A Century of Great Lakes Governance: Assessing the interjurisdictional policies and initiatives for the protection and restoration of the Great Lakes

Abstract

The Great Lakes represent the largest freshwater system on earth, containing a fifth of the world's fresh surface water. The vibrant ecosystems and the important resources they provide, however, are increasingly threatened by anthropogenic factors. Oversight and management of the Great Lakes lies within multiple national and subnational jurisdictions on both sides of the Canada-United States border, with numerous interjurisdictional initiatives and agreements in place to protect the lakes for current and future generations. These include the Boundary Waters Treaty, the Great Lakes Water Quality Agreement, the Great Lakes Charter and Annex, and the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health. This research paper explores the history of these agreements, identifies their key policy goals, and assesses areas of strength and weakness within them. Using this historical and political context as a backdrop, the paper concludes with an analysis of Ontario's recently passed Great Lakes Protection Act. Of particular focus is the legislation's strong emphasis on target setting, monitoring, and stakeholder involvement.

KEYWORDS**:** *Great Lakes Protection Act, Great Lakes governance*

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Introduction

The Great Lakes and their associated tributaries represent the largest freshwater system on earth. They satisfy the water needs of more than thirty million people and are home to vibrant and important aquatic ecosystems (Environmental Protection Agency, 2015). The many high-density population centres and agricultural lands within the Great Lakes Basin however, render these waters especially vulnerable to anthropogenic influences, which can have significant and lasting impacts on both human and ecosystem health (Assembly of First Nations, n.d.: 4). Factors such as rising population densities, agricultural runoff, invasive species, climate change, and wetland destruction have caused a decline in the ecological health of these important resources (Environmental Defence, 2015), and have impacted the region's economy, culture, public health,

and quality of life (Crane, 2012: 24). Access to freshwater is a fundamental human right, and protecting and restoring the Great Lakes is critical to ensure the well-being of current and future generations (United Nations, 2015: 1).

Crucial policy goals in Great Lakes protection and restoration initiatives should be *i.* Maintaining and restoring ecological health, *ii.* Encouraging sustainable use of Great Lakes resources, *iii.* Employing a holistic, ecosystem approach to environmental decision-making which takes into account the interconnectedness of all ecosystem components, and *iv.* Involving and empowering stakeholders through collaborative governance.

Great Lakes management lies within multiple national and subnational jurisdictions in Canada and the United States. Coordinating the actions of the twelve governments involved presents inherent logistical and administrative challenges. Nonetheless, numerous agreements, treaties, and interjurisdictional initiatives amongst federal, state, and provincial governments have shaped legislation and endeavored to protect and restore these important freshwater resources. These include the *Boundary Waters Treaty*, the *Great Lakes Water Quality Agreement*, the *Great Lakes Charter* and *Annex*, and the *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health* (see Appendix for an overview and timeline). Despite fruitful bilateral and intergovernmental collaboration, protection initiatives have not consistently met the aforementioned policy goals, and the lakes and their ecosystems are currently in a poor ecological state.

The path toward effective protection and restoration of the Great Lakes must begin with a thorough review of the history of Great Lakes governance. This research paper aims to initiate this review by analyzing key milestones in the intergovernmental management of the Great Lakes. It begins with a look at challenges and limitations prevalent in collaborative governance models, and then explores the Great Lakes agreements and initiatives, focusing on identifying key goals, strengths, and weaknesses within them. The paper concludes with an analysis of Ontario's recently passed *Great Lakes Protection Act* (S.O. 2015, c. 24). This important piece of legislation emphasizes policies of target-setting, accountable implementation, and stakeholder involvement, and represents a step forward in Great Lakes conservation and restoration.

Challenges in Interjurisdictional Collaborative Governance

Many natural resources cut across organizational, governmental, and territorial boundaries (Huxham, 2000: 338). However, if individual entities in shared resource systems act according to self-interests exclusively, without regard for the common good, resource supplies can become depleted, tainted, or irreversibly damaged. This *tragedy of the commons* model, theorized by the American ecologist and philosopher Garrett Hardin (Hardin, 1968), emphasizes the need for a framework of communicative, coordinated, and collaborative governance over vitally important shared resources like the Great Lakes.

The advantage to be gained through a collaborative governance model is clear: organizations or governments working together can achieve something greater than each group working in isolation (Huxham, 2000: 338). In the case of the Great Lakes Watershed, this means

the responsible use, effective restoration, and pre-emptive protection of the lakes. However, given the current poor ecological health of the Lakes, it is clear that this ideal is not consistently met.

In Canada, management of natural resources is a provincial responsibility, as outlined in Section 92A of the *Constitution Act* (1982, c. 11). However, the federal government's jurisdiction over areas such as trade and commerce, inland fisheries, and First Nations affairs also mandates its close involvement in Great Lakes management. In the United States, the federal government along with the state governments of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, and New York also have jurisdiction over various aspects of the Great Lakes. Given the sovereignty of the federal, state, and provincial governments involved, as well as the numerous subordinate ministries, agencies, and departments within them, there are inherent logistical challenges and pervasive risks which can hinder the effectiveness of Great Lakes collaborative governance (Crane, 2012: 38).

Frequent government turnover within Great Lakes provinces and states for instance, can have a disruptive effect on any protection initiatives which may already be in place. Newly elected governments set forth different ideals and policies than their predecessors, and matching new priorities with existing intergovernmental agreements can be onerous and time consuming (Crane, 2012: 39). Conversely, in instances where there is strong government coordination and policy alignment, rapid progress can occur. While this is a generally desirable goal, significant "institutional inertia" can arise, which may serve to limit adaptability and flexibility should the need for swift changes to policy or approach arise (Crane, 2012: 39).

Fragmentation is another significant risk to effective collaborative Great Lakes governance, and can occur when multiple governmental bodies have jurisdiction over different aspects of the same issue (Hill et al., 2008: 316). Without effective communication, information sharing, and coordination, there is the potential for unnecessary redundancy, duplication of efforts, or implementation gaps (Bakker and Cook, 2011: 280).

Despite these challenges, Canada and the United States have forged a strong and lasting diplomatic bond centered on the management of these valuable resources, the origins of which can be traced to 1909 and the signing of the *Boundary Waters Treaty* (Bruce and Wood, 2012).

Boundary Waters Treaty (1909)

At nearly nine-thousand kilometers, the Canada-US border spans the entire North American continent. Straddling this vast divide are 150 rivers and lakes, which for centuries have played an important role in bilateral transport and trade (Hall, 2008: 1419). However, by the turn of the 20th century, issues surrounding water quality and concerns over hydroelectric development in the Niagara, St. Mary's and Milk Rivers illustrated the need for a defined diplomatic framework with which to resolve issues and disputes pertaining to the use of shared water resources (Crane, 2012: 16).

The resulting *Boundary Waters Treaty*, signed in 1909 by the United States and Britain (acting as signatory for Canada), represented a departure from the predominantly issue-based, reactionary approach to resource management and decision-making of the time (Crane, 2012: 16).

It instead introduced a broad system of water governance which was free from national self-interests and could be implemented across the entire resource sector in order to efficiently address, and ideally prevent, disputes over shared waters (Hall, 2008: 1418). The Treaty's key policies goals were to keep boundary waterways free and open for commercial navigation and trade (Article I), restrict water diversion projects which would affect the flow and levels of boundary waters (Articles II and III), and prohibit pollution which would detrimentally affect the health, property, or water quality on either side of the border (Article IV).

A major outcome of the Treaty was the creation of the International Joint Commission (IJC), an independent, non-partisan organization to which the responsibility of implementing and overseeing much of the Treaty's policies was conferred. Consisting of directors from both nations, the Commission continues to play a major role in managing shared water resources. The quasi-judicial authority afforded to the IJC enables it to review, approve, or deny any proposed development or project which would impact shared water resources (Crane, 2012: 18). Considerations for approval are based on a hierarchical set of principles laid out in Article VIII, which prioritizes domestic and sanitary water uses over navigation and power generation.

For its time, the *Boundary Waters Treaty* was an innovative and forward-thinking diplomatic instrument, recognizing that ecosystems do not adhere to strict geopolitical borders (Crane, 2012: 17). While it has facilitated more than a century of peaceful bilateral environmental cooperation (Hall, 2008: 1450), a notable limitation is the fact that it did not apply a holistic, ecosystem approach to environmental decision-making, a crucial Great Lakes policy goal. For instance, the boundary waters to which the Treaty applies are defined rather limitedly as only those lakes or rivers through which the Canada-US border is located (Hall, 2008: 1421). This definition explicitly excludes tributary waters flowing into or out of these lakes and rivers, which serves to limit the effectiveness of pollution control measures introduced under Article IV (Hall, 2008: 1421). Given the interconnectedness of the lakes, pollutants in Great Lake tributaries can rapidly disperse and spread throughout the watershed. Furthermore, the Treaty's anti-pollution measures focus solely on direct, point-source deposition of pollutants and does not consider other indirect routes of entry, such as airborne pollution that may be deposited through precipitation or toxic runoff from coastal lands (Hall, 2008: 1421).

Beginning in the 1960's, water quality in the Great Lakes had become a significant concern, with Lake Erie in particular rapidly becoming an ecological wasteland. High phosphorus levels were producing massive algal blooms, which disrupted the food chain and caused a substantial decline in aquatic species (Environment and Climate Change Canada, 2013a). With the need for action increasingly evident, the federal Canadian and United States governments reaffirmed their dedication to protecting the Great Lakes, and in 1972 signed the first *Great Lakes Water Quality Agreement*.

Great Lakes Water Quality Agreements (1972, 1977, 1983)

In the Agreement, both governments committed to a coordinated approach to limit phosphorus pollution from municipal and industrial sources, based on recommendations from the IJC. This included setting basin-wide water quality benchmarks and committing to a review of the design and operation of the region's water treatment infrastructure (International Joint

Commission, 2015). Within a short period, the wastewater treatment systems in many Great Lakes municipalities were upgraded to enhance phosphorus removal, leading to a marked improvement in water quality (Crane, 2012: 25).

The *Great Lakes Water Quality Agreement* coincided with the emergence of modern environmentalism (Jones and Taylor, 1999; 249-250), with new non-governmental organizations like Greenpeace increasingly pushing environmental issues to the forefront of North American politics (Crane, 2012: 24). The Agreement was strengthened by significant stakeholder involvement, and the phosphorus reduction efforts were spurred by numerous grassroots citizen-action groups (Knud-Hansen, 1994). As a result of these efforts, phosphorus levels in Lake Erie dropped dramatically, and the reclamation project was heralded as an international environmental success (Christie, 2009).

In 1978, the *Great Lakes Water Quality Agreement* was updated to broaden its scope beyond the issue of phosphorus pollution, formally integrating the ecosystem approach to Great Lakes management. This policy recognizes the innate interconnectedness of ecosystem components and the delicate balance that exists among them (Jones and Taylor, 1999: 251). It emphasizes science-based decision making, and posits that even minute changes in water chemistry, air quality, or biological composition can have cascading effects on the ecosystem as a whole, as well as the range of industries utilizing the lakes (Jones and Taylor, 1999; 251). Decisions pertaining to Great Lakes management, therefore, must account for potential indirect impacts on all other aspects of these complex ecosystems.

In 1983, the Agreement was amended a second time to incorporate specific phosphorus loading targets, and again in 1987 to integrate a policy of Great Lakes Areas of Concern (AOCs). These are geographic areas in which the beneficial use of a lake is deemed to be impaired (International Joint Commission, 2015). In order to address AOCs, specific Remedial Action Plans (RAPs) were formulated. Such plans have had varied success, and their effectiveness is largely tied to the level of government funding allocated for their implementation. In Canada, the federal government earmarks only $8 million dollars annually to cover RAP initiatives (Treasury Board of Canada Secretariat, 2015). However, this figure may rise under the recently elected federal Liberal government, given their stated commitment to environmental stewardship (Liberal Party of Canada, 2015: 8).

Lakewide Management Plans (LaMPs) were also integrated into the 1987 Agreement, and set forth actionable targets to restore the chemical and biological integrity of open lake waters. This is a contrast to previous iterations of the Agreement which focused solely on coastal waters (Great Lakes Commission, 2008: 1).

Great Lakes Charter and Annex (1985, 2001)

Between 1987 and 2012, the *Great Lakes Water Quality Agreement* was unchanged and Great Lakes management was left largely to the subnational provincial and state governments. The *Great Lakes Charter*, signed in 1985 by Ontario, Quebec, and the eight Great Lakes states was a good faith agreement outlining the governments' commitment to grow the region's economy

in an environmentally friendly and sustainable manner (Environmental Commissioner of Ontario. 2005: 64).

Of significant concern in the Charter was maintaining lake levels by regulating water diversion and removal projects (Environmental Commissioner of Ontario. 2005: 64). By exercising the ecosystem approach, it is evident that large-volume water removals could lead to serious and widespread detrimental ecological impacts. As such, Charter members agreed to voluntarily consult with each other over any plans to divert or remove water from the Great Lakes. This provision illustrates the importance of effectively balancing the "triple bottom line" in natural resource management. That is, weighing the social, economic, and environmental implications of any decision (Slaper and Hall, 2011: 1). While freshwater removal and trade has the potential to generate significant revenue for Great Lakes governments, these short-term economic benefits do not outweigh the associated long-term environmental impairments.

The resolve of Charter members was tested in 1998, when the Ontario government granted a permit under the *Water Resources Act* (R.S.O. 1990, c. O.40) to Nova Group Inc., allowing the company to remove up to 600 billion litres of water per year from Lake Superior for shipment and sale in Asia (Cooper and Miller, 2012). Following a strong public outcry and dissent among other Great Lakes governments, the permit was ultimately cancelled and Ontario subsequently passed the *Water Taking and Transfer Regulations* (O. Reg. 387/04), under the *Ontario Water Resources Act* (R.S.O. 1990, c. O.40), prohibiting large volume removals. This event illustrates the important role stakeholders and private citizens can have in shaping government policy and action, as the significant public backlash that arose in this situation led to tangible and enforceable legislation.

In response to the Nova Group Inc. controversy, the Great Lakes Charter was amended in 2001 to include an Annex which clarified the decision-making criteria to be employed when reviewing proposals for water diversion or removal. It stated that proposed projects must not affect water quality and levels in the lakes, and must comply with all relevant and applicable laws and regulations (Environmental Commissioner of Ontario. 2005: 64). The Annex also prompted the provincial and state governments to sign the *Great Lakes–St. Lawrence River Basin Sustainable Water Resources Agreement*, an updated charter which re-committed the subnational government to implement measures to protect and restore Great Lakes waters. In Ontario, this Agreement has been implemented through various water conservation and efficiency programs, as well as new legislation such as the *Water Opportunities and Water Conservation Act* (S.O. 2010, c. 19), which introduced economic incentives for the creation of sustainable and innovative technologies in the province's water sector (Government of Ontario, 2014).

Great Lakes Water Quality Agreement (2012)

In response to new and emerging environmental issues, the *Great Lakes Water Quality Agreement* between the Canadian and US federal governments was amended a fourth time in 2012. While re-affirming existing commitments, the new agreement set forth an updated approach for dealing with modern problems, which were not on the environmental policy radar at the time of the 1987 amendment. New annexes identifying the need to prevent and mitigate threats such as aquatic invasive species, loss of habitat and greenspace, and climate change were incorporated (Environment and Climate Change Canada, 2013b). The new agreement also set timelines for

developing and implementing initiatives such as phosphorus reduction programs, and invasive species detection and response plans (Environment and Climate Change Canada, 2013b).

Though an important measure in bringing collaborative bilateral Great Lakes management into the twenty-first century, the new agreement lacks concrete targets, as well as clear strategies for implementation and accountability, both of which are crucial Great Lakes policy goals. Furthermore, the agreement has garnered criticism for being overly broad and short on details (Bruce and Wood, 2012). While previous iterations of the agreement included specific concentrations for contaminants like lead and mercury, and provided a solid framework for regulatory legislation in both countries, the updated agreement contains no such targets (Bruce and Wood, 2012). This creates room for discrepancy and disconnect to arise between the two federal jurisdictions, where a lack of coordination and communication may serve as a barrier to progress.

Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (2014)

In order to meet its commitments under the 2012 *Great Lakes Water Quality Agreement*, the Canadian government has partnered with the Ontario government in the form of the *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health* (COA) (Canadian Environmental Law Association, 2014: 2). The COA re-affirms existing federal-provincial commitments to protect and restore the Great Lakes, and outlines how the many agencies and departments at both levels of government will cooperate and coordinate their actions in Great Lakes conservation and remediation efforts (Environment and Climate Change Canada, 2015).

This is an important tool with which to limit or prevent issues of fragmentation, redundancy, and duplication of efforts among federal and provincial bodies, which is a pervasive risk in collaborative Great Lakes governance. However, like the most recent *Great Lakes Water Quality Agreement*, this too lacks details regarding action, implementation, and funding (Canadian Environmental Law Association, 2014: 2). Furthermore, one wonders why it took commitments under a bilateral agreement to foster this level federal-provincial coordination, which ostensibly should be a natural part of Canadian federalism.

Great Lakes Protection Act (2015)

Despite legislation and initiatives stemming from various national and subnational Great Lakes jurisdictions, the ecological health of these valuable resources is trending downward (Fryefield, 2013: ii). The re-emergence of old issues such as eutrophication and algal blooms, coupled with new threats like the invasive Asian Carp and climate change, are having detrimental effects on the region's inhabitants, industries, and economies. Highly publicized events like the record-setting algal bloom in Lake Erie in 2011, have prompted the Ontario government to take action (Michalak et al., 2013: 6448). In its *Great Lakes Strategy 2012*, the provincial government recognized that "new problems are overwhelming old solutions", and identified as key policy goals the involvement of stakeholders in decision-making, protecting water quality, habitats, and species, and ensuring sustainable industry and development in the Great Lakes basin (Government of Ontario, 2012: 30). These are all crucial Great Lakes policy goals, which one hopes will soon be adopted by other Great Lakes governments as well.

The recently passed *Great Lakes Protection Act* (S.O. 2015, c. 24) is the province's legislative tool for achieving these policy goals. Passed in October 2015, this was the province's third attempt at enacting this legislation, having previously been interrupted by the proroguing of the legislature in October of 2012, and an election in June of 2014. The Act received Royal Assent on November 3rd, 2015, and represents a significant step forward in the sustainable management of the Great Lakes. It sets out a modern and forward-thinking approach to environmental management, which exercises the ecosystem approach and precautionary principle. It stresses stakeholder collaboration and public engagement, while recognizing the important and historic role of First Nations and Métis communities in the Great Lakes Basin (Government of Ontario, 2012: 31). As a piece of enabling legislation, it empowers the executive branch of the provincial government, specifically the Minister of the Environment and Climate Change as well as the Minister of Natural Resources and Forestry to oversee and coordinate the protection and restoration of the Great Lakes.

While previous agreements and interjurisdictional initiatives have been criticized for lacking clear and concrete targets, the *Great Lakes Protection Act* (S.O. 2015, c. 24) spells out explicit instructions to Ministers for setting science-based, geographically-focused targets, developing strategies for implementation, and monitoring and reporting on progress. For instance, the *Minister of the Environment and Climate Change* must establish at least one target within the first two years to assist in the reduction of harmful algal blooms in the Great Lakes (Part IV: 9(2)). Furthermore, the statute provides the Minister of Natural Resources and Forestry with jurisdiction to create specific targets with respect to limiting and preventing the loss of wetlands (Part IV: 9(3)). Marshlands and bogs within the Great Lakes Basin have natural water purifying properties, and are essential for preventing the entry of contaminants into the Lakes (Canadian Environmental Law Association, 2015). This provision illustrates the ecosystem approach in action, as the government is formally recognizing that the loss of wetlands has widespread effects on the overall ecological health of the lakes and the populations which are dependent on them.

It must be noted that targets are of little use unless accompanied by a clear strategy for implementation, along with a definitive assignment of responsibility and accountability. Unlike previous Great Lakes initiatives, implementation and accountability is explicitly stated in the Act itself. With respect to any target created under Part IV, the Minister shall "prepare a plan setting out the actions that shall be taken to achieve the target." That is, each target must include a roadmap for its implementation.

In this context, it is also important to note the use of the word "shall". In a previous draft of Bill 66, which became the *Great Lakes Protection Act*, the word "may" was used in its place. Within a statute, "shall" and "may" have very different connotations. Whereas the latter simply *allows* for an action, the former *mandates* it. This revision instills accountability, and will have important implications in the event a new party is elected to power. That is, new Great Lakes Ministers will be required to comply with this provision regardless of differences in party policies. This will limit the disruption and interruption of Great Lakes initiatives that can occur as a result of government turnover.

An important feature integrated into the *Great Lakes Protection Act* is stakeholder and community involvement in Great Lakes decision-making. In creating this legislation, the

provincial government has recognized the important historic connection that the region's many First Nations and Métis communities have with the land, and the Act mandates their consultation in the management of the Great Lakes (Part V: 10(b-iii)). Furthermore, Part II of the Act stipulates the formation of the Great Lakes Guardian Council, a group led by the Minister of Environment and Climate Change, and comprising representatives of various Great Lakes stakeholder groups. The council is required to meet at minimum once per year in order to facilitate information sharing, and allow members to voice unique concerns and identify priorities for action (Part II: 4(2)). Prior to any council meeting, the Minister is required to extend written invitations to representatives of the region's First Nations and Métis communities, environmental non-governmental organizations, the scientific community, as well as the industrial, agricultural, recreational and tourism industries (Part II: 3(a-e)).

By explicitly naming stakeholder groups and mandating their inclusion in Great Lakes management, the government has empowered local communities to propose and spearhead initiatives, which is a crucial Great Lakes policy goal. There is also significant value in stipulating scientific consultation in the Act (Part V: 10(4)), as it is critical that environmental initiatives are informed and continuously shaped by the most up to date scientific research.

While drafting Bill 66, the province received numerous comments from a wide range of stakeholders through the environmental registry (Number 012-3523). So far, stakeholder response to the Act has been generally positive, as one might expect given that their involvement in Great Lakes decision making is integrated directly into the legislation. Municipalities for instance, are pleased with the level of consultation they are to be afforded in reviewing and shaping proposals for initiatives. However, some representatives of the region's municipalities have raised important questions pertaining to the source of funding for these initiatives. It remains to be seen, for instance, what financial burdens will be placed on Ontario's cities and towns for initiatives that affect areas within municipal jurisdiction, such as potential upgrades to wastewater treatment systems arising from tighter regulatory standards (Association of Municipalities of Ontario, 2012: 7; The Regional Municipality of Durham, 2015: 155-156).

The agricultural sector, while welcoming the province's efforts to protect and restore the Great Lakes and its resources, has raised concerns over potentially conflicting regulations that may arise as a result of the Act. Agricultural practices within the province are already governed by regulations under a number of statues, including the *Ontario Water Resources Act* (R.S.O. 1990, c. O.40), the *Environmental Protection Act* (R.S.O. 1990, c. E.19), as well as the *Nutrient Management Act* (S.O. 2002, c. 4) (Mann, 2015). New runoff-reduction initiatives introduced under this new Act have the potential to conflict with existing nutrient management regulations (O. Reg 267/03) (Ontario Federation of Agriculture, 2013: 3; Ontario Fruit and Vegetable Growers' Association, 2015: 3). However, Part VII of Act states that in instances where provisions within the Act conflict with other statutes, the one which most effectively protects the lakes' ecological health prevails (Part IV: 37)).

Conclusion

The Great Lakes are a vital resource which supports large populations on both sides of the border. Furthermore, the region's economy, culture, and quality of life are closely linked to the state of the lakes (Crane, 2012: 24). Great Lakes policies must focus on maintenance and

restoration of ecological integrity, sustainable use of Great Lakes resources, responsible decision-making utilizing the ecosystem approach, and direct stakeholder involvement.

In the years since the *Boundary Waters Treaty* and the creation of the International Joint Commission, great strides have been made in protecting and restoring these valuable resources. This bilateral water governance has facilitated a fruitful and lasting diplomatic relationship between Canada and the United States, at both the national and subnational level. Interjurisdictional initiatives such as the *Great Lakes Water Quality Agreement* and the *Great Lakes Charter* have led to tangible improvements in the Great Lakes and their ecosystems. However, crucial Great Lakes policy goals have not been consistently met. This, coupled with new and emerging threats like climate change and agricultural runoff, have left the Great Lakes in poor ecological health. The Government of Ontario's new *Great Lakes Protection Act* (S.O. 2015, c.24) represents a step forward which could advance the protection and restoration of the Great Lakes.

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Water Opportunities and Water Conservation Act, 2010, S.O. 2010, c. 19.

Water Taking and Transfer, O. Reg. 387/04, enacted under *Ontario Water Resources Act,* R.S.O. 1990, c. O.40

Appendix

Name	Date	Signatories	Summary
Boundary Waters Treaty	January 11th, 1909	United States, Great Britain (on behalf of Canada)	Broad system of water governance to address and prevent disputes over shared waters. Created of the International Joint Commission.

Great Lakes Water Quality Agreement	April 15th, 1972; November 22nd, 1978 (Ecosystem Approach Incorporated); October 16th, 1983; November 18th, 1987	United States, Canada	US and Canada formally agree to coordinated approach to Great Lakes management. Set a path for several subsequent subnational agreements.
Great Lakes Charter and Annex	February 11th, 1985; June 18th, 2001	Ontario, Quebec, Illinois, Indiana, Michigan, Minnesota New York, Ohio, Pennsylvania, Wisconsin	Great Lakes provinces and states commit to grow the region's economy in an environmentally friendly and sustainable manner.
Great Lakes- St. Lawrence River Basin Sustainable Water Resources Agreement	December 13th, 2005	Ontario, Quebec, Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin (implements Charter and Annex)	Re-commitment to protect and restore the lakes. Focused on the need to regulate large water diversions or removal projects.
Great Lakes-St. Lawrence River Basin Water Resources Compact	December 8th, 2008	Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin	Legally-binding compact implementing the commitments made in the Sustainable Water Resources Agreement
Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health (COA)	December 18th, 2014.	Canada, Ontario	Legislates the involvement of stakeholders in decision-making and the protection of water quality, habitats, and species. Ensures sustainable development in the Great Lakes basin.

Figure 1. Timeline of key international and intergovernmental Great Lakes agreements and initiatives.