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Great Lakes Major Research Paper

RPD* 6360 – Major Research Paper

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Dedications Page

For my mom, Shelley Lefler, my lifetime editor-in-chief and role model

For my dad, Sherwood Lefler, for teaching me the value of a hard day's work

A special 'thank you' to all those who participated in the telephone interviews.

Your time and work are greatly appreciated.

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1.0 Abstract

This paper seeks to illuminate the relationships and collaborative efforts between the Canadian and American agencies, programs and governments governing the Great Lakes. A normative approach of key informant interviews with members of such agencies will further knowledge on various processes used to maintain a healthy lake environment, the collaborative efforts and impacts of the agencies involved and will further serve to clarify whether one amalgamated piece of legislation would indeed aid in the protection of individual lakes and their ecosystems.

2.0 Introduction

The 20th century ushered in automobiles, corporate farms, burgeoning technology, and industrial expansion. The possibilities for advancement of civilization were bounded by the limits of human imagination only. Realization of the effects of this prosperity on the natural environment was slow, but changes in the quality of the water in the Great Lakes became impossible to ignore. People began to understand that the weakened health of the water had a negative effect on their own health, and that modifications were required to change methods of waste disposal which were culpable in this decline. The deterioration of the Great Lakes was caused by man-made materials and chemicals including sewage waste disposal, toxic contamination, industrial and urban development, in addition to runoff from agriculture and air pollution (GLIN, 2014). Lake Erie was declared “dead” in the 1960s due to eutrophication, which meant that algae became the dominant plant species as it thrives on low oxygen levels (Ashworth, 1988). Earlier deterioration was caused by a number of non-native species entering the lakes. During the 1940s and 1950s the sea lamprey decimated the lake trout fishery in the Great Lakes, with a 98% decrease in the annual catch (The Government of Canada (a), 2015). The sea lamprey control program currently in place costs \$22 million annually combined for Canada and the U.S. The

government of Canada states that “the ongoing expense underscores the fact that the cost of prevention is far less than the cost of control and mitigation” ((a), 2015). Lake Erie and Lake Superior have seen both endangered and alien species resulting in changes to the ecosystems of the Lakes and its surrounding areas. Two such species are the Zebra and Quagga Mussels currently proliferating in Lake Erie. These species thrive on the low oxygen levels in the Lake, competing for and winning resources from the native species. These types of mussels tend to attach to piers and other water structures “compromising structural integrity and leading to costly removal or repair” which can also interfere with water treatment technology in some “drinking water supply areas” (Lake Superior Working Group, 2009). The economic impact of Zebra mussels has cost the province of Ontario \$75-91 million per year (Government of Ontario (a), 2014). Further, these mussels filter large amounts of phytoplankton causing the water to become clear and consequently allowing “more sunlight to penetrate the water column” (Ontario Ministry of Natural Resources, 2012). One repercussion is that light sensitive native species are forced to find a new habitat. Further, decomposing mussels “add nutrients to the nearshore areas and this can cause nuisance algae blooms”, a noticeable issue on Lake Erie (Ontario Ministry of Natural Resources, 2012). Lake Erie saw its largest algal bloom in 2011, which “turned waters a putrid green” and closed many beaches due to health risks. These algal blooms release dangerous toxins into the water and in the first week of August 2014, Toledo, Ohio determined that the drinking water from Lake Erie was contaminated and declared a state of emergency (Galimberti, 2014). Drinking water had to be sourced in from surrounding areas with Red Cross volunteers delivering to “homebound residents” (Galimberti, 2014). In addition to the health risks the blooms impose, the treatment cost of the water also increases, demanding more resources than are available. Moreover, these blooms are “unsightly and significantly negatively impact tourism

and recreational fisheries” leading to a loss of important economic return for the municipalities on Lake Erie (Galimberti, 2014).

Additional danger lurks beneath the surface, and according to Lubetkin, “entry of the bighead and silver carp into the Great Lakes could upend the lakes’ ecology and the region’s \$7 billion fishing industry” (2014). The Government of Ontario is progressing in their goal to keep new invasive species, such as Asian Carp, from entering the Great Lakes. In their efforts to realize this goal, a law has been passed making it “illegal in Ontario to possess live Bighead, Silver, Grass or Black carp” as well as other non-native invasive species (Government of Ontario (b), 2014). Enforcement of this law is made possible with the collaboration of multiple jurisdictions and federal agencies. According to the Ontario Federation of Anglers and Hunters, offenders have been “caught, convicted and received large fines for trying to import truckloads of Asian carps into Ontario to sell at fish markets” (n.d.). Furthermore, efforts are being made to create an Asian Carp Response Plan should these species be found in the Great Lakes system. In addition, the Government of Ontario is currently working collaboratively with the Ontario Federation of Anglers and Hunters on initiatives such as the Invading Species Awareness Program to combat non-native invasive species, including education and awareness, training, monitoring and early detection (Government of Ontario (b), 2014). According to Lubetkin:

Allowing the Asian carp to enter the Great Lakes will undermine restoration efforts. This report confirms that we have an effective solution to protect the Great Lakes from these invaders. It’s now time to act. Delay will only make the problem more complicated and expensive to solve. (2014)

If nothing is done about the non-native species invasion then the ecosystems of the Lakes and their watersheds will be altered dramatically. Native species will die out while the invading species conquer. Not only will this cause the biodiversity to change, this wicked problem has had and will continue to have a negative effect on industries, such as agriculture and fisheries on the Lakes, resulting in a decrease of economic activity. Moreover, the economic cost of eradication of non-native invasive species after they have been established is astronomical. Prevention remains the most affordable action, not only economically but also socially and ecologically. Prevention (with the aid of current pieces of legislation such as acts, plans and strategies) of invasive species entering an ecosystem will save it from their often unknown and disastrous effects on aquatic habitat and animals. The object of this paper is to discover whether having these individual plans consolidated into one document would facilitate the education of citizens and stakeholders about these pertinent matters. The hypothesis is that an amalgamated piece of legislation will aid in the protection of individual lakes and their ecosystems. Therefore the null-hypothesis is that one amalgamated piece of legislation will not be a significant improvement over the multitude of documents already governing the individual lakes and their ecosystems.

3.0 Methodology

3.1 Key Informant Interviews

This section will seek to illuminate the premise for the use of the normative and qualitative techniques employed to research and analyze work being done to protect the Great Lakes. Techniques applied include key informant interviews and literature reviews of several pieces of federal and provincial legislation. According to Cummings, key informant interviews “aid in interpreting social phenomena” as well as yielding informative background information for the

area of study (2007). Further, interviews are “optimal” for collecting data on “individuals’ personal histories, perspectives, and experiences” (Family Health International, n.d.). The interviews for this major research paper were structured, with a fixed number of questions to be answered by anonymous volunteers with experience of the Great Lakes systems and watersheds.

Key informant interviews are an unparalleled source of qualitative information. This information is gathered through a series of open-ended questions that encourage “in-depth responses about people’s experiences, perceptions, opinions, feelings and knowledge” (Cummings, 2007). Responses given were shaped by the personal and professional backgrounds of the interviewees. This use of qualitative data allows for focus on patterns of reactions by these volunteers to illumine the discovery of recurring themes (Cummings, 2007). The key informant interviews conducted during this research were structured and confidential; thus, no informant shall be named in this major research paper. These respondents were selected for their knowledge on the subject as well as their work experiences and volunteer activities in and around the Great Lakes watersheds. The nine subjects were asked the same ten questions (which can be found in Annex 1) to determine whether the hypothesis of a single amalgamated document would in reality be beneficial.

3.2 Critical Review of Policy Elements

The collection and analysis of the multiple strands of relevant legislation was an indispensable step in the development of knowledge of laws and regulations governing the Great Lakes. Further benefit was provided by the use of SWOT analyses of the documents. This method of determining the Strengths, Weaknesses, Opportunities and Threats guided the research in the direction of answering the hypothesis of the paper. According to Paton and Cochran, qualitative

methods are used to answer the questions ‘what’, ‘how’ and ‘why’ in order to understand “the experiences of [...] the community” (2002).

Literature reviews of several documents in current legislation will demonstrate the complexity of the system in place. Sections of legislation to be reviewed include the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, Ontario’s Great Lakes Strategy, the Canada-U.S Great Lakes Water Quality Agreement, Ontario’s Water Resources Act, and the proposed Bill 37: Invasive Species Act.

4.0 Relationships and Collaborations

The Great Lakes Water Quality Act was first signed in the 1970s by both Canada and the United States after the Cuyahoga River caught fire as a result of pollution (GLIN, 2014). Because the lakes are shared, this is a bi-national issue and cooperation and collaboration are needed to maintain a healthy lake system. In 2012 both Canada and the United States signed the Great Lakes Water Quality Agreement with the goal to “restore and maintain the chemical, physical, and biological integrity of the Waters of the Great Lakes” through cooperation and collaboration, the development of programs, and to eliminate and reduce environmental threats to the waters (The Government of Canada (c), 2012). The International Joint Commission held its first meeting in 1912 after the signing of the Boundary Waters Treaty between Canada and the United States (International Joint Commission, 2015). This committee consists of an equal number of professionals and experts from both nations and is responsible for recommending “solutions to transboundary issues” concerning the Great Lakes and connecting systems (International Joint Commission, 2015). Because this national issue is so vast and goals cannot possibly be achieved by an individual government, priorities and objectives are assigned for management by provinces

and their governing municipalities. While this displays a balanced allocation of power and the ability for municipalities to control administration, there are some stakeholders that believe local municipalities and local governments are incapable of such responsibilities. Of this belief Reed states:

A patrician attitude suggests that functions delegated to local governments are less important than those of senior levels of government; it entrenches a perception of superiority among senior government officials who deliver programs and implement policies locally. Such an attitude may reproduce the belief among senior government representatives and even local government officials that localities are incapable of assuming greater involvement in decision-making and management responsibilities. Thus, the delivery of senior government programs rarely leads to substantial alterations in the distribution of power or to the redistribution of goods and services. (1995, p.137)

However, in recent years power distribution among municipalities has been encouraged as a result of the Great Lakes dilemma and indeed stakeholders have voiced their opinions on subjects such as erosion, flooding and climate change. Grover and Krantzberg claim that “binational stakeholder involvement is necessary if policy makers are to successfully work toward solutions that maximize protection of the biological integrity and recreational value of the Great Lakes” (2012, p. 406). In point of fact, municipal stewardship programs encourage stakeholders to take responsibility of their surrounding environments. According to Reed, “co-management is one of many strategies intended to bring stakeholders together via nonconfrontational [sic] mechanisms” (1995, p. 134). Stewardship programs, education and outreach to the public are a few of the commitments made in both the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health and Ontario’s Great Lakes

Strategy. This coordination between the federal, provincial and municipal governments encourages community outreach programs and the general public to gather and voice their opinions. Such programs include the Great Lakes Guardian Community Fund which aids in the restoration of lakes in “grassroot” communities, the Burlington Green Environmental Association that offers garbage clean-up days as well as the “planting of native trees, shrubs and seeds”, and the Lake Huron Centre for Coastal Conservation that engages elementary students by planting dune grass which protects “the natural coastline from erosion and provides habitat for wildlife” (The Government of Ontario (c), 2012). These relationships between the multiple layers of governments and the public must be maintained through collaboration to continue the restoration and protection of the Great Lakes.

4.1 Theory of Collaboration

Because the Great Lakes are massive with multiple pressures and multiple agencies governing them, a linear solution cannot be achieved to this wicked problem. It is a so-called wicked problem as there can be no simple solution; wicked problems are unstructured and are continually evolving. According to Briggs, there are nine characteristics of a wicked problem which include: being difficult to clearly define (whether it be an end-goal or the problem itself), being multi-causal, being socially complex, leading often to unforeseen consequences, being unstable, having no clear solution, involving changing behaviour, being the responsibility of multiple organizations and systematically causing policy failures (2007). Because wicked problems are also socially complex, collaboration between stakeholders and the various forms of governance on the Great Lakes is crucial. In addition, “all parties need to be engaged in public policy development and implementation” to ensure success (Grover & Krantzberg, 2012, p. 407). Oftentimes small alliances must form to convince local municipalities of their specific interests

in order to have a common problem remediated. Reed suggests that the “success of these efforts depends on the extent to which the alliance can determine common objectives” and its ability to convince senior governments that it represents “the local interest” (1995). The multiple organizations governing the Great Lakes must adapt current policy in favour of the evolving pressures being put on the Great Lakes.

4.2 Key Informant Interview Analysis

These interviews were key factors in the consideration of developing a new framework to amalgamate acts, strategies, policies and other pieces of legislation governing the Great Lakes into one easy to follow mechanism. The structured interview questions can be found in Annex 1: Key Informant Interview Questionnaire. These interviews were carried out with nine professionals in the Great Lakes areas that have shown a commitment to the Great Lakes and their ecosystems. The interviews were conducted with members of Trout Unlimited Canada, the Ministry of Agriculture, Forestry and Rural Affairs, the Ministry of the Environment, Conservation Ontario, Environment Canada, the International Joint Commission Great Lakes Water Quality Board, the Invasive Species Centre and Our Living Waters. Although their responsibilities vary, many continue their work in the Great Lakes through volunteer groups and committees demonstrating their dedication to the improvement and well-being of the Great Lakes and their ecosystems.

Through their various perspectives, it was clear that all participants believe there are strong relationships and collaborations between Canada and the U.S. However, parties are wary that once the deliverables and commitments are made the government agencies will agree to perform the bare minimum only. This only furthers the need for stakeholder involvement. The more those

citizens in the area know about their environment, the more they will lobby for its improvement and sustainability. As it currently stands, citizen stakeholder involvement is low, which is why the governments are committed to meet the bare minimum requirements only of the Canada-Ontario Agreement and the Great Lakes Water Quality Agreement.

Participants also thought that the current series of policies, acts and strategies can be both assets and hindrances in their everyday personal activities. For instance, they can be used as a tool to provide guidance and to drive written commitments into action. Nevertheless, enforcement is difficult and implementation is not effective and tends to monitor rather than rectify problems. Furthermore, the multiple pieces of legislation create additional paper shuffling proving a major hindrance to activities. With respect to a better strategy for coping with the multiple pressures bearing on the Great Lakes, all participants agreed that there is room for improvement, but it would not be advantageous to make a fresh start. One respondent pointed out the ease of highlighting failings in a system, but queried how to formulate a better option if the opportunity could be provided.

When questioned about the management of species diversity, the general opinion was that the focus must be on both species and their habitats, as they are symbiotic. To enable this, prevention, management and ensuring opportunities for species survival is critical. While the Canada-Ontario Agreement looks at the effects of water resources on ecosystems, the collaboration between federal and provincial governments is essential to be able to mandate surveillance and control of invasive species through regulations.

Most participants were unable to formulate whether there were key policy components that represent barriers to species diversity management. Those that did answer, agree that it is not

policy per se that proves a barrier but the ability of both the Canadian and American governments to implement and enforce the regulations. Further, the sheer number of governmental agencies makes it difficult to know exactly who has responsibility and what the timelines for project completion are. Budgets are also an issue as they are too constrained, and strategies focus on the waters, but not on the watersheds that feed into them. The issue of the most significant concern is the perceived lack of interest and awareness within the human population. Public concern is critical to provide any chance to protect the environment. A fundamental problem is the disconnection between public desire for results and the will to put funding in place. Of further concern is the tendency for agencies to assume someone else bears the responsibility. If one level of government is unable to fund a project, it may get passed to another or even shelved. Therefore, it is crucial that funds be specifically allocated, especially to areas where lack of funding is the sole obstacle to significant progress. One participant acknowledged that the U.S. is investing more and wants Canada to invest at that same level.

Two further concerns arose from the interviews. One significant concern is the potential introduction of Asian Carp into the Great Lakes. A second is an obligation for a more comprehensive focus on flooding and erosion, through the Canada-Ontario Agreement, as there have been letters of concern from the public in this regard.

4.3 Public Awareness and Stewardship Programs

Outreach programs and public education appear in both the Canada-Ontario Agreement and Ontario's Great Lakes Strategy as a way to involve stakeholders. Meetings and teleconferences were set up to "gain insight into [the stakeholders'] expectations and key issues for potential implementation" after the first draft of the Great Lakes Strategy (Reeves, 2012). While the goals

stated are clear, many feel that the government is failing to “build enthusiasm” concerning initiatives to protect and restore the Great Lakes (Reeves, 2012). The success of these policy goals relies on stakeholder involvement, but as Reeves asks, “how can the public become engaged when the government fails to adequately engage them?” (2012). Perhaps further involvement would have materialized if more effort had been put into publicity, such as radio and television advertisements inviting the public to the meetings.

Programs such as the Great Lakes Agricultural Stewardship are promoting “environmental stewardship” to farmers with land abutting both Lake Erie and Lake Huron (The Government of Ontario (e), 2015). Funding for this program has been committed by both the federal and provincial governments and will contribute \$4 million annually for the next four years. This stewardship aims to:

identify ways producers can improve soil health, reduce run-off and improve pollinator habitat; modify equipment to address risks related to manure application and pollinator health; and to adopt best management practices, including soil erosion control structures, cover crops, residue management, buffer and shelter strips. (The Government of Ontario (e), 2015)

This program also commits to the Canada-Ontario Agreement by participating in the action plans to “reduce the impact of excess nutrients on the water quality of Lake Erie” (The Government of Ontario (e), 2015). To date, more than 23,500 “on-farm improvement projects” have been undertaken and have made significant contributions to the amelioration of the environment, including the watersheds on which the participating farms reside (The Government of Ontario (e), 2015).

The Great Lakes Stewardship Initiative was created in 2007 in Michigan to “develop knowledgeable and active stewards [...] through hands-on learning in the community” (GLSI, n.d.). This program focuses on future stewards of the Great Lakes: students. Since its beginning, over 50,000 students ranging from kindergarten to grade twelve have participated in this program designed to help them “become effective environmental stewards” while partnering with community organizations to extend collaboration and to strengthen the community (GLSI, n.d.). Stewardship programs such as these show the commitment that communities and stakeholders have to protect and restore the Great Lakes. These programs must continue into the future to restore and maintain healthy lakes.

5.0 Critical Review of Policy Elements

This section will focus on several key components of current legislation governing the Great Lakes and their surrounding ecosystems. As aforementioned, a SWOT analysis will be used for each piece of legislation to aid in determining its strengths, weaknesses, opportunities and threats.

5.1 Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014

This recent agreement between the federal government of Canada and the provincial government of Ontario was created to ensure that five consensual priorities would be addressed. These priorities include protecting waters, improving wetlands, beaches and coastal areas, protecting habitat and species, enhancing understanding and adaptation, promoting innovation and engaging communities (The Government of Canada (b), 2014). This agreement is firm in recognizing the requirements needed to protect and sustain healthy living systems; however it lacks in implementation and follow-through. For instance, this agreement recognizes that the Great Lakes

are “currently exhibiting symptoms of stress due to human activities undertaken within the basin” and that efforts need to be furthered to “address new and continuing threats [...] including aquatic invasive species, excessive nutrients, harmful pollutants, discharges from vessels, climate change, and the loss of habitats and species”, however in several sections the responsibility of ameliorating these conditions is passed to municipalities that consequently have less funding and are unable to accomplish the goals in a timely manner or even at all (The Government of Canada (b), 2014). An example of this can be found in the Harmful Pollutants Annex. While the Agreement sets out six months to “establish a work-plan and timelines to achieve the commitments for Chemicals of Concern” this will not be accomplished until almost 18 months (The Government of Canada (b), 2014). Six months was insufficient time for follow through as the new process of determining the chemicals is complex and all parties have differing interests and concerns. Further, until the official list of Chemicals of Concern is specified and published, the environmental quality criteria, which includes the establishment of “guidelines, objectives, and/or standards” for the Chemicals of Concern cannot advance (The Government of Canada (b), 2014).

The Nutrients Annex proposes to put the focus first on Lake Erie, the “lake at greatest risk” while generating scientific data that “may be transferable” to the other lakes (The Government of Canada (b), 2014). While at first this seems a logical prioritization, unfortunately the other lakes are not at zero risk. In these circumstances it would be more desirable to have a preventative plan for all of the Great Lakes, instead of waiting for data on one before moving on to the others. Another issue with this one-lake strategy is that all of the lakes in the system have different, separate issues that require their own preventative measures; one plan cannot be all encompassing.

Strength in the Harmful Pollutants Annex is the transparency of both the federal and provincial governments. It is a goal to share information between themselves as well as ensuring that the public is well informed of the management of the chemicals. In addition they plan cooperation with the First Nations and Métis as well as stakeholder engagement activities to “ensure their participation” in the implementation of the management of chemicals (The Government of Canada (b), 2014). Moreover, the Canada-Ontario Agreement shows consistency by implementing identical requirements to the Canada-United States Great Lakes Water Quality Agreement. The consistency in following requirements for Discharges from Vessels illustrates that the multiple governments are dedicated to accomplishing the goals of the Agreement.

The Areas of Concern Annex focuses on the restoration of water quality and ecosystem health in troublesome areas, such as Bay of Quinte and the St. Lawrence River. One goal is to “reduce the migration of pollutants” from contaminated sites, but it does not specify how this will be achieved; only that it is the responsibility of the province. Further, the second goal of making “significant progress towards remedial action plan implementation” does not have clearly defined parameters (The Government of Canada (b), 2014). How will this significant progress be quantified and how will they know when this goal has been attained?

Asian carp remain a significant threat to the Great Lakes. While there are provincial regulations in place that prohibit the “possession of live invasive fish species in Ontario, including live Asian carp”, it was suggested by a key informant that live bait fishing has led to the introduction of invasive species in the past, such as the brown goby appearing in a water system that it could not access naturally, and that live bait fishing should also be prohibited (The Government of Canada (b), 2014). There is opportunity here to implement regulations concerning aquatic invasive species. However, the Agreement shows weakness in the implementation sections, choosing to

“monitor and report on the status of established AIS and their impacts on Great Lakes food webs” instead of promoting action to rectify the situation (The Government of Canada (b), 2014).

The Engaging Communities Annex offers the opportunity for stakeholders and communities to discuss the state of the lakes and to participate in “recreation opportunities, programs, issues” as well as education and awareness (The Government of Canada (b), 2014).

5.2 Canada-United States Great Lakes Water Quality Agreement, 2012

The Agreement between the two federal governments is strong in its transparency to the public. This is demonstrated by progress reports for the individual annexes to be filed and reported to the public and the International Joint Commission every three years. Once these reports have been submitted, consultations between agencies take place to analyze the need for more action and whether improvements can be made to the efficacy of the Agreement.

In identified Areas of Concern, Remedial Action Plans are to be developed through collaborative efforts of state and provincial governments, First Nations, Métis, the appropriate municipal governments, watershed agencies such as the Conservation Authority and the community that is affected. These plans aim to restore conditions of ecosystems and include “remedial measures to be taken” (The Government of Canada (c), 2012). Once it is deemed that the area has been revitalized, the designation of Area of Concern is to be removed while the appropriate parties continue to monitor. Although this action plan deals with the remediation of an area, focus on preventative measures is likewise necessary. For instance, while parties may be concentrated on one Beneficial Use Impairment, another could arise that they are unprepared to manage. This in turn would lead to a cycle of remedial action instead of a more constructive preventative action.

The third Annex of Chemicals of Mutual Concern is a positive step as it accords responsibility for the environment to the public. To achieve the reductions of chemical inputs into the watershed, the public will be “using safer and less harmful chemicals” (The Government of Canada (c), 2012). Despite this promise, in order to accomplish the goal, appropriate chemicals must be determined in a mutual fashion by the many governing bodies involved. This is proving a difficult task, due to the lack of an official published list of Chemicals of Concern.

The purpose of the Aquatic Invasive Species Annex is to “control or reduce the spread of existing AIS [Aquatic Invasive Species], and to eradicate, where feasible, existing AIS within the Great Lakes Basin Ecosystem” (The Government of Canada (c), 2012). This section provides the opportunity for leaders to prevent invasive species from entering the Lakes. Measures to reach this objective are clear, and include coordinating bi-national Risk Assessments, developing management strategies, coordinating education efforts and establishing effective barriers that prevent invasive species from entering while allowing native species to continue (The Government of Canada (c), 2012). According to the Army Corps, the sole way to accomplish this task is through physical separation of the Great Lakes and Mississippi River systems as previous electrical barriers have been “breached in a variety of ways, leaving Lake Michigan and the other Great Lakes vulnerable to the destructive non-native fish” (Lubetkin, 2014). The use of these physical barriers is an opportunity for the lakes to restore their ecosystems while revitalizing “drinking water and wastewater systems” as well as addressing the issue of flooding (Lubetkin, 2014).

5.3 Ontario's Great Lakes Strategy, 2012

This provincial strategy “aims to conserve biodiversity and deal with invasive species” with the broader goal that the Great Lakes continue to be “drinkable, swimmable and fishable” (The Government of Ontario (c), 2012). The strategy outlines six Great Lakes Goals:

Engaging and empowering communities; protecting water for human and ecological health; improving wetlands, beaches and coastal areas; protecting habitats and species; enhancing understanding and adaptation; and, ensuring environmentally sustainable economic opportunities and innovation. (The Government of Ontario (c), 2012)

This strategy was created to overcome many challenges concerning the Great Lakes as well as the multiple pressures put on them, such as human population growth and urban expansion, invasive species, climate change, chemicals of concern (such as phosphorus) and algae (The Government of Ontario (c), 2012). There is a great opportunity for engaging and empowering communities responsible for the wellbeing of the watersheds and ecosystems in which they reside. According to the Government of Canada, “few people are sufficiently aware of the nature and magnitude of the threat and, as a result, there is a widespread lack of compliance with voluntary practices and regulations” which has led to some spread of Aquatic Invasive Species ((c), 2015). There is a dearth of enforcement under these circumstances. Although regulations and legislation do exist perpetrators are not dealt with severely and the consequences have “not always been adequately brought to bear on the problem” (The Government of Canada (a), 2015). Total charges of “possession of live Asian carp” have resulted in fines of only \$130,000 (The Government of Ontario (c), 2012). Legislation and regulations lay a solid foundation for

rehabilitating the Great Lakes, but the enforcement of these laws is crucial for the goals of the strategy to be attained.

This strategy is strong in its willingness to implement the Ontario Invasive Strategic Plan to continue to effectively manage these species. Major points of this plan include the prevention of new invaders, responding rapidly to these new invasions, detection of invaders already within the Ontarian systems and managing and adapting to established invaders (The Government of Ontario (c), 2012). These goals will require commitments and coordination from a variety of governments as well as collaborative efforts of the communities affected.

Upon further examination of the document it is apparent that the strategy is more optimistic than data-reliant. As an example, the Government of Ontario states that “over the last decade, the rate of invasions has declined” while the Government of Canada states that “recent data suggests that the pace is still accelerating” ((c) 2012; (a) 2015). It is little wonder that educating the public is the key to success when the governing parties have conflicting perspectives on the subject.

5.4 Environmental Protection Act, 2015

The last amendment made to this Act was in 2010. The current purpose of this legislative document is to “provide for the protection and conservation of the natural environment” (The Government of Ontario (f), 2015). A serious weakness of this act is that ice shelters are the single concern in the portion of the document pertaining to water. Sub-sections include the prohibition of waste discharge, the removal of ice shelters and the disposal of ice shelters (The Government of Ontario (f), 2015). The forced removal of ice shelters is a safety precaution, which means that waste discharge is the sole environmental concern in this section. In regard to this it states that “no person shall discharge or cause or permit the discharge of any waste on ice

over any water except in accordance with the regulations” (The Government of Ontario (f), 2015). In spite of the volume of this act, the proportion which deals with water issues is extremely small. Thus a more useful tool for water protection is the Ontario Water Resources Act.

5.5 Ontario Water Resources Act, 2015

The purpose of this act is to “provide for the conservation, protection and management of Ontario’s waters and for their efficient and sustainable use, in order to promote Ontario’s long-term environmental, social and economic well-being” (The Government of Ontario (d), 2015). To accomplish this, there are regulations that outline specific restrictions such as water transfers from certain basins (including the maximum amount of water that can be transferred), efficient use of water (such as appliances) and wells. This is considered one strength of this piece of legislation as these regulations are quite strict but straightforward. The Minister of the Environment shows transparency in this act by preparing an “assessment of cumulative impacts” and “invite[s] members of the public to submit written comments” (The Government of Ontario (d), 2015). This provides communities with the chance to voice their opinions to their governments. After consideration of the comments, the Minister of the Environment will then publish a statement that “summarizes the actions that the Government of Ontario intends to take in response to the assessment” (The Government of Ontario (d), 2015). This response allows the province of Ontario to show its commitment for protecting, conserving and managing the waters of the Great Lakes to the public.

5.6 Bill 37: Invasive Species Act

This act pertaining to invasive species has been carried past the first reading but there is still the ongoing debate of the second reading (Legislative Assembly of Ontario, n.d.). The Honourable Bill Mauro, who is the current Minister of Natural Resources and Forestry, wrote this document (Legislative Assembly of Ontario, n.d.). It aims to delineate regulations and actions to be taken with respect to invasive species. Topics included are prohibited activities, preventative measures, orders and actions, enforcement and offences and penalties (Mauro, 2014). Enforcement officers include park wardens and conservation officers appointed by the Minister. Special preventative measures offer the opportunity for a “prevention and response plan to be prepared” should an invasive species pose a significant threat (Mauro, 2014). These plans would include rapid response measures, practices to promote early detection and measures to control or eradicate an invasive species. Currently there are not government entities responsible for the plans, as they are to be specified in the plan only if this type of situation should arise (Mauro, 2014). Further, under this act, the Minister will have the ability to empower entities to “use any physical or mechanical means” to eradicate invasive species, to “destroy by any means” any being that could be a carrier, and other necessary remedial actions even if they result in “damage to property or its removal or destruction” (Mauro, 2014). While these powers may seem extreme, this act goes on to explain that should these actions be carried out, the occupant must be notified five days in advance of any action to be taken. In addition, occupants may receive compensation for property damages as a result of the actions taken to prevent invasive species from entering the Great Lakes systems.

6.0 Current Framework

The framework currently in place covers bi-national agreements, federal and provincial legislation as well as municipal practices and policies. Previously reviewed were the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, the Canada-United States Great Lakes Water Quality Agreement, Ontario's Great Lakes Strategy, the Environmental Protection Act, the Ontario Water Resources Act and the proposed Bill 37, an act respecting Invasive Species. Additional legislation includes individual Lakewide Action and Management Plans designed and implemented for each lake in the Great Lakes system. According to the Canada-Ontario Agreement, these individual plans for Lakes Erie, Ontario, Huron and Superior should be completed and published by 2018 ((b) 2014, p. 44). These plans will contain sections to encourage community development and engagement, a nearshore framework for areas of concern and ongoing research and analysis of the environments of the Lakes (The Government of Canada (b), 2014). Presently the Executive Committee oversees the Agreement and is responsible for ensuring that the stated goals are achieved, undertaking annual evaluations and assessments, overseeing the "development, amendment and implementation of Annexes", ensuring opportunities for engaging Great Lakes communities and making the effort to continue the cooperation and collaboration between all parties concerned (The Government of Canada (b), 2014).

Most participants in the telephone interviews responded that the cooperation and relationships between the Canadian and American federal governments are moderate to strong. The International Joint Commission remains a considerable ally for the protection and restoration of the Great Lakes. The main responsibilities of this commission are to regulate shared water uses, to investigate transboundary water issues and to recommend solutions to these issues

(International Joint Commission, 2015). To do this, the commission must maintain communications and network activities to encourage the participation of ministries.

In the world of water protection and restoration, respondents noted that the Canada-Ontario Agreement is advantageous as a resource for guiding local actions such as research and monitoring. However, there are limitations to the documents, mainly involving reporting and permissions when trying to accomplish the priorities. For example, one must receive approvals from various government bodies before a project commences. This often proves difficult and time-consuming as various governments may have different priorities and concerns. It was also suggested that the senior levels of government need to provide more financial leadership, since provincial and municipal governments are consistently under budget and staffing constraints. Notwithstanding these drawbacks, it was a general consensus that the current pieces of legislation used to govern these national waters are assets, and that they give a common vision of priorities to draw the focus of participating government and non-government agencies. Therefore, a new framework to govern the Great Lakes would only upset the current balance. However, participating agencies for the protection and restoration of the health of the Great Lakes must continue to commit and pursue their goals and priorities in both the Canada-Ontario Agreement and the Canada-United States Agreement. Active collaboration, communication and cooperation between the two nations will continue to strengthen the relationships for the improved health of the Great Lakes.

7.0 Conclusion

Current stewardship programs must continue to encourage the participation and collaboration of stakeholders with their municipal governments. An educated public will be able to exert more

power on the government to fulfill their commitments. Therefore, it is imperative that the current lack of public awareness be addressed and the public be encouraged to participate in programs such as tree planting and cleaning up days. Additional funds are required for the restoration of some areas of concern. It is highly recommended that funds be attributed to locales that have no current plan in place and where no remedial work is presently underway instead of focusing on areas that are already beginning to change for the better.

Lakewide Action and Management Plans should be published by 2018, which may require increased funds for field research and monitoring as well as staffing. These plans for the individual lakes and systems that feed into them have the scope to respond directly to each system's needs and frame their own priorities for protection and restoration. Additional attention must be given to the participation and education of stakeholders. Further, as the lack of awareness of the public regarding invasive species in the Great Lakes is widespread, it is highly recommended that live bait fishing be prohibited. As previously shown, the brown goby had been introduced to a system that it could not have accessed naturally; the conclusion being that human intervention was responsible.

Since the signing of the Water Boundary Treaty in 1909, the relationships between the Canadian and American federal governments have been maintained and strengthened by the ability to efficiently and effectively manage and sustain the health of the Great Lakes. However, a slew of invasive species (including Zebra and Quagga mussels and Sea lamprey) were already present before the coordination of a prevention plan to prohibit the incursion of Asian carp into the Great Lakes system. Because this species will wreak havoc on the ecosystem, the native species, and fisheries it is imperative that these carp are prohibited from entering. To accomplish this, the

power between the senior level governments and municipalities must be shared, and the inclusion of stakeholder participation is crucial for ongoing success.

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9.0 Annex 1: Key Informant Interview Questionnaire

1. Can you describe some of your day to day responsibilities?
2. Have you personally been involved with any collaborative efforts and/or groups to protect the Great Lakes? (Professional and/or otherwise?)
3. Would you rate the current relationships and collaborations between Canada and the U.S as weak or strong?
 - a. Would (can?) you elaborate on this?
 - b. Why do you feel this way?
4. Do you find the current series of Acts, Policies and Strategies an asset or a hindrance in your everyday professional activities?
5. In your professional opinion, could there be a better strategy for coping with the multiple pressures put on the Great Lakes than is already in place?
 - a. (If yes, Can you give me an example?)
6. What are key policy elements that facilitate management of species diversity?
7. Are there any policy components that represent barriers to species diversity management?
 - a) Ex. Planning Act, (fed) CERA legislation and designation process, (prov) endangered species act and permitting system
8. There is a current strategy. What are major drawbacks for management of species in the Great Lakes area?
 - a) What would you suggest to improve current approaches and instruments available for implementation?
9. What issue in your mind represents the most significant concern on management of biodiversity?

10. Is there anything else you would like to add?