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Comprehensive Water Planning In Iowa: Past Efforts



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Introduction

Water planning comes in different shapes and sizes. A well driller who has promised a customer a “good” well has to do a little up-front planning to make sure there is a suitable aquifer to yield the quantity and quality of water promised. A public water utility must look at its source of water to determine if there will be enough water to meet demands during dry periods and to determine the level of treatment that likely will be required to meet drinking water standards. And, the Corps of Engineers must conduct detailed hydrologic studies when designing a flood control reservoir to make sure the reservoir will provide the degree of flood protection intended. These and many other activities will always require project-specific water planning of varying scope and detail.

Comprehensive water planning, on the other hand, is more of a big picture, “60,000 ft. view” level of planning that looks broadly at all aspects of water and is intended to identify overall problems and needs with the intent of addressing those needs and avoiding future problems. As such, comprehensive water planning considers not only the physical aspects of water — how much, where, and what quality — but also the policies, laws, institutions and programs that affect water in some way.

This document looks at some of Iowa’s more comprehensive, statewide water planning efforts that addressed all aspects of water or a major water issue such as water quality.

Iowa State Planning Board - Basin Reports

The first known state comprehensive water planning effort for Iowa was conducted in the 1930’s as part of a larger national effort. The Committee on Water Resources of the National Resources Committee undertook the task of developing a national study of water use and conservation using major drainage basins as the study units. It was intended that such individual studies would collectively provide a “...sound and nationwide outline of feasible plans for securing the greatest beneficial use of water resources in each major basin in the United States.” It was also offered that such studies and plans “...merit continuous check, revision and improvement.” In today’s terms, this would be called adaptive management.

The Water Resources Committee of the Iowa State Planning Board undertook this task for Iowa; the effort culminating with the 1936 publication of six volumes reporting on the following river basin areas: (I) Iowa-Cedar; (II) Des Moines, Skunk and southeast Iowa; (III) south central Iowa; (IV) northeast Iowa; (V) west central Iowa; and (VI) northwest Iowa. These study reports were subsequently transmitted to the National Resources Committee.

Each volume followed a similar format and was divided into seven major categories:

1. Basin description — general descriptions of the basin’s size, slope, and geology; industry and agriculture in the basin, population trends.
2. Economics — population and trends, agriculture and industry in the basin, land use and values.
3. Surface water resources — stream and river characteristics, floods, navigation, water power, recreation, stream pollution.
4. Underground water resources — use, geology, topography, rock structure, water bearing formations.
5. Problems of water use and control
6. Presentation of a coordinated water plan
7. Water projects — lists of potential water projects such as wastewater treatment, water supplies.

In many respects, the problems noted in 1936 are not unfamiliar today. Floods, soil erosion, water supply, stream pollution and water-based recreation needs occupied much of the discussion. Stream pollution was severe as many cities and industries at the time simply dumped their raw sewage into nearby streams and rivers. Sewage treatment of any kind was relatively rare and “zones of extremely heavy

pollution” were often noted downstream of the larger cities and towns. Because of this, surface waters across the state were generally considered unfit for domestic water supply, livestock watering, fish growth, and recreation. Although Iowa did have some pollution laws at the time, the following statement in Volume II typified the state of pollution control:

“Emmetsburg, Des Moines, and Ottumwa have been ordered to install treatment works but have appealed to the District Court.”

“Surface pollution”, what is known today as nonpoint source pollution, was noted but considered relatively unimportant compared to the pollution from cities and industries.

The reports also noted significant needs for flood control to protect urban areas and recommended, among other things, that future development in floodplains be restricted if possible. The importance of “holding the water where it falls” was also noted and the construction of numerous small dams was recommended to provide a variety of benefits including flood and erosion control and water supply for livestock.

Section VII of each of the six volumes contained lists of recommended water projects. Some of these projects were recommended for immediate construction while others were identified as needing further study and review. Recommendations for the construction of sewage treatment works and flood control projects dominated the project lists.

It is not known to what extent these basin reports influenced state or national water policy. With the United States’ entry into World War II, much of the National Resources Committee’s efforts in the following years focused on the war effort and subsequent recovery.

Iowa Natural Resources Council – Basin Plans and the ’78 State Water Plan

The Iowa Natural Resources Council was created by the Iowa General Assembly upon the recommendations of a legislative study committee that was convened after disastrous, statewide flooding in 1944 and 1947. Although flooding was the impetus for the Council’s creation, the General Assembly charged it with much broader water planning responsibilities. The Council had the statutory authority and duty to establish a “...*comprehensive, statewide program for the control, utilization and protection of the surface and ground water resources of the state.*” The legislation also recognized the conservation of Iowa’s waters by the “considered and proper use thereof” was of paramount importance to the welfare and prosperity of the people of the state.

The Natural Resources Council’s powers in its early years were largely advisory in nature and its initial efforts focused primarily on water planning and policy development. Just as floods prompted formation a legislative study committee in 1948, drought conditions in the 1950s led to the creation of another legislative study committee to look at the other side of the water coin — too little water. That committee’s recommendations were reflected in 1957 legislation that gave the Council regulatory powers over water use and withdrawal as well as floodplain development. The Council’s overall water planning function was retained with specific provisions being added that required the Council to make surveys and investigations of the water resources of the state and to formulate plans for the further development, protection and preservation of those water resources.

Basin plans

One of the first statewide planning efforts of the Council resulted in the publication of reports on the water resources and problems in eight basins: the Des Moines, Nishnabotna, Iowa-Cedar, Floyd-Big Sioux, Skunk, Southern Iowa, Northeastern Iowa, and Western Iowa. These reports, published from 1956 to 1959, presented a broad look at the condition and availability of Iowa's water resources as well as water-related problems and needs in each of these basin areas. Specific areas addressed included basin characteristics, water supply, water use, and flood and sediment problems. Water quality was considered as part of the water use topic. At the time, there was a state "stream and lake pollution law" that required some degree of municipal wastewater treatment and lack of stream flow to adequately dilute waste was perceived as a significant cause of water quality problems. Based on these inventories and analyses, recommendations relating to the development of comprehensive basin plans were also provided. These recommendations varied somewhat from basin to basin but common ones included:

- the need for a significant amount of data collection including precipitation, streamflow, suspended sediment and water quality;
- the need for topographic mapping at a scale suitable for basin planning;
- investigations of Iowa's groundwater resources;
- a better accounting of the water used for various uses including domestic, municipal industrial uses and irrigation;
- upgrading all wastewater treatment plants to provide, at a minimum, primary treatment with higher levels of treatment for streams where problems were apparent;
- the development of water-based recreation and
- the construction and maintenance of various structures such as dams, levees, and terraces for a variety of purposes including flood control, low flow augmentation and erosion control.

The '78 State Water Plan

The basin plans produced by the INRC in the late 1950's were a step in the right direction but the needs and recommendations in those reports did not lead to the hoped-for results; few of the recommendations were actually implemented. Additionally, the individual basin reports did not constitute the comprehensive, statewide plan for the control, utilization and protection of surface and ground water resources called for in statute. By the early 1970's it was realized a renewed, more visible effort was needed to develop a truly comprehensive water plan for Iowa.

The publication "Special Report, Iowa's Water Resources Program Progress and Needs" issued by the Natural Resources Council in 1973 briefly reviewed water-related problems and needs and called for the development of a comprehensive plan as a "...*framework to assure effective cooperation of agencies regulating water and related resources.*"

Supported in large part by funds made available under Title III of the federal Water Resources Planning Act of 1965, work on a framework plan began in earnest in 1975. Although the Natural Resources Council hired a dedicated staff to work full time on the framework plan, many other state and federal agencies also provided substantial input and assistance over a three year period. Individual task forces comprised of state and federal agencies as well as private interests were formed and each developed individual task force reports for the following seven categories:

- Water quality
- Domestic, municipal, commercial and industrial water supply
- Floodplain management
- Water-oriented recreation and fish and wildlife

- Water for energy production
- Commercial and recreational navigation
- Agriculture

Additional task force groups were also developed to furnish basic data and background information on Iowa's water resources as well as the socio-economic and legal-institutional aspects of water policy. The individual task force reports identified the problems and needs of each subject area and provided conclusions and recommendations that were then summarized in a main report.

This intensive, three-year planning effort culminated with the publication of the 200-plus page "Iowa Water Plan '78, Framework Study Main Report". A smaller, executive summary was also published. The individual task force reports that contained a significant level of detail are no longer available.

The '78 Framework Study Main Report consisted of twelve chapters, each dealing with a particular aspect of water or water policy. Those twelve chapter titles are listed below.

- Chapter 1 – The State Water Plan.
- Chapter 2 – Iowa in Perspective.
- Chapter 3 – Water Resource Availability.
- Chapter 4. Water Quality.
- Chapter 5 – Water Supply and Use Problems.
- Chapter 6 – Floodplain Management
- Chapter 7 – Water-Oriented Recreation, Fish and Wildlife
- Chapter 8 – Water for Energy Production
- Chapter 9 – Commercial and Recreational Navigation
- Chapter 10 – Agriculture
- Chapter 11 – Law and Government
- Chapter 12 – Directions for the Future

With the exception of the first two chapters, each chapter provided a review of the problems and needs in the indicated subject area followed by conclusions and specific recommendations.

The '78 plan was given a high-profile public release with an accompanying, professional-quality film highlighting Iowa's water resources being shown around the state more or less coincident with the release of the Plan.

The framework plan was envisioned as the starting point for continued comprehensive water resources planning. A recommendation in Chapter 12 specifically called for a Water Plan '80 to assess progress in implementing the '78 plan recommendations as well as looking at funding alternatives and potential resource agency reorganization.

Unfortunately, the '78 plan was for all practical purposes the end of any comprehensive, multifaceted "60,000 ft. view" water planning in Iowa. Any Iowa water planning efforts since then have been more narrowly-focused efforts dealing with specific topics or issues. The called-for 1980 update was never prepared, federal Title III water planning funds were eliminated in the early 1980s and the requirement for a comprehensive plan was stripped out of Iowa statute in 1982 and replaced with much more narrow planning requirements. Some of the recommendations contained in the '78 plan were realized years or even decades later due to other forces but most of the recommendations were largely forgotten. The Iowa Natural Resources' Council, the driving force behind the '78 plan, was also eliminated in 1983.

The Iowa Geological Survey - Water Atlases

Prior to its merger with other resource agencies into the Department of Natural Resources in 1986, the Iowa Geological Survey was an independent agency headed by the State Geologist with its primary function being the investigation of the water, land and mineral resources of the state.

From 1965 through 1978 the Geological Survey produced a series of Water Atlases that looked at ground and surface water resources, quality as well as quantity, in various geographical areas of the state. Two atlases, Numbers 2 and 3, were specific to a county while the other six covered about the eastern two-thirds of the state with the exception of the far southeastern corner. The primary emphasis of all the atlases was on the available supply and not necessarily existing or future demand. As such, the reports constituted a fairly comprehensive look at the availability and relative quality of Iowa's surface and ground waters in much of Iowa.

Department of Water, Air and Waste Management - The 1985 State Water Plan

The 1982 legislation that combined the Iowa Natural Resources Council and the Department of Environmental Quality into a new Department of Water, Air and Waste Management eliminated the statutory requirement for a comprehensive water plan that had existed in some form since 1949. In its place, the General Assembly called for two planning efforts:

- the assessment of water needs for all users at five year intervals from 1985 through 2004 and the preparation of a general plan of water allocation considering the quantity and quality of water resources available to meet the needs of water users; and
- the development and adoption of a floodplain mapping plan for the period 1986 through 2004 that considered flooding.

The legislation also required that the Water, Air and Waste Management Commission deliver to the General Assembly a water plan in the form of draft legislation that would implement a general plan of water allocation priorities. Beginning in 1983, a series of public meetings were held to receive input and a technical advisory committee consisting of various user and interest groups were formed to guide the water planning process. A number of interim publications and reports were developed with the culmination of the planning process being the publication of "The 1985 State Water Plan."

The 1985 Plan took a broad, general look at water availability and use across Iowa but its primary focus was on the development of a priority system for restricting water usage during times of shortages. Draft legislation was developed that would implement a priority system. Other provisions contained in the draft legislation included requirements for water conservation, the elimination of some grandfathered uses and provisions for well interference compensation. Most of recommended statutory changes were adopted by the 1985 General Assembly. The 1985 plan also called for the development of a comprehensive groundwater protection strategy.

Notwithstanding the statutory directive to assess water needs at five year intervals, the 1985 Plan was the one and only attempt to do so. Additionally, a floodplain mapping plan was adopted but never implemented. The lack of funding was the primary obstacle to meeting these two planning requirements and both requirements expired in 2004.

Department of Natural Resources – Groundwater Protection Strategy

The 1985 legislation that adopted changes to Iowa's water use and allocation laws also charged the Water, Air and Waste Management Commission with delivering to the General Assembly for its 1987 session a plan for the protection of Iowa's groundwater. In addition to evaluating the potential sources of groundwater contamination, the plan was to evaluate existing groundwater protection laws and programs and to recommend any needed changes or additions.

In July 1986, the Department of Water, Air and Waste Management was combined with the Iowa Conservation Commission, the Iowa Energy Policy Council, and the Iowa Geological Survey into a new Department of Natural Resources with two Governor-appointed commissions to establish policy – the Environmental Protection Commission and the Natural Resources Commission. The Environmental Protection Commission was the policy-making successor to the Water, Air and Waste Management Commission and the requirement for a comprehensive groundwater protection strategy then fell upon the newly-created Environmental Protection Commission's shoulders.

The groundwater protection strategy was developed in a very short timeframe with most of the effort occurring in the last half of calendar year 1986. Two committees were formed: a Technical Advisory Committee comprised mainly of water agency and university staff and a Program Advisory Committee consisting of representatives of various interest groups. Public input was derived through a public attitude survey and public meetings. Department of Natural Resources staff evaluated potential sources of groundwater contamination and the programs intended to protect groundwater and made recommendations for changes that were then provided to the two committees for review and feedback.

The outcome of the planning process was the "Iowa Groundwater Protection Strategy 1987" that was approved by the Environmental Protection Commission and submitted to the General Assembly in January 1987. The strategy included a mix of recommendations for program development and improvement, legislation, and funding. The General Assembly that same year passed the Iowa Groundwater Protection Act that was based in part on some of the recommendations contained in the strategy.

Like the 1978 Framework Study and the 1985 Water Plan, the 1987 Groundwater Protection Strategy was envisioned as the start of a continuing planning process and not the end. Although a series of annual reports documenting progress on specific requirements of the Groundwater Protection Act and biennial reports evaluating the status of the state's groundwater protection program were published for a number of years thereafter, there has been no continuing groundwater protection planning program nor has there been an effort to revisit and update the 1987 groundwater protection plan.

Other planning efforts

The 1978 Framework Study was Iowa's last attempt to develop a truly comprehensive state water plan. The 1985 Water Plan and the 1987 Groundwater Protection Strategy were admirable statewide water planning efforts but were only intended to address one aspect of water. Other water planning efforts by various entities that merit a mention include the following ones.

Upper Mississippi and Missouri River Basin Studies

Beginning in the early 1960s, there was Congressional interest in a national program of river basin planning. This interest translated into basin plans for the Upper Mississippi River Basin and the Missouri River Basin that took a comprehensive look at the water and related land resources in these two basins. Developed by the Corps of Engineers in cooperation with coordinating committees comprised of state officials, the basin studies were a voluminous compilation of land and water resources information as well as individual states' demographics and water policies. The study reports also provided a framework for developing the basins' resources and for

ongoing and future studies and planning activities. In effect, these two basin plans were comprehensive water plans on a regional, multi-state scale.

Both reports were published in the early 1970s, about the time the Upper Mississippi River Basin Commission and the Missouri River Basin Commissions were formed as authorized by the federal Water Resources Planning Act of 1965. These formally-organized river basin commissions would have been the logical heir to continue the planning process initiated by the Corps and while they did engage in some additional, more narrowly-focused planning efforts over the next decade, federal funding for the Commissions were cut off in the early 1980s and they were subsequently de-authorized.

The 1996 State Water Plan

This little-known “state water plan” was prepared by Iowa State University’s Office of Social and Economic Trend Analysis and was intended to identify options for addressing water quantity and quality for water supply purposes in planning areas with populations under 10,000. Federal funds were used and while representatives from water-related interests participated in the plan development, there was relatively little involvement of state agency staffs. The resulting recommendations were general in nature and emphasized technical assistance and ongoing planning to address the issue of water supply.

Iowa Water Quality Action Plan

The Iowa Water Quality Action Plan was the result of a year-long process initiated by the Iowa Environmental Council. This effort involved a broad cross section of people from the public and private sectors organized into various working groups with recommendations being finalized in a November 1997 meeting. The Action Plan primarily dealt with the institutional aspects of water quality, such as the need to develop a comprehensive, statewide water quality monitoring network. The final recommendations were provided in the publication “Iowa Water Quality Action Plan” dated January 1998.

Iowa Watershed Task Force

The 1999 legislation that created a watershed protection program within the Iowa Department of Agriculture and Land Stewardship also created a watershed task force “...to develop a framework for the enhanced cooperation and coordination between federal, state and local government, the private sector and the public regarding multi-objective needs for soil conservation, water quality protection, flood control and other natural resource conservation issues in the state’s watersheds.”

A steering committee and three workgroups representing a wide variety of perspectives and interests were formed to assist in the formulation of recommendations. The Task Force’s final report, issued in the spring of 2001, identified a number of statewide issues and needs. Five broad goals and 19 more-specific recommendations to address the identified issues and needs were provided. Included were recommendations for an on-going coordinating body, increased funding for data collection and project implementation, the development and updating of flood maps, and the development of local watershed councils.

Water Quality Summit

In his 2003 Condition of the State Report, Governor Vilsack highlighted water quality as an area of interest and established a goal of no impaired waters by 2010. He also called for a statewide summit to develop a plan for restoring the quality of Iowa’s waters.

Workgroups representing a wide variety of interests were formed to address five categories: nutrients; current programs, resources and deployment; point source reduction; nonpoint source reduction; and impaired waters restoration. Each workgroup prepared a separate report with recommendations that ranged from the broad and general to very specific. In all, over 100 tentative recommendations were presented by these six workgroups.

These recommendations were presented to a broad audience at the Governor's Water Quality Summit held in November 2003 and audience members were asked for their reactions and input. Each task force chair subsequently finalized their report and recommendations, incorporating comments received at the Summit to the extent possible. These individual reports were not, however, synthesized into a final, single report nor were there any subsequent efforts to track and assess the progress in implementing the numerous recommendations.

Water Quality Planning Task Force

Legislation passed in 2006 established a watershed quality task force to provide recommendations for a voluntary statewide water quality program designed to accomplish the goals as outlined in the legislation. The task force's final report dated November 2007 contained five broad recommendations and although none of the recommendations directly addressed the goals established in the authorizing legislation, the substance of the Task Force's recommendations were incorporated into legislation passed in 2008.

House File 2400, among other things, established a Governor-chaired Water Resources Coordinating Council and charged the Department of Natural Resources with conducting watershed assessments across the state over the next five years and periodically updating the assessments. The legislation also charges the Coordinating Council with the "...*regular coordination of water resources-related functions, including protection strategies, planning, assessment, prioritization, review, concurrence, advocacy, and education.*" It also provides that the Council "may" oversee a statewide regional watershed assessment, prioritization and planning process including a short term interim program and a long-term comprehensive state water quality and quantity plan. The role of the Council in future comprehensive planning functions is uncertain as no dedicated resources or staff were provided for its activities, it does not have independent rulemaking authority, and it is not known how its assigned functions and duties will mesh with the statutory duties of other authorities such as the Environmental Protection Commission.

Lessons to be learned

Iowa's efforts to develop a truly comprehensive, statewide water plan that addresses all physical and institutional aspects of its water resources ended in 1978. Since that time a number of more narrowly-focused, special purpose water planning efforts have taken place but there has been no effort to bring all these efforts together into one comprehensive plan.

A relevant question is whether the various planning efforts over the years resulted in any significant gains or if things are any better as a result of those efforts. That question is a hard one to answer. Some recommendations resulted in legislation and program implementation while many others were largely forgotten. And some recommendations were so vague and general it is difficult to gage their success or failure. The success of any particular recommendation is not always apparent as it may have reflected actions already in progress or, alternatively, planted a seed that germinated many years later.

There are, however, some observations that can be made that should guide any future comprehensive water planning efforts.

- Almost all, if not all, the plans or planning efforts have called for some type of a continuing planning process that periodically reevaluates, refines and updates a plan. This has never happened; the publication of the "plan" typically defines the end of the active planning process for that particular effort. Unless very specific and enforceable provisions for a continuing planning process are identified and implemented, water planning in Iowa will likely continue to be done in a patchwork of sporadic efforts, a planning approach some have described as "muddling through."
- The more detailed and specific the recommendations that emanate from the planning process, the greater the chance of success. The recommendations resulting from the 1985 Water Plan, for instance, were very specific and most were incorporated into Iowa statute. Relatively vague and general recommendations are easy to agree with, but also easy to ignore as they don't call for specific actions by specific entities.
- Funding is critical to planning and implementing the resulting plan, but those funds are rarely provided. Over the years Iowa statute has contained a number of legislatively mandated planning processes that have been ignored for lack of funding and staff. Without the availability of federal Title III funds, it is unlikely the '78 Framework Plan would have been developed. Unless funding sources are identified and adequate funds provided, it shouldn't be expected that a water planning process will result in significant achievements.
- Planning often results in a long laundry list of recommendation to address the issues and needs identified in the planning process, but seldom are these recommendations prioritized. To be effective, the recommendations either have to be limited in number or, alternatively, prioritized to identify the most important, urgent needs. There likely will not be adequate funding and resources available to meet all needs; plans need to identify the most important ones to get the attention they deserve.