

# **Building Strong Collaborative Relationships for a Sustainable Water Resources Future:**

**STATE OF MICHIGAN**

SUMMARY OF STATE WATER PLANNING

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December 2009

The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

# STATE OF MICHIGAN

## 1. STATE/REGIONAL WATER PLANNING STATUS

Although there are a number of programs and initiatives that guide statewide water planning in Michigan, there is no single comprehensive statewide plan. The Michigan Great Lakes Plan (GLP), which was released in 2009 by the Department of Environmental Quality (DEQ) Office of the Great Lakes (OGL), addresses eight priority issues identified by the Great Lakes Governors, including:

- Aquatic Invasive Species
- Habitat/Species
- Coastal Health
- Areas of Concern
- Nonpoint Sources
- Toxic Pollutants
- Indicators and Information
- Sustainable Development

For each issue, the GLP identifies the threats it poses to the Great Lakes, defines a specific goal for addressing the issue, and provides a series of recommendations for state and federal governments to achieve this goal. Because it does not cover all aspects of water resources planning in the state, such as water supply shortages, the GLP is not a comprehensive statewide plan.

Statewide water planning issues are also addressed by the former Groundwater Conservation Advisory Council (GWCAC) and the existing Water Resources Conservation Advisory Council (WRCAC), which were created to investigate a number of issues related to the sustainable use of the state's water resources. In 2006, the GWCAC was replaced with the WRCAC, which was charged with expanding on the findings and recommendations of the GWCAC.

In addition to the GLP and conservation advisory councils, the DEQ and Department of Natural Resource (DNR) administer a number of other programs and initiatives related to water resources planning such as the Drinking Water Protection Program, Nonpoint Source Control Program, Floodplain Management Program, and Water Withdrawal and Use Program, among others.

## 2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

The Michigan Department of Environmental Quality (DEQ) is the primary state agency responsible for water resources planning. DEQ is comprised of seven divisions:

- Air Quality
- Environmental Science and Services
- Executive

- Land & Water Management
- Office of Geological Survey
- Office of the Great Lakes
- Remediation & Redevelopment
- Waste & Hazardous Materials
- Water Bureau

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The Michigan Department of Natural Resources (DNR) is also involved in water planning and management through its Natural Rivers, Dam Removal, and BMP Programs, as well as the Water Resources Conservation Advisory Council.

### **3. WATER MANAGEMENT VISION AND GOALS**

The vision of DEQ is (Source [1]):

*We, in the Michigan Department of Environmental Quality (DEQ), protect and enhance Michigan's environment and public health. As stewards of Michigan's environmental heritage, we work on behalf of the people of the Great Lakes state for an improved quality of life and a sustainable future. In service to the public, we administer programs and enforce laws that protect public health and promote the appropriate use of, limit the adverse effects on, and restore the quality of the environment. We encourage voluntary actions to enhance our natural resources and the environment. We preserve biologically diverse, rare, sensitive, or endangered plants, animals, and ecosystems through identification, education, management, and public/private partnerships and initiatives. We advance environmental protection through innovation and improvements to regulations and programs.*

The vision of the Michigan Great Lakes Plan is (Source [4]):

*It is our collective vision that the Great Lakes and the rivers bringing water to the Great Lakes will be the premier freshwater resource in the world and will sustain a healthy environment, strong economy, and high quality of life long into the future. This includes the vision of a sustainable Great Lakes ecosystem that ensures environmental integrity and supports economically viable and healthy communities. It is also our vision to protect, restore, and sustain the integrity of the Great Lakes ecosystem through collaborative partnerships.*

By implementing the Michigan Great Lakes Plan, the state hopes to have (Source [4]):

- *Ensured that no new aquatic invasive species (AIS) are introduced into Michigan waters and onto Michigan lands.*
- *Conserved and enhanced Michigan's fish and wildlife by protecting and restoring the ecological processes that sustain them.*
- *Adopted a long-term goal of virtually eliminating the release of, and exposure to, persistent bioaccumulative toxics (PBTs) and other toxics substances into the Great Lakes Basin ecosystem to protect human health, fisheries and wildlife populations, and the aquatic environment.*
- *Restored the beneficial uses currently impaired at the 14 Michigan Areas of Concerns (AOCs).*
- *Controlled pollution from nonpoint sources (NPS).*
- *Used standardized and scientifically valid data to make the best decisions.*
- *Incorporated the principles of sustainability into the principles and practices of the activities of Michigan's citizens and public and private entities while sharing a commitment to protect and enhance and acting as wise stewards of the waters, lands, and related resources of the state of Michigan.*
- *Linked environmental, economic, and social objectives for sustainability.*
- *Recognized that regional, watershed, or lake specific goals, objectives, and priorities are appropriate.*
- *Acknowledged that economic conditions in Michigan and available public resources will require both careful examination of existing programs to determine where resources can be shifted to higher priorities, expand cooperative actions with private sector partners, and greater flexibility in the use of new or existing federal funds.*
- *Established an effective and reliable system to monitor the future health of the Great Lakes ecosystem.*

For each of the eight priority issues identified by the Great Lakes Governors, the Michigan Great Lakes Plan provides a specific goal for the state, as discussed in the following section.

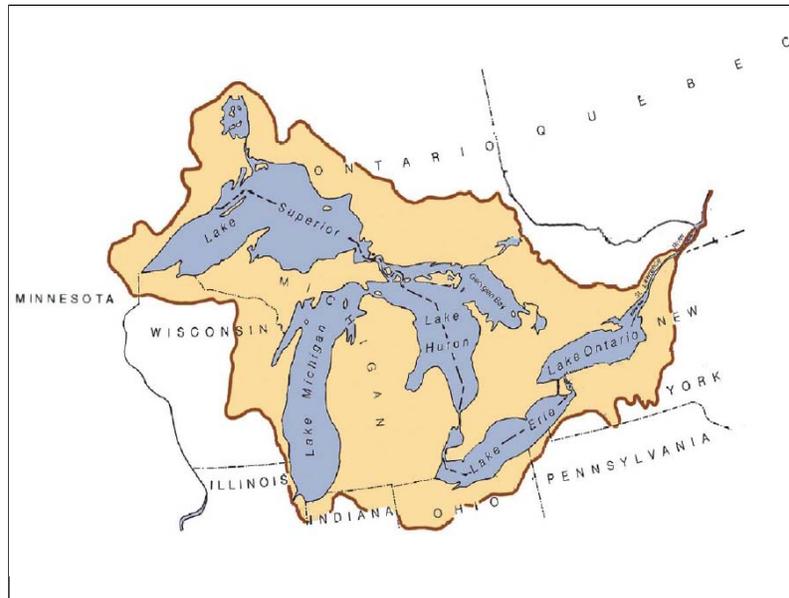
#### **4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT**

Water resources planning in Michigan is conducted through a number of programs and initiatives. The Michigan Great Lakes Plan was created to address the eight priority issues identified by the Great Lakes Governors that are impacting the Great Lakes. While this plan includes a significant number of recommendations for both the state and federal governments, it is not a comprehensive statewide water plan as it does not address issues such as water supply. However, many of the water-related issues not covered in the Great Lakes Plan are addressed by the DEQ through other programs and initiatives. This section provides an overview of the Great Lakes Plan followed by a summary of other statewide water planning programs and activities in Michigan.

## Michigan Great Lakes Plan

With all of its land draining into the Great Lakes (Figure 1), Michigan plays a pivotal role in the protection and restoration of this valuable freshwater resource. The Michigan Great Lakes Plan (GLP) was created in response to the 2005 Great Lakes Regional Collaboration (GLRC) Strategy, which was developed through a partnership between the following key regional entities:

- Council of Great Lakes Governors
- Great Lakes and St. Lawrence Cities Initiative
- Great Lakes Congressional Task Force
- Great Lakes Indian Fish and Wildlife Commission
- U.S. Environmental Protection Agency, Great Lakes National Program Office



**Figure 1. Great Lakes Basin** (Source [12])

The GLP “provides specific direction within Michigan to address the recommendations of the GLRC Strategy and take further steps to address the specific needs within the state” (Source [4]). Furthermore, the GLP “is not intended to identify every action necessary to protect and restore the Great Lakes... Instead, [it] provides a mechanism to consider and reevaluate the commitment of existing resources; identify public investments in protection and restoration that can make the most significant, positive contribution to the future of the Great Lakes; and establish consensus, action priorities that can be implemented through more effective use of existing resources, expanded collaboration between government agencies and the private sector, and targeted efforts to secure new resources where funding shortfalls are identified” (Source [4]).

The GLP focuses on the following eight priority issues identified by the Great Lakes Governors:

- Aquatic Invasive Species
- Habitat/Species
- Coastal Health
- Areas of Concern (AOC)/Sediments
- Nonpoint Sources
- Toxic Pollutants
- Indicators and Information
- Sustainable Development (including sustainable energy and assuring a strong economy)

For each of these eight issues, the GLP includes the following sections:

- Background
- Success Stories
- Michigan Goal
- Recommendations that can be Accomplished within Existing Funding Constraints through Increased Collaboration
- Recommendations Needing Additional Funding to Accomplish
- Recommendations Needing Congressional or Federal Agency Action
- Recommendations Needing Michigan Legislative Action

A summary of each priority issue is provided below.

#### Aquatic Invasive Species

The spread of aquatic invasive species (AIS) is a major issue in Michigan. “Significant progress over the previous three decades to restore the Great Lakes has been interrupted and undermined by the present crisis of AIS” [4]. The goal for AIS prevention and control is to “Prevent all new introductions of AIS into Michigan, stop the spread of AIS within the state and clearly identify and organize responsibilities and authorities for AIS prevention, control, monitoring, regulation and outreach/education within the appropriate state agencies and partners” (Source [4]).

Recent efforts to control AIS include legislation passed in 2005 that requires all ocean-going vessels to treat their ballast water using a state-approved method, as well as a successful phragmites control demonstration program. The major recommendations of the GLP are “to develop a long-term funding source and sustainable program for AIS prevention and control actions” and to increase education and awareness throughout the state (Source [4]).

### Habitat/Species

The GLP recognizes that the loss of habitat due to human development and activity directly affects “human health, economic vitality and sustainability, and regional prosperity, as well as the biodiversity of Great Lakes wildlife, fish, and plant species and their habitats” (Source [4]). The goal for species management and habitat protection is to “Conserve, enhance and restore Michigan’s fish and wildlife by restoring and protecting natural communities, the diverse habitats they provide and the ecological processes that sustain them” (Source [4]). Recent activities to protect and restore coastal and inland habitat include the launch of the Coastal and Estuarine Land Conservation Program (CELCP), through which the state can acquire and protect valuable coastal habitats.

### Coastal Health

Contamination of coastal beaches from pathogens and toxic algae from point and nonpoint source pollution cause human health issues. Michigan’s goal for coastal health is to “Protect public health through the elimination of pollution source which can cause closings at beaches due to bacterial contamination to enhance recreation opportunities and support a strong and vibrant Michigan economy” (Source [4]). Recommended strategies to achieve this goal include reducing point and nonpoint source pollution and improving beach monitoring programs.

### Areas of Concern (AOC)/Sediments

The U.S. and Canadian governments have identified 43 Areas of Concern (AOCs) according to the 1987 Protocol Amending the 1978 Great Lakes Water Quality Agreement. AOCs are locations with “serious water quality problems known to cause beneficial use impairment of the shared aquatic resources” (Source [5]). There are 14 AOCs in Michigan with contaminated sediments being the primary cause of impairment (Figure 2). Michigan’s goal for AOCs/sediments restoration and protection is to “Restore and protect beneficial uses in 14 Michigan AOCs where human activities have cause or are likely to cause impairment of beneficial human uses or the area’s ability to support aquatic life and to serve as an important step toward virtual elimination of persistent toxic substances (PTS) within the Great Lakes” (Source [4]).



**Figure 2. Areas of Concern in Michigan** (Source [11])

### Nonpoint Sources

Nonpoint source (NPS) pollution is recognized as being among “the most significant problems threatening the water quality of Michigan’s lakes, streams, wetlands, and

groundwater” (Source [4]). Reduction of NPS pollution is being targeted by a number of organizations in Michigan through efforts such as (Source [4]):

- *Using a watershed approach,*
- *Enhancing the watershed approach by addressing forestry, recreation, resource extraction, and transportation-related NPS,*
- *Support, promote, and facilitate sustainable land use practices and planning,*
- *Engage local partnerships, and*
- *Develop NPS tools such as financial and technical assistance, information and education, and regulatory actions.*

Michigan’s goal for Nonpoint Source reduction is “To control or eliminate NPS pollution in Michigan to provide for healthy and diverse aquatic ecosystems, protect public health, restore natural hydrology to streams, enhance environmentally compatible recreation opportunities and support a strong and vibrant Michigan economy” (Source [4]). The state is addressing NPS pollution through a number of programs such as the Conservation Reserve Enhancement Program (CREP) that “was created to help protect our environment and wildlife by encouraging farmers to adopt conservation practices” (Source [4]).

#### Toxic Pollutants

Despite success in reducing potentially toxic substances (PTS) over the past few decades, there continue to be some PTS “detected at levels that potentially pose threats to human and wildlife health, warrant fish consumption advisories in all five Great Lakes, and disrupt a way of life for many in the Basin, particularly the life ways and culture of tribal communities” (Source [4]). Michigan’s goal for eliminating PTS is (Source [4]):

*Michigan concurs with the GLRC Strategy to adopt a long-term goal of virtually eliminating the release of, and exposure, to PBTs and other toxic substances into the Great Lakes Basin ecosystem to protect human health, fisheries and wildlife populations, and the aquatic environment. The goal of elimination will be sought within the most expedient time frame, through the most appropriate common sense, practical and cost-effective mix of voluntary, regulatory, and incentive-based actions. Michigan recognizes that complete removal may not be practical from open waters, bottom sediments, or landfill leachate for some PTS. Therefore, Michigan qualifies elimination of PTS from the ecosystem to concentrations that will be protective of public health and the environment.*

The state has been working towards this goal through the Clean Michigan Initiative Bond, which has provided funding to reduce and prevent PTS introduction in the Great Lakes. The state has observed significant declines in polychlorinated bipheyls (PCBs) and dichloro-diphenyl-trichloroethane (DDT) in fish populations over the past 30 years.

### Indicators and Information

Michigan recognizes that “Protection and restoration of Michigan’s Great Lakes watersheds require a well-documented, collaborative strategy, access to the best scientific information available, research to provide that information, and coordinated action” (Source [4]). The goal for Great Lakes Indicator-Information is to “Standardize and enhance scientifically valid methods by which information is collected, recorded, and shared within Michigan to provide high-quality data for managers, scientists, and the public to measure environmental quality status and trends and to evaluate the effectiveness of prevention, remediation, and restoration activities” (Source [4]). The state recently expanded its volunteer-based water quality monitoring program (MiCorps), which assists DEQ in collecting water quality data throughout the state. Recommendations for improving the state’s monitoring programs include continued expansion and increased funding.

### Sustainable Development

In order to meet the needs of future generations, Michigan recognizes that “a path to development must be envisioned that emphasizes efficient, careful and integrated resources utilization, protection, and reuse, along with ecosystem protection and restoration” (Source [4]). The state’s goal for Sustainable Development is that “The activities of Michigan’s citizens and public and private entities support a strong and vibrant Michigan economy, meeting societal and cultural needs while incorporating the principles of sustainability into their practices and sharing a sense of commitment to protect and enhance and be wise stewards of the waters, lands and related resources of the state of Michigan” (Source [4]). Recent advances in the implementation of sustainable development include the Michigan Groundwater Stewardship Program (MGSP), which promotes sustainable agricultural practices and “helps Michigan residents reduce the risks of groundwater contamination associated with pesticide and nitrogen fertilizer use” (Source [4]). In addition, the city of Grand Rapids has taken a progressive step towards sustainable development through initiatives to eliminate waste, conserve energy and water, develop renewable energy, and implement “green” building design, among others.

### Plan Implementation

The GLP provides recommended actions for state and federal government agencies that are necessary to achieve the goal for each of the eight priority issues. However, no authority is granted to any specific agency to implement the plan’s recommendations, and thus the actions can only be implemented on a voluntary basis by the state and federal governments. The plan states that “an implementation team will be created to assist federal, state, and local efforts to enact the recommendations of the Plan” (Source [4]).

### **Conservation Advisory Councils**

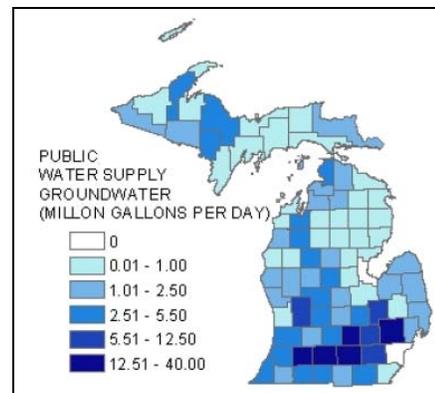
In addition to the GLP, Michigan has addressed statewide water planning issues through the Groundwater Conservation Advisory Council (GWCAC), which was created through

Public Act 34 of 2003, and the Water Resources Conservation Advisory Council (WRCAC), which was created through Public Act 189 of 2008. The GWCAC was charged in 2003 with three tasks (Source [8]):

1. *Study the sustainability of the state’s groundwater use and whether the state should provide additional oversight of groundwater withdrawals.*
2. *Monitor Annex 2001 implementation efforts and make recommendations on Michigan’s statutory conformance with Annex 2001, including whether groundwater withdrawals should be subject to best management practices or certification requirements and whether groundwater withdrawals impact water-dependent natural features.*
3. *Study the implementation of and the results from the groundwater dispute resolution program created in Part 317.*

Annex 2001 refers to the 2001 Supplementary Agreement to the Great Lakes Charter signed by the participating Great Lakes states and provinces that requires each member to implement specific water planning and management programs such as water withdrawal reporting (Source [9]).

In 2006, the GWCAC reported its findings and recommendations on these three tasks and called for development of a statewide groundwater assessment and monitoring program to track indicators of the sustainability and impacts of groundwater use, and enhancement of the groundwater inventory and mapping project (GWIM), in addition to other recommendations (Source [8]). Figure X shows the amount of groundwater used for public water supply by county.



**Figure X. Groundwater Use for Public Water Supply,**  
(Source [8])

In 2006, the Legislature passed Public Act 34 of 2006, which charged the GWCAC with an additional three tasks designed to further address the issues identified in the Public Act 34 report related to the 2001 Great Lakes Charter Annex (Source [10]):

- *Develop criteria and indicators to evaluate the sustainability of the state’s groundwater use.*
- *Design and make recommendations regarding a water withdrawal assessment tool.*
- *Study and make recommendations as to whether the state should consider as part of its groundwater conservation programs, proposals to mitigate adverse impacts to the Waters of the State or to the Water-dependent Natural Resources of the State that may result from groundwater withdrawals.*

In 2007, the GWCAC submitted its findings and recommendations for these tasks, which were overall positive and supportive of the state's water withdrawal assessment process but called for further development and testing prior to implementation.

Following the report in fulfillment of Public Act 34 of 2006, the GWCAC was replaced by the Water Resources Conservation Advisory Council (WRCAC) through Public Act 189 of 2008. The WRCAC was created "to serve as a representative, collaborative forum for study and evaluation of the state's water management programs" (Source [7]). The WRCAC is administered by the DNR and is comprised of 21 members from a wide range of water-related entities, including both government and private sectors. The current tasks for the WRCAC include (Source [7]):

- *Evaluation of the new Water Withdrawal Assessment Tool.*
- *Evaluation of the overall Water Withdrawal Assessment Process.*
- *Recommendations for inclusion of Great Lakes, inland lakes, and other waters in the process.*
- *Examining any potential legal conflicts within the process.*
- *Recommendations for a new state water conservation and efficiency program.*

Similar to the GLP, the GWCAC and WRCAC were not granted regulatory authority to implement their recommendations. Instead, these recommendations are given to the appropriate state agency, mainly DEQ and DNR, which are then responsible for implementing them.

### **Other State Water Planning Programs and Activities**

In addition to the GLP and the legislative advisory councils, the Michigan DEQ is involved in other planning-related activities through its Water Bureau and Land and Water Management Division. The Water Bureau (WB) "administers a number of programs that range from preventive to remedial and from voluntary to regulatory for the protection of drinking, ground, and surface waters of the state for present and future generations" (Source [3]). The following WB programs involve various planning activities:

- Drinking Water Protection Program
- Source Water Protection Program
- Groundwater Dispute Resolution Program
- Water Withdrawal and Use Program
- Nonpoint Source Control Program
- Inland Lakes Management Program

The mission of the Land and Water Management Division (LWMD) is "to promote the best use of these resources for their social and economic benefits while protecting associated resource values, property rights, the environment, and public health and safety" (Source [6]). The LWMD runs the following planning-related programs:

- Floodplain Management
- Hydrologic Data Collection and Analysis
- Wetlands Protection
- Inland Lakes and Streams Protection
- Shoreland Management

## **5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT**

Water planning in Michigan involves a number of interstate and international partnerships involving the Great Lakes. Michigan is part of the Great Lakes Commission, which includes seven other member states (Illinois, Indiana, Minnesota, New York, Ohio, Pennsylvania and Wisconsin) as well as two associate members (Ontario and Quebec). For more information on this partnership, see the Great Lakes Commission water planning summary. Michigan is also a member of the Great Lakes Governors, each of which adopted the Great Lakes Compact that provides “a comprehensive management framework for achieving sustainable water use and resource protection” (Source [4]).

The Michigan Great Lakes Plan expands on the Great Lakes Regional Collaboration Strategy, which was developed through partnership between the following key regional entities:

- Council of Great Lakes Governors
- Great Lakes and St. Laurence Cities Initiative
- Great Lakes Congressional Task Force
- Great Lakes Indian Fish and Wildlife Commission
- U.S. Environmental Protection Agency, Great Lakes National Program Office

In addition, public participation was a critical component in the development of the Michigan Great Lakes Plan (GLP). The GLP includes a section describing the specific issues facing stakeholders in eight regions of the state.

The Groundwater Conservation Advisory Council and Water Resources Conservation Advisory Council were comprised of members from a broad range of public and private interests. The reports by these councils were produced through collaboration and consensus between all participating members.

## **6. PLAN IMPLEMENTATION STRATEGY**

Although the GLP does not provide any specific implementation strategy, it does state that “an implementation team will be created to assist federal, state, and local efforts to enact the recommendations of the Plan” (Source [4]).

## **7. OUTCOMES ASSESSMENT PROCESS**

The GLP does not provide a specific outcomes assessment process, but does highlight the need for “a comprehensive network of monitoring/observing systems to provide high-

quality data for managers, scientists, and the public to determine environmental quality status and trends and to evaluate the effectiveness of prevention, remediation, and restoration activities” (Source [4]).

The DEQ performs a number of monitoring programs to assess water quality, habitat loss, beach contamination, and other environmental indicators. Since 1999, DEQ and DNR have been required to submit a periodic assessment on the State of Michigan’s Environment. This report is currently published every three years, with the most recent edition completed in 2008 (Source [13]). The report includes three sections:

- Environmental Measures – *presents the ecological, physical, and chemical measures used to track the overall quality of the state’s environment and fulfill the legislative mandate* (Source [14]).
- Programmatic Measures – *discusses additional state agency measures that are tracked to fulfill various state or federal environmental programmatic requirements* (Source [14]).
- Emergent Contaminants of Concern – *discusses several newly recognized contaminants that environmental and public health experts have an incomplete understanding regarding their potential for adverse environmental and human health effects* (Source [14]).

## **8. NEEDS, CHALLENGES AND CRITICAL PRIORITIES – INTERVIEW INSIGHTS**

Major challenges in Michigan include invasive species which are having a significant impact on fisheries and coastal communities, the 14 areas of concern (AOC) discussed above, habitat loss, emerging contaminants, and long-term water use management. The state cited the recent enactment of regulations that require permits for ocean-going vessels and are designed to minimize, if not eliminate, the transport of invasive species into the Great Lakes.

The state indicated that partnerships have been critical to enactment of new regulations, policies and programs. Support for a new water management structure to track water use was made easier through the creation of an advisory committee that included representatives from industry, public interests and environmental groups. Stakeholder participation was also a critical part of the development of the Michigan GLP. Internal action teams comprised of various state agencies received input from stakeholders across the state on the plan.

The state highlighted the importance of recognizing the hydrologic system as a whole, with groundwater and surface water being closely connected. Climate change is viewed as a potential serious issue, especially with respect to impacts on navigation and recreation. The director of DEQ is leading a regional climate council that will be developing recommendations for policies and actions to address climate change impacts. Drought and insufficient water supplies are not seen as critical issues due to the abundance of water resources in the state and lack of development pressure.

As with all other states, funding is a pervasive issue, especially for implementation of the GLP. Michigan is considering consolidating the number of state agencies from a total of 20 down less than 10 in order to reduce costs and improve efficiency. They are currently in the process of deciding how best to utilize existing resources to implement various programs and planning initiatives. Some funding from the EPA is particularly useful since it does not require significant matching funds from the state.

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