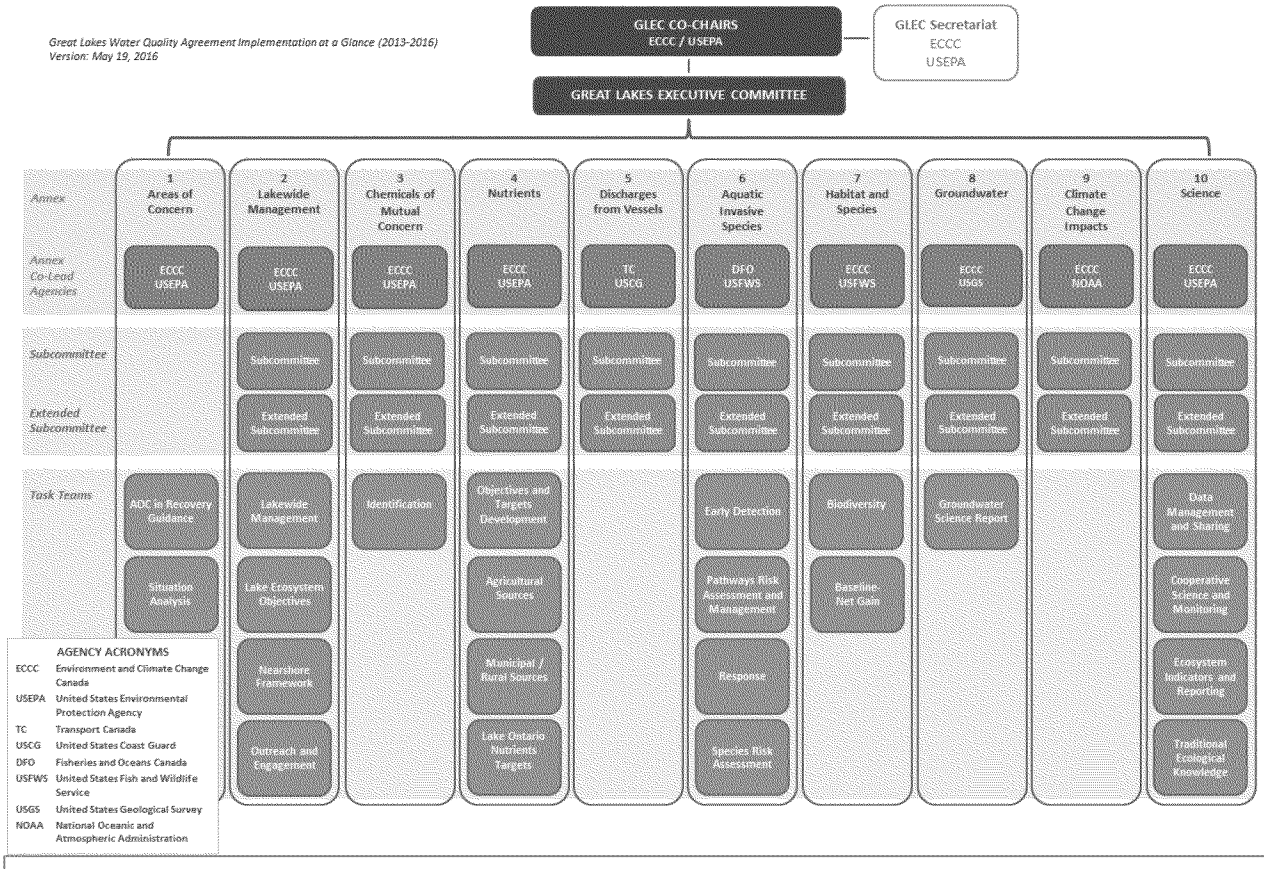
- A Great Lakes Executive Committee (GLEC) was established to replace the former Binational Executive Committee. The GLEC has a significantly expanded membership including senior-level representatives from the Governments of Canada and U.S., state and provincial governments, tribal governments, First Nations, Métis, municipal governments, watershed management agencies, and other local public agencies. The inaugural meeting of the GLEC was held on December 5-6, 2012 in Toronto, Ontario. The GLEC has met biannually since then, alternating meeting locations between Chicago, Illinois, and Toronto, Ontario. Summaries of the past GLEC meetings are available at binational.net (http://binational.net/category/mtg-ru/).

- The GLEC provides a forum for GLEC members to share information and discuss issues relevant to the implementation of the Agreement. The meetings have been instrumental in coordinating the activities of departments, agencies, organizations and peoples represented in the GLEC membership. Meetings are open to the public, attracting attendance from observers including the Province of Quebec, the International Joint Commission, the Great Lakes Commission, the Great Lakes Fishery Commission, environmental non-governmental organizations, industry representatives and members of the interested public – all of which have provided significant contributions and

advice to the GLEC.

- The GLEC has created a formal subcommittee structure to engage member organizations and others in working binationally to plan and coordinate actions to implement the ten Annexes contained in the 2012 GLWQA. Annex-specific subcommittees are co-led by a Canadian and U.S. representative. Extended subcommittees have been created to advise and provide input to the Annex Co-Leads and to the Annex Subcommittee; while Task Teams have been formed to perform specific tasks required to meet the Annex's commitments.. The Annex Subcommittee structure has allowed a significant amount of work to be accomplished over the first three years of the implementation of the 2012 GLWQA, engaging a large number of organizations and individuals; this work will be discussed in subsequent chapters of this report. Figure 2 depicts the Annex Subcommittees, Extended Subcommittees, and the Task Teams that existed for each Annex between 2013 and 2016.

Figure 2 – Great Lakes Water Quality Agreement Implementation at a Glance (2013-2016)



The Subcommittee, consisting of representatives from GLEC member agencies and organizations, assists the Annex Co-Leads in coordinating and undertaking activities in support of meeting commitments of the Annexes.

An Extended Subcommittee, consisting of representatives from GLEC member agencies and organizations and other entities, advises and provides input to the Annex Co-Leads and Subcommittee.

A Task Team, consisting of representatives from GLEC member agencies and organizations and others entities, may be established to perform specific tasks over a specified period of time, as required to meet Annex commitments.

Article 5: Creating binational priorities for science and action.

The process of developing binational priorities builds consensus on the essential science and action required to restore and protect Great Lakes water quality and ecosystem health. In addition, communicating clear priorities enables GLEC members to engage others in working cooperatively to achieve the science and action priorities. Canada and the Unites States presented proposed binational priorities for science and action for public input at the 2013 Great Lakes Public Forum on September 9-10, 2013. The 2014-2016 binational priorities for science and action were subsequently finalized and posted on binational.net (www.binational.net/2014/03/20/psa-pasa-2014) in March, 2014.

The Parties proposed binational priorities for science and action for 2017-2019 will be presented at the 2016 Great Lakes Public Forum for public input.

Article 5: Convening a Great Lakes Public Forum.

- Canada and the Unites States held the first Great Lakes Public Forum on September 9-10, 2013. The Forum provided an opportunity for Canada and the United States to discuss and seek public comment on the state of the lakes and binational priorities for science and action. The Forum also provided an opportunity for the International Joint Commission to discuss the Parties' progress reporting and the Commission's assessment of progress. Further information on the Forum, including the agenda, and other materials are available at binational.net (www.binational.net/2013/10/01/great-lakes-public-forum-2013).

- The second Great Lakes Public Forum will be held on October 4-6, 2016 in Toronto, Canada. The Forum will provide an opportunity for public input on: progress in relation to the implementation of the 2012GLWQA; the state of the Great Lakes; and priorities for science and action.

Article 5: Convening a Great Lakes Summit.

- The GLWQA commits Canada and the United States to convening a summit meeting between the Parties to the GLWQA and the Great Lakes related commissions: the Great Lakes Commission, the Great Lakes Fishery Commission and the International Joint Commission. The purpose of the Summit is to promote increased coordination and effectiveness in the environmental management of the Great Lakes. The first Summit meeting was held on September 11, 2013, and included: 1) discussion of the missions, roles and responsibilities of the Commissions in relation to the GLWQA; 2) opportunities for enhanced collaboration between the Commissions and Canada and the United States on Lakewide Action and Management Plans; 3) coordination of the science and monitoring undertaken by Canada, the United States and the Commissions; and 4) use of emerging tools and gap analyses in addressing excessive nutrient levels in Lake Erie.

- In addition to holding these formal Summit meetings, Canada and the United States have increased their engagement with the Commissions by: 1) holding meetings in conjunction with the biannual GLEC meetings; 2) holding other *ad hoc* meetings to discuss GLWQA-related issues; 3) by increasing communication between Commissions and the Lakewide Management Annex Co-Leads via periodic conference calls; and, 4) granting Commission participation or observation on all of the Annex Subcommittees.

- A 2016 Great Lakes Summit will occur during the October, 2016 Great Lakes Public Forum to continue the successful dialogue between Canada and the United States and the Commissions.

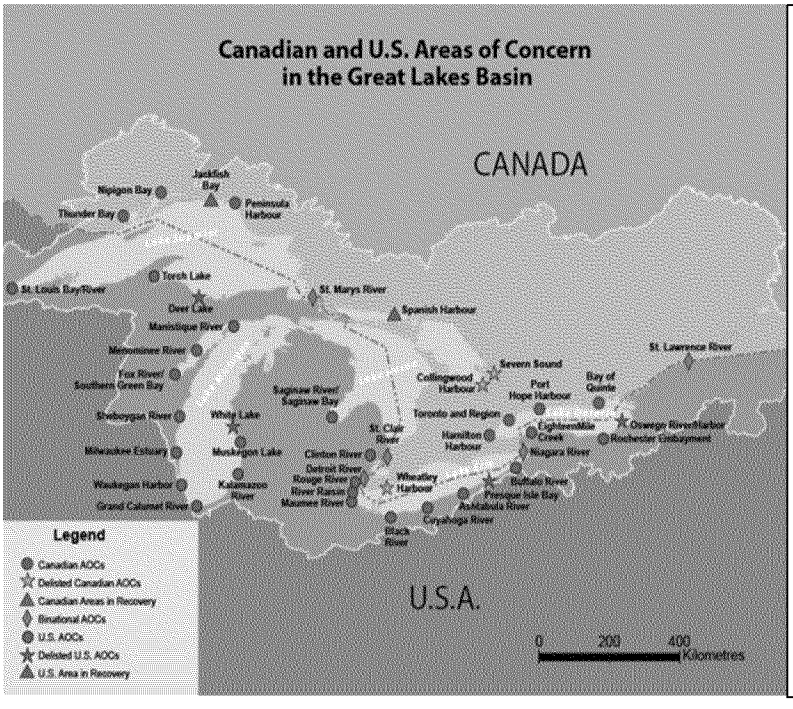
Article 6: Providing notification of planned activities that could lead to a pollution incident or have a significant cumulative impact on the Waters of the Great Lakes.

- Pursuant to Article 6(c), Canada and the United States have implemented procedures providing for notifications, of planned activities that could lead to a pollution incident or that could have a significant cumulative impact on the Waters of the Great Lakes. Proposed notifications are solicited from GLEC members and observers on a quarterly basis. Information on the notifications conveyed by one country to the other is available at http://binational.net/2015/05/06/notifications/.

AREAS OF CONCERN ANNEX

OVERVIEW

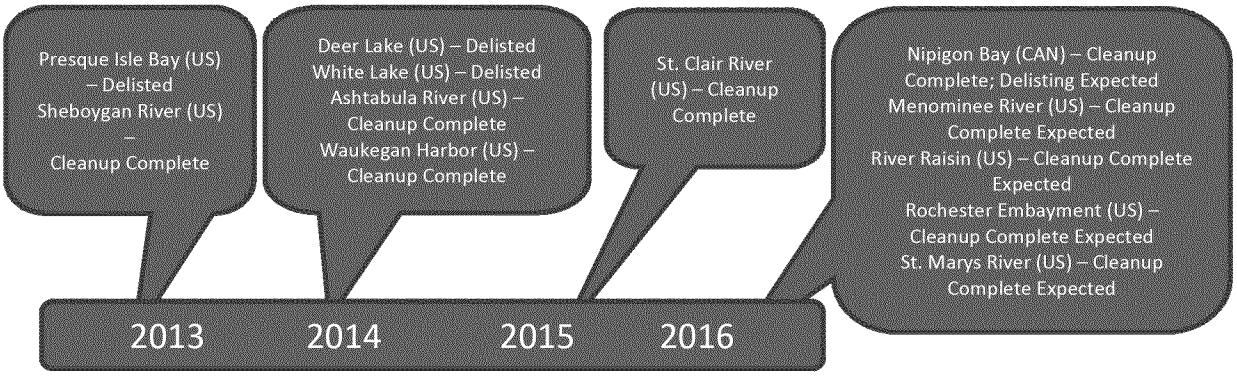
Pursuant to the 1987 GLWQA, the Parties designated a total of 43 AOCs, 31 in the U.S. and 12 in Canada. AOCs are the most environmentally degraded sites within the Great Lakes, based upon an assessment of "beneficial use impairments", and contribute to degradation on a lakewide and Great Lakes ecosystem wide basis. The Areas of Concern Annex in the 2012 GLWQA reaffirms the commitment of Canada and the United States to restore water quality and ecosystem health in Great Lakes Areas of Concern (AOCs), and as described below, the Parties made have significant progress under this Annex in the last three years. Implementation of the Area of Concern Annex is co-led by Environment and Climate Change Canada and the United States Environmental Protection Agency.



Fourteen Beneficial Use Impairments (BUIs) contributing to a location's designation as an AOC:

- Restrictions on fish and wildlife consumption;
- Tainting of fish and wildlife flavour;
- Degradation of fish wildlife populations;
- Fish tumours or other deformities;
- Bird or animal deformities or reproduction problems;
- Degradation of benthos (organisms living on lake bottoms);
- Restrictions on dredging activities;
- Eutrophication (undesirable algae);
- Restrictions on drinking water consumption, or taste and odour problems;
- Beach closings;
- Degradation of aesthetics/visual appearance;
- Added costs to agriculture or industry;
- Degradation of phytoplankton and zooplankton populations (organisms that provide a crucial source of food to fish);
- Loss of fish and wildlife habitat.

PROGRESS TOWARD MEETING GLWQA COMMITMENTS



- Between 2013 and 2016, the U.S. delisted the Presque Isle (Pennsylvania), Deer Lake (Michigan) and White Lake (Michigan) AOCs, signifying that remedial actions were completed and elimination of beneficial use impairments was confirmed through environmental monitoring and assessment.

- To date, the Parties have delisted seven of the 43 AOCs: three in Canada (Collingwood Harbour in 1994; Severn Sound in 2003, and Wheatley Harbour in 2010) and four in the United States (Oswego in 2006, Presque Isle in 2013, and Deer Lake and White Lake in 2014).

- Canada has designated two Canadian AOCs as AOCs in Recovery signifying that all remedial actions have been completed and monitoring of natural recovery is in progress (Spanish Harbour in 1999 and Jackfish Bay in 2011).

- The Parties have completed all remedial actions at five other AOCS: Nipigon Bay in Canada; and Sheboygan Harbor (Wisconsin), Waukegan Harbor (Wisconsin), Ashtabula (Ohio), and St. Clair (Michigan) in the United States. With remedial work completed, these five AOCs are now being monitored to determine when the beneficial use impairments have been fully addressed and delisting can occur.

- Work to restore environmental quality is continuing in all AOCs. By 2019, Canada projects completion of all remedial actions in four additional AOCs: Bay of Quinte, Peninsula Harbour, Niagara River and St. Lawrence River – Cornwall; while the United States plans to complete management actions necessary for delisting in five additional AOCs: Black River, Buffalo River, Clinton River, Manistique River and Muskegon Lake.

BINATIONAL ACTIONS TAKEN

- Efforts to restore the 43 AOCs have been underway for over 25 years. Working with provincial, state and local governments, tribes, First Nations and community members and stakeholders, Canada and the United States have made significant progress in assessing beneficial use impairments, identifying their causes, engaging local communities in developing remedial action plans, and in implementing actions to restore beneficial uses of the environment. Action to restore Areas of Concern is primarily carried out domestically, however, Canada and the United States share information on approaches and lessons learned on an ongoing basis in order to increase the efficiency and effectiveness of AOC remediation efforts in both countries.

Supporting overall implementation of AOC remediation.

- A guidance document was developed to provide advice on the process, principles, challenges and roles and responsibilities for designating an AOC as an AOC in Recovery. The document recommends five factors to be considered before making a proposal or when reviewing a proposal to designate an AOC as an AOC in Recovery pertaining to restoration actions, delisting criteria, monitoring, considering time for recovery, and considering stakeholder input in the designation. The document will contribute to ensuring a consistent approach to designation of AOCs in recovery.

- A Situation Analysis report was completed to document how AOC restoration activities are currently being implemented in Canada and the United States, including a review and comparison of agency roles and practices; status of and processes for RAPs, including delisting criteria, BUI removals, AOC delisting and public involvement; key challenges, targets and objectives; and recommendations on guidance needs and information sharing. The document will assist agencies in implementing continuous improvements to current practices.

DOMESTIC ACTIONS TAKEN

CANADA

Within Canada, Environment and Climate Change Canada and the Ontario Ministry of Environment and Climate Change share the lead for implementation of AOC remediation efforts. Progress is being made in all Canadian AOCs. Table X shows the status of BUIs in each Canadian AOC and Table X shows the status of remaining actions required to delist, or remove the designation of, a particular Canadian AOC.

In 2015 in-water construction began on the largest remediation project ever undertaken in a Canadian AOC. It involves the clean-up of 700,000 cubic meters of severely contaminated sediment in the Hamilton Harbour AOC. Other notable Canadian AOC remediation projects undertaken during the 2013 to 2016 period include xxx in the xxx AOC, xxx in the xxx AOC and xxx in the xxx AOC. More information on the status of beneficial use impairments in Canadian AOCs, projects completed, and remaining issues to be addressed, can be viewed at http://www.ec.gc.ca/raps-pas/default.asp?lang=En&n=A290294A-1.

UNITED STATES

AOC clean-up efforts in the U.S. are led by U.S. EPA, with significant contributions from other federal

agencies (i.e., NOAA, Army Corps of Engineers), states, local governments and communities, and NGOs. Between 1987 and 2010, only one U.S. AOC was delisted. However, since the inception of GLRI, three additional AOCs have been delisted and management actions have been completed at __ additional U.S. AOCs. In addition, EPA projects that management actions will be completed at __more AOCs by 2019. This remarkable pace of AOC restoration is due to the GLRI. First, the GLRI appropriation language makes clear that cleaning up and restoring AOCs is a priority. Second, federal agencies have been able to utilize over $_____ in GLRI funding to pay for this work.

Status of Beneficial Use Impairments in the Canadian Great Lakes Areas of Concern

AOC	Restrictions on fish & wildlife consumption	Tainting of fish & wildlife flavour	Degradation of fish & wildlife populations	Fish tumours or other deformities	Bird/animal deformities or reproduction problems	Degradation of benthos	Restrictions on dredging activities	Eutrophication or undesirable algae	Restrictions - drinking water consumption, taste/odour problems	Beach Closings	Degradation of aesthetics	Added costs to agriculture or industry	Degradation of phyto- and zooplankton populations	Loss of fish & wildlife habitat	Original Total	Total Removed	Remaining Total
Thunder Bay												2014			8	1	7
Nipigon Bay **Completed**		1995	2016	1995		2016	1995	2016			2016			2016	8	8	0
Jackfish Bay				2010	2010		1998								8	3	5
Peninsula Harbour **In Recovery**				2012			2012								6	2	4
St. Marys River					2016										10	2	9
Spanish Harbour **In Recovery**			1999		1999					1999		1999	1999	1999	9	6	3
Severn Sound **Delisted**	2002		2002				2002	2002			2002			2002	6	6	0
Collingwood Harbour **Delisted**	1994		1994		1994	1994	1994	1994		1994	1994		1994	1994	10	10	0
St. Clair River		2011									2016	2012			9	3	6
Detroit River		2014							2011	2016	2016	2011			12	5	7
Wheatley Harbour **Delisted**	2010		2010			2010	2010	2010						2010	6	6	0
Niagara River				2009	2009		2009								9	3	6
Hamilton Harbour															9	0	9
Toronto and Region				2011	2011	2016	2016								10	4	6
Port Hope Harbour															1	0	1
Bay of Quinte															10	0	10
St. Lawrence River		1997			2007	2007	2007		1997		1997	1997			12	7	5
Original Total	14	4	15	8	8	15	17	10	4	11	12	5	4	16	143		
Total Removed	3	4	5	5	7	5	9	4	2	3	6	5	2	5		66	
Remaining Total	11	0	10	3	1	10	8	6	2	8	6	0	1	11			78

BUI Removed BUI Impaired

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Status of Beneficial Use Impairments in the US Great Lakes Areas of Concern

Updated 5/9/16

AOC	State	Restriction on fish & wildlife consumption	Tainting of fish & wildlife flavor	Degraded fish & wildlife populations	Fish tumor or other deformities	Bird & animal deformities or reproduction problems	Degradation of benthos	Restrictions on dredging activities	Eutrophication or undesirable algae	Restrictions – drinking water consumption, taste/odor problems	Beach Closings	Degradation of aesthetics	Added costs to agriculture or industry	Degradation of phyto- and zooplankton	Loss of fish and wildlife habitat	Original Total	Total Removed	Remaining Total
Waukegan Harbor	IL							2014			2011				2013	6	3	3
Grand Calumet River	IN									2012			2011			14	2	12
Clinton River	MI															8	0	8
Deer Lake	MI	2014				2011			2011							3	3	0
Detroit River	MI		2013							2011						11	2	9
Kalamazoo River	MI										2011	2012				8	2	6
Manistique River	MI						2007				2010				2008	5	3	2
Muskegon Lake	MI	2013						2011		2013	2015					9	4	5
River Raisin	MI			2015					2013		2013	2012			2015	9	5	4
Rouge River	MI															9	0	9
Saginaw River & Bay	MI		2008							2008					2014	12	3	9
Torch Lake	MI				2007											3	1	2
White Lake	MI	2013		2014			2012	2011	2012	2014		2014			2014	8	8	0
St. Clair River	MI/ON		2010				2015	2011				2012	2012			10	5	5
St. Marys River	MI/ON					2014						2014				10	2	8
Menominee River	MI/WI										2011					6	1	5
Buffalo River	NY															9	0	9
Eighteenmile Creek	NY															5	0	5
Oswego River	NY	2006		2006					2006						2006	4	4	0
Rochester Embayment	NY				2015					2011			2011			14	3	11
Niagara River	NY/ON				2016											7	1	6
St. Lawrence River	NY/ON													2015		7	1	6
Ashtabula River	OH	2014		2014											2014	6	3	3
Black River	OH															9	0	9
Cuyahoga River	OH															9	0	9
Maumee River	OH												2015			10	1	9
Presque Isle	PA				2013			2007								2	2	0
Fox River/ S Green Bay	WI															13	0	13
Milwaukee Estuary	WI															11	0	11
Sheboygan River	WI							2015	2016							9	2	7
St. Louis River & Bay	WI/MN											2014				9	1	8
Original Total		30	7	25	18	17	27	27	18	8	20	19	4	8	27	255		
Total Removed		5	3	4	4	2	3	6	5	6	6	6	4	1	7		62	
Remaining Total		25	4	21	14	15	24	21	13	2	14	13	0	7	20			193

BUI Removed BUI Impaired

EPA-R5-2017-0002000000498

Canadian Areas of Concern – Status of Actions

AOC	Sediment Cleanup / Remediation	Habitat Restoration	Municipal / industrial WW treatment	Non-point-source pollution mgmt.	Studies/ Investigations	BUI Evaluation/ Assessment	Follow-up Monitoring	Year RAP actions were or will be completed	AOC Weblink
Thunder Bay								beyond 2020	For Canadian and binational AOCs, go to: www.ec.gc.ca/raps
Nipigon Bay								Delisting expected in 2016	
Jackfish Bay (in recovery)				N/A				beyond 2020	
Peninsula Harbour				N/A				2019	
St. Marys River								beyond 2020	
Spanish Harbour (in recovery)								beyond 2020	
St. Clair River								2020	
Detroit River								2020	
Niagara River								2019	
Hamilton Harbour								beyond 2020	
Toronto Region								beyond 2020	
Port Hope		N/A	N/A	N/A				beyond 2020	
Bay of Quinte								2019	
St. Lawrence River (at Cornwall)								2019	

These Canadian AOCs are already delisted: Collingwood Harbour (1994), Severn Sound (2003), and Wheatley Harbour (2010).

All Actions Completed (100%) | Majority of Actions Completed (75+%) | Actions Well Underway (50+%) | Actions Required or to be Determined (<50%)

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U. S. Areas of Concern – Status of Actions

Updated 5/11/16

AOC	State	Sediment Remediation	Habitat Restoration	Hydrologic Controls/Diversions Implemented	Safe Drinking Water Provided	Engineering Design	Studies/Investigations	Other Regulatory Action	BUI Evaluation/Assessment	Year all remediation and restoration actions were or will be completed	AOC Weblink
Waukegan Harbor	IL			N/A	N/A					2014	For additional information on United States and binational Areas of Concern; go to : https://www.epa.gov/great-lakes-aocs/list-aocs
Grand Calumet River	IN			N/A	N/A					2020	
Clinton River	MI	N/A		N/A	N/A			N/A		2017	
Deer Lake	MI				N/A					Delisted 2014	
Detroit River	MI			N/A	N/A					2023	
Kalamazoo River	MI			N/A	N/A					2030+	
Manistique River	MI		N/A	N/A	N/A			N/A		2018	
Muskegon Lake	MI			N/A	N/A			N/A		2018	
River Raisin	MI			N/A	N/A			N/A		2016	
Rouge River	MI			N/A	N/A					2021	
Saginaw River & Bay	MI									2030+	
Torch Lake	MI		N/A	N/A	N/A	N/A				2030+	
White Lake	MI			N/A	N/A	N/A		N/A		Delisted 2014	
St. Clair River	MI/ON	N/A		N/A	N/A			N/A		2015	
St. Marys River	MI/ON			N/A	N/A			N/A		2016	
Menominee River	MI/WI				N/A					2016	
Buffalo River	NY			N/A	N/A					2017	
Eighteenmile Creek	NY		N/A		N/A					2026+	
Oswego River	NY	N/A	N/A		N/A	N/A				Delisted 2006	
Rochester Embayment	NY				N/A					2016	
Niagara River	NY/ON			N/A	N/A					2026+	
St. Lawrence River	NY/ON			N/A	N/A					2026+	
Ashtabula River	OH			N/A	N/A	N/A		N/A		2013	
Black River	OH			N/A	N/A			N/A		2017	
Cuyahoga River	OH			N/A	N/A					2021	
Maumee River	OH			N/A	N/A			N/A		2025	
Presque Isle	PA			N/A	N/A	N/A		N/A		Delisted 2013	
Fox River/ S Green Bay	WI				N/A					2026+	
Milwaukee Estuary	WI			N/A	N/A					2026+	
Sheboygan River	WI			N/A	N/A					2013	
St. Louis River & Bay	WI/MN			N/A	N/A					2020	

All Actions Completed (100%) | Majority of Actions Completed (75+%) | Actions Well Underway (50+%) | Actions Required or to be Determined (<50%)

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LAKEWIDE MANAGEMENT ANNEX

OVERVIEW

The Great Lakes are comprised of five of the twenty largest lakes in the world by volume: Superior (3), Michigan (7), Huron (8), Ontario (12) and Erie (18). The Great Lakes are connected and discharge through major river systems: the St. Marys, St. Clair, Detroit, Niagara and St. Lawrence. Given the size and ecological complexity of the lakes, restoring and protecting Great Lakes water quality and ecosystem health sometimes requires an approach that is specifically tailored to an individual lake.

In the Lakewide Management Annex of the 2012 GLWQA, Canada and the United States commit to establishing Lakewide Action and Management Plans (LAMPs) for each of the five Great Lakes and their connecting river systems. These individualized plans will serve as blueprints for action, as they will identify and prioritize desired restoration and protection activities on each of the Great Lakes.

This Annex's implementation is supported by the Lakewide Management Annex Subcommittee, co-led by Environment and Climate Change Canada and the United States Environmental Protection Agency. Organizations on the subcommittee include: [insert logos]

PROGRESS TOWARD MEETING GLWQA COMMITMENTS

2012	2013	2014	2015	2016
• Published LAMP Annual Reports. • Established Lake Ontario Science and Monitoring Priorities • Finalized Lake Michigan Biodiversity Conservation Strategy.	• Published LAMP Annual Reports. • Established Lake Michigan Science and Monitoring Priorities • Finalized Lake Erie Biodiversity Conservation Strategy	• Published LAMP Annual Reports. • Established Lake Superior Science and Monitoring priorities	• Published LAMP Annual Reports. • Established Lake Huron Science and Monitoring priorities • Finalized Lake Superior Biodiversity Conservation Strategy.	• Published LAMP Annual Reports. • Finalized Lake Superior LAMP. • Finalized Nearshore Framework.

BINATIONAL ACTIONS TAKEN

Developing The Lake Superior Lakewide Action and Management Plan.

- The Lakewide Action and Management Plan (LAMP) rotational reporting schedule was confirmed in 2014. Canada and the United States next undertook the development of the first LAMP under the 2012 GLWQA for Lake Superior including an extended period for public and agency input and review. In June of 2016, the Lake Superior LAMP was finalized. Liz and Rob to address Mike G.'s comment here.

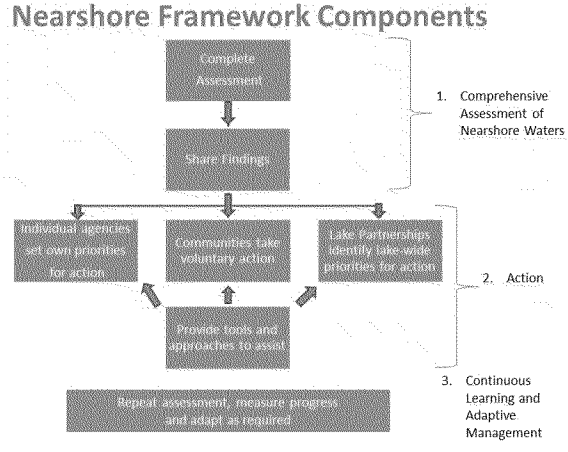
Developing a nearshore framework to identify nearshore areas of high ecological value and those that are or may become subject to severe stress due to the cumulative effects of multiple stressors.

- Canada and the United States approved the Nearshore Framework in July 2016, and will pilot test implementation of the framework in Lake Erie beginning in 2017.

- The framework provides a mechanism for undertaking a systematic, integrated and collective approach for assessing nearshore health and identifying and communicating cumulative impacts and stresses, in order to inform and promote action at all levels to restore and protect the ecological health of Great Lakes nearshore areas.

- Canada and the United States undertook a three-year process to engage a wide range of people and organizations throughout the Great Lakes basin in development of the Nearshore Framework.

The Great Lakes Nearshore Framework



Establish Lake Ecosystem Objectives for each Great Lake, including its connecting river systems, as a benchmark against which to assess status and trends in water quality and lake ecosystem health.

- Using direction from the 2012 GLWQA, in October of 2014 a draft guidance document for the development of Lake Ecosystem Objectives (LEOs) and a draft framework linking the LEOs to the Agreement's General Objectives and the State of the Great Lakes Indicators were developed.

- The guidance suggests that LEOs should:
  - be practical and attainable or achievable within a 20-year timeframe;
  - provide sufficient direction for implementing LAMP actions;
  - have support from the agencies that implement the programs used to achieve the objective;
  - be based on sound, readily available data, so they can be reported on every five years; and
  - taken together, be a comprehensive suite which addresses each 2012 GLWQA General Objective and lake stressor.

- A binational team was formed to draft, using the guidance, a suite of LEOs for Lake Erie.

- LEOs for the other lakes will be developed during the next reporting cycle.

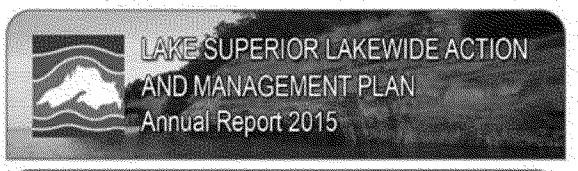
The Parties, in cooperation and consultation with State and Provincial Governments, Tribal Governments, First Nations, Métis, Municipal Governments, watershed management agencies, other local public agencies, and the Public, shall undertake the lakewide management actions.

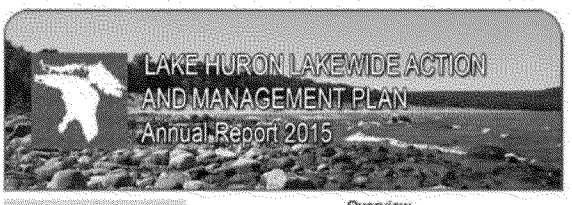
- Canada and the United States have undertaken outreach and engagement activities through the work of the Lake Partnerships and the Annex Subcommittee.

- In 2015, eight webinars involving over 800 participants were held to update the basin-wide and individual lake stakeholder communities about progress under the Lakewide Management Annex, and to discuss possible approaches to outreach and engagement. Outreach and Engagement sub-committees were formed under each Lake Partnership to develop and implement an outreach and engagement strategy for each lake.

- In 2016, the Parties solicited stakeholder participation with the Lake Partnerships. The solicitationcan be found at www.binational.net (http://binational.net/category/a2-2/lamps-paaps/lamp-ars/).

- In 2013, 2014, and 2015, LAMP Annual reports were issued to provide an overview of accomplishments and challenges facing each lake.





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What is the Lake Huron LAMP?

Under the Great Lakes Water Quality Agreement, 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 Huron Lakewide Action and Management Plan (LAMP) will be a binational action plan for restoring and protecting the Lake Huron ecosystem. The LAMP will be developed and implemented by the Lake Huron Partnership, which is led by the U.S. Environmental Protection Agency and Environment Canada and which facilitates information sharing, sets priorities, and assists in coordinating binational environmental protection and restoration activities. The Lake Huron LAMP, and the

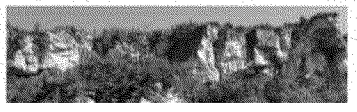
Overview

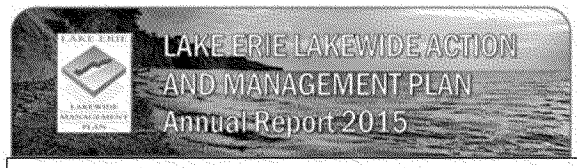
With its land and waterscapes evolving through the interacting forces of water, geology and climate, Lake Huron and its watershed have been shaped into an area of global ecological significance. Lake Huron is renowned for its beaches, dunes, rugged shorelines, coastal wetlands, diverse river systems, forests and more than 30,000 islands. Conserving this precious resource is important to maintaining its enormous social, recreational and economic benefits.

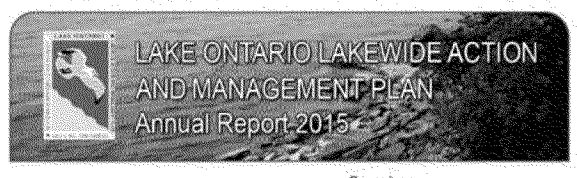
The Lake Huron Partnership is expanding its work to be fully consistent with all other Great Lakes in preparing its first Lakewide Action and Management Plan (LAMP) in 2016. The priorities of the Partnership are to continue to study, report on, and address key issues such as contaminants in fish and wildlife, biodiversity and ecosystem change, fish and wildlife habitat, and localized domestic water quality issues including beach closings and algal fouling.

The Lake Huron Partnership's 2015 Annual Report provides information and updates on:

- Turning community interest into environmental action;
- Restoring fish populations and spawning habitat;
- Cleaning up of contaminated sediment in the Tittabawassee River Floodplain; and
- The St. Marys River Area of Concern and the Spanish Harbour Area in Recovery.







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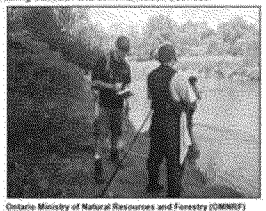
This 2015 annual report highlights accomplishments and progress in achieving LAMP goals during the past year and identifies LAMP-related activities including outreach, monitoring, and protection and restoration actions.

Overview

In 2015, the Lake Ontario Partnership continued its efforts to address important lakewide stressors and worked cooperatively to protect and restore water quality and ecosystem health. This was accomplished through a series of priority actions and programs, including the Binational Biodiversity Conservation Strategy (BBCS), the Cooperative Science and Monitoring Initiative (CSMI), reducing critical pollutants, restoring fish species and a productive food web, improving environmental quality of nearshore ecosystems and coastal wetlands, and undertaking outreach and communication activities.



Ontario Ministry of Natural Resources and Forestry (OMNRF) staff member interviewing tributary angler for the Lake Ontario Tributary Survey.
Credit: OMNRF.

Accomplishments

Fisheries Research and Monitoring in Lake Ontario

Lake Ontario is home to an exceptional and diverse salmon and trout fishery. Chinook Salmon, Rainbow Trout, Brown Trout and Coho Salmon are important species in both the open waters of Lake Ontario and its tributaries (as fish migrate up the tributaries to spawn). The Ontario Ministry of Natural Resources and Forestry (OMNRF) and New York State Department of Environmental Conservation (NYSDEC) have regularly surveyed the amount of fishing activity on the open waters of Lake Ontario for over 30 years. The NYSDEC surveyed the amount of fishing activity in New York's Lake Ontario tributaries from 2005–2007 and in 2011–2012. OMNRF just completed the first-ever comprehensive survey of the amount of fishing activity on Canadian tributaries to Lake Ontario. These surveys show that fishing activity on Lake Ontario's tributaries has increased, while fishing activity on Lake Ontario itself has decreased. In fact, the most recent NYSDEC survey showed that the amount of annual fishing activity on tributaries is two times greater than the amount of fishing activity on the lake itself. The Salmon River (Oswego County, N.Y.) is by far the largest fishery on the U.S. side of the lake, accounting for approximately 50% of the total fishing activity in New York tributary waters.