

WATER CONSERVATION

Special Report No. 4

of the

Illinois State Water Plan Task Force

Prepared by

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Preface

This report on the issue of water conservation in the state of Illinois was prepared as a special report of the Illinois State Water Plan Task Force. Water conservation was identified by state agencies and citizens in 1980 as one of 10 critical water management issues that needed to be reviewed as part of the state's water planning activities. This report reviews the issue, providing background on the nature of the problem, a summary of ongoing state agency programs, and a description of future water conservation programs planned or recommended by Illinois agencies.

This report was compiled by the Illinois Department of Commerce and Community Affairs and by the Water Resources Center of the University of Illinois at Urbana-Champaign. It was reviewed by the Illinois State Water Plan Task Force.

STATEMENT OF THE PROBLEM

There are increasing signs that serious water shortages loom in the future of this nation. Water has been used traditionally in this country, especially east of the Mississippi River, as though the supply is inexhaustible. But recently, Americans, both east and west of the Mississippi, are beginning to grasp the nature of the water shortage problem.

Americans have discovered the hidden water costs of the commodities that they produce and consume. For example, it requires about 15,000 gallons of water to grow a bushel of wheat, 60,000 gallons to manufacture a ton of steel, and 120 gallons to produce one egg.

During the last few decades demands for water have escalated at the same time that supplies of usable water have diminished. Underground water reserves, which built up over thousands of years, have been seriously depleted due to irrigation in the Great Plains and Southwest; other underground supplies used by population centers have also been depleted from use or have been contaminated by toxic wastes. Surface water supplies and water quality in many agricultural areas have been diminished by nonpoint source pollution and sedimentation due to runoff and soil erosion. Moreover, another limiting factor in water supply has been the increase in high costs of oil and electricity that is needed to run the pumps to transport water from underground and surface water supplies.

A contributing factor to the escalation of water demand and diminished supplies has been the low cost of water. Because of governmental subsidies for water development, water often has been priced far below its real cost, and as a result, large quantities have been wasted through inefficient delivery systems and wasteful personal, industrial, and agricultural use.

National forecasts of serious water shortages are somewhat in contrast to past Illinois experience where supplies have generally been adequate to meet demands. Shortages in Illinois, however, have occurred for limited geographical areas and during occasional periods of drought. Most of the state's water conservation efforts have been limited to those communities sharing in state-allocated Lake Michigan water and to periods of drought. Other general conservation efforts have been related to the energy crisis (water conservation produces energy conservation because the heating and pumping of water requires energy).

ONGOING PROGRAMS

Several Illinois agencies have ongoing water conservation programs.

Department of Commerce and Community Affairs (DCCA)

DCCA has been involved for some time in energy-related water conservation programs and in assisting local governments in coordinating water conservation programs in times of drought. It has also promoted water conservation statewide through information and education programs. Current activities include:

- * The distribution of brochures and other materials related to water conservation to communities and individuals throughout the state.
- * The presentation of workshops on water and energy conservation at the request of interested groups.
- * Assistance to local governments in coordination of water programs.
- * The distribution of a videotape that was produced on the water conservation measures taken in the town of Eldorado during the 1980 drought as an instructional film for other communities faced with drought.
- * The participation in radio talk shows and the distribution of news releases on the subject of water and energy conservation.

Division of Water Resources, Department of Transportation (DWR)

DWR is the agency responsible for allocating Lake Michigan water to communities in the Chicago metropolitan area. In administering these allocations, DWR has worked with communities receiving allocations in a mandated conservation program to stretch their existing supplies and to identify alternative sources of water. As part of this conservation program, DWR developed an educational packet of materials that it has also distributed to other communities affected by droughts.

Capital Development Board (CDB)

The CDB is currently studying the use of water conservation devices in new state government construction and the retrofitting of existing state institutional facilities for which it is responsible.

- * CDB has installed a metering system and begun monitoring water consumption in two new resident cottages at the St. Charles Youth Center of the Department of Corrections. One cottage was fitted with conventional water fixtures, the second with low-flow devices. Comparisons of water consumption and energy savings are being made.
- * CDB also has installed a metering system in all buildings of the new Vienna Correctional Facility to determine domestic hot and cold water consumption for a state institution. A comparison will be made between the use of conventional water fixtures in the old facility and the low-flow fixtures of the new facility.

Water Resources Commission (WRC)

The commission prepared a packet of water resources and conservation related materials that was sent to every local government unit in the state in 1982. It distributes this packet upon request.

Other Programs

Many other programs are being conducted in the state by private water companies, nonprofit citizen organizations, and associations such as the American Water Works Association.

FUTURE PROGRAMS AND ACTIVITIES

The task force will continue to promote water conservation statewide through information and educational programs, recognizing the general benefits of water conservation, especially its contribution to energy conservation. However, the task force will especially concentrate on targeting state technical assistance resources at water-deficient regions of the state where conservation can be a cost-effective alternative to resource development, as well as a stop-gap measure in times of drought.

Identification Of Water-Deficient Communities

DWR working with the Illinois Environmental Protection Agency (IEPA) has identified communities of the state that face water shortages, and DWR will coordinate and target state technical assistance resources to these communities to promote water conservation, in addition to working with the communities to identify and expand possible water supplies.

Public Education

DWR, with the assistance of other agencies such as the WRC, will continue to make packets of educational materials developed during the last drought available to public officials and school administrators. These agencies will work with school officials in water-deficient communities and with other groups to educate both school children and school administrators on the importance and techniques of saving water at home and at our public schools.

DCCA intends to continue efforts to promote water conservation through newspaper and radio talk shows. These efforts were fairly successful in the past in drought areas and efforts will be made to raise public consciousness about the issue in metropolitan areas.

DCCA will also develop water conservation articles for consumer, civic, and labor-oriented magazines, as well as general interest magazines.

DCCA and the WRC will continue to distribute printed water conservation materials upon request.

Marketing Of Water Conservation Devices

DCCA will promote the marketing of water conservation devices, especially in water-deficient regions of the state. The agency will: (a) work with such organizations as the Plumbing Manufacturers Institute and appropriate trade associations in an attempt to get them involved in promoting the sale and distribution of water conservation devices; (b) encourage a major retailer to feature special sections in its stores where conservation devices can be promoted; (c) develop and supply articles for various trade publications on the subject of water conservation; and (d) work with plumbing contractors in promoting the use of water conservation devices, equipment, and practices.

Revision Of Plumbing Codes

Drawing upon the positive results generated by plumbing code changes in the State of California and closer to home in DuPage County, the Illinois Department of Public Health, with the assistance of DCCA, will review the effectiveness of new water conservation plumbing fixtures and will recommend state plumbing code changes. Water-deficient communities will be encouraged to adopt the state plumbing code, which may recommend conservation plumbing fixtures as regular features in new construction. These recommendations should eventually have the effect of stimulating the market for these conservation products and increasing their availability in hardware and home center retail stores.

Consultation With Industry

In addition to the plans mentioned under "Marketing of Water Conservation Devices," DCCA will consult with industries to learn about successful water

conservation experiences and will promote industrial workshops and other technology transfer programs.

Construction and Rehabilitation of State Institutions

The CDB's recent studies have shown that water conservation saves more than just water--it may save treatment costs, sewage disposal costs, and energy costs for heating and chilling. The CDB will review specifications thoroughly for new and rehabilitated state facilities for incorporation of water conservation fixtures. These facilities include state correctional and mental health facilities.

Close Working Relationship With Local Governments and Agencies

In addition to the program proposal relating to local plumbing code revisions, DCCA will develop a close working relationship with water-deficient communities with respect to water conservation issues. They will: (a) hold workshops where water conservation ideas and experiences (e.g., leak detection and repair programs) can be exchanged; (b) provide information on water rate structures that encourage water conservation; and (c) provide information to communities enabling them to determine if their rates are sufficient to cover the actual cost of providing water.

Training Water Plant Operators in Water Conservation Techniques

The Environmental Resource Training Center at Southern Illinois University at Edwardsville provides training programs for water plant operators. The operators receive training in various aspects of managing and maintaining public water systems. In addition to the current curriculum, IEPA will add coursework on water conservation practices and financial planning to accommodate water conservation practices. IEPA will also work with the many community colleges that also offer water plant operator courses to incorporate

water conservation planning in their curricula. This expanded course work should prove most helpful over time to communities during water shortage periods as well in helping to prevent future water shortage problems.

Retrofitting of Low-Income Housing

Contingent upon federal funding, DCCA will retrofit up to 17,000 low-income residences with water conservation devices under the Illinois Home Weatherization Assistance Program.

Evaluating Water Conservation Programs

The Department of Energy and Natural Resources through the efforts of the State Water Survey will monitor and evaluate the effectiveness of water conservation through the water inventory program.

The combined efforts of these water conservation programs should contribute to the general awareness of the high cost of wasting water and the value of water conservation, especially as an element of energy conservation. Moreover, programs targeted to water-deficient communities will assist in integrating water conservation as a necessary and cost-efficient element of total water supply management and development.