



PROTECTION OF THE WATERS OF THE GREAT LAKES

REVIEW OF THE RECOMMENDATIONS IN THE
FEBRUARY 2000 REPORT

AUGUST 2004



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Protection of the Waters of the Great Lakes
Review of the Recommendations in the February 2000 Report

EXECUTIVE SUMMARY

The waters of the Great Lakes are essential for the health and well-being of the Great Lakes Basin ecosystem and for the nearly 40 million people who rely on the lakes for drinking water, for food, for work, and for recreation. The importance of this unique resource to the health and vitality of the entire basin ecosystem requires that governments at all levels continue to develop standards governing the use of Great Lakes water and to improve efforts to conserve water from all sources.

The Canadian and United States governments have committed themselves in the *Boundary Waters Treaty* and in the *Great Lakes Water Quality Agreement* to restore and maintain the integrity of this unique, vital, and virtually non-renewable resource. Also, the governments of the Great Lakes states and of Ontario and Quebec have made commitments in the *Great Lakes Charter* and in *Annex 2001* to protect, conserve, and manage the waters of the Great Lakes.

On February 22, 2000, the Commission issued a report at the request of the Canadian and United States governments on the protection of the waters of the Great Lakes concluding that the Great Lakes do not offer a vast reservoir for an increasingly thirsty world. That report noted that, although the Great Lakes contain about 20 percent of the fresh water on the earth's surface, only one percent of this water is renewed each year. The Commission concluded that removals of water from the basin reduce the resilience of the system and its capacity to cope with unpredictable stresses, such as climate change. The Commission therefore recommended that governments take a number of specific measures to ensure that removals of water from the basin and consumptive uses in the basin will not endanger the integrity of the Great Lakes Basin ecosystem.

The Commission has been asked by the United States and Canadian governments to review the recommendations that it made in its 2000 report in the light of developments that have taken place since that report was issued. The body of this report includes a review of each

recommendation. This report reflects the input of more than 50 non-governmental organizations, citizens, and government representatives at public hearings on water use in the Great Lakes Basin.

Key developments since the 2000 report include:

- Amendments to the *International Boundary Waters Treaty Act* (Bill C-6) and *International Boundary Waters Regulations*, which entered into force in Canada in December 2002, prohibit removals from Canadian boundary waters¹ of the Great Lakes.
- In the United States, the *Water Resources Development Act* of 1986 prohibits the diversion of Great Lakes water unless approved by all eight Great Lakes state governors. Amendments to this act in 2000 further encourage the Great Lakes states, in consultation with the provinces of Ontario and Quebec, to develop and implement a standard for making decisions concerning the withdrawal and use of water from the Great Lakes Basin.
- In 2001, the Great Lakes states and Ontario and Quebec concluded an annex to the 1985 *Great Lakes Charter*, a good-faith arrangement called *Annex 2001* that committed them to establish a new decision-making standard, and a decision-support system to manage withdrawals of water from the Great Lakes Basin. The Commission commends the Great Lakes states and Ontario and Quebec for their achievements to date, and notes that new draft arrangements to implement *Annex 2001* were put out for public comment for 90 days on July 19, 2004, and that a final arrangement will then have to be approved by governments through legislation.
- While there are not, at present, any active proposals for diversions outside the Great Lakes Basin, except to communities on the edge of the basin, this situation could change. Moreover, the increasing demands for water to supply the needs of these near-basin communities, and potential future demands for diversions to other parts of the continent, make it urgent for governments to carry out the recommendations in the Commission's 2000 report, and for the Great Lakes states and provinces to implement *Annex 2001* in a manner that conforms with those recommendations. The Commission recommends that the outcome of the *Annex 2001* process should include a standard and management regime consistent with the recommendations in our 2000 *Report*. Until this process is complete, it is not possible to say whether and to what extent *Annex 2001* and measures taken under it will give effect to the recommendations in the Commission's 2000 Report.

¹ The term 'boundary waters' in the Act has the same meaning as in the Boundary Waters Treaty which defines boundary water in the preliminary article to mean "For the purpose of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary."

The Commission concluded in its 2000 report that existing international trade law obligations do not prevent Canada and the United States from taking measures to protect their water resources and preserve the integrity of the Great Lakes Basin ecosystem. The governments of Canada and the United States support this view, and the Commission recommends that both governments take steps to allay public fears that Great Lakes water could be treated as a commodity. Indeed, the Commission reaffirms that trade agreements do not constrain the protection of water in its natural state, that is, before that water has become a commercial good or saleable commodity. Just as important, the Commission continues to strongly support the basic principle espoused in our 2000 report that water use standards that treat in-basin and out-of-basin users differently are reasonable.

The Commission understands that, at this time, demand for diverted water resides on the U.S. side of the boundary in communities near the basin divide such as New Berlin, Wisconsin and Lowell, Indiana.² Indeed, the Commission is aware of a growing number of proposals to allow communities that straddle or lie just outside the surface-water divide of the Great Lakes Basin to use Great Lakes water. Of particular concern to the Commission is unsustainable groundwater depletion in these communities that could lead to declining water quality, the dewatering of tributaries, and destruction of habitat. For instance, large groundwater withdrawals in southeastern Wisconsin have reduced groundwater flow to Lake Michigan and, in some locations, have reversed flow.³

States and provinces are developing a water management regime to deal with these demands in a fair and sustainable way, and the Commission continues to urge that the new regime be consistent with the Commission's recommendations in its 2000 report. In addition, the federal, state and provincial governments should work together to map and characterize groundwater aquifers.

With respect to conservation, the Commission finds that substantial work remains to be done at all levels of government to implement the water-saving measures set out in the Commission's 2000 report. Therefore, the Commission urges that those conservation recommendations be instituted as soon as possible. Governments at all levels should also encourage the development and implementation of policies such as metering and conservation pricing as well as technologies that will reduce the consumption and loss of water as long as low income families are protected.

² Milwaukee Journal Sentinel, "Troubled Waters: The Great Divide," November 23, November 30 and December 7, 2003.

³ Feinstein, D.T., Hart, D.J., Eaton, T.T., Krohelski, J.T., and Bradbury, K.R., 2004, Simulation of Regional Groundwater Flow in Southeastern Wisconsin, Wisconsin Geologic and Natural History Survey Open File Report, 2004-01 p. 132

Over the years, the Commission has been asked by governments on several occasions to offer its advice on protecting the waters of the Great Lakes Basin from unsustainable use and diversion. While knowledge of the ecosystem has advanced and policies and practices are improving, serious concerns remain and a great deal of work still needs to be done to achieve sustainable management of these resources for the benefit of present and future generations. The Commission urges all the Great Lakes states and provinces and the governments of the United States and Canada to carefully evaluate the observations in this report, to recommit themselves to implementing the recommendations in our 2000 report and to work together to manage and protect the world's most precious source of freshwater – the Great Lakes.

Review of Recommendations

The Commission has undertaken a full and careful review of the recommendations in its 2000 report. The original recommendations made by the Commission in its 2000 report are repeated below in plain text. Observations on the status of these recommendations are in **bold** following the relevant recommendation.

Recommendation I. Removals

Without prejudice to the authority of the federal governments of the United States and Canada, the governments of the Great Lakes states and Ontario and Quebec should not permit any proposal for removal of water from the Great Lakes Basin to proceed unless the proponent can demonstrate that the removal would not endanger the integrity of the ecosystem of the Great Lakes Basin and that:

- a. there are no practical alternatives for obtaining the water,
- b. full consideration has been given to the potential cumulative impacts of the proposed removal, taking into account the possibility of similar proposals in the foreseeable future,
- c. effective conservation practices will be implemented in the place to which the water would be sent,
- d. sound planning practices will be applied with respect to the proposed removal, and
- e. there is no net loss to the area from which the water is taken and, in any event, there is no greater than a 5 percent loss (the average loss of all consumptive uses within the Great Lakes Basin); and the water is returned in a condition that, using the best available technology, protects the quality of and prevents the introduction of alien invasive species into the waters of the Great Lakes.

In reviewing proposals for removals of water from the Great Lakes to near-Basin communities, consideration should be given to the possible interrelationships between aquifers and ecosystems in the requesting communities, and aquifers and ecosystems in the Great Lakes Basin.

In implementing this recommendation, states and provinces shall ensure that the quality of all water returned meets the objectives of the *Great Lakes Water Quality Agreement*.

At this time, removal from the Basin of water that is used for ballast or that is in containers of 20 liters or less should be considered, prima facie, not to endanger the integrity of the ecosystem of the Great Lakes. However, caution should be taken to properly assess the possible significant local impacts of removals in containers.

Removal of water for short-term humanitarian purposes should be exempt from the above restrictions.

The governments of Canada and the United States and the governments of the Great Lakes states and Ontario and Quebec should notify each other of any proposals for the removal of water from the Great Lakes Basin, except for removal of water that is used for ballast or that is in containers of 20 liters or less.

Consultations regarding proposed removals should continue in accordance with the procedures and processes that are evolving throughout the Great Lakes Basin and should be coupled with additional opportunities for public involvement.

Any transboundary disagreements concerning any of the above matters that the affected governments are not able to resolve may, as appropriate, be referred by the governments of Canada or the United States to the International Joint Commission pursuant to Article IX of the Boundary Waters Treaty.

Nothing in this recommendation alters rights or obligations under the Boundary Waters Treaty.

Commission Observations on Recommendation I

The Commission observes that no proposals to divert water out of the Great Lakes Basin have been approved since our 2000 report.

In December 2002, the Canadian government proclaimed in force Bill C-6 which amended the Canadian *International Boundary Waters Treaty Act* and new related *International Boundary Waters Regulations*. These, among other things, prohibit new removals from the Canadian boundary waters of the Great Lakes-St Lawrence Basin by means of diversions and also prohibit removals by any other means of amounts over 50,000 liters per day. There are limited exceptions for: manufactured products that contain water, including water and other beverages in bottles or packages; water used in a conveyance, including a vessel, aircraft or train, as ballast, for the operation of the conveyance, or for people, animals or goods on or in the conveyance; or water used in a non-commercial project on a short-term basis for fire-fighting or humanitarian purposes. In the Great Lakes-St. Lawrence Basin, this prohibition against out-of-basin removals applies only to those Canadian waters that are “boundary waters” as that term is defined in the Boundary Waters Treaty of 1909.

Also, in 1999, Ontario enacted a *Water Taking and Transfer Regulation* which generally prohibits transfers out of Ontario's part of the Great Lakes-St Lawrence basin. Since 1999, Quebec has also generally prohibited transferring water outside Quebec that has been taken in Quebec.

The Commission commends the Canadian, Ontario, and Quebec governments for the added protection that they are providing to the waters of the Great Lakes-St Lawrence River Basin.

In the United States, Section 504 of the *Water Resources Development Act of 2000* (WRDA 2000) amended the *Water Resources Development Act of 1986* (WRDA 1986). Including this amendment, WRDA declares, among other things, that it is the purpose and policy of the Congress:

“ to take immediate action to protect the limited quantity of water available from the Great Lakes system for use by the Great Lakes States and in accordance with the Boundary Waters Treaty of 1909;

“ to encourage the Great Lakes States, in consultation with the Provinces of Ontario and Quebec, to develop and implement a mechanism that provides a common conservation standard embodying the principles of water conservation and resource improvement for making decisions concerning the withdrawal and use of water from the Great Lakes Basin;

“to prohibit any [new] diversion of Great Lakes water by any State, Federal agency, or private entity for use outside the Great Lakes basin unless such diversion is approved by the Governor of each of the Great Lakes States; and

“to prohibit any Federal agency from undertaking any studies that would involve the transfer of Great Lakes water for any purpose for use outside the Great Lakes basin.”

WRDA continues with a specific reference to the IJC:

“No Federal agency may undertake any study, or expend any Federal funds to contract for any study, of the feasibility of diverting water from any portion of the Great Lakes within the United States, or from any tributary within the United States of any of the great Lakes, for use outside the Great Lakes basin, unless such study or expenditure is approved by the Governors of each of the Great Lakes States. The prohibition of the preceding sentence shall not apply to any study or data collection effort performed by the Corps of Engineers or other Federal agency under the direction of the International Joint Commission in accordance with the Boundary Waters Treaty of 1909.”

The Commission considers the amendment to be constructive, and commends the United States Congress for its action in this area.

On June 18, 2001, the Great Lakes states and Ontario and Quebec concluded an *Annex to the 1985 Great Lakes Charter*, a good-faith arrangement between the Great Lakes states and Ontario and Quebec, which established principles for the management of Great Lakes water resources.

Annex 2001 commits the Great Lakes states and Ontario and Quebec

“... to develop and implement a new common, resource-based conservation standard and apply it to new water withdrawal proposals from the Waters of the Great Lakes Basin. The standard will also address proposed increases to existing water withdrawals and existing water withdrawal capacity from the Waters of the Great Lakes Basin.”

Annex 2001 also sets out six directives concerning the development of a new set of binding agreements: development of a broad-based public participation program; establishment of a new decision-making standard; review of projects under the *Water Resources Development Act of 1986*, as amended in 2000; development of a decision-support system that ensures the best available information; and further commitments with respect to such matters as implementing programs and legislation, monitoring, decision-making and dispute-resolution mechanisms, conservation, scientific research and the role of groundwater.

Proposed policies to implement *Annex 2001* were released for public comment on July 19, 2004. The public comment period lasts for 90 days.

Finally, the Commission recommends that the outcome of the *Annex 2001* process should include a standard and management regime consistent with the recommendations in our 2000 report. Until this process is complete, it is not possible to say whether and to what extent *Annex 2001* and measures taken under it will give effect to the recommendations in the Commission’s 2000 Report.

Recommendation II. Major New or Increased Consumptive Uses

To avoid endangering the integrity of the ecosystem of the Great Lakes Basin, and without prejudice to the authority of the federal governments of the United States and Canada, the governments of the Great Lakes states and Ontario and Quebec should not permit any proposal for major new or increased consumptive use of water from the Great Lakes Basin to proceed unless:

- a. full consideration has been given to the potential cumulative impacts of the proposed new or increased major consumptive use, taking into account the possibility of similar proposals in the foreseeable future,
- b. effective conservation practices will be implemented in the requesting area, and,
- c. sound planning practices will be applied with respect to the proposed consumptive use.

In implementing this recommendation, states and provinces shall ensure that the quality of all water returned meets the objectives of the Great Lakes Water Quality Agreement.

The governments of Canada and the United States and the governments of the Great Lakes states and Ontario and Quebec should notify each other of any proposals for major new or increased consumptive uses of water from the Great Lakes Basin.

Consultations regarding proposed major new or increased consumptive uses should continue in accordance with the procedures and processes that are evolving throughout the Great Lakes Basin and should be coupled with additional opportunities for public involvement.

Any transboundary disagreements concerning the above that the affected governments are not able to resolve may, as appropriate, be referred by the governments of Canada or the United States to the International Joint Commission pursuant to Article IX of the Boundary Waters Treaty.

Nothing in this recommendation alters rights or obligations under the Boundary Waters Treaty.

Commission Observations on Recommendation II

The Great Lakes states and Ontario and Quebec are working to negotiate an agreement among them to implement in final form the provisions of *Annex 2001* with respect to consumptive uses. A draft agreement was put out for public comment in July, 2004.

In the meantime, on December 17, 2003, Ontario made a new regulation concerning the taking and use of water that places a one-year moratorium on new and expanded water takings in southern Ontario to allow the Ontario government time to review its groundwater supplies and draft new rules for water takings.

Recommendation III. Conservation

In order to avoid endangering the integrity of the ecosystem of the Great Lakes Basin, the governments of the Great Lakes states and Ontario and Quebec should apply conservation measures to significantly improve efficiencies in the use of water in the Great Lakes Basin and should implement the conservation measures set out in this recommendation.

The governments of the Great Lakes states and Ontario and Quebec, in collaboration with local authorities, should develop and launch a coordinated basin-wide water conservation initiative, with quantified consumption reduction targets, specific target dates, and monitoring of the achievement of targets, to protect the integrity of the Great Lakes Basin ecosystem, and to take advantage of the other economic and environmental benefits that normally flow from such measures.

In developing and implementing this initiative, the governments should, among other things, consider:

- a. state-of-the-art conservation and pollution-control technologies and practices,
- b. potential cumulative impacts,
- c. the application of sound planning practices,
- d. to the extent practicable, the setting of water prices at a level that will encourage conservation,
- e. conditioning financial help from governments for water and wastewater infrastructure on the application of sound conservation practices,
- f. promotion of eco-efficient practices, especially in the industrial and agricultural sectors,
- g. establishment of effective leak detection and repair programs for water infrastructure in all municipalities,
- h. the inclusion of strong performance and environmental standards and financial incentives for water saving in contractual arrangements for delivery of water-related services, whether public or private,
- i. the application of best practicable water-saving technologies in governmental facilities,
- j. sharing experiences with respect to the planning and implementation of conservation policies and programs and the use of water-saving technologies, and,

- k. joint preparation of promotional and educational materials and publication of success stories, including sponsoring conferences and workshops on water conservation, in partnership with others.

Commission Observations on Recommendation III

The Commission observes that conservation is justifiable on its own merits in terms of both economic efficiencies and proper husbandry of scarce water resources, yet we remain concerned about the slow pace of implementing the recommendations in our 2000 report.

As stated in the November 8, 2002 report of the Commission's task force, the Canadian and U.S. governments continue to support research on water conservation and water use, which includes developing comprehensive databases on water valuation studies in cooperation with provincial and international partners.

The Great Lakes States and Ontario and Quebec are continuing to develop agreements for implementing those provisions of *Annex 2001* that address conservation.

The Commission's task force also noted that a paper prepared by the Great Lakes Commission⁴ indicates that there is considerable room for improvement in conservation measures.⁵ It appears that Indiana, Michigan, Ohio, and Wisconsin either have no conservation programs or have programs that are very limited.

Status of conservation efforts of local units of government was not assessed. However, the Commission observes that significant potential exists at the local level of government to implement conservation measures. The Commission recognizes that it will always be very difficult to collect data on conservation programs and to summarize those programs because of the very large number of local jurisdictions involved.

In the United States, the *Safe Drinking Water Act* of 1996 required the Environmental Protection Agency (EPA) to publish guidelines for geographically-tailored water conservation plans for public municipal water systems. The effectiveness of these guidelines, which are designed to encourage conservation at the municipal level, is not being measured. States have the authority to require water systems to submit a water conservation plan consistent with the EPA or other guidelines as a condition of receiving loans under the Drinking Water State Revolving Fund. However, Illinois, Indiana, Michigan, New York, Ohio, and Pennsylvania do not require conservation for projects that

⁴ Dan Blake, Great Lakes Commission, Water Conservation in the Great Lakes - St Lawrence Region, July, 2002.

⁵ For the purposes of this report, "conservation measures" means actions taken to reduce withdrawal or consumptive use of water.

wish to draw on revolving funds.⁶

The Commission commends the ongoing initiative launched by Chicago Mayor Richard Daley to meter all water uses in the largest city in the Great Lakes region and notes that a majority of water withdrawals and uses in the Great Lakes basin are not metered and that such metering would dramatically enhance the ability to conserve and better manage water use. Moreover, pricing municipal water to encourage conservation would also be a step in the right direction as long as safeguards are included to protect persons with low incomes.

Finally, according to the Commission's task force, apparent water use dropped considerably between 1993 and 1998. It is not known, however, how much of that apparent reduction represents a real trend. Unfortunately, we are not able to measure how much conservation alone has contributed to the quicker than expected leveling-off of consumptive water use.

Recommendation IV. *Great Lakes Charter Standards*

Without prejudice to the authority of the federal governments of the United States and Canada, the Great Lakes States and Ontario and Quebec, in carrying out their responsibilities under the *Great Lakes Charter*, should develop, within 24 months, with full public involvement and in an open process, the standards and the procedures, including the standards and the procedures in Recommendations I and II, that would be used to make decisions concerning removals or major new or increased consumptive uses. Federal, state, and provincial governments should not authorize or permit any new removals and should exercise caution with respect to major new or increased consumptive use until such standards have been promulgated or until 24 months have passed, whichever comes first.

Commission Observations on Recommendation IV

The Great Lakes states and Ontario and Quebec are working on implementing the provisions of *Annex 2001* for the establishment of standards and procedures to manage water withdrawals and use. A proposal was put out for public comment in July 2004.

So far as we are aware, no new removals or major new or increased consumptive uses from the Great Lakes have been authorized or permitted by federal, state or provincial governments since 2000.

The Commission again urges the states and provinces to adopt a standard consistent with the principles in Recommendation I and II of our 2000 report and notes that based upon the advice of its task force, legal counsel and the governments of the

⁶ Minnesota requires cities to have a conservation plan to get on a revolving fund priority list. Wisconsin effectively requires a plan for new wells by virtue of a separate wellhead protection plan for new wells. When administering revolving funds, New York and Pennsylvania give priority to projects that have conservation features, but these states do not require conservation features in order for projects to receive these funds.

United States and Canada, a standard that treats in-basin water uses differently than out-of-basin diversions is reasonable.

Recommendation V. Existing Institutions and Mechanisms

To help ensure the effective, cooperative, and timely implementation of programs for the sustainable use of the water resources of the Great Lakes Basin, governments should use and build on existing institutions to implement the recommendations of this report. In this regard, the governments of the states and the provinces should take action, with respect to the implementation of the *Great Lakes Charter*, to:

- a. develop and implement, on an urgent basis, the Basin Water Resources Management Program,
- b. develop a broader range of consultation procedures than is currently called for in the *Charter* to assure that significant effects of proposed uses of water resources in the Great Lakes Basin are assessed, and,
- c. ensure that the notice and consultation process under the *Charter* is open and transparent and that there is adequate consultation with the public.

Commission Observations on Recommendation V

As noted above, the Great Lakes states and Ontario and Quebec are working on implementing provisions in *Annex 2001* to the *Great Lakes Charter*.

The Commission observes that the Great Lakes states and provinces have a prior notice and consultation process for certain water withdrawals under the *Great Lakes Charter*. The Commission continues to encourage careful attention to providing the public a convenient opportunity to be heard in such consultations. The Commission also observes that the establishment of a public advisory committee to the Working Group on *Annex 2001* has been an exceptionally positive development. In addition, the Commission notes that Directive #6 of *Annex 2001* contains a commitment on the part of the governors and premiers to “identify and implement effective mechanisms for decision making and dispute resolution.”

Finally, the Commission observes that the Great Lakes states and Ontario and Quebec are working on implementing provisions in *Annex 2001* that may address the issues raised in Recommendation V and that a proposed *Agreement* was put out for public comment in July 2004 .

Recommendation VI. Data and Research

Federal, state, and provincial governments should move quickly to remedy water use data deficiencies by:

- a. allocating sufficient staff and financial resources to upgrade the timeliness, precision, and accuracy of water use data,
- b. working much closer together to ensure consistency in water use monitoring, estimation techniques, and reporting,
- c. emphasizing and supporting the development and maintenance of a common base of data and information regarding the use and management of the water resources of the Great Lakes Basin, establishing systematic arrangements for the exchange of water data and information, and undertaking coordinated research efforts to provide improved information for future water planning and management decisions.

Furthermore, governments should immediately take steps to ensure that, on a binational basis, research is coordinated on individual and cumulative impacts of water withdrawals on the integrity of the Great Lakes Basin ecosystem. In support of their decision-making, governments should implement long-term monitoring programs capable of detecting threats (including cumulative threats) to ecosystem integrity. Such monitoring programs should be comprehensive, particularly in their approaches to detecting threats to ecosystem integrity at a spectrum of space and time scales.

As part of an anticipatory policy for identifying emerging issues, governments should, on a binational basis, undertake more active science and research and, in particular, should implement appropriate long-term monitoring programs for key indicators of ecosystem change.

Commission Observations on Recommendation VI

The Commission notes that in the *Great Lake Charter*, the states and provinces made a commitment nearly two decades ago to register all water withdrawals exceeding 100,000 gallons a day and to regulate all water withdrawals for diversions or consumptive uses exceeding two million gallons per day as a condition for participation in the notice and consultation process in the *Charter*. Given that as well as other commitments in *Annex 2001*, the Commission observes that despite some progress, deficiencies in the collection of water use data continue.

In its response to the Commission's 2000 report, the Canadian government has said that plans are evolving to modernize its water-monitoring network, but these have not yet been finalized. According to the Commission's task force, Environment Canada and Ontario have initiated a joint project to gain baseline data on water supply, use and demand at a sub-basin level, identify ecological sensitivities and make projections for the future. This project is not scheduled to be completed until 2005.

The Commission’s task force has found that the United States Geological Survey (USGS), which is responsible for compiling and disseminating the United States’ water-use data, scaled back its 2000 five-year national water-use data report, in part because its program is under-funded, and, in part, because of concerns that certain features of the report, in particular estimates of consumption, lack a sufficient scientific basis to warrant continued publication. There is, at present, no agreement on “consumptive use coefficients,” a term that is defined in this report to mean, “that portion of water withdrawn which is evaporated, transpired from plants, incorporated into products or otherwise lost, and thus is not available for further use in the basin.” According to the task force, the consumptive use problem has been overstated.

The Commission also notes that, under the aegis of *Annex 2001*, the Great Lakes states and Ontario and Quebec, with support from U.S. and Canadian federal government agencies, worked with the Great Lakes Commission (GLC) to develop an assessment of available information, an update of data on existing water uses, an identification of data needs, a better understanding of groundwater, and evaluation of models that could be used to implement the support system.

Noting the steps above, the Commission continues to urge the Great Lakes states to complete and update the database for water withdrawals including agricultural withdrawals.

The state of Michigan, the only state to have failed to regulate water withdrawals over two million gallons per day, should immediately take action to keep this promise. The Commission understands that Michigan’s Governor has called for action to regulate water withdrawals and that the state legislature may consider this matter in the future.

Recommendation VII. Groundwater

Governments should immediately take steps to enhance groundwater research in order to better understand the role of groundwater in the Great Lakes Basin. In particular, they should conduct research related to:

- a. unified, consistent mapping of boundary and transboundary hydrogeological units,
- b. a comprehensive description of the role of groundwater in supporting ecological systems,
- c. improved estimates that reliably reflect the true level and extent of consumptive use,
- d. simplified methods of identifying large groundwater withdrawals near boundaries of hydrologic basins,
- e. effects of land-use changes and population growth on groundwater availability and quality,

- f. groundwater discharge to surface water streams and to the Great Lakes, and systematic estimation of natural recharge areas, and,
- g. systematic monitoring and tracking of the use of water-taking permits, especially for bottled water operations.

In recognition of the frequent and pervasive interaction between groundwater and surface water and the virtual impossibility of distinguishing between them in some instances, governments should apply the precautionary principle with respect to removals and consumptive use of groundwater in the Basin.

Commission Observations on Recommendation VII

The Commission observes that scientific understanding of groundwater and its role in supporting ecosystem functions remains incomplete and significant research needs to be conducted in order to fill existing gaps in knowledge. The Commission has provided a menu of research topics that remain relevant and urges the governments to conduct and support that research.

In its response to the Commission's 2000 report, the Canadian government stated that the Geological Survey of Canada has initiated consultations with the provinces, territories, and other federal science agencies to develop a national program that would map the nation's major aquifers, including groundwater in the Great Lakes Basin. According to the Commission's task force, groundwater is also part of the Environment Canada - Ontario water use and supply project that is referred to in the Commission's comments on the preceding recommendation. However, so far as the Commission is aware, none of these efforts has as yet come to fruition. In addition, the government of Canada has initiated discussions with the government of the United States regarding the development of a coordinated approach to raising the awareness of groundwater issues throughout the Great Lakes Basin.

The USGS and Great Lakes states are also undertaking groundwater research primarily related to specific needs, such as reports of domestic wells going dry in Monroe County and Saginaw County, Michigan, and declines in the deep aquifer in southeastern Wisconsin. A USGS official told the task force that to date there has been little done in response to the Commission's call for unified consistent mapping of boundary and transboundary hydro geological units. The task force found that there has, however, been progress in describing the role of groundwater in supporting ecological systems (although the availability of good quality water for drinking and ecosystems is still a largely unstudied area for the Great Lakes as a whole), on identifying the effects of land use changes and population growth on groundwater availability and quality, on learning more about groundwater discharge to streams and on estimating natural recharge areas.

Groundwater also forms part of the work that the Great Lakes Commission is doing with respect to *Annex 2001*. Moreover, in 2002, the Great Lakes Protection Fund issued a

grant to USGS to allow a team of hydrologists to develop a three-dimensional visualization of the Lake Michigan Basin which will illustrate how groundwater relates to the surface water system, and to develop protocols and data reporting procedures with Environment Canada that can be used in both countries in routine hydrological analyses. These efforts are underway, but, so far as the Commission is aware, have not yet been completed.

The Commission observes that the *Boundary Waters Treaty* is silent regarding groundwater. However, apart from the fact that sometimes groundwater and surface water flows may be indistinguishable, the IJC can and has considered groundwater flows under References issued pursuant to Article IX of the treaty and can consider impacts on groundwater flows when deciding whether to approve applications for projects with transboundary effects pursuant to Articles III, IV and VIII of the treaty. The *Great Lakes Charter* and *Annex 2001* both define “waters of the Great Lakes basin” as including tributary groundwater that is within the *Charter* boundary. As such, it appears that any water management regime that is developed as a result of the *Annex 2001* process will be applied to both groundwater and surface water withdrawals within the *Charter* boundaries. The Commission cautions that because of the relatively poor state of scientific knowledge concerning the quality, quantity and flow of groundwater, that any regime should be flexible enough to accommodate improvements in that knowledge.

The Commission wishes to stress the critical importance of the above recommendation that governments should commence a project to map and characterize all of the groundwater aquifers in the Great Lakes Basin. Such a project would dramatically enhance the ability to manage these vital waters and advance scientific understanding of these unseen resources.

Finally, the Commission observes that there are examples of near-basin communities that in their quest for needed water – and their inability to tap Great Lakes surface water – have resorted to withdrawing large quantities of groundwater.

Recommendation VIII. Climate Change

Recognizing that the Intergovernmental Panel on Climate Change has concluded that human activities are having a discernible effect on global climate, and despite the uncertainties associated with the modeling of future climate, the governments of Canada and the United States should fully implement their international commitments to reduce greenhouse gas emissions.

Commission Observations on Recommendation VIII

The Commission observes that climate change exacerbates uncertainty with respect to Great Lakes water supplies, with most models predicting lower lake levels, providing even more reason for the states and provinces to complete the *Annex 2001* process with standards and management guidelines consistent with our recommendations.

In addition, the Commission notes that the Canadian government has ratified the *Kyoto Protocol* to the *United Nations Framework Convention on Climate Change*, and has adopted a Climate Change Plan for Canada, which it is implementing. The Plan, which is the result of extensive consultations with provinces, territories, stakeholders and individual Canadians, is said to provide a framework for moving forward, while allowing for continuous adjustment as progress is assessed.

The United States is not a Party to the *Kyoto Protocol*, but is instead addressing the climate change issue through its own measures. In this regard, the Commission notes, with interest, the creation of the Chicago Climate Exchange, which describes itself as the “first voluntary, legally binding commitment by a cross-section of North American corporations, municipalities and other institutions to establish a rules-based market for reducing greenhouse gases.” Members of the exchange buy and sell emissions reduction credits in order to reduce overall emissions in a cost-effective way.

Recommendation IX. Trade Law

The governments of the United States and Canada should direct more effort to allaying the public's concern that international trade law obligations could prevent Canada and the United States from taking measures to protect waters in the boundary region, and they also need to direct more effort to bringing greater clarity and consensus to the issue.

Commission Observations on Recommendation IX

International trade agreements do not prevent the governments of the United States and Canada from protecting water as it resides in the Great Lakes and their tributary rivers and streams, if there is no discrimination against persons from other countries and undue expectations are not created. However, some remain concerned; therefore, the governments need to make a greater effort to clarify this issue for the public, including continuing to demonstrate that future trade agreements, such as the proposed *Agreement for a Free Trade Area of the Americas* or a *General Agreement on Trade in Services*, will not affect the ability of governments to protect water resources like the Great Lakes.

Recommendation X. Standing Reference

The Commission should be given a standing reference to review its recommendations for the protection of the waters of the Great Lakes in three years and thereafter at 10-year intervals unless conditions dictate a more frequent review. This report is the response to the request from governments for a review after three years.

Commission Observations on Recommendation X

The governments have accepted this recommendation and have given the Commission the Reference that it proposed, but without committing to make funds available for the ten-year review.

Recommendation XI. Next Steps

The Commission recommends that the governments consider for adoption the proposed plan of work for Commission activities on the rest of the border, focusing on priority issues and on specific regional issues where the Commission can contribute binational experience and resources.

Recommendation XII. Implementation

The Commission recommends that the governments of the United States and Canada and the governments of the Great Lakes states and Ontario and Quebec, acting individually or collectively, as appropriate, take the necessary steps to implement the recommendations contained in this report.

Commission Observations on Recommendation XII

Progress is being made with respect to the recommendations in the Commission's 2000 report, but many of our recommendations have not been implemented. It would appear that Recommendation I has essentially been met in Canada by *Bill C-6* and by the Ontario *Water Taking and Transfer Regulation*. In the United States, the *Water Resources Development Act* prohibits diversions or exports of water from the Great Lakes or their tributaries without the approval of the Governors of all Great Lakes States. However, Recommendations I to VII, inclusive, which directly address measures needed to protect the waters of the Great Lakes Basin, have not yet been fully implemented, and a further effort is required by the governments to do so. Therefore, the governments of Canada and the United States and the governments of the Great Lakes states and Ontario and Quebec, acting individually or collectively, as appropriate, should take the necessary steps to complete implementation of all the Commission's recommendations in its 2000 report.



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