

ILLINOIS RIVER BASIN ACTION PLAN

SPECIAL REPORT NO. 11

OF THE

ILLINOIS STATE WATER PLAN TASK FORCE

Printed By
Illinois Division of Water Resources
Department of Transportation
Springfield, Illinois 62764

October 1987

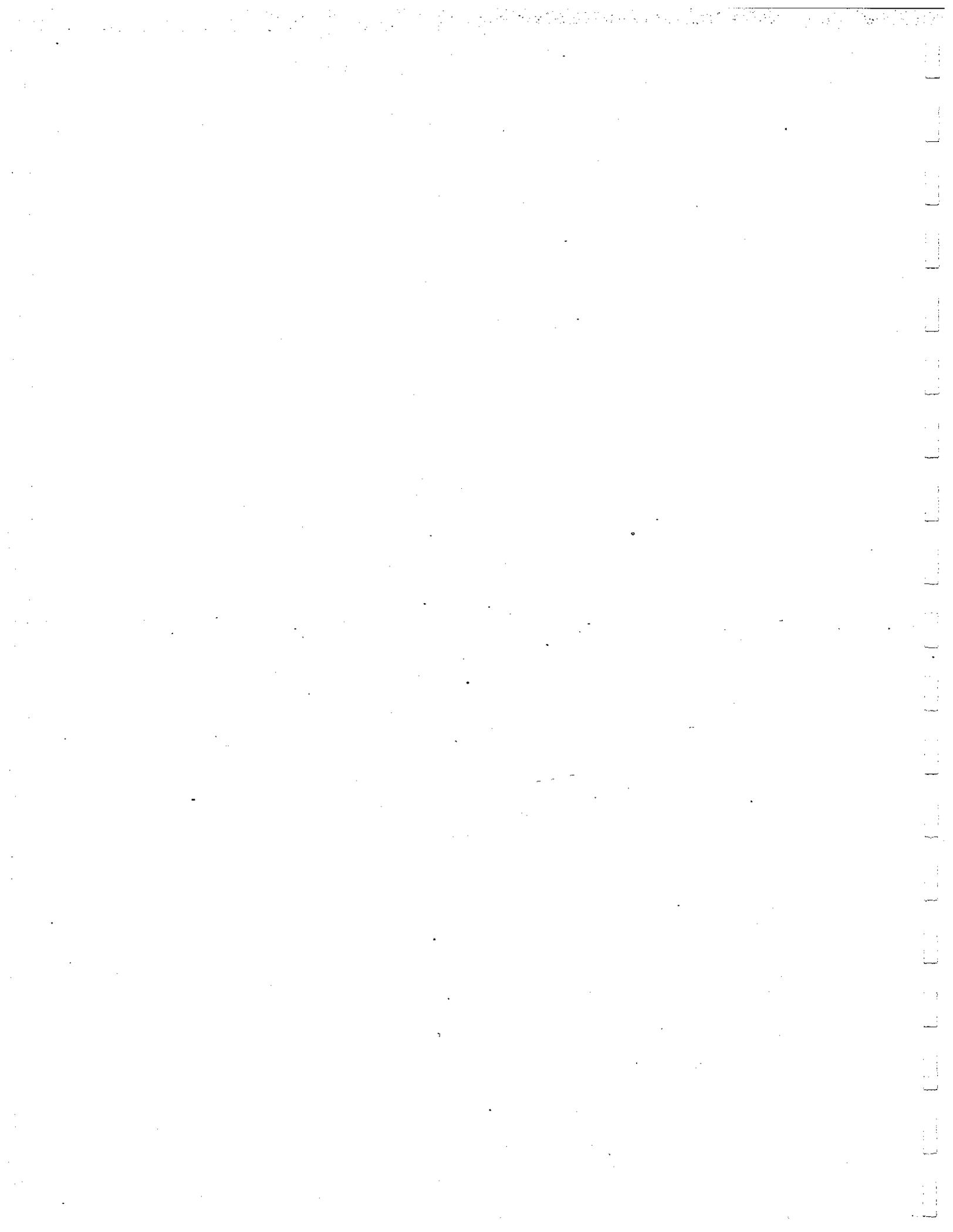


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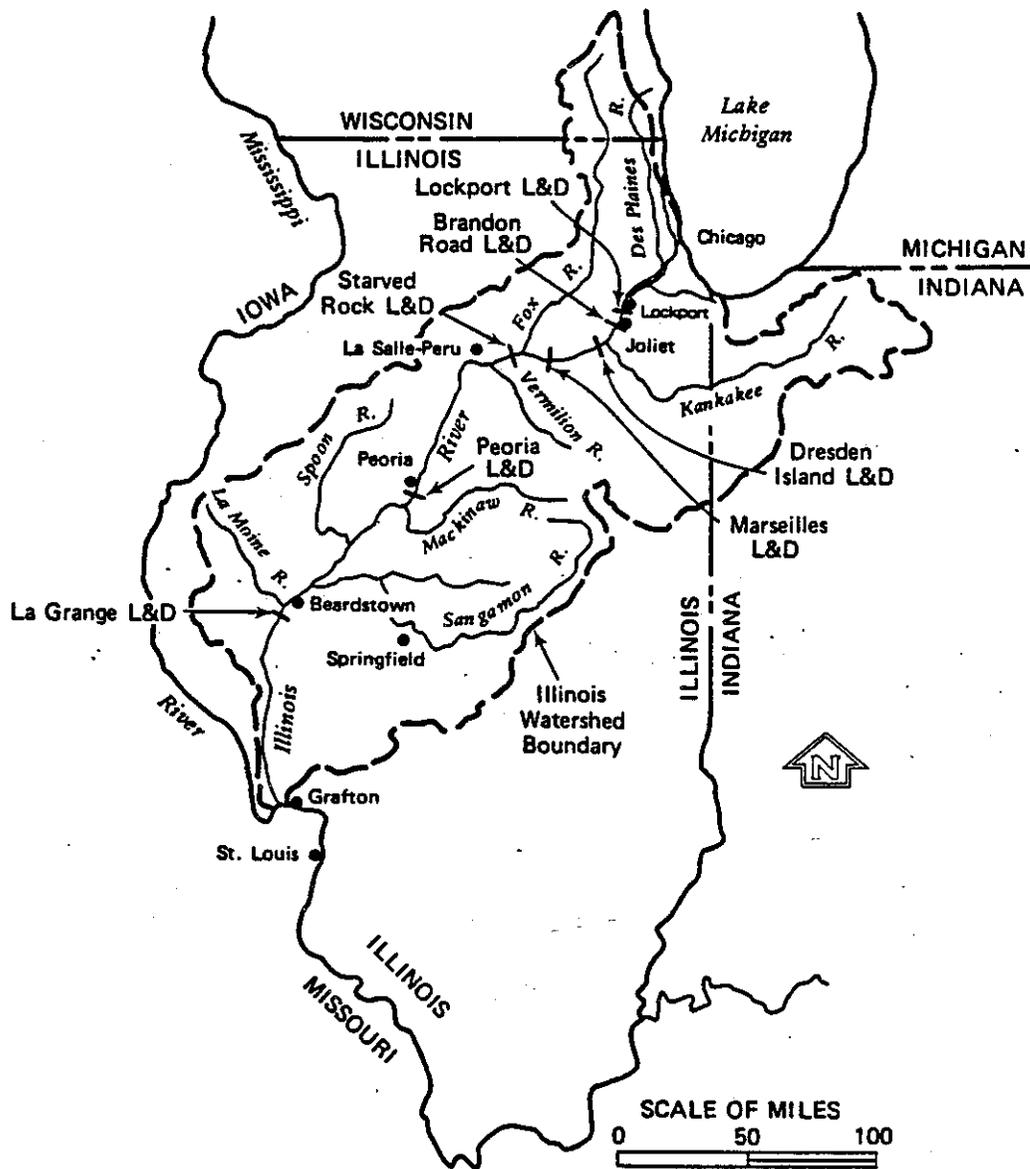
Executive Summary Introduction

This Executive Summary is intended to fill a conventional role in the Report. It is also intended to stand alone as a separate and complete, but brief, report on An Action Plan for Illinois River Management. This Executive Summary contains a map of the Illinois River Watershed and a Table of Illinois River Basin Issues and Agencies.

This is a report from Illinois State agencies operating through the Water Plan Task Force. It deals with management of the Illinois River and its watershed, and it responds to grass-roots concerns for the basin, as expressed by an April 1-3, 1987 conference and its published proceedings.

This report summarizes the expressed problems and priorities of the April conference as reported in the Proceedings "Management of the Illinois River System: The 1990's and Beyond", as well as sponsorship and planning events leading to the conference. The conference was also designated "A Governor's Conference", and Governor Thompson attended on the first day and cruised Peoria Lake. It was also announced that the Governor had requested the State Water Plan Task Force to review the Conference Proceedings and prepare a recommended action plan.

The body of this report consists of 16 issue papers covering the important topics of concern. These constitute the requested action program of solutions in response to the concerns raised at the April conference.



ILLINOIS WATERWAY

ILLINOIS RIVER BASIN ISSUES AND AGENCIES

<u>ISSUE</u>	<u>LEAD AGENCY/SUPPORT AGENCIES</u>
1. Sedimentation	Energy and Natural Resources (DENR) Dept. of Conservation (DOC) Environmental Protection Agency (EPA)
2. Erosion Control	Dept. of Agriculture DOC DENR EPA
3. Flooding	Dept. of Transportation (DOT) DENR
4. Water Quality	EPA DENR
5. Aquatic Habitat Forestry, Wildlife and Natural Resources	DOC DENR
6. Lake Michigan Diversion	DOT DENR
7. Recreation	DOC
8. Commercial Navigation	DOT DENR
9. Drinking Water Supply	EPA
10. Wastewater Disposal	EPA
11. Hydropower	DENR DOT
12. Agriculture	DOA EPA
13. Urban Stormwater Management	EPA DENR
14. Commercial Fish and Mussel Resources	DOC DENR
15. Archaeological, Historical, and Paleobiological Resources	DENR Ill. Historic Preservation Agency
16. Economic Development	Dept. of Commerce and Community Affairs

Governor's Conference on Illinois River Management

Approximately 250 people attended the conference in Peoria on April 1-3, 1987. The conference was divided into three subject areas dealing with a) physical and engineering aspects, b) natural resources and biological, and c) economic aspects. Within each of the subject areas state-of-the-art papers were followed by discussions in 11 workshop groups. Each of the workshops under a chairman and reporter sought a consensus on the problems and their relative priorities. Possible solutions were also identified.

Welcomes and Keynote Addresses

Conferees were welcomed by the Chairman, the Mayor of Peoria, and the Chairwoman of the Peoria County Board. Keynote speakers outlined the consequences of inadequate water management, cited benefits of improved management, and emphasized the trend to greater state and local authority and responsibilities in government.

A Historical Background on the Illinois River

Historically, the Illinois River was one of the most productive rivers in North America, its fish and wildlife populations virtually unequaled. Today, even after experiencing drastic changes brought about by human intervention, the Illinois River remains our state's most important river system. Its basin and tributaries total 32,081 square miles and include over half of the area of Illinois as well as parts of Wisconsin and Indiana. Accordingly, the Illinois River is affected by and affects the majority of our state's citizens.

Five major changes have been imposed by our society on the Illinois River system since the turn of the century. An appreciable volume of water diverted from Lake Michigan entered the Illinois River in 1900 when the Sanitary and Ship Canal was opened at Chicago. Shortly thereafter, vast quantities of untreated domestic sewage and industrial wastes from Chicago were flushed through the Canal into the Illinois River and away from Lake Michigan, a source of the city's water. Thirty-eight organized drainage and levee districts and three private levees were developed for agricultural purposes between 1902 and 1929, and they greatly modified the hydrology and landscape of the valley. Six dams-five along the Illinois and another below its mouth at Alton on the Mississippi-were constructed during the 1930's to create a channel 9 feet in depth for commercial navigation. In recent decades, sedimentation has dramatically affected the river and its adjacent waters.

Sedimentation, today's major pollutant of our nation's agricultural waterways, is the primary obstacle in preserving some semblance of the historic Illinois River for future generations. Restoration of portions of the river valley by reclaiming selected drainage and levee districts is one plausible approach; however, any alternative must be accompanied by a land-use policy that is both economically sound and ecologically intelligent.

Physical and Engineering Aspects

Commercial Navigation - The State of Illinois offers a distinct geographic and economic advantage to shippers due to its midwest location at the confluence of the Great lakes and the inland waterway system. Therefore, the subject is of great importance, yet it does not constitute a major problem calling for immediate action programs to correct serious problems. It is also true that although state and local governments have roles to play, considerable responsibility for the management of commercial navigation resides with the federal government.

Lake Michigan Diversion - High water levels on the Great Lakes with widespread flooding and shoreline erosion and damage have again renewed interest in increasing the diversion from Lake Michigan to the Illinois River among other possible responses. The International Joint Commission is currently studying these options.

It is the opinion of the Division of Water Resources that any federal legislation calling for an increased diversion at Chicago should contain the following key elements:

1. Any authorization for an increased diversion at Chicago should be part of a recommended plan of action between Canada and the U.S.
2. The recommended plan of action should include all existing control measures which can be used to reduce water levels on the Great Lakes. This includes not only an increased diversion at Chicago but also stopping or curtailing the diversion of water into Lake Superior at Long Lake and Ogoki, maximizing flows out of the Niagara River and the Welland Canal, including increasing the flows to the Black Rock Lock during the non-navigation season.
3. The recommended plan of action should be implemented only during periods of high lake levels.

River Forecasting - It is clear that efficient management of all aspects of the Illinois River system requires advance knowledge of flow conditions.

River forecasting for the Illinois River is not easy because of the large basin size and variability. The slopes vary from flat to rolling, and the land use from urban to cultivated and forested. For these and other reasons the forecasts have at times been less precise than desirable or possible. Improving the forecasts through enlarged data networks or greater agency attention may be a problem to consider.

The Flooding Problems - Discussion at the April Conference confirmed that flooding remains a serious problem in the Illinois River Basin. Since 1978, the Illinois River has flooded at least once a year, and was severe enough to be declared a disaster area in two or more counties in 1979, 1982, 1983, 1985 and 1986.

It seems clear that a full menu of alternative measures are available and administrative procedures are clear. What seems necessary is a resolve on all levels to devote adequate resources to adopt and implement programs to reduce the large, annual flood losses.

Chicago Region Impact - The greater Chicago area represents one of the largest urban centers in the United States, with a population of over five million people in an area of about 900 square miles. Obviously, such a population concentration and the attendant industrial and commercial enterprises require a complex and extensive water quality management program. It may be equally clear that even with extensive controls and treatment, the Chicago area location at the head of the basin, will have numerous impacts on the Illinois River downstream.

The principal water management agency in the Chicago area is the Metropolitan Sanitary District of Greater Chicago (MSDGC). Today sewage receives at least secondary treatment. The District maintains programs of stream aeration, land disposal of removed solids, and control of industrial waste.

A major problem of the Chicago area has resulted from the combined sewers. During storm periods runoff mixed with untreated sewage frequently exceeded the system capacity, resulting in both basement and local street flooding. Excessive storm flows require the release of polluted waters to Lake Michigan, threatening the water supply and bathing beaches. A solution to this problem is being implemented in the Tunnel and Reservoir Plan (TARP).

Natural Resources and Biological Aspects

The Illinois Department of Conservation is a major agency in the natural resources and biological areas. Its mission is to protect and manage the State's natural resources and provide outdoor recreation opportunities.

Fish and Wildlife - Aside from aesthetic values of fish and wildlife, there are important economic considerations. The Illinois River and its backwaters provide about 2.1 million angling days. Based on an average of \$12 spent by fishermen per day this amounts to \$25.2 million annually.

Hunting and trapping also contribute to the Illinois River economy. Peak fall migrations often exceed one million ducks on the River. It is estimated that waterfowl hunters expended a total of \$4.6 million in 1985. Deer hunters in counties along the Illinois River spent an estimated \$2.6 million. Small game hunters spent \$6.8 million. The value of furs is estimated at \$800,000 for the 1984-85 season.

Water Quality - Many will be surprised to learn that on an organic waste load basis, the Illinois is in the best condition of more than 100 years. Carbonaceous waste loads have been reduced 91 percent since 1922, and in the Peoria area there has been a 97 percent reduction in organic waste discharges since 1925. This has been achieved by municipal and industrial treatment, particularly during the past 15 years. Reductions in the Chicago region through treatment and the TARP program are particularly notable.

Reductions in the organic loadings result in improved levels of dissolved oxygen (DO) which raises the aesthetic quality and the environment for desirable aquatic life.

Soil Erosion - A number of Illinois River management problems point to erosion and siltation as a serious problem. The nature and source of the erosion problem is documented in the Proceedings of the Peoria Conference and in various other sources. It is established that the bulk of erosion products is from crop land in the form of sheet, rill, and gully erosion. A variety of means for reduction of erosion are available through conservation methods. Streambank erosion has more recently come to be recognized as an important source of erosion products at least in some areas.

Active erosion control programs date back to about 1934, but progress has been slow. Currently, programs for the Illinois basin are striving to reach "T by 2000". These are levels of soil loss that can be permitted but still maintain long-term productivity of the soil resource. Such levels would also eliminate many of the off-site problems which have been cited. Unfortunately, mid-course checks indicate that the programs to achieve T by 2000 are behind schedule.

Innovative Ideas for Water Management. In contrast to conventional approaches to waste treatment and discharge of drainage and flood waters, closed systems are proposed by some. Used water can be sent through the natural cleansing systems of soil, plants, air and sunshine for reclamation and reuse.

Demographic and Economic Aspects

The region accounted for 56 percent of the State's total personal income, with the largest share in Cook County. Per capita personal income ranges from a high of \$14,328 in Grundy County to a low of \$9,409 in Schuyler County. These compare with a state average of \$13,705.

Agriculture and Industry - The region is an important agricultural area with livestock receipts of \$419,875,000 or 18 percent of the states' total. Crop receipts were \$1,001,739,000 or 17 percent of the states' total.

The region is an important industrial area with about 58 percent of the construction and manufacturing employment of the state.

Peoria: A Model Development - Life in early Peoria was oriented to the river as settlers arrived and grain and other products were shipped. Great breweries and distilleries, as well as other industries prospered by the water. Eventually industrial growth virtually closed public access to the river.

In more recent times circumstances permitted the City of Peoria to acquire 37 acres of riverfront property with support from a state grant. Combined with other property the city now controls about 1 1/2 miles of land along the river.

It is of critical importance to the riverfront development that Lake Peoria remain an attractive and open body of water. If siltation were to convert the area to mud flats the reason for the development would be lost.

Priorities and Recommendations

The Peoria conference was structured so that each technical session presenting papers was followed by workshops divided into eleven groups.

Out of this process there emerged a consensus of top priority problems as:

1. Soil erosion and siltation
2. Flooding
3. Lack of public awareness
4. Diversion of Lake Michigan

Some 33 additional problems were sufficiently discussed to be reported in the proceedings. There was a consensus that all the top problems require immediate action.

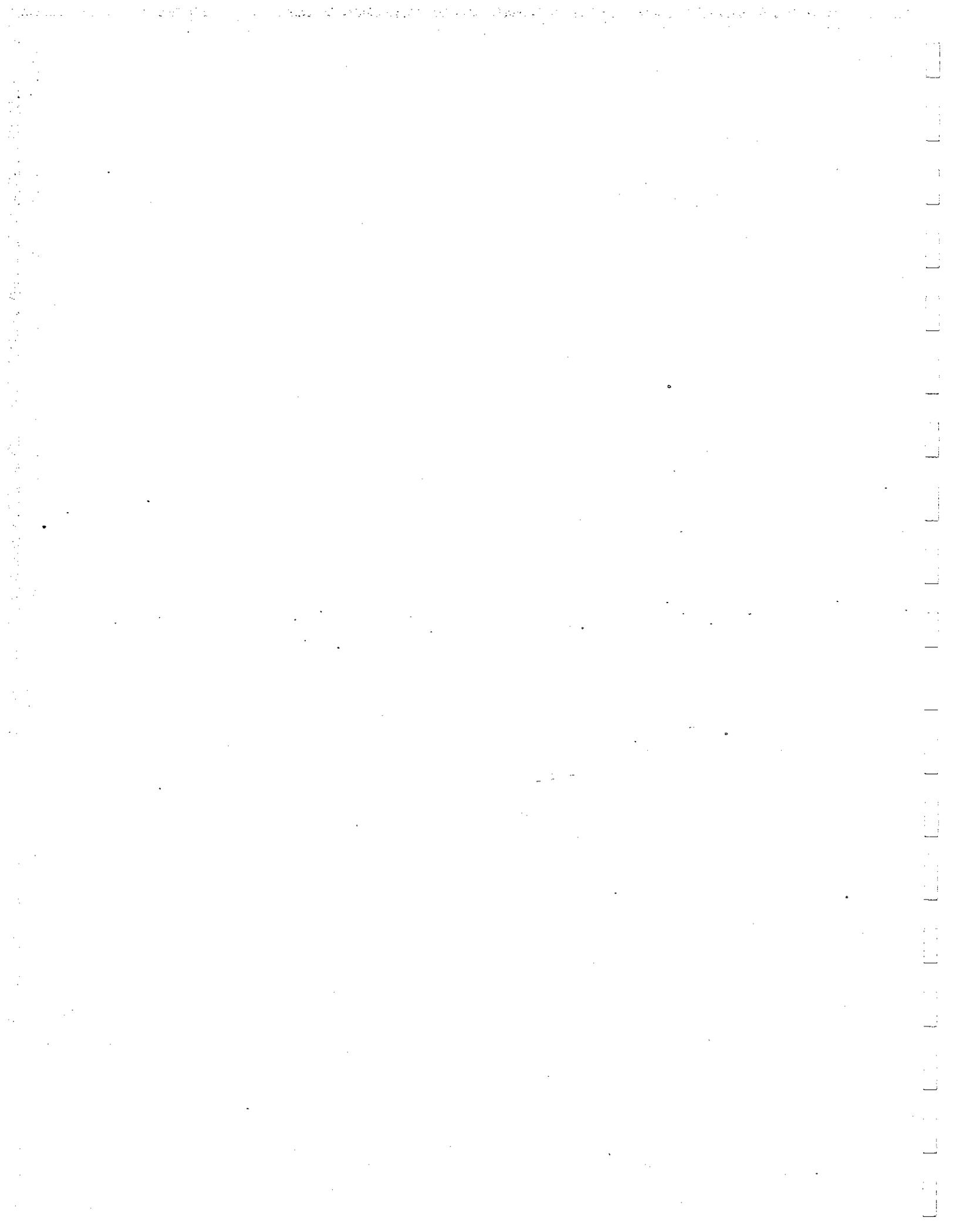
The Conference leadership suggested the following recommendations based upon the Conference.

1. The formation of a post-conference advocacy committee to set goals, objectives, determine a time frame for action and attempt to estimate costs.
2. Interact closely with state and federal agencies that deal with the management of the Illinois River systems and its environmental condition.
3. Organize an annual event to exchange information on solving problems, but choosing the site of the meeting at other prominent cities of places along the river, e.g.
4. Continue to focus media attention on the Illinois River system.

State Agency Response

The response of State agencies to the problems and concerns raised at the Peoria Conference is organized into 16 issue papers in the full report. A common format was adopted for these and the subjects are listed in the preceding table.

For the Executive Summary an abbreviated form was adopted for each of the issue papers, and these are in the following sections.



SEDIMENTATION

Erosion and sedimentation are natural processes that cannot be stopped or eliminated. Human interventions such as alteration of stream courses, construction of locks and dams, changes in flow regime (including increased flow due to diversion), constriction and alterations of floodplains, and drastic changes in land use patterns have accelerated both of these processes, significantly impacting the Illinois River including its backwater and bottomland lakes. Many of the backwater lakes are losing their depths at the rate of 0.81 to 2.10 inches per year. Some of them are now nothing but broad mudflats and can no longer be considered backwater lakes. In general, the capacity losses of backwater lakes are higher than those of other manmade lakes.

Loss of capacity for most backwater lakes starts from their connecting channel with the Illinois River and then progresses gradually inward. Morphometric variations at the river-tributary confluences are responsible for extremely high sedimentation rates of many bottomland lakes such as Peoria Lake, which has lost 68 percent of its 1903 capacity. The rate of capacity loss of this lake has been shown to be higher during the last 20 years than in previous periods. Sedimentation of the waterways impacts aquatic habitats, impedes the operation of commercial and recreational traffic, constricts the conveyance channel, and transforms these water bodies into shallow water and wetlands. Erosion and sedimentation have been recognized as the "number one" water resources problem facing the State of Illinois. Various alternatives are available and can be implemented to alleviate the chronic sedimentation problems of this major river. A concerted effort by Illinois natural resources agencies in cooperation with local interest groups is essential in evaluating, initiating, and implementing alternative solutions for revitalizing selected backwater and bottomland lakes along the Illinois River.

Before a course of action is recommended, it must be pointed out that the Illinois River cannot be returned to its original pristine condition. Moreover, some areas of the bottomlands and backwater lakes have undergone almost irreversible changes and can not be altered or revitalized without significant cost and effort. It is essential that a thorough evaluation of the backwater and bottomland lakes be made to determine the area or areas of these resources that are of significant value to Illinois citizens. Once this determination has been made, efforts should be concentrated to revitalize only these high-value areas.

The recently completed Governor's Conference on the Illinois River has identified siltation as the number one problem facing the Illinois River. The following recommendations were developed after consideration of this and other research reports evaluated for this issue paper.

The recommended "courses of action" are divided into two broad categories: resource information and plan of action.

I. Resource Information: Basic information is essential in the development of any management alternative if we hope to have any long-lasting impact. The following resource information is needed:

- o A sedimentation survey of these selected backwater lakes will provide information about the present state of these lakes. Sedimentation surveys of the backwater lakes will require \$175,000 per year for three years and these funds should be made available to the Illinois State Water Survey (ISWS), Department of Energy and Natural Resources (DENR). A centralized data bank where physical, chemical, and biological data and information are stored and updated periodically will not only assist us in developing proper management alternatives, but will also enhance our ability to respond to critical issues that will face us during extreme events such as drought and floods. Cost of this program will be \$75,000 per year and the program should be housed at the ISWS (DENR).
- o Extremely limited amounts of data and information are presently available on sediment loads carried by streams and rivers that drain directly into the Illinois River. State natural resources agencies should initiate and support a program of instream sediment load measurements including the quality of sediment at selected gaging stations on the tributaries and main stem of the Illinois River. This program would be housed at the State Water Survey (DENR) and would compliment the Benchmark Sediment Network presently operated by the Water Survey. This course of action is similar to actions recommended by the State Water Plan Task Force in their Special Report 10 of August 1985. Annual cost for such a program for the State would be \$325,000 with an additional first year's cost of \$110,000 for the initiation of the program.

II. Plan of Action: The "plan of action" is subdivided into three subheadings: Peoria Lake sediment management, in-lake management, and sediment input control. In-lake sediment management will have immediate impacts or benefits, and sediment input control will probably start to show an impact on the receiving lakes within the next 5 to 10 years. Intelligent meshing of "in-lake sediment management" with "sediment input control" is essential to obtain long-lasting benefits for all the backwater lakes, including Peoria Lake and the backwater lakes along the Illinois River. This plan of action also includes demonstration projects that can be initiated easily.

Peoria Lake Sediment Management:

- o The state natural resources agencies under the leadership of

the Illinois State Water Survey (DENR) should work with local area interests to develop a comprehensive management program for Peoria Lake consistent with the recommendations made in the "Peoria Lake Sediment Investigation" report published by the State Water Survey. This activity will require \$250,000 and these funds should be made available to ISWS (DENR).

- o The state natural resources agencies should continue to pursue Corps of Engineers' FY 89 environmental management program funding for the island demonstration project in Peoria Lake. Present estimated cost of this program by the U. S. Army Corps of Engineers is \$3.3 million. If this project is funded by the Environmental Management Program of the Upper Mississippi River, 25% of the total cost must be cost shared by the State and local agencies. Lead agencies for this program would be IDOC and DENR.

In-Lake Management:

- o High-value areas beyond Lake Peoria and within the backwater and bottomland lakes should be identified by the state natural resources agencies under the leadership of ISWS (DENR) and local concerned officials and citizens. A comprehensive management plan should be developed for these backwater and bottomland lakes. Total cost would be \$500,000 for a period of three years.
- o Techniques should be developed and implemented for the removal of sediment by selective dredging. Research should be conducted by DENR (ISWS, INHS, ISGS) and the estimated cost for this activity is \$100,000 per year for 3 years.
- o Concepts should be developed and feasibility studies should be conducted by ISWS (DENR) for creating artificial islands (similar to those now being studied by the Water Survey for Peoria Lake), public parks, playgrounds, etc., in the immediate vicinity of the dredging sites with dredged materials. Estimated cost for such an activity would be \$100,000 per year for 2 years.
- o Techniques should be identified and developed for controlling the sediment input to selected backwater lakes from the Illinois River by using methods such as gated control structures. Research for feasibility studies will be needed and should be conducted by ISWS (DENR) and will cost \$75,000 per year for 2 years.
- o Management techniques should be developed and implemented so that some or portions of the backwater lakes can be managed as shallow water wetlands, and terrestrial habitats. Such work should be undertaken by the State natural resources agencies.

Sediment Input Control:

- o Low-cost bank stabilization techniques should be developed and implemented for streams located within the immediate vicinity of the river and backwater lakes. ISWS (DENR) and IDOC should be the lead agencies and annual costs would be \$200,000.
- o Best management practices should be implemented on the highly erodible areas of the watershed. For cost estimate, see "Erosion Control" issue paper.
- o The public must be made aware that a state permit is required for stream channel modification or floodway construction.
- o IDOT-Division of Water Resources permit requirements will include provisions to reduce erosion and preserve stream channel stability.
- o Concerned state agencies should work with local units of government to encourage the incorporation of streamside vegetative buffers for all new and existing developments in both rural and urban areas.
- o Any state or federally funded projects on waterways, streams, rivers, lakes, or wetlands should be reviewed by the state natural resources agencies for determination of their potential impact on the erosion and sedimentation of the concerned bodies of water.

EROSION CONTROL

Soil Erosion is a ubiquitous and costly process. Ubiquitous - in that soil erosion to some degree occurs with each rainfall event. Erosion is a natural phenomenon that can never be stopped, but can be controlled and reduced to tolerable limits. Soil erosion is costly - requiring significant amounts of capital to control the erosion while still allowing for the production of normal agricultural commodities on rural lands as well as protection of the resource base on both the rural and urban lands. In addition to the landowner's cost of controlling erosion on-site, off-site deposition of the eroded soil in streams, rivers, lakes, road ditches, streets, sewers and other areas causes far greater expense to the public through remedial actions as well as decreasing the utility and value of the affected land and water resources.

Soil and Water Conservation Districts in cooperation with individuals both rural and urban, have been working to control agricultural streambank and urban/construction site soil erosion for nearly fifty years. Much progress has been made, but much still remains to be done. To meet the State's goal of T by 2000 on agricultural lands, and to address erosion on other non-agricultural acres, current programs need to be strengthened and new areas for action should be examined. The following courses of action are recommended as a means toward that end.

- o State cost-share funding for erosion control should be increased and extended beyond the initial five-year authorization period. Estimates indicate that \$160,000,000 will be needed in the next 12 years to meet T by 2000 goals for the Illinois Basin.
- o Soil and Water Conservation Districts will require an estimated \$5,000,000 per year from increased local as well as state sources of revenue to enable the employment of full-time experienced staff to work on the erosion control program.
- o The Illinois Conservation Enhancement Act, approved by the 85th General Assembly, should be adopted and funded at the requested \$10,000,000 level. This bill would supplement the federal Conservation Reserve Program, removing highly erodible land from crop production.
- o The proposed Bureau of Agricultural Development should be created and funded at \$100,000 annually, as a means of providing assistance to farmers in choosing alternative land uses that will keep soil erosion loss at or below "T".
- o Legislation needs to be enacted which would provide for assessments at one-sixth of the value for farmers who voluntarily take marginal land out of production.

- o The Illinois Department of Transportation - Division of Water Resources should promulgate and enforce construction permit regulations to assure that proper permit authority/management practices are in place to mitigate impacts from stream alteration. This will require \$105,000 per year.
- o A continuous research program should be funded by the ISWS DENR to: 1) define the erosion and sedimentation relationship, 2) determine effectiveness of Best Management Practices for controlling water quality degradation, 3) define critical areas for solving downstream sediment and water quality problems, and 4) define biological and water quality benefits/damages of any sediment control techniques. Total annual cost for research would be \$250,000 per year for three years and the monitoring would cost \$500,000 per year.
- o During the development of conservation farm plans, soil and water conservation districts and the USDA Soil Conservation Service should provide leadership in encouraging riparian landowners to adopt stream corridor protection measures through the use of critical area seedings, vegetative filter strips, and field windbreak practices.

FLOODING

Most of the major Illinois river flood control projects have been completed. Overall basin planning has concluded that large scale flood control reservoirs are not feasible. Channel dredging is still being considered in the Peoria Lake area, but if it is funded it will be for recreational and habitat purposes and should not affect flood levels.

The current approach is now to look at the special circumstances and options for each community. Many communities on the Illinois River and its tributaries have had reconnaissance studies completed. Where structural projects were shown to be appropriate, the state or federal agency has proceeded towards implementation. Two examples of this are Pontiac and Liverpool, both of which are having their detailed plans finalized.

It has been determined that structural flood control projects will not be feasible in most of the remaining communities. Accordingly, it has been recommended that federal, state and local agencies proceed with nonstructural flood control planning for the rest.

The following action items are recommended to aid in the implementation of this flood control program.

- o Provide additional state technical support and guidance for the preparation of local flood hazard mitigation plans. This will require a state budget increase of \$100,000 per year.
- o Make technical staff available to provide direct advice to owners of flood-prone property on retrofitting, flood insurance, emergency response planning, and other methods to reduce flood damages. This will require that the Division of Water Resources add to its staff a full time flood damage mitigation urban planner.
- o Provide funds to complement available federal funding programs to support implementation of community flood hazard mitigation plans at a level of \$2,000,000 per year. Particular attention should be given to funding acquisition of floodplain property to convert areas of damage-prone buildings to public open space.
- o Encourage at all levels of government stricter floodplain regulatory standards such as prohibiting the construction of new buildings in the floodway.
- o Provide state sponsored training and guidance for the preparation of local flood fighting plans.

- o It is recommended that the Floodplain Information Repository at the Illinois State Water Survey (SWS) be updated on a regular basis, particularly in areas of extensive urbanization. The Repository should continue to provide flood elevations, flood zone determinations, and other flood related information to citizens, institutions, and communities of the State. This SWS program will require \$130,000 per year in new funding.
- o A detailed basin by basin analysis of agricultural levee placement will be conducted in order to improve flood control planning and permitting decisions in rural areas.

WATER QUALITY

The Illinois River Basin has seen significant improvement in water quality over the past 15-20 years. Although problems such as sedimentation, periodic low dissolved oxygen (DO) concentrations, and excursions of other water quality parameters beyond applicable standard still exist, all historical data point to marked improved in water chemistry.

These improvements can be credited to State and local efforts in waste management. These efforts have significantly reduced waste contamination through an intensive permit and monitoring program throughout the Basin. Recent studies by the State Water Survey on sludge deposits in the Illinois River Basin also show marked improvement in the reduction of heavy metals. These improvements reflect the upgraded treatment efforts of domestic and industrial dischargers.

The most significant remaining water quality problem in the Illinois River Basin is sediment/turbidity primarily of nonpoint source origin. Agricultural practices are considered as the primary source of these pollutants. To combat this problem, a variety of efforts with technical and financial support from State agencies, has been implemented. The initial findings of these efforts is that sediment/turbidity pollution will continue unless further measures, especially at local levels, are implemented.

Additionally, the increased assessment for toxic contaminants show that efforts to monitor toxics should be expanded while maintaining our "historical" monitoring base for trend analysis purposes.

The following are recommendations for continued water quality assessment:

- o Continue the extensive water quality monitoring and evaluation programs now occurring while expanding assessments into the new generation chemicals (i.e. pesticides, organic chemicals) with manpower and laboratory capabilities to effectively analyze the samples. Increased fish contaminant monitoring would further enhance the State's ability to evaluate and advise the public on suitability of sport fish taken within the Basin for human consumption. This will cost \$350,000 per year for SWS participation.
- o Local government should take a more active and aggressive role in non-point source control through enactment of limited-use zoning, construction ordinances, development of stormwater management programs and creation of local revenue generation strategies for capital projects directed at erosion control.

- o The State through DENR and IEPA should establish a statewide sediment monitoring network to evaluate the magnitude of the problem and designate key problem areas in order to assist State and local officials in implementing control measures. Program costs are identified in the sedimentation issue paper.
- o The IEPA will make an aggressive effort to implement the USEPA program recommendations for management of stormwater discharge consistent with Section 405 of the Water Quality Act.
- o Best management practices (BMP's) for control of nonpoint source pollution should be implemented at all levels due to the benefits of sedimentation reduction, and their associated contaminants (i.e. pesticides, heavy metals, organic chemicals, etc.).

AQUATIC HABITAT, FORESTRY, WILDLIFE, AND NATURAL AREAS

The Illinois River basin was once an area with a wealth of natural resources - fertile soils, forests, clean rivers, and rich habitats of marshes, sloughs, ponds and lakes. This richness supported a myriad of waterfowl, furbearers, and fish. Many changes have occurred within the basin in the past 100 years which have had a significant impact upon the river and its fish and wildlife, as summarized in another part of the report.

A major blow to the rich Illinois River Basin was the diversion of sewage from Chicago into the Illinois River in 1900. Upper stretches of the river became void of oxygen and toxic. After 1908, fish production in the Illinois River declined sharply. The sewage slowly spread its lethal pollution downstream. During this time agricultural development was also occurring. As a result, about 200,000 acres of rich bottomlands along the Illinois River were drained. Then during the 1930's navigation dams were built to promote barge transportation on the Illinois River. The heavy barge traffic causes scouring of the river bottom and shorelines disturbing fish spawning and feeding areas. Intensifying the problem, modern agricultural practices have increased soil erosion and sedimentation so that bottomland lakes, which are essential fish and wildlife habitat areas, are being filled with sediments. The sedimentation and agricultural development have minimized the acres of bottomland habitat left in the basin.

Although improvement of water quality in recent years has restored some fish to the Illinois River such as catfish, white bass, large mouth bass, smallmouth bass, and walleye, the damage to fish and wildlife habits is continuing to occur even today. This is evidenced by the decline of waterfowl on the Illinois River. The continuing sedimentation of lakes and bottom lands and the toxicity of bottom sediments still further degrades the remaining fish and wildlife habitats.

Immediate and significant steps need to be taken to increase the fish and wildlife populations, improve their habitats, and slow the sedimentation of lakes and bottomlands in the Illinois River basin. Such recommended steps are:

Aquatic Habitat

- o Continue Department of Conservation (DCC) fisheries monitoring to document impacts of changes in aquatic habitat;
- o. Department of Conservation and State Water Survey (DENS) should evaluate the success of the tire breakwater experiment at Peoria Lake for possible implementation in other areas to encourage re-establishment of aquatic vegetation;

- o Support studies of ways to reduce stream bank erosion, such as the Court Creek studies at an estimated cost of \$100,000 per site;
- o Initiate studies to determine the sources of toxics in bottom sediments, and seek methods to detoxify the sediments;
- o DENR and DOC should continue to assess the importance of deep water areas to survival of fish populations;
- o Initiate DENR and DOC studies to develop effective ways to create backwater areas and to acquire and restore to original conditions leveed floodplains in selected drainage and levee districts; study cost by SWS at \$150,000 per year for 3 years.

Forestry

- o Expand DOC technical assistance programs to advise landowners of ways to protect and better manage their forest lands and to encourage tree plantings and establishment of greenways along streams at a cost of \$300,000 per year;
- o Provide for a strengthened urban forestry program in DOC to encourage municipalities to retain forest lands and to establish greenways at a cost of \$300,000 per year;
- o Recognize the significance of forests in producing higher water quality and provide incentive to owners of forest lands by minimizing taxes on forest lands and maintaining provisions of the Farmland Assessment Act for lower taxes on forest lands;
- o Increase DOC nursery seedlings production by a 4 to 5 fold increase at an initial cost of \$2 million capital and \$1.5 million operating.

Wildlife

- o Provide technical and economic assistance to the Department of Conservation for wildlife habitat development projects such as Banner Marsh levee renovation, Stump Lake levee improvements, and Rice Lake levee and site improvements.
- o Through DOC provide cost-share, grant, or loan funds to private organizations such as duck clubs for developing seasonal off-river lakes to benefit aquatic birds and waterfowl at a total cost of \$10 million;
- o Restore funding to DOC for the Wildlife Habitat Acquisition and Natural Areas Acquisition programs at originally planned levels at a total cost of \$32.5 million;

- o Continue Natural History Survey aerial censuses of waterfowl populations during migrations at \$50,000 per year;

Natural Areas

- o Continue DOC aerial surveys and monitoring of populations of the plant purple loosestrife, which is a severe threat to wetland areas at a total cost of \$10,000.

General

- o Increase staff levels as needed to promote, plan, and coordinate the above recommended actions at State, and local levels, using federal and State cost-share programs as much as possible;
- o Strengthen local zoning requirements to reduce agricultural and urban development in floodplains and to prevent the filling of wetlands;
- o Continue the partnership approach of government and private interest groups, such as with the Partners in Conservation effort, to promote cooperation toward mutually beneficial fish and wildlife improvements;
- o Aggressively work to arrest erosion and sedimentation, concentrating demonstration projects and research at existing sites thus protecting past investments (for specific recommendations see the Sedimentation and Erosion Control issue papers);
- o Complete natural resource inventories by DENR and DOC of streams, wetlands, fish and wildlife, and initiate planning based on the resulting data to identify quality natural resources and to establish priorities for acquisition programs; and
- o Initiate a Statewide Greenways Program to focus resource protection on Illinois' major rivers, such as the Illinois River and its larger tributaries.

ILLINOIS' LAKE MICHIGAN WATER DIVERSION

Illinois' diversion of Lake Michigan water has been controversial ever since its inception. More recently, discussions about an increase in Illinois' diversion has similarly stirred strong feelings on both sides of the issue. The complexity of the Illinois River ecosystem, the influence of both man-made and natural factors on its flow, productivity and quality make quantitative assessment of the impacts of a particular plan for an increased lake Michigan diversion very difficult. A 1981 Corps report found that an increased diversion was not economically justified, considering the impacts on both the Illinois waterway and the Great Lakes system. Concerning environmental impacts on the Illinois waterway, generally the Corps was able to describe both beneficial and adverse effects expected to occur from an increased diversion.

Authorization for an increased diversion at Chicago for the Illinois Waterway requires either an act of Congress or a modification to Illinois' United States Supreme Court Decree. The recent initiative for an increased diversion has been to provide water level relief on the Great Lakes, it is an international issue, and hence, inappropriate to bring before the Supreme Court. It has been Illinois' position that any efforts to resolve the high lake level problem should involve all Great Lakes interests, both Canadian and American, and include all existing controlling measures which can impact on Great Lakes water levels. In addition, in response to the potential adverse impacts which have been described in previous studies of an increased diversion at Chicago, Illinois is opposed to an increased diversion until it can be clearly demonstrated that an operating plan can be developed to adequately protect interests on the Illinois waterway. In keeping with this position, Illinois' efforts have focused on providing input and assistance to the continuing studies of the International Joint Commission and the Corps of Engineers to ensure that any operating plan for an increased diversion at Chicago provides maximum protection to our waterway interests.

- o Therefore, it is recommended that Illinois continue to oppose increased Lake Michigan diversion at Chicago, Illinois until an acceptable operating plan is developed. State agencies must actively cooperate in any future study of increased diversion by the Corps of Engineers or International Joint Commission in order to ensure that an acceptable plan is developed.

RECREATION

Many recreation sites in the Illinois River basin are focused on the rivers and lakes of the basin for recreation. There are water-dependent recreation activities such as fishing, waterfowl hunting, boating, and swimming. There are also water-enhanced recreation activities—activities through proximity to the water. Such activities are hiking, picnicing, and camping. Opportunities for these recreation activities are provided by local, State, and federal agencies, and many private concerns. Often these providers produce recreation development plans independent of each other, resulting in an under supply of certain recreation activities. According to Illinois' 1983 Statewide Comprehensive Outdoor Recreation Policy Plan, the area within the Illinois River basin is in need of a greater supply of camping, fishing, boating, swimming, and hunting opportunities, and trails.

A 1985 survey of Illinois residents showed that swimming and fishing were two of the most popular recreation activities in the state. In general, recreation use is increasing in Illinois.

The recreation sites of the Illinois River basin are directly affected by the quality of the surrounding natural resource. In the basin, degradation of the natural resource is occurring at an alarming rate through channelization, soil erosion, sedimentation, clearing of natural vegetation, and poor water quality. This degradation directly affects the quality and quantity of recreation available in the Illinois River basin. The quality of water-dependent recreation activities at some recreation sites has been threatened by the degradation of the rivers and lakes in the basin. Many potential recreation sites have been converted to agricultural or urban development, or have also experienced degradation of the natural resource.

With a degrading natural resource quality, a diminishing supply of quality potential recreation sites, and a trend of increasing recreation use by the general public, the State should implement the following recommendations:

- o Coordinate and prioritize local and State recreational development activities in order to complement existing programs, such as the Corridors of Opportunity and other Build Illinois efforts;
- o Continue the partnership approach of government and private interest groups, such as with the Partners in Conservation effort, to work toward mutually beneficial recreation developments;
- o Provide a stronger State presence through DOC and DCCA, in river corridor development, including the development of the Illinois River Trail and the Illinois River Road at a total cost of \$500,000;

- o Aggressively work to arrest the degradation of natural resources caused by erosion and sedimentation;
- o DOC should concentrate on developing multi-use recreation opportunities at existing recreation sites;
- o DOC should concentrate acquisition programs on sites with quality natural resources;
- o Complete the DOC natural resource and recreation facilities inventories and use them to establish priorities for acquisition programs and recreation planning;
- o Increase visitor services and programs at existing DOC recreation sites at a cost of \$7 million capital and \$2 million operating;
- o Fund the DOC Wildlife Habitat Acquisition Program and the Natural Areas Acquisition Program at their originally planned levels;
- o Initiate a Statewide Greenways Program through DOC and DCCA to focus resource protection, recreation development, and tourism promotion in such areas as the Illinois River corridor.

COMMERCIAL NAVIGATION

The State of Illinois offers a distinct geographic and economic advantage to shippers due to its Midwest location at the confluence of the Great Lakes and the inland waterway system. The inland waterway system that serves the state includes 1,116 miles on the Mississippi, Illinois, Ohio and Kaskaskia Rivers and 344 waterway terminals that annually handle over 80 million tons of barge shipments.

The capacity of the inland waterway system in the State of Illinois is affected by the condition of the locks and dams. The U.S. Army Corps of Engineers is or will be conducting studies to determine the need for lock improvements and to assess the impacts of commercial navigation on the environment and on recreational uses of the Mississippi River and the Illinois Waterway.

It is critical that the State have ample opportunities to monitor the navigation studies by the Corps of Engineers and to review draft reports on study findings and recommendations. To achieve this oversight responsibility, it is recommended that:

- o IDOT be the lead agency in notifying the Corps of the need for state involvement in ongoing and proposed studies of the impacts of commercial navigation on the environment and recreation uses of the rivers in Illinois.
- o IDOT coordinate its review activities with the Department of Energy and Natural Resources, Department of Conservation and other state agencies as needed.

Due to the contribution of commercial navigation activities to the economies of the communities along the Illinois Waterway, communities can undertake the following types of programs to ensure that future demand for riverfront lands by the barge industry and terminal developers are compatible with community needs and plans for future riverfront uses.

- o Identify riverfront sites suitable for barge fleetings, terminal development and other uses related to the barge industry including the disposal of dredged materials. Also, identify sensitive areas in which such development should be prohibited.
- o Establish a dialogue with barge terminals and barge operators by such means as ad-hoc committees to discuss the needs and problems of the barge industry and to reconcile problems between the barge industry and other local interests.
- o Develop public awareness programs to increase the public's understanding of the contribution of the barge industry to the economy of the local area and the State of Illinois.

DRINKING WATER SUPPLY

There is use of surface water for public water supply purposes within the Illinois River Basin, and generally, sufficient groundwater is available. This source usually requires little treatment, and has minimal costs associated with construction, operation and maintenance of treatment facilities. However, a number of groundwater supplies within the basin obtain water which exceeds the drinking water standard for radium. It may be cost-effective for these communities to develop regional water supplies which would depend on surface water as a source of supply.

Public water supplies within the basin as elsewhere in the State, which rely on surface water impoundments are faced with siltation problems of varying degrees. Other problems with surface water quality, however, tend to be minimal. Seasonal quality fluctuations are the most common problem encountered.

Non-point source problems are to be addressed and as programs are phased in, the public water supplies will benefit. Participation in the program by public water supplies would include use of the intakes and reservoirs as monitoring stations to gauge the overall effectiveness of the programs being implemented.

WASTEWATER DISPOSAL

The treatment and management of wastewater disposal in the Illinois River Basin can be considered a major success. Every major metropolitan area, and hundreds of rural communities, has improved their wastewater treatment with the assistance of an estimated \$2.3 billion dollars of State and Federal funds to match local and private financial inputs. Additionally, hundreds of millions of dollars have been expended by industry to comply with industrial wastewater requirements. Close regulation of these activities and the operational effectiveness of the facilities, is maintained through the National Pollution Discharge Elimination System permit process, and other Federal and State permitting programs for sludge, industrial pre-treatment and other waste/residue disposal.

With fully developed programs in place to address conventional wastewater problems, the State is now placing increased emphasis on the identification, classification, and management of toxic substances. To assure the effectiveness of these programs and the continued success of more "traditional" programs the following are recommended:

- o Continued vigilance is needed in the administration of State and Federal regulations. Review of the utilization of Administrative Authority in the control of land pollution at the IEPA, and Administrative Order authority at the USEPA, indicates that the procedural streamlining and effectiveness acquired through such authority would enhance administrative efforts to assure adequate wastewater treatment and disposal practices.
- o Continued financial support through "Build Illinois" and/or a revolving loan program is needed to help communities defray the costs of compliance with NPDES limits for publicly owned treatment facilities.
- o Local initiatives in continued improvement of operation and management of facilities including refinancing, and "policing" of significant users is needed to assure optimum performance of wastewater collection and treatment facilities.

HYDROPOWER

Hydropower is one of Illinois' largely untapped albeit small renewable resources. At the present time, small-scale or low-head hydropower plants on the Illinois River are operating at the Lockport Dam (capacity 17.0 megawatts or MW) and at Marseilles Dam (2.3 MW). The total potential for the seven locks and dams on the river is estimated as 83.8 MW. These structures serve various purposes such as navigation, recreation, water supply, and hydropower. They usually have adverse effects on water quality in terms of lowered dissolved oxygen (DO) levels because of reduced flow velocities and increased flow depths, and trapping of sediments carrying nutrients and contaminants.

The Corps of Engineers' studies, conducted in the early 1980s, show that hydropower development is economically justifiable at the Brandon Road, Dresden Island, Marseilles (new plant), and Starved Rock locks and dams. The capacity of these plants is estimated as 47.3 MW. According to the Federal Energy Regulatory Commission (FERC), a preliminary permit has been issued for a new plant at Marseilles, and license applications are pending for plants at Brandon Road, Dresden Island, and Starved Rock. Environmental concerns associated with small-scale hydropower development relate to instream flow needs, dissolved oxygen and reaeration techniques, fish passages, and tailwater fishing.

The following recommendations have been developed for possible courses of action when studying hydropower development on the Illinois River:

- o Conduct full hydrologic analyses: All projects should have analyses that include development of daily flow series at the site for 25 years or more, weekly dissolved oxygen and mean temperature values, and monthly values of desired protected or instream flows. The upstream and downstream water stage series should always be developed to calculate the available head.
- o Evaluate the full environmental impacts: Impacts in terms of reduction in dissolved oxygen, reaeration, aquatic habitat, and fish passageways should be investigated in detail. Suitable remedial measures should be identified and their costs determined. Any changes in sediment transport and sedimentation must be investigated and measures to mitigate any adverse impacts be identified.
- o Conduct a thorough economic analyses: These must always be carried out for various values of hydropower capacity that can be developed at the site. Both tangible costs and intangible costs and benefits must be considered to the highest degree possible, to determine the true economic feasibility of a proposed project.

AGRICULTURE

Illinois' farmers as a whole are production oriented. They, as well as the majority of farmers nationwide, believe that the more they produce, the better off they will be financially. It is paradoxical however, that the products that Illinois' farmers know how to produce best frequently cause economic damage to the farmer in terms of surplus commodities and the erosive degradation of the land resource.

If farmers are to escape this dilemma; they must be provided with sound, viable alternatives which will allow for reasonable profits after payment of necessary taxes and farming expenses.

The following courses of action are deemed necessary to assist farmers with the adoption of alternative farming methods.

- o Soil and Water Conservation Districts need to be fully funded from dedicated sources of revenue to allow for the continued employment of qualified personnel to assist farmers in developing farm plans and making proper erosion control management decisions. The amount of funds needed is addressed by a recommendation in the section on Erosion.
- o The University of Illinois Cooperative Extension Service should be provided additional annual appropriation of \$100,000 to develop training workshops to inform and educate farmers in choosing proper return-maximizing management options.
- o Cooperative State, federal and local efforts to inform farmers of the conservation compliance provisions of the 1985 Food Security Act need to be strengthened.
- o The U of I Agricultural Experiment Station should assume leadership in researching and developing alternative profitable land uses for highly erodible land.
- o Farmers must be informed of the benefits of utilizing soil testing and crop scouting to maximize their profitability by utilizing the minimum effective quantities of fertilizer and pesticides.
- o During the development of conservation farm plans, soil and water conservation districts and the USDA Soil Conservation Service should provide leadership in encouraging riparian landowners to adopt stream corridor protection measures through the use of critical area seeding, vegetative filter strips, and field windbreak practices.

URBAN STORMWATER MANAGEMENT

Control/management of urban stormwater has been primarily a function of local government. In a few instances, stormwater discharges from industrial property with potential water quality impacts are regulated under the National Pollution Discharge Elimination System (NPDES) permit program, but for the most part, reliance has been on effective local management practices for the protection of water quality.

Studies by both State and Federal Agencies have identified the water quality impacts of stormwater as a localized intensive impact of short duration. Lead, copper and iron exceeded general use water quality standards 25 to 30 times a year with a once-a-year maximum of 15 to 20 times the standard. Longer term impacts are normally manifested through deposition of pollutants in the bottom sediments of the receiving waterbody and disrupting the aquatic community through direct sediment toxicity or sediment-water interactions.

The Water Quality Act of 1987 renewed and expanded focus on urban stormwater management through Section 319 (nonpoint management) and Section 405 (stormwater discharge permitting). These programs have the strong potential to regulate stormwater discharges through the NPDES permitting process and mandated management/maintenance practices. These Water Quality Act initiatives are focused towards proper management by local units of government.

Considering the historical data collected and the focus of recent legislation, the following activities are recommended:

- o Maximize the education/information transfer functions. A program of education/information transfer would: 1) acquaint developers and local officials with the need for use of proper stormwater management techniques, 2) establish and promote anti-litter activities, and 3) inform homeowners of the proper use and application of fertilizers and pesticides.
- o Municipalities and counties should adopt and enforce adequate stormwater detention ordinances as appropriate. Model ordinances developed by the Northeastern Illinois Planning Commission (Suggested On-Site Stormwater Detention Basin Ordinance, January 1980) and Southwestern Illinois Metropolitan Planning Commission (Model Stormwater Detention Ordinance for Developing Areas, January 1982) are available for reference and consideration by individual communities.
- o Since it is the primary responsibility of the local, State or federal agency to control urban runoff contributions arising from their individually directed activities and facilities, the following preferred control practices are recommended: administrative procedures for personnel training, improved equipment utilization and scheduling, and controlled application programs for de-icing or other related right-of-way clearance programs.

- o Municipalities, township, county and State highway organizations, the Illinois State Toll Highway Authority, and facility engineering departments at State and federal installations should review the effectiveness of programs for control of the application of de-icing materials, personnel training in proper storage and application methods, equipment usage in order to minimize any negative water quality impacts.

- o Although TARP has been an expensive undertaking, the potential benefit of the plan has surfaced during its performance during two major storms in the last year. If phase one of the plan is completed, the storage capacity of the system for water to be treated (water quality phase) would increase from the current 1 billion gallons to approximately 2.2 billion gallons. The stormwater storage phase, phase 2, is just starting at the O'Hare site. If completed, phase 2 would provide an additional 15 billion gallons of storage. This additional storage capacity would have significantly reduced the 100 million dollars in damages incurred during the August 1987 event. It is therefore recommended that funding be sought to complete phase 1 as soon as possible. The cost of this work is easily justifiable in relation to the damages that it would help to circumvent. Additional funding should also be sought for at least 50% completion of phase 2 in a timely manner.

COMMERCIAL FISH AND MUSSEL RESOURCES

During the mid-1800's, commercial fishing and harvesting of mussels were thriving economically important industries within the Illinois River basin. In 1908 commercial fishermen caught a record 24,763,000 pounds of fish from the Illinois River at a value of \$1,135,000. In that same year, the value of the mussel products (shells and pearls) harvested from the Illinois River was worth \$139,000. Soon after these tremendous harvests, the numbers of fish and mussels harvested from the Illinois River began to drop. Over the next 75 years, the importance of these industries to the basin's economy has declined significantly.

This decline was largely due to the diversion of Chicago's sewage to the Illinois River. The sewage caused extreme water pollution using up all the oxygen in the river and producing toxic conditions. This condition killed many fish and destroyed their food supplies. Fingernail clams, an important food source for fish, had disappeared from the river above Beardstown. About 1940 the mussel industry on the Illinois River collapsed, both from a switch to plastic buttons in the market and from the declines in mussel populations. The decline of the commercial fishing industry has continued, until in 1978 only 306,016 pounds of fish were harvested, a loss of 98% of the record 1908 harvest. Although in recent years the water quality of the Illinois River has been improving, and fish and mussel populations have increased slightly since 1982, other factors continue to keep populations low. The spread of agricultural and urban development has resulted in the clear cutting of forests, the plowing of steep-sloped lands, the straightening of rivers through channelization and the reduction of floodplain through the construction of levees, pavements, and buildings. These actions have caused increased erosion, sedimentation, and flooding. As a result bottomland lakes, which are essential fish production areas, have been filling up with sediment, and other aquatic and shoreline habitats have also been seriously degraded. In addition, barge traffic has resulted in wave turbulences that scour shorelines and river bottoms preventing the growth of vegetation used by some fish for food and disturbing fish spawning areas.

The commercial fish and mussel resources have both been seriously degraded by pollution and sedimentation. A list of possible courses of action to help increase fish and mussel populations of the Illinois River basin follows:

- o Provide positive and forceful action to resolve the problem of sedimentation in our rivers;
- o Fund research projects designed to alleviate environmental problems associated with dredging, barge fleetling, channelization, and other such activities at a cost of \$100,000 per year;
- o Encourage the funding of stream habitat creation and improvement projects at the Department of Conservation at \$100,000 per year;

- o Adopt a statewide greenways concept along major rivers, and
- o Encourage the purchase of floodplain and leveed lands for re-establishment of terrestrial and aquatic habitat.
- o Expand fish contaminant monitoring programs to improve the State's ability to advise the public on suitability of commercial fish taken from the Illinois River for human consumption.

ARCHAEOLOGICAL, HISTORICAL AND PALEOBIOLOGICAL RESOURCES

The study of archaeological, historical and paleobiological resources provides a unique and unrenowable perspective on the natural and cultural history of the Illinois River Basin. In addition to their considerable scientific value, these resources are significant for their educational value, and they provide popular tourist attractions. Clearly their conservation is in the interest of Illinois' citizens.

Unregulated land modification and shoreline erosion are destroying sites at an unprecedented rate. Although adequately protected where federal undertakings are concerned, many state actions impact sites without adequate assessment of these resources. Without prudent management, the present trend in site destruction will continue, and the public will lose its opportunity to learn about the cultural and natural heritage of Illinois.

The following courses of action for the management and development of archaeological, historical and paleobiological sites are recommended.

The Illinois State Museum (ISM) and Illinois Historic Preservation Agency (IHPA) must:

- o Compile, summarize, and evaluate existing records of sites in the Illinois River Basin. This will require \$15,000 for one year.
- o Integrate existing information about cultural and paleobiological resources in the Illinois River Basin into an overall management plan to protect and develop these resources. ISM and IHPA will require \$30,000 for one year.
- o Inventory archaeological sites, standing structures, and paleobiological sites in areas inadequately surveyed. ISM and IHPA will require \$500,000 per year for 5 years.
- o Nominate eligible archaeological and historical sites for inclusion on the National Register of Historic Places. This will require IHPA funding at \$30,000 per year for 5 years.
- o Collaborate with other management agencies to a) identify factors affecting the preservation of cultural and paleobiological resources and b) participate in studies to measure the impact of factors affecting these resources. IHPA will require \$30,000 per year for 5 years.
- o Implement pilot studies to monitor and protect significant sites. IHPA will require \$100,000 per year for 5 years.

- o Establish state historic preservation laws modelled after existing federal legislation to insure adequate protection of significant cultural and paleobiological sites. IHPA will require \$30,000 per year for one years.
- o Develop some significant sites for tourism and the education of Illinois' citizens. IHPA and ISM will require \$500,000 per year for 5 years.

Economic Development

The Department of Commerce and Community Affairs administers a wide variety of programs designed to assist communities, as well as individuals to improve opportunities for economic development in Illinois. Cooperation among business, government, labor and individuals is the key to the success of the Illinois economy. The wide range of services geared to promote economic development and improving the quality of life, through grants to communities, loans to businesses and job training programs to individuals, is helping to create economic activity which puts more Illinoisans to work.

The Build Illinois Program enables the Department to integrate its programs with other state, local and federal programs to capitalize on economic development opportunities and to prepare the state's economic infrastructure for the future. The Department of Commerce and Community Affairs' Build Illinois programs include: Corridors of Opportunity; Large Business Loan; Infrastructure Development; Small Business Loan; and Incubator Development. These programs have been implemented throughout the state, as well as in counties bordering the Illinois River. For this purpose, the projects located in the Illinois River counties are mentioned.