



*Rochester Committee
for Scientific Information*
PO Box 20198
Rochester, NY 14602

Bulletin #331

November, 2007

The North American Great Lakes: Whose Water Is It?

M. Ann Howard, JD
Science, Technology, Society/Public Policy
Rochester Institute of Technology

Introduction and Background

In 1998, The Nova Group, an Ontario consulting firm, secured a permit from the province of Ontario to withdraw 158 million gallons of water a year from Lake Superior and ship it by tanker to arid areas in Asia. Although the permit was issued with scant attention, the news of this plan spread rapidly and environmental groups, politicians, and ordinary citizens on both sides of the Great Lakes quickly condemned the plan and the permit was rescinded. Although this plan was not the first attempt to divert Great Lakes water, the controversy surrounding the Nova Group permit heightened public awareness as to the susceptibility of the lakes and set in motion an international response to protect the lakes.

The significance of the Nova plan can be best understood in the context of the world's water situation. Although 70% of the Earth's surface is water, only 3% is fresh water. Of the 3%, over 2% is bound up in icebergs and permanent snow cover or is very deep below the surface. Of the remaining 1%, only about half is available either from surface water or groundwater. All totaled, only about .0008% of the Earth's water supply is available for use by humans and other species, and over half of that is polluted.

According to the United Nations, nearly 20% of the world's population lack adequate supplies of fresh water. The United Nations predicts that if current consumption patterns continue, two out of every three persons on Earth will live in water-stressed conditions by the year 2025. Water scarcity already affects every continent and is growing due to population growth, urbanization, and the increase in industrial and domestic uses.

At the heart of the world's water problem is the misfit between where people are and where the water is. The United States is not immune. Currently about 30% of the United States is experiencing moderate to exceptional drought conditions with adverse economic, social and environmental impacts. The regions most severely impacted are home to the most rapidly increasing populations, while at the same time, prolonged drought episodes since 1996 have highlighted an increasing vulnerability of these regions to water shortages.

Some of the most vexing natural resource issues in Southwestern United States involve water scarcity, pitting rural agricultural users and Native American tribes against growing urban populations. On October 15, 2007, the New York Times reported that much of the Southeastern United States from North Carolina to Florida had reached the most severe category of drought, creating an emergency so serious that experts predicted that some cities were just months away from running out of water.

The North American Great Lakes

In the context of the world’s water situation, the Great Lakes are an extraordinary resource. The Great Lakes Basin is the world’s largest system of freshwater and the lakes contain nearly one-fifth of the world’s surface freshwater. The five Great Lakes - Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario – hold 23,000 km³ (5,500 cu. mi.) of water, covering a total area of 244,000 km² (94,000 sq. mi.). However, on average, less than 1% of Great Lakes water is renewed annually through precipitation, run-off, and filtration.

Approximately 42 million Americans and Canadians rely on the Great Lakes Basin water for their drinking water supply. The system also plays a vital role in the multibillion-dollar regional economy, supporting manufacturing, shipping, fishing, tourism, agriculture, and many other activities.



Figure 1. The Great Lakes Basin (Source: U.S. Army Corps of Engineers: Detroit Division.)

The Nova Group incident raised the specter of possible bulk transfers of Great Lakes water to other water-stressed parts of the world. Some observers suggested that pressure was growing to divert Great Lakes water to water-poor regions of the United States and a more immediate concern for many was the potential diversion of water to communities straddling the Basin or located just outside the Basin.

Water Diversion History

Concerns over the withdrawal and diversion of Great Lakes water are more than two centuries old. Among the most controversial proposals was the Lake Michigan diversion at Chicago through the Chicago Sanitary and Shipping Canal. Completed in 1900, the 28-mile canal was the solution to Chicago's sanitation problems by reversing and diverting the heavily polluted Chicago River into the Des Plaines River, into the Illinois River, and eventually down the Mississippi. In spite of numerous court challenges, the Lake Michigan diversion has expanded over the years and with the advent of sewage treatment technology it has become less important for sanitation and instead has become a major means for the movement of Lake Michigan water to supply drinking water to growing communities. In 1958, the diversion was increased to supply water to suburban Chicago communities outside the Great Lakes basin. Following a legal challenge from the State of Wisconsin, the United States Supreme Court issued a consent decree in 1967 that permitted the State of Illinois to continue to supply water from Lake Michigan to communities outside the basin.

Through the 1980s and 90s, the Lake Michigan diversion continued to provoke legal challenges. In 1995, a dispute arose between Michigan and Illinois because Michigan charged that more water was being diverted from Lake Michigan through the Chicago diversion than allowed by the court decree. The United States Department of Justice intervened and the federal government and the eight Great Lakes states took this dispute to mediation. In October 1996, a settlement was struck in which Illinois agreed to reduce the diversion of water from Lake Michigan to the amount set in earlier court decrees. In return, the eight Great Lakes states agreed not to take legal action over the withdrawal violations that had already occurred. Today, the Chicago diversion remains the largest single diversion of water outside the Great Lakes Basin.

Two other diversions, built during the 1930s and 1940s, in the remote northwest corner of Lake Superior, are far less controversial than the Lake Michigan diversion. The Long Lac and Ogoki diversions, built primarily for hydropower, divert water from the Hudson Bay watershed into Lake Superior. In spite of the contention surrounding the Chicago diversion, water from the Long Lac and Ogoki diversion bring more water into the Basin than is lost through the Chicago Sanitary and Shipping Canal.

Other larger diversion plans, while never implemented, illustrate the long-standing concerns over the potential for using the Great Lakes to solve the distribution of water supplies to growing population centers and to support economic interests. The largest and most inconceivable was the North American Water and Power Alliance Plan (NAWPAP). Developed during the 1960s, the plan called for a \$100 to \$300 billion diversion project that would have transported water from many of North America's largest river systems in Alaska and the Canadian Yukon and delivered it to water-poor areas of Canada, the United States, and Mexico for use in irrigation, hydropower, and drinking water supply. The scheme included the Alberta-Great Lakes Canal that would have annually carried 40 million-acre feet of water into Lake Superior. While

supported by some members of Congress and the private sector, the plan never came close to materializing.

Similar to the NAWPAP, the GRAND Canal was another large-scale diversion plan. First proposed in the 1950s, the Great Recycling and Northern Development Canal plan called for construction of a large berm dam across James Bay to capture freshwater from the large rivers flowing into the Bay. With these diversions James Bay would be turned into a freshwater lake. Freshwater would then be pumped over the Arctic divide and transferred into the Great Lakes. Great Lakes water then would be diverted for sale to western states. Although the Great Lakes would have received rather than lost water from these projects, the NAWPAP and the GRAND Canal made clear the potential for large-scale engineering projects that could move water from one region to another.

Water Management Frameworks

The Great Lakes system covers eight states (New York, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Wisconsin, and Minnesota) and two provinces (Ontario and Quebec). Hundreds of Native American tribes and First Nations and thousands of municipalities also have jurisdiction within the Great Lakes basin and share legal responsibilities for decisions that impact the management of the lakes. A collection of federal, state and provincial laws, international treaties, and tribal water rights govern the withdrawal and diversion of Great Lakes water.

Long-standing boundary water disputes between the United States and Canada were first addressed in the Boundary Waters Treaty of 1909. Although the 1909 treaty defines boundary waters as those lakes and rivers along the international boundary between the two nations, it explicitly excludes tributary waters that flow into the lakes. Under the treaty each nation reserves the right to divert and control tributaries and the other party continues to have the right to seek legal remedies should a diversion result in injury.

The Boundary Waters Treaty also called for the creation of the International Joint Commission (IJC), a representative body comprised of three Canadian and three U.S. representatives; the IJC was charged with the resolution of situations unique to the boundary waters. With regard to diversions, Article III of the Boundary Waters Treaty sets priorities the IJC must consider when evaluating new water diversions. In order of preference, consideration must be given to 1) uses for domestic and sanitary purposes; 2) uses for navigation, including the service of canals; 3) uses for hydropower and irrigation. In addition, Article III specifically requires that no use be permitted if it materially conflicts with any other uses.

A host of diversion schemes during the 1950s gave rise to a proposal devised by the governors of the Great Lakes states known as the Great Lakes Basin Compact. As originally proposed, the 1955 Great Lakes Basin Compact was a regional plan to promote the comprehensive development, use, and conservation of the Great Lakes Basin. The Compact established the Great Lakes Commission to carry out the terms of the Compact. Certain provisions of the Compact were granted Congressional consent in 1968. However, Congress refused to allow inclusion of the provinces of Quebec and Ontario because it determined that this would be contrary to the exclusive authority of the Executive on matters involving foreign policy.

A 1982 U.S. Supreme Court case potentially challenged the ability of the Great Lakes states' to prevent water transfers outside the basin. Although this case, *Sporhase v. Nebraska Ex Rel. Douglas*, did not directly involve a Great Lakes water issue, the decision in the case did cause reverberations throughout the basin. In the *Sporhase* case the Supreme Court ruled that a Nebraska state law prohibiting groundwater from being transferred to another state, if that other state refused to allow its water from being transferred to Nebraska, violated the interstate commerce clause of the U.S. Constitution. For the Great Lakes governors this ruling signaled that any state legislation that would have banned water diversions outside their states' borders would be struck down as unconstitutional.

In 1985, the Great Lake governors and the premiers of Ontario and Quebec signed the Great Lakes Charter. The Charter sets out five principles: integrity of the Great Lakes basin; cooperation among jurisdictions; protection of the water resources of the Great Lakes; prior notice and consultation; and cooperative programs and practices. Although not legally binding, the Charter was seen as noteworthy because, unlike the Boundary Waters Treaty, the Charter clearly articulates environmental protections and applies to the tributaries within the Great Lakes Basin, not just the lakes themselves.

Notably, under the Great Lakes Charter parties agreed to prohibit new diversions of Great Lakes water averaging more than five million gallons per day over a thirty-day period without approval of all parties. Congress endorsed these provisions through amendments to the Water Resources Development Act of 1986. Specifically, Congress provided that Great Lakes water diversions require the unanimous approval of all Great Lakes governors. As significant as this legislation was, it lacked legally binding authority over water diversion decisions in Canada. The 1998 Nova Group permit brought this issue to a head. In addition, the Nova permit highlighted the potential for water transfers outside the basin in the context of international trade.

Congress responded by including provisions in the Water Resources Development Act of 2000 that expressly mandate that exports of Great Lakes water have the unanimous approval of all eight Great Lakes state governors. As with the 1986 Act, this provision does not bind Canada. However, Congress encouraged the Great Lakes states to consult with Ontario and Quebec and to devise a common strategy for decisions regarding use and diversion of Great Lakes Basin water.

In light of the Nova Group permit controversy, the United State and Canada asked the International Joint Commission to review all related issues, "including existing and potential consumptive water uses (water taken out of the Basin and not returned), existing and potential diversions of water in and out of the transboundary basins, including withdrawals of water for export, the cumulative effects of existing and potential diversions and removals of water, including removals in bulk for export, and the current laws and policies as may affect the sustainability of the water resources in boundary and transboundary basins". The IJC issued its final report to the governments of the United States and Canada in February 2000. The IJC recommended that the two nations refrain from approving water withdrawals or diversions until the cumulative impacts of withdrawals have been fully considered, including ecosystem impacts, and until conservation practices have been fully implemented. The IJC also recommended that notifications be made to all states, provinces and national governments for any new or increased proposals for consumptive uses. The IJC also recommended that the standards in the Great Lakes Charter for reviewing such proposals be strengthened.

In response to Congressional recommendations embodied in the Water Resources Development Act of 2000, and in light of the IJC recommendations, the Great Lake governors and the premiers of Ontario and Quebec developed the Great Lakes Charter 2001 Annex. This agreement obligated the signatories to develop a new common resource-based conservation standard for evaluating future water diversions and out-of-basin transfers. Annex 2001 also required the development of plans for improving the basin's water system, and called for an enhanced program of public participation. The Council of Great Lakes governors released two related water management proposals in July 2004. These proposed agreements, the Great Lakes Basin Water Resources Compact and the non-binding Great Lakes Basin Water Resources Agreement, were designed to implement Annex 2001. The draft Compact established a Great Lakes Water Resources Council that would be responsible for reviewing and voting on water withdrawal, diversion, and consumptive use proposals. Essentially, the criteria for review would "advance the substantial public interest of protecting, conserving, and restoring the overall environmental balance and physical and chemical, and biological integrity of the waters..." The criteria also included protecting the integrity of "interacting components of land, water and living organisms affected by the waters of the Great Lakes Basin." The Compact further required each state to develop a water conservation plan. The nonbinding draft Agreement mirrors the provisions in the Compact and seeks to commit the Great Lakes states and provinces to work together to develop a common standard for reviewing water withdrawals and diversions. The most controversial provision of the draft Compact allowed for new or increased diversions averaging less than 1 million gallons per day in any 120-day period. These diversions would have been subject only to review by the jurisdiction where the proposal originated.

After extensive public comment and prolonged negotiations among the signatories and various interest groups, the final Agreement and Compact were released in December 2005. In a major departure from the original document, the final version of the Compact proposed a ban on new water diversions, with limited exceptions, particularly for supplying public water in communities near the Basin. The states and provinces agreed to a uniform regional standard for evaluating proposal water withdrawals and the required state water conservation plans remained in the final documents.

In order to be binding on the states, the Compact must be approved by the legislature of each Great Lake state and ratified by the United States Congress; at that time the Compact will become both state and federal law. On the Canadian side, no federal action is required. The provinces will have to amend their laws and regulations to conform to the provisions of the agreements. As of August 2007, only two states, Minnesota and Illinois, had ratified the Compact. Both houses of the New York legislature passed the necessary legislation. Active bills were pending in Michigan, Indiana, and Pennsylvania. No legislation has been proposed to date in either Wisconsin or Ohio.

Future Concerns

Among the concerns associated with water diversions outside the basin, and particularly bulk transfers, is the question as to whether water is regulated by international trade agreements such as the North American Free Trade Agreement (NAFTA) or the General Agreements on Tariffs and Trade (GATT). In its 2000 report, the International Joint Commission concluded that it would be unlikely that water in its natural state as part of a lake or river, would be within the scope of the trade agreements since it is not a product or a good. What remains unclear is how water would be considered once it is made a part of commerce. Since there have been no

international trade disputes involving restrictions on water exports, the subject remains unsettled.

Another source of uncertainty regarding the Great Lakes Basin is the possible impact of climate change. Various models conclude that climate change conditions could interfere with the natural fluctuations of lake levels in the Basin. Other predictions point to the declining winter ice cover as a harbinger of climate change consequences, particularly because ice cover tends to slow evaporation during the winter months. The IJC warned that in consideration of potential climate change impacts “considerable caution should be exercised with respect to any factors potentially reducing water levels and outflows.”

Conclusion

Decades of disputes over use of the water of the Great Lakes came to a head in 1998 when the Nova Group permit was issued. The resulting attempts to protect the Great Lakes Basin through interstate and international arrangements have yet to satisfactorily resolve the potential for water diversion outside the Basin. Unless and until the eight Great Lake states and two provinces make significant progress on establishing binding arrangements for management of Great Lakes water and adopt clear and meaningful conservation plans, the Lakes remain vulnerable to waste and overuse and possible threats from outside interests.

References

Annin, Peter. 2006. *The Great Lakes water wars*. Washington, D.C.: Island Press.

Great Lakes-St. Lawrence River Basin Compact Implementation. Council of Great Lakes Governors. <http://www.cglg.org/projects/water/CompactImplementation.asp>

Goodman, Brenda. 2007. Drought-stricken South facing tough choices. *New York Times*, October 16.

Government of Canada and United States Environmental Protection Agency. 1995. *The Great Lakes atlas*: Third edition.

----- 2006. *State of the Great Lakes 2007: Draft report*.

Jackson, Robert, et al 2001. Water in a changing world. *Ecological Applications* 11(4): 1027-1045.

Simsarian, James. 1938. The diversion of waters affecting the United States and Canada. *The American Journal of International Law*. 32 (3): 488-518.