

# Our Great Lakes Water Resources:

## Conserving and Protecting Our Water Today for Use Tomorrow

### *Final Report*

presented to  
Governor David A. Paterson and  
The New York State Legislature

by  
The Great Lakes Basin  
Advisory Council

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## ***List of Abbreviations***

**CU:** Consumptive Use

**EBM:** Ecosystems-based Management

**ECL:** Environmental Conservation Law

**ELOHA:** Ecological Limits of Hydrologic Alteration

**GIS:** Geographic Information Systems

**GLBAC:** New York Great Lakes Basin Advisory Council

**GL-SLR BWRC:** Great Lakes – St. Lawrence River Basin Water Resources Council

**GLWWRP:** Great Lakes Water Withdrawal Registration Program

**gpd:** gallons per day

**gpm:** gallons per minute

**IAGLR:** International Association of Great Lakes Researchers

**mgd:** million gallons per day

**NDRBC:** Delaware River Basin Commission

**NGO:** non-governmental organization

**NYCRR:** New York Codes, Rules, and Regulations

**NYS DEC:** New York State Department of Environmental Conservation

**NYS DOH:** New York State Department of Health

**NYGLPF:** New York State Great Lakes Protection Fund

**NYOGLECC:** New York Ocean and Great Lakes Ecosystem Conservation Council

**NYSERDA:** New York State Energy Research and Development Authority

**PWSPP:** Public Water Supply Permit Program

**SEQR:** State Environmental Quality Review

**SRBC:** Susquehanna River Basin Commission

**USGS:** United States Geological Survey

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## Executive Summary

Efficient and responsible water use is a cornerstone of sound water management policy, whether the resource is considered abundant or scarce. Efficient use and conservation of our Great Lakes water resources can ensure equitable access to and long-term availability of water; enhance economic viability and competitiveness of the region; support reductions in energy use and greenhouse gas emissions; improve the ability to manage an uncertain future and growing demand for water; and, prevent or minimize conflicts among water users.

On March 4, 2008, the Great Lakes-St. Lawrence River Basin Water Resources Compact was signed into New York State Environmental Conservation Law by Governor Eliot Spitzer as 21 ECL Title 10. Section 21-1007 of the Act directs the New York Great Lakes Basin Advisory Council (GLBAC) to:

- \* *convene not later than three months following the effective date of the Act;*
- \* *develop “recommendations for legislation, regulations or rules that are necessary to implement and effectuate the requirements and purposes of the Compact;” and*
- \* *present its final recommendations to the Governor and State Legislature not later than eighteen months from the statute’s effective date, which is September 4, 2009.*

This report, prepared by the Great Lakes Basin Advisory Council (GLBAC), is designed to fully respond to the directive by the State Legislature to the GLBAC in 2008, as contained in New York’s ratifying legislation that adopted the Compact. However, it is also the GLBAC’s express desire that this report serve to stimulate new dialogue within the State regarding how our water resources can best be managed, in light of the growing need for renewable energy, threats from climate change and to guarantee sustainable resources for future generations of New Yorkers, along with the fish, birds, animals, and plants that make up a healthy ecosystem.

Recognizing the complexity of the Compact and the issues the GLBAC was charged to consider, an approach was eventually defined to develop recommendations in a manner that was consistent with a set of guiding principles.

- The Council would rely on input from relevant State agencies and non-governmental organizations to the greatest extent possible, recognizing that vacant positions in the Council representing important constituent categories, the Council's lack of technical and policy expertise in some specific disciplines, and limitation in available science and its information base may limit its ability to fully inform on each directive.
- This report's contents must serve as an initial and continuing source of guidance to the State Legislature in considering further State water resources legislation.
- The production of this report is an opportunity for the Council to highlight key management and scientific information needs that will promote more effective water conservation and projection of future supply needs.

The Act states that the recommendations shall include, but are not limited to, the following:

- a. the evaluation and recommendations of the threshold levels to be included in the implementing legislation regulation or rules for regulating new or increased water withdrawals in the state;
- b. the establishment of a permitting program or alternative programs in order to meet the water management objectives of this state;
- c. the development of the state's water conservation and efficiency programs;
- d. the method for establishing the baseline for determining a new or increased diversion, consumptive use, or withdrawal pursuant to Section 4.12.2 of the Compact; and,
- e. the collection and application of scientific information to improve understanding of the waters of the Great Lakes Basin and the impacts of withdrawals and diversions.

In Section I, *"The Evaluation and Recommendations of Water Threshold Levels for Management or Regulation,"* the Great Lakes Basin Advisory Council (GLBAC) evaluates the water thresholds for management and regulation. State agencies, such as NYS DEC and NYS DOH, have reviewed existing water threshold levels and identified all principle facilities and their current use, approved amounts and maximum capacities. In this section, the Council makes recommendations regarding the threshold. Some of the key recommendations include:

- Adopting a provisional threshold value of 100,000 gallons per day as specified by the Compact;
- Gathering the information necessary to evaluate the appropriateness of the threshold; and,
- Considering appropriate incentives to encourage large consumptive users to register their consumptive water use.



Next, the Council (GLBAC) looks at the current limitations in permitting programs. New York State currently requires persons who want to withdraw a significant amount of water for public supply purposes only to first get a permit. All other users are required to report or register their withdrawals. These permits may apply to surface and/or groundwater withdrawals and have various conditions attached to try to ensure that the withdrawal does not harm other water users or waste water. The current system uses two approaches: permitting and registration. The Compact requires the development of a program for managing and regulating new and increased withdrawals according to management standards, giving NYS an opportunity to improve and strengthen its current programs.

Some of the central recommendations in this section include:

- Streamlining the existing permitting process;
- Developing a reasonable fee structure used to support the permitting program's operating expenses; and,
- Developing a uniform policy for approving or rejecting applications for permits.

The Compact stipulates that each state is to develop water conservation and efficient use programs consistent with the goals and objectives adopted by the Council for application across the entire basin ( Appendix E). New York State DEC already has "A Water Conservation Manual". This document contains specific sections on how to gather information through water meter, how to conduct a water supply audit to quantify system uses, and worksheets to forecast water demand. However, this requirement from the Compact provides NYS with an opportunity to examine what others in the Great Lakes Basin have done within the context of New York State and the Great Lakes Basin especially with respect to developing more sustainable practices regarding water use and conservation.

Sustainable use and management addresses the need to build and maintain water supply systems that are efficient and minimize loss. One way of addressing both ecosystem integrity and hydrological integrity for New York's Great Lakes Basin is through in-stream flow standard development. In this process, a hydrologic baseline plus ecological quality indicators are identified which then can be used to assess levels of natural flows needed to maintain ecological and hydrologic integrity.

The GLBAC recommends a robust, broad-based public education and outreach program on water conservation standards, as detailed in Section III of this document. The creation of this education and outreach program,



as it is with the development of policy, must involve various stakeholders including, but not limited to, local, municipal leaders, water infrastructure managers, agency representatives, research scientists and industry representatives. The overarching Council recommendations are as follows:

- undertake to revise current manual for water conservation practices to incorporate suggestions for Green infrastructure;
- water system metering should be made available for all residential, commercial, industrial, and agricultural water consumption users;
- implement an educational outreach program on water conservation and sustainability;
- create incentives for conservation;
- provide technical guidance in assessing impacts of water withdrawals; and,
- fully embrace and implement the objectives of the 2005 Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement.

Prior to managing or regulating new and expanded uses as required by the Compact, New York State must establish a baseline of current existing water withdrawals, diversions and consumptive uses. To this end, the Council also proposes a clear and consistent baseline for water withdrawal permitting. This baseline should be quantitatively accurate and should consider permittee's past withdrawal rates, current permits and projected future withdrawals and set-up a mechanism for accurate monitoring and detailed water usage data. True pricing of water delivery should also be used to ensure the sustainability of water service providers as well as encourage future conservation. In order to accurately measure water usage, conserve water and identify and prevent leakages, metering should be available to residential, industrial, commercial and agricultural water users. NYS should also encourage water leakage studies. Minimum stream flow standards should also be adopted. The baseline should be developed with the following recommendations in consideration:

- promote a cooperative approach;
- The methodology for establishing a baseline should be as follows:
  - a. For public water supply systems, the baseline used should be their permitted water withdrawal amounts as of December 8, 2008.
  - b. For non-public water supply withdrawals, registered withdrawal capacities and historic usage should be considered.
  - c. The most recent 5 years of data should be used for determining baseline amounts.
  - d. The baseline value for a non-public water supply should be set as the water user's maximum capacity, or 2 times their maximum daily water use over the most recent 5 years interval, whichever is lower.

In order to effectively implement the Compact and to enhance New York's water resource management knowledge and capacity, sound scientific information is needed. The collection, interpretation, and use of this scientific information requires (a) new, expanded or adapted research priorities, (b) amended regulatory and monitoring policies, and strategically designed ecosystem monitoring programs and plans. In certain cases, these activities can be implemented by existing New York authorities and organizations, and in some cases, collaborative programs with non-New York State organizations are needed.

Section V presents an overview of the science principles contained in Section 1.4 of the Compact which New York is committed to pursue, as well as a brief summary of existing New York State water resource science programs and their abilities to support the Compact. Sound scientific information is needed to effectively implement the Compact and to enhance the management of New York's water resource. The collection, interpretation, and use of this scientific information requires new, expanded or adapted research priorities, as well as amended regulatory and monitoring policies. Strategically designed watershed and ecosystem monitoring programs may be needed. In certain cases, these activities can be implemented by existing New York authorities and organizations, and in some cases, collaborative programs with non-New York state organizations are needed. The section contains recommendations for what next steps are needed to enhance New York's scientific ability to support implementation of the Compact. Some Council recommendations include:

- Integrate scientific needs for implementation of the Compact into other NGO, Federal and Basin-wide programs such as the Cooperative Science Monitoring Initiative, the Great Lakes Observing System, and the Lake Area Management Plans;
- Conduct a formal Gap analysis to assess its specific science information needs for implementation of the Compact;
- Coordinate with counties, towns and water suppliers so development decisions are made in line with science-based water availability projections and watershed health considerations; and,
- Collect, manage and analyze scientific information on aquifers and stream flow levels.

Implementation of the Great Lakes Basin Water Resources Compact will involve real costs to State agencies, water suppliers and industrial water consumers. These costs need to be dealt with in an equitable and fair

manner to encourage conservation, while still promoting the economic viability of New York State. Section VI provides recommendations for addressing implementation costs, and identifies potential revenue streams. Some of the Council recommendations in this section include:

- Allocate and fully fund the Environmental Protection Fund;
- Develop incentives for homeowners and businesses to invest in technologies and practices to reduce water use;
- Support establishment of a Clean Water Trust fund at the state level that is not subject to state budget vulnerabilities to support water infrastructure, conservation and efficiency measures;
- Investigate a 'Systems Benefit Charge' type fee on water utilities to help fund water conservation and efficiency programs, research and development; and,
- Include conservation as a criterion for priority ranking within the Drinking Water State Revolving Fund's Intended Use Plan.

The efforts proposed above cannot occur without proper and full political leadership and support, nor can they function effectively without a detailed policy which outlines goals and appropriate conservation measures. More importantly, perhaps, is the need for stable funding sources for the recommended initiatives and sufficient staff and technical assistance at all levels to effectively implement these recommendations.

The Great Lakes Basin Advisory Council believes that to meet the needs of future generations, ensure economic prosperity and community vitality, we must act today to address the long-term sustainability of our Great Lakes resources.

## Introduction

### *Background*

The Great Lakes — Ontario, Erie, Huron, Michigan and Superior — are aptly named. Together with their connecting channels — rivers of great significance in their own respect — these water bodies span more than 750 miles west to east and provide water for consumption, power generation, commercial transportation and recreation. The Great Lakes form the largest system of fresh surface water in the world, containing roughly 20% of the global supply (Appendix A). This system accounts for 84% of North America's fresh surface water and is one of, if not the most important, natural resource in the United States and Canada (EPA Great Lakes Environmental Atlas, <http://www.epa.gov/glnpo/atlas/index.html>).

The significance of this ecosystem to New York State, as well as the inherent complexities of such an extensive area, can be inferred from the map of New York's major water drainage basins (Appendix B). Approximately 80 percent of New York State's fresh surface water, over 700 miles of shoreline, and nearly 48 percent of New York lands are contained in the drainage basins of Lake Erie, Lake Ontario, the Finger Lakes, and the St. Lawrence River which includes the Lake Champlain/Lake George watersheds. Sustaining life, providing recreation, and supporting local and regional economies, the Great Lakes are a true natural legacy to the people of New York.

More than four million New Yorkers depend on the fresh water of these basins for drinking water, and hundreds of miles of waterways and border waters for navigation. Immense quantities of surface water are withdrawn annually for thermoelectric and hydropower; widely diversified agricultural and irrigation operations; and multiple industrial and municipal uses. In addition to all these critical uses of water by humans, thousands of species of fish and wildlife benefit from free-flowing waters and natural water level fluctuations that assist in sustaining natural processes and habitat diversity.

In 1992, New York's Great Lakes Basin Advisory Council (GLBAC) issued a strategic guidance document, *"The New York State 25-Year Plan for the Great Lakes,"* to help focus state policies and resources on the most critical protection and restoration needs. That 25-Year Plan contains an entire chapter on water quantity beginning with a Strategic Goal:

*“Manage the Basin’s water resources to meet current and future human and ecosystem needs, recognizing its true value (costs) and major uncertainties regarding its abundance, levels and impacts.”*

To meet this goal, the State must balance water demand and supply. The 25-Year Plan went on to recommend specific actions to address major regional issues including:

- Water conservation and metering;
- Needed improvements to infrastructure;
- Registration of major water supply withdrawals;
- Protection of water quality;
- Improved management of small water supply systems; and,
- Scientific Information/technical data gathering for improved water resource planning.

Although the state has made significant progress in each of these issues since 1992, a new mechanism was needed to address deficiencies and to achieve greater consistency across the entire Great Lakes Basin.

Therefore, in December 2005, the Governors and the Premiers signed the two agreements at the Great Lakes Governors leadership summit. The first was the Great Lakes – St Lawrence River Basin Sustainable Water Resources Agreement (the Regional Agreement), a good faith agreement among the member states and provinces establishing rules procedures and standards for managing new and increased water withdrawals, diversions and consumptive uses, including measures to prohibit diversions from the Great Lakes Basin with specific exceptions; requirements for water conservation and efficient use programs; in-basin water withdrawal management or regulation programs; and enhanced science, enforcement, public involvement and consultation with the Tribes/First Nations. The second agreement was the Great Lakes—St. Lawrence River Basin Water Resources Compact (the Compact), an agreement among the Great Lakes States that essentially mirrored all the provisions of the Regional Agreement. On March 4, 2008, the Great Lakes-St. Lawrence River Basin Water Resources Compact was signed into New York State Environmental Conservation Law by Governor Eliot Spitzer as 21 ECL Title 10. New York State was the fourth state to sign the Compact and in October 2008, President George W. Bush signed a joint resolution of Congress providing federal consent to the Compact. The President’s action marked the final step in the Compact’s approval process thus enabling these agreements to become legally binding interstate law.

Public water supplies in New York's portion of the Great Lakes Basin provide water to almost 6 million people with an additional one half million relying on their individual wells.

- NYS Dept. of Health

Briefly the articles of the Compact call for the following:

- Sets forth the purposes of the Compact, which are generally for the states to act together to protect, conserve, restore, improve and effectively manage the waters and water dependent natural resources of the Basin. The Compact shall also provide for cooperative planning and action by the member parties with respect to Great Lakes water resources.
- Calls for an adaptive management approach to be used for the conservation and management of the Basin water resources, recognizing that there are uncertainties in the scientific knowledge concerning the Basin water and water dependent natural resources.
- Establishes and defines the makeup of the Great Lakes-St. Lawrence River Basin Water Resources Council. This Council is composed of the governors of the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio and Wisconsin, and the Commonwealth of Pennsylvania.
- Establishes the powers and duties of the Council to plan, conduct research and collect, compile, analyze, interpret, report and disseminate data on water withdrawals, diversions and consumptive uses; to forecast water levels; and to design, acquire, construct, maintain, control, or conduct studies or other interests that are deemed necessary to carry out the purposes of this Compact.
- Delineates specific areas of responsibility for the Council and Parties of the Compact. Some of the key responsibilities include:
  - Water Management and Regulation;
  - Water Resources Inventory, Registration and Reporting;
  - Water Conservation and Efficiency Programs;
  - Regional Review of Proposals for Exceptions to the Prohibition of Diversions;
  - Management and Regulation of New or Increased Withdrawals and Consumptive Uses; and
  - Assessment of Cumulative Impacts.
- Calls for a prohibition of any new or increased diversions, but also provides for exceptions to such prohibitions for straddling communities, counties and intra-basin transfers.
- Requires that each member party create a program for the management and regulation of any new or increased withdrawals and consumptive uses.

- The compact requires consultation with the Tribes within the Basin as well as public participation in the management of the water resources of the Basin. It also provides for dispute resolution and enforcement procedures.

## ***Need and Justification***

As stated in a recent publication, *“Water? That’s not a problem. We live on the Great Lakes”* (Shubart 2004), many in the Great Lakes Basin are not aware of the need for managing this valuable resource. New York State is dependent on the Great Lakes Basin water resources for potable water, industry, agriculture, and recreation. The Great Lakes-St. Lawrence River Basin is approximately 48% of the area of New York State. A few examples of the Basin’s importance to New York include:

- Provides essential drinking water for both public community (those that serve more than 25 people or greater than five service connections and supplies year-round) or non-community systems (those that serve more than 25 people on a less than year-round basis, e.g. motels, restaurants, or schools).
- Supplies surface water to 144 community water supply systems in New York’s Great Lakes Basin that serve a total population of 4,560,000. There are also 58 non-community systems using surface water as a source of water serving over 220,000 additional residents.
- Recharges groundwater which serves as a drinking water source for more than 865 community systems and 650,000 New York State residents. An additional 290,000 residents are dependent on approximately 1,644 non-community groundwater systems in the Basin along with approximately 500,000 people who use private wells as their source of potable water.

Thus, any issue that threatens the water quality and quantity in the Great Lakes Basin has the potential to significantly impact New York State and its residents. Such issues include:

- The Great Lakes Basin is essential to main water flows in 60,000 miles of streams in New York State that provide over 20 million residents with drinking water and support habitat for fish and wildlife. Many of these streams are polluted and/or suffer from low flow conditions due to both natural and/or man-made hydrologic impacts.
- Over 10,000 public water supply systems in New York State tap into ground water and operate reservoirs, but many of these systems may lose up to 25% of the water they carry due to leakage and inaccurate metering.
- Some areas of New York State rely heavily on groundwater for their water supply and both individual households and businesses have had to deepen their wells in recent years. Low groundwater levels can impact both adjoining well fields as well as the flow in many surface streams that are partially fed by groundwater.



*Manage the Basin's water resources to meet current and future human and ecosystem needs, recognizing its true value (costs) and major uncertainties regarding its abundance, levels and impacts."*

*-The New York State 25-Year Plan for the Great Lakes*

- Impacts from regional climate changing weather patterns may also have severe effects on the water resources of the Great Lakes Basin. In recent years, the Great Lakes region has suffered from several short to medium length droughts within the watershed. This has resulted in occasional water supply crises at areas such as the West Canada Creek and Hinkley Reservoirs where emergency management measures were needed both for water supply and for aquatic habitat preservation. Other potential changes due to climate change include (Fromhoff et al, 2007):
  - Alteration of the timing and amount of stream flow;
  - Increase in winter precipitation;
  - Reduction of snow pack and shortening the snow season;
  - Increase in frequency of short-term (one-to-three month) droughts;
  - Increase in the frequency of extremely hot days; and
  - Increase in the likelihood and severity of damaging rainstorms.

While acknowledging the uncertainty of predicting future climate impacts (Mortsch et al. 2005), New York must be proactive in protecting the water resources of the Great Lakes and those drainage basins leading to the Lakes. The Hinckley Reservoir event illustrates the importance of management, communication, and cooperation between different users of the resource. We cannot be complacent about our drinking water supply, assuming that it will be an inexhaustible resource into perpetuity, but must address sustaining our water supply systems in terms of both human consumption as well as ecological integrity as mandated by the Great Lakes Compact.

## ***Current Regulatory Environment***

It is beneficial to review the current regulatory environment regarding water use and diversions prior to the development of any new recommendations for legislation, regulations or rules necessary to implement the Compact. In response to the prior challenges, a variety of complex water quantity governance regimes and legislation currently exist around the State (Table 1).

## Great Lakes Basin Advisory Council

Table 1: Current Regulatory and Consultation Requirements for Different Watersheds within New York State. Further discussion of each item is provided in the paragraphs below.

Water Basin	Reporting/Registration	Permit	Regional Consultation
Statewide	Only report withdrawals from systems with the capacity to withdraw > 100,000 gpd 30-day avg*	New or additional sources of potable water supply	SEQR
Great Lakes-St. Lawrence River Basin	Register all new and increased withdrawals > 100,000 gpd 30-day avg	New or additional sources of potable water supply	Any new/increased consumptive use > 5 mgd/90 day avg requires Prior Notice & Consultation (PNC) with Compact Council & Regional Body (CC/RB).  Any new or increased Diversions out-of-basin banned with three exceptions; exceptions may require review/approval by CC/RB
Susquehanna River Basin	Register all withdrawals > 10,000 gpd	100,000 gpd/30 day SH <sub>2</sub> O/ GH <sub>2</sub> O & 20,000 gpd/30 Consumptive Use & All Natl Gas	All permit dockets are approved by the Commission – including diversions
Delaware River Basin	None	Any withdrawal or diversion > 100,000 gpd on 30-day avg.	All dockets are approved by Commission
Long Island Groundwater Wells	None	Required for all wells with a pumping capacity > 68,500 gpd not covered by a potable water supply permit	SEQR

\* This is a new statutory requirement ECL 15.3301, et.al.

These existing statutes have been partially effective in safeguarding portions of the State's water resources; however, they fall short of providing parity throughout the entire state and in addressing the above areas. For instance:

- a) Public water supplies are regulated statewide under section 15-1501 of the Environmental Conservation Law (ECL), which requires that all community public water systems that serve piped, potable water to the public on a year-round basis obtain a Public Water Supply Permit to develop any new, or to increase any existing, supply. This statute is enforced via New York Codes, Rules and Regulations (NYCRR) Part 601 regulations and covers even very small public water supply withdrawals. Permittees are now required by ECL 15-3301 to report annual water usage. However, all new public water supply applications submitted to the Department of Environmental Conservation are required to include a water conservation program. The focus of these programs is on metering sources of supply and customers; reduction of unaccounted-for water; leakage repair and system maintenance; and minimizing outdoor water use during dry periods.

- b) Within New York State's portion of the Great Lakes Basin, ECL §15-1605 already requires that all withdrawals greater or equal to 100,000 gallons per day (gpd) averaged over a 30 day period to register with the Department of Environmental Conservation pursuant to NYCRR Part 675 regulations. Each registrant must pay an annual fee of \$100 and report annual water usage. ECL §15-1607 requires that New York State consult with the other Great Lakes States and the Provinces of Ontario and Québec on any project that will result in a consumptive use of greater than five million gpd. ECL §15-1613 requires that, after a hearing, the Governor and Legislature must approve or disapprove any diversion of water from the Great Lakes Basin that originates in any of the eight states.
- c) The Susquehanna River Basin covers thirteen percent of New York by area. The Susquehanna River Basin Commission (SRBC), pursuant to ECL Article 21, Title 13, regulates all withdrawals or diversions within the basin that are greater or equal to 100,000 gpd averaged over a 30 day period and also regulates consumptive uses that are greater or equal to 20,000 gpd averaged over a 30 day period.
- d) The Delaware River Basin covers five percent of New York by area. Pursuant to ECL Article 21, Title 7, the Delaware River Basin Commission (DRBC) regulates all withdrawals or diversions within the basin that are greater or equal to 100,000 gpd averaged over a 30 day period.
- e) ECL Article 21 delegates authority to the Delaware and Susquehanna River Basin Commissions to regulate withdrawals from, diversions into or out of, and consumptive uses of, water in each basin. All withdrawals, diversions and consumptive uses are reported to the Commissions on an annual basis. Consumptive use is defined as water that is not returned to the basin due to evaporation, incorporation into products, or other processes. Both Commissions charge significant fees for both application review and annual water usage.
- f) To protect and conserve Long Island's vulnerable and limited water resources, a permitting program applies to all significant ground water withdrawals in Kings, Queens, Nassau and Suffolk counties, which cover approximately three percent of New York's land area. ECL §15-1527 requires that all wells on Long Island not covered by a public water supply permit and with a pumping capacity of 45 gallons per minute (64,800 gpd) or more must obtain a Long Island Well Permit pursuant to six NYCRR Part 602 regulations.

As with public water supply permits, there are currently no permit application or water usage fees for Long Island well permits.

ECL §15-3301 was enacted in 2009 and now requires statewide reporting by all persons withdrawing or having capacity to withdraw, more than 100,000 gpd, with certain exceptions.

From this patchwork regime of water statutes and requirements, it is evident that New York State is in need of a comprehensive water resources management strategy. Importantly, the State now has available enabling legislation through the ***Great Lakes-St. Lawrence River Basin Water Resources Compact*** to make the most significant advances in water resources management.

## ***Role of the Great Lakes Basin Advisory Council***

The Great Lakes Basin Advisory Council (GLBAC) is a statutory body that was created in 1988 to assist New York State in its effort to protect the environmental, social and economic health of the Great Lakes region. The Council advises the Governor and State Legislature regarding New York's role in regional, federal, and international water management issues, and functions as a link between the government and the public. Diverse statewide interests are represented in GLBAC deliberations by its thirteen public and six agency members. Members are appointed by the Governor and the Legislature and are selected as follows: nine are appointed by the Governor; three are from the environmental sector; three are from the business/labor sector; and two are from the local government sector, and one is from the science/academic sector. Two members are appointed by the State Senate: two are State Assembly appointees; six are representatives from NYS agencies (Health, DEC, Transportation, Power Authority, State, & Economic Development); and four are non-voting observers including NYS Office of Parks, Recreation & Historic Places, Office of Emergency Management, Great Lakes Research Consortium, and NY Sea Grant. The Council reports to the Governor and the Legislature. The specific charges to the GLBAC in its authorizing legislation are to:

- Review and make recommendations on any comprehensive Great Lakes Management Plan developed by DEC;
- Develop legislative recommendations;
- Assess land acquisition needs for purposes of wildlife habitat, coastal management, public access, parks and historic preservation; and,
- Review and advise on proposals that come before the Council of Great Lakes Governors (CGLG); Assist in funding priorities for NYS Great Lakes research and program needs; and Advise the Commissioner of the DEC concerning selection of projects to be funded by the NYS Great Lakes Protection Fund.

On March 4, 2008, the ***Great Lakes-St. Lawrence River Basin Water Resources Compact*** was signed into New York State Environmental Conservation Law by Governor Eliot Spitzer as 21 ECL Title 10. Section 21-1007 of the Act directs the New York Great Lakes Basin Advisory Council (GLBAC) to:

- convene not later than three months following the effective date of the Act;
- develop “recommendations for legislation, regulations or rules that are necessary to implement and effectuate the requirements and purposes of the Compact;” and
- present its final recommendations to the Governor and State Legislature not later than eighteen months from the statute’s effective date, which was to be September 4, 2009.

The Act states that the recommendations shall include, but are not limited to, the five following topics, each of which is an individual section in this report. These sections include:

1. The evaluation and recommendations of the threshold levels to be included in the implementing legislation, regulation or rules for regulating new or increased water withdrawals in the state;
2. The establishment of a permitting program or alternative programs in order to meet the water management objectives of this state;
3. The development of the state’s water conservation and efficiency programs;
4. The method for establishing the baseline for determining a new or increased diversion, consumptive use, or withdrawal pursuant to Section 4.12.2 of the Compact; and
5. The collection and application of scientific information to improve understanding of the waters of the Great Lakes Basin and the impacts of withdrawals and diversions.

### ***Purpose of this Report***

This report, prepared by the Great Lakes Basin Advisory Council (GLBAC), is designed to fully respond to the directive by the State Legislature to the GLBAC in 2008, as contained in New York’s ratifying legislation that adopted the Compact. However, it is also the GLBAC’s express desire that this report serve to stimulate new dialogue within the State regarding how our water resources can best be managed, in light of the growing need for renewable energy, threats from climate change; and to guarantee sustainable resources for future generations of New Yorkers, along with the fish, birds, animals, and plants that make up a healthy ecosystem.

## ***Principles and Process***

The GLBAC enthusiastically accepted the directives as described above and convened a business meeting on June 18, 2008 to commence project planning. The discussion was initiated with a briefing by the Department of Environmental Conservation regarding the Compact's principles and provisions. This briefing served to ensure all Council members were familiar with the aims of the policy. Subsequently, a project approach and schedule were proposed (Appendix F). During ensuing business meetings, the GLBAC continued to refine this project schedule and approach. Recognizing the complexity of the Compact and the issues the GLBAC was charged to consider, an approach was eventually defined to develop recommendations in a manner that was consistent with a set of guiding principles listed below.

- I. The Council would rely on input from relevant State agencies and non-governmental organizations to the greatest extent possible, recognizing the Council has current vacant positions for appointed members which represent important constituent categories and the Council's lack of technical and policy expertise in the specific disciplines necessary to fully inform each directive.
- II. Although it is important to deliver the report on-time, it is also important that the report's contents serve as an initial and continuing source of guidance to the State Legislature in considering future State legislation on water resources.
- III. The production of this report is an opportunity for the Council to highlight key management and scientific information needs that will promote more effective water conservation and projection of future supply needs.

Throughout the process of developing this report, the GLBAC has endeavored to consider (a) existing New York State water resource programs and regulatory requirements, (b) ideas suggested by various federal, state, provincial, and non-government organizations pertinent to the Compact, and (c) innovative ideas offered by New York constituents within and beyond the Great Lakes Basin. This input was used to prepare a draft version of this report, which was circulated through a series of community workshops across the state to obtain public comment on the proposed ideas and guidelines. This public involvement effort was specifically designed to reach the broadest number and variety of stakeholder organizations as possible, while simultaneously serving as an educational aide to enhance public understanding about the importance and complexity of each directive. Results from this public commentary, along with how these issues were incorporated in the current document are summarized in Appendix I. Overall, this iterative process focuses on each directive individually, attempting to integrate the latest ideas and opportunities supporting each directive and to foster the greatest possible public involvement.

## Section I: The Evaluation and Recommendation of Water Threshold Levels for Management or Regulation

**Issue:** Water threshold levels are defined as minimum amount of withdrawal or a consumptive use that is needed to trigger the management and regulation requirements of the Compact. Currently different states have adopted different levels for regulation, ranging from as low as 10,000 gallons per day in Minnesota, per permit, to as high as 5 million gallons per day in New York, requiring prior notice and consultation with other states. New York State has adopted different water threshold levels for individual basins across the state as summarized in Table 1.

### *Specific Compact Requirements and Guidance*

Article 4, Section 10.1 states that within five years of the effective date of the compact (e.g. by December 8, 2013), each party shall create a program for the management and regulation of new and increased withdrawals and consumptive uses.

- Each party may determine the scope and threshold of its program, including which new or increased withdrawals will be subject to the program.
- Parties shall set and may modify threshold levels for the regulation of new or increased withdrawals in order to assure an effective and efficient water management program.

Article 4 Section 10.3 states that parties that fail to set threshold levels that comply with the above before 10 years after the effective dates of the Compact shall apply a threshold level for management and regulation of 100,000 gallons per day for all new or increased withdrawals.

Article 4 Section 11 provides a “Decision-Making Standard” or criteria under which proposals subject to management and regulation in Section 4.10 may be approved as appropriate. These criteria include: the return of water to the basin after an allowance for consumptive use, no significant individual or cumulative adverse impacts, an amount withdrawn that is reasonable for the intended use, the incorporation of environmentally sound and economically feasible water conservation measures, and consistency with all other pertinent federal, state and local laws.



## ***Considerations***

It is important to make a clear distinction between threshold levels discussed in this Section and the permitted or baseline use levels discussed later in Section III. Most existing public water supplies have permits that set specific withdrawal amounts. However, this is not the case for other Great Lakes Basin water withdrawals such as industrial and agricultural or non-public supplies. Information regarding these withdrawals would provide additional data for determination of a state-wide water budget, evaluation of the effectiveness of smaller conservation measures, etc.

New York State already has two water reporting programs that have thresholds based upon the 100,000 gallons per day averaged over a 30 day period threshold (see section 2). These include the Public Water Supply Permit Program (PWSPP) and the Great Lakes Water Withdrawal Registration Program (GLWWRP). Combined both programs involve nearly 350 public and private facilities.

The Compact also allows for the exemption of specific withdrawals from management and regulations. Exceptions to the prohibitions on diversions are allowed a community that straddles the basin boundaries, to supply water used to maintain Ship ballast and other essential needs, or for noncommercial projects on a short-term basis such as water for fighting fires.

## ***Council Recommendations***

### Regarding DEC

1. The New York State Department of Environmental Conservation (DEC) should adopt a provisionary threshold guideline value as 100,000 gallons per day or greater average in any 30-day period (including consumptive uses).
2. The DEC should immediately start gathering the information necessary to evaluate the appropriateness of the threshold.
3. The DEC should consider specific exemptions in the Compact should also be exempt from the registration and reporting requirements, or if that information is essential for other reasons such as generation of a water budget.
4. The DEC should evaluate if a threshold of 100,000 gallons per day is appropriate in not less than four years of the issuance of this report.

### General

5. New York State should provide appropriate resources required to gather and maintain information to evaluate the appropriateness of the threshold.

## Section II: The Establishment of a Water Withdrawal Permitting or Alternative Program.

**Issue:** The Compact requires the development of a program for managing and regulating new and increased withdrawals, giving NYS an opportunity to improve and strengthen its current programs.

### *Compact Requirements/Guidance*

Article 4, Section 10.1 of the Compact stipulates that each state shall establish, within five years of the effective date of the Compact, a program for the management and regulation of new or increased withdrawals and consumptive uses by adopting and implementing measures consistent with the decision-making standard described in Article 4, Section 4.11. Specifically, this decision-making standard is to be used to evaluate and approve new and increased withdrawals and diversions. The Standard consists of the following criteria:

1. All water withdrawn shall be returned, either naturally or after use, to the source watershed less an allowance for consumptive use;
2. The withdrawal or consumptive use will be implemented so as to ensure that the proposal will result in no significant individual or cumulative adverse impacts to the quantity or quality of the waters and water dependent natural resources and the applicable source watershed;
3. The withdrawal or consumptive use will be implemented so as to incorporate environmentally sound and economically feasible water conservation measures;
4. The withdrawal or consumptive use will be implemented so as to ensure that it is in compliance with all applicable municipal, state and federal laws as well as regional interstate and international agreements, including the Boundary Waters Treaty of 1909; and,
5. The proposed use is reasonable, based upon a consideration of the following factors:

- a. Whether the proposed withdrawal or consumptive use is planned in a fashion that provides for efficient use of the water, and will avoid or minimize the waste of water.
- b. If the proposal is for an increased withdrawal or consumptive use, whether efficient use is made of existing water supplies.
- c. The balance between economic development, social development and environmental protection of the proposed withdrawal and use and other existing or planned withdrawals and water uses sharing the water source.
- d. The supply potential of the water source, considering quantity, quality, and reliability and safe yield of hydrologically interconnected water sources.
- e. The probable degree and duration of any adverse impacts caused or expected to be caused by the proposed withdrawal and use under foreseeable conditions to other lawful consumptive or non-consumptive uses of water or to the quantity or quality of the waters and water dependent natural resources of the Basin,
- f. The incorporation of any proposed plans and arrangements for restoration of hydrologic conditions and functions of the source watershed.

## **Considerations**

Management and regulation programs constitute efforts to control actions that may pose a threat to the natural resources or other persons. The issuance of permits is one common practice to achieve specified objectives and requirements of an environmental law or regulation. However, several alternatives to standard permit procedures exist that may be viable under certain situations and levels of potential risk or harm. For instance, besides individual and general permits, registration, licensing, certification and other management practices may be equally successful.

The State of New York currently manages water withdrawals within the Great Lakes Basin (roughly 48% of the state) through two programs. The first is the Public Water Supply Permit Program (PWSPP). Since 1906, previous state commissions and now Environmental Conservation Law 15-1501 and (NYCRR) Part 601 require that all community-type public water suppliers that serve piped, potable water to the public have a Public Water Supply Permit to develop any new or increased source of water supply. Issuance of a permit requires that an applicant demonstrate that the proposed water supply is adequate, the proposed demands are reasonable, any environmental impacts are acceptable, and that water conservation measures are in place.

In addition, since 1989, the Great Lakes Water Withdrawal Registration Program (GLWWRP) has required that all other withdrawals from New York's portion of the Great Lakes Basin that exceed 100,000 gallons per day averaged over a 30 day period register such withdrawals with

DEC and report annual water usage (ECL 15-1605 & NYCRR Part 675). Registration is required annually. The number of registrants and public water suppliers in each category is summarized in Table 2.

Table 2: The number of registrants and public water supplies with approvals to withdrawal greater than 100,000 gallons per day in the Great Lakes Basin through the Public Water Supply Permit Program (PWSPP) and the Great Lakes Water Withdrawal Registration Program (GLWWRP, 2008).

	Number of Facilities	Water Use [mgd]	Max Capacity [mgd]
PWSPP	245	724	1,133
GLWWRP	100	3,785	5,748

**Current Limitations:** The PWSPP only covers certain categories of public water supply withdrawals (e.g. private water companies) down to very small amounts while ignoring other human consumption operations such as bottled water and soft drink facilities, breweries and wineries. In addition, the GLWWRP only registers non-public water supply withdrawals without requiring any review of withdrawal amounts, potential environmental impacts, or water conservation measures.

## ***Council Recommendations***

### Registration

1. NYS should create a fund from registration fees, as for EFC programs, so that revenues could accrue on the account. The funds shall pay for the administrative costs associated with registration.
2. Registration should be integrated with existing programs wherever possible, and incentives developed to encourage voluntary reporting for those with withdrawals below the mandatory 100,000 gpd.

### Permits

3. Permits should have reasonable application fees that are used to support agency staff and to support the program's operating expenses.
4. DEC should streamline and simplify the existing permitting process.

5. Fees and penalties should be implemented on a sliding scale, i.e. the longer out of compliance pursuant to the permit, the more severe the fee or penalty. For example, the first offense would receive a written warning with possible penalties; the second offense would receive a personal visit (DEC) and a second written warning; the third offense starts the fees and penalties.
6. DEC should review the appropriateness of the fee structure four years from the effective date of this report, to be completed prior to five years from the effective date of this report.
7. DEC should establish a uniform policy and procedure for integrating historical use into the permitting process.
8. DEC should develop a uniform policy for approval or rejection of an application for a water withdrawal permits. For example, in addition to those restrictions defined in the Compact itself, the withdrawal:
  - Cannot exceed the natural replenishment or safe yield of the water resources to be utilized;
  - Cannot contribute to the violation of state water quality standards;
  - Cannot violate any other condition the DEC Commissioner deems necessary for the conservation and protection of ground or surface waters of the State; and,
  - Must be fully compliant with provisions of all other federal, state and local environmental laws.

#### Other issues

9. NYS should establish an inter-agency task force to address emerging and cross agency issues such as:
  - Development of a uniform procedure for addressing new uses such as hydro-fracking;
  - Development of a uniform procedure for addressing human consumption operations such as bottled water and soft drink facilities, breweries and wineries; and,
  - Development of a uniform procedure for dealing with straddling communities.

## Section III: Development of the State's Water Conservation and Efficiency Programs.

**Issue:** The Compact stipulates that each state is to develop water conservation and efficient use programs consistent with the goals and objectives adopted by the Council for application across the entire basin. New York State DEC already has "A Water Conservation Manual" but this requirement from the Compact provides NYS with an opportunity to examine new or emerging technologies and practices within the context of New York State, and the Great Lakes Basin, especially with respect to developing more sustainable practices regarding water use and conservation.

### *Compact Requirements/Guidance*

The Compact specifically defines Environmentally Sound and Economically Feasible Water Conservation Measures as:

*"those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that*

- i) are environmentally sound,*
- ii) reflect best practices applicable to the water use sector,*
- iii) are technically feasible and available,*
- iv) are economically feasible and cost effective based on an analysis that considers direct and avoided economic and environmental costs, and*
- v) consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the processes employed, energy impacts and other appropriate factors.*

Specific provisions in the Compact under Article 4 Section 4.2. Water Conservation and Efficiency Programs include:

Principles for water conservation and sustainability:

- Ecosystem integrity
- Hydrologic integrity
- Sustainable use and management
- In-stream flow standard development
- ELOHA

1. The Council will identify Basin-wide water conservation and efficiency objectives to assist the States in developing their water conservation and efficiency programs. These objectives are based on the following<sup>1</sup>:
  - a. Ensuring improvement of the waters and water-dependent natural resources;
  - b. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
  - c. Retaining the quantity of surface water and groundwater in the Basin;
  - d. Ensuring sustainable use of waters of the Basin; and,
  - e. Promoting the efficiency of use and reducing losses and waste of water.
2. Within two years of the effective date of this Compact (i.e. December 2010), each State shall develop its own water conservation and efficiency goals and objectives consistent with Basin-wide goals and objectives. Based on those goals and objectives, it shall:
  - a. Develop and implement a water conservation and efficiency program, either voluntary or mandatory, for all, including existing, Basin water users based on those goals and objectives;
  - b. Annually assess its programs in meeting the State's goals and objectives;
  - c. Report to the Council and the Regional Body on that assessment; and,
  - d. Make this annual assessment available to the public.
3. Within two years of the effective date of this Compact, the State shall promote environmentally sound and economically feasible water conservation measures such as:
  - a. Measures that promote efficient use of water;
  - b. Identification and sharing of best management practices and state of the art conservation and efficiency technologies;
  - c. Application of sound planning principles;
  - d. Demand-side and supply-side measures or incentives; and,
  - e. Development, transfer and application of science and research.
4. Beginning five years after the effective date of this Compact, and every five years thereafter, the Council shall review and modify as appropriate the Basin-wide objectives. This assessment will be based on examining new technologies, new patterns of water use, new resource demands or threats, and a cumulative impact assessment.

In addition to the specific guidance provided under the compact, the New York State legislature has given a specific charge to the Great Lakes Basin Advisory Council under Title 10 of Article 21, NYS Environmental Conservation Law § 21-1007. Section 2c specifically charges the GLBAC to convene for the purpose of making recommendations for legislation, regulations or rules necessary to implement the development of the State's water conservation and efficiency programs.

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<sup>1</sup> These goals and objectives have been formally adopted by the Council and are contained in Appendix G



## *Considerations*

### Great Lakes —St. Lawrence River Basin Water Conservation and Efficiency Objectives.

The Great Lakes Governors and Premiers, as part of the Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement signed in 2005 pledged to adapt regional water conservation and efficiency objectives by December, 2007. These objectives are given in Appendix F and were intended to be broad, overarching concepts for further State and Provincial action. Efficient and responsible water use is a cornerstone of sound water management policy, and can:

- Ensure equitable access to and long-term availability of water;
- Protect public health and enhance quality of life;
- Minimize impacts of water use to support healthy aquatic ecosystems of the Great Lakes and St. Lawrence River Basin;
- Minimize costs related to water and wastewater infrastructure;
- Preserve social and cultural heritage;
- Prevent or minimize conflicts among water users;
- Enhance economic viability and competitiveness of the region;
- Support reductions in energy use and greenhouse gas emissions;
- Improve the ability to manage an uncertain future and growing demand for water; and demonstrate that the region's citizens are prudent stewards of the resource.

There are a number of resources available to guide New York State in development of a Water Conservation and Efficiency Program. New York State DEC's "Water Conservation Manual for Development of a Conservation Plan", originally developed in 1989 and updated slightly in 1998, was intended to help local water supply systems comply with state requirements as part of a new application to NYSDEC for a Public Water Supply Permit that required a water conservation program. This document contains specific sections on how to gather information through water meters, how to conduct a water supply audit to quantify system uses, and worksheets to forecast water demand. It also contains a number of sections on water conservation methods; specifically how to reduce system water losses through leak detection and repair, how to reduce water demand through appropriate pricing, and how to bring about residential use reductions through approaches such as water conserving toilets, reducing customer water pressures, leak repair and outdoor

landscaping techniques. This manual is about 20 years out of date and does not include many of the current techniques such as green design or rain gardens, but still serves as an excellent starting point for any Conservation and Efficiency Plan. Key points or recommendations from the NYSDEC document include:

- Leakage in the distribution system causes significant water waste in some systems, where even small leaks can waste hundreds of gallons per day. Most of these leaks can be detected through appropriate audits or leak detection methods;
- Reducing excessive pressures (e.g. <80 psi) in the distribution system can save significant quantities of water, both through the reduction of stresses on the pipes and joints and through actual decreased flow through open faucets;
- Water demand is influenced by personal income, housing characteristics, weather and water price. Of these, only price is within the ability of the utility to control and offers a viable mechanism to reduce demand for residential customers;
- Simple residential retrofits, such as repairing leaky toilets, installing low flow shower heads and water displacement devices can save a significant quantity of water if used properly. For example, a California study estimated that 16 gallons per person per day was saved through programs which included replacing showerheads with water-efficient showerheads, inserting toilet tank dams, installing faucet aerators, and fixing toilet tank leaks;
- Small residential leaks, such as a slow drip from a faucet can waste up to 20 gallons per day. Most of these leaks occur in apartment buildings where the direct water costs are not obvious to the inhabitants;
- Outdoor water use is frequently targeted by water conservation programs, especially during drought periods. While such usage is probably not as important in New York State as in more arid states, it still can represent nearly 25% of the total urban water usage;
- Wastewater disposal is a significant cost to many industries and a combination of water supply and wastewater expenses can provide a significant conservation incentive;
- Peak load pricing and seasonal demand pricing can be effectively used to reduce many elastic demands such as watering outdoor plants or providing water during critical shortages in supply;
- Prices should be set to reflect the actual cost of service, including all costs associated with property, hardware, operations, maintenance and personnel; and,
- Raising public awareness for the need to conserve water, emphasizing both environmental and economic benefits; encouraging participation of both adults and youth; and motivation of customers to voluntarily change their water use practices

as well as to purchase water saving fixtures and fittings are all important components of a successful water conservation program.

On a Basin-wide scale, the Great Lakes Commission has prepared a review entitled “Current Water Conservation Practices in the Public Water Supply Sector of the Great Lakes-St. Lawrence Region” (Lameka 2004). As part of this process, the GLC surveyed public water supply systems throughout the Great Lakes Basin for factors such as the linkage between water conservation, water quality, and ecosystem health, and the importance of education and financial incentives. The report provides a “snapshot” of the current state of water conservation practices in the public water supply sector in the Great Lakes region. Several trends from this survey include:

- The most common conservation efforts among Great Lakes water systems are meter calibration and replacement and leak detection and repair;
- The least practiced conservation activities include subsidizing low-flow plumbing fixtures and the application of inverted pricing blocks for water rates;
- More than half (65%) of the facilities who responded do not operate under any formal conservation plan;
- Less than half the facilities provide any sort of education programs (48%).

Other regional or relevant water conservation programs in the Great Lakes Basin include those for nearby Ontario by the Ontario Water Works (OWW, 2008), by the Canadian Council of Ministers and the Environment (2006), the US EPA’s “Growing Toward More Efficient Water Use; Linking Development, Infrastructure, and Drinking Water Policies” (USEPA 2006), and a plethora of water conservation programs around the country which may or may not be relevant because of regional hydrologic differences such as in California (Gleick et al 2003), the Southeast (American Rivers 2008) and Georgia (Vinson Institute 2006).

#### Regional Differences and the Maintenance of Ecosystem Integrity

We need to recognize that not all water resource use and conservation issues in the context of New York State and the Great Lakes watershed are identical. For example, **Urban** settlements, including cities, villages, and some hamlets which were historically occupied by industrial, residential complexes, and included power generation land users, are major consumers of water for residential, commercial, and industrial needs. A major issue that will need to be addressed is loss of water in delivery systems through leakage and lack of accurate metering. Reducing the

amount of runoff during precipitation through use of green infrastructure such as green roofs, permeable pavement, water barrels, water retention and infiltration practices are important components of any urban system.

For **suburban** areas one of the main water consumption issues is the use of water to keep lawns green during the summer growing season. Another issue is “non-smart growth” development in the form of large lot or sprawl configurations that increase water supply infrastructure costs as well as consumption. For **rural areas** one of the major consumptive water uses is for agricultural irrigation. Newer irrigation technology, use of timers, and metering can help to minimize water waste. There are also major recreational water users such as golf courses, theme parks, and ski areas that use large amounts of water seasonally. Finally, there is the issue of adequate water supply from groundwater wells, streams and ponds— and how such use impacts streams and ponds from an ecological perspective.

Ecosystem integrity addresses the need for enough surface and subsurface flow and water quality to maintain, and in some cases, restore the ecological habitat quality of streams, rivers, ponds, and wetlands that are interconnected within the Great Lakes Watershed. Likewise, hydrologic integrity will address the need to maintain surface and subsurface water flows for both human consumption and aquatic habitats. Sustainable use and management addresses the need to build and maintain water supply systems that are efficient and minimize loss. One way of addressing both ecosystem integrity and hydrological integrity for New York’s Great Lakes Basin is through in-stream flow standard development. In this process, a hydrologic baseline plus ecological quality indicators are identified which then can be used to assess levels of natural flows needed to maintain ecological and hydrologic integrity. The scientific basis for this process, termed the Ecological Limits of Hydrologic Alteration (ELOHA) was published in 2006 (Arthington et al 2006; Poff et al 2009).

The ELOHA framework involves the following actions:

- Building a hydrologic database of daily streamflows representing at least two conditions – baseline (pre-development) and present-day;
- Classifying river types according to hydrologic and other characteristics;
- Assessing flow alteration from baseline conditions at every analysis point;
- Determining flow-ecology relationships that quantify biological responses to different degrees of hydrologic alteration for each river type, based on existing biological and related data and models; and,
- Implementing policies to maintain and restore environmental flows through a social process involving stakeholders and water managers informed by the flow-ecology relationships.

To be successful, ELOHA requires that we use the best scientific information to balance the human needs for water for drinking, washing, fire protection, irrigation, manufacturing, and recreation with the needs of fish and wildlife. Factors such as timing, frequency, duration, and rates of change are all important considerations in the maintaining aquatic ecosystems. It is

essential to elicit public participation throughout the process, and beneficial to utilize a phased implementation of regulation to encourage and support water planning and conservation efforts. Richter et al (2006) delineates an adaptive ecosystem-based management approach for developing environmental flow recommendations that could potentially be useful for NYS. The methodology developed involves the following steps:

1. an orientation meeting;
2. identification, review and a summary of existing knowledge about flow-dependent biota and ecological processes of concern;
3. a workshop to develop ecological objectives and initial flow recommendations, and identify key information gaps;
4. implementation of the flow recommendations on a trial basis to test hypotheses and reduce uncertainties; and,
5. monitoring system response and conducting further research as warranted. A range of recommended flows are developed for the low flows in each month, high flow pulses throughout the year, and floods with targeted inter-annual frequencies.

## ***Council Recommendations***

### General

1. New York State DEC should undertake to revise its current manual for water conservation practices to incorporate newer suggestions for Green infrastructure.
2. Water system metering should be made available for all residential, commercial, industrial, and agricultural water consumption users as without accurate metering, there is no incentive to conserve water.
3. NYS should ensure that adequate financial resources are available for addressing the maintenance, repair or replacement of deteriorated and/or leaking water systems.
4. Water authorities, cities, towns, and villages utilizing centralized water delivery systems should investigate and implement, where possible, alternative pricing for water delivery as well as incentives to conserve or reduce usage.
5. New York State should implement an educational outreach program on water conservation and sustainability that should include ways for individual households and businesses to reduce water usage, recycle water, as well as reduce property storm water runoff.

6. New York State should develop a separate water conservation best practices manual for agricultural, recreation areas, and industrial users. This should be coupled with targeted partnerships between existing agencies to implement education and outreach programs.
7. New York State should consider developing a “Smart Growth” Guide that is modeled after the USEPA (2006) publication but applicable to the New York State Great Lakes Watershed.
8. New York State should adopt statewide stream flow standards with an aim to protect aquatic and streamside habitats.
9. The NY Oceans and Great Lakes Ecosystem Conservation Council should provide technical guidance so that agencies and other involved organizations can evaluate whether major water withdrawals could negatively affect stream flow levels and aquatic life.
10. New York State should fully embrace and implement the objectives of the 2005 Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement including, but not limited to:
  - Develop long-term forecasts and strategies that incorporate water conservation and efficient water use;
  - Provide incentives to encourage efficient water use and conservation to maximize water use efficiency and minimize waste of water;
  - Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies;
  - Promote investment in and maintenance of efficient water infrastructure and green infrastructure. This includes improved monitoring and standardized data reporting among conservation and efficiency programs;
  - Encourage the research, identification and sharing of innovative management practices and state of the art technologies for limiting water use and increasing water conservation;
  - Strengthen scientific understanding of the linkages between water conservation practices and ecological responses;
  - Inform, educate and increase awareness regarding water use, conservation and efficiency and the importance of water. Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability; and,
  - Share conservation and efficiency experiences, including successes and lessons learned across the Basin.

## Section IV: Methods for Establishing the Baseline

**Issue:** Prior to tracking new and expanded uses as required by the Compact, New York State must establish a baseline volume of current existing water withdrawals, diversions and consumptive uses.

### *Compact Requirements/Guidance*

1. Article 4, Section 12.2 of the Compact stipulates that within one year of the effective date of the Compact (December 8, 2008), the State must establish a baseline of existing water withdrawals, diversions and consumptive uses from which new and increased withdrawals will be considered under the Compact. As part of establishing this baseline, the state shall develop either or both of the following lists for their jurisdiction:
  - a. A list of existing withdrawal approvals as of the effective date of the Compact;
  - b. A list of the capacity of existing systems as of the effective date of this Compact. The capacity of the existing systems should be presented in terms of withdrawal capacity, treatment capacity, distribution capacity, or other capacity-limiting factors. The capacity of the existing systems must represent the state of the systems; and,
  - c. Existing capacity determinations shall be based upon approval limits or the most restrictive capacity information.
2. For all purposes of the Compact, volumes of diversions, consumptive uses, or withdrawals of water set forth in the list(s) prepared by each State in accordance with Section 12.2, shall constitute the baseline volume. These list(s) shall be furnished to the Regional Body and the Council within one year of the effective date of the Compact

The situational assessment requires that the State's baseline should address all water withdrawals, diversions, and consumptive uses that were known to the State as of the Compact's effective date of December 8, 2008, per article 4, Section 12.2 of the Compact.

The Compact also provides additional guidance in the following areas:



- **Timing of Additional Applications.** Applications for new or increased withdrawals, consumptive uses or exceptions shall be considered cumulatively within ten years of any application.
- **Change of Ownership.** Unless a new owner proposes a project that shall result in a proposal for a new or increased diversion or consumptive use subject to regional review or council approval, the change of ownership in and of itself shall not require regional review or council approval.
- **Groundwater.** The Basin surface water divide shall be used for the purpose of managing and regulating new or increased diversions, consumptive uses or withdrawals of surface water and groundwater.
- **Withdrawal Systems.** The total volume of surface water and groundwater resources that supply a common distribution system shall determine the volume of a withdrawal, consumptive use or diversion.
- **Transmission in Water Lines.** Transmission of water within a line that extends outside the Basin as it conveys water from one point to another within the Basin shall not be considered a diversion if none of the water is used outside of the Basin.

## Considerations

The DEC has a list of water registrations in the Great Lakes Basin greater than 100,000 gallons per day (gpd) over a 30-day average (appendix C), and a list of permitted public water supplies. DEC is also compiling a GIS-based map that shows the location of each withdrawal. However, additional types of information may be necessary to finalize a baseline list according to the Compact's criteria described above. In order to develop the necessary information, challenging technical and policy issues must be addressed. For example:

- Public water supply permits include a maximum amount allowed which can serve as a baseline, or be adjusted to reflect actual usage.
- Industrial and municipal water systems are typically designed for a maximum potential capacity to pump, distribute, treat, and discharge a specific volume of water. This maximum capacity is usually much greater than the actual amount of water used. This provides for an "excess capacity" available for projected use and growth demands. This is a critical element for a private sector business plan or community master plan, but also resulting in setting a baseline that is actually much greater than the actual use.
- In contrast to using maximum amounts, annual water use reports by Registrants and Permittees include monthly amounts over a two-year running period which may also serve as a baseline value. These averages may vary considerably between seasons, years, changes in facility processes, and depending upon local climatic conditions.

- Although many historical water use records and annual reports may date back as far as twenty years, the older records are not as complete as the more recent records. Modifications have been made at some facilities affecting their water usage making the pre-modification data irrelevant.
- Water users who are registered and reporting, as required, are legally compliant with State rules and regulations but their withdrawals are not considered “approved” nor are the quantities of water taken. These additional uses need to be included in the current baseline values.
- Intra-basin water diversions, especially for navigational purposes such as the Erie Barge Canal and Lake Champlain Canal, are typically not metered for water quantities released, outflows, or evaporated loss. These additional uses also need to be included in the current baseline values.

Ideally the baseline would be related to the existing water use and the maximum daily capacity of a facility. However some registered capacities greatly exceed the actual amounts of water used over the past 5 years. This situation occurs in less than 8% of the registered facilities and thus use of the historical actual water use in place of the maximum capacity of water use would result in only an 8% reduction in the baseline withdrawal amounts below.

The baseline should be set at such an amount as to not restrict the currently permitted operations by the water user, but to also minimize the unused but reserved water resources. These criteria could be met by setting the baseline at the water user’s maximum capacity or 2 times the daily maximum; whichever is lower. In most cases the maximum capacity will be determined to be the baseline. In a number of cases, 2 times the daily maximum will be calculated to be the baseline. Using 2 times the daily maximum of water usage would provide ample water even during historically high withdrawal events, but would help minimize the differences when the maximum daily capacity of a facility greatly exceeds the actual water use. In all cases expected future water use should be taken into account.

#### Consumptive losses

Although public water suppliers often meter their water withdrawal and distribution to customers, little information exists regarding the amount of water withdrawn that then is consumptively lost, an amount that varies considerably among different public utilities depending upon the make-up of their customers. With the possible exception of commercial industries

which must carefully control their water-related processes, actual consumptive use (i.e. water loss from the basin) is not measured. It is generally estimated either by mathematical coefficients that are widely recognized as gross estimates, or by the “acres-inches” estimation method for agricultural and irrigational water users, neither method is quantitatively accurate enough to use for regulatory baselines.

Considerable debate continues regarding issues such as if water lost from a supply system due to leakage into the nearby ground, or agricultural irrigation water that is either absorbed into the soil or into plants that remain in the watershed should be considered as a consumptive use, or if water lost by evaporation is considered as a consumptive use. These issues still need to be resolved as part of determining the baseline. Since the Compact will apply to all “new and increased water withdrawals, diversions and consumptive uses,” it is essential that the State accurately records baseline quantities that are realistic, responsive to economic growth dynamics, scientifically-based, and adaptive to variations in water users over varying seasons, years, and climatic conditions.

## ***Council Recommendations***

### General

1. When developing the State’s baseline, the DEC should promote a cooperative approach by contacting all water users currently on record to request the type of information needed, and that can be reasonably provided.
2. Businesses, agricultural irrigators, and public water suppliers should report any capacity amounts they project over the next 10 years for inclusion in the baseline.
3. DEC or the appropriate agency should contact each water user directly to verify current maximum pumping capacities, maximum daily water usage, expected future water use and plans for possible expansions.

### Methodology

The methodology for establishing a baseline should be as follows:

4. For public water supply systems, the baseline used should be their permitted water withdrawal amounts as of December 8, 2008.
5. For non-public water supply withdrawals, registered withdrawal capacities and historic usage should be considered. This can be accomplished by reviewing annual water usage reports and contacting each registrant directly.
6. To account for inaccuracy in older use data and modifications to the facilities that may have impacted subsequent use data, the most recent 5 years of data should be used for determining baseline amounts.
7. The baseline value for a non-public water supply should be set as the water user’s maximum capacity, or 2 times their maximum daily water use over the most recent 5 years interval, whichever is lower.

## Section V: The Collection and Application of Scientific Information

**Issue:** Sound scientific information is needed to effectively implement the Compact and to enhance the management of New York's water resource. The collection, interpretation, and use of this scientific information requires new, expanded or adapted research priorities, as well as amended regulatory and monitoring policies. Strategically designed watershed and ecosystem monitoring programs may be needed. In certain cases, these activities can be implemented by existing New York authorities and organizations, and in some cases, collaborative programs with non-New York state organizations are needed.

### *Compact Requirements/Guidance*

Section 1.4 of the Compact requires that the parties commit to and provide leadership to strengthen the scientific basis for sound water management decision-making under the Compact. It specifically delineates five areas in which the Great Lakes States and Provinces of Ontario and Quebec have committed to the collection and application of scientific information. These five areas are:

- a. An improved understanding of the individual and cumulative impacts of withdrawals from various locations and water sources on the Basin ecosystem and to develop a mechanism by which impacts of withdrawals may be assessed;
- b. The periodic assessment of cumulative impacts of withdrawals, diversions and consumptive uses on a Great Lake and St. Lawrence River Watershed Basin;
- c. Improved scientific understanding of the waters of the GL-SLR Basin;
- d. Improved understanding of the role of groundwater in Basin water resources management; and,
- e. The development, transfer and application of science and research related to water conservation and water use efficiency.

Other sections of the Compact will require ongoing efforts and specific science to support their implementation. Section 4.2 under “Water Conservation and Efficiency Programs” requires:

- a. Adopting regional water conservation and efficiency objectives to guide work to be undertaken regionally and by the States and Provinces; and,
- b. Development, transfer and application of high-quality science and research related to water conservation and water use efficiency.

Section 4.15 under “Assessment of Cumulative Impacts” requires that New York State:

- a. Develop tools to identify when future cumulative impact assessments shall be conducted (e.g. the earlier of every 5 years, when the incremental Basin water losses have reached 50 mgd average in a 90-day period, or at the request of one or more of the Parties);
- b. Identify information that will be needed to conduct future cumulative impact assessments; and,
- c. Develop a process for the Regional Body to conduct future cumulative impact assessments.

## ***Considerations***

The Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement established a Regional Body to implement the agreement. Since its inception on December 12, 2005, the Regional Body has developed its own science committee and committee work plan to advance the goals and objectives of the Compact/Agreement on a Basin-wide level. The most visible output of this science committee is the sponsorship of special programs at the International Association of Great Lakes Researchers (IAGLR) Annual Conference. This conference includes presentations from a variety of government, academic, and not-for-profit organizations on all aspects of Great Lakes Science. Special sessions in 2007, 2008 and 2009 have specifically focused on implementation of the Great Lakes regional Compact<sup>2</sup>.

At the State level, the New York Great Lakes Protection Fund (NYGLPF) is currently the only State program specifically authorized to support research, information collection, and public outreach for the purpose of improving the State’s Great Lakes Basin resources. The NYGLPF supports a number of research activities to advance the scientific needs of the Compact, using

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<sup>2</sup> Recent and selected past conference proceeding are available online at: <http://www.iaglr.org>. These sessions were entitled “Building toward a Science Strategy for the Great Lakes Basin under the Great Lakes – St. Lawrence River Basin sustainable water Resources Agreement”.

research priorities for funding established and reviewed each year by the Great Lakes Basin Advisory Council (GLBAC). These priorities currently are designed to promote research projects that can support the Compact. Specifically:

- NYGLPF supports an annual small seed grant program (under \$10,000) supervised by GLBAC and administered through the New York Great Lakes Research Consortium through a sub-appropriation to the SUNY College of Environmental Science and Forestry from the Department of Environmental Conservation (DEC).
- NYGLPF supports a large grant (\$100,000 or less per project) program which is supervised and administered by the DEC. Request for Applications for the large grants program are issued every few years depending on available funds within the NYGLPF.

The New York Ocean and Great Lakes Ecosystem Conservation Act of 2007 (ECL Article 14) established a New York Oceans and Great Lakes Ecosystem Conservation Council (NYOGLECC; [www.NYOGLECC.org](http://www.NYOGLECC.org)) that includes the commissioners of Agriculture and Markets, Economic Development, Environmental Conservation, General Services, Parks, Recreation and Historic Preservation, and Transportation; the Secretary of State; the President of the Energy Research and Development Authority; and the Chancellor of the State University of New York; or their respective designees. NYOGLECC is charged with developing a program to enhance the scope and quality of scientific information needed to make ecosystem-based management (EBM) decisions and policies within New York State. NYOGLECC is assisted by a Science Advisory Committee which created a list of recommendations for greater science, research and development, ecosystem monitoring, and science-based decision making<sup>3</sup>. Other NYOGLECC activities as called for in ECL Article 14 include:

- the development of an Ocean and Great Lakes Ecosystem Conservation Atlas to support EBM activities;
- to encourage scientific research and information sharing that will inform ecosystem-based management decisions and enhance ecosystem management capabilities;
- To use New York's private and public academic, research and non-profit institutions more effectively in developing and advancing coastal EBM; and,

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<sup>3</sup> These recommendations are available in the NYOGLECC report entitled "Our Waters, Our Communities, Our Future: Taking Bold Action Now to Achieve Long-term Sustainability of New York's Ocean and Great Lakes" available online at <http://www.NYOGLECC.org>.

- To facilitate regional coordination and cooperation to address complex coastal resource issues which cross political and jurisdictional boundaries.

In addition to NYGLPF and NYOGLECC, other Federal and New York State programs possessing the authority and ability to promote and support the incorporation of science information and processes into the Compact include:

- **New York Sea Grant Program** – a university-based statewide network of integrated research, education, and extension services promoting the wise use and protection of marine and Great Lakes resources. New York Sea Grant is a partnership between the National Oceanic and Atmospheric Administration (NOAA) and the State of New York, located at Stony Brook and Cornell Universities, and part of a network of 32 Sea Grant programs in all the coastal states
- **New York Soil and Water Conservation** –develops and oversees the implementation of an effective soil and water conservation and agricultural nonpoint source water quality program for the State of New York.
- **U.S. Geological Survey (USGS)** - has conducted technical assessment of groundwater supplies, and has maintained a network of stream gauges for ongoing monitoring of flows and levels. These services have been invaluable in assisting State agencies and local governments with water resource planning, impact assessment, and drought monitoring. New York State has relied heavily on the partnership with USGS in the past however, due to federal budgetary priorities, most of the USGS stream gauges in New York are scheduled for decommissioning.
- **Great Lakes Regional Research Information Network (GLRRIN)** – is a voluntary network of governmental, academic, and private programs involved in Great Lakes research. GLRRIN, along with the **Council of Great Lakes Research Managers (CGLRM)** which appointed by the Internal Joint Commission (IJC), provide input into the scientific needs for implementation of the Great lakes Water Quality Agreement (GLWQA) between the United States and Canada. They also assist the US- Environmental Protection Agency and Environment Canada in research needs and coordination of the **Cooperative Science Monitoring Initiative (CSMI)** between the two countries. GLRRIN and CGLRM are to work with the individual **Lake Area Management Plan (LAMP)** managers to identify the key science needs to be addressed by the CSMI during the intensive sampling year that rotates every five years between the different lakes. While the goals of the GLWQA and the Compact are not necessarily identical, many of the science data needs for the two programs will overlap.
- **Great Lakes Interagency Task Force (IATF)** - brought together eleven U.S. Cabinet and federal Agency heads to coordinate restoration of the Great Lakes. Created by an Executive Order from President Bush on May 18, 2004, the IATF is to focus on environmental outcomes like cleaner water and sustainable fisheries, and target measurable results. Then President Bush directed that US-EPA work with relevant states

and cities to convene a regional collaborative effort. **US-EPA's Great Lakes National Program Office (GLNPO)** currently funds a number of science projects pursuant to the achievement of the goals in the Great Lakes Water Quality Agreement including the restoration and maintenance of the chemical, physical, and biological integrity of the Great Lakes Basin.

As described above, there are **a number of efforts at the State, Basin and Federal** level currently underway to enhance the science for water quantity management within the overall Great Lakes-St. Lawrence River Basin. New York should be seeking ways to effectively integrate its needs with such Basin-wide programs, and to assess existing gaps in Basin-wide science that have direct relevance to sustaining New York's water resource supplies.

Need for Monitoring:

New York State has no statutory authority governing overall water resource withdrawals, thus neither scientific research nor environmental monitoring activities exist on a state-wide or Basin-wide scale outside of several highly localized and specialized situations (ex., Long Island groundwater supplies, Tug Hill aquifer, etc). Historically, the USGS has conducted assessments of the groundwater supplies and surface flows through a series of more than 125 gauging stations located across New York State<sup>4</sup>. This information is then used to generate a series of monthly reports on New York State's water conditions including the capacity of several key lakes and reservoirs. With changing federal budgetary priorities, the future status of many of the gauging stations is uncertain. This information is critical for calculation of water supply budgets needed to determine the correct water withdrawal amounts and the effectiveness of our conservation measures.

The availability of our water resources is directly tied to the economic future of New York State. Historically, the withdrawal of water from the Great Lakes for fossil fuel, nuclear and hydropower generation represents nearly 75 percent of all water use (approximately 2,880 million gallons per day annual average in 2007). Because water withdrawals and use are so important to sustaining our State's energy needs, the New York State Energy Research and Development Agency (NYSERDA) should include conservation and efficient use of water resource science in its research and development portfolios. This enhanced scientific capacity could be especially critical to assisting the State in conducting long-term monitoring of water resources.

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<sup>4</sup> The location of these gauging stations and the monthly hydrologic conditions reported for New York State's water resources are available online at <http://ny.water.usgs.gov/cgi-bin/eomreports>.



## ***Council Recommendations***

### General

1. New York State should seek ways to effectively integrate its scientific needs for implementation of the Compact into other NGO, Federal and Basin-wide programs such as the Cooperative Science Monitoring Initiative, the Great Lakes Observing System, and the Lake Area Management Plans.
2. New York State should conduct a formal Gap analysis to assess its specific science information needs for implementation of the Compact.
3. NYS should coordinate with counties, towns and water suppliers so development decisions are made in line with science-based water availability projections and watershed health considerations, including evaluation of cumulative effects of withdrawals and waste/stormwater discharges.

### Regarding NYOGLECC

4. New York State should embrace the recommendations of the NYOGLECC Science Advisory Council and work towards having a better understanding of the drivers and services provided by each ecosystem and watershed within the Great Lakes Basin.
5. NYOGLECC should establish water resource supplies, flows and water levels as a scientific priority based on the adaptive management approach required through the New York Oceans and Great Lakes Ecosystem Conservation Act.
6. The Ocean and Great Lakes Ecosystem Conservation Atlas, being developed by NYOGLECC to support EBM activities, should specifically include GIS overlays of water resources within the state and Great Lakes Basin, depicting surface water flows, drainage basins, precipitation patterns, groundwater resources, etc.

### Regarding NYSERDA

7. The New York State Energy Research and Development Agency (NYSERDA) should include conservation and efficient use of water resource science in its research and development portfolios.

### Regarding Monitoring

8. NYS should support funding sources in collaboration with federal agencies and non-profit organizations to sustain stream gauging stations statewide, as well as to support collection of other real time information that can be used to develop the appropriate models for water withdrawals, sustainable use and management.
9. New York State should work collaboratively to collect, manage and analyze scientific information on aquifers and stream flow levels; including size and capacity of aquifers, current and projected demand, GIS database and mapping, and integrated real-time stream gauging information.

10. New York should convene a stakeholder workgroup to discuss supporting a long-term water resource monitoring program, and to evaluate the establishment and support mechanisms for a long-term resource monitoring program.

Other

11. New York State should adopt policy that requires universal metering and community “water budgets” to be developed for every river, estuary, aquifer and/or watershed in the state.
12. New York State should adopt quantitative streamflow and water level protection standards for lakes, rivers and streams that protect aquatic and streamside life (see also Section III, recommendation 6).

## Section VI: Compact Program implementation costs, fees and revenue streams

**Issue:** Implementation of the Great Lakes Basin Water Resources Compact will involve real costs to State Agencies, water suppliers and industrial water consumers. These costs need to be dealt with in an equitable and fair manner to encourage conservation, while still promoting the economic viability of New York State.

### *Compact Requirements/Guidance*

The compact does not provide any guidance or requirements in this area.

### *Considerations*

Potential funding for implementation of the Compact could come from Federal, State or local sources. These are discussed separately below:

#### Federal Funding Mechanisms

The primary existing federal funding mechanisms are the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF). The US-EPA provides oversight in both cases and both are administered by the NY Environmental Facilities Corporation (joint with NY-DOH or NY-DEC respectively). The DWSRF provides federal dollars to the states to install, upgrade, or replace infrastructure to continue to ensure the provision of safe drinking water, installation of new treatment facilities to better protect public health, and improvements to help those water systems experiencing a threat of contamination due to aging infrastructure systems. New York's CWSRF provides low-interest rate financing to construct water quality protection projects and has gained widespread recognition as one of the most successful programs in the country. Both programs allow funding for water conservation and protection measures.

The American Recovery and Reinvestment Act of 2009 (Recovery Act) seeks to spur technological advances in science and health and to invest in environmental protection and other infrastructure that will provide long-term economic benefits. EPA manages over \$7 billion in projects and programs that will help achieve these goals, offers resources to help other agencies implement "green" measures to achieve a much larger set of recovery objectives. Much of the apropos funding would come through the State Revolving funds described above. However, Brownfields, Superfund sites and industrial storage sites are included separately. In addition, the Water Protection and Reinvestment Act of 2009 (HR 3202) currently working its way through Congress would direct that fines, penalties, and other moneys, including consent decrees, obtained through enforcement of the Clean Water Act be placed into a specialized National Clean Water Trust Fund to carry out projects to restore and recover waters of the United States. Other possibilities include the American Clean Energy and

Security Act (HR2454) of 2009, also currently in committee that could potentially provide a national framework and funding to work with States to address coastal community needs based on the changing climate which is applicable with the goals of water conservation and preservation under the Compact.

#### Statewide Funding Mechanisms

The primary existing State funding mechanisms for implementation of the Compact is the Environmental Protection Fund (EPF). The EPF is funded through the Real Estate Transfer Tax revenue, and is allocated by the New York State Legislature and the Governor through annual appropriations. Most of the funds are administered by the NYDEC, OPRHP, DOS, Ag and Markets or Empire State Development Corporation. The *Environmental Protection Fund Enhancement Act of 2007* called for the EPF to be allocated and spend \$300 million, however that amount has been significantly decreased in recent years. The EPF has funded a number of critical water quality projects/programs including the NY Oceans and Great Lakes Ecosystem Conservation Council (NYOGLECC), the Great Lakes Protection fund large and small grants program, the Finger Lakes-Lake Ontario Watershed Protection Alliance just to name a few.

Other new funding mechanisms at the State level could include establishing a new line item: Water Conservation and Efficiency, dependent upon securing an increased EPF allocation, or the establishment of a statewide Clean Water Trust Fund, similar to that proposed on the national level, to provide dedicated funding for clean water needs in New York State. This funding could complement the work of efficiency and conservation efforts for New York's water, while helping to close the \$80 billion funding gap for New York's Clean Water and Drinking Water infrastructure.<sup>5</sup> Another possibility would be to adopt a *Systems Benefit Charge (SBC)* type fee on water utilities to help fund water conservation and efficiency programs, research and development. Coupled with a comprehensive offering of rebates for items like free water efficient toilets, water saver landscape rebates, free water conservation audits, commercial rebate programs, and recommendations for water conservation in landscaping, such efforts would provide powerful incentives for homeowners and businesses to invest in technologies and practices to reduce water use.

#### Local Funding Mechanisms

The primary funding mechanisms for implementing water conservation at the local level is through the Water Rate structure. A number of studies

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<sup>5</sup> <http://www.osc.state.ny.us/localgov/pubs/research/capitalplanning.pdf>

have shown that conservation rate structures are an effective way to promote water efficiency and can also provide stable utility revenue generation even if demand is reduced<sup>6</sup>. The impact of conservation water rates is related to the consumer response. For instance a residential water user with a 10% rate increase may reduce their water consumption by 3.5% to 4.5% over time. Residential water users will reduce outdoor consumption more readily than indoor consumption. The residential customer demand for water is more responsive to price over long term than short term. In contrast, industrial demand tends to be less elastic than commercial or residential demands, and both commercial and industrial demands are less flexible in the long run than in the short run (Mitchell and Chestnut 2009).

The four most common water rate structures are uniform (or flat rate), decreasing block rate, seasonal rates and increased block rates. Some forms of block rate structure (increasing or decreasing) are most common, but the uniform or flat rate structure is most popular. In general:

- A decreasing block rate structure encourages more water use;
- An increasing block rate structure, e.g. where the the price of water increases with the quantity of water consumed, tends to reduce consumption, sending the signal that higher amounts of consumption require the supplier acquire, treat and distribute more expensive waters. These rates offer great potential for promoting water use efficiency;
- Seasonal rates can be used to reflect temporal differences in the cost of providing water during the summer months due to the need of extra capacity to serve outdoor demand and promote outdoor water conservation;
- Flat rates probably have the least effect, however they can be coupled with “excess use rates” which are priced significantly higher for above average use so the supplier can target users and this reduces peak load demand. There are also “feebates” where high water users pay a premium that is distributed to those who use less water; and,
- Tiered rates generally provide the most financial incentive to stay within the water use budget. This rate structure could be used for landscape, recreational and agricultural water users. It also allows the water agency to identify customers with excessive outdoor water usage and to provide assistance for more efficient water usage practice.

All of the above rate structures are based on accurate metering installed for all water users. In addition, they should incorporate the concept of “true pricing” which includes all water delivery and treatment costs.

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<sup>6</sup> <http://www.a4we.org>

## ***Council Recommendations***

### **General Recommendations**

1. NYS should allocate and fully fund the Environmental Protection Fund, and the subsequent formation of a dedicated line item for Water Conservation and Efficiency programs.
2. NYS should develop necessary incentives for homeowners and businesses to invest in technologies and practices to reduce water use.
3. NYS should support establishment of a dedicated Clean Water Trust fund at the federal level to support water infrastructure, conservation and efficiency measures.
4. New York State, working with members from GLBAC, NYSERDA, Public Service Commission, Environmental Facilities Corporation, and the Governor's Clean Water Collaborative should investigate funding mechanisms on water utilities to help fund water conservation and efficiency programs, research and development.
5. The Environmental Facilities Corporation and NY-DOH should include conservation as a criterion for priority ranking within the Drinking Water State Revolving Fund's Intended Use Plan.

### **Regarding Pricing**

6. The council feels that our long term goal is to encourage a progressive pricing structure that both pays for the delivery and treatment of water, but also encourages water conservation. To accomplish this goal, establishment of an interagency working group should identify a technical assistance program to assist the local municipal water suppliers and this program should:
  - a. Provide municipal water supplies with alternative pricing structures for water delivery and supply
  - b. Provide case studies and examples of how such alternative programs should be implemented.
  - c. Provide resources to municipalities to encourage them to adopt alternative pricing structures.
  - d. Provide assistance on how to address the impact of rate changes on the general public
  - e. Provide assistance on how to link these changes in pricing to water conservation efforts
  - f. Establish a technical assistance program for appropriate agencies

## Section VII. Summary of Recommendations

### *Recommendations to the Governor and State Legislature*

#### Section I:

1. New York State should provide appropriate resources required to gather and maintain information to evaluate the appropriateness of the threshold.

#### Section II:

1. NYS should create a fund to be used for registration and reporting incentives, as for EFC programs, so that interest could accrue on the account. The funds shall pay for the administrative costs associated with Registration.
2. NYS should establish an inter-agency task force to address the following issues:
  - Procedures for addressing future uses such as hydro-fracking and bottling
  - Development of a uniform procedure for dealing with straddling communities.

#### Section III:

1. NYS should ensure that adequate financial resources are available for addressing the maintenance, repair or replacement of deteriorated and/or leaking water systems.
2. Water authorities, cities, towns, and villages utilizing centralized water delivery systems should investigate and implement, where possible, “true pricing” for water delivery as well as incentives to conserve or reduce usage.
3. New York State should implement an educational outreach program on water conservation and sustainability that should include ways for individual households and businesses to reduce water usage, recycle water, as well as reduce property storm water runoff.
4. New York State should develop a separate water conservation best practices manual for agricultural, recreation areas, and industrial users. This should be coupled with targeted

partnerships between existing agencies to implement the education and outreach program.

5. New York State should consider developing a “Smart Growth” Guide that is modeled after the USEPA (2006) publication but applicable to the New York State Great Lakes Watershed.
6. New York State should adopt statewide stream flow standards with an aim to protect aquatic and streamside habitats.
7. The NY Oceans and Great Lakes Ecosystem Conservation Council should provide technical guidance so that agencies and other involved organizations can evaluate whether major water withdrawals could negatively affect stream flow levels and aquatic life.
8. New York State should fully embrace and implement the objectives of the 2005 Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement including, but not limited to:
  - Develop long-term forecasts and strategies that incorporate water conservation and efficient water use.
  - Provide incentives to encourage efficient water use and conservation to maximize water use efficiency and minimize waste of water.
  - Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.
  - Promote investment in and maintenance of efficient water infrastructure and green infrastructure. This includes improved monitoring and standardize data reporting among conservation and efficiency programs.
  - Encourage the research, identification and sharing of innovative management practices and state of the art technologies for limiting water use and increasing water conservation.
  - Strengthen scientific understanding of the linkages between water conservation practices and ecological responses.
  - Inform, educate and increase awareness regarding water use, conservation and efficiency and the importance of water. Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability.
  - Share conservation and efficiency experiences, including successes and lessons learned across the Basin.

Section IV: None



Section V:

General

1. New York State should seek ways to effectively integrate its scientific needs for implementation of the Compact into other NGO, Federal and Basin-wide programs such as the Cooperative Science Monitoring Initiative, the Great Lakes Observing System, and the Lake Area Management Plans.
2. New York State should conduct a formal Gap analysis to assess its specific science information needs for implementation of the Compact.
3. NYS should coordinate with counties, towns and water suppliers so development decisions are made in line with science-based water availability projections and watershed health considerations, including evaluation of cumulative effects of withdrawals and waste/stormwater discharges.

Regarding NYOGLECC

4. New York State should embrace the recommendations of the NYOGLECC Science Advisory Council and work towards having a better understanding of the drivers and services provided by each ecosystem and watershed within the Great Lakes Basin.
5. NYOGLECC should establish water resource supplies, flows and water levels as a scientific priority based on the adaptive management approach required through the New York Oceans and Great Lakes Ecosystem Conservation Act.
6. The Ocean and Great Lakes Ecosystem Conservation Atlas, being developed by NYOGLECC to support EBM activities, should specifically include GIS overlays of water resources within the state and Great Lakes Basin, depicting surface water flows, drainage basins, precipitation patterns, groundwater resources, etc.

Regarding NYSERDA

7. The New York State Energy Research and Development Agency (NYSERDA) should include conservation and efficient use of water resource science in its research and development portfolios.

Regarding Monitoring

8. NYS should support funding sources in collaboration with federal agencies and non-profit organizations to sustain stream gauging stations statewide, as well as to support collection of other real time information that can be used to develop the appropriate models for water withdrawals, sustainable use and management.
9. New York State should collect, manage and analyze scientific information on aquifers and stream flow levels; including size and capacity of aquifers, current and projected demand, GIS database and mapping, and integrated real-time stream gauging information.
10. New York State should convene a stakeholder workgroup to discuss supporting a long-term water resource monitoring program funded by water user fees, and to evaluate the establishment and support mechanisms for a long-term resource monitoring program.

Other

11. New York State should adopt policy that requires universal metering and community “water budgets” to be developed for every river, estuary, aquifer and/or watershed in the state.

Section VI:

General Recommendations

1. New York State should allocate and fully fund the Environmental Protection Fund, and the subsequent formation of a dedicated line item for Water Conservation and Efficiency programs.
2. New York State should develop necessary incentives for homeowners and businesses to invest in technologies and practices to reduce water use.
3. New York State should support establishment of a dedicated Clean Water Trust fund at the federal level to support water infrastructure, conservation and efficiency measures.
4. New York State, working with members from GLBAC, NYSERDA, Public Service Commission, Environmental Facilities Corporation, and the Governor’s Clean Water Collaborative should investigate a ‘Systems Benefit Charge’ type fee on water utilities to help fund water conservation and efficiency programs, research and development.
5. The Environmental Facilities Corporation and NY-DOH should include conservation as a criterion for priority ranking within the Drinking Water State Revolving Fund’s Intended Use Plan.

Regarding Pricing

6. The council feels that our long term goal is to encourage a progressive pricing structure that both pays for the delivery and treatment of water, but also encourages water conservation. To accomplish this goal, establishment of an interagency working group should identify a technical assistance program to assist the local municipal waters supplier and other parties. This program should:
  - a. Provide municipal water supplies with alternative pricing structures for water delivery and supply.
  - b. Provide case studies and examples of how such alternative programs should be implemented.
  - c. Provide resources to municipalities to encourage them to adopt alternative pricing structures.
  - d. Provide assistance on how to address the impact of rate changes on the general public.
  - e. Provide assistance on how to link these changes in pricing to water conservation efforts.
  - f. Establish a technical assistance program for appropriate agencies.

***Recommendations to NYS Department of  
Environmental Conservation***

Section I:

1. The New York State Department of Environmental Conservation (DEC) should adopt a provisional threshold guideline value as 100,000 gallons per day or greater averaged in any 30-day period (including consumptive uses).
2. The DEC should immediately start gathering the information necessary to evaluate the appropriateness of the threshold.
3. The DEC should consider if straddling communities and other specific exemptions in the Compact should also be exempt from the registration and reporting requirements, or if that information is essential for other reasons such as generation of a water budget.

4. The DEC should evaluate if threshold of 100,000 gallons per day is appropriate in not less than four years of the issuance of this report.

## Section II:

### Registration

1. Registration should be integrated with existing programs wherever possible, and incentives developed to encourage voluntary reporting for those with withdrawals below the mandatory 100,000 gpd.

### Permits

2. Permits should have reasonable application fees that are used to support agency staff and to support the program's operating expenses.
3. DEC should streamline and simplify the existing permitting process.
4. Fees and penalties should be implemented on a sliding scale, i.e. the longer out of compliance pursuant to the permit, the more severe the fee or penalty. For example, first offense - written warning with possible penalties; second offense personal visit (DEC) and second written warning; third offense starts the fees and penalties.
5. DEC should review the appropriateness of the fee structure four years from the effective date of this report, to be completed prior to five years from the effective date of this report.
6. DEC should establish a uniform policy and procedure for integrating historical use into the permitting process.
7. DEC should develop a uniform policy for approval or rejection of an application for water withdrawal permits. For example, in addition to those restrictions defined in the Compact itself, the withdrawal:
  - Cannot exceed the natural replenishment or safe yield of the water resources to be utilized;
  - Cannot contribute to the violation of state water quality standards;
  - Cannot violate any other condition the DEC Commissioner deems necessary for the conservation and protection of ground or surface waters of the State;
  - Must be fully compliant with provisions of all other federal, state and local environmental laws.

Section III:

1. New York State DEC should undertake to revise its current manual for water conservation practices to incorporate newer suggestions for Green infrastructure.
2. Water system metering should be made available for all residential, commercial, industrial, and agricultural water consumption users as without accurate metering, there is no incentive to conserve water.

Section IV:

General

1. When developing the State's baseline, the DEC should promote a cooperative approach by contacting all water users currently on record to request the type of information needed, and that can be reasonably provided.
2. Businesses, agricultural irrigators, and public water suppliers should report any capacity amounts they project over the next 10 years for inclusion in the baseline.
3. DEC or the appropriate agency should contact each water user directly to verify current maximum pumping capacities, maximum daily water usage, expected future water use and plans for possible expansions.

Methodology

The methodology for establishing a baseline should be as follows:

4. For public water supply systems, the baseline used should be their permitted water withdrawal amounts as of December 8, 2008.
5. For non-public water supply withdrawals, registered withdrawal capacities and historic usage should be considered. This can be accomplished by reviewing annual water usage reports and contacting each registrant directly.
6. To account for inaccuracy in older use data and modifications to the facilities that may have impacted subsequent use data, the most recent 5 years of data should be used for determining baseline amounts.
7. The baseline value for a non-public water supply should be set as the water user's maximum capacity, or 2 times their maximum daily water use over the most recent 5 years interval, whichever is lower.

Section V: None

Section VI: None

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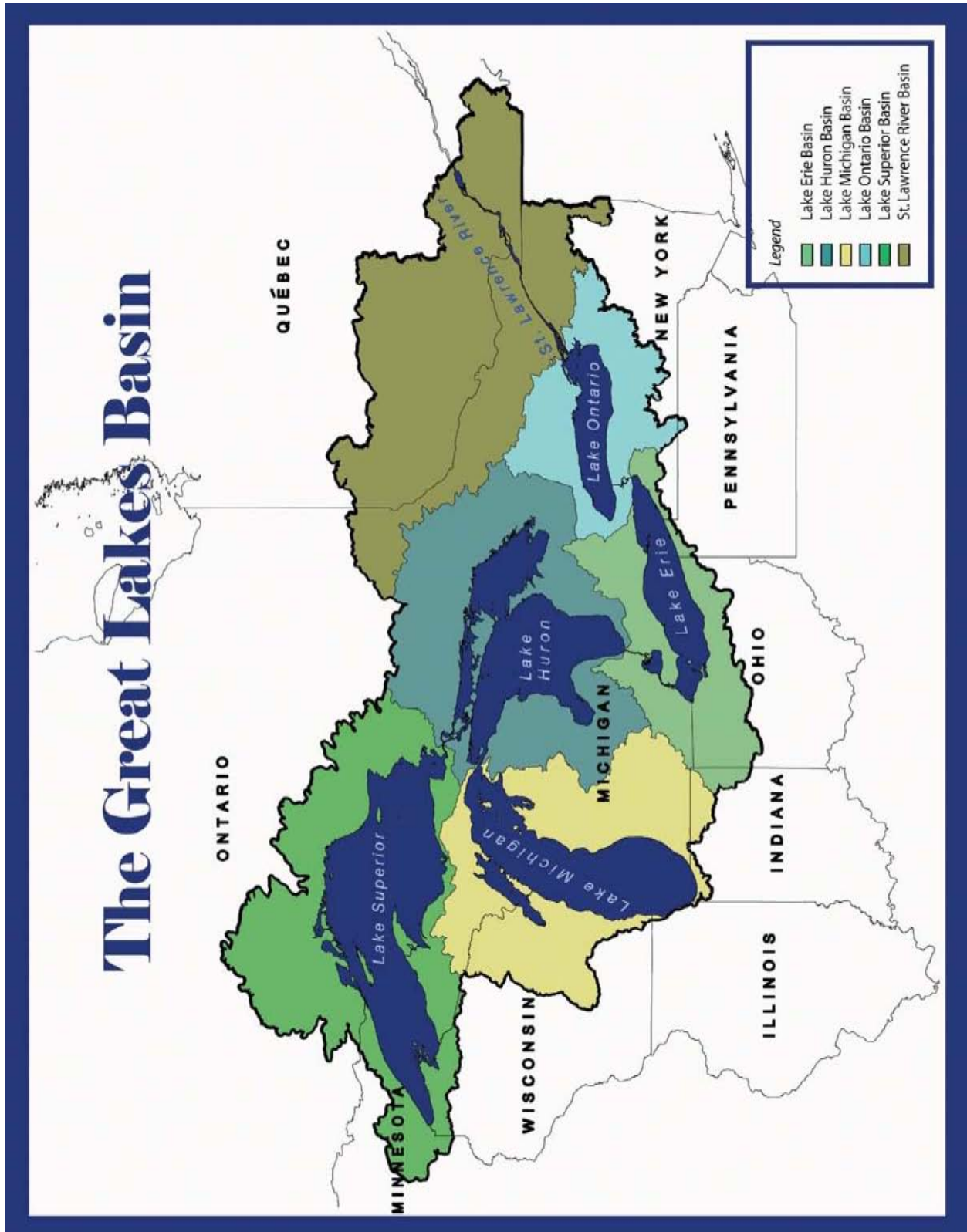
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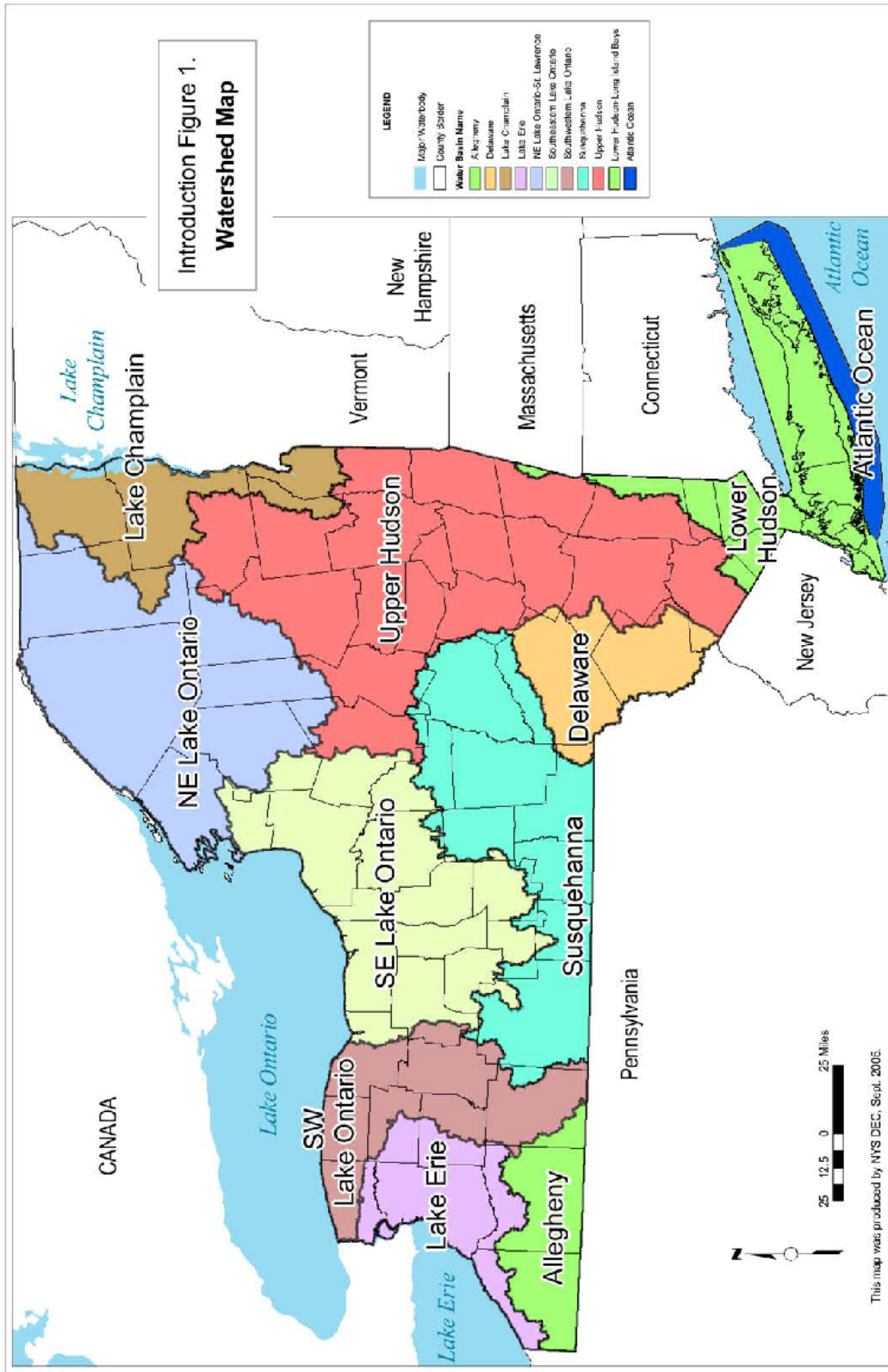
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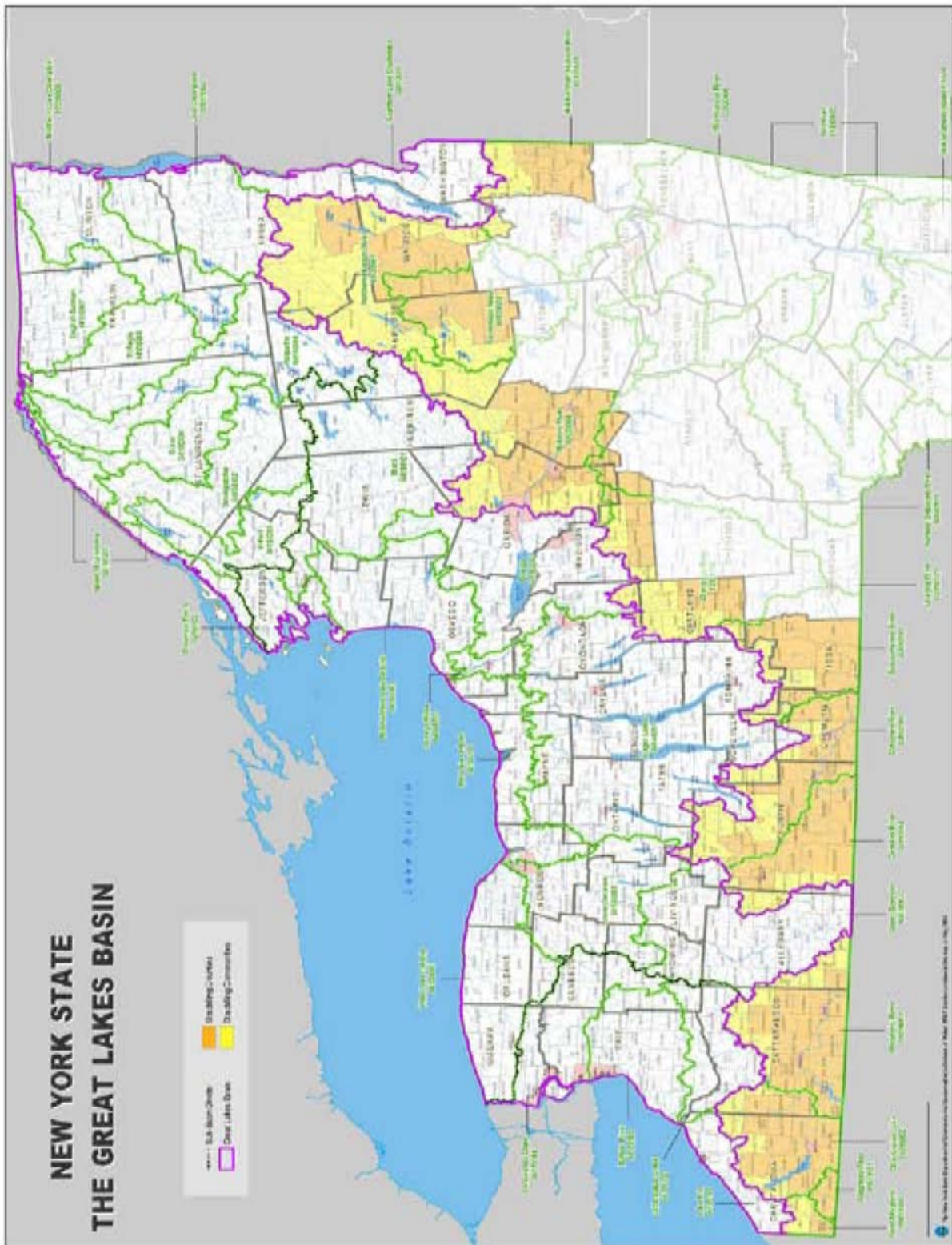
## Appendix A:



## Appendix B:



## Appendix C:





## Appendix D: Scientific Priorities of the NY Oceans and Great Lakes Ecosystem Conservation Council

Many of the issues facing implementation of the Compact are similar to those facing implementation of Ecosystem-based management within New York State. In this regard, the New York Ocean and Great Lakes Ecosystem Conservation Council (NYOGLECC) formed a Science Advisory Group (SAG) that has provided a list of recommendations for implementation of EBM within New York State. Several of these research priorities are also pertinent to implementation of the Compact. These include the following:

**Research Priority 1:** Conduct an integrated ecosystem assessment (IEA) for each ecosystem:  
Assess existing baseline information and identify key goods and services.

**Research Priority 2:** Identify key species, processes, living resources and socioeconomic benefits of each ecosystem.

**Research Priority 3:** Identify and quantify the resiliency of systems to natural hazards/perturbations and episodic events.

**Research Priority 4:** Understand impacts and effects of invasive species.

**Research Priority 5:** Understand the impact of current restoration efforts, regulations, and legislation.

**Research Priority 6:** Understand how ecosystem structure and function will be impacted by global climate change.

**Research Priority 7:** Determine and quantify the interactions/impacts that humans have on the natural ecosystem.

**Research Priority 9:** Develop models that couple knowledge of ecosystem structure and function with information from observing systems indicators/monitoring networks

**Research Priority 10:** Expand and integrate regional and local coastal observing-system capabilities

**Research Priority 11:** Develop appropriate indicators and metrics of ecosystem health.

**Research Priority 12:** Develop and evaluate strategies for ecosystem assessment that allow for adaptation and flexibility, as well as account for uncertainty.

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From: "Research and Monitoring Priorities for Ecosystem-based Management of New York's Oceans and Great Lakes" ; An appendix to "Our Waters Our Futures" prepared by the NYOGLECC Science Advisory Committee. Available online at [www.NYOGLECC.org](http://www.NYOGLECC.org).

# **Appendix E: Great Lakes-St. Lawrence River Basin, Water Conservation and Efficiency Objectives**

## **Background**

The Great Lakes Governors and Premiers signed the Great Lakes—St. Lawrence River Basin Sustainable Water Resources Agreement (Agreement) on December 13, 2005. This Agreement created the Great Lakes-St. Lawrence River Water Resources Regional Body (Regional Body), comprising the Governors and Premiers, to further coordinate implementation of its terms.

Pursuant to Article 304(1) of the Agreement, the Regional Body will adopt regional water conservation and efficiency objectives by December 13, 2007. These objectives are intended to be broad, overarching concepts which will provide context for further State and Provincial action that will be more specific in nature.

The process for developing the regional water conservation and efficiency objectives was intended to be open and transparent. Regional stakeholders were asked to provide technical information, make recommendations and foster communication with interested organizations and individuals. Representatives of Tribes and First Nations were also engaged and asked to share their experience and traditional knowledge. Additionally, public input was sought through a formal public comment period.

Once finalized and adopted by the Regional Body, the regional objectives will then be used to inform the development of individual State and Provincial water conservation and efficiency goals and objectives. These goals and objectives will in turn shape State and Provincial water conservation programs that will be more specific in nature. The Agreement also provides direction to ensure that the States and Provinces, along with the Regional Body, undertake periodic reviews of their water conservation programs. Additionally, the regional objectives, as well as reports prepared by each State and Province on their programs, will be reviewed by the Regional Body every five years.

## **Introduction**

Efficient and responsible water use is a cornerstone of sound water management policy, whether the resource is considered abundant or scarce. Efficient use and conservation of our water resources can:

- Ensure equitable access to and long-term availability of water;
- Protect public health and enhance quality of life;
- Minimize impacts of water use to support healthy aquatic ecosystems of the Great Lakes and St. Lawrence River Basin;
- Minimize costs related to water and wastewater infrastructure;
- Preserve social and cultural heritage;
- Prevent or minimize conflicts among water users;
- Enhance economic viability and competitiveness of the region;
- Support reductions in energy use and greenhouse gas emissions;
- Improve the ability to manage an uncertain future and growing demand for water; and,
- Demonstrate that the region's citizens are prudent stewards of the resource.

These Basin-wide goals and objectives are intended to complement other water conservation and efficiency efforts consistent with water quality objectives. They will accelerate intergovernmental and other partnerships including, for example, partnerships with Basin Tribes and First Nations to build a greater understanding and consideration of traditional knowledge and practices. Whether accomplished through voluntary, mandatory, or a combination of measures, to be successful, these goals and objectives need to be broadly supported.

Regional collaboration and assistance among all governments, stakeholders and the public will be necessary to ensure that the States and Provinces are collectively able to meet these Basin-wide goals and objectives.

**Goals:** As stated in the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

1. Ensuring improvement of the waters and water dependent natural resources;
2. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
3. Retaining the quantity of surface water and groundwater in the Basin;
4. Ensuring sustainable use of waters of the Basin; and,
5. Promoting the efficiency of use and reducing losses and waste of water.

**Objectives:** Guide programs toward long-term sustainable water use.

- Use adaptive programs that are goal-based, accountable and measurable.
- Develop and implement programs openly and collaboratively, including with local stakeholders, Tribes and First Nations, governments and the public.

- Prepare and maintain long-term water demand forecasts.
- Develop long-term strategies that incorporate water conservation and efficient water use.
- Review and build upon existing planning efforts by considering practices and experiences from other jurisdictions.
- Adopt and implement supply and demand management to promote efficient use and conservation of water resources.
- Maximize water use efficiency and minimize waste of water.
- Promote appropriate innovative technology for water reuse.
- Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.
- Provide incentives to encourage efficient water use and conservation.
- Include water conservation and efficiency in the review of proposed new or increased uses.
- Promote investment in and maintenance of efficient water infrastructure and green infrastructure.



## Appendix F: Glossary of Terms

### Glossary

**Adaptive Management** means a Water resources management system that provides a systematic process for evaluation, monitoring and learning from the outcomes of operational programs and adjustment of policies, plans and programs based on experience and the evolution of scientific knowledge concerning Water resources and Water Dependent Natural Resources.

**Applicant** means a Person who is required to submit a Proposal that is subject to management and regulation under this Compact. **Application** has a corresponding meaning.

**Approved Capacity** A term generally referring to either (a) the maximum amount of water allowed by NYS Public Water Supply Permit (ECL ART. 15, TITLE 15, and Implementing Regulations 6NYCRR, PART 601) to be withdrawn by a designated permit holder, or (b) the maximum amount of water that can be held, pumped, transported or stored in accordance with applicable engineering standards, designs, specifications or test certifications.

**Baseline withdrawal** A water withdrawal or consumptive use greater than 100,000 gallons per day over any 30-day average, and any out-of-basin or intra-basin (lake-to-lake) diversion regardless of the amount, that existed legally and was registered with or permitted by the State as of December 8, 2008. Such water withdrawals, diversions and consumptive uses are to be included on the State's baseline list adopted by the Great Lakes-St. Lawrence River Basin Water Resources Compact Council.

**Basin or Great Lakes—St. Lawrence River Basin** means the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of the Parties.

**Basin Ecosystem or Great Lakes—St. Lawrence River Basin Ecosystem** means the interacting components of air, land, water and living organisms, including humankind, within the Basin.

**Community within a Straddling County** means any incorporated city, town or the equivalent thereof, that is located outside the Basin but wholly within a County that lies partly within the Basin and that is not a Straddling Community.

**Consumptive Use** means that portion of the water withdrawn or withheld from the Basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into products, or other processes. (Compact definition).

"Consumptive Use" means a use of Great Lakes water, other than an interbasin diversion, that results in a failure to return any portion of the amount withdrawn to the Great Lakes basin. Consumptive use does not include evaporative losses from reservoirs used to impound water for hydroelectric generation. (DEC definition) (conflict between the two re: evaporation)

**Cumulative Impacts** mean the impact on the Basin ecosystem that results from incremental effects of all aspects of a Withdrawal, Diversion or Consumptive Use in addition to other past, present, and reasonably foreseeable future Withdrawals, Diversions and Consumptive Uses regardless of who undertakes the other Withdrawals, Diversions and Consumptive Uses. Cumulative Impacts can result from individually minor but collectively significant Withdrawals, Diversions and Consumptive Uses taking place over a period of time.

**Cumulative Adverse Impacts** means negative impacts on the Basin ecosystem that result from incremental effects of all aspects of a Withdrawal, Diversion or Consumptive Use, in addition to other past, present, and reasonably foreseeable future Withdrawals, Diversions and Consumptive Uses regardless of who undertakes the other Withdrawals, Diversions and Consumptive Uses. Cumulative impacts can result from individually minor but collectively significant Withdrawals, Diversions and Consumptive Uses taking place over a period of time. Examples of some adverse impacts include:

Physical criteria

- measurable change to the natural range of variability of the hydrologic regime. The natural range of variability is defined for multiple parameters that measure magnitude, frequency, duration, timing, and rate of change. Taken together, the natural range of variability of the individual parameters comprise the natural range of variability of the hydrologic regime
- degradation of structural habitat (for examples, degradation of substrate; loss of woody debris that functions as in-stream or in-lake habitat; degradation of emergent, submergent, or riparian vegetation; changes to natural distribution of riffles and pools)
- disruption of natural connections between and among habitats, including lateral (that is, riparian) and longitudinal (that is, up and downstream) connections
- disruption of natural temperature regime of the hydrologic system (that is, the natural variability of its thermal conditions)

Chemical criteria

- disruption of natural productivity of the ecosystem
- introduction of potentially harmful toxins, contaminants, and excessive nutrients
- disruption of the hydrologic system's ability to process toxins, contaminants, and nutrients (that is, disruption of chemical and nutrient cycling)

Biological criteria

- decline in population levels or health of native species
- introduction of non-native species

- disruption of biological interactions such as predation and competition
- introduction of harmful microorganisms and no elevation of microorganisms to harmful levels

**Diversion** means a transfer of Water from the Basin into another watershed, or from the watershed of one of the Great Lakes into that of another by any means of transfer, including but not limited to a pipeline, canal, tunnel, aqueduct, channel, modification of the direction of a water course, a tanker ship, tanker truck or rail tanker but does not apply to water that is used in the Basin or a Great Lake watershed to manufacture or produce a product that is then transferred out of the Basin or watershed. **Divert** has a corresponding meaning.

**Environmentally Sound and Economically Feasible Water Conservation Measures** mean those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that i) are environmentally sound, ii) reflect best practices applicable to the water use sector, iii) are technically feasible and available, iv) are economically feasible and cost effective based on an analysis that considers direct and avoided economic and environmental costs, and v) consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the processes employed, energy impacts and other appropriate factors.

**Exception** means a transfer of Water that is excepted under Section 4.9 from the prohibition against Diversions in Section 4.8.

**Exception Standard** means the standard for exceptions established in Section 4.9.4.

**Excess Capacity** A term generally referring to the incremental difference between the Approved Capacity and the average annual or monthly amount of water typically withdrawn.

**Intra-Basin Transfer** means the transfer of water from the watershed of one of the Great Lakes into the watershed of another Great Lake.

**Leakage** The loss of water from a water distribution system due to such causes as poor construction methods, aged materials, ground movement, corrosion, pressure and accidental breakage. Leakage amounts and rates can either be measured or estimated.

**Measures** means any legislation, law, regulation, directive, requirement, guideline, program, policy, administrative practice or other procedure.

**New or Increased Diversion** means a new Diversion, an increase in an existing Diversion, or the alteration of an existing Withdrawal so that it becomes a Diversion.

**New or Increased Withdrawal or Consumptive Use** means a new Withdrawal or Consumptive Use or an increase in an existing Withdrawal or Consumptive Use.

**Originating Party** means the Party within whose jurisdiction an application or registration is made or required.

**Product** means something produced in the Basin by human or mechanical effort or through agricultural processes and used in manufacturing, commercial or other processes or intended for intermediate or end use consumers. (i) Water used as part of the packaging of a product shall be considered to be part of the Product. (ii) Other than water used as part of the packaging of a product, water that is used primarily to transport materials in or out of the Basin is not a Product or part of a product. (iii) Except as provided in (i) above, water which is transferred as part of a public or private supply is not a product or part of a product. (iv) Water in its natural state such as in lakes, rivers, reservoirs, aquifers, or water basins is not a product.

**Public Water Supply Purposes** means water distributed to the public through a physically connected system of treatment, storage and distribution facilities serving a group of largely residential customers that may also serve industrial, commercial, and other institutional operators. Water Withdrawn directly from the Basin and not through such a system shall not be considered to be used for Public Water Supply Purposes.

**Safe Yields** The maximum amount of water that can be withdrawn from a source without depleting that source under the drought of record.

**Source Watershed** means the watershed from which a withdrawal originates. If water is withdrawn directly from a Great Lake or from the St. Lawrence River, then the Source Watershed shall be considered to be the watershed of that Great Lake or the watershed of the St. Lawrence River, respectively. If water is withdrawn from the watershed of a stream that is a direct tributary to a Great Lake or a direct tributary to the St. Lawrence River, then the Source Watershed shall be considered to be the watershed of that Great Lake or the watershed of the St. Lawrence River, respectively, with a preference to the direct tributary stream watershed from which it was withdrawn.

**Straddling Community** means any incorporated city, town or the equivalent thereof, wholly within any County that lies partly or completely within the Basin, whose corporate boundary existing as of the effective date of this Compact, is partly within the Basin or partly within two Great Lakes watersheds.

**True Pricing** refers to all the costs associated with providing potable water including the direct costs with maintenance and operations, and indirect costs too such as but not limited to administrative and legal support. The costs need to account for all activities associated with securing sources, treating water and distributing water.

**Water Budget** refers to the ratio of water input-to-output considering all phases of a hydrologic cycle or constructed system within a designated facility, water body, watershed or water basin.

**Water Dependent Natural Resources** means the interacting components of land, water and living organisms affected by the Waters of the Basin.

**Waters of the Basin or Basin Water** means the Great Lakes and all streams, rivers, lakes, connecting channels and other bodies of water, including tributary groundwater, within the Basin.

**Withdrawal** means the taking of water from surface water or groundwater. **Withdraw** has a corresponding meaning.

## Appendix G: Individual Public Comments and Council Responses

**Table 4: Response to Comments**

Original Comment	Action Taken	Council Action
<b>Section I. Evaluation and Recommendation of Water Threshold Levels for Management or Regulation</b>		
Council should include in the report (or the appendices) the list of existing water withdrawal approvals.	Mapping is included	
Streamflow standards and other recommendations for establishing the baseline, discussed in other parts of the report should be included in this section.	Moved to water thresholds section, with cross-referencing to conservation.	
Council should assess whether current program(s) for Great Lakes water withdrawals is consistent with the Compact. If the Council determines the existing programs are inconsistent then the Council should provide specific recommendations for establishing a framework for compliant water withdrawal program.	This will be addressed. The program will be designed over the next five years.	
Threshold should be lower: registration 10,000gpd; permit 50,000gpd (3 comments)	Sect. I - 2, 3	
Thresholds must be based on the true, sustainable capacity of the water source, not just withdrawal yields.	Section I – 2, 3	
More stringent stream flow standards by establishing sustainable capacity for each source and maintain natural patterns of flow	Section III – 6	
Explain how stream flow standards would be set	Section III – 6	
Need to clarify regulatory versus ecological baseline	Sect. I – 2,3,4	
Quantitative standards for protection of stream flows  Page 21 – The discussion on river base flows on this page and the next few pages makes reference to Nature Conservancy work in this area, along with some additional NGOs. These are not the only references on the topic. We suggest that the Draft Report also cite alternate industry references such as those suggested by the Edison Electric Institute and the National Council for Air and Stream Improvement, for a more balanced treatment of the topic.	Sect. III - Considerations	
Page 29, bullet #2 under “Council Recommendations” that “NYS should adopt quantitative stream flow and water level production	Variable instream flow regime is	

standards for lakes, rivers, and streams that protect aquatic and streamside life." What actions would be taken if such water bodies go below these quantitative values and a public water supply has already taken every water conservation measure? As noted in the Draft Report, regional climate change could have severe effects on the Great Lakes Basin. Regardless, climate changes will occur over the next decades with unknown impacts to water quantity values. Setting a quantitative water value with an uncertain future climate may cause inappropriate decisions on part of the regulatory agencies to address a perceived issue.	recommended.
<b>Section II. Establishment of Water Withdrawal Permitting or Alternate Program</b>	
How is an adverse impact to be defined?	Glossary
The report must make recommendations and/or assessments for dealing with straddling communities/counties.	Sect. II, 10
Throughout the report metering is referenced, and the report must make clear recommendations for including metering for permitting.	Sect. III, 1
The report must make recommendations for consolidating and/or streamlining permitting processes.	Sect. II, 4
The report must include recommendations for fee schedules for permitting.	Discussed, but does not fall under our purview. This is DEC.
Enact permit standards that proactively address sustainable capacity rather than the current reactive approach.	Sect. I – 2, 3
Need to be clear as to what the term limit is on registrations	Registration term limit has been added.
Legislation should ensure that all existing water usage within the Great Lakes Basin is grand fathered at historically permitted levels reflecting each user's greatest withdrawal capacity, whether for commercial, residential, industrial, farming, mining, municipal, or other uses. This would allow existing users to "ramp up" future production and processes during periods of economic recovery without being hampered by undue restrictions on water usage.	Sect. II - 9
The draft report finds that water users who are registered and reporting are in compliance with state rules but are not necessarily approved for water withdrawal. It is unclear how one could be registered and reporting water usage but not have approval to use the water. Is the Council seeking to institute a special permitting system? This ambiguity must be clarified.	Definitions re: registration and permitting are required.
A permitting program should include: thorough information	Sect. II – 11

requirements for applicants, criteria upon which DEC may accept or deny an application above and beyond the Compact standard, mandatory water conservation efforts, strict permit terms and limits, and an inclusive public participation process	
DEC should impose strict fees and substantial penalties to ensure that permittees are compliant with permit limits. (2 comments)	Sect. II – 4, 6, 7
Monitoring, reporting and enforcement should be required components of the permit program.	Sect. II
Conservation and efficiency plan should be made mandatory part of permitting program	Sect. III - 3, 4
New York State's water withdrawal permit program should be bolstered to help with Compact implementation and as a vehicle for working with other water programs in New York State	Sec. I - 2
<p><b><i>Any permitting program should include the following components:</i></b></p> <p>Information requirements for applicants. DEC should require that applicants for water withdrawal permits provide specific information, including:</p> <p>Background- basic information needed:</p> <ul style="list-style-type: none"> <li>○ purpose of the proposed water withdrawal;</li> <li>○ location and source of the proposed water withdrawal;</li> <li>○ adequacy of supply selected;</li> <li>○ limiting capacity of the proposed project and the planned mean and peak daily, monthly and annual withdrawal volumes;</li> <li>○ location of the applicant's proposed return water flows;</li> <li>○ a list of other department permits associated with the project/withdrawal (including State Pollution Discharge Elimination [SPDES] permits, Title V permits, etc.);</li> </ul> <p>Measurement &amp; Accounting issues:</p> <ul style="list-style-type: none"> <li>○ a requirement for annual verification that measurement equipment is accurate to within 5 percent;</li> <li>○ requisite continuous, accurate records of withdrawals or consumptive use;</li> <li>○ requisite baseline groundwater level measurement, surface water level measurement and stream flow measurements and quarterly re-assessment;</li> <li>○ monthly reporting requirements for all measurements and test results;</li> <li>○ requisite reporting of any permit violations to DEC within 48 hours;</li> <li>○ adherence to all conservation measures identified by the applicant and the agency;</li> <li>○ 100 percent metering throughout the system and meter calibrations every five years;</li> </ul>	



- supporting studies, reports, and other information upon which assumptions and assertions have been based;

Conservation Measures:

- annual inspections for leaks;
- ongoing practices to detect and repair water leaks;
- identification and encourage installation of state-of-the-art water-conserving fixtures;
- mandatory employee training regarding appropriate water conservation techniques;
- public education regarding water conservation in connection with the use of water for which the applicant's permit is granted;
- other water-conservation measures and goals as stipulated including drought protection measures, limiting unaccounted for water, etc.
- withdrawal limits and identified conservation and efficiency measurements as "conservation plans";
- conservation measures instituted by the applicant prior to the application and the applicant's long-range water conservation plan to be implemented or continued after the issuance of a permit.
- compliance schedules for current withdrawers who must upgrade systems or practices to meet conservation and efficiency standards or any other requirements promulgated through rules and regulations or includes in permits, including water audits; and part of their annual reporting.
- provisions for identifying and repairing leaks;

Impact assessment:

- anticipated impact of the withdrawal on surface and ground water characteristics (quality, quantity, flow regimen and other hydrologic characteristics), threatened or endangered species and their habitats, and existing water withdrawals;
- assessment of a proposed withdrawal's impacts on other users;
- will not adversely impact public or private drinking water supplies ;
- will be implemented to ensure there are no significant individual or cumulative adverse impacts on the quantity or quality of the resource and the water dependent natural resources including the protection, propagation and management of fish and other aquatic life, wildlife and the preservation of endangered species;
- will not adversely affect wastewater treatment needs, flood management, water-based recreation, waste assimilation, agriculture, fish and wildlife, and low flow and thermal requirements;
- will not adversely impact the health or safety of the community or surrounding communities where the

<ul style="list-style-type: none"> <li>water will be extracted;</li> <li>will not adversely affect existing and planned water uses in the area such as public water supplies, relative density of private wells, hydropower, flood management, water-based recreation, wetland habitats, waste assimilation and agriculture; and will be compatible with the policies and programs of the State of New York, as adopted or amended, dealing with long-range planning, management, allocation and use of the water resources of the State.</li> </ul>	
<p><b>Criteria upon which DEC may accept or deny an application (in addition to the Compact standard), including that the withdrawal:</b></p> <ul style="list-style-type: none"> <li>will not exceed the natural replenishment or safe yield of the water resources to be utilized;</li> <li>will not contribute to the violation of state water quality standards;</li> <li>will not violate any other condition the DEC Commissioner deems necessary for the conservation and protection of ground or surface waters of the State;</li> <li>will be fully compliant with provisions of all other federal, state and local environmental laws;</li> <li>see all categories of potential impact above.</li> </ul>	Sect. II – 11
<p>The finding that current methods for estimating consumptive use is not “accurate enough” is contrary to the Compact language and subsequent Regional Body guidelines discussions, that state that flexibility will be retained for choosing methodologies for estimating consumptive use</p>	
<p>Would NYS consider leakage a consumptive use?</p>	Glossary
<p>Are there plans to set threshold levels for consumptive use or loss over a certain limit for <i>existing</i> as well as new withdrawals?</p>	Sect. II – 6
<p>Metering should be mandatory in order to have effective conservation, need to be able to measure progress and effectiveness, also essential for establishing baselines</p>	Sect. III – 1
<p>Undertake a real inventory of current water withdrawals so we know how much water is coming out of the lakes;</p>	Sect. II – 1
<p>Build conservation and efficiency practices into all water withdrawals</p>	Sect. III – 3, 4
<p>Ambiguities in defining the scale of the impacts of water withdrawals will result in lengthy and expensive court challenges over proposed withdrawals.</p>	Council – should have definitions reviewed.

The Compact's stated purpose for establishing existing withdrawal capacities is only to determine a baseline for identifying when a new or increased water withdrawal is to occur, which are then subject to the Compact's provisions, whereas historic withdrawals are not. Moreover, nothing in the Compact is intended for these baselines to become any sort of permitted limit.	Sect. II – 6
Water withdrawal permits are not required by the Compact	The Compact is a "minimum" floor.
Why does the issue of "excess capacity" need to be addressed? During Compact language negotiations it was left clear that the Compact was clearly "grand fathering" existing system capacity.	Sect. II – 6
Why the 10-year limit on capacity numbers? The Compact does not place any limit on how long the stated capacity will remain in effect.	
Ensure all significant withdrawals are accounted for through reporting and/or permitting	Sect. II – 1,2,3,5,8
Hydro-fracking: How will water sources (e.g., wells) be protected from fracking	Section II – 7
The GLBAC must include recommendations for addressing shale drilling concerns and other multi-jurisdictional issues including, but not limited to: <ol style="list-style-type: none"> <li>1. Legislative and regulatory recommendations;</li> <li>2. Protection of water quantity and the ability to regulate water quality;</li> <li>3. Compatibility with other compacts, and challenges faced with integrating those compacts with shared concerns such as High Volume Hydraulic Fracturing;</li> <li>4. Recommendations for tracking water use;</li> <li>5. Recommendations/Requirements for treatment; and</li> <li>6. Classifying wastewater and flow-back fluid in terms of use.</li> </ol>	Inter-agency Task Force
Each State has the ability to strengthen the Compact by regulating exports of water in containers <5.7 gallons as prohibited diversions. We encourage New York State to take this opportunity to lead other States in the Basin in regulating exports of bottled water. (2 comments)	Discussed but rejected by Council – we can't single out water bottlers and ignore brewing. Soda, etc.
<b>Section III. Methods for Establishing the Baseline</b>	
The subsequent report draft should include how the DEC lists of water registrations will be incorporated into a comprehensive statewide registration for implementing the Compact.	
The report asks if evaporation is a consumptive use, and the	Glossary

Compact is very clear on this issue- “Consumptive Use means that portion of Water Withdrawn or withheld from the Basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into Products, or other processes.” The Council should embrace the Compact’s definition of Consumptive Use.	
<p>The Council should answer the following questions:</p> <ol style="list-style-type: none"> <li>How will GLBAC recommend reconciling registered water users to be compliant with the Compact?</li> <li>The report must address the issue of operating at “excess capacity,” and make recommendations.</li> <li>The report must clearly state how consumptive use will be measured in order to be compliant, establish baselines, etc.</li> <li>The report must determine how to include agriculture in the baseline</li> </ol>	
Proposed language for new or increased diversions, the baseline withdrawal amount shall be the larger of: (a) the limitation specified in the issued permit; or (b) the physical capacity of the withdrawal system of the applicable facility	Sect. IV - 3
The report should also make clear that “existing capacity” is ONLY to determine baseline for identifying when a new or increased water withdrawal is to occur. Previously established withdrawals are not subject to the provisions of the Compact.	Sect. II – 6
Baseline lists of existing users should be based on either approved withdrawals or most restrictive system capacity as of December 8, 2008 (the Compact’s effective date), as called for in the Compact.	Sect. Compact Requirements
Another alternative approach advanced by the Council to determine existing baseline withdrawal is to use metering to determine significant increases in withdrawals. This is contrary to the established method already established in the Compact and supported in the draft report. The baseline is to be withdrawal system derived, not flow derived.	
Page 20, top paragraph. discussion on page 15 and subsequent pages states baseline water withdrawals are to be based on maximum system flow limiting considerations, the wording suggests such baselines are to be tied to metered flows.	
Page 24, bullet #1. The statement that registered water withdrawals are not considered “approved” is troubling. This would then beg the question: “To what extent are such withdrawals legally regarded as ‘unapproved?’” The drafters of the Compact stressed on many occasions that the Compact does not	Registration is not an “approval” process. It is an information gathering process. Permits are “approvals”.

require “permitting” of existing, or even of new or increased withdrawals.	
Page 25, bullet #3. This statement and similar statements elsewhere within the Draft Report are inconsistent with the Compact language, wherein the baseline established is to be system derived, not flow derived.	
Page 25, bullet #4. The wording in the second line “approved capacity” should be changed to “stated capacity” or something similar. The Compact does not require “approval” of stated system capacity.	Approved capacity must be defined.
<b>Section IV. Development of the State’s Water Conservation and Efficiency Programs</b>	
<p>The Council should include the specific details of what “outreach” will entail?</p> <ul style="list-style-type: none"> <li>v. The report must identify who will deliver the message and who will be the audience.</li> <li>vi. Including a robust public outreach program, delivered to many sectors including general public/homeowners, schools, municipalities, businesses, agriculture, and more will be necessary for an effective outreach program.</li> <li>vii. Developing a robust outreach and implementation program with municipalities to effectively conservation of water and financial resources.</li> </ul>	<p>Sect. III – 4,5 Sect. VI</p>
<p>Recommended to include the following in the Water Conservation and Efficiency Section:</p> <ul style="list-style-type: none"> <li>viii. New York State must establish its own water conservation goals and objectives</li> <li>ix. New York State should develop a water conservation strategy that includes aggressive targets for total water use reduction in the state as well as sector specific targets. The plan should include detailed plans for achieving those targets.</li> <li>x. Explain how and why streamflow standards should be incorporated into conservation program.</li> <li>xi. The GLBAC should define “true pricing” as it is referenced throughout the report</li> <li>xii. The GLBAC should review a “stormwater fee” and determine if this form of “progressive pricing” is applicable and</li> </ul>	

	<p>can be used.<sup>7</sup></p> <p>xiii. The report should connect how communities can work together to address problems that will be raised by a water leakage study under the umbrella of a State Compact program to secure funding, defray costs, or negotiate together for a larger contract.</p> <p>xiv. The GLBAC should review current “Smart Growth Guide” initiatives and make recommendations for incorporating those initiatives and codifying Smart Growth principles.</p> <p>xv. The GLBAC should review the current regulatory framework for green infrastructure and make recommendations for implementing New York State Great Lakes-St. Lawrence watershed green infrastructure mandates. Funding and incentives are available for green infrastructure through the state’s EFC and EPA.</p> <p>xvi. The section quotes a report for a “successful” water supply and conservation program. These principles should be used for recommendations.</p> <p>xvii. addressing universal metering and community “water budgets” should be included in the Water Conservation and Efficiency section, and not the Collection and Application of Scientific Information section.</p>	
<p>The development of state’s water conservation and efficiency program is vague: what kind of outreach? Who is the audience? Who is going to do the outreach?</p>		<p>Sect. III - 4</p>
<p>What are the specific water conservation and efficiency measures being considered for recommendation to the legislature? There are none in the report.</p>		<p>Sect. III</p>
<p>Strong measures should be established for each sector within the watershed, using best available technology. Per capita indoor and outdoor water use should be considered separately for each sector.</p>		
<p>Conservation Objectives and Programs adopted by the State based on goals established by the Regional Body should be flexible and incentive-based, not prescriptive.</p>		<p>Sect. III</p>
<p>New York State should develop a water conservation strategy that includes aggressive targets for total water use reduction in the</p>		<p>Task Force</p>

<sup>7</sup> [http://www.phila.gov/water/pdfs/billstuffer\\_2009-07.pdf](http://www.phila.gov/water/pdfs/billstuffer_2009-07.pdf)

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state as well as sector specific targets. The plan should include detailed plans for achieving those targets.	
DEC should work with stakeholders to develop and implement a comprehensive public outreach program to inform the public, municipalities and industrial users on water conservation best practices.	Sect. III, Sect. VI
An incentive for public suppliers could be to include conservation as a criterion for priority ranking within the Drinking Water State Revolving Fund's Intended Use Plan. Linking conservation initiatives to funding would send a strong message about New York's commitment to water resources while encouraging those who are running their systems most efficiently. Another possibility is to lower interest rates for those suppliers that implement stringent conservation programs. These concepts could also be applied to other sectors, including industry and agriculture, which apply to the state for various grants or loans.	Sect. III - 3
Concept of true pricing: use of progressive Block Rate structures has been effective in other cities to promote water conservation	Sect. VI - 9
True pricing needs to include externalized costs	Sect. VI
Recommend specific funding streams	Sect. VI
Trust fund for water efficiency	Sect. VI
Systems/benefits charge to finance management	Sect. VI - 10
It is not clear what is meant by "true pricing." This language needs to be defined.	Costs and Fees section added
Permits should have reasonable application fees that are used to support agency staff	Sect. II - 4
New York should enact a statewide block pricing program (whereby users are charged a higher unit price as consumption rises) for water use to encourage efficiency and conservation through pricing and avoid significant water rate increases for low and fixed income households.	Sect. VI - 9
New York should enact a 'Systems Benefit Charge' type fee on water utilities to help fund water conservation and efficiency programs, research and development. These funds can provide the necessary incentives for homeowners and businesses to invest in technologies and practices to reduce water use.	Sect. VI - 10
GLBAC should also report on potential revenue, reasonable application and administrative fees and fines, and recommend that fees are directed to support the program's operating expenses.	Purview of DEC.
Page 22, bullet #3. The reference to "true pricing" is unclear and vague. Is this a reference to "true costs" contained in the last full paragraph of Page 20, relating to minimizing water supply infrastructure leaks? At the very least this needs to be defined.	Sect. VI

<p><u>Statewide Funding Mechanisms</u></p> <p><i>Environmental Protection Fund (EPF)</i>: Council should advocate for the legislature to allocate and spend the EPF at \$300 million, as called for in the <i>Environmental Protection Fund Enhancement Act</i>.</p>	Sect. VI
<p>Recommend that the Governor and Legislature substantially increase funding for the following existing line items of the EPF to bolster Compact implementation programs:</p> <ul style="list-style-type: none"> <li>i. Water Quality Improvement;</li> <li>ii. Oceans and Great Lakes;</li> <li>iii. Finger Lakes-Lake Ontario Watershed Protection; and Open Space</li> <li>iv. the Council should propose establishing a new line item: Water Conservation and Efficiency, dependent upon securing increased EPF allocation.</li> </ul>	
<p>The Council should propose a statewide <i>Clean Water Trust Fund</i> to provide sorely needed dedicated funding for clean water needs in New York State. This funding can and should complement the work of efficiency and conservation efforts for New York's water, while helping to close the \$80 billion funding gap for New York's Clean Water and Drinking Water infrastructure.<sup>8</sup> The Council should identify diffuse funding sources for this Trust Fund and recommends accessing fees on pesticides, fertilizers, bottled water, and permits, etc.</p>	Sect. VI
<p>The Council should recommend the state adopt a <i>Systems Benefit Charge (SBC)</i> type fee on water utilities to help fund water conservation and efficiency programs, research and development. These funds can provide the necessary incentives for homeowners and businesses to invest in technologies and practices to reduce water use. The Council should work with members from NYSDERDA, Public Service Commission, Environmental Facilities Corporation, and the Governor's Clean Water Collaborative to develop an effective SBC-type fee for water utilities.</p>	Sect. VI - 10
<p>The Council should review and consider recommending establishing statewide funding programs like Maryland's Chesapeake Bay Restoration Fund.<sup>9</sup> The Bay Restoration Fund is dedicated to restoring the Chesapeake Bay and is funded through a flat rate fee of \$2.50 to residential consumers and flow-based fees for larger water users. The fee is collected by the sewer authority.</p>	Costs and fees

<sup>8</sup> <http://www.osc.state.ny.us/localgov/pubs/research/capitalplanning.pdf>

<sup>9</sup> Bay Restoration Fee Calculator: <http://www.mde.state.md.us/Water/CBWRF/feecalculator/index.asp>;  
Bay Restoration Fund Explanation: <http://www.mde.state.md.us/Water/CBWRF/index.asp>



The Council should review and recommend New York adopt water conservation initiatives like San Antonio, Texas Water System which provides a comprehensive list of rebates like free water efficient toilets, water saver landscape rebates, free water conservation audits, commercial rebate programs, and recommendations for water conservation in landscaping.	Sect. III – 3 Sect. VI
<i>Clean Water State Revolving Fund</i> – the Council should recommend full funding and eligibility for water conservation and efficiency programs.	Sect. III – 3 Sect. VI
<i>Drinking Water State Revolving Fund</i> - the Council should recommend full funding and eligibility for water conservation and efficiency programs.	Sect. III – 3 Sect. VI
Great Lakes Restoration Initiative (GLRI)- the Council should recommend and provide the structure for New York State Great Lakes-St. Lawrence River Watershed collaboration to provide coordination and guidance for local municipalities and the State to achieve sustainable water management and much needed investments for water conservation and efficiency programs.	
Climate change legislation can provide funding for adaptive management. For example, the recently passed legislation in the House of Representatives, HR. 2454, <sup>10</sup> the American Clean Energy and Security Act (ACES). ACES provides a national framework for working with States to address coastal community needs based on the changing climate which is applicable with the goals of water conservation and preservation under the Compact. the Council should support New York state’s efforts to secure comprehensive federal action on climate change and establishing dedicated funding for necessary adaptation and mitigation.	Costs and fees
Establish a national Clean Water Trust Fund. The Council should support establishing a national Clean Water Trust Fund, like HR. 3202 <sup>11</sup> that was recently introduced in the House of Representatives, to provide a dedicated source of funding to address our aging and leaking water infrastructure and provide resources for research and development for water efficiency solutions.	Costs and fees
<b>Section V. Collection and Application of Scientific Information</b>	
<i>“The Collection and Application of Scientific Information”</i> This section is a perfect example of outlined priorities in order of importance and detailed and specific recommendations. The	Used as model

<sup>10</sup> <http://thomas.loc.gov/cgi-bin/query/D?c111:4:./temp/~c1119hJqVQ::>

<sup>11</sup> <http://thomas.loc.gov/cgi-bin/query/z?c111:H.R.3202:>

Council should apply this model to all other sections.	
Should combine certain research priorities and making the following research priorities:	
xviii.	<b>Research Priority 1:</b> “Conduct an integrated ecosystem assessment (IEA) for each ecosystem: Assess existing baseline information and identify key goods and services.”
xix.	<b>Research Priority 6 and 15:</b> “Understand how ecosystem structure and function will be impacted by global climate change” and “Develop and evaluate strategies for ecosystem assessment that allow for adaptation and flexibility, as well as account for uncertainty.”
xx.	<b>Research Priority 7:</b> “Determine and quantify the interactions/impacts that humans have on the natural ecosystem.”
xxi.	<b>Research Priority 9 and 10:</b> “Develop models that couple knowledge of ecosystem structure and function with information from observing systems indicators/monitoring networks” and “Expand and integrate regional and local coastal observing-system capabilities.”
<b>Miscellaneous</b>	
All inputs and outputs to the system must be considered, including wastewater.	
It should be stipulated that water be returned not just to the source watershed but to its initial point of withdrawal to maintain health of tributary ecosystems	
Use of term ‘economically feasible’ is troubling, should be removed	
NYS should fund leakage studies	Sect. III - 2
Whatever management plan is enacted should be an adaptive management plan	
How will this affect tribes/nations?	Tribes have been approached – were invited to give feedback.
How will we deal with straddling communities	Sect. II - 7
What about interbasin transfer?	
Is hydropower a withdrawal?	No, it is a pass through
What about climate change, how does it factor in?	

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How does this relate to LO-SLR plan?	
Is water used for navigation a diversion?	Glossary
Include information about where water usage is currently (energy sector, municipal use, etc)	
No mention of LO water levels	
Ensure a process for enforcement of the law, to avoid harmful practices such as inter-basin transfers of Great Lakes water.	
The right to use and incorporate water into chemical feedstock and other products for shipment outside the Great Lakes Basin must be preserved.	
<b>The term "source watershed" should be defined with flexibility to allow appropriate water withdrawals and discharges and still be protective of the environment.</b>	Glossary
It is unclear why the issue of "excess capacity" is seen as a "...challenging technical and policy issue... that must be addressed." The Compact language seemed to indicate that existing system capacity was being "grandfathered" in.	
Returning clean water to the source watershed is a core objective of the Compact. The Council should provide clear recommendations to the DEC and Legislature to ensure the quality of returned water is free from biological, chemical, radioactive, and/or toxic contaminants.	Definition needed.
Clearly defining 'adverse impact' is paramount in achieving the goals of the Compact. The Council should recommend the DEC establish a criterion that ensures ecosystems will have "no adverse impact" as a result of large-scale water withdrawals.	Glossary
Since surface water is connected to groundwater, surface water should likewise be regulated in the basin. All inputs and outputs to the system must be considered, including wastewater	
New York's water management policy and practices will position the state to firmly oppose large water diversion proposals that could adversely impact New York's Great Lakes waters;	Yes.
New York State should establish a Great Lakes program office, as other Compact states have done, and fully staff it.	Task Force using existing agencies.
The Council of Great Lakes Legislators should be reconvened and an integral part of this process	
Water withdrawal, total water use, and water efficiency practices should be a consideration in SEQR.	DEC purview
New York State should expand and fill the Great Lakes Basin Advisory Council	
The report must answer how leakage will be addressed regardless if there is current knowledge as to how much, the issue of leakage	Sect. III - 2

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and implementation of the Compact should provide ample opportunity for communities to work together.	
Develop a decision-making tool to integrate information and current water users for future withdrawals	
This document should provide a clear action agenda for legislative and regulatory officials. It is critical this information is presented in an easily digestible format. Include a one page "action agenda" to provide a legislative and regulatory roadmap.	End of document – recommendations pages – Legislative and DEC.
State implementing legislation should make it clear that the Legislature has the final say on changes to the standard	
Unilateral administrative implementation by the Regional Body without proper State implementing legislation could circumvent legislative intent.	
Keep in mind the audience, make it easy and understandable, offer 2-3 priority recommendations	Final recommendations pages.
Need to include a page at beginning indicating what governor/legislature needs to do	End of document
Hold a legislative hearing on Compact recommendations	This could be done at Great Lakes lobby day
What is the process from here on out? Will the public have another opportunity?	
Closely engage others (EFC, NYSEDA, Governor's Clean Water Collaborative, DEC divisions of Water and of mineral resources, NYS DOS, Public Service Commission, NYOGLECC, etc.)	Sect. II – 8,10 Sect. VI - 1
Set-up a regional body to continue work on this	
Need to tell municipalities and others what this means to them, what is their role	Education and outreach
Require townships in basin to include in their Comprehensive Plan need to study the impact of land development on the Great Lakes water resource following "Smart Growth" principles	Sect. III - 5
State water users should not be excluded from input to State processes for setting thresholds for water withdrawals.	
It mainly lists possibilities and generalities	Made more specific recommendations
Two sections do not include any recommendations for actions- the "Evaluation and Recommendation of Water Threshold Levels for Management or Regulation" section and the "Establishment of a Water Withdrawal Permitting or Alternate Program" section. A comprehensive list of recommendations must be included.	Recommendations added and clarified.
Need a definitions page	

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Include GLBAC member page and maybe a page at end listing those with input	
an alternative title, like: <b>"Our Great Lakes Water Resources: Conserving and Protecting Our Water Today for Sustainable Use into the Future."</b>	Change made
provide short summaries of valuable resources and including critical documents as additional appendices available on-line.	
the report include an executive summary which includes key recommendations and is no more than four pages.	Included
the Council should outline key actions and opportunities that need further attention by the Council, local municipalities, stakeholders, and the public.	Final recommendations pages.