



# **ILLINOIS STATE WATER PLAN**

## **Remaining Issues and Implementation Requirements**

**Illinois State Water Plan Task Force  
November 1994**

## Contents

<b>Introduction</b>	1
<b>Remaining Issues With Recommendations Not Implemented</b>	2
Illinois Groundwater Protection Act - Long Term Implementation	2
Groundwater Quantity - Water Authorities Act and Related Statutes	3
Groundwater Resource Inventory - Mahomet Aquifer	3
Wetland Protection	4
Natural Conditions Protection - Legislative Proposal	5
Instream Flow Protection - Legislative Proposal	6
<b>Remaining Issues and Recommendations With Unmet Needs</b>	7
Erosion and Sediment Control Act	7
Row Crop Land Conversion Program	7
Modern Statewide Soil Survey - Completion	8
Monitoring of Sediment in Illinois Streams and Rivers	8
Lake Sedimentation Survey	9
Illinois Groundwater Protection Act - Full Implementation	9
Assessment and Mapping of the Ground-Water Resources of Illinois	10
Integrated Water Management - Continue Interagency Coordination	10
<b>New Issues Requiring Future Attention</b>	12
Erosion and Sediment Control - Stream Sediment Contributions	12
Federal Groundwater Quality Protection Program	12
Floodplain Mapping Revisions - Tech. Bulletin 70	13
Exotic Species Impact on Native Fauna and Flora	13
Stream Access	14
Remediation and Rehabilitation of Quality Impaired Waters	15
Stream and Lake Use Management	15
Water Pollution - Chemical Contaminant Monitoring	
Illinois Fish Contaminant Monitoring Program	17
Geographical Information Systems (GIS) - State Implementation	18
Lake Michigan	18
Management of Large Rivers of Illinois	19
Geologic Mapping in Illinois	20
Illinois Water Inventory Program	20
Illinois Water Use Act	21
Water Information Access Service	21
<b>Cost Estimate Summary</b>	23

## Introduction

In the spring of 1980, Governor Thompson appointed a task force to develop a State Water Plan. The Illinois State Water Plan Task Force completed its initial planning activities and published a final report entitled "Illinois State Water Plan" in January of 1984.

Following the publication of the Illinois State Water Plan, the State Water Plan Task Force has continued to meet quarterly for the purpose of tracking the progress of implementation of the Water Plan as well as responding to new water resources issues which were determined to require an interagency review or response.

Substantial progress has been made towards the full implementation of 132 of the 151 specific recommendations covering the 20 key water resource issues addressed in the 1984 Illinois State Water Plan. In order to document and track the progress of Water Plan implementation, the Task Force published reports in May of 1986 and in January of 1990 which were entitled "Status of Implementation, Illinois State Water Plan." In December of 1990 and in November of 1992 the Task Force published reports entitled "Remaining Issues and Implementation Requirements."

This report is an update to the November 1992 report and is intended to again be a concise document which specifically addresses the unmet needs concerning full implementation of the recommendations presented in the 1984 Water Plan Report. The unmet needs are discussed in two separate sections. The first section lists those recommendations which have not been implemented to any degree. The second section lists those recommendations which have been partially implemented but for various reasons have substantial remaining implementation needs. New issues which will require future attention are also presented in the last section of this document.

## **Remaining Issues With Recommendations Not Implemented**

### **Illinois Groundwater Protection Act - Long Term Implementation**

(Lead Agency: Illinois Environmental Protection Agency and Department of Energy and Natural Resources)

The continued success of the groundwater quality protection program is dependent upon certain essential enhancements to programs envisioned by the legislation. The foundation which has been established by this legislation must now be built upon through the development of programs beyond those needed for a baseline level of protection. The law and implementation plan call for long-term elements to be added in the following critical areas:

Implementation of new technology control regulations and other technical review functions regarding sources within setback zones and regulated recharge areas through the following:

- Review and recording of facility monitoring reports to determine regulatory compliance;

- Review of requests for minimal hazard certifications pursuant to Section 14.5 of the Act and performance of field inspections as appropriate; and

- Performance of special monitoring at community water systems as may be required due to hazard reviews, for discovery purposes, and for quality control at monitored sites.

Establishment of a regional groundwater protection planning program which responds to priority areas requiring regional recharge area designation through the following:

- Designate priority groundwater protection planning regions based upon recharge area mapping by DENR;

- Establish regional planning committees for each designated area and provide technical assistance and supporting services as appropriate; and

- Contract with county or multi-county authorities as needed to assist the committees in their efforts.

Full development of long-term ambient water quality monitoring systems to identify problem areas, evaluate program impacts and direct priority concerns as follows:

Monitor for all chemicals, pre-selected wells having groundwater quality standards violations or health advisories;

Evaluate sampling data to determine the effectiveness of protection efforts, identify regional trends, and assist in the development of the State Pesticide Plan; and

Initiate a cooperative agreement with USGS to provide reliable low-cost water quality data analysis, data management and reports.

**Cost** - It is estimated that initial costs to start and phase in program elements would require approximately \$250,000 which includes five technical and professional staff.

#### **Groundwater Quantity - Water Authorities Act and Related statutes**

(Lead Agency: Division of Water Resources)

Amendments to the Water Authorities Act, which were drafted by an interagency committee, address the most significant groundwater quantity issues and recommendations that were evaluated by the State Water Plan Task Force. These amendments will require further review and public comment prior passage by the General Assembly. The recommendation by the Governor's Water Resources and Land Use Priorities Task Force for a comprehensive evaluation of Illinois water use law should provide an opportunity to re-evaluate the recommendations of the Water Plan Task Force Groundwater Quantity Committee.

**Cost** - \$75,000 per year, includes one new engineering position and a studies program.

#### **Groundwater Resource Inventory - Mahomet Aquifer**

(Lead Agency: Division of Water Resources and Department of Energy and Natural Resources)

The Mahomet Valley aquifer located in east central Illinois is one of the most valuable groundwater resources of Illinois. The future development of this resource is now the cause of widespread controversy. Much of this controversy involves a lack of understanding and knowledge concerning this aquifer and its potential. This technical evaluation would address these concerns and provide for sound future development.

**Cost** - \$1,000,000 to \$1,500,000 per year for seven years.

## **Wetland Protection**

(Lead Agency: Department of Conservation)

Wetland protection and management has been addressed by the State through several initiatives and programs.

The Illinois portion of the National Wetland Inventory (NWI) was completed and digitized in 1988. Since that time several important improvements have been made to the automated data to make it even more useful for policy makers and wetland managers. Hard copy maps and automated wetland data are available to the public through two distribution centers.

The NWI continues to be a very useful resource inventory. However, its usefulness is diminishing, especially in the rapidly developing parts of the State. The estimated cost to update the inventory is \$1,200,000.

The State legislatively adopted a consistent state wetland protection policy through passage of the Interagency Wetlands Policy Act. The Act formally adopted the goal of a no net loss of wetland acres and functions and a long-term goal of increasing the existing wetland resource.

Illinois was the second State in the nation to adopt the no net loss goal through legislation. Administrative Rules are about to be promulgated for the Act. Implementation of the Act requires the development of standardized technical procedures for improved consistency in wetland delineation, function, evaluation, restoration/creation and planning. Both research and development funding is needed to support this effort. Estimated cost is \$250,000 annually. Full implementation of the Interagency Wetland Policy Act is estimated to cost an additional \$120,000 annually.

The State is currently looking at a strategy to implement recommendations to the Governor's Water Resources and Land Use Task Force and the Department of Conservation's Conservation Congress. This effort is known as the State Wetland Conservation Strategy. It will provide a comprehensive assessment of the State's wetland resource and existing programs which impact the wetlands resource. It will also make specific recommendations on how to address the resource concerns raised by the Task Force and Congress delegates. This is scheduled for completion by the end of 1995.

**Cost** - \$1,200,000 is needed to update the Illinois Wetland Inventory; \$250,000 is needed annually to facilitate the research and development necessary for the production of standardized technical procedures for the implementation of the Interagency Wetlands Policy Act; \$120,000 is needed annually for staff and operations to fully implement this Act.

**Natural Conditions Protection - Legislative Proposal**  
(Lead Agency: Department of Conservation and  
Division of Water Resources)

The protection of the natural conditions of the more unique rivers and streams of Illinois has been recognized as an important environmental issue worthy of state legislative action. A legislative proposal which would provide protection for the natural conditions of the more unique streams of Illinois has now been prepared for consideration by the General Assembly. Efforts need to continue to promote acceptable legislative proposals for natural streams protection to the public and general assembly.

In 1992, Dr. Larry Page of the Illinois Natural History Survey, completed a report entitled Biologically Significant Streams of Illinois. All the river and streams segments identified in this survey as being of Grade A quality were added to the Illinois Natural Areas Inventory (INAI) during 1992 and 1993.

The Natural Areas Preservation Act was amended effective January, 1994 to require that any unit of state or local government which takes any action affecting an INAI site must consult with the IDOC before taking the action. The purpose of the consultation is to find mutually agreeable ways to avoid or reduce damage to the INAI site.

Final rules were approved in 1994 to establish a new protection program for owners of significant streams and rivers in Illinois. The Register of Land and Water Reserves allows public and private owners of a stretch of significant streams and rivers to register their ownership in cooperation with the IDOC and the Nature Preserves Commission. The registration agreement is a legal document similar to a conservation easement. Once registered, the area may not be taken for some other purpose unless there is a finding by the IDOC and NPC that the diversion is in the public interest.

A pilot landowner contact project was conducted in 1994 along the Little Vermilion River in Vermilion County. Every landowner along the 12 mile stretch of the Little Vermilion from Georgetown to the Indiana state line was contacted on a one-on-one basis to discuss the importance of the river and to explore various conservation options with the landowner. The pilot project was funded by the Natural Areas Acquisition Fund. A similar effort will be conducted in 1995 on the Embarras River in Cumberland County.

The State Water Plan Task Force activities should continue to support legislative and agency actions that are required to implement the full authority of the State to protect the State's rivers and streams.

**Cost** - If the proposed legislation is enacted, it will require at least \$184,000 per year, which includes four new engineer positions and one conservation resource administrator at \$50,000 per year.

**Instream Flow Protection - Legislative Proposal**  
(Lead Agency: Division of Water Resources)

The recommendation of the Water Plan to evaluate the need for instream flow protection legislation was endorsed through PA 86-191 (HB 1196). This legislation mandated that an interagency committee develop a program and legislation for the protection of instream flows and report back to the Governor and General Assembly by April 30, 1991. This committee completed its activities and submitted a report to the Governor and General Assembly as mandated.

The report included 16 white papers on covering important issues concerning the management and protection of the instream resources of the State of Illinois. The committee developed and reviewed five legislative proposals for the protection and management of instream flows. A timely consensus could not be reached on the key elements of a legislative solution for the regulation and protection of the instream flow resources of the State. The committee did identify the key issues and questions that must be addressed during the development of any legislative proposal for the protection of instream flows.

**Cost** - Unknown, but possibly \$150,000 per year, includes two new engineer positions plus \$50,000 per year for one conservation aquatic biologist. A research program identified by the University of Illinois to address the ecology and economics of instream flows would cost \$250,000 per year over four years. A research program on regulation would cost \$75,000 per year over two years.



## **Remaining Issues and Recommendations With Unmet Needs**

### **Erosion and Sediment Control Act**

(Lead Agency: Illinois Department of Agriculture)

This Act, formally known as the State Soil Erosion and Sediment Control Program is embodied in the publication "Guidelines for Establishing District Programs and Standards.

This Act provided a mechanism whereby a landowner whose erosion problem was causing difficulty for a neighboring landowner could receive Cost-share assistance to correct the problem through keeping his soil for his use and no longer harming the neighbor. This program started with an appropriation of \$50,000 which rose to \$200,000 before funding was discontinued in FY '92. Many of the complaints filed were "friendly complaints". The loss of this program prevents being able to remove some of the most difficult situations where erosion is occurring, causing sedimentation.

**Cost** - \$200,000 per year.

There has been a 22% reduction inland eroding more than "t". This was achieved through the cooperation of agencies and landowners. There was a state cost-share fund which assisted this program that is no longer available. Consequently, there is greater dependence on federal funds and the landowners ability to pay. Such programs as CRP have made a significant impact on taking highly erosive lands out of production. The future of this program will have a significant impact on the continuing progress of the State to reach "T by 2000".

The State Cost-share program was discontinued in the FY '93 budget. It had been funded as follows: FY '86 - \$4,000,000; FY '87 - \$3,000,000; FY '88 - \$5,000,000; FY '89 - \$3,000,000; FY '90 - \$2,000,000; FY '91 - \$1,800,000; FY '92 - \$500,000; FY '93 - 0, for a total of \$19,300,000 over seven years.

**Cost** - Renewed funding needs could return to \$4,000,000 per year.

### **Row Crop Land Conversion Program**

(Lead Agency: Illinois Department of Agriculture)

Convert 900,000 acres of land currently in row crop production to a less intensive use (Pasture, Trees, etc.) because it cannot meet "T" values with current soil and water conservation technology. It is estimated that there will be 820,000 acres in CRP in Illinois by the time the decisions are made on the acres offered at the last sign-up. Those acres will all be in grass or

trees. The erosion rate should be below "T" .See discussion above. The 820,000 acres amount to 91% of the 900,000 acre goal.

**Cost** - Unknown federal costs primarily through ASCS.

### **Modern Statewide Soil Survey - Completion**

(Lead Agency: Illinois Department of Agriculture)

Complete modern soil survey mapping in all counties. With federal, local and state funds it is expected that all field work on soil surveys will be completed by December 31, 1995. Printed soil surveys should be available in FY '97. There is a need to update older surveys to make them all equally usable and appropriate for use as a basic data layer in a State Geographic Information System (GIS).

**Cost** - \$350,000 to \$500,000 per year.

### **Monitoring of Sediment in Illinois Streams and Rivers**

(Lead Agency: Illinois State Water Survey)

Sediment in Illinois streams and rivers has been recognized as the number one pollution problem facing the state of Illinois for many years. Recognizing the seriousness of the problem, the Illinois State Water Survey initiated the Illinois Instream Sediment Monitoring Program in 1981. Initially, the data collection program included 50 stations throughout the state. Twenty-seven of the stations were monitored intensively while the remaining 23 were monitored only once a week. The objective of the program was to assess the existing problem in the state and to monitor the long-term trend in erosion and sedimentation in the state. It was felt that it is essential that the amount of sediment transported by Illinois streams are quantified in order to help identify proper management techniques and practices that can control the erosion problems in the state.

Because of funding limitations, the instream sediment monitoring program has been in the decline since 1983. At the present, there are only 10 stations out of the original 50 stations that are still being monitored. This program needs to be at least restored to the original level to monitor the trend of sediment load in Illinois streams.

**Cost** - \$500,000 per year.

## **Lake Sedimentation Survey**

(Lead Agency: Illinois State Water Survey)

Illinois' 3,000 lakes and 81,000 ponds serve many useful purposes including water supply for municipalities and industry, recreational activities such as fishing, swimming and boating, and flood control. By providing such beneficial and essential services, Illinois' lakes and ponds play an important role in the states' economy, environment, and standard of living. The proper management of Illinois' lakes is therefore an important responsibility for state government. The Water Survey has been investigating problems associated with many of these lakes over the years and assisting municipalities and other state agencies to develop management programs. In most cases, the number one problem with Illinois lakes is the high sedimentation rate that is reducing their storage capacities and beneficial uses very rapidly. The Water Survey's efforts to assist municipalities and other state agencies in developing proper management programs to reduce the rate of sedimentation and manage the in-lake sediment is limited and totally inadequate because of the lack of funding. The Water Survey needs to develop a well organized and systematic lake sedimentation program that does not depend on contracts from municipalities and other state agencies. Existing lakes in the state should be surveyed and investigated by trained and experienced professionals so that accurate and reliable data is generated for the development of cost effective and efficient lake management programs in the state.

**Cost** - \$300,000 per year.

## **Illinois Groundwater Protection Act - Full Implementation**

(Lead Agency: Illinois Environmental Protection Agency and Department of Energy and Natural Resources)

There has been good progress made on implementing major portions of the IGPA dealing with coordinating state efforts, establishing setback zones, water well permit issuance, mapping sensitive groundwater areas and submission of proposed regulations to the Pollution Control Board. Additional resources will be needed to more fully implement the programs which are in place and otherwise working well.

New technology control regulations require technical assistance be given regarding actions to be taken on sources located within setback zones and regulated recharge areas. Because of the time intensive nature of the assistance, additional staff will be needed to:

Review requests for waivers pursuant to Section 14.2(b) or PCB exception requests of Section 14.2(d); and

Provide coordination and technical review of responses to water supply contamination incidents.

Development and filing of rule making proposals for maximum setback zones which are based upon identification of high hazard areas using the well site surveys.

Enhancement of community water system protection programs by responding to local technical assistance needs through the following:

Coordinate with DENR to develop a prototype groundwater protection needs assessment for local governments; and

Provide IEPA and DENR staff which work only in providing assistance to communities in developing groundwater protection programs.

**Cost** - All of these program elements are required by the IGPA and are needed to run a long-term, prevention based program. While some assistance is being provided by USEPA for needs assessments and regional planning, it will be limited to only partial program assistance and to two regional areas. Approximately \$250,000 in additional funding which includes five technical and professional staff that will be needed to carry this out and an additional natural heritage biologist may be required at \$50,000 per year to conduct required reviews of ecologically vital groundwater areas.

### **Assessment and Mapping of the Ground-Water Resources of Illinois**

(Lead Agency: Illinois Department of Energy and Natural Resources, State Water Survey and State Geological Survey)

The ground-water resources of Illinois are well understood for only a very small portion of the state. The ground-water conditions over most of Illinois are poorly characterized. To effectively protect this valuable resources, it is imperative that it be understood from the standpoint of both quantity and quality. Unless we know the ambient ground-water quality, we can not assess the effectiveness of ground-water protection measures. This work would systematically examine the whole state. The order of study could be driven by other needs such as the Groundwater Protection Act priority planning regions, but would also have a component that would focus on parts of the state with little or no information.

**Cost** - \$750,000 per year.

### **Integrated Water Management - Continue Interagency Coordination**

(Lead Agency: Illinois Division of Water Resources)

Although positive strides have been made in coordinating State Agency programs to reduce duplicity and consolidate data collection and management, further efforts along these lines will be needed in addressing expanded programs in toxics, nonpoint pollution, groundwater protection,

stream and river management including large rivers and lake management and restoration. The recommendation by the Governor's Water Resources and Land Use Priorities Task Force for a comprehensive evaluation of Illinois water use law should provide an opportunity to re-evaluate the recommendations of the Water Plan Task Force regarding expanding programs and interagency coordination.

**Cost** - \$150,000 for the first year and \$50,000 for the second year.

## **New Issues Requiring Future Attention**

### **Erosion and Sediment Control - Stream Sediment Contributions**

(Lead Agency: Illinois Department of Agriculture, Illinois Department of Conservation and Department of Energy and Natural Resources - State Water Survey)

Although the Watershed Land Treatment Program and Erosion and Sediment Control Complaint Process has shown us that the agencies can work effectively in the Watershed Priority Committee, further interagency attention must be directed to areas contributing significant stream sediment loads. The development of research is needed to determine the most effective methods to control stream banks against the erosive action of flowing water. Cost-share assistance programs must be supported by the SWPTF to assure installation of effective, cost efficient and environmentally sensitive techniques. The Natural Resources Coordinating Council has established an interagency work group to further define the nature and scope of the programs necessary to provide improved stream bank protection measures throughout Illinois.

**Cost** - \$350,000 per year for research and planning and one professional staff at \$50,000 per year.

### **Federal Groundwater Quality Protection Program**

(Lead Agency: Illinois Environmental Protection Agency)

In 1991, the U.S. Environmental Protection Agency (USEPA) released its Groundwater Protection Strategy for the 1990's. The Strategy sets forth the Agency's groundwater protection goals and principles, and introduces the concept of Comprehensive State Groundwater Protection Programs (CSGWPPs). These CSGWPPs will be the focal point for a long-term joint commitment between USEPA and the States. In the Spring of 1992, USEPA released draft CSGWPP guidance which is still undergoing review.

USEPA wants the CSGWPP approach to be the catalyst for fundamental changes in the development of groundwater protection programs at the federal, State and local levels. These changes are intended to lead to increased integration of all groundwater protection efforts, based upon a comprehensive resource-orientated perspective and State centered priorities.

Under the new USEPA strategy, a development process for both a core and fully integrated CSGWPP involves meeting adequacy criteria under six strategic activities identified in the strategy. The starting point in Illinois will be to conduct a self assessment of the Illinois groundwater profile. The current profile report has been prepared by USEPA and will be utilized

by the Interagency Coordinating Committee on Groundwater (ICCG) to conduct a self-assessment in relation to the six strategic activities defined in the USEPA strategy.

Illinois must continue to carefully evaluate the federal proposals and provide input to the legislative and rulemaking processes where possible. The federal groundwater program can quickly become massive and require a large commitment of resources. On the other hand, participation in the federal program will provide for continued federal funding; consistency of groundwater regulations among states; and perhaps satisfy public perception of groundwater protection needs.

**Cost** - It is not possible to project a cost at this time.

### **Floodplain Mapping Revisions - Tech. Bulletin 70**

(Lead Agency: Illinois Division of Water Resources)

Floodplain maps used in the entire State for regulatory purposes and the flood insurance program are now over 15 years old and are based on data that is over 30 years old. These maps require a technical revision using updated values for the frequency and distribution of heavy rainstorms. The State Water Survey has prepared Technical Bulletin 70 which is based on updated rainfall records and shows some very significant changes in the frequency of heavy rainstorms and therefore, associated flooding.

**Cost** - Unknown at this time but could potentially reach tens of millions.

### **Exotic Species Impact on Native Fauna and Flora**

(Lead Agency: Department of Conservation and  
Department of Energy and Natural Resources)

In recent years there has been growing concern over the proliferation of exotic animals and plants in Illinois waters. Purple Loosestrife has invaded and is taking over much of the wetland acreage in the northern portion of Illinois. The rusty crayfish, a bait species, threatens to displace native species in several streams, including the Kankakee River. Lake Michigan has become host to several new invaders over the past ten years. The River Ruffe, the Rudd, the Zebra Mussel, and Bythotrephes ( a giant water flea), have all been introduced via the purging of fresh water ballast by transoceanic vessels. In 1993, an exotic invertebrate species, *Daphnia Lumholtzi*, was discovered in Lake Springfield and threatens to displace native invertebrates. Each of these species poses a unique threat to the ecosystem of both Lake Michigan and our inland waters. During the next ten years, much research will be required by government agencies to investigate means for the control and eradication of exotic species.

The IDOC, assisted by federal Wallop-Breaux funds, completed a two-year research project on Zebra Mussels in June, 1993. This study was conducted primarily on Lake Michigan by Dr. J. Ellen Marsden of the Illinois Natural History Survey. The objective of this study was to monitor the spread of Zebra Mussels in Lake Michigan and to begin to assess their impact on native communities of fish and other organisms. The study found that zebra mussels increased in abundance both years and water clarity was positively correlated with this increase. About 20% of the in shore substrate in southern Lake Michigan is now heavily colonized by zebra mussels and the flood of 1993 allowed them to spread down the Illinois and Mississippi Rivers. Heavy infestations of zebra Mussels have now been found in the Illinois and Mississippi Rivers and as far south as the Ohio River near the mouth of Lusk Creek. Dr. Marsden is still serving as a repository for Zebra Mussels occurrence information, along with her colleague, Doug Blodgett. The IDOC, Division of Natural Heritage, has also begun keeping records of the occurrence of all exotic invaders, and special cards for this purpose have been distributed to all Department field biologists. A brochure has been developed concerning the control of purple loosestrife in native marshes. The IDOC Natural Heritage Division, assisted by local conservation agencies, cooperated in a midwest biocontrol program for purple loosestrife in 1994. The program was coordinated by the US Fish and Wildlife Service. Total costs were \$14,000.00 for enough proven and approved control insects of two species to do seven releases. The releases were in wetlands in the upper Fox River Valley, near Lake Michigan in Lake County, in south Cook County and near the Mississippi River. Two new insects will be available for release, possibly as early as 1995.

**Cost** - \$250,000/year for research and \$50,000/year for one professional support staff.  
Loosestrife control cost is \$15,000/year for culture of insects.

### **Stream Access**

(Lead Agency: Department of Conservation)

With the growth of environmental awareness and emphasis on the protection of the State's rivers and streams comes the necessity to make these resources available to the public in a manner consistent with the protection goal. Private ownership of the streams need not be a barrier to use provided the landowner is not subjected to undue physical, monetary and land use restrictions. The opportunity to provide access with no loss to the landowner needs to be fully explored and implemented. Such a study and implementation must have the support of the water resource management agencies represented by the SWPTF.

**Cost** - Estimated \$2,500,000 to construct sites on 25 selected streams plus \$100,000 per year for two additional support staff.



## **Remediation and Rehabilitation of Quality Impaired Waters** (Lead Agency: Illinois Environmental Protection Agency)

Illinois is fortunate to have considerable water resources of high quality and is implementing significant measures to protect ground water in the future, but attention should be also focused on cleaning up waters that have been polluted. Consideration should be given to rehabilitating quality impaired ground water and surface water. Each point and nonpoint originated contamination incident should be thoroughly investigated regarding the economic and technical feasibility of remediation. No contamination event should automatically result in the write-off of the affected water resource. However, in many cases, contaminant source removal and site cleanup are incorrectly assumed to translate almost immediately into surface and ground water restoration. Ground water restoration may take decades and should include detailed monitoring which may continue after suitable remediation has been achieved. Long-term economic costs and benefits should be well-understood before fiscal resources are committed to the cleanup. Once undertaken though, rehabilitation projects should continue to completion.

**Cost** - Current federal and state programs are insufficient to address the current and projected needs for water resources rehabilitation. State funding should be increased to expand current water resources cleanup efforts and to support more research on cleanup technologies. A research program identified by the University of Illinois, to further address this issue and the benefits and cost of alternative programs, would cost \$200,000 per year for three years.

## **Stream and Lake Use Management** (Lead Agency: Illinois Environmental Protection Agency and Department of Conservation)

**Lake Use Management:** Recognizing that improved lake uses and water quality could result from a greater role in lake management by the State, the Illinois General Assembly enacted the Illinois Lake Management Program Act ("Act", effective 1/1/90). As mandated by the Act, IEPA, designated as the lead agency, worked cooperatively with other state agencies (IDOC, IDOA, DENR, IDOT-DWR) and the Illinois Lake Management Association (ILMA) to develop an "Administrative Framework Plan" ("Plan") to serve as a blueprint for the administration of enhanced comprehensive lake program activities in the areas of public education, technical assistance, monitoring/research, and financial incentives. Through a funding package known as "Fish Illinois" which was passed in 1993, the Department of Conservation is hiring ten additional district fisheries biologists and nine technicians. The new staff will work primarily to provide technical assistance and monitoring on Illinois inland lakes and ponds.

**Cost** - The plan proposed three funding/program level options for consideration (\$2.0, \$6.5, and \$21.5 million; total cost over five years). The IEPA's director formally submitted the plan to the Governor (July, 1992) with a recommendation to implement the

"middle" \$6.5 million option, because it could provide for credible initiatives in each of the four management components resulting in demonstrable progress in lake restoration and protection at a reasonable and manageable cost. Although sources of funding for implementation of enhanced program activities were not specifically addressed in the plan, it did suggest that a long-term, dedicated source be sought. Those agencies with a role under this option stand ready to implement enhanced program activities should funding be made available. The Conservation 2000 legislative proposal put before the General Assembly in 1994 contained \$5,000,000 for IEPA to fund this proposal. It deserves the continued support of the SWPTF.

**Stream Use Management:** The wise conservation and management of Illinois' stream corridors is critical to the maintenance and restoration of stream ecosystems. Benefits include: flood management, improvement of water quality, cropland protection, wildlife habitat and greenways. The IDOC would work with IDOA and local soil and water conservation districts to help landowners establish and enhance riparian areas through education and effective conservation practices with incentives such as cost-sharing programs, management agreements and other innovative techniques.

Water pollution and siltation of local water supplies could effectively be controlled by stabilization of watershed conditions. Water retention basins, vegetative filter strips and wetland areas have all proven to be effective means to control erosion and remove pollution. The resultant improvement in water quality should reduce the costs of maintenance to local water districts, costs of storm and floodwater management and the costs of dredging. The use of a forest strip 52 feet in width has been shown to remove 97 percent of subsurface nitrate-nitrogen, a common pollutant associated with agricultural activities. This filter strip would help farmers comply with federal EPA water quality standards. By returning riparian ecosystems to a more natural state, fish and wildlife habitat would be improved and linear greenways would be established. greenways could be used to provide recreation opportunities for local residents and tourists.

In a 1990 report by Kovacic, Osborne and Dickson, the effect of riparian vegetation on nutrient transport from rowcrop agriculture into the Embarrass River in Champaign County was studied. Forested filter strips and grass filter strips were compared to unbuffered areas. The forested strip of approximately 52 feet removed in excess of 95 percent of NO<sub>3</sub>-N, whereas the grass strip of 45 feet reduced it by 50 percent. Because farmland comprises 80 percent of all land uses in Illinois, the denitrification of agricultural runoff would drastically improve the water quality of the state's rivers and lakes. Excess nitrogen causes massive blooms of bluegreen algae which poses health hazards to humans, water plants and animals. Exposure to high levels of nitrogen also has been shown to cause methemoglobinemia in infants, commonly seen in rural areas having nitrate-contaminated wells. The study also points out that forest buffer establishment is a controversial subject in agricultural areas. It is generally assumed that forests inhibit drainage which in turn reduces crop yields. In such areas, grass filter strips might be a less controversial solution. Farmers do recognize the environmental problems of crop runoff, but tend to prefer cost-sharing and voluntary programs over regulatory methods. There are various low cost methods of stream corridor restoration such as the use of willow posts by the Missouri Department of Conservation.

Farmers might be induced to plant appropriate trees in the filter strips if they were shown correct timber production practices. Runoff from urban and suburban developments also needs to be retained and filtered. Retention basins, porous paving in parking areas and greenways should all be utilized in these developing areas. Several articles in the proposed Conservation 2000 legislation deal with the recommendation for stream corridor restoration. There is funding proposed for IDOA for streambank restoration, conservation practices cost-sharing program, soil and water conservation grants. IDOC has funding proposed for greenway planning and coordination, easements, cost-sharing programs, and nursery production. This important legislative initiative is worthy of continued support by the SWPTF.

**Cost** - Implementation of the six-year Conservation 2000 Program would include \$125,000/year to the IDOA for streambank stabilization, \$150,000/year to DOC to increase production of its tree nurseries and \$1,250,000 for cost share and incentives to land owners, among other things.

**Illinois River Watch Program:** There is a growing concern that Illinois needs to expand its ability to monitor environmental quality of the State's rivers and streams. One program that might meet this need would be the development of a citizen based stream monitoring program such as the River Watch Network which was developed in northeastern Illinois. The Statewide River Watch Network was initiated in April 1993 by the Lt. Governor and a steering committee representing public and private entities. Since that time the network has selected macroinvertebrate collection and habitat assessment to be its initial monitoring activity, and has conducted a pilot project to test its monitoring protocol and training program. Volunteer recruitment will begin in this fall, and training will be conducted in the winter, monitoring should be underway in early spring. The network is being coordinated and supported by DENR.

**Cost** - Startup cost, staffing needs, and operating cost to be estimated by statewide steering committee.

### **Water Pollution - Chemical Contaminant Monitoring Illinois Fish Contaminant Monitoring Program**

(Lead agencies: Illinois Environmental Protection Agency,  
Illinois Department of Conservation, Illinois Department of  
Public Health and the Illinois Department of Agriculture)

In Illinois, contaminant levels in fish are monitored via a cooperative program with the above lead agencies. The objectives of the Illinois Fish Contaminant Monitoring Program are:

1. To investigate and detect the presence and build-up of toxic and potentially hazardous substances in fish, encompassing both fish toxicity and public health implications.
2. To determine the impact of fish contaminants upon the suitability of aquatic environments for supporting abundant, useful and diverse communities of fish life in streams and impoundments of Illinois.
3. To aid in the location of sources of toxic materials discharged and evaluate long-term effects of source controls and land use changes.

Recent IEPA federal funding for contaminant analysis and tissue storage has been terminated. Approximate costs to re-initiate this program with the IEPA is \$500,000/year.

**Cost - IEPA \$500,000/ year for tissue storage and contaminant analysis.**

### **Geographical Information Systems (GIS) - State Implementation**

(Lead Agency: Department of Energy and Natural Resources)

State natural resource agencies now recognize the value and need to implement a comprehensive interagency statewide geographical information system. GIS systems are now in general use by many federal agencies as well as a growing number of units of local government. State natural resource agencies must develop a full GIS capability to work with the information that will be needed to deal with such complex land management and regulatory issues as wetlands, prime farmland, waste facility siting, mine land development and reclamation, natural areas protection, etc.

**Cost - Estimated start up costs at \$800,000 per year.**

### **Lake Michigan**

(Lead Agency: Illinois State Water Survey and State Geological Survey)

Lake Michigan water is the largest and single most important water resource of the State of Illinois. The southern basin of Lake Michigan is not only important just for its recreational use, but it also provides water for drinking water purposes including sewage dilution for the metropolitan areas of the City of Chicago. An assessment and evaluation of this water body as far as the transport, movement, and redeposition of insoluble materials is considered essential for the development of a suitable management plan. A qualification of the hydrodynamic and hydraulic characteristics of the southern basin of Lake Michigan, including sediment deposition and redistribution should be initiated and completed.

**Cost - \$300,000 per year for 5 years.**

## **Management of Large Rivers of Illinois** (Lead Agency: Illinois State Water Survey)

Illinois is blessed with two of the largest rivers of the nation which not only provide water for a variety of purposes but also are extremely important as the main inland transportation arteries of the continental USA. Out of the approximately 13,000 miles of the Upper Mississippi River System (UMRS) from St. Paul to Cairo, Illinois, about 800 miles are either within the state of Illinois or borders the state on the west. Moreover, about 134 miles of the Ohio River also borders the state on the south. Lock and dams were constructed from 1913 through the 1930's to increase the low water depth and maintain navigation. Commercial navigation on these rivers are essential for the economic viability of the state.

Many locks and dams are now 60 or more years old and they may require repair or replacement in the next 10 to 30 years. Even though the replacement or repair of these locks and dams will be done by the federal government, both the alteration and changes on the operation and locking capacity could impact the future levels of navigation traffic. Alterations such as these are associated with a change in the physical flow pattern and probably the aquatic habitats.

Presently the U.S. Army Corps of Engineers (USACOE) and the National Biological Survey (NBS) are working to determine the future changes associated with navigation traffic. USACOE is also working on the navigation-related need of the entire UMRS. Since 1981, the Illinois State Water Survey has played a pivotal role in the evaluation and analyses of the physical changes associated with navigation. This also included the development of a Plan of Study (POS) for Melvin Price Lock and Dam with USACOE and other UMRS states.

The USACOE has prepared a document entitled "Initial Project Management Plan" (IPMP) which formulates the initiation, continuation and completion of studies related to environmental health of these large rivers and also how to address the future engineering designs. Because of a lack of funding, not all the work items included under POS and also at the level that POS recommended, could be included under IPMP. The State of Illinois played a pivotal role through its various agencies, such as IDOT(DWR), IDOC, DENR(ISWS, INHS), in the development and formulation of POS and other works postulated through UMRB states. Thus it is essential that matching funds be made available from the State to complete much of the work to be initiated as part of IPMP and other related studies. Professionals from this State are uniquely qualified to initiate and complete many of the applied research activities on hydraulics, hydrology, river mechanics, sedimentation and hydrodynamic behavior of these large and unique rivers. All this work is to be done to compliment the work to be initiated under IPMP and POS.

**Cost - \$500,000 per year for 5 to 7 years.**

## **Geologic Mapping in Illinois**

(Lead Agency: Illinois Department of Energy and Natural Resources - State Geological Survey)

For many aspects of long-term groundwater protection efforts in Illinois, detailed geologic maps and essential. Geologic maps have direct application for both economic development and environmental protection. In addition to the groundwater resource and groundwater protecting programs that require detailed delineation of aquifers, geologic maps are the primary data base for virtually all earth-science applications including exploration for and development of mineral and energy resources, screening and characterization of sites for waste disposal; design of sound environmental regulations; and siting of critical facilities. Only a small portion of the state has been geologically mapped at the scales needed.

In May 1992, Congress passed and President Bush signed into law the National Geologic Mapping Act of 1992. This legislation authorizes expedited production of a geologic-map data base for the nation via a federal geologic mapping component, a federal geologic mapping support component, a state geologic mapping component, and a geologic mapping education component. The two federal components are already funded at essentially 100% of authorized levels. Unfortunately, the state component of matching funds for the states has been funded at only nominal levels of \$1-2 million. That component which is authorized to begin at \$15 million in federal FY 93, rises to \$25 million by federal FY 96 and beyond. The detailed procedures for allocation of those state component funds among the states are currently in development. Best estimates, based in part on the Illinois experience in the smaller, predecessor federal COGEOMAP program, suggest that Illinois may look for up \$1.1 million in FY 96 and beyond. Those federal funds must be matched by the state. In the spring of 1992 the Illinois General Assembly passed and Governor Edgar signed into law an amendment of the Natural Resources Act to provide explicit authority for the state to participate in the new federal geological mapping program.

The National Geologic Mapping Act provides a most attractive opportunity for Illinois. In a detailed study of completed geologic maps in Bone and Winnebago Counties it was found that investment in geologic mapping provided economic returns ranging between 5 and 54 times the cost of mapping.

**Cost** - \$1,100,000 in FY 96 and beyond, all of which will be matched by federal funds.

## **Illinois Water Inventory Program**

(Lead Agency: Department of Energy & Natural Resources - State Water Survey)

The Water Inventory Program was initiated in 1978 with funding from USGS. The USGS stopped funding the inventory in 1980; since then, the inventory has been minimally maintained through internal sources at the Water Survey. The inventory and resultant database provides important information concerning major water users within the state including all municipal surface-and ground-water withdrawals.

**Cost** - To maintain this important database and upgrade its capabilities would require approximately \$75,000 per year.

### **Illinois Water Use Act**

(Lead Agency: Department of Agriculture and Department of Energy and Natural Resources - State Water Survey)

This Act calls for new "large capacity" (i.e., >70 gpm) well owners to notify the local county SWCD office of their intention to drill and, upon request, for the Water and Geological Surveys to make an impact assessment of the intended ground-water withdrawal on surrounding wells. The IDOA has authority to restrict withdrawals if conflicts arise. Activities related to the Water Use Act have been unsupported by GRF funds ever since the Act was passed in 1983. For several years, the Water Survey covered expenses internally but increased demands on those moneys forced a cessation of all Water use Act-related activities altogether. A backlog now exists for several hundred large capacity wells for which no impact assessment has been made and for which no realistic mechanism exists to erase the back log or to address future wells.

**Cost** - To properly conduct the responsibilities required under state law, funding by the state of approximately \$80,000 per year is needed.

### **Water Information Access Service**

(Lead Agency, Illinois State Water Survey)

The management of water resources in the future will increasingly need an interdisciplinary approach, drawing from available information from many sources. This is especially true in Illinois, where the various water issues are addressed by a number of different state and federal agencies. Even now, it is often difficult for a professional (much less the public) to access the wide variety of data that could be used to evaluate a water resource issue for a particular location. The Illinois Geographic Information System has been recommended as one tool to catalogue much of this information, but most water resources information will not readily be converted to a GIS format, nor will most potential users of water information have access to GIS facilities or know how to use the GIS. The state therefore needs a directory of complete information that is readily accessible by all water resource agencies and individuals.

Information technology is expanding rapidly through the use of Internet and other computer services. Information utilities on the Internet, such as Gopher and Mosaic, provide the user with access to available data, or directories of information, for locations throughout the United States and the world. Water information for the State of Illinois can be described and catalogued in the same format. Each agency could develop and maintain an in-house directory of the information and or services they provide. One agency, such as the Water Survey, could maintain a home

**Illinois State Water Plan - Remaining Issues and Implementation Requirements Report**  
**Cost Estimate Summary (see report for further detail)**

<b>Remaining Issues With Recommendations Not Implemented</b>	<b>First Costs/Annual Costs/Staffing</b>	
Illinois Groundwater Protection Act - Long Term Implementation	\$250,000	5
Groundwater Quantity - Water Authorities Act	\$75,000	1
Groundwater Resource Inventory - Mahomet Aquifer	\$1,500,000 (for 7 yrs)	
Wetlands Protection	\$1,570,000	
Natural Conditions Protection - Legislative Proposal	\$234,000	5
Instream Flow Protection - Legislative Proposal	\$525,000	3
 <b>Remaining Issues and Recommendations With Unmet Needs</b>		
Erosion and Sediment Control Act	\$4,200,000	
Row Crop Land Conversion Program	0	
Modern Statewide Soil Survey - Completion	\$500,000	
Monitoring of Sediment in Illinois Streams and Rivers	\$500,000	
Lake Sedimentation Survey	\$300,000	
Illinois Groundwater Protection Act - Full Implementation	\$300,000	6
Assessment and Mapping of the Ground-Water Resources of Illinois	\$750,000	
Integrated Water Management - Continue Interagency Coordination	\$150,000	0
 <b>New Issues Requiring Future Attention</b>		
Erosion and Sediment Control - Stream Sediment Contributions	\$400,000	1
Federal Groundwater Quality Protection Program	unknown	
Floodplain Mapping Revisions - Tech. Bulletin 70	unknown	
Exotic Species Impact on Native Fauna and Flora	\$315,000	1
Stream Access	\$2,500,000	\$100,000
Remediation and Rehabilitation of Quality Impaired Waters	\$200,000 (for 3 yrs)	2
Stream and Lake Use Management	\$2,825,000 (for 5 yrs)	
Water Pollution - Chemical Contaminant Monitoring		
Illinois Fish Contaminant Monitoring Program	\$500,000	
Geographical Information Systems (GIS) - State Implementation	\$800,000	
Lake Michigan	\$300,000 (for 5 yrs)	
Management of Large Rivers of Illinois	\$500,000 (for 7 yrs)	
Geologic Mapping in Illinois	\$1,100,000	
Illinois Water Inventory Program	\$75,000	
Illinois Water Use Act	\$80,000	
Water Information Access Service	\$40,000	\$15,000
<b>TOTALS</b>	<b>\$2,690,000</b>	<b>\$17,914,000</b>
		<b>24</b>