

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

**STATE OF IOWA**

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 IOWA

## 1. STATE/REGIONAL WATER PLANNING STATUS

The Iowa Department of Natural Resources (IDNR) is the state's lead agency dealing with water resources planning and management. IDNR's Water Quality Bureau (WQB) functions primarily as a water quality planning and management agency, with water supply as a secondary responsibility (IDNR, 2009d). WQB also works closely with IDNR's Geological Survey to conduct water quality and quantity monitoring.

Iowa's last comprehensive, statewide water plan was published in 1978 by the now dissolved Iowa Natural Resource Council (NRC). In 1985, the Department of Water, Air, and Waste Management (DWAWM) developed a more specific plan that described the availability and quality of Iowa's surface and groundwater resources, provided estimates of current and future use, proposed an implementation plan, and considered water allocation planning to meet projected needs. Both the NRC and DWAWM were consolidated into the IDNR in 1986 as part of a reorganization of state government.

The IDNR is currently in the process of updating the state's comprehensive water plan. In total the plan will have 8 chapters focusing on different areas of water resources management, with the goal of completing 2 chapters a year and posting them on the IDNR website as they are updated. The first two chapters being developed focus on water quantity and allocation and floodplain management. The next scheduled chapters will focus on water quality and recreation.

In 2007, IDNR developed a Strategy for the Management of Iowa's Water Resources (IDNR, 2007) which serves as an update on water quantity and allocation issues described in the 1985 plan. The strategy establishes four objectives:

1. Characterize Iowa's surface and groundwater resource availability, quality, use, and sustainability and compile data into a centralized web-based system.
2. Identify and estimate present and future water use by geographic area and types of user groups.
3. Make necessary policy recommendations for the sustainable use of Iowa's water resources.
4. Implement a comprehensive, real-time water resource permitting, management and development system.

In 2006, the Iowa Legislature created the Watershed Quality Planning Task Force to discuss and present to the General Assembly, recommendations for a voluntary statewide water quality program (IDNR, 2009h). Specifically, the Task Force was charged with developing a report containing recommendations on the following issues:

- *Improving water quality*
- *Creating economic incentives for voluntary non-point source discharge reductions*
- *Facilitating implementation efforts*

- *Providing incentives for the development of new and more accurate quantifiable pollution control protocols and procedures*
- *Providing greater flexibility through community-based, non-regulatory, performance-driven watershed management planning.*

In their final report, the Task Force made the following recommendations (WQPTF, 2007):

- *Create a water resource coordinating council with a goal of developing an integrated approach to water resource management. Current approaches to water resources management in the state are viewed as insufficient by the task force. Using an integrated approach would help “overcome old polarities such as quantity versus quality, land versus water, the chemical versus the physical and biological, supply versus demand, political boundaries versus hydrological boundaries, and point versus non-point.*
- *Develop a water quality research and marketing campaign to encourage a conservation ethic among Iowans.*
- *Create and support a regional watershed assessment program at the HUC-8 scale. There are approximately 56 HUC-8 watersheds in Iowa and the program goal would be to assess 11 watersheds per year for five years.*
- *Once regional watershed assessments are complete, prioritize sub-watersheds and develop sub-watershed scale plans. These plans should include objectives, assessments of the watershed’s physical, social, and financial resources, analysis of alternatives, an implementation plan, and an evaluation process to measure results.*
- *Provide technical and financial support for locally-based watershed monitoring.*
- *Address aging wastewater and combined sewer/stormwater infrastructure problems to ensure compliance with current and future water quality standards.*

Based on the recommendations of the Watershed Quality Planning Task Force, the Iowa Legislature passed HF 2400, the Surface Water Protection Act, in 2008. HF 2400 sets up a structure to implement the task force’s recommendations but does not provide additional funding. The bill establishes the Water Resources Coordinating Council (WRCC) within the Governor’s Office whose members include:

- The Governor, or designee, who serves as the chair
- Director of the Department of Natural Resources, or designee
- Director of the Soil Conservation Division, or designee
- Secretary of Agriculture, or designee
- Director of the Department of Public Health, or designee
- Director of the Homeland Security and Emergency Management Division, or designee
- Dean of the College of Agriculture at Iowa State University, or designee
- Dean of the College of Public Health at the University of Iowa, or designee
- Dean of the College of Natural Sciences at the University of Northern Iowa, or designee
- Director of the Department of Transportation, or designee
- Director of the Department of Economic Development, or designee
- Director of the Iowa Finance Authority, or designee

The Council is directed to “use an integrated approach to water resource management, recognizing that insufficiencies exist in current approaches and practices, as well as in funding sources and the utilization of funds. The integrated approach used by the council shall attempt to overcome old categories, labels, and obstacles with the primary goal of managing the state's water resources comprehensively rather than compartmentally (Iowa Code (IC) 466B.3(2)).” The Council is also charged with overseeing a regional watershed assessment, planning and prioritization program (466B.3(4)(b)(vii) and 466B.5). Initial watershed assessments are scheduled to be completed within five years. Once completed, the Council is responsible for prioritizing watersheds and facilitating the development of community-based sub-watershed improvement plans. A long-term comprehensive statewide water quality and quantity plan is also expected to be developed by the Council once the assessments are completed. This plan will be updated every five years as regional watershed assessments are updated.

Following the extensive flooding that occurred in Iowa in 2008, the Legislature expanded the purpose of the 2008 act to include floodplain issues. In addition the WRCC was expanded to include a representative from the University of Iowa Engineering Department and the Rebuild Iowa Office.

Beyond information in what is now known as the Surface Water Protection and Flood Mitigation Act, there is no Council website that provides an overview of current and future planning activities.

IDNR in cooperation with a number of its partners has begun to develop regional watershed assessments for the HUC-8 basins of the state. USDA/NRCS is implementing a similar activity by implementing their protocol for the development of Rapid Watershed Assessments. The DNR effort is complimentary to the NRCS effort and approaches the issue of assessment from a slightly different perspective so not to be duplicative.

Developing a comprehensive state water plan was also identified as a priority by the Director of IDNR (IDNR, 2008):

*Iowa needs a comprehensive and dynamic state water plan, and as the state agency primarily responsible, the Iowa DNR should coordinate and implement this plan. It is our role to coordinate stakeholders and achieve a plan that takes “the long view,” projecting clean and sustainable use of our water resources well into the future. Elements of this plan will include water quantity, water quality, anti-degradation policies, prioritization of watershed clean-up, contingency planning for floods and droughts, etc.*

IDNR in cooperation with its partners is beginning the process of consolidating a number of its planning functions on a basin basis. The state has been divided into nine primary river basins that will serve as planning and implementation units for water resource issues.

## 2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

IDNR's Director serves as a member of the Water Resources Coordinating Council.

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IDNR also administers the state's flood and floodplain management, dam safety, nonpoint source pollution, stormwater, private well construction, and TMDL programs.

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## 3. WATER MANAGEMENT VISION AND GOALS

IDNR's mission is, "to conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life for Iowans and ensure a legacy for future generations (IDNR, 2009)." Its department goals are (IDNR, 2009b):

- *Iowans will value and engage in our natural resources.*
- *Iowans will have a healthy and safe environment.*
- *There will be abundant, high quality opportunities for responsible use and enjoyment of natural resources.*
- *IDNR employees will be our greatest strength.*

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

More than 90 percent of Iowa's land is managed for agriculture. Of that land, 65 percent is in row crop production. This high concentration of row crop and livestock land management results in significant impacts on water resources quality and quantity as well as the way the planning and management of water resources is conducted in Iowa. Non-point source water pollution from agricultural runoff is a dominant water quality issue in the state. Because the state of Iowa has no regulatory authority to control non-point source pollution, pollution control and abatement is accomplished through programs that promote the implementation of best management practices (BMPs), by use of voluntary incentives that include cost-sharing and low-interest loans. The IDNR relies on local soil and water conservation districts to educate and provide incentives to farmers and land owners about the advantages proper land management can have on water quality.

Two issues that have garnered the most attention in water resources planning in recent years have been flood control and water supply management and allocation. Flooding in 2008 piqued an interest in planning for flood control. In addition the recent rapid growth in the biofuels industry has created concern over water availability in Iowa. These two issues have been the focus of the first part of the state's developing comprehensive water resources plan.

The Strategy for the Management of Iowa's Water Resources establishes the following priorities for state monitoring and modeling (ranked in order that IDNR proposes to investigate them):

1. Dakota Aquifer—identified in the IDNR rules as an aquifer that must be monitored to prevent excessive water level declines.
2. Jordan/Prairie du Chien-St. Peter/Dresbach—Jordan is another aquifer identified in the IDNR rules for monitoring. The aquifer has a relatively low recharge rate. Currently, the aquifer provides 14 percent of Iowa residents with drinking water.
3. Alluvial Aquifers—are a source of drinking water for 30 percent of Iowans. There are five major alluvial systems: Missouri & Mississippi River, Northwest Iowa, portions of the Skunk, Des Moines, and Racoon River, Cedar & Iowa River, and Southwest Iowa.
4. Silurian/Devonian Aquifer—source of drinking water for 15 percent of residents. The aquifer is vulnerable to contamination from geothermal wells.
5. Buried Sand and Gravel Aquifers—used by 12 percent of residents for drinking water. These aquifers are the least understood with very little available data. There are four areas: Cleona Channel, Fremont Channel, Skunk River, and unnamed aquifers.
6. Mississippian Aquifers—serves 4 percent of residents and is broken into two areas: north central and southeast Iowa.
7. Ordovician Aquifer above the St. Peter Sandstone—used by 2 percent of the population for drinking water.

Currently, drinking water programs are administered by WQB's Water Supply Section. These drinking water programs are distributed between two sections (IDNR, 2009f): Water Supply Engineering and Water Supply Operations. Water Supply Engineering program areas include:

- Public Water Supply construction permits
- Drinking Water State Revolving Fund (SRF) Program
- Source Water Assessment and Protection Program
- Public Water Supply capacity development
- Water Use and Allocation
- Optimization Program (AWOP)

Water Supply Operations program areas include:

- Inventorying all public water supplies
- Operation permit requiring routine water quality monitoring
- Oversight of water quality results (compliance and enforcement)
- Certification of water and wastewater operators, well contractors and pump installers
- Certification of environmental laboratories
- Private wells and septic systems and financial assistance

IDNR funds water resource projects through the Drinking Water SRF Program (IDNR, 2009c), the Clean Water SRF (CWSRF) (IDNR, 2009), and Iowa Water Quality Loan Fund (WQLF) (IDNR, 2009a). The WQLF offers four programs to address water quality issues due to nonpoint source pollution (IDNR, 2009e):

1. Local water protection—primarily for landowners to address non-point source water quality issues affecting streams and lakes
2. Livestock water quality facilities<sup>1</sup>
3. Onsite wastewater systems assistance—available to existing homeowners for replacement of outdated septic systems with approved onsite systems
4. General nonpoint source—eligible projects include, but are not limited to: restoration of wildlife habitat, streambank stabilization, urban stormwater management, remediation of storage tanks, water conservation and reuse, and wetland flood prevention. Loans are also available for water quality components of other projects such as municipal landfill closure, Brownfields remediation, and bird sanctuaries

In 2007, the Iowa Climate Change Advisory Council (ICCAC) was established. ICCAC was tasked with developing policies and cost-effective strategies to reduced greenhouse gas emissions statewide. The Council consists of 23 Governor-appointed members from various stakeholder grounds, and four non-voting members from the General Assembly. In their final report, the ICCAC recommended 56 energy policies. These policies do not take into consideration other mitigation activities to minimize the negative effects of climate change. There are uncertainties regarding how climate change will impact Iowa's water resources and the

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<sup>1</sup> Programs 1 and 2 are jointly administered by IDNR, the Iowa Department of Agriculture and Land Stewardship, and local Soil and Water Conservation Districts.

state is in the process of conducting additional research and developing predictive modeling capabilities to be able to position themselves to better predict the impacts of climate change.

Iowa's Office of Energy Independence (IOEI) was also established in 2007. IOEI is responsible for setting Iowa's strategic direction for a clean energy future. From 2007 to 2010, IOEI is authorized to distribute \$25 million a year in grants and loans that will go towards projects that aid the state in gaining energy independence (IOEI, 2008). In their 2008 Energy Independence Plan, IOEI makes the following recommendations:

- *Promote the development of an environmentally sound biomass industry in Iowa.*
- *Enhance the economic and environmental viability of the biofuels industry.*
- *Develop a biomass feedstock supply infrastructure for second generation biofuels.*
- *Support development and deployment of integrated biorefineries.*
- *Improve the analysis used to develop greenhouse gas performance measures.*

At this time, it is unclear how the state's push toward energy independence through increased production of biofuels will affect state water demands.

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

For water resources planning and management, IDNR partners with several federal agencies including U.S. Department of Agriculture's (USDA) Natural Resource Conservation Service who has worked with the IDNR in addressing flooding issues and providing money for easements on agricultural floodplain ground. Other federal partners include the USDA-Agricultural Research Service, U.S. Environmental Protection Service, U.S. Geological Survey and U.S. Fish and Wildlife Service. IDNR is currently looking to develop better relationships with the U.S. Army Corps of Engineers to embark on a joint effort to create river basin plans throughout the state. Within the state, IDNR partners with numerous state agencies and regional entities such as the Department of Transportation, Department of Agriculture and Land Stewardship, Department of Economic Development, Department of Homeland Security and Emergency Management, Iowa State University, University of Iowa, University of Northern Iowa, and numerous organizations and associations.

The public is involved in watershed-level planning through IDNR's Watershed Improvement Program (IDNR, 2009g). IDNR provides technical and financial assistance to watershed groups to plan, organize and complete watershed projects aimed at reducing non-point source pollution and flooding.

Stakeholder involvement is a major emphasis of the IDNR in tackling the state's various water resources challenges. IDNR works with local soil and water conservation districts to implement their projects and lead the charge for stakeholder involvement. IDNR's approach is to get stakeholders involved in water resources planning and management at the local level where their knowledge and behaviors can have direct impacts on how water resources are managed. This approach is especially salient in dealing with the potential water quality impacts resulting from improper agricultural land management. The overall lack of staff needed to generate interest in

watersheds and local water resources issues has created a hurdle in achieving the desired level of stakeholder engagement.

## 6. PLAN IMPLEMENTATION STRATEGY

IDNR's Water Resource Strategy includes a budget (Table 1) and draft implementation schedule (Figure 1) from FY08 to FY18. The Water Resources Strategy represents information/science needs that would support an updated comprehensive water plan that focuses on state water issues beyond water supply. Expected outcomes of the Water Resources Strategy are (IDNR, 2007):

1. Development of a comprehensive data system
2. Improved water use planning and decision making
3. Full implementation of required water resource programs

However, for implementation to actually be enacted, the right level of political support is needed to ensure funds are appropriated for projects and associated management actions.

**Table 1. Budget Needs for IDNR's Water Resources Strategy (IDNR, 2007)**

Element	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19
1 Stream Gauge Installation	0	187,000	0	0	0	0	0	0	0	0	0	0
1 Stream Gauges	30,000	97,000	102,000	107,000	112,000	118,000	124,000	130,000	136,000	143,000	150,000	158,000
1 Groundwater Level Monitoring	60,000	105,000	110,000	116,000	122,000	128,000	134,000	141,000	148,000	155,000	163,000	171,000
2 Targeted Water Resource Data Collection	0	336,000	353,000	370,000	389,000	409,000	430,000	258,000	272,000	286,000	302,000	317,000
3 Characterization of Water Resources	425,000	512,000	543,000	575,000	609,000	647,000	685,000	727,000	770,000	338,000	358,000	380,000
4 Maintenance of Water Resource Characteristics	0	0	275,000	292,000	309,000	328,000	347,000	368,000	390,000	414,000	438,000	465,000
5 Development of Predictive Models and web-based database	165,000	347,000	325,000	345,000	365,000	387,000	410,000	435,000	461,000	489,000	518,000	0
6 Maintenance of Predictive Models and web-based database	0	0	125,000	133,000	140,000	149,000	158,000	167,000	177,000	188,000	199,000	211,000
7 Policy Review	0	0	0	0	0	0	0	0	0	0	0	0
8 Water Allocation Permitting	300,000	600,000	636,000	674,000	715,000	757,000	803,000	851,000	902,000	956,000	1,014,000	1,075,000
Total	980,000	2,184,000	2,469,000	2,612,000	2,761,000	2,923,000	3,091,000	3,077,000	3,256,000	2,969,000	3,142,000	2,777,000
Existing Level of Effort	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Environment First Appropriation	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000
Funding Needed		1,204,000	1,489,000	1,632,000	1,943,000	1,943,000	2,111,000	2,097,000	2,276,000	1,989,000	2,162,000	1,797,000

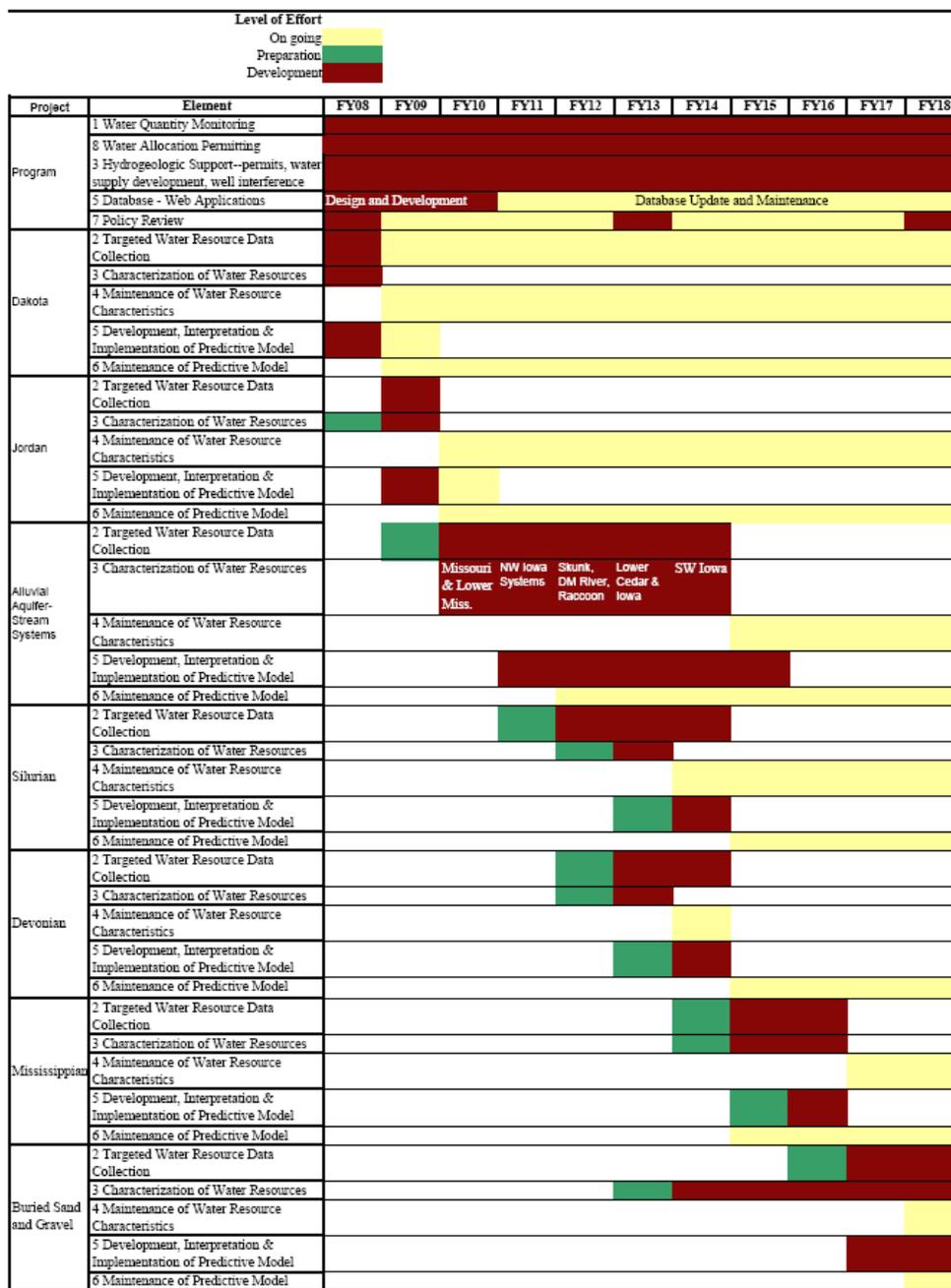


Figure 1. Draft Water Resources Strategy Implementation Schedule (IDNR, 2007)

## 7. OUTCOMES ASSESSMENT PROCESS

There is no defined outcomes assessment process in Iowa’s state water planning efforts at this time.

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

The key water resources issues/needs in the state of Iowa are:

- Addressing water quality issues resulting from agricultural land management
- Generating local community involvement to connect people to their watersheds and practice BMPs
- Demand for water driven in part by recent growth in biofuels industry
- Professional staff to administer programs and develop basin plans
- Water resources planning that is less reactive and more proactive
- Development of a successful partnership with the USACE and others to develop river basin plans

The primary water resources concern in Iowa is centered on the concentration of agriculture within the state. With greater than 90 percent of its area in agricultural production, Iowa is highly susceptible to non-point source water quality problems due to contaminated runoff as well as flooding susceptibility due to the lack of perennial vegetation. Because non-point source pollution is not regulated, local stakeholder behaviors have the greatest potential to improve the impacts of agriculture on water quality through the implementation of BMPs.

Iowa is currently working on an updated comprehensive water resources plan that follows the structure of the state's previous plan published in 1985. The approach of the plan in progress is a focus on basin level planning that examines water quantity, water quality, floodplain management, and recreation needs. The plan is tentatively scheduled to be completed in 4 years, however, challenges due to inadequate staff and funding have the potential to hinder progress. In addition, Iowa is seeking to develop a better relationship with the USACE to supply resources and expertise in conducting water resources planning.

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