

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF MINNESOTA

SUMMARY OF STATE WATER PLANNING

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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 MINNESOTA

1. STATE/REGIONAL WATER PLANNING STATUS

The Minnesota Environmental Quality Board (EQB) is responsible for coordinating state water resource management activities. *Minnesota Statutes* (MS) charges EQB with the following responsibilities:

- Develop the state water plan (MS 103B).
- Develop water priorities and policy reports (MS 103A).
- Coordinate development of periodic assessments of water resources (MS 103A).
- Coordinate agencies and programs that affect the environment (MS 103A; 103B, 116C).
- Ensure compliance with state environmental policy (MS 116C and 116D).
- Coordinate development of an integrated state energy and environmental strategy report (MS 116D).
- Advise the Governor and the Legislature (MS 116C).

The state's current comprehensive water plan, "Minnesota Watermarks: Gauging the Flow of Progress 2000 to 2010," was developed in 2000 by EQB. The intent of the plan is to provide goals, objectives, and performance indicators that serve as "the foundation for state, federal and local plans and management efforts, and to provide direction for basin and local plans (EQB, 2000)." Since 2000, the state's water priorities have been focused through biennial water policy reports published in 2003 (EQB, 2003), 2005 and 2007. The most recent policy report, "Protecting Minnesota's Waters: Priorities for the 2008 to 2009 Biennium (EQB, 2007a)," places emphasis on three areas: water quality and the Clean Water Legacy Act (MS 114D); water supply; and wetlands. The policy reports are meant to inform the state Legislature as it sets its funding priorities. They also serve as an opportunity for state agencies to coordinate water priorities on a continual basis.

In conjunction with state priorities and EQB's responsibilities, EQB also published a water resources assessment in 2007, "Use of Minnesota's Renewable Water resources: Moving Toward Sustainability (EQB, 2007b)." The report identifies the Twin Cities-St. Cloud area as a region of significant growth and water resources concerns. The report also requests improved mapping and understanding of the state's water resources, including groundwater and its connection to surface waters as well as how land use activities and water quality may affect future water supplies.

Following the development of the water resources assessment report, the Minnesota Pollution Control Agency (PCA) requested that the EQB convene an interagency work group to consider water supply issues in the state (EQB, 2009d). EQB responded to the request by organizing the group and charging them to:

- Take a broad look at water availability and appropriations, including but not limited to issues specific to the ethanol industry, finding a way to put consideration of proposed water uses into a broader framework and perspective.

- Consider how the state might establish (and/or has established) protective and achievable standards to quantify and address the environmental impacts of proposed water uses.
- Summarize need and options for collecting additional data important to comprehensive and timely analysis of proposed water uses.

In December 2008, the EQB adopted a package of policy recommendations in “Managing for Water Sustainability: Report of the EQB Water Availability Project.”

EQB continues to work with its partners to organize and collect data in preparation for updates to the water assessment and priorities reports, as well as the update to the state water plan due in September 2010 (EQB, 2009c). The 2010 plan is due to the state Legislature by September 15, 2010. Importantly, during the 2009 Legislative Session, the Legislature directed the University of Minnesota to develop a 25-year water sustainability framework to help guide allocation of new funds made available by the Clean Water, Wildlife and Cultural Heritage Amendment to the state constitution. The amendment, which was adopted by the state’s voters in November 2008, provides approximately \$250 to \$300 million each year (depending on the economy) for water, wildlife and the arts from a new tax of 3/8 of one percent of taxable sales. The new funding is slated to expire in 25 years, if the constitution is not amended. The Legislature directed the University to work with EQB in developing the framework and the EQB expects to rely heavily on the University-led effort to meet its 2010 water planning mandate.

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

EQB consists of the Governor's representative (by law the board chair), nine state agency heads and five citizen members. The current board chair is also the Commissioner of Agriculture. In addition to the department of Agriculture, the nine agency heads represent the departments of Administration, Commerce, Employment and Economic Development, Health, Natural Resources, and Transportation, as well as the Pollution Control Agency and the Board of Water and Soil Resources. Many of the state agencies represented on the EQB administer water resources-related programs.

BWSR is the administrative agency for the state’s 91 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers (BWSR, 2009). The board consists of 17 Governor-appointed members, including local government representatives that deliver BWSR programs, state agencies, and citizens.
BWSR:

- Functions as the state soil conservation agency (MS 103B.101)
- Provides resolution of water policy conflicts and issues. (MS 103A.211, 103A.305, 103A.315, 103A.311)
- Implements comprehensive local water management acts (MS 103B.201, 103B.255, 103B.301)
- Provide forums for local water-related issues, priorities, and opportunities to be incorporated into state public policy (MS 103B.101)
- Administers the Wetland Conservation Act (MS 103G)

DNR's water programs deal with a variety of resource management issues, including the regulation of water appropriations and activities that affect public waters, dam safety, flood plain management, shoreland management, fish and wildlife management, and ecological resources management. DNR's Division of Waters issues permits to water users withdrawing greater than 10,000 gallons per day or 1 million gallons per year (DNR, 2009c). Public water suppliers servicing more than 1,000 people are required to have a Water Supply Plan (MS 103G.291) approved by DNR, which must be updated every ten years (DNR, 2009b). Other Division of Waters programs include the Floodplain Management and National Flood Insurance Programs, Dam Safety Program, Ground Water Monitoring Program, and Regional Hydrogeologic Assessment Program (DNR, 2009a).

MDH's water programs center on drinking water quality and protection. DOH reviews and approves plans associated with the installations, alternation, or extension of state water supply facilities (Minnesota Administrative Rules (MAR) 4720.0010), and administers the Source Water Assessment Program (MDH, 2009).

MPCA's water programs are aimed at protecting water quality and aquatic and riparian ecosystems. MPCA assists water management organizations in the Twin Cities Metropolitan area with the development of Watershed Management Plans, required by the Metropolitan Surface Water Management Act (MPCA, 2009d). These plans are revised every 5 to 10 years, and includes a land and water resources inventory, assessments of current and potential problems, goals and policies, and an implementation plan (MAR 8410). MPCA also conducts water quality and biological monitoring, and prepares assessments and upholds environmental regulations per U.S. Environmental Protection Agency (USEPA) requirements (MPCA, 2009c).

3. WATER MANAGEMENT VISION AND GOALS

The Environmental Quality Board brings together the Governor's Office (as chair), five citizens and the heads of nine state agencies that play a vital role in Minnesota's environment and development. The board develops policy, creates long-range plans and reviews proposed projects that would significantly influence Minnesota's environment. The board is responsible for coordinating public water management activities and, as part of its set of water-related duties, for developing a decadal state water plan (EQB, 2009a)."

The most recent state water plan establishes four long-term, statewide goals, and numerous objectives and indicators that include common goals and objectives developed by seven interagency river basin teams. The river basin teams represent the state's 10 major river basins (Figure 1). For planning purposes, the Minnesota, Des Moines, and Missouri River Basins were combined into one basin group and the Lower Mississippi and Cedar River Basins were grouped together.

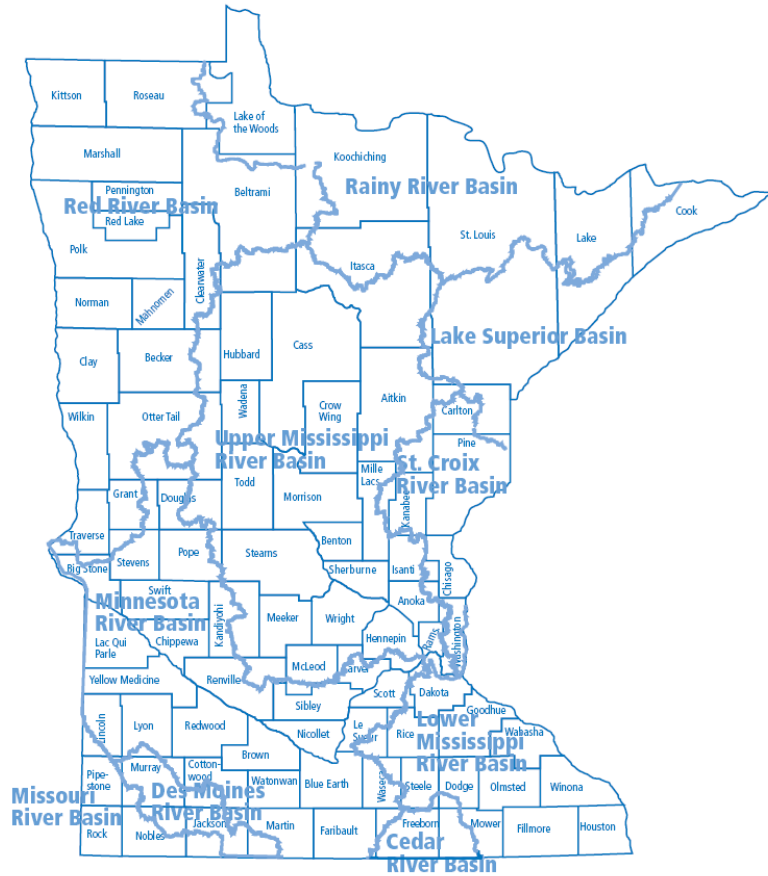


Figure 1. Minnesota’s Major River Basins (EQB, 2000)

Minnesota’s statewide water resources goals, objectives and indicators are:

1. *Minnesotans will improve the quality of water resources*

Objectives:

- *Protect and improve water quality in rivers, streams and other water courses*
 - *Indicator: Percentage of stream miles assessed that meet water quality standards and criteria*
- *Protect and improve lake water quality*
 - *Indicator: Percentage of lake acres assessed that meet water quality standards and criteria*
- *Protect and improve groundwater quality*
 - *Indicator: Percentage of drinking water wells sampled that meet nitrate standards*

2. *Minnesotans will conserve water supplies and maintain the diverse characteristics of water resources to give future generations a healthy environment and a strong economy*

Objectives:

- *Maintain groundwater levels to sustain surface water bodies and provide water supplies for human development*
 - *Indicator: Water levels in wells in relation to precipitation*

- *Maintain flow of rivers and streams within historical range of variation*
 - Indicator: *Number of dam operations that deviate from run-of-the-river operation: all dams operated run-of-the-river by 2010*
 - Indicator: *Number of dams removed*
 - Indicator: *Percent of floodplains lost*

- *Maintain the quality and diversity of the St. Croix River Basin's lakes, streams and wetlands while acknowledging regional variation*
 - Indicator: *Net increase in wetland acres*
 - Indicator: *Changes in wetland types and quality*
 - Indicator: *Changes in stream types*

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

Water resources planning and management in Minnesota in the last several years has focused on water quality, water supply and wetlands, as indicated by EQB's biennial policy report for 2008 to 2009 (EQB, 2007a).

Although Minnesota is considered a water-rich state, water supply and sustainability have emerged as a major issue. Between 1995 and 2005, water use in Minnesota grew 50 percent faster than the state population. The population is expected to grow another 26 percent by 2030 (EQB, 2007a). Water demand is particularly important in metropolitan areas such as the Twin Cities, but also can be significant in local areas across the state.

In its 2008 assessment of water sustainability, EQB acknowledged that Minnesota law governing the allocation of water resources is comprehensive and thorough, but that the state applies this body of law more in response to applications for water use than in planning for sustainable resource management.

To begin to change this picture, the board concluded that the state could strengthen its efforts by accelerating the strategic acquisition of hydrologic, hydrogeologic and ecological information and improving the tools it uses to apply this information.

Among other things, it argued that the state should:

1. Establish a long-term strategy for generating and managing the information needed to integrate water sustainability assessment results into regulatory programs on a statewide basis. This strategy must address the legal, financial and security issues that influence public access to this information. Strategy elements also should include:
 - Allocation plans by aquifer and watershed
 - Continuing efforts to build, maintain and use existing models, such as the Metropolitan Council ground water model
 - New efforts to assess regional water availability and sustainability using a variety of methods, models and mapping

2. Identify defensible criteria for assessing the critical water levels or flow conditions required to support ecosystems. The criteria should consider ecosystem-sensitive practices that protect critical components of the hydrograph, including:
 - A habitat- and population-based minimum flow
 - A high flow protection standard that protects critical habitat-forming and silt-flushing high flows
 - Protections for downstream needs
 - Protections for the natural variability of flows over time (hydrograph shape)
3. Work with local governments, regional development staff and others to plan and manage water systematically at an area-wide scale through designated *water appropriation and use management areas*. It should identify priority areas and priorities for their implementation based upon a system of criteria that includes an assessment of an area's water sustainability limits, the competition for water, water quality concerns, future growth prospects and local interest.
4. Understand how state and local activities and incentives to encourage economic development may affect water availability and sustainability in the areas of interest prior to release of funds or approval of plans.
5. Develop a system of incentives to reward local units of government that incorporate water availability and sustainability considerations into their water and land use plans and decisions.
6. Develop Minnesota's resource system planning capability, including efforts to define water sustainability limits; link water management to land use decision-making; seek opportunities for conjunctive surface and ground water management; and consider the use of economic mechanisms in water management.
7. Continue to track and assess the implications of population, economic, climate and land use changes on management practice, sustainability planning and priority setting.
8. Examine opportunities to employ economic policies and incentives in support of sustainable water management. These should include:
 - Requiring water users to conduct more aquifer and watershed monitoring and to help support information systems development and analysis
 - Providing additional incentives for water conservation and wise management
 - Encouraging consideration of alternative water supplies, gray water reuse, conjunctive use and other water saving measures when siting high water uses or designing infrastructure
 - Developing methods for making credible estimates of the value of ecosystem services, as well as the economic implications for communities and individuals of water use policies and prospects
9. Develop a water sustainability data acquisition plan for inclusion in the 2010 state water plan that: a) sets priorities and standards for the next decade of data collection and funding; b) identifies the lead agency for collecting specific data types; c) provides for a routine appraisal of data collection efforts; and d) sets timelines for lead agencies to collect high priority data.
10. Define a strategy for integrating the information needed to assess water sustainability at statewide, regional or county scales.

In 2005, the Legislature charged the Metropolitan Council, a regional planning agency serving the seven counties in the Twin Cities metropolitan area, with the development of a regional water supply plan (MS 473.1565). In March 2009, the Council released a draft of its Master Water Supply Plan on its website (Metropolitan Council, 2009b). The plan defines one over-arching goal and several guiding principles, which are:

- *Ensure a sustainable water supply for current and future generations*
 - *Water supply planning is an integral component of long-term regional and local comprehensive planning*
 - *An understanding of the region's long-term water supply availability and demand is necessary to identifying a specific community's or sub-region's water sources*
 - *All hydrologic system components, naturally occurring and man-made, must be carefully evaluated when making water infrastructure plans*
 - *The quality of the region's water is a critical component of water supply planning*
 - *Interjurisdictional cooperation is a viable option for managing short-term water supply disruptions and sustainably meeting long-term water supply needs*
 - *Regional and local cost-effectiveness and equity are considered when identifying water supply options*
 - *Wise use of water supplies is critical to ensuring adequate supplies for future generations*

A major component of the Master Water Supply Plan is an interactive web application call Make-a-Map that provides users access to GIS datasets and the ability to construct customized maps (Metropolitan Council, 2009a). Another component of the plan is a numerical groundwater flow model for the region called Metro Model 2, which can identify potential supply problems. The plan states that the Metropolitan Council will continually update and recalibrate the model using current data.

Minnesota also maintains a statewide drought plan, developed by DNR (2006). The drought plan describes the state's on-going management and mitigation activities and defines drought response actions.

Water demand statewide is expected to increase as demands for alternative forms of energy are developed. Minnesota's Energy Planning Report development by the Department of Commerce (OES, 2001), discusses energy options for Minnesota. Significant hydroelectric resources within the state have already been captured and used for electricity generation for several decades. Therefore, development of additional hydropower operations is not considered as part of energy plan for meeting the state's additional energy needs. The state's focus has been on the development of ethanol and biodiesel.

Minnesota's preliminary Climate Change Action Plan (OES, 2008), developed by the Department of Commerce's Office of Energy Security (OES) and the Minnesota Climate Change Advisory Group, provides a roadmap to reach the state's goal of reducing "statewide greenhouse gas emissions across all sectors producing those emissions to a level at least 15 percent below 2005 levels by 2015, to a level at least 30 percent below 2005 levels by 2025, and to a level at least 80 percent below 2005 levels by 2050" (MS 216H.02) (OES, 2009). According to the MPCA (2009 Ethanol), as of August 2008, Minnesota has 19 operating ethanol facilities with a

combined production capacity of 856 million gallons per year. Approximately seven more facilities are proposed or in the early planning stages, which could bring Minnesota's capacity to ~1.7 billion gallons per year. Consumption of ethanol is estimated to reach 572 million gallons in 2012 (Figure 2). To date, no formal estimates of water demand associated with increased ethanol and biodiesel production have been made.

Financial assistance is available through the state's Clean Water State Revolving Fund administered by the MPCA (MPCA, 2009b) and through the Drinking Water Revolving Fund administered by MDH.

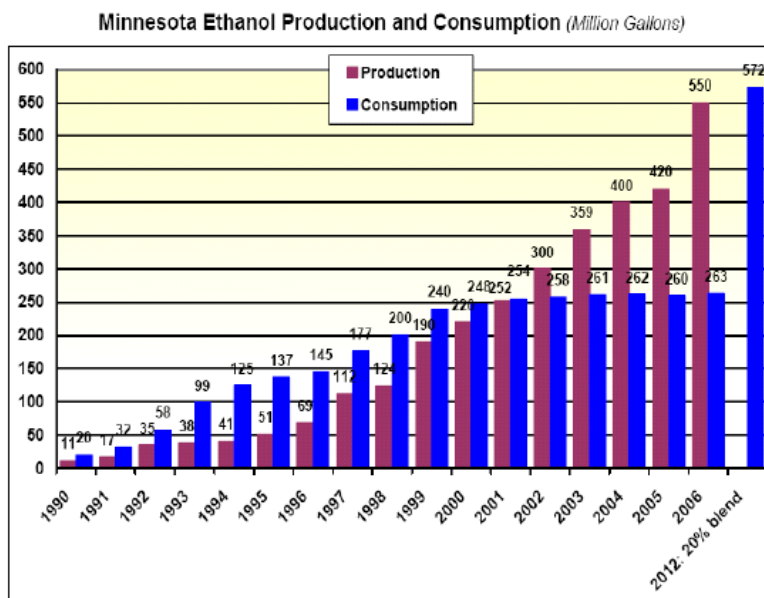


Figure 2. Estimated consumption based on 20% blend ethanol by 2012
 Source: Agricultural Marketing Services Division, MN Department of Agriculture

Figure 2. Past and Projected Ethanol Production and Consumption (EQB, 2007a)

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

EQB and the state's major water resource agencies, DNR, DOA, PCA, DOH, and BWSR, work with many federal, state, regional, and local entities on water resources issues. At the federal level, Minnesota partners with the U.S. Geological Survey, USEPA, U.S. Army Corps of Engineers, U.S. Department of Agriculture's Natural Resources Conservation Service, and the U.S. Department of the Interior's National Park Service. State and local partners include:

- Metropolitan Council
- Minnesota Geological Survey
- State Universities
- Minnesota River Basin Joint Powers Board
- Arrowhead Regional Development Commission
- Bois Forte Band of Chippewa Indians
- Red Lake Band of Chippewa Indians
- Rainy River First Nations

- Southeastern Minnesota Water Resources Board
- Cannon River Watershed Partnership
- Minnesota-Wisconsin Boundary Area Commission
- Whitewater River Watershed Project
- South Zumbro Watershed Partnership
- Prairie Island Indian Community
- St. Croix Band of Chippewa
- Soil and water conservation districts
- Local water planners
- County planning departments

The public is involved in local, regional, and state water resources planning through the various watershed organizations, soil and water conservation districts, and the Metropolitan Council. During the development of the 2000 state water plan, private citizens were able to participate in their respective river basin groups to help identify key water resources issues and to establish goals and priorities.

6. PLAN IMPLEMENTATION STRATEGY

The EQB prefers to work through its partners to implement the State Water Plan. The priorities report series serves to evaluate progress toward the goals outlined in the State Water Plan and identify opportunities for the EQB and its local and state partners to take actions in response to water plan recommendations.

EQB's policy and priorities report for 2008 to 2009 (EQB, 2007a) makes recommendations to the Legislature for funding of programs aimed at:

- Increasing water quality monitoring
- Developing total maximum daily loads (TMDLs)
- Providing landowner assistance in the implementation of best management practices
- Continuing research on the effectiveness of best management practices
- Providing assistance to small, unsewered communities
- Developing water interconnection between Minneapolis and St. Paul for emergency water supply
- Continuing research on water supply and sustainability
- Monitoring, mapping, and assessing state wetlands

Since 2007, the Clean Water Council, a stakeholder-based advisory committee, issues a report to the Legislature on water quality needs and priorities. The biennial report on the Clean Water Legacy Act (CWC, 2008) provides the following recommendations to the Legislature:

- Develop a statewide watershed approach to prioritize and integrate monitoring and assessment, TMDL, and restoration and protection activities.
- Dedicate \$14.95 million in FY2010–2011 for monitoring and assessment, with an emphasis on monitoring lakes and streams using a watershed framework. All priority waters in all major watersheds will be assessed on a 10-year cycle.

- Dedicate \$20.61 million towards the development of TMDLs.
- Increase funding for restoration and protection efforts.
- Invest in infrastructure for wastewater and stormwater treatment.
- Advance research for effective Clean Water Legacy Act implementation.
- Invest in civic engagement to enhance long-term success of restoration and protection efforts.

A breakdown of the CWC's budget recommendations is provided in Table 1.

Table 1. CWC Budget Recommendations (CWC, 2008)

CWLA Funded Activities (dollars in millions)	FY07 (one-time funding)	FY08-09 (one-time funding)	FY10-11 Recommendations
Water Quality Assessment & Monitoring			
State, citizen and local monitoring activities	\$2.140	\$14.524	\$14.524
Endocrine disruptor monitoring/analysis	–	\$0.375	\$0.375
Subtotal	\$2.140	\$14.899	\$14.899
TMDL Development			
TMDL development and technical assistance	\$3.170	\$20.610	\$20.610
Civic engagement in TMDL development	–	–	\$0.900
Subtotal	\$3.170	\$20.610	\$21.510
Nonpoint Source Protection & Restoration			
Nonpoint restoration/cost share/ incentive payments	\$1.500	\$3.316	\$19.320
Nonpoint restoration engineering/technical assistance	\$2.250	\$3.000	\$6.000
Nonpoint protection activities	\$1.410	\$1.000	\$10.000
Stream bank, stream channel, lakeshore, roadside protection and restoration projects (SLR)	\$1.000 (bonding)	–	\$4.000
Reporting, evaluation & research	\$0.600	\$0.400	\$0.600
County ISTS	\$0.730	\$2.450	\$5.000
Imminent threat/failing ISTS grants	–	\$1.000	\$2.000
Feedlot water quality grants	–	\$3.000	\$6.000
AgBMP Loan Program	\$1.200	\$2.500	\$5.000
Agricultural technical assistance (including pilot projects)	\$0.400	\$0.400	\$0.600
Research on agricultural BMP effectiveness & load allocations	\$0.800	\$1.100	\$2.000
Riparian land protection	\$1.340	–	–
Civic engagement in restoration & protection activities	–	–	\$0.900
Subtotal	\$11.230	\$18.166	\$61.420
TOTAL	\$24.950*	\$53.975	\$97.829**

7. OUTCOMES ASSESSMENT PROCESS

Minnesota's 2000 State Water Plan was developed after an extensive assessment of progress that the state made in relationship to its previous water plan published in 1991, "Minnesota water plan: directions for protecting and conserving Minnesota's waters." See Soundings: A Minnesota Water Plan Assessment, which detailed point-by-point assessments of the status of each water plan recommendation. In addition, each biennial report published by EQB since 2000 contains major accomplishments and actions made toward the state priorities developed in the previous biennium.

In the 2005 to 2007 biennium, the state's recommended priorities were:

- *Protect core state water activities and meet strategic long range needs.*

- *Make the commitment to restoring impaired waters.*
- *Promote Twin Cities water supply sustainability.*

In the 2008 to 2009 Priorities Report, EQB lists the following accomplishments:

For core water activities

- *Evaluated state wetland conservation efforts*
- *Protected core water functions funded through the General Fund*
- *Increased drinking water protection fees to fund needed water testing*
- *Brought citizens into Environment and Natural Resources Trust Fund decisions, creating the new Legislative Citizen Commission on Minnesota's Resources*

For impaired waters

- *Enacted the Clean Water Legacy Act, providing a new operational framework, tools and first-year start-up funding to protect and restore water quality*
- *Created the Clean Water Council, a citizen/state advisory group charged with making recommendations on implementation*
- *Accelerated testing of Minnesota's waters*
- *Began to develop specific plans (TMDLs) to clean up Minnesota's most contaminated waters*
- *Targeted additional financial resources to existing state and local programs to improve water quality*
- *Leveraged additional federal, local and private resources*

For water supply sustainability

- *Adopted legislation directing Metropolitan Council to create a Metropolitan Water Supply Plan*
- *Created a Metropolitan Region Water Supply Advisory Committee*
- *Funded development of a regional water supply master plan*
- *Began work to understand the issue statewide*

Future updates to the state water plan may include a formal assessment of the state's water planning outcomes since the current plan lists environmental indicators and targets at both the state and river basin levels. In addition, they will integrate ideas and recommendations developed by the University of Minnesota in its water sustainability framework planning process.

8. NEEDS, CHALLENGES AND CRITICAL PRIORITIES – INTERVIEW INSIGHTS

Minnesota is currently focusing its planning priorities on evaluating the sustainability of water use trends - recognizing the difference between using the water that's available and managing the resource in a way which ensures it will be available in the future. The state is taking a closer look at the ethanol biofuel industry in particular to better manage its water use habits.

The state needs more monitoring data and data management to meet its water resource management goals. Funding has also been an issue, in that programs are funded one by one instead of based on a comprehensive look at the statewide water planning initiatives. Minnesota

would also like to be able to make a distinct connection between permit fees and environmental value, which is something that has not been fully understood yet.

The state relies on university research to better understand climate change. Currently, water issues are mentioned in Minnesota's climate change policy documents, but the state needs to include specific climate change effects in the statewide water planning efforts.

Minnesota has relied on the USGS for information on water availability; in particular groundwater-surface water interactions. The state would like to see more USACE involvement and expertise with large river basin modeling studies.

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