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Community Involvement as a Tool for International Policy: Realizing the Great Lakes Water Quality Agreement

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Community Involvement as a Tool for International Policy:

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Abstract

Whether present in abundance or known for its scarcity, water defines the regional and geographical identities of people. It defines political and ecological boundaries globally. Water paucity and quality in burgeoning populations has been a catalyst for creative resource management policies. Conservation of water resources, in practice, has still not improved however. As a result, the health and stability of the Great Lakes as a natural resource is threatened. The Great Lakes region includes two countries, eight states, two provinces, and over 200 tribal and native influences. International agreements, such as the Boundary Waters Treaty of 1909 (BWT) and the Great Lakes Water Quality Agreement (GLWQA) beginning in 1972, have attempted to define responsibilities for broad water issues. So what are the best ways to manage such a vital element? Management institutions created from such agreements and treaties have struggled to handle the diversity of issues for various reasons. Meanwhile, local-level efforts emerged to address specific local concerns. The role of such efforts is examined, using interdisciplinary historical analysis and comparative case studies, in relation to the GLWQA. The place and function of different forms of local-level efforts are incorporated into this study to provide depth. The resulting analysis reveals that these forms of conservation have produced encouraging progress and results. Strengthened efforts must be made to cultivate further community involvement as a way to achieve the goals set out in international policy and bridge the philosophical dichotomy of thinking globally, and acting locally.

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List of Abbreviations

LLCM: Local-Level Conservation Mechanisms

BWT: Boundary Waters Treaty of 1909

GLWQA: Great Lakes Water Quality Agreement of 1978 (Amendment, 1987)

-Initially agreed to in 1972, renewed in 1978.

Compact: Great Lakes-St. Lawrence River Basin Sustainable Water Resources Compact & Agreement

IJC: International Joint Commission

WRDA: Water Resources Development Act of 1986

Charter: The Great Lakes Charter of 1985

Annex: The Great Lakes Charter Annex of 2001

AOC/s: Area/s of Concern

EPA: United States Environmental Protection Agency

EC: Environment Canada

Basin: Great Lakes Basin

GLIN: Great Lakes Information Network

RAP: Remedial Action Plan

LaMP: Lakewide Management Plan

GLI: Great Lakes Water Quality Initiative

OCWA: Ontario Clean Water Agency

OMNR: Ontario Ministry of Natural Resources

OMOEE: Ontario Ministry of Environment and Energy

TOM: Tip of the Mitt Watershed Council

MCD: Muskegon Conservation District

UTRCA: Upper Thames River Conservation Authority

COA: Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

EA: Environmental Assessment

BUI: Beneficial Use Impairment

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I. Introduction

The United States and Canada share the longest border in the world of over 5,500 miles (Fry, 2005). This border is defined by rivers, lakes and watersheds, from the St. Lawrence Seaway in the east, to the border between Alaska and the Yukon in the northwest. It is anchored in the Midwest by the Great Lakes Basin (Figure 1, below). The sustainability and health of this watershed is challenged by alien invasive species, population growth and more. Around forty million people call this region home, a population that depends on the Great lakes to support its economy and identity. The fishing industry alone accounts for $3.5 billion while the shipping industry contributes another $3 billion. The waters also support a growing tourism industry, with hunting, recreational boating, and recreational fishing each worth over $2 billion to the economy. The water found in the Great Lakes Basin also supports over 30% of the United States' and over 25% of Canada's agriculture (IJC, 2005). Water management practices remain a contentious issue facing institutions in both social and political spheres.

Concerns over water quantity and its availability as a resource for human use were first addressed in a comprehensive manner with the Boundary Waters Treaty of 1909 (BWT). It took fifty years for water pollution to reach a level of concern warranting binational political attention. The Great Lakes Information Network defines water pollution as "a change in the chemical, physical and biological health of a waterway due to human activity" (GLIN). Human activity near Cleveland, Ohio became the source of the spark that the Great Lakes region needed to capture that political attention on an international level. In June of 1969, a tributary of Lake Erie, the Cuyahoga River literally caught fire. As a result, the political efficacy of water pollution gained momentum rapidly, resulting in the Clean Water Act of 1970 and most importantly, the first edition of the Great Lakes Water Quality Agreement with Canada in 1972.

The Basin includes the Government of Québec and Province of Ontario in Canada, while in America, the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, and New York, as well as the Commonwealth of Pennsylvania. Over 200 Native American, metis, and tribal governments also influence the region. This political arrangement is illustrated below in Figure 1. The primary bodies of water are Lake Michigan, Lake Superior, Lake Huron, Lake Erie, Lake Ontario, Lake St. Clair, the St. Clair River, Detroit River, and the St. Lawrence River. The fact that these states, provinces, and countries are each made up of communities and municipalities is important to the Basin's social and political dynamics.

Figure 1. Great Lakes Basin Boundaries

People tend to identify more strongly with and value higher the issues that affect themselves and their community (Schultz, 2012). For this reason, among other factors, organized forms of community-based action have developed. Significant motivation to create such an institution may arise from the sentiment that intimate knowledge of an issue will lead to more efficient, motivated, and direct solutions. They become neighborhood associations, political advocacy groups, and environmental groups. "Between the early and mid-twentieth century, New Zealand, England and Wales, the United States, and Canada established agencies to address regional environmental, social and economic issues" (Shrubsole, 1996). Locally oriented water conservation exists in various forms also. In Ontario, Conservation Authorities are established primarily around a local watershed, which serves as the principal management unit and is clearly definable geographically. Other examples include watershed councils and conservation districts. In the context of this research, such locally supported, issue-based institutions are categorized as local-level conservation mechanisms.

Community involvement forms the basis of grassroots efforts and bottom-up management approaches. The 1992 Earth Summit resulted in new ideas on water quality and freshwater resource management approaches. In order to implement these ideas, "several management principles were adopted in *Agenda 21*" (Shrubsole, 1996). The essentials of local-level conservation mechanisms were included within *Agenda 21* with "a 'bottom-up' approach of putting emphasis upon people, communities and NGOs; the need for 'open governance;' the importance of adequate information" (Shrubsole, 1996). Hans van Ginkel remarks that "We have to learn how to move fluidly between the global and local in the present world" and "At the end of the day it's about people taking responsibility for their own future" (Glasser, 2008).

This research strives to answer important questions concerning water resource management in the Great Lakes. The role of local-level conservation mechanisms in addressing environmental issues concerning the region is examined. As something to simply consider, can further local-level involvement contribute in bridging the dichotomous gap between thinking globally and acting locally in environmental issues? The analysis and research are not necessarily intended to form a policy change; rather, they wish to guide future implementation of the goals and intentions found in environmental policies. Thus, the foundational question of this work is: What is the role of local-level conservation mechanisms in effective implementation of the Great Lakes Water Quality Agreement?

II. Approach & Methods

Broad historical research, case studies, and comparative analysis are used to illustrate conclusions. The historical work is largely derived from scholarly articles, government documents, as well as documents from local-level conservation mechanisms/institutions. The case studies are supported by annual reports & budgets, government documents, newspaper articles, and more scholarly articles. The work here is applied comparatively in discussion.

The interdisciplinary historical research creates a foundational background that provides context for both the case studies and the discussion. It covers the federalist and cultural differences between the United States and Canada, at the national, state/provincial, and local levels. The relevant water resource management history between the two countries is also included. The genesis and evolution of local-level conservation mechanisms rounds out the base of the background research. Specific focus is placed on non-profits, conservation districts, and conservation authorities, which form the vehicular examples of the case studies. The functions and motivation of such institutions are further investigated. Explanation follows on how all of

these components merge in relation to the Great Lakes Water Quality Agreement and to water conservation questions of this work.

The three case studies provide specific examples of local-level mechanisms to provide illustration to the historical research. Conservation Authorities in Ontario, Conservation Districts in Michigan, and a Northern Michigan non-profit are used as examples of local-level mechanisms of water conservation. The Upper Thames River Conservation Authority (UTRCA), the Muskegon Conservation District (MCD), and the Tip of the Mitt Watershed Council (TOM) are the specific institutions chosen. All three bear a commonality in their local-level scope. However, they differ in their authority, responsibilities, orientation, and legal function. The case studies are structured in a method to reduce such variation and then analyze them based on what they do share. Each is illustrated through the study of a project taken up by the institution. The institutions are then analyzed through a couple of metrics that apply to all three. The analysis is based on the institution's accountability, funding sources and use, and partnership building. The results of the case studies are applied to the historical contexts in the Discussion section. Specific applications are made to the gaps in the GLWQA's effectiveness. Conclusions are drawn, based on the comparisons, and enumerated in the final section of this work.

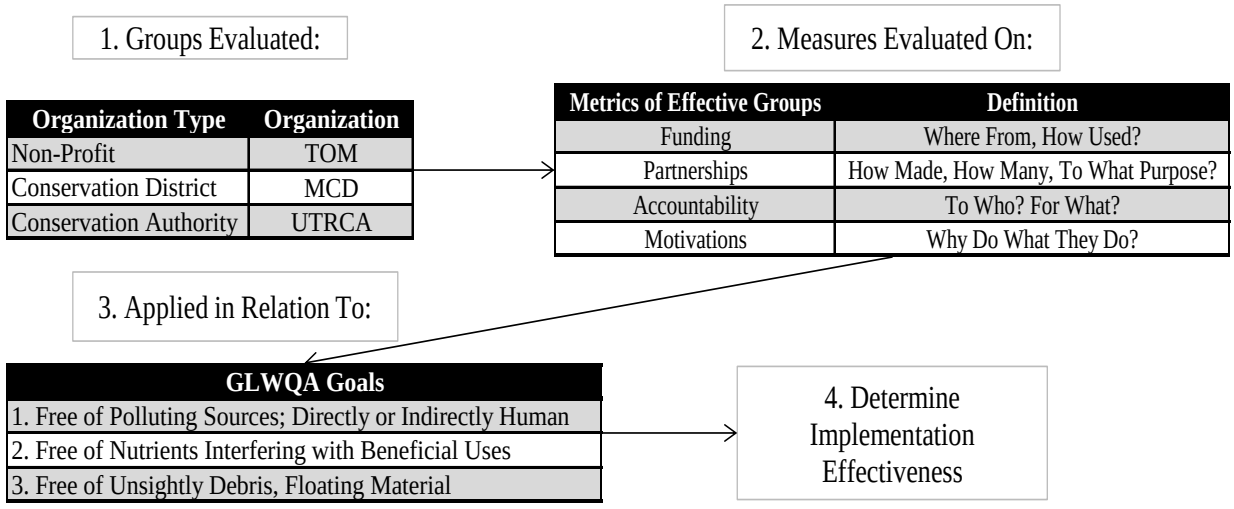


Figure 2. Methodology Flow Chart

III. History of Great Lakes Water Management

In order to understand the setting in which the GLWQA and water pollution interact, a number of other elements involved are important to know. Also important are the various levels of power and influence at work in the Basin. This includes the political and professional participants. Understanding who and what are involved, at the level they are involved, and the relationship between them provides a basis to recognize the issues of water pollution in the Great Lakes under the GLWQA. It further allows an illustration to base the inclusion of local-level conservation mechanisms off.

a. Brief Differences in the Governments of Canada and the United States

Canada and the United States share a common language, the longest border in the world, and the Great Lakes. The number of similarities among the cultures and people extend to a level taken for granted, and often naively assumed. The differences are typically forgotten by those in the United States and celebrated in Canada. The differences are reflected in the political relationship between the two governments. The differences can also be seen in the structural make-up of the two governments and their departments and agencies.

Canada and the United States are both federalist governments, with constitutions that delegate powers to the levels of actors in each country. It is interesting that the U.S. constitution was conceived under constant reminders of the dangers of a central government that could grow too strong. A select choice of powers was given to the federal government, with anything not specifically named to fall to the authority of the states. As this was interpreted over time, the federal government of the U.S. has expanded its original powers exponentially. On the other hand, the Canadian constitution was "originally designed to create a strong central government and a clear division of responsibilities and jurisdictions, is today distinguished by powerful

provinces and overlapping federal-provincial jurisdictions" (Inscho, Durfee, 1995). While the U.S. constitution "gives the federal government clear and extensive authority in international relations," (Inscho, Durfee, 1995) the Canadian constitution is structured in a way that "execution of international agreements may depend on the passage of implementing legislation by provincial parliaments" (Inscho, Durfee, 1995). Implications of these differences are seen in the Great Lakes.

The Canadian constitution does not include delineation of powers on the environment. "Because responsibility for environmental protection and remediation does not clearly lie with either the federal or the provincial government, the question of responsibility for resolving" environmental issues in the Great Lakes are left unanswered (Inscho, Durfee, 1995). This has resulted in a number of agreements between the federal government and the provincial government in order to create cooperation. When it came time to enter the GLWQA in 1972 – an international agreement – Canada had such domestic struggles to address in conjunction to the foreign affairs. This was "because responsibility for their implementation falls between 'the classes of subjects' given to the federal government and those given to the provinces" (Inscho, Durfee, 1995). As an example, Ontario is "responsible for 'near-shore' lake waters and for the lake floor, while the federal government is responsible for the open lakes, international pollution, and some federal harbors" (Inscho, Durfee, 1995). Overall, the provinces in Canada have more of a capacity to influence foreign affairs than states in the U.S. because Canadian "federalism places considerable emphasis on provincial (rather than national) power" (Inscho, Durfee, 1995). Canada must listen to the voice of the provinces in creating international agreements. Since the provinces have so much more power relative to the states as a result of constitutional vagaries, they can in effect refuse to implement obligations of an international agreements that concern,

for example, natural resources. The U.S. does not need to consult with its states as much because of its power to delegate standards to them. It is still important to at least understand the dynamics of the affected states in an international agreement as "the states may be needed to implement federal international obligations" (Inscho, Durfee, 1995).

Environment Canada (EC) is the federal agency responsible for the environment in Canada, while in the United States, the Environmental Protection Agency (EPA) is responsible. In terms of water management, EC does not set water standards for all of Canada, the provinces do. Under the Canadian constitutions of 1867 and 1982, the federal government must recognize the predominance of the provinces (Fry, 2005). So with water, the Canadian federal government and EC must approach water from the understanding that the water belongs to the provinces (Allee, 1995). For example, under the GLWQA, which is detailed later, the national government in Ottawa deferred to Ontario and Quebec to implement the terms of the agreement. The EPA on the other hand, is responsible for setting national water pollution standards in the United States, but water rights and law are primarily the responsibility of the states. Another consequence is large amounts of top-down attempts at coordination from federal level institutions like the EPA. "The U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Geological Survey, and 13 other federal agencies, for example, conduct more than 140 national and regional monitoring programs, ranging from national monitoring networks to site-specific research projects" (Christen, 2004). Since the EPA does not maintain regional, state, or local offices, any local management of a resource is done through local offices of other agencies. For example, the EPA will work with the Army Corps of Engineers in dealing with wetland protection but the Soil Conservation Service for non-point pollution sources (Allee, 1995).

In both countries, the municipal governments derive their powers from the state and provincial governments. The countries differ however in the way they delegate those powers. The provinces hold onto much of the power, delegating little outside of the bigger cities, and typically prefer to setup boards and commissions to address issues instead of delegating functions to local governments. This includes functions such as community planning, public health, and conservation. Allee further argues that:

> Provincial governments are more likely than state to think and act in terms of communities and sub-regions. Nongovernmental organizations have emerged to carry out in rural areas many of the tasks that governments would perform in the United States. They create incentives for individual action and facilitate community decision making, roles more often expected of local governments in the United States (1995).

The differences here play out in water resource management too. In Ontario, conservation authorities have addressed watershed protection since the 1940s. The protection is heavily driven by the local communities in the different watersheds. They establish the boundaries of the areas they wish to protect and then form a "conservation authority" specifically responsible. This is similar to the International Joint Commission's (IJC) process of establishing Areas of Concern (AOCs). They are both approaches that encourage localized, community involved management. In the United States the approach is less proactive, although similar institutions do exist as Conservation Districts.

There seems to be more innate capacity for the development of local-level conservation mechanisms in Ontario as a result of Canada's federal and cultural orientations. This is evident historically, as the province's "conservation authorities were the first provincial agencies to incorporate provincial conservation programs with local resource management concerns" (Cardwell, 1996). More on the history of local-level conservation is discussed later, but it is

worth noting now that the differing outlooks of each country are evident from their ideas on conservation. The outlook in Canada definitely suggests more openness to local participation. There are multiple levels of citizen participation and awareness when it comes to the Great Lakes issues in Ontario. Inscho and Durfee provide three, the first of which being "those citizens who take an interest only when dramatic events or their individual self-interest drives them to do so. Although this segment is large…it generally lacks cohesion, sophistication, and leadership to be effective over the long term" (1995). They go on to name established environmental interest groups as the second level and those that have been involving Remedial Action Plans (RAPs) for Great Lakes AOCs. In short, the U.S. conservation movement was characterized by a dichotomous choice between utilitarian and preservationist perspectives. In Canada, the conservation movement was marked by a comprehensive perspective. It was one that embraced the importance of natural resources to the economy and the opportunity to create jobs in a difficult time while also thoroughly recognizing that without preservationist conservation, economic motivations would be mute.

It is also important to comment on the current economic relationship between Canada and the United States. Earl Fry notes that the two countries have the largest bilateral trading relationship in the world, a relationship worth roughly $1.2 Billion a day (2005). A tremendous amount of this trade occurs in and depends on the waters of the Great Lakes. Fry further concludes:

> In spite of the major differences in outlook among the citizens of the two neighbouring countries, one should anticipate that transgovernmental linkages involving provincial, state, and municipal governments will continue to proliferate, a direct result of the thick network of cross-border interdependence which continues to expand (2005).

The economic relationship here should be remembered by policy makers and enforcers attempting to ameliorate the Great Lakes of pollution. Those expanding relationships among subnational governments can be utilized to facilitate a more efficient environmental relationship. "Implementing GLWQA, however, requires concerted and concrete actions…Such problems require a longer lasting and more narrowly focused mechanism" (Inscho, Durfee, 1995).

b. History of Relevant Agreements and Treaties

The Boundary Waters Treaty of 1909 (BWT) was the first agreement to address the management of the Basin's water. The IJC was established under this treaty with jurisdiction over all waters existing in all or in part along the border. Over three hundred areas along this border classify as trans-boundary waters. This jurisdiction was in fact fairly limited though in scope. For example, the IJC had no jurisdiction in Lake Michigan since it is not technically boundary water, even though it connects and shares a watershed with true boundary waters. The key reason here is that the BWT addresses water *quantity* almost exclusively, meaning water levels and flows, and it does not concern water quality with any significance. The scope of jurisdiction for BWT also does not include underground water or tributaries. The BWT has since been complimented with the Great Lakes Water Quality Agreements of 1972 and 1978, as well as a protocol amendment in 1987 (GLWQA). These all attempted to address issues of water quality like pollution, toxins, and ecosystem health.

The Great Lakes Charter of 1985 (Charter) focused on the Basin as one, interconnected system and recognized that water withdrawal and diversion decisions must consider this element. The Charter is only a good-faith agreement however, meaning it has no legal or binding authority (Bielecki, 2007). The success and implementation of the Charter depends entirely on the commitment of the signatories, the governors and premiers.

In 1986, the United States enacted the Water Resources Development Act (WRDA). This requires the unanimous consent of Great Lakes governors for any diversion to be made out of the Basin. The issue with WRDA is that it provides no standards to analyze existing diversions on, no process to review a proposed diversion, and no process to challenge a proposal decision. The Great lakes Charter Annex of 2001 (Annex) formed a new, good-faith agreement that attempted to reconcile the issues of both WRDA and the original Charter of 1985. It provided a standard for reviewing all withdrawals, not only diversions.

All of these contributed to the formation of the Great Lakes-St. Lawrence River Basin Water Resources Sustainability Agreement and Compact in 2005 (Compact). It bans all new diversions, as well as any proposals to increase existing diversions. It guarantees the use of a consistent standard of review and process to evaluate proposals. The Compact and Agreement create clear and detailed goals and objectives for regions within the basin. Another aspect of the compact is that it encourages and stresses the importance of public involvement in preserving and protecting the region's water. Since the Compact and Agreement are binding and legal, they are great progress from the voluntary nature of the previous good-faith agreements. The Agreement has been enacted by both Ontario and Quebec on the Canadian side while the Compact has been ratified by all eight Great Lakes states. All eight states have also passed the complimentary legislation to begin enacting all of the Compact's provisions. The United States Congress passed the Compact in 2008, making the Compact and Agreement official legislation. The permanent nature of these agreements addresses issues of enforceability, regional stability, and uniformity in decision making for the Great Lakes Basin. The Great Lakes Compact and Agreement focus on an ecosystem based approach to water quantity management. Like the

GLWQA, the Compact and Agreement supplement the BWT and do not change it (Bielecki, 2007). Great Lakes water pollution is still addressed entirely separately through the GLWQA.

c. The Great Lakes Water Quality Agreement

Canada and the United States attempt to simplify this web under the Great Lakes Water Quality Agreement (GLWQA) by treating the Basin as one ecosystem and system. Specifically, Article I, sub-paragraph (g) defines "Great Lakes Basin Ecosystem" structurally as "the interacting components of air, land, water and living organisms, including *humans*, within the drainage basin of the St. Lawrence River at or upstream from the point at which this river becomes the international boundary between Canada and the United States" (GLWQA, 1978). This ecosystem is further defined geographically in Article I, sub-paragraph (h), stating that "'Great Lakes System' means all of the streams, rivers, lakes and other bodies of water that are within the drainage basin on the St. Lawrence River at or upstream from the point at which this river becomes the international boundary between Canada and the United States" (GLWQA, 1978).

The basics of the GLWQA are defined and settled in its two initial articles. As referenced above in the introduction, Article I provides definitions of terms as well as defines the focus of the agreement politically, structurally, and geographically. For example, it elaborates the meaning behind a "Great Lakes Basin Ecosystem" and the "Great Lakes System." Article II establishes the purpose of the agreement and the commitment of the two governments. In order to achieve their goals, Canada and the United States:

> Agree to make maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge or pollutants into the Great Lakes System. (GLWQA, 1978)

They further institute in this section, as policy, a combination of "local, state, provincial, and federal participation" in order to achieve the scope of success envisioned. The idea of harmonization among levels of government that is prevalent throughout the agreement is also established in Article II, in sub-paragraph (c). It reads, "Coordinated planning processes and best management practices be developed and implemented by the respective jurisdictions to ensure adequate control of all sources of pollutants" (GLWQA, 1978).

Articles III, IV, and V adopt a set of framing objectives and then elaborate further on the specific direction of intent. Article III is especially ambitious and represent the salience of water pollution as an issue at the time of the agreement's formation in the 1970s. It makes five statements as "General Objectives for the Great Lakes System." The tone of the objectives is strongly set with heavy use of the word "Free." The objectives state the Great Lakes System should be:

1. *Free* from substances, that as a result of human activity enters the waters both directly and indirectly. These substances may not adversely affect any aquatic life or waterfowl, and may not form any unwanted deposits.
2. *Free* from floating materials that result from the activities of humans that amass to a level considered "unsightly." These materials include oil, scum, or any other undesirable debris.
3. *Free* from any materials or heat that, again enter the water directly or indirectly, and due to human activity, could combine to create water issues to an extent that would interfere with beneficial uses.
4. *Free* from any materials or heat that, again enter the water directly or indirectly, and due to human activity, could combine to create water issues that are harmfully toxic to humans, animals, or any other aquatic life.
5. *Free* from nutrients that, due to human activity, enter directly or indirectly into the waters at levels capable of creating growth of aquatic life that may interfere with beneficial uses.

Number five refers to nutrients such as phosphorous or nitrogen that make their way from detergents and lawn fertilizers to waters in the Great Lakes System. The rest of the GLWQA's

initiatives, requirements, and goals are created under the guidance of these five general objectives.

Articles XI through XV are mostly administrative procedures and obligations, but they do contain a number of implications that are worth noting. Article XI is titled "Implementation" and is a pivotal passage of the agreement. It strictly requires the Governments of Canada and the United States to commit to seek three things: appropriating the funds necessary to implement the agreement, passage of any additional legislation needed to implement agreement elements, and the cooperation of both state and provincial governments in every matter of relevance to the GLWQA. Article XII reaffirms the commitments of both governments, as well as the rights accorded to them in the BWT. Further, the 1987 "protocol explicitly recognized the importance of the provincial and state governments' role in great Lakes protection" (Inscho, Durfee, 1995).

IV. Local-Level Conservation

Local-level conservation mechanisms have an intertwined, evolutionary past. The conservation movement in the United States influenced the movement in Canada and vice-versa. At the same time, citizen responses to events in the political conservation movement spawned organized interest groups. Those same interest groups would later catalyze the creation of new forms of conservation mechanisms, e.g. conservation authorities. A brief historical background of some these events are relevant to the comparative applications of this study later.

a. History of Local-Level Conservation Mechanisms

Environmental Interest Groups/Non-profits

Environmental interest groups and movements have historical ties dating back to the mid-1800s. The United States established the Department of Interior in the 1850s and by 1875, the American Forestry Association had formed (Simler, 2001). Other groups, like the Audubon

Society also emerged with hopes of protecting "an aspect of aesthetic environmental quality" (Simler, 2001). Resource management concerns began to replace purely aesthetic ones by the early 1900s as the availability of resources in an economic context began to raise awareness among more individuals. This was particularly evident in the interests surrounding forestry, which became the venue for the debate between Gifford Pinchot and John Muir conservation philosophies.

Conservation spread into Canada as the degradation of its natural resources became increasingly apparent. Feeding off the Pinchot and Muir movements, similar directions began forming in Ontario in the early 1900s. These became various conservation groups dedicated to the respective issues facing them, such as flooding, depleted forests, and polluted waterways. Over the years, these organizations grew in number and size across the province. As a result, "In 1931, the Federation of Ontario Naturalists (FON) was established by the union of the province's naturalist clubs. Similarly, in 1936, the Ontario Conservation and Reforestation Association (OCRA) was formed" (Cardwell, 1996). FON and OCRA would greatly influence the conservation movement. "In 1936, it became apparent that the different conservation groups, such as the FON and the OCRA, should work together to achieve their goals" (Cardwell, 1996). The relationship and partnerships between the conservation organizations in Ontario ultimately lead to a gathering in London, Ontario in December of that year. The purpose was to consider a formal union of their partnerships. The conference revealed how much conservation had become salient within their interests and the push for what would become Ontario's conservation authorities was launched. These interest groups would go "on to play central roles in the development of Ontario's Conservation Authorities Act" (Cardwell, 1996). They formed the Guelph Conference in 1941, the results of which sparked the selection of the Ganaraska

Watershed as a pilot study site to determine what sort of conservation efforts would be needed. By 1944, the Ontario government and its departments had fully taken the lead from Ontario's conservation interest groups and held another conference in London. Two more conferences in Kingston and Toronto during the two subsequent years produced enough information and results by 1946 to formulate and pass the legislation that became the Conservation Authorities Act.

Conservation Districts

Official conservation efforts in the U.S. became institutionalized most notably in 1933 with the creation of the Soil Erosion Service, an agency within the Department of Interior. Hugh Bennett became the first Chief. In 1935, Congress created the Soil Conservation Service as an agency in the Department of Agriculture. This evolved the Soil Erosion Service into a national program designed to conserve and develop the United States' soil and water resources. This was especially salient at this time in American history, as the country was in the thick of both the Great Depression and the Dust Bowl. Hugh Bennett served as chief of the Soil Conservation Service until 1951 (Natural Resource Conservation Service). President Roosevelt urged state governors to pass associated legislation in 1937 that would allow the creation of Soil Conservation Districts. The first such district was organized on August 4th, 1937 in the Brown Creek Watershed of North Carolina. The Soil Conservation Service became the Natural Resources Conservation Service in 1994.

In Michigan, the first Conservation District organized in 1937 as well. Before that however, a few community oriented conservation projects introduced Michiganders to the resources in their own backyards. In 1934, the first erosion control demonstration project in Michigan was carried out in Benton Harbor of Berrien County. Three years later a second, similar demonstration occurred in Howell, Michigan. That same year, the state legislature passed

Public Act 297 (1937), known as the Michigan Soil Conservation Districts Law. Also in 1937, the West Ottawa Soil Conservation District was organized as the first Conservation District in the state. It was the first District organized east of the Mississippi River and north of the Ohio River in the United States (Natural Resources Conservation Service). The Michigan Association of Soil Conservation Districts, now simply the MACD, organized on December 9th, 1940 by leaders of seven soil conservation districts within the state.

Conservation Authorities

Cardwell's research reveals the tensions during the beginnings of the conservation movement in the United States. The contrasting perspectives of Pinchot's utilitarian and Muir's preservationist conservation philosophies clashed. The economic desperation of the 1930s however dictated the conservation paths that ultimately lead to the Tennessee Valley Authority (TVA) and the Muskingum Conservancy District in 1933. Both institutions were guided by policies and philosophies that centered on conservation methods that resulted in continued peak utilization of resources. In Canada, the tensions between Pinchot and Muir ideals were not as intense (Cardwell, 1996). Cardwell also suggests that there was a "notion that at that time, conservation in Canada was a means of implementing the best available resource management strategies in order to reduce the probability of resource depletion and promote the continued growth of the country's resource based economy" (1996).

Canadian officials began to recognize the need to begin planning for the aftermath of World War II early. They immediately looked to the experiences of the United States' New Deal programs as a possible framework for employing the surge of returning soldiers. "Growing public awareness regarding the degraded state of the province's natural resources in the late 1930s and early 1940s was a second motivating factor for the organization of the Guelph

Conference" (Cardwell, 1996). The conference took place in 1942 and one of the primary conclusions reached there recognized that "all the renewable resources of the Province are in an unhealthy state. None of these natural resources will restore themselves under present conditions, and the need for far reaching measures of restoration and conservation is acute. Without them, conditions will get progressively worse" (Cardwell, 1996). The conference also recognized that an opportunity had presented itself, on the other side of the degradation coin, where efforts to restore and protect the province's natural resources would create the jobs demanded by the veterans (Cardwell, 1996).

A pilot study of the Ganaraska River watershed was completed in 1943 and then compiled into *The Ganaraska Watershed* report. It "identified a wide range of water and land-related projects" worth addressing. The report goes on to suggest that no one department that existed at the time had staffing to cover all of the issue disciplines identified. It also suggested that it was questionable whether the best interests of the community would be served by having a government department take absolute responsibility (Shrubsole, 1996). Moving forward, "Ontario officials looked to the experience of the Grand River Conservation Commission, and toured the Muskingum Conservancy District (Ohio, USA) and the Tennessee Valley Authority (TVA, USA) in 1994" (Shrubsole, 1996). The lessons learned by the Ontario officials became the fundamental principles upon which conservation authorities were designed. The six principles are "watershed, local initiative, provincial-municipal partnership…a healthy environment being necessary for a healthy economy, a comprehensive approach, [and] coordination and cooperation" (Shrubsole, 1996). Of the six principles that create the foundation of the Conservation Authorities Act and thus the design of the conservation authorities, three are considered to be the "cornerstones" by scholars. They agree that "the ideology which underlay

the movement," the conservation authorities movement, "drew upon three main concepts: local initiative, cost-sharing arrangements, and watershed jurisdiction" (Cardwell, 1996). The fundamental simplicity of these concepts was accurate enough that "over time, only minor adjustments have been seen as being necessary" (Cardwell, 1996).

b. Behavior of Local-Level Conservation Mechanisms

Local-level conservation mechanisms operate in different ways depending on organizational structure, orientation, and infinitely diverse contextual scenarios. A few core consistencies are evident though in regards to their importance to an organization, and thus their resultant behavior. Funding, partnerships, and accountability all drive local-level mechanisms in the form of motivations and ultimately are recognizable in the form of decisions made. Kirkpatrick, et al describes decision-making as basically choice behavior that is information-dependent. As a result, people or groups seek to remove as much uncertainty as possible. Constraints in the form of information costs, organizational constraints, situational, motive, cognitive, and the group itself all prevent knowing everything relevant to a decision.

Funding

Funding is dramatically different between forms of local-level conservation mechanisms but is universally integral. Non-profits must continuously seek out funding and grants, from both public and private sources. Conservation districts and conservation authorities are not as bound by this since public funds are either guaranteed or readily available. "The availability of government funds results in more nonprofit organizations and an increase in the number of large nonprofit organizations" (Luksetich, 2008). If the availability of government funds results in more non-profit organizations and an increase in the number of large non-profit organizations, are non-profits really different than CDs or CAs in their relationship with government? Non-

profits are not necessarily dependent on government funding but their performance and ability to "provide some assurance to buyers of the quality of a good or service" is directly related to and at least partially influenced by that funding (Luksetich, 2008).

Partnerships

Building partnerships and relationships is a key factor of achieving implementation of goals. As "achieving national policy goals often depends on cooperation between two orders of government," the same applies between local-level influences (Inscho, Durfee, 1995). "The ease with which groups can find like-minded coalition partners" (Dusso, 2008) is considered a group resource. "In a fundamental sense, most decision-related behavior prior to the decision itself involves attempts by decision-makers to remove uncertainty through communication with each other and with actors outside the decisional group" (Kirkpatrick, Davis, Robertson, 1976). This highlights the importance of including the amount of collaboration partners as a metric from the case studies for my methods.

Accountability

Candler and Dumont (2010) remark that "non-profits face a wide array of stakeholders to whom they need to consider their accountability obligations." They suggest that non-profits are accountable to members, clients, constituents, donors, governments, media, staff, its partners and allies, and the general public. In keeping accountable to these influences, non-profits must also be accountable for financial resources, volunteer resources, and their reputational capital. Their actions must also remain accountable to the law, ethics, the group's mission, and maintain legitimacy (Candler, Dumont, 2010). Finally, non-profits must remember that the "goods and/or services" of their actions have quantifiable impacts on their community. Candler and Dumont also note that while non-profits consistently felt the responsibility to account for their use of

financial resources; they did not feel a responsibility to account their "reputational capital" to the government specifically. The fine line between these carries larger implications. It suggests that non-profits tend to maintain accountable finances for legality reasons while not tending to care as much about the opinions of governments on their actions, as long as they are legal.

Motivations

Scholars have thoroughly researched the behavior of LLCM and much of the results boil down to factors of motivation. Kluvers and Tippet, among others have attempted to define why people choose to work in the non-profit sector despite being paid less than their private-sector counterparts (2009). "Behavioral and social scientists argue that motivation is the driving force behind behavior change" (Schultz, 2011). In the background research of their study, it was evident "how important employee identification with the organisation's goals and values were to the achievement of the organisation's mission" (Kluvers, Tippet, 2009). More research shows that non-profit "staff tend to be motivated by the values and mission of their organization" (Kluvers, Tippet, 2009). So if staffs are typically both motivated and identify with an organization's mission, it can lead to quality results.

Quality is an evident theme in this work, something that applies to understanding local-level behavior and performance. Research has:

> "found that financial incentives have a strong relationship with performance. They found that financial incentives were particularly powerful with respect to performance quantity, but that results were uncertain when regarding performance quality – an important consideration in the human services sector, and the essential aspect of this research: what motivates employees in the non-profit sector, where performance quality is all-important in the work" (Kluvers, Tippet, 2009).

The expectations of many Ontarians are that CAs are responsible for leading water quality restoration, planting trees, and protecting natural areas. The legislated responsibilities of CAs are

quite broad and as a result, CAs have grown their activities and policies to a point where their actions overlap with government agencies. Inefficiencies and public confusion have occasionally resulted (Shrubsole, 1996). According to Charness, et al, salience is necessary for group membership to be affective (2007). This drives much of local-level mechanism activity. For example,

> For instance, when inadequate efforts were forthcoming from provincial agencies concerning diffuse source pollution control, the UTRCA convinced its member municipalities to support some projects. The key elements in achieving success related to demonstrating that a significant problem existed and showing that the conservation authority was capable of addressing it. In this manner, conservation authority initiatives outside core mandate areas are legitimized, in large part, through strong municipal support. Without visible 'top-down' provincial commitment, integrated water management could be initiated through these 'grassroots' efforts (Shrubsole, 1996).

Motivations are also proven to be variable but not dependent on nationalities and cultures. This is evident from the work of Gelfan, et al who found that "Culturally heterogeneous teams performed as or more effectively as homogenous teams when leaders help to prevent communication breakdowns" (2007). They argue further though, that the perspectives of indigenous influences are "critical for organizational behavior," something especially relevant in the Great Lakes considering that there are over 200 Native American, metis, and tribal governments in the region.

V. Case Studies

The following are three case studies of three different forms of LLCM. The Tip of the Mitt Watershed Council is a community formed non-profit organization. The Muskegon Conservation District is a state formed conservation effort organized around a political community, Muskegon County. Lastly, the Upper Thames River Conservation Authority is a provincially legislated body, organized geographically around watersheds, that is formed at the

behest of the communities located within its watershed's borders. The subtle and obtuse differences lead to differing methods and results, revealed through examples of their respective programs and projects. Certain metrics are utilized in order to appropriately relate the comparisons of the three forms of LLCM. The three basic metrics used are funding use and sources, partnership building, and accountability.

a. Department of Environmental Quality/Tip of the Mitt Watershed Council – Petoskey, Michigan, United States

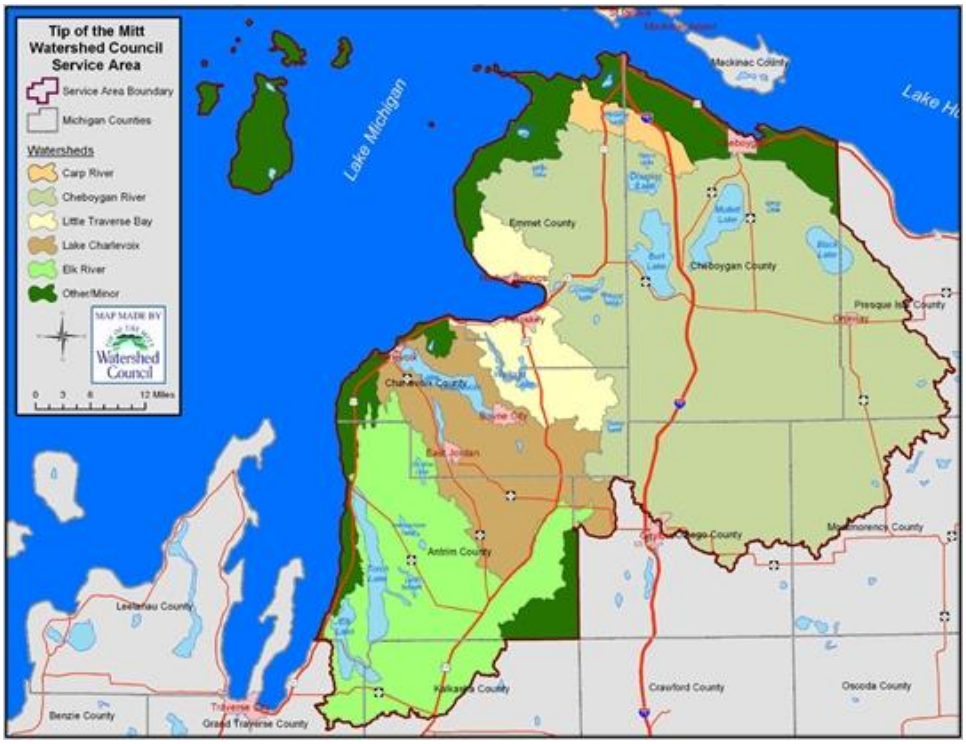


Figure 3. TOM Service Area

The Tip of the Mitt Watershed Council is a non-profit organization in Northern Michigan that covers the four northern counties of Antrim, Cheboygan, Charlevoix, and Emmet. The Tip of the Mitt Watershed Council, founded in 1979, celebrated its 30th year in 2009 as the lead organization for water resources protection in Northern Michigan. Their service area includes, over 1,800 lakes, including some of the largest in the state, over 2,500 miles of rivers and

streams, and 339,000 acres of wetlands. Within this service area, according to the Michigan Senate Fiscal Agency, is a population of 108,000 living in the four counties. The organization has gained large recognition for its presence in the state's water resources discussions. Recently, TOM has emerged as a leading educator on hydraulic fracturing, or fracking, for fossil fuel resources. Continuing to build strong local and regional partnerships, such as with the University of Michigan and its northern biological station or the Michigan Department of Environmental Quality, remains an instrumental element of TOM's success.

TOM has been systematically performing a Local Ordinance Gaps Analysis project for each of the four counties in its service area. "The purpose is to evaluate existing zoning ordinances against what should be in place to best protect water resources, and offer recommendations and suggested actions to help local government strengthen areas that need improved" (TOM, 2012). The project covers county, city, township and village level ordinances. In the summer of 2011, TOM began the process for Cheboygan County. The presence of the University of Michigan Biological Station allowed TOM to work through a class that was offered there that concerned urban and environmental planning. Students in the class were used to compile the research needed for Cheboygan County. This opportunity allowed TOM to reach out to the community, get new "volunteers" involved, and perform research without cost.

TOM and the biological station also worked together to "install a demonstration rain garden" to mitigate water runoff (TOM, 2012). This is a partnership that began with the origins of TOM and has continued since. They installed a central rain garden that included sandy soils and deep-rooted wetland plants to facilitate the stormwater's infiltration to the ground instead of letting it carry sediments and nutrients into water sources. Included in the installation was the creation of a "mini-dune complex complete with sand-loving species" that are native to Northern

Michigan (TOM, 2012). A large number of other features were implemented to create the overall demonstration project. It serves as a guide to others in the community and visitors to the Biological Station. Station staff and volunteers were again central to TOM's success with the project.

Much of the work TOM does is necessarily carried out in advisory roles. Their research and expertise on water issues has made them an accountable voice in policy formation across the region. In their own community, the council performs shoreline surveys "to evaluate conditions or activities along a lake shoreline that could be detrimental to the lake ecosystem and water quality" (TOM, 2012). The surveys are performed by TOM and the results are shared with "owners of properties where problems are suspected" (TOM, 2012). This process has been performed on some of the largest lakes in the area and over 1,000 property owners have been contacted in a role intended to "inform, educate, and protect." Those contacted are urged to work with the council to find solutions to their problems. At this point, questionnaires are given to those willing to participate. They are designed to reveal the specific property issues that are affecting the water quality. Upon receiving this information, TOM writes a "hand-tailored response to every person that returns a questionnaire" (TOM, 2012). This process is intimate on a level that a government institution would struggle to achieve, but it is also slow, taking multiple years. The final stage of the process is a site assessment, done only at the request of the property owner, and settles on a final solution that is custom for each site. The recommendation is then up to the owner to follow through on. According to TOM, the "shore survey approach to working with individual property owners has proven to be very effective" (2012). Through volunteers and committed staff, TOM is able to accountably partner with its community to make consistently beneficial contribution to Great Lakes water quality.

TOM has taken up the issue of fracking and as a result of their efforts, has become "the lead organization for hydraulic fracturing in the state" (TOM, 2011). The organization developed a fracking update email list to keep its interested audience informed and a Rapid Response Coalition to influence elected and public officials "in a coordinated manner" (TOM, 2012). Tip of the Mitt has further developed enough report in environmental policy to have an affective and influential relationship with the Michigan Department of Environmental Quality (DEQ). The organization created a "regulatory wish list" in conjunction with over 30 other Michigan organizations that was sent to the DEQ. The list identified "changes that are needed to our regulatory system to ensure that hydraulic fracturing is done in a sustainable manner to protect our resources" (TOM, 2012). The DEQ responded quickly to one of the wish list's concerns that addressed water withdrawals. The Department began requiring fracking operators to use a Water Withdrawal Assessment Tool to attempt to avoid the negative impacts of water withdrawals. The DEQ also offered, at the request of TOM, an "explanation of the process they use evaluating water withdrawals and site specific reviews" (TOM, 2012). TOM's efforts have also pushed the DEQ to issue new Permitting Instructions and to institute new information posting policies. As a trial, the DEQ began to post Material Safety Data Sheets when they become available. These sheets include some of the chemicals used in the process of fracking. Full chemical usage transparency is a goal of TOM's in regards to fracking. As a result of their relationship with the DEQ, which is built on their reputation of quality, TOM has been able to slowly implement water quality improvements.

b. Muskegon Conservation District/White Lake Public Advisory Council – Muskegon County, Michigan, United States

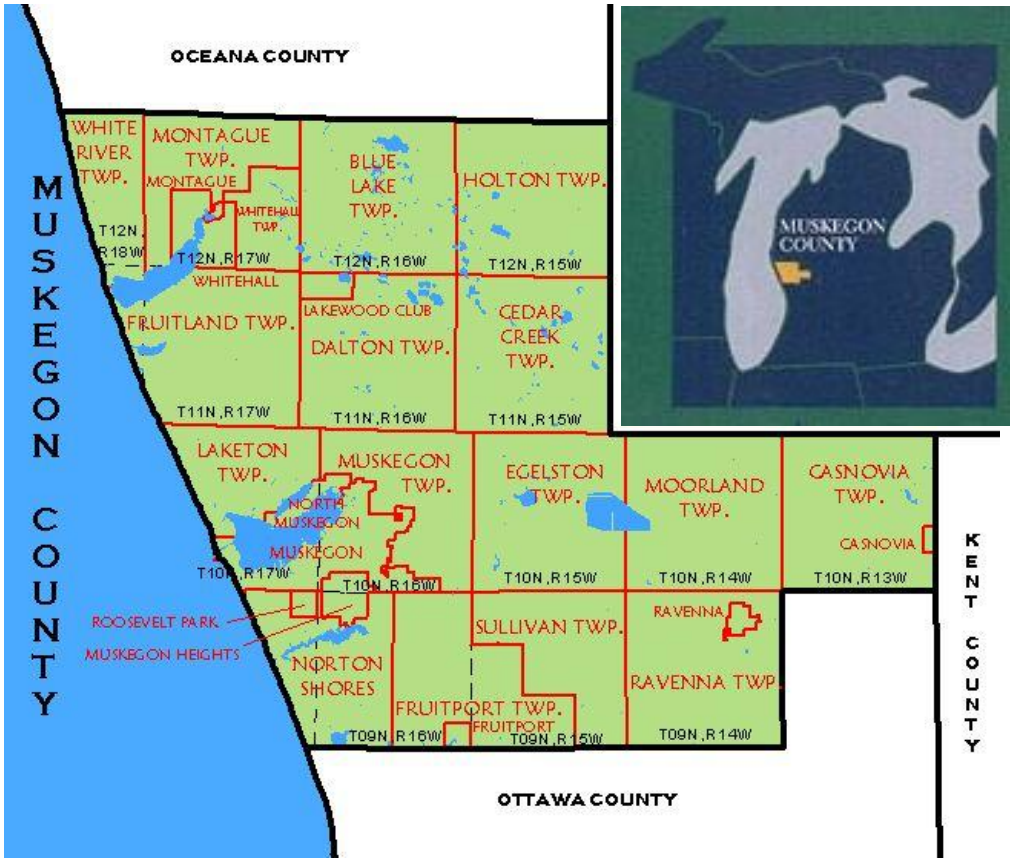


Figure 4. Muskegon Conservation District Service Area

Muskegon Conservation District (MCD) is a conservation district for Muskegon County along the eastern shore of Lake Michigan and was established in 1938. According to the Michigan Senate Fiscal Agency, Muskegon County had a population of 172,000 in 2010. Within its service area is White Lake, one of the 43 Area of Concerns (AOCs) enumerated by the GLWQA. Industrial and municipal pollution were the primary sources that affected the water quality of White Lake. Recently, White Lake made tremendous progress in the remediation of its pollution. The lake's delisting as an AOC will happen in the next couple of years. The process by

which MCD made this happen is detailed and evaluated through their relationship with the White Lake Public Advisory Council (WLPAC).

The lake was designated as an AOC in 1985 but some efforts were made prior to that. In 1974, the industrial and municipal discharges were diverted to the county wastewater system. Wastewater systems were significant to the GLWQA's objectives. Some remediation efforts were also performed towards soil and groundwater issues left by a Hooker Chemical facility in the early 1980s as well. After its AOC listing in 1985, it took Michigan two years to develop the original RAP for White Lake. The creation of a plan inspired "little action" and "as a result local citizens became involved" (Cabala, 2012). The White Lake Public Advisory Council was formed in 1992. It immediately began to work in partnership with state and federal environmental agencies in attempts to draw attention to the issues at White Lake. As a result of this partnership building, eight of a possible fourteen significant problems were identified, problems known as Beneficial Use Impairments (BUIs). These impairments were found to be causing "significant changes to White Lake's ecology, water quality, and economic vitality" (Cabala, 2012). The White Lake Public Advisory Council is administratively and technically guided by the MCD. It primarily works with the Great Lakes Commission, the U.S. EPA and the Michigan Department of Environmental Quality. Over the last 20 years since the public advisory council's creation, a lot of concentrated efforts and studies have been carried out. A new RAP was developed in 1995 in light of new evaluations. Contaminated sediments left over from a tannery were investigated that same year and were removed in 2002. The next year, more contaminated sediments that were a result of a Hooker Chemical outfall were removed. From 2006 to 2010, participating parties spent a lot of time planning and developing goals and criteria to address the BUIs identified in 1992. A number of other small projects continued to slowly chip away at the large

scale issues of White Lake. In 2011, the White Lake Shoreline Habitat Restoration Project began and the restrictions placed on dredging were officially removed.

The White Lake AOC has begun to move steadily towards delisting. The Muskegon CD and its Public Advisory Council have turned to addressing the remaining BUIs one by one. As each one is evaluated and checked off by government agencies, the site can continue to get closer to full remediation.

c. Upper Thames River Conservation Authority – London, Ontario, Canada

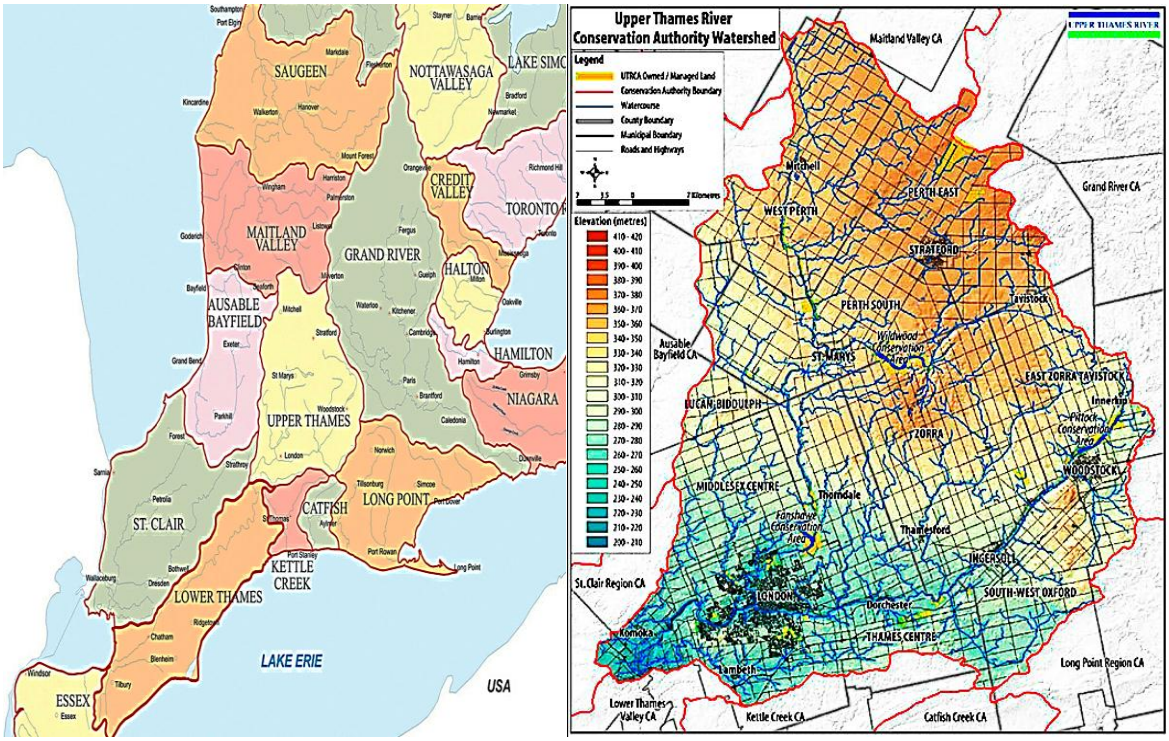


Figure 5. UTRCA Service Area

The UTRCA is one of 36 conservation authorities in the Canadian province of Ontario. Their area of jurisdiction – the upper watershed of the Thames River – covers 3,432 square kilometres and is home to around 485,000 people (UTRCA, 2004). The Thames River watershed encompasses both rural and urban communities, such as Stratford and London. A total of 17 municipalities are within the watershed. The UTRCA was the sixth Authority formed in Ontario,

created by Order in Council during September of 1947. The watershed is mainly rural except for the larger urban centers of London, Stratford and Woodstock and has a total population of approximately 485,000. Agriculture is the main component of the landscape with approximately 3,600 farms, including over 2,000 livestock operations (UTRCA). The River itself has been identified by the IJC as "one of the largest sources of nutrients in Lake Erie, second only to Ohio's Maumee River" (UTRCA, 2004). Such a high capacity for Great Lakes water quality impacts makes this CA a good choice to study. "The Conservation Authority takes a subwatershed approach in its monitoring and remediation programs," with the Upper Thames River watershed divided into 28 subwatersheds, which are "a manageable size for monitoring and targeting remedial work" (UTRCA, 2004). Such size allowed the identification of the Dingman Creek Weir as a project to improve water resource and ecosystem quality. The UTRCA also likes the subwatershed approach because they "are also a manageable scale for the public. Landowners and interest groups can identify with their local creek or stretch of the Thames" (UTRCA, 2004).

Dams and other similar structures have adverse effects that "include barring migration of fish and wildlife, increasing soil deposition and erosion, altered water quantity and quality, eutrophication, and wildlife mortality" (UTRCA, 2004). For these reasons, the UTRCA project to remove the Dingman Creek Weir was chosen for this case study. The GLWQA specifically concerns water quality and the agreement's creation was partially in response to the eutrophication that nearly killed Lake Erie. The UTRCA has identified around 175 structures through the Thames River Watershed Barriers Assessment program. The program follows a set of developed criteria in order to rank the "impoundments" for their removal or mitigation. The criteria considers the impoundments' current function, age, structural integrity, and impacts on

the aquatic ecosystem (UTRCA, 2004). The Dingman Creek Weir was over fifty years old, had begun to fall apart, and no longer served its original purpose, and as a result, became the top priority under the Assessment program. The funding for the project was provided by the UTRCA and their partnership with the Ontario Ministry of Natural Resources. This partnership is established under the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem.

The city of London, who owns the land around the weir, participated with the UTRCA to perform a Municipal Class Environmental Assessment (EA). The EA was performed with the goals of public safety and liability, aquatic health, and the site's value to the community in mind. In the process, local area residents, stakeholders, and local agencies were all consulted with on various options of addressing the weir. "The preferred option that came out of the EA process, which included public input, is to completely remove the weir" and fall 2005 was targeted as a removal date. After the EA was finished in the spring of 2005, with the final recommendation of complete removal, the results were released to the community. The EA was also dispersed through the local media and a physical copy was mailed to those who responded to the initial notice of the project. The project was then approved after no significant obstacles were raised during this process. The final plan of implementation was to decommission and remove the weir, rehabilitate the stream channel with natural channel design, and restore the channel and bank.

The initial cost of removing the weir was estimated at $15,000. This excluded the time and cost of acquiring the necessary permits, to perform the EA, and to prepare and review design alternatives for the creek restoration post weir removal. Much of these additional costs consisted of staff time. Aside from the EA, permits and approvals were needed from the Ontario Ministry of Natural Resources, Ontario Ministry of the Environment, Fisheries and Oceans Canada,

Transport Canada, the City of London, and the UTRCA. UTRCA staff controlled pedestrian and other traffic in the construction area to ensure public health and safety.

The crew responsible for the project spent a day clearing a lane through an area marked as low impact vegetation in order to allow the mechanical equipment access to the site. The participating coordinators of the project hired a professional arborist to guide the clearing of this vegetation. Since the fall is typically a period of lower stream flow, September was chosen to completely remove the weir. In the meantime, as much of the weir that was above water level was removed to minimize the amount of sediments and debris released into the stream. The river stones that were to be used as part of the stream restoration after the weir's removal were put to use during the removal process as well. The stones were used as a foundation for the excavator and backhoe to work off in order to keep them out of the water. This allowed the project to cut costs and keep more mechanical wastes out of the water. To keep a historical reminder of the weir's place in the community, portions that did not block any of the stream were preserved. The physical removal of the weir took three days.

Post weir removal, the rehabilitation process of the stream channel took over. The same stones used as an operating base for the heavy equipment was redistributed along the channel around the weir in order to create a riffle pattern. The pattern was designed to maintain an area wide enough to ensure access for stream watercraft. The stream banks up and downstream of the weir were shaped to be consistent with the rest of the stream. This included the planting of new vegetation and trees to stabilize the reconstructed shores. The site continues to be monitored. Any new construction or other general changes in the area trigger an inspection of the project site. Further, the UTRCA's annual sampling program continues to perform benthic and fish sampling. The CA's website offers a comprehensive detailing of the project.

VI. Discussion

Tip of the Mitt Watershed Council, Muskegon Conservation District, and the Upper Thames River Conservation Authority clearly operate in differing scopes and functions. TOM with the most scattered (and smallest) constituency across four counties, MCD with a concentrated but larger population in one county, and UTRCA with a diverse population centered within one watershed but 17 municipalities. TOM is a non-governmental non-profit, reliant on a concerned audience. MCD is a government created conservation arm at the county-wide, local level, reliant on its populace for direction. UTRCA is also a government legislated body in Ontario, designed to operate within communities at the watershed level, and reliant on local initiative. The differences evident from the case studies can be analyzed through four basic measures of group effectiveness. The results are then applicable to analysis in measurement of their efforts in effective implementation of the GLWQA's goals.

a. Results

Funding

Tip of the Mitt Watershed Council's funding is made very transparent through its annual reports. During the 2010 year, 93% percent of their Operating Fund Revenue and Support was from unrestricted contributions and grants. Only 3% was from investment revenue, with another 3% from contract services. This funding situation clearly dictates the manner in which the organization is motivated to perform. Line by line funding of initiatives does not lend any assurance for future efforts, despite TOM's proven track record of success. So in response, TOM is very vocal, very socially active, and provides very thorough, accessible, and presentable accounting of its actions. This has made the organization focused in its projects in order to remain consistent to its mission.

Information about funding is consistently vague or not available for MCD. The conservation districts are eligible for available grants and state funds. It is up to the CD to determine what sources are relevant to their efforts and follow through. The MCD does not offer reports of their budgets or directly detail their efforts with the White Lakes Public Advisory Council. All information on the restoration of the AOC at White Lake is provided by the Council, with no monetary details.

The conservation authority was also able to directly fund its project through existing revenues and partnerships, instead of having to rely on grants or donations or new partnerships, something the non-profit continually faced. The UTRCA has a much different fiscal scenario than TOM or MCD. It was able to reliably budget 48% of its own direct revenue through permits, fees, and other recreational activities for 2012. Another 19% is projected to come from contract services, 3% from the Ministry of Natural Resources, and the final 30% would come from the municipalities within the CA. Their total budget for 2012 is forecast to be nearly $12 million, which is actually down from years previous. Their detailed budget separates allocations toward its different services and programs. These include flood/water & erosion control, environmental planning, watershed planning, environmental monitoring, research, soil conservation, the Clean Water Program, forestry, conservations areas, etc. Another key area outlined in the 2012 budget is specifically for community partnerships. The UTRCA states that they strive to "motivate watershed residents to adopt stewardship by facilitating 1) access to environmental and conservation information, and 2) involvement in stewardship activities" (UTRCA, 2012). The organization's ability to count on guaranteed sources of money through government funds allow it to maintain a large operation and staff and directly fund its own

projects in the absence of partnerships. This allows it to move beyond the capacity of strictly an advisor and into the realm of implementation.

Ontario and its Conservation Authorities have a form of provincial-municipal cost-sharing/funding structure and as a result, a relationship incorporating multiple mechanism levels, from local to agency to province. Such relationships may be valuable and crucial but reliability is never guaranteed. "The 1982 COA, for example, provided for federal funds in the amount of $65 million (Canadian), to be paid over three years. Then in the late 1980s, the federal government removed itself from such municipal infrastructure funding" (Inscho, Durfee, 1995). This same issue of federal unreliability however may be the greater issue. Both the United States and Canada have failed to consistently follow through on their GLWQA responsibilities. According to Fischer, et al "Sustainable resource use can result from economic institutions that follow certain design principles, related to, among other things, clear boundaries, collective choice arrangements…" (2012), two principles that form the foundation of Conservation Authorities in Ontario. For example, conservation authorities are principally guided by watershed orientation, a clear geographical boundary.

Partnerships

The non-profit excelled in partnership building and community outreach, something integral to its function and survival. The conservation district worked well with government agencies but very slowly. How long the clean-up process would have taken without the involvement of the district and its public advisory council is unknown, but it is evident their involvement sped up the process dramatically. The UTRCA and TOM both excel at utilizing volunteers in its projects. Important since "conservation volunteers in highly participatory projects report higher levels of learning about how to achieve conservation outcomes and how to

work collaboratively than do those in less participatory projects" (Fischer, et al, 2012). Remaining consistent allows TOM to build evolving partnerships and stay connected and salient to its community. In the absence of a partnership or grant for a given project or objective however, the council is forced to remain in an advisory capacity. This advisory capacity proved to be effective however, especially in its relationship with the DEQ. Tip of the Mitt's established reputation as a producer of quality research and work allowed it to work in a give-and-take relationship with the state of Michigan department. The DEQ respected the information provided by TOM and used it to make quick policy changes regarding fracking and water quality.

The MCD acts as a fairly passive enabler in the case of White Lake's clean-up efforts. Essentially, it facilitates the local citizenry's self-organization and efforts through its administrative support. This form of partnership is certainly functional to a certain extent, but with clear limitations. Its ability to influence policy and water quality implementation efforts is limited in this case to an administrative aid. MCD's ability to drive policy and water quality implementation efforts is also limited. The organization acts in a reactionary capacity instead of an initiative one.

The conservation authority excelled at both partnership building and community outreach. It was very clear from their annual reports and other published materials that community participation and volunteer work were important to UTRCA. The CA felt that participation was important for educational reasons, especially in creating a working knowledge base among landowners, along with establishing conservation ideals in youth volunteers. There was less emphasis on the need for partnership building based on a fiscal motivation. Where TOM may possibly need the contributions of volunteers in order to influence a project, UTRCA has the flexibility to drive efforts.

Accountability

In terms of public access and thus accountability, TOM and UTRCA easily outperform MCD. Both TOM and UTRCA are actively engaged with the community through recreation efforts, events, education campaigns, media outreach, and reporting. Documents of budgets and activities are readily accessible through both of their websites with direct contact information. The MCD maintains a site, but it is nowhere near as thorough as the others'. The entire conservation district network in Michigan is lacking in this area as well, at least in terms of modern accessibility. While the quality of accountability seen in the case of MCD does not speak for the entire Conservation District network in Michigan, it is still noteworthy and indicative of the overall depth of the mechanism.

Motivations

Since motivation is the driving force behind behavior change, and individuals have a stronger motivation to respond to pressing issues at the local level, a prevalent non-profit in a community is uniquely positioned to encourage conservation behavior. The non-profit can organically utilize their altruistic and intrinsic motivation factors. The non-profit can also incorporate an individual's "stronger sense of personal responsibility" into its objectives, creating innate accountability in its work. This also favors non-profits in terms of partnership building.

The same lesson can be applied to the conservation district. Where TOM was prevalent in its community, MCD appeared much less so. As a result, its ability to influence, encourage, or drive conservation behavior is limited. The motivations in the conservation district are interesting. It is not motivated by a need of survival like the non-profit that counts on continued annual support. To an extent, the conservation district is simply there; created as a government

arm, ready to be available when enough citizen self-organization drives its involvement. It is also not as motivated by a need to increase its funding sources.

The UTRCA's mandate and fiscal situation has influenced it and other conservation authorities to create their own revenue streams. Its conservation efforts are clearly guided at least in part by monetary motivations. While some extent of government funding is guaranteed, along with the municipal tax levies that are required for a conservation authorities existence, a large portion of their mandated responsibilities require additional funding. As a result, conservation authorities have expanded their efforts and operational scope (not geographically) as a way to create such funds. This has evolved into Conservation Areas where the institution collects revenue from permits, fees, and services. So the conservation authorities are partially not motivated by monetary factors as well. Over time, their ability to create their own source of funding has allowed UTRCA to focus on project implementation, as seen in the Dingman Creek Weir removal.

Goals of the GLWQA

The Great Lakes Water Quality agreement is expansive and sets very laudable goals for water quality. Among those, a few key objectives are reflective of the agreement's intentions. The three used in this analysis are the goal to make the Great Lakes: 1) free of pollution sources that are either directly or indirectly caused by humans; 2) free of nutrients that accumulate to interfere with the beneficial uses of the water; and 3) free of unsightly debris or floating material affecting water quality. While "free of" implies total removal of pollution, nutrients, etc., this analysis considers improvements in these areas an indicator of effectiveness. The three case studies reveal differing levels of effectiveness in achieving these goals.

TOM worked with the University of Michigan Biological Station to analyze gaps in its service area's policies and ordinances where water quality could be improved. It has also worked directly with the DEQ to improve water quality regulatory standards in relation to the fracking industry. Its policy achievements have improved the awareness of water quality issues related to fracking, but have not directly improved water quality. There have certainly been other efforts by the organization that have cleaned up water pollution sources, as seen in their shoreline survey projects. MCD's work with the WLPAC has definitely improved water quality in the White Lake AOC. However, their results are not a direct function of their efforts as the WLPAC took much of the initiative in this case. Regardless, it is hard to deny the quantifiable improvements made as more BUIs are removed and the site moves closer to delisting as an AOC. The UTRCA's Dingman Creek Weir removal project directly improved water quality. The weir was affecting ecosystem function and contributing sediment to a river system polluting the Great Lakes.

TOM's community outreach in its shoreline survey projects definitely reduced the amount of nutrients entering waters. Its work with DEQ on fracking however has not reduced nutrient runoff directly. MCD, working with the WLPAC, made considerable improvements in reducing beneficial use impairments that were a result of human industrial pollution. Less improvement was made in actual nutrient remediation though, since much of the focus in this case was on the industrial wastes. The removal of the Dingman Creek Weir and the subsequent restoration of the stream bed and shoreline dramatically improved the nutrient and sediment loads in the watershed. The natural restoration that improved the ecosystem function facilitated the natural filtering of further nutrients out of the water.

TOM's shoreline survey project helped identify polluting debris and materials entering waters from properties. Most of the results here were of the nutrient variety though and less so of

physical debris. Their efforts with DEQ to influence fracking regulations and operations in Michigan certainly have the potential to prevent future debris and material entering and polluting water sources though. MCD's support of WLPAC allowed the removal of industrial waste deposits, sediments, and tailings that were unsightly and polluting to Great Lakes water quality. The UTRCA removed the Dingman Creek Weir that was a concrete eyesore. It was a human created object that was deteriorating quickly and contributing debris to the watershed. Its removal illustrates a successful example of effective implementation of water quality improvement strategies.

b. Conclusions

In the end, both the non-profit and the conservation authority showed a demonstrated ability to implement water quality improving initiatives consistently. The conservation district itself did so, but not in an accountable way. Since it performed mostly as an administrative aid, it made no effort to broadcast its efforts directly. The non-profit proved better, out of necessity, at forming partnerships and finding funding of the three organizations. The conservation authority demonstrated good partnership building as well, but it was not as prevalent as the non-profit's. The conservation authority was also best at generating its own funding revenues. The non-profit and conservation authority both demonstrated consistent accountability as well through annual reports, budgets, and transparency. The conservation district lacked accountability in all of these ways. It is not possible to definitively say whether one of these three local-level conservation mechanisms has the greatest capacity in regards to implementing the GLWQA. What is clear though is that both the non-profit and conservation authority outperformed the conservation district in the given case study. Also, and most importantly, local-level conservation mechanisms have proven to play a considerable role in effectively implementing the GLWQA. The

Muskegon Conservation District was involved in pushing the White Lake Area of Concern closer to delisting. Tip of the Mitt Watershed Council has grown into a voice recognizable around the Great Lakes Basin and has influenced countless policies at the local, state, and international level that improve water quality. The Upper Thames River Conservation Authority has made improvements to the water quality and ecological functions of the streams and systems within its watershed, a watershed that has been a large polluter of Great Lakes water historically. Local-level involvement should become increasingly prevalent in order to create further implementation of environmental policy.

c. Limitations of Study

The difficulty in reducing the variation within the comparisons reduced the ability to apply consistent data throughout this work. It is always difficult to quantify metrics like motivation and partnership building. As a result, there was no way to definitively value the effectiveness of local-level conservation mechanisms. The diversity of non-profits makes looking at only one problematic. The same can be said of conservation districts/authorities as well. Not all conservation districts are as shallow as Muskegon's seemed to be. Further research can be done to investigate what can be done specifically to streamline such mechanisms. Since so much analysis came down to accountability from the organizations, a lack of accountability in one place affected the comparative aspects of the rest of the study. Spatial and temporal contextual variables define the limitations to this study. Moving forward, the results presented in this study still provide insight into water conservation efforts in relation to water quality improvements.

VII. Bibliography

"Agenda 21." *Chambers Dictionary of World History*. London: Chambers Harrap, 2005. *Credo Reference*. Web. 24 March 2012.

Allee, David J. (1995). "Subnational Governance and the International Joint Commission: Local Management of United States and Canadian Boundary Waters." *Ekistics* 372nd ser. 62.270: 80.

Annin, Peter. (2006). *The Great Lakes Water Wars*. Washington: Island. Print.

Aubin, D. (2008, June). Branching Out, Digging In: Environmental Advocacy and Agenda Setting by Sarah B. Pralle [Review of the book *Branching Out, Digging In: Environmental Advocacy and Agenda Setting*]. *Canadian Journal of Political Science*, 41:2, 494-495.

Bakker, Karen J. (2007). *Eau Canada: the Future of Canada's Water*. Vancouver, BC: UBC. Print.

Bielecki, Jessica. (2007). "Managing Resources with Interstate Compacts: A Perspective from the Great Lakes." *Buffalo environmental law journal* 14: 173-249.

Cabala, T. (2012, Apr. 2). Restoring Our Lake: White Lake as an Area of Concern. *White Lake Beacon*. Retrieved Apr. 6, 2012, from http://whitelakebeacon.com/news/27021-restoring-our-lake

Candler, G. & Dumont, G. (2010). A non-profit accountability framework. *Canadian Public Administration, 53*(2), 259-264. Retrieved May 6, 2012, from http://go.galegroup.com/ps/i.do?action=interpret&id=GALE%7CA230684821&v=2.1&u=lom_wmichu&it=r&p=ITOF&sw=w&authCount=1

Cardwell, J. A. (1996). The Origin and Changing Role of Recreation in Ontario's Conservation Authorities (Doctoral dissertation, York University, Apr., 1996). *Dissertation Abstracts International*, p. 1-143. Abstract retrieved Apr. 2, 2012, from http://search.proquest.com/docview/89207708/fulltextPDF?accountid=15099 ProQuest Dissertations & Theses (PQDT) ProQuest Document ID: 89207708

Carroll, John. (1983). *Environmental Diplomacy: An Examination of a Prospective of Canadian-US Transboundary Environmental Relations*. University of Michigan.

Charness, G., Rigotti, L., & Rustichini, A. (n.d.). Individual Behavior and Group Membership. *The American Economic Review, 97*(4), 1340-1352. Retrieved May 5, 2012, from http://search.proquest.com/docview/233018798

Christen, K. (2004). U.S. GAO: Watershed Management Needs Better Coordination. *Water*

Environment & Technology, *16*(10), 19-21. Retrieved Apr. 4, 2012, from http://search.proquest.com/docview/205301893/abstract?accountid=15099

Corral-Verdugo, V. & Frias-Armenta, M. (2006). Personal Normative Beliefs, Antisocial Behavior, and Residential Water Conservation. *Environment and Behavior*, *38*(3), 406-421. Retrieved May 5, 2012, from http://eab.sagepub.com/content/38/3/406

Dempsey, Dave. (2001). *Ruin & Recovery: Michigan's Rise as a Conservation Leader*. Ann Arbor: University of Michigan. Print.

Donahue, Michael. (2001). "A Water Resources Management Decision Support System for the Great Lakes: International Water Issues on the U.S.-Canadian Border." *Water Resources Impact* 3.2: 16.

Drewes, A. D. & Silbernagel, J. (2012). Uncovering the spatial dynamics of wild rice lakes, harvesters and management across Great Lakes landscapes for shared regional conservation. *Ecological Modelling*, *229*(24 March 2012), 97-107. Retrieved Apr. 3, 2012, from http://www.sciencedirect.com/science/article/pii/S0304380011004753

Duan, H. (2010). A Survey of Non-profit Organizations Evaluation Methods. *Asian Social Science*, *6*(8), 30-41. Retrieved May 5, 2012, from http://search.proquest.com/docview/821865688

Dusso, A. (2010). Legislation, Political Context, and Interest Group Behavior. *Political Research Quarterly*, *63*(1), 55-67. Retrieved May 5, 2012, from http://prq.sagepub.com/content/63/1/55

Fischer, J., Dyball, R., Fazey, I., Gross, C., Dovers, S., et al. (2012). Human Behavior and Sustainability. *Frontiers in Ecology and the Environment*, *10*(3), 153-160. Retrieved May 6, 2012, from http://www.esajournals.org/doi/abs/10.1890/110079

Fry, Earl H. (2005). "Federalism and the Evolving Cross-border Role of Provincial, State, and Municipal Governments." *International Journal* 60.2: 471-82.

Gelfan, M. J., Erez, M., & Aycan, Z. (2007). Cross-Cultural Organizational Behavior. *Annual Review of Psychology*, *58*, 479-514. Retrieved May 5, 2012, from http://www.annualreviews.org/doi/abs/10.1146/annurev.psych.58.110405.085559

Glasser, H. (2008). Hans van Ginkel: On the Vision, History, and Status of the Regional Centres of Expertise in ESD Programme. *Journal of Education for Sustainable Development*, *2*(2), 109-117.

Godfrey, Robert. (2007). *Against the Current: An Analysis of the Barriers Facing the International Joint Commission*. 1 Vol. 2007.

Great Lakes Information Network. (2011). *Water Pollution in the Great Lakes*. Online. http://great-lakes.net/teach/pollution/water/water1.html.

Greenhouse, C. (1998). Watershed Management. *The National Academies in Focus, 48*(3), 13-13. Retrieved Apr. 3, 2012, from http://search.proquest.com/docview/211025313/fulltext?accountid=15099

Hall, Noah D. (2008). "The Centennial of the Boundary Waters Treaty: A Century of United States-Canadian Transboundary Water Management." *Wayne Law Review.* Winter, 2008.

International Joint Commission. (2006). *Advice to Governments on Their Review of the Great Lakes Water Quality Agreement: Special Report to the Governments of Canada and the United States*. August, 2006. Online. http://ijc.org/php/publications/pdf/ID1603.pdf.

International Joint Commission. (1909). *Boundary Waters Treaty*. Online. http://www.ijc.org/rel/agree/water.html.

International Joint Commission. (1978). *Great Lakes Water Quality Agreement*. Online. http://www.ijc.org/rel/agree/quality.html.

International Joint Commission. (2005). *A Guide to the Great Lakes Water Quality Agreement: Background for the 2006 Governmental Review*. September, 2005. http://ijc.org/php/publications/pdf/ID1625.pdf.

Inscho, F. R. & Durfee, M. H. (1995). The Troubled Renewal of the Canada-Ontario Agreement Respecting Great Lakes Water Quality. *Publius, 25*(1), 51-69. Retrieved May 5, 2012, from http://www.jstor.org/stable/10.2307/3330656?origin=api&

Kagan, Neil. (1998). "Building on the Great Lakes Water Quality Agreement: The Next 25 Years." *The Toledo journal of Great Lakes' law, science policy* 1998.1: 37.

Kirkpatrick, S. A., Davis, D. F., & Robertson, R. D. (1976). The Process of Political Decision-Making in Groups: Search Behavior and Choice Shifts. *The American Behavioral Scientist (pre-1986), 20*(1), 33-55. Retrieved May 6, 2012, from http://search.proquest.com/docview/194661899

Kluvers, R. & Tippet, J. (2009). Rewards in a Non-Profit Organisation: A Case Study. *Third Sector Review, 15*(1), 47-61. Retrieved May 5, 2012, from http://go.galegroup.com/ps/i.do?action=interpret&id=GALE%7CA220202764&v=2.1&u=lom_wmichu&it=r&p=AONE&sw=w&authCount=1

Krantzberg, Gail. (2008). "The Great Lake's Future at a Cross Road." *The Environmentalist* 28.3 301-05.

Lipsky, M. (1968). Protest as a Political Resource. *The American Political Science Review, 62*(4), 1144-1158. Retrieved May 5, 2012, from http://www.jstor.org/stable/10.2307/1953909?origin=api

Luksetich, W. (2008). Government Funding and Nonprofit Organizations. *Nonprofit and*

Voluntary Sector Quarterly, *37*(3), 434-442. Retrieved May 5, 2012, from http://nvs.sagepub.com/content/37/3/434

Michigan Senate Fiscal Agency. (2012). *Michigan Population by County: 1990-2010* Lansing, MI: Author. Retrieved May 20, 2012, from http://www.senate.michigan.gov/sfa/Economics/MichiganPopulationByCounty.PDF

Pralle, S. B. (2006). *Branching Out, Digging In: Environmental Advocacy and Agenda Setting*. Washington, DC: Georgetown University Press. Retrieved May 6, 2012, from http://site.ebrary.com/lib/wmichlib/docDetail.action?docID=10236756

Reschenthaler, G. B. (1981, Sept.). Federalism, Bureaucracy and Public Policy: The Politics of Highway Transport Regulation by Richard J. Schultz [Review of the book *Federalism, Bureaucracy and Public Policy: The Politics of Highway Transport Regulation*]. *Canadian Journal of Political Science*, 14:3, 637-639.

Schultz, P. W. (2011). Conservation Means Behavior. *Conservation Biology*, *25*(6), 1080-1083. Retrieved May 5, 2012, from http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2011.01766.x/abstract

Schwarz, Alan M. (2005). "The Canada-US Environmental Relationship: Calm Waters but Slow Sailing." *International Journal* 60.2: 437-48.

Shrubsole, D. (1996). Ontario Conservation Authorities: Principles, Practice and Challenges 50 Years Later. *Applied Geography*, *16*(4), 319-335. Retrieved Apr. 2, 2012, from http://www.sciencedirect.com/science/article/pii/0143622896000173

Simler, B. S. (2001). The Changing Roles of Environmental Interest Groups in National Policy-Making: A Marine Conservation Case Study (Doctoral dissertation, Oregon State University, May 24, 2001). *Dissertation Abstracts International*, retrieved May 20, 2012, from http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/4233/Simler_ocr.pdf?sequence=1

SOLEC. (2007). *State of the Great Lakes 2007: Highlights*. Online. http://binational.net/solec/English/sogl2007highlights_en.pdf.

Sproule-Jones, Mark, Carolyn Johns, and B. Timothy Heinmiller. (2008). *Canadian Water Politics: Conflicts and Institutions*. Montréal [Québec: McGill-Queen's UP. Print.

Tip of the Mitt Watershed Council (TOM). (2011, Aug.). *2010 Annual Report: Waves of Success* Petoskey, MI: Author. Retrieved Apr. 9, 2012, from http://www.watershedcouncil.org/about%20us/2008%20annual%20report/files/2010%20annual%20report.pdf

Tip of the Mitt Watershed Council (TOM). (2012). *Current Reflections: Fall/Winter 2011*

Petoskey, MI: Author. Retrieved Apr. 6, 2012, from http://www.watershedcouncil.org/news/files/2011%20news/fall%20winter%202011%20newsletter-web.pdf

Upper Thames River Conservation Authority (UTRCA). (2012, Feb. 21). *Upper Thames River Conservation Authority: 2012 Approved Budget* London, ON: Author. Retrieved Apr. 6, 2012, from http://www.thamesriver.on.ca/downloads/images/Budget_2012.pdf

Upper Thames River Conservation Authority (UTRCA). (2004, Dec.). *UTRCA Water Report: Turning Information into Action* London, ON: Author. Retrieved Apr. 9, 2012, from http://www.thamesriver.on.ca/downloads/images/waterreport_lowres.pdf

Upper Thames River Conservation Authority. (2005, Mar.). *Class Environmental Assessment Report: Dingman Creek Weir Removal* London, ON: Author. Retrieved May 5, 2012, from http://www.thamesriver.on.ca/Watershed_Projects/Dingman_Weir_EA/Dingman_Weir_EA_Report_text.pdf

Upper Thames River Conservation Authority. (2012, Apr. 20). *The Dingman Creek Weir Removal Project* London, ON: Author. Retrieved May 6, 2012, from http://www.thamesriver.on.ca/Watershed_Projects/dingman_weir1.htm

Valiante, Marcia. (2007). "The Role of Local Governments in Great Lakes Environmental Governance: A Canadian Perspective." *University of Michigan journal of law reform* 40.4: 1055.

Valiante, Marcia. (2008). *Management of the North American Great Lakes*.

Whalen, H. (1976, Mar.). Pressure Group Behaviour in Canadian Politics by A. Paul Pross [Review of the book *Pressure Group Behaviour in Canadian Politics*]. *Canadian Journal of Political Science*, 9:1, 147-149.

Appendices

a. Timeline
b. Organizational Relationships and Intersections Flow Chart
c. Organization Mission Statements

a. Timeline

1909: Boundary Waters Treaty

1946: Conservation Authorities Act

1972: Great Lakes Water Quality Agreement

1978: Renewal of Great Lakes Water Quality Agreement

1985: Great Lakes Charter

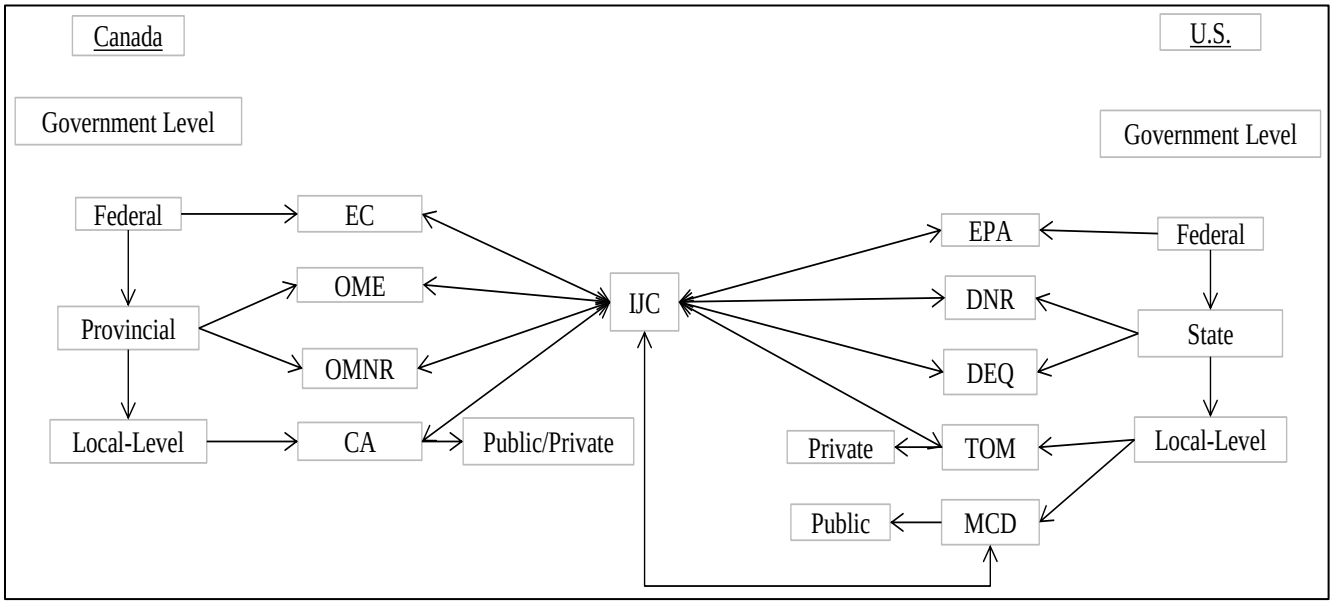
1986: U.S. Water Resources Development Act

1987: Protocol to Great Lakes Water Quality Agreement

2001: Great Lakes Charter Annex

2005: Great Lakes – St. Lawrence River Basin Water Resources Sustainability Agreement & Compact (U.S. singed in 2008)

b. Organizational Relationships and Intersections Flow Chart



Legend

Abbreviation	Name
EC	Environment Canada
OMNR	Ontario Ministry of Natural Resources
OME	Ontario Ministry of the Environment
CA	Conservation Authorities
IJC	International Joint Commission
EPA	Environmental Protection Agency
DNR	Department of Natural Resources
DEQ	Department of Environmental Quality
TOM	Tip of the Mitt Watershed Council
MCD	Muskegon Conservation District

c. Organization Mission Statements

Tip of the Mitt Watershed Council:

> The Tip of the Mitt Watershed Council speaks for Northern Michigan's waters. We are dedicated to protecting our lakes, streams, wetlands, and groundwater through respected advocacy, innovative education, technically sound water quality monitoring, thorough research and restoration actions. We achieve our mission by empowering others and we believe in the capacity to make a positive difference. We work locally, regionally and throughout the Great Lakes Basin to achieve our goals (2012).

Muskegon Conservation District:

> The Muskegon Conservation District is a unique governmental subdivision of the state created to serve as stewards of our natural resources. The guiding philosophy is that local people should make decisions on conservation issues at the local level, with technical assistance provided by local resource professionals. District projects and programs are as diverse as the landscape and are continually changing to meet the environmental challenges in local communities. We are here for YOU (2012).

Upper Thames River Conservation District:

Since 1946, the mandate of the Conservation Authorities has been defined in Section 20 of the Provincial Conservation Authorities Act: "to establish and undertake, in the area in which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals."

The objectives of Ontario's 36 Conservation Authorities are:

- to ensure that Ontario's rivers, lakes and streams are properly safeguarded, managed and restored;
- to protect, manage and restore Ontario's woodlands, wetlands and natural habitat;
- to develop and maintain programs that will protect life and property from natural hazards such as flooding and erosion;
- to provide opportunities for the public to enjoy, learn from and respect Ontario's natural environment.

The UTRCA's mission statement is "Inspiring a healthy environment."