

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF ILLINOIS

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 ILLINOIS

1. STATE/REGIONAL WATER PLANNING STATUS

In 2006, then Governor Blagojevich issued Executive Order 2006-1 that directed the Department of Natural Resources' (DNR) Office of Water Resources (OWR) and the Illinois State Water Survey (ISWS) to:

1. Define a comprehensive program for state and regional water supply planning and management and develop a strategic plan for its implementation consistent with existing laws, regulations and property rights.
2. Provide for public review of the draft strategic plan for a water supply planning and management program.
2. Establish a scientific basis and an administrative framework for implementing state and regional water supply planning and management.
3. Develop a package of financial and technical support for, and encouragement of, locally based regional water supply planning committees. These committees, whether existing or new entities, shall be organized for participation in the development and approval of regional plans in the Priority Water Quantity Planning areas.
4. By December 31, 2006, ensure that Regional Water Quantity Plans are in process for at least two Priority Water Quantity Planning Areas.

To begin the effort, regional water quantity planning was initiated in two pilot priority planning areas in east central and northeastern Illinois (Figure 1). These two planning areas include the top three prioritized aquifer systems and two of the top five prioritized watersheds identified in the ISWS publication "Prioritizing Illinois Aquifers and Watersheds for Water Supply Planning (ISWS, 2004b)." Areas were identified and prioritized based on water supply availability, current and projected population and economic growth, and the perceived benefits and urgency for water supply planning (ISWS, 2009c).

In both planning areas, major planning issues involve drought, climate change, growing water demand associated with biofuel/ethanol production, and groundwater and surface water interactions. Water demand due to projected population and economic growth in these areas is expected to increase by 20 to 50 percent in coming decades (ISWS, 2009c). Water supply planning in east central Illinois focuses on the Mahomet Aquifer and the Sangamon River Watershed. In northeastern Illinois, planning focuses on the deep bedrock aquifer system and the Fox River Watershed. The planning effort is facilitated by the Mahomet Aquifer Consortium in the east central region and by the Chicago Metropolitan Agency for Planning in the northeast. All agencies were charged with specific planning tasks (ISWS, 2009c).

Pilot projects were given a 3-year budget starting in July 2006. Funds were managed through OWR with \$1.5 million going to the regional committees and \$3.24 million allocated to the Illinois State Geological Survey (ISGS) and ISWS to conduct supporting geologic and hydrologic studies. In year 3 of the project (July 2008 to July 2009), the water supply planning initiative was cut from the state budget (Mahomet Aquifer Consortium, 2008). . Additionally, collection of new geologic and hydrologic data for the study was curtailed. Despite this setback,

the regional committees continued to meet and the scientific surveys continued their supporting role through expenditure of internal survey funds.

By June 2009, both regional water supply planning groups are expected to develop a final report that summarizes the findings of the supply/demand study and provides recommendations for regional and statewide water supply planning and management. Based on the outcomes of the two water supply planning areas, the state envisioned that additional water supply planning areas would be formed starting in FY2010 (Mahomet Aquifer Consortium, 2008). However, due to budget constraints, it is unclear whether this initiative will move forward.

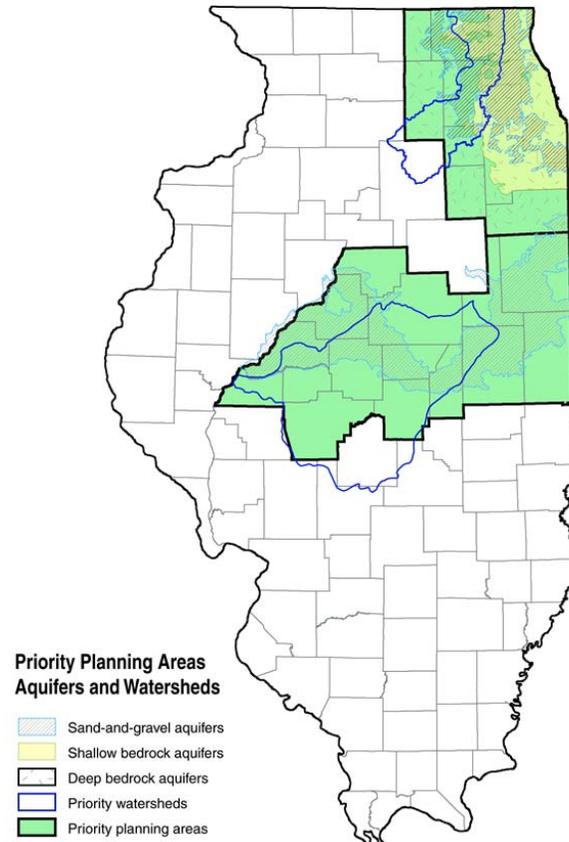


Figure 1. Priority Planning Areas for State Water Supply Planning (ISWS, 2009d)

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

IDNR's OWR is the state's lead agency for water resources planning, navigation, and floodplain management and serves as the state's representative in interstate organizations on water resources. OWR works with other state entities to provide drought response, produce flood emergency situation reports, and conduct comprehensive reviews of Illinois water use law (IDNR, 2009a). In addition, OWR administers several regulatory programs that oversee construction in floodways, construction along the shores of Lake Michigan, diversion of water from Lake Michigan, and water withdrawals from state reservoirs such as Lake Shelbyville, Carlyle Lake, and Rend Lake.

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ISWS is a division of the University of Illinois at Urbana-Champaign's Institute for Natural Resources Sustainability (INRS). Four centers and one national program compose ISWS: Center for Atmospheric Science, Center for Chemistry & Technology, Center for Groundwater Science, and Center for Watershed Science, and the National Atmospheric Deposition Program. ISWS and other state scientific surveys such as the Illinois State Geological Survey (ISGS) are the state's primary agencies responsible for producing and disseminating scientific and technological information, services and products related to the environment and economic development (ISWS, 2009b).

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The Illinois Environmental Protection Agency's (IEPA) Bureau of Water handles water pollution control and public water supply programs in a integrated approach to address federal and state regulations that deal with water pollution and water supply issues (IEPA, 2009a). Among the Bureau of Water's responsibilities is to oversee watershed management and planning in the state.

The Bureau of Water (IEPA, 2009a):

- Ensures that Illinois' rivers, streams and lakes will support all uses for which they are designated including protection of aquatic life, recreation and drinking water supplies.

- Ensures that every Illinois Public Water system will provide water that is consistently safe to drink.
- Protects Illinois' groundwater resource for designated drinking water and other beneficial uses.

3. WATER MANAGEMENT VISION AND GOALS

IDNR's mission is "to manage, conserve and protect Illinois' natural, recreational and cultural resources, further the public's understanding and appreciation of those resources, and promote the education, science and public safety of Illinois' natural resources for present and future generations (IDNR, 2008)."

Survey-wide, IDNR has seven strategic priorities, which are (IDNR, 2008):

1. Maintain and meet the outdoor educational and recreational demands of Illinois' citizens in a manner that preserves and protects fish, wildlife, natural areas and other natural resources of our state.
2. Pursue direct acquisition of property to meet IDNR's ecosystem based management and resource compatible recreation objectives.
3. Improve the quality of life for Illinois citizens through the proper management of the water resources of the state, including water supply, flood damage reduction, watershed planning and regulation of development within the floodplains.
4. Effectively integrate Information Technology into IDNR operations to increase productivity and enhance service delivery.
5. Repair, reclaim, and restore land and water resources including those that were degraded by mining activity prior to the passage of the Surface Mining Control and Reclamation Act in 1977.
6. Encourage the public's safe use of recreational and natural resources.
7. Work together with conservation partners to conserve wildlife & plant species before they become rarer and more costly to protect.

IDNR's key water-related initiatives include:

- Implementation of a new invasive species control, research and education program to address the most pressing invasive species problems on state lands and waters to prevent further degradation of those resources.
- Continuation work begun to create floodplain maps of Illinois.
- Continuation of a 3-year, \$5 million effort to develop comprehensive water quantity plans in regional pilot areas.
- Expansion of OWR's operations and capital programs for safety enhancements at State owned dams located on public waters by upgrading and rehabilitating spillways and supporting facilities including dam removal, dam modifications, and safety signage and markings to reduce the risk of injury.

The survey-wide mission of ISWS is (ISWS, 2006a):

The Illinois State Water Survey is the primary agency in Illinois for research and information on surface water, groundwater, and the atmosphere. Its mission is to characterize and evaluate the quality, quantity, and use of these resources. The mission is achieved through basic and applied research; by collecting, analyzing, archiving, and disseminating objective scientific and engineering data and information; and through service, education, and outreach programs. This information provides a sound technical basis for the citizens and policymakers of Illinois and the nation to make wise social, economic, and environmental decisions.

ISWS's Strategic Plan (2006a) also contains a mission statement, vision to 2012, goals, and strategies for each of the four Centers and the Water and Atmospheric Resources Monitoring Program.

The mission of the ISGS's hydrogeology section is "to investigate and report on the hydrogeology of Illinois and to provide the people and institutions of Illinois with a scientific basis for the protection and beneficial use of its groundwater resources (ISGS, 2009)."

IEPA's mission is "to safeguard environmental quality, consistent with the social and economic needs of the State, so as to protect health, welfare, property and the quality of life (IEPA, 2009c)."

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

Major objectives of the state water supply planning process include conducting assessments of state resources and calculating projected water demand. Numerous published studies by ISWS support this objective, including "An Analysis of Groundwater Use to Aquifer Potential Yield in Illinois (2004a)," "County-Level Forecasts of Water Use in Illinois: 2005 to 2025 (2005)," "The Water Cycle and Water Budgets in Illinois: A Framework for Drought and Water-Supply Planning (2006b)," and "Potential Impacts of Climate Change on Water Availability (2008)."

Water withdrawals in Illinois have doubled since 1950, with more than 90 percent taken from surface water sources (ICCG, 2002). Water withdrawal estimates in Illinois are largely based upon the ISWS's Illinois Water Inventory (IWIP) questionnaires that are sent to municipalities and known self-supplied industrial and commercial facilities and completed on a voluntary basis (ICCG, 2002). In addition, the IDNR relies upon its data collection and staff expertise to model and understand the surface and groundwater characteristics of the state and to develop integrative planning. Among other models, Illinois utilizes deep aquifer models to show where groundwater withdrawals will impact water supply within the state.

Several areas in the metro-Chicago area are predicted to have water shortages in 2020 (Figure 2). Water use is projected to grow faster than the state population, primarily due to increased demand from thermoelectric generation (ISWS, 2006b). Out of Illinois' 102 counties, total water use is projected to increase in 89 counties.

Due to many uncertainties in climate change prediction, ISWS constructed several scenarios for future climate, water availability, and water demand scenarios rather than making firm predictions or forecasts (ISWS, 2008). ISWS climate scenarios to 2050 are formulated with the assumption that normal climatic conditions, those experienced from 1971 to 2000, will continue into the future. Based on this assumption, ISWS uses three demand scenarios, current trend, a higher-demand, and lower-demand or conservation, and two climate change scenarios, an increase in temperature from 0° to 6°F and changing annual precipitation from -5 to +5 inches. Combinations of the climate and demand scenarios were used to evaluate possible Lake Michigan water levels and the resulting impacts on surface water and groundwater quantities.

Based on numerical experiments using the latest global climate models, ISWS scientists predict that mean annual temperature in Illinois could increased by 12°F and mean annual precipitation could increase or decrease by 9 to 10 inches by the 2100 (ISWS, 2008). ISWS, therefore, encourages the use of climate change scenarios in statewide and regional water resources planning, and plans to evaluate the impacts of climate change on water resources as part of the final results of its modeling study.

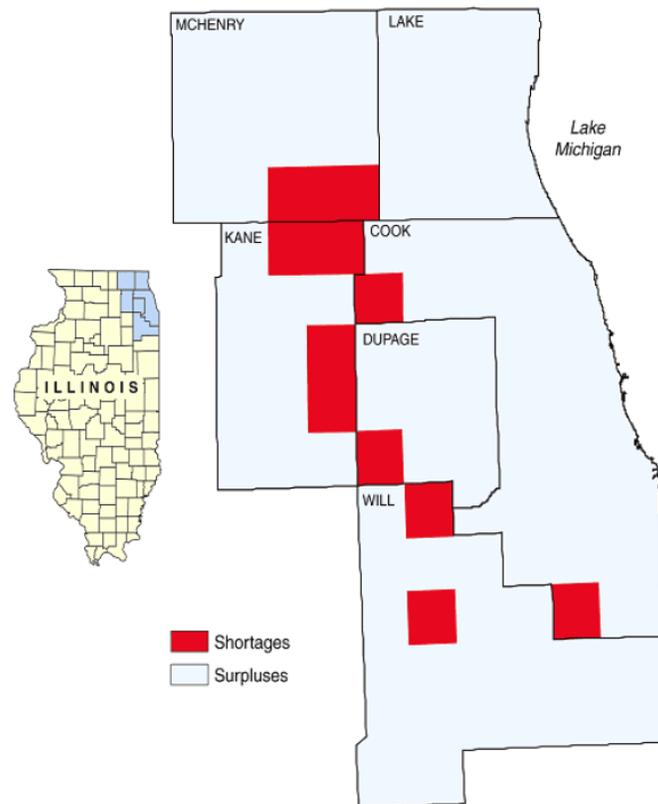


Figure 2. Projected 2020 Water Shortages in Northeastern Illinois (ISWS, 2006b)

Emergency response and mitigation planning for natural hazards is the responsibility of the Illinois Emergency Management Agency (IEMA). The Illinois Natural Hazard Mitigation Plan (IEMA, 2007), is developed and maintained cooperatively among state agencies and is coordinated by IEMA. The Mitigation Plan addresses six natural hazards that pose the greatest

threat to the state: severe storms and tornadoes, floods, severe winter storms, drought, extreme heat and earthquakes.

The system of levees within the state of Illinois is another focus of water resources planning and management. Many of the state's levees are reaching the end of their expected service lives and major improvements are needed. The costs and regulatory issues associated with those improvements are a concern. Another concern regarding levees in the state of Illinois is the implications of a federal National Levee Safety Program. There is a lack of funding available to improve the safety and attain certification for the state's many levees and the financial implications of the implementation of such a program are a priority within the state.

Water quality monitoring in Illinois is conducted primarily by the IEPA according to its Water Monitoring Strategy (2007) while surface water and groundwater monitoring is the responsibility of the scientific surveys.

Illinois implements its water resources objectives through its state programs and projects. OWR is responsible for overseeing major water resources development in Illinois. OWR programs provide direct assistance to communities to reduce stormwater-related flood damages, operate and maintain state managed dams and facilities on waterways, and fund projects through its long-range capital improvement program. OWR also directs construction and related permitting needs and serves as the federal agency representative on most Federal water resources projects in Illinois.

IEPA's Bureau of Water also assists in developing water projects by providing financial assistance through several of its loan and grant programs including (IEPA, 2009b):

- Wastewater Infrastructure Revolving Loan Program
- Drinking Water Infrastructure Revolving Loan Program
- Nonpoint Source Pollution Control Grant Program
- Illinois Clean Lakes Program
- Priority Lake and Watershed Implementation Program
- Lake Education Assistance Program

Additional funding for water resource projects is available through the Partners for Conservation Program. Previously known as Conservation 2000, the Program is Illinois' long-term initiative that takes a holistic approach to protecting and managing the state's natural resources (IDNR, 2009b). Partners for Conservation funds are available through IDNR, the Department of Agriculture, and IEPA. Overall, however, there is a need for steady funding for water resources planning and management in Illinois. Funding levels have declined in recent years and money is needed to support not only the state's state and regional water supply planning initiative, but also data collection and analysis, navigation, and flood management.

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

Key partners in the water resources planning process include federal, state, regional, and local agencies, including:

- USEPA
- USACE
- ISWS
- ISGS
- IEPA
- Department of Agriculture
- Chicago Metropolitan Agency for Planning
- Mahomet Aquifer Consortium

Through its membership in the Upper Mississippi River Conservation Committee, the Upper Mississippi River Basin Association, the Great Lakes Commission, the Ohio River Basin Commission, and the Ohio River Valley Water Sanitation Commission, Illinois collaborates with many of its neighboring states in solving regional and interstate water resources issues.

The public is involved in regional water supply planning through meetings of the regional water supply planning committees headed by the Chicago Metropolitan Agency for Planning and the Mahomet Aquifer Consortium. Numerous task forces, advisory groups, various committees and the public are involved in the state-level water planning process.

6. PLAN IMPLEMENTATION STRATEGY

As regional water supply plans are not yet available, there is no formal plan implementation strategy. Departmental strategic plans are carried out through various programs, projects, and other initiatives and are funded through state grants and loans. There is a proposal to keep the two existing regional planning groups active once plans are developed to monitor progress at a local level.

7. OUTCOMES ASSESSMENT PROCESS

There is no defined outcomes assessment process in Illinois' state or regional water planning efforts at this time.

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

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

- Continuing efforts and moving forward with the statewide regional water supply planning process.
- Addressing the impacts of population growth and urban sprawl on water resources, especially in northeastern Illinois.
- Acquiring a steady stream of funding to advance the progress not only of the pilot regional and statewide water supply planning initiatives, but also other water resources issues in the state including data collection and modeling, navigation, and flood management.

The primary statewide water resources focus in Illinois currently rests with the continuation of the actions undertaken under Executive Order 2006-1, specifically the two pilot planning

regions. Recent budget constraints have impacted the progress of the regional planning initiatives. Establishing a steady and reliable source of funding for the statewide strategic planning effort is a major priority in Illinois. There is a need to maintain support for the two current regional groups so they can implement their plans and monitor how well findings and conclusions manifest into the future. Key technical elements that support the plan's progress are also in need of funding. These include a surface and groundwater withdrawal data inventory system and development and maintenance of complex groundwater models.

9. REFERENCES

Blagojevich, R (2006). *Executive Order 2006-1*. Retrieved February 6, 2009 from <http://www.illinois.gov/Gov/pdfdocs/execorder2006-1.pdf>

IDNR (2008). *Illinois Department of Natural Resources Strategic Plan*. Retrieved February 6, 2009 from <http://dnr.state.il.us/StratPlan/strateg1.pdf>

IDNR. Office of Water Resources—About Us. Retrieved February 6, 2009(a) from <http://www.dnr.state.il.us/owr/aboutus.htm>

IDNR. Partners for Conservation. Retrieved February 12, 2009(b) from <http://dnr.state.il.us/orep/pfc/>

IEMA (2007). *Illinois Natural Hazard Mitigation Plan*. Retrieved February 9, 2009 from http://www.state.il.us/iema/planning/documents/Plan_IllMitigationPlan.pdf

IEPA (2007). *Water Monitoring Strategy*. Retrieved February 6, 2009 from <http://www.epa.state.il.us/water/water-quality/monitoring-strategy/2007-2012/monitoring-strategy-2007-2012.pdf>

IEPA. About the Bureau. Retrieved February 6, 2009(a) from <http://www.epa.state.il.us/water/about.html>

IEPA. Financial Assistance Programs. Retrieved February 6, 2009(b) from <http://www.epa.state.il.us/water/financial-assistance/>

IEPA. Purpose of the Illinois EPA. Retrieved February 6, 2009(c) from <http://www.epa.state.il.us/about/purpose.html>

ISGS. Hydrogeology Section. Retrieved February 6, 2009 from <http://www.isgs.uiuc.edu/sections/hydro/hydro-home.shtml>

ISWS (2004a). *An Analysis of Groundwater Use to Aquifer Potential Yield in Illinois*. Retrieved February 6, 2009 from <http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2004-11.pdf>

ISWS (2004b). *Prioritizing Illinois Aquifers and Watersheds for Water Supply Planning*. Retrieved February 6, 2009 from <http://www.isws.illinois.edu/pubdoc/IEM/ISWSIEM2006-04.pdf>

ISWS (2005). *County-Level Forecasts of Water Use in Illinois: 2005-2025*. Retrieved February 6, 2009 from http://info.geography.siu.edu/geography_info/research/documents/ISWS_IL_Water_Use_Projections.pdf

ISWS (2006a). *Illinois State Water Survey Strategic Plan*. Retrieved February 6, 2009 from <http://www.isws.illinois.edu/iswsdocs/ISWSStrategicPlan2006.pdf>

ISWS (2006b). *Water Cycle and Water Budgets in Illinois*. Retrieved February 6, 2009 from <http://www.isws.illinois.edu/iswsdocs/wcwbiiil/WaterCycleandWaterBudgetsinIL.pdf>

ISWS (2008). *Potential Impacts of Climate Change on Water Availability*. Retrieved February 6, 2009 from http://www.isws.illinois.edu/iswsdocs/wsp/climate_impacts_012808.pdf

ISWS (n.d.). *Charge to Regional Water Supply Planning Groups*. Retrieved February 6, 2009(a) from <http://www.isws.illinois.edu/iswsdocs/wsp/ChargetoRWSPG.pdf>

ISWS. About the Water Survey. Retrieved February 6, 2009(b) from <http://www.isws.illinois.edu/about.asp>

ISWS. Illinois Water Supply Planning. Retrieved February 6, 2009(c) from <http://www.isws.illinois.edu/wsp/>

ISWS. *Priority Planning Areas Aquifers and Watersheds*. Retrieved February 6, 2009(d) from http://www.isws.illinois.edu/wsp/graphics.asp?id=priority_areas.jpg&pg=priorityplan

Mahomet Aquifer Consortium (2008). *Water Supply Planning in Illinois: Current Status and Future Outlook*. Retrieved February 6, 2009 from http://www.mahometaquiferconsortium.org/WSP_Status_and_Future_1108.pdf

Interagency Coordinating Committee on Groundwater (2002). Report to the Interagency Coordinating Committee on Groundwater from the Subcommittee on Integrated Water Planning and Management: With Recommendations Pursuant to Executive Order Number 5, 2002. Retrieved April 15, 2009 from <http://www.epa.state.il.us/water/groundwater/publications/iccg-subcommittee-report.pdf>