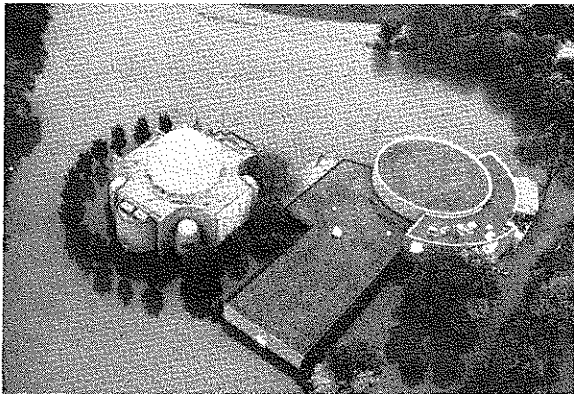
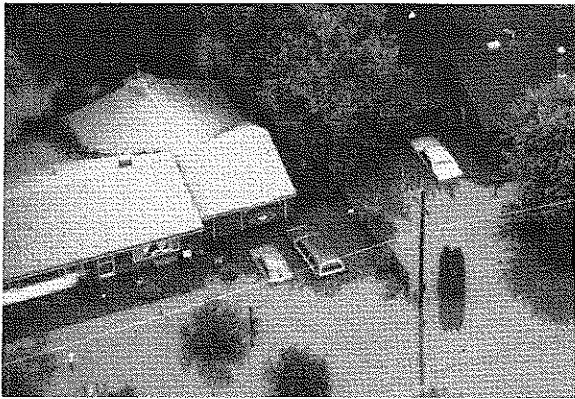


Our Community and Flooding

A Report on the Status of Floodwater Management in the Chicago Metropolitan Area, 1987

*Prepared by the Resource Coordination
Policy Committee*



April, 1987

Preface

We have a problem in the Chicago Metropolitan Area — flooding. For years, we have covered the earth with pavement and buildings. Water originally held by the earth was directed by our technical skills to streams which were never designed by nature to carry such volumes. The water directed so cleverly to these outlets rushed over the stream banks and caused the very problem that our technology was supposed to stop — flooding.

In recent years, our community leaders and organizations have worked together to stop existing flood damages and prevent future flood damages from occurring. The original "Our Community and Flooding" prepared in 1975 summarized the watershed plans developed as part of this collective effort.

The purpose of this report is to measure our progress to date and to summarize what remains to be done. Since the rains will continue to come and our communities will continue to grow, the progress of our floodwater management plans is essential to assure that we have communities safe and secure from the hazards of flooding.



The Resource Coordination Policy Committee

The Resource Coordination Policy Committee is composed of floodwater management and related agencies working together to solve our flooding problems. It receives direction and guidance from the Chicago Metro Area Council of Watershed Steering Committees which represents communities and local leaders of each watershed. The agencies include:

Soil and Water Conservation Districts of North Cook, Lake, DuPage, Kane, South Cook and Will Counties

Illinois Division of Water Resources

Metropolitan Sanitary District of Greater Chicago

U.S. Department of Agriculture Soil Conservation Service

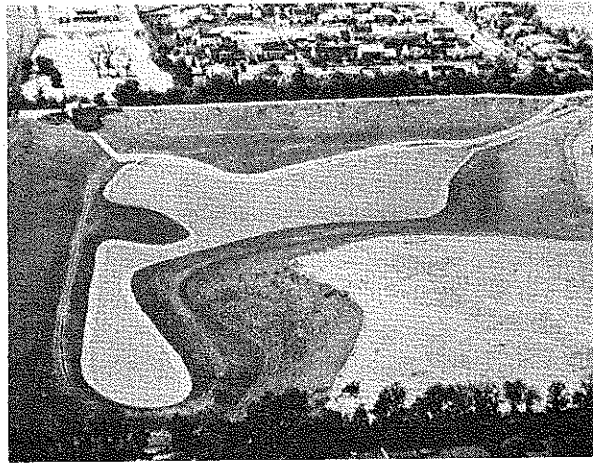
U.S. Army Corps of Engineers

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All services are offered without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

PART I – FLOODWATER MANAGEMENT PERSPECTIVE

How Our Flood Problems Developed

Flooding and related problems have been a part of the history of the Chicago area since its earliest days. History records that Marquette and Joliet who first explored this area in 1673 were forced to move their camp because of flooding.

The Chicago Metropolitan Area's location on the southwest shore of Lake Michigan has helped to make it a major national transportation and business center. But the geological features of this location also cause major flood problems.

Glaciation left our area quite flat, particularly the area nearest Lake Michigan which was covered by Glacial Lake Chicago. As a result, stream systems are poorly developed. Undrained areas in the form of wetlands are common and floodplains vary greatly in width. The flatness of our region often means that floodwaters cover large areas. Watersheds draining the area include the Chicago River, North Branch Chicago River, Des Plaines River in Illinois, Little Calumet River in Illinois, Calumet Sag Channel, Poplar Creek, Salt Creek, DuPage River and the Fox River in Illinois.

The rapid population growth since the 1950's caused many municipalities to urbanize areas that are natural floodplains, i.e. those areas next to our streams that flood when their banks overflow. Urbanization of these areas at that time was considered sound economic and political reasoning. It was orderly growth within areas containing public services and utilities.

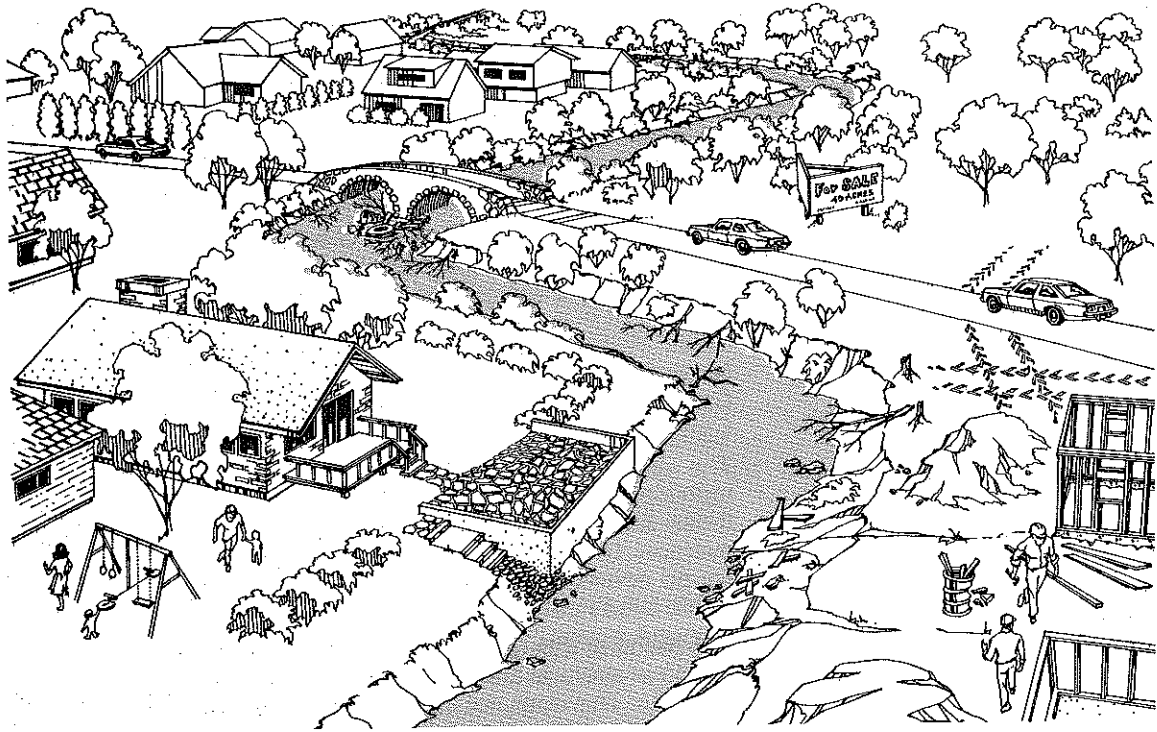
The result of this urbanization has been estimated to cost \$22.8 million in average annual floodwater damages affecting 200 communities. This does not include damages within the Central Basin Watershed, which may approach \$100 million. It is estimated that a major flood occurrence damages over 18,000 residential buildings and approximately 550 commercial buildings. Also affected are 10 major transportation arteries and 43 secondary traffic routes. Direct damage to highways and bridges is not usually large but major economic losses do occur in the form of associated damages when traffic is disrupted and homes and businesses become inaccessible due to floodwaters.

Many important physical factors serve to increase the frequency and impact of our flooding problem. Poor management of our natural resources is one of these factors. Erosion from areas under development produces sediment which obstructs drainage facilities and reduces the capacity of our streams to convey water. Development of wetland areas also adds to our problem. The natural floodwater storage of these wetlands is lost through filling and the development often drains into storm sewers which speed the runoff to downstream floodplains. The practice of filling floodplains to insure that planned improvements are above past record flood depths is another factor. Filling causes the storm runoff to find other areas to flood, often to the distress of neighbors.

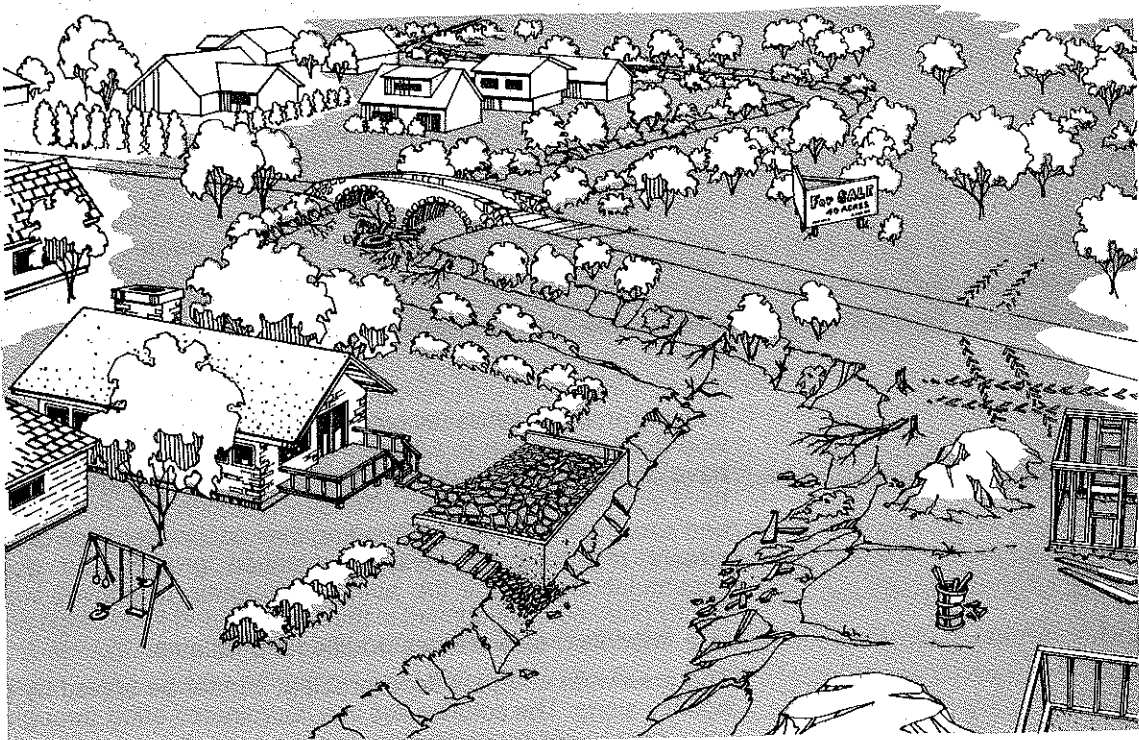
In addition, alterations to stream channels have contributed to the flooding problem. While uncontrolled stream modification may provide flood protection to adjacent areas, the downstream effects have commonly been detrimental. Inadequate bridge openings have also produced adverse effects by restricting the flow of water and causing it to back up. Flooding also occurs because of poor stream maintenance. Heavy vegetation growth and debris accumulations reduce the ability of streams to convey water. Poorly planned development in the floodway and flood fringe areas of a floodplain also creates additional problems.

The area-wide complex flood problem cannot be solved by one agency alone. The solution lies in a coordinated effort throughout the Chicago Metropolitan Area.

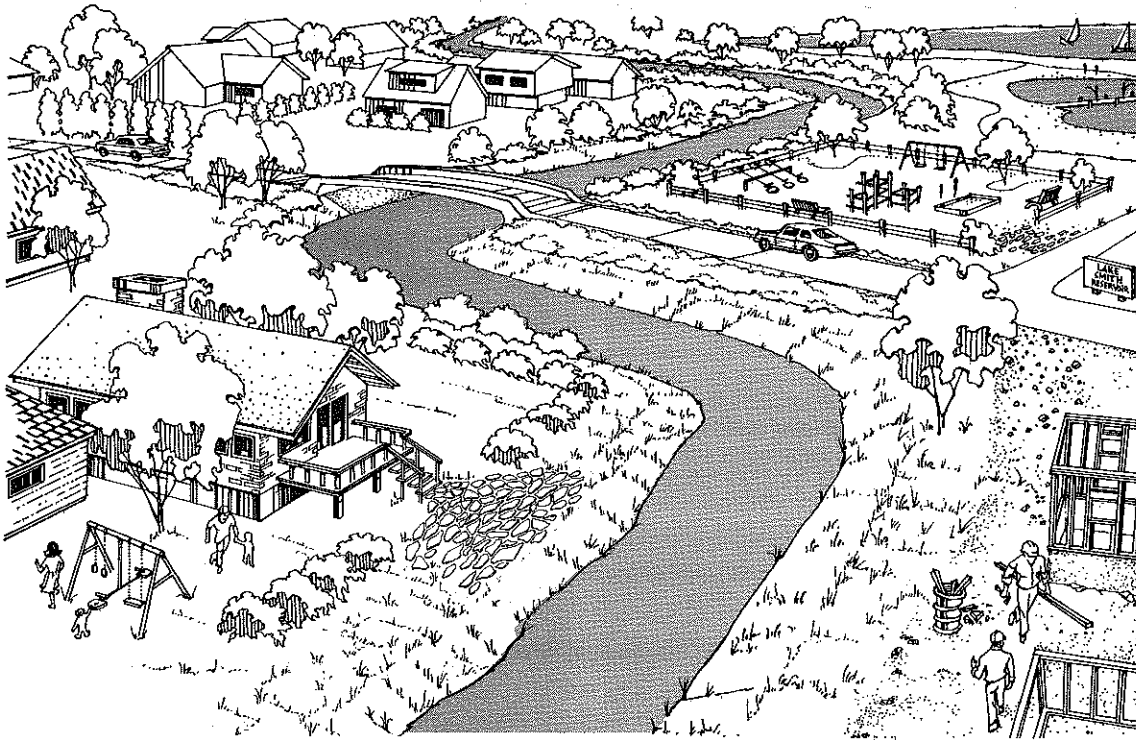
What Floodwater Management is About



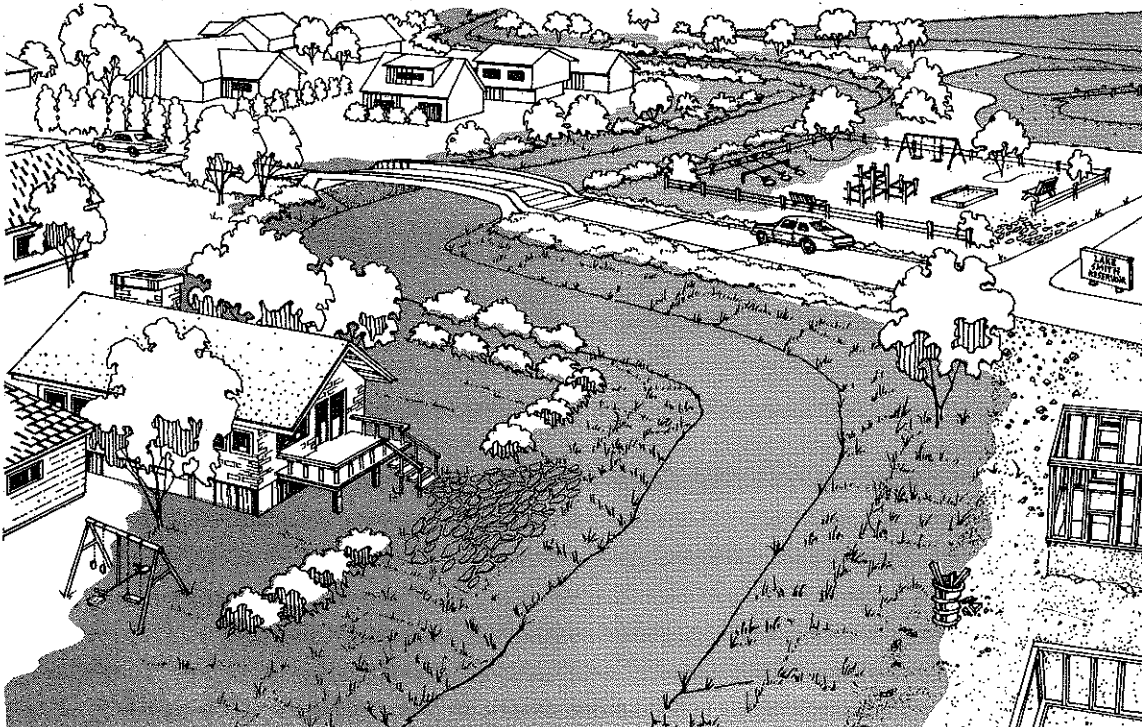
A Floodwater management is achieved by learning what impacts a flood will have, what causes those impacts and how they can be minimized, if not eliminated. The scene above typifies the kinds of things that worsen a flood's damaging effects: projection into the stream; erosion and sedimentation from developing areas; poor maintenance; debris; improper use of land in the floodplain.



B When a flood does occur, poor stream maintenance, construction, planning and development can result in considerable property damage and other negative impacts.

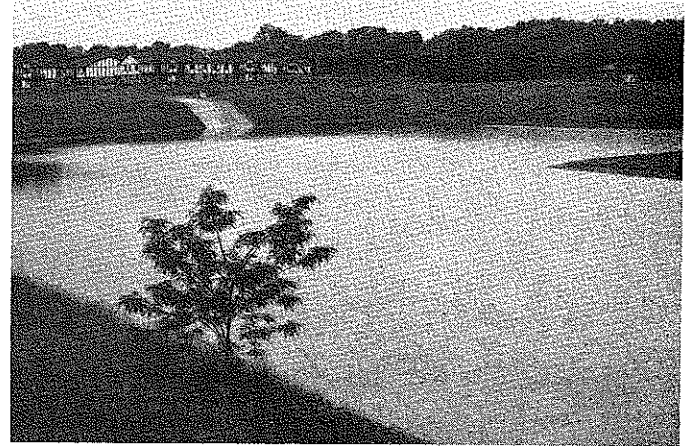


C The same scene is shown here, but with some alterations and additions: a house can be flood-proofed by raising the floor level above flood elevation; the absence of a projection into the stream; a well maintained construction site, stream and stream bank; an elevated roadway and new bridge; a multi-purpose flood control reservoir.

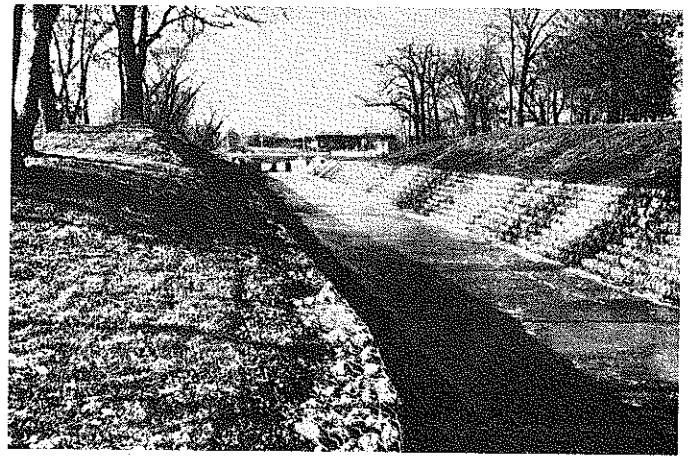
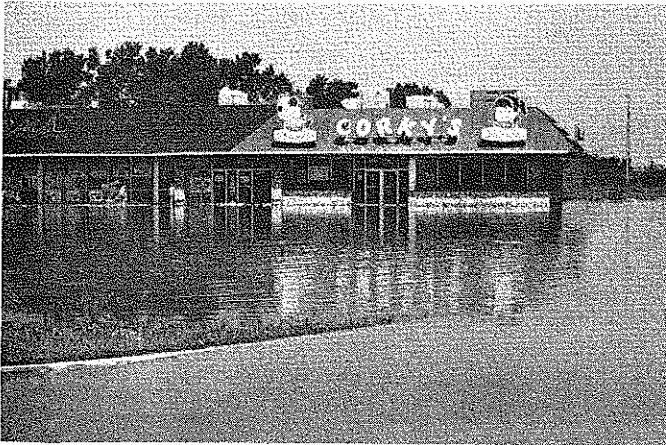


D Again, the flood occurs. It's important to understand that floodwater management does not stop flooding. However, by comparison to the scene on the left, it does reduce damage significantly.

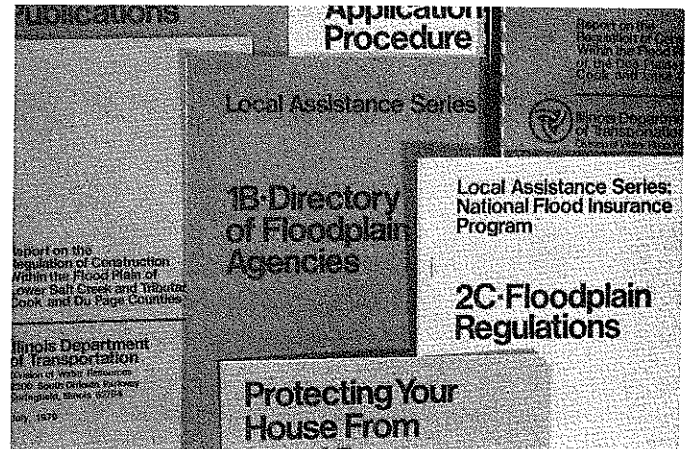
Solutions to the Problem



Widespread residential flood damages (left) can be reduced or eliminated by structural measures such as floodwater storage reservoirs (right).



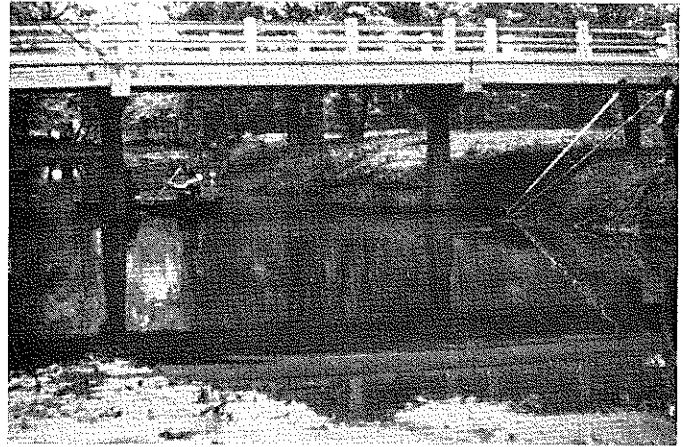
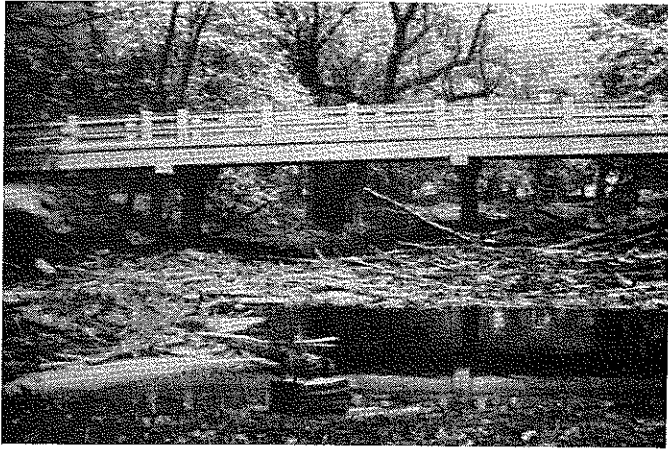
Flood damages to business and industry (left) affect the economic well-being of an entire community. Channel improvements (right) can significantly reduce those damages.



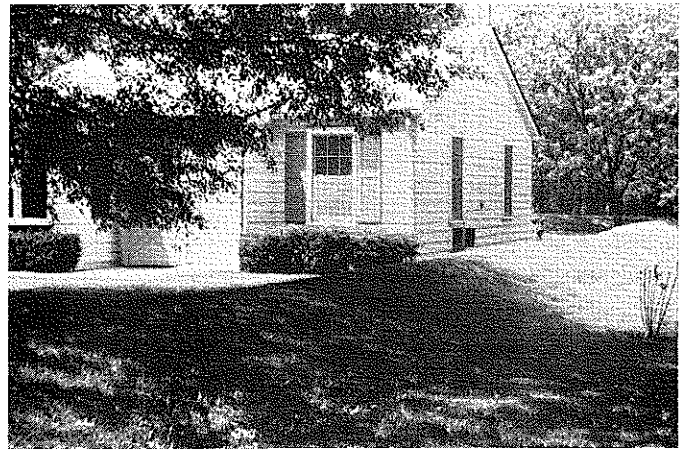
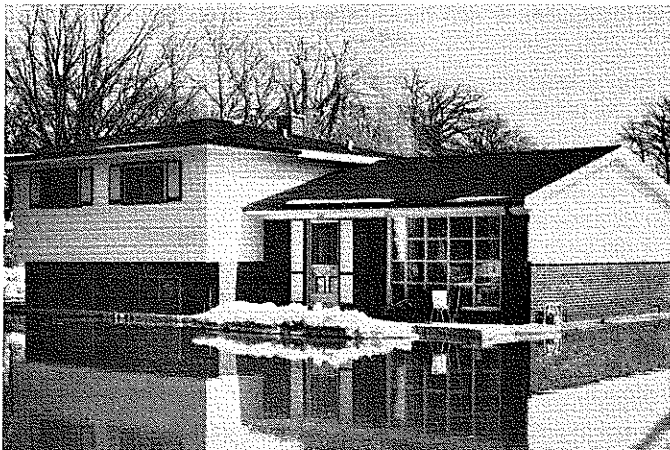
Uncontrolled development in flood-prone areas (left) often causes extensive economic losses affecting an entire community. Non-structural, regulatory actions (right) can greatly reduce these effects.



Besides the loss of valuable top-soil, lack of proper erosion protection measures during and after any construction work will produce sediment (left), a major factor in increased flood levels. Techniques like the sediment trap shown (right) will reduce or eliminate this unnecessary condition.



Man-made and natural debris (left) decreases the ability of a stream to carry water, especially during a flood. Proper maintenance (right) insures efficient floodwater conveyance.



Moving from a flood-prone area is not economically feasible for many who experience periodic flood damage (left). Floodproofing techniques, such as the berm shown (right) can provide protection from floodwaters.

Existing Services and Programs

Many local, state and federal agencies are working together to solve flooding problems in the Chicago Metropolitan area.

Efforts have been made to coordinate activities when appropriate to take advantage of the economies of regional planning. The Chicago Metropolitan Area River Basin Study is an example of such a planning effort.

The study was begun in 1971 when the Metropolitan Sanitary District entered into a cooperative agreement with the Soil Conservation Service to prepare River Basin Plans under authority of Section 6 of Public Law 566, 83rd Congress, as amended — the Watershed Protection and Flood Prevention Act.

Concerned citizens joined local, state and federal agencies to investigate flooding problems in the Des Plaines, North Branch Chicago River, Little Calumet, Poplar Creek, Calumet-Sag and Salt Creek Watersheds. Working under federal guidelines, every aspect of the flooding problem was investigated.

The primary goal of the study was to develop comprehensive plans to reduce existing floodwater damages. The problems and needs in each of the watersheds were considered. As a result, programs and projects were developed which are now being implemented.

Similar studies have been conducted by the Corps of Engineers in the Fox River and DuPage River Watersheds.

USDA Programs (Soil Conservation Service)

The Watershed Protection and Flood Prevention Act (P.L. 566) authorizes the Soil Conservation Service (SCS) to cooperate with local organizations to carry out, maintain, and operate works of improvement for flood prevention, multiple purpose water resource development, and protection of soil resources. Under this authority, floodwater management plans for the six watersheds referenced earlier in the discussion have been developed in cooperation with agencies and steering committees in each watershed. Steering committees are groups of concerned citizens who serve on a voluntary basis. They represent the social, economic, and environmental setting prevalent in their area and have joined together to seek solutions to the flooding problems that confront their communities.

The following goals and assumptions were universally adopted by these committees during preparation of the floodwater management plans:

1. Protect against the flood which occurs on the average of once in 100 years (100 year frequency).
2. Project flooding conditions with urbanization at the year 2,000.
3. Emphasize floodwater retention.
4. Limit analysis to flood damages associated with overbank flooding.
5. Assume that the Metropolitan Sanitary District's Tunnel and Reservoir Plan for the combined sewer areas is in place.
6. Assume that flood control measures which have been authorized and funded are in place.

The final plans developed are a combination of structural and non-structural measures to correct existing flood problems and prevent future problems from occurring. They include reservoirs, channel improvements, dikes, land protection, floodplain regulations, channel maintenance programs, floodproofing and wetland and open space acquisition.

Other SCS Programs

The Soil Conservation Service (SCS) provides technical assistance through Soil and Water Conservation Districts to individual landowners, groups of landowners and communities in programs involving soil, water and related natural resource needs. Summarized, these programs are:

URBAN SOIL EROSION AND SEDIMENTATION CONTROL PROGRAM: Assists governmental units in developing and implementing soil erosion and sedimentation control programs in urbanizing areas. This includes training and assistance in developing soil erosion and sedimentation control ordinances, site development plans and on-site help to communities, developers and consultants.

SOIL SURVEYS: The soil survey provides information about soils and their limitation and potential for housing, recreation, septic filter fields, agriculture and many other uses.

ASSISTANCE TO RURAL LAND OWNERS AND OPERATORS: SCS helps farm owners and operators in planning resource management systems and applying conservation practices to the land. These practices include conservation tillage, contour farming, terraces, structures, grass waterways, pasture planting and management, and woodland planting and management.

U.S. Army Corps of Engineers

House Public Works and Transportation Committee and Senate Environment and Public Works Committee resolutions and specific legislation provide basic authorization for survey investigations and other feasibility studies by the Corps of Engineers. Generally, water resource developments recommended to Congress in response to study authorities may not be implemented without being specifically adopted in law. The majority of the Corps' water resource projects or programs fall into that category. However, Section 201 of the 1965 Flood Control Act, as amended, delegated to the Secretary of the Army the right to administratively authorize water resource developments for which the estimated Federal cost is less than \$15 million. Approval by the Public Works Committees is required prior to project implementation. Additionally, subject to specific limits on the allowable Federal expenditures, Congress has delegated continuing authority to the Secretary of the Army acting through the Chief of Engineers for study, adoption and construction of small projects for navigation, flood control, beach erosion control and shore protection as summarized in Table 1. Criteria for design, evaluation and local cooperation (with the added requirement that local interests bear all project costs in excess of the Federal limit, except for Section 111 projects) are the same for these projects as for projects specifically authorized by Congress.

Table 1
Continuing Authority Projects

Authority	Type of Projects for Which Used	Limit of Federal Costs Per Project
Section 3 1945 R & H Act	Snagging and Clearing for Navigation	(2)
Section 14 1946 FC Act (1)	Streambank and Shore Protection for Facilities	\$ 500,000
Section 103 1962 R & H Act (1)	Small Beach Erosion Control Projects	2,000,000
Section 107 1960 R & H Act (1)	Small Navigation Projects	4,000,000
Section 205 1948 FC Act (1)	Small Flood Control Projects	5,000,000
Section 208 1954 FC Act (1)	Snagging and Clearing For Flood Control	500,000

(1) As subsequently amended.

(2) A limit per project is not specified; however, in any given year a maximum of \$100,000 may be used nationwide.

(3) A project exceeding \$1 million will be transmitted to Congress for specific authorization.

Other Corps of Engineers Programs

Section 22 of Public Law 93-251 authorized cooperation with states in the preparation of comprehensive plans for the development, utilization and conservation of the water and related resources of drainage basins located within the boundaries of the state and to submit to Congress reports and recommendations with respect to appropriate Federal participation in carrying the plan. Expenditures in any one state can not exceed \$200,000 in any one year.

Corps input to the state planning program is on an effort or service sharing basis in lieu of an outright grant.

The Corps is authorized by Section 206 of the Flood Control Act of 1960; as amended, to provide information, technical planning assistance, and guidance upon request to both Federal and non-Federal entities in identifying the magnitude and extent of the flood hazard and in planning wise use of the flood plains. Direct response and assistance of this kind are provided through the Floodplain Management Services Program at District offices. The Corps also administers studies which provide basic hydrologic and hydraulic information to the Federal Emergency Management Agency on a reimbursable basis under interagency agreement.

Specific Corps Projects

In March 1975, the Corps initiated a study of the Chicago-South End of Lake Michigan Study Area to assess overbank flooding and surface ponding in the area drained by the Des Plaines River and its tributaries, and the area tributary to Lake Michigan. The study area also includes the Chicago Metropolitan Area River Basin and DuPage River. Interim Studies completed include the Lower Des Plaines River, (1980;) DuPage River, (1982); and the I&M Canal, (1986). The Lower Des Plaines and DuPage Rivers interims identified flood problems in the basins but did not recommend Federal participation due to lack of economic justification. The I&M Canal interim study recommended rehabilitation on the McCook levee located on the Des Plaines River. This project is continuing under the Corps of Engineers small flood control authority. The feasibility report which recommended replacement of the existing levee is under review by North Central Division. Following approval of the feasibility report, the Detailed Project Study will be initiated. Preliminary cost of the levee rehabilitation is estimated to be \$1,650,000 Federal and \$550,000 non-Federal.

As a result of the extensive flooding during September-October 1986, the Illinois Division of Water Resources has requested that the Corps of Engineers initiate a flood control study of the Upper Des Plaines River Basin. This study will be initiated by the Corps following approval to conduct the study under the Chicago-South End of Lake Michigan Authority by the Chief of Engineers. Reconnaissance studies are underway to investigate the flood problems at North View in DuPage County along the East Branch DuPage River under authority of Section 205 of the 1948 Flood Control Act. The reconnaissance report on Valley View is scheduled for completion in May 1987.

The 1976 Water Resources Development Act authorized a Phase 1 General Design Memorandum (GDM) Study for the North Branch Watershed to be performed by the Corps of Engineers. The study investigated the main features of the plan prepared by the Soil Conservation Service in October 1974. The Phase 1 GDM report contains an evaluation of the federal interest in, and the feasibility of, constructing the reservoirs identified in the Plan. The Water Resources Development Act of 1986 authorizes construction of three reservoirs which were recommended in the Phase 1 GDM. See page 17 for details.

A study report for the Little Calumet River in Indiana was completed in December 1973. The Water Resources Development Act of 1976 authorized a Phase 1 advanced engineering design study which directed the Corps to determine the feasibility of implementing a flood damage reduction, outdoor recreation and recreation navigation project along the Little Calumet River in Indiana. The Phase 1 study recommends flood damages reduction improvements along the Little Calumet River between the Illinois-Indiana state line and the Penn Central Railroad bridge in Gary. These improvements in Indiana will be compatible with the authorized flood damage reduction improvements in Illinois planned by the Soil Conservation Service. The Water Resources Development Act of 1986 authorized the recommended plan. The preconstruction engineering and design is underway.

The Corps of Engineers also has authority to study the flooding problems along the Fox River. The final study is scheduled to be completed in 1987. Based on studies completed to date, it appears that modification of the existing McHenry and Algonquin dams is justified based on the potential for reducing flood damages in the Chain-O-Lakes area and the Algonquin pool. Implementation of non-structural flood damage reduction measures in Elgin and unincorporated Kane County also appear justified.

The Corps, with the Metropolitan Sanitary District of Greater Chicago as a local sponsor, has for a number of years conducted a clean-up program on the North Branch Chicago River and the Little Calumet River between the Cal-Sag Channel

and the Illinois-Indiana state line. Debris, trash and vegetation are removed from designated areas along the North Branch Chicago River each year. Debris was removed from the Little Calumet River in 1976. The scope for silt removal from the Little Calumet River has been formulated but at the request of the MSDGC the project is being deferred until completion of the TARP Phase 1 Calumet System. The Water Resource Development Act of 1986 specified future work of the clean-up program on the North Branch and Little Calumet Rivers to be cost shared 50 percent Federal and 50 percent local. The Corps of Engineers is also authorized to participate in future maintenance of the Little Calumet River in Illinois.

Construction is underway on rubblemound offshore breakwaters, riprap revetments, and beach nourishment at ten location along the Chicago Edgewater area of the Lake Michigan shoreline. The project was authorized by Public Law 91-190 to provide flood protection resulting from high lake levels.

At the request of the Governor of Illinois, assistance is being provided under the Advanced Measures provisions of PL 84-99 to provide flood protection along the Lake Michigan shoreline in areas of Edgewater as well as the Rogers Park area in Chicago. Other areas of the Illinois shoreline are also being investigated.

Section 14 projects under investigation for the lake Michigan shoreline include protection at Fullerton Avenue, Temple Emanuel in Edgewater, Meigs Field in Chicago, and a streambank protection investigation on the Fox River in Batavia.

The 1976 Water Resources Development Act authorized a Phase 1 GDM study of the Phase 11 TARP project. Known as the Chicagoland Underflow Plan, details are provided on page 35.

The Corps of Engineers under the authority of Section 205 of the 1948 Flood Control Act is also investigating solutions to urban water damage problems in the Village of Northfield as the result of overbank flooding from the Middle Fork of the North Branch of the Chicago river.

Other Federal Programs

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 created a flood insurance program administered by the Flood Insurance Administration of the Federal Emergency Management Agency.

The 1968 Act made federally subsidized insurance available to citizens in communities that adopt regulations controlling floodplain development.

The 1973 Act makes flood insurance mandatory as a condition for federally related financial assistance to communities or individuals acquiring or refinancing property or building within the flood hazard area as defined by the program established in 1968.

Federal agencies provide assistance following flood disasters in the form of grants, direct assistance or low interest loans. Participation in the flood insurance program by communities with identified flood hazards assures continued flood relief assistance.

State of Illinois, Department of Transportation Division of Water Resources Flood Control Planning

The Flood Control Act of July 1945, Ill. Rev. Stat., Ch. 19, Par. 126, a-h, gives the Division of Water Resources legal authority to participate in the improvement of the rivers of the State for the purpose of regulating and controlling flood and low water flows. Criteria followed by the Division relating to flood control planning include:

1. Assurance that the most severely damaged areas receive priority consideration and assistance from State and federal sources.
2. State water resource projects be designed to maximize economic efficiency at minimal environmental impact.
3. State expenditures result in the maximum benefits for the least possible cost.
4. Local interest and investment of funds be required as evidence of involvement in any project.

The Division of Water Resources, in cooperation with local government, has provided over 2,000 acre feet of floodwater storage in eight reservoirs, as well as improved channels at numerous locations throughout the metropolitan area.

The Division participates in federal programs within the legal authority of State Statutes. The Division is an active sponsor, along with other regional and local agencies, of floodwater management plans developed with SCS assistance. Responsibilities include land acquisition needed for the structural measures and implementation of various non-structural programs.

Stream Preservation Program

The Division has assumed responsibility for the development of a stream preservation program as a part of the non-structural program of the Chicago Metropolitan River Basin Plans.

It will include the following goals and objectives:

1. Keep debris, sediment and unwanted vegetation out of the rivers and streams.
2. Safe conveyance of floodwater through each community.
3. Assure that flood control structural measures will perform as planned by maintaining unobstructed inflows and outflows.
4. Provide for annual inspection and maintenance of the key rivers and streams in each watershed.
5. Encourage each community to assume responsibility for the stream portion within its jurisdiction.
6. Provide assistance and advice to communities, when needed, by the Division and other regional agencies.

The program will be implemented and initially coordinated through each respective watershed steering committee as the watershed plans are developed and implemented.

State Floodplain Regulations

The Rivers, Lakes, and Streams Act of June, 1911, Ill. Rev. Stat., Ch. 19, gives the Division of Water Resources the authority to regulate construction activities within the floodway. The floodway is that portion of the floodplain required to store and convey floodwater. A permit is required to construct within the floodway. Construction is prohibited that significantly raises the stage or velocity of the 100 year projected flood in the floodway.

Flood plain maps are available from the Division of Water Resources for the Upper Des Plaines River, the North Branch Chicago River, the Lower Des Plaines River, the Little Calumet River, Poplar Creek, Upper Salt Creek, and Waubensee Creek.

Floodproofing and Flood Insurance Programs

The Division's Local Floodplain Programs Section is the State Coordinating Agency for the National Flood Insurance Program. This section provides advice and information concerning the flood insurance program as well as technical assistance for floodproofing.

Metropolitan Sanitary District of Greater Chicago

The first modification of the natural drainage system in the Chicago Metropolitan area was done by the Metropolitan Sanitary District in the late 1880's. A series of canals were constructed to reverse the flow of the Chicago River and carry waste away from Lake Michigan.

The existing canal systems (Sanitary and Ship Canal, North Shore Channel, and Calumet-Sag Channel) provide a substantial volume of flood control storage. The water level in the waterways can be lowered in anticipation of a storm to provide bank storage of up to 4,600 acre-feet of additional capacity above normal operating water levels.

Flood Control Program

While the Metropolitan Sanitary District of Greater Chicago does not have a specific statutory responsibility in the area of flood control, its involvement and expertise in the areas of water pollution control and drainage has lead the Sanitary District to assume a flood control leadership role in the metropolitan area.

By the mid-1960's, the Sanitary District was involved in the design and construction of many flood control storage reservoirs and stream improvement facilities. Melvina Ditch Retention Reservoir, completed early in 1967, was the first reservoir

constructed. To date, with MSDGC participation, 24 reservoirs have been completed and three more are under construction. These reservoirs range in capacity from 24 to 1,076 acre-feet of stormwater detention and provide relief to thousands of people. All of the reservoirs designed by the Sanitary District will accommodate the largest storm expected to occur in any span of a hundred years.

The maintenance and operation responsibility of approximately one-half of the existing reservoirs has been fully undertaken by the local municipality, while in the remaining reservoirs, the Sanitary District shares this responsibility with a local public entity.

The Sanitary District has sought Federal, State and local participation in its flood control efforts. Today, the Sanitary District is one of the principal sponsors of the floodwater management plans developed by the Soil Conservation Service. These plans address flood control on a regional basis.

The Sanitary District, as a local sponsor of the SCS watershed projects, is generally responsible for the acquisition of land rights and contract administration. Since the inception of this program, the Sanitary District has expended more than \$10,000,000 in land rights acquisition for five reservoirs (Structures 2, 3, 4, 5, and 6) in the Upper Salt Creek Watershed, and more than \$5,000,000 for three reservoirs (Structures 32, 53, and 143) in the Little Calumet River Watershed. As contracting agent, the Sanitary District has constructed eight reservoirs with SCS funding.

In 1974, the Sanitary District adopted the "Flood Control Program Guidelines" (amended January 1981) which established certain criteria for the Sanitary District's participation in proposed local flood control reservoir projects (projects not addressed in the regional SCS program). These criteria included such items as the requirement for a local sponsor to share the costs of reservoir implementation, a requirement that the proposed reservoir be of at least 100 acre-feet capacity, that the flooding problem be of long standing, and that the project have a favorable benefit/cost ratio. The January 1981 amendment requires a "Strategic Planning Study for Flood Control" to be conducted by the Illinois Division of Water Resources. This State study is required for possible State funding of the project and will be used to define a cost effective project. The cost of a State study is to be borne equally by the local sponsor and the Sanitary District. The Flood Control Program Guidelines ensure that public funds are expended only in situations where serious flooding problems exist and adequate justification of expenditures is made.

Sewer Permit Programs

Since 1972, detention of stormwater runoff has been a requirement of the sewer permits within the service area of the Metropolitan Sanitary District. This area includes most of Cook County. Lake and DuPage Counties have also developed similar ordinances based on the MSDGC regulations.

The intent of the regulations is to require local governments and developers to jointly provide detention storage. This eliminates excessive runoff during heavy storm periods and promotes comprehensive community wide programs for flood control. The MSDGC ordinance requires that the release rate of stormwater runoff from all developments of a certain size not exceed stormwater runoff from the area in its natural undeveloped stage.

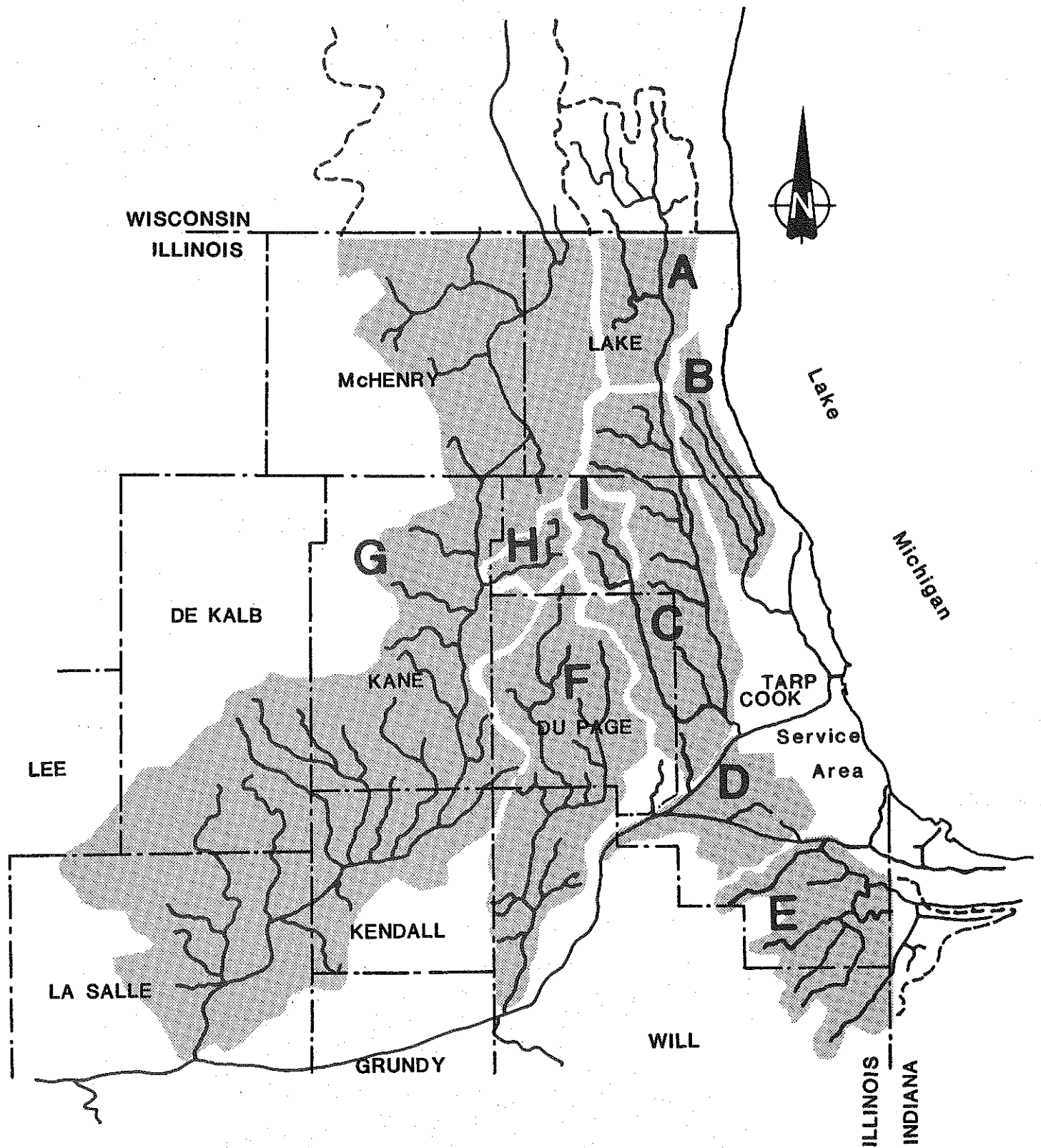
Tunnel and Reservoir Plan (TARP)

The Chicago Metropolitan area has two different methods for collecting sewage. Flood problems in areas serviced by these two systems must be resolved differently. In all areas except the central basin, sewage and storm water are collected separately. These areas are commonly called "separate sewer" areas. Surface flood retention reservoirs, mentioned previously, are provided only in separate sewered areas. In the central basin, sewage and stormwater are collected in the same sewer and the areas served are called "combined sewer" areas. Combined sewer areas comprise 375 square miles of the total 872 square mile area under the jurisdiction of the Sanitary District. Flood and pollution problems in these areas will be served by the Tunnel and Reservoir Plan (TARP). The TARP service area includes the City of Chicago and 51 suburban municipalities.

TARP consists of two phases. Phase I of the Plan is primarily a water pollution control project. Phase II is associated primarily with urban flood control.

Virtually all excess combined sewage will be captured by the ultimate tunnel-reservoir system. In addition, waterway stages will be controlled, eliminating overbank flooding, basement flooding, and the bypassing of raw sewage.

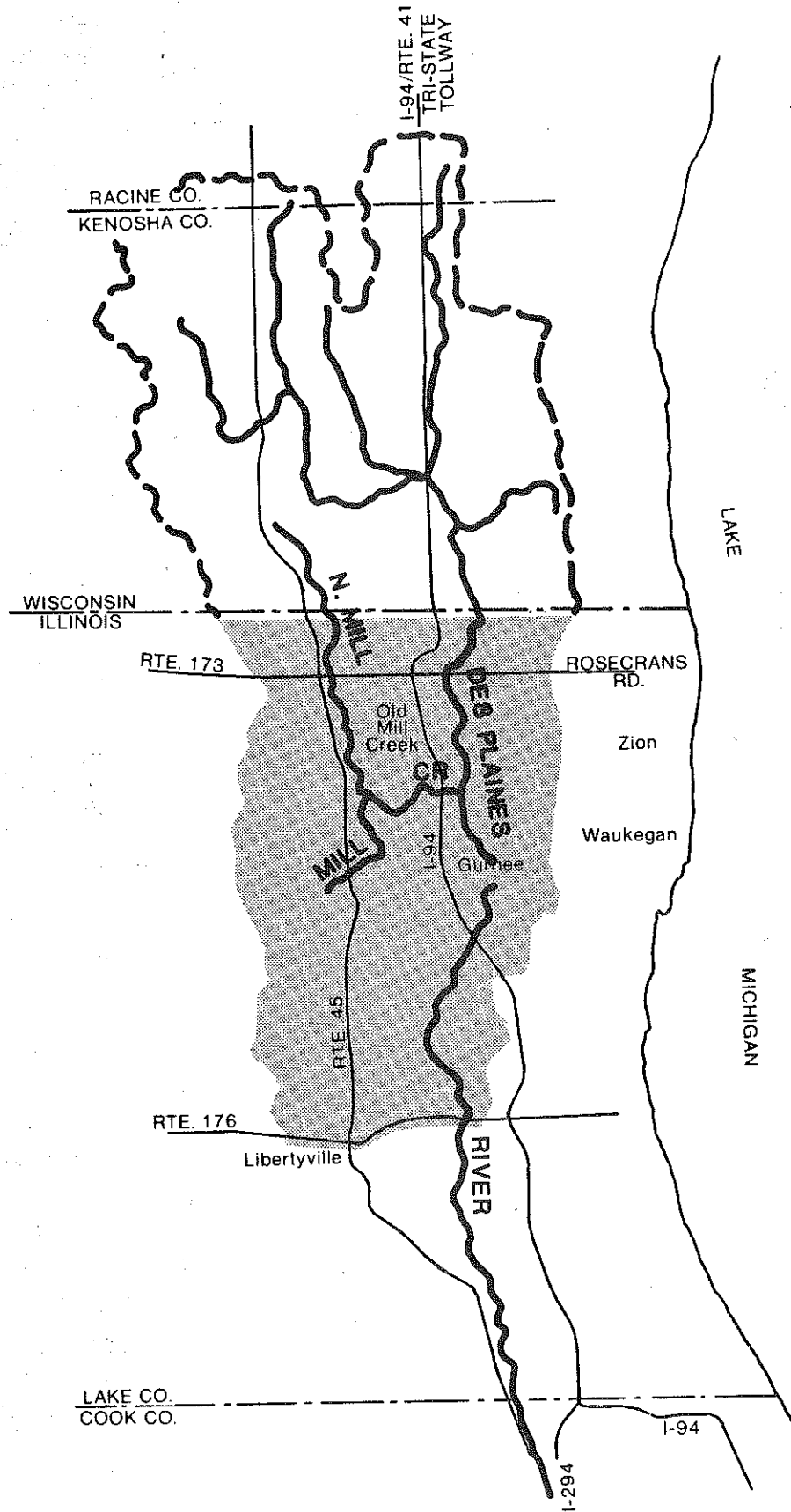
PART II - THE STATUS OF FLOODWATER MANAGEMENT



Watersheds of the Chicago Metropolitan Area

Map Key	Watershed	Area (Sq Mi)	Area Subject To Flooding (Acres)	Length Of Rivers and Tributaries (Miles)	Residences Damaged Annually	Businesses Damaged Annually	Average Annual Damages (\$1,000s)	Page
A	Upper DesPlaines River	300	13,000	62	203	11	\$283	15
B	North Branch Chicago River	102	5,500	57	1,030	20	\$2,995	17
C	Lower DesPlaines Tributaries	381	20,900	188	2,497	200	\$10,826	19
D	Cal-Sag Channel	117	1,050	25	175	-	\$165	23
E	Little Calumet River	213	10,800	109	6,866	142	\$5,835	25
F	Du Page River	353	8,623	129	130	25	\$2,890	27
G	Fox River	1,720	Not Available	117 (Main Stem)	3,880	Not Available	\$2,700	29
H	Poplar Creek	40	1,525	26	184	28	\$125	31
I	Upper Salt Creek	52	1,940	17	1,200	2	\$2,393	33
	TOTALS	3,767	64,438	730	16,195	428	\$28,212	

Upper Des Plaines River Watershed



Program Status

The Upper Des Plaines River watershed is unique in the Chicago metropolitan area because it is largely rural in character. The floodwater management plan developed for it as part of the Chicago Metropolitan Area Floodwater Management Study focuses on non-structural programs to prevent future damages from occurring. These programs include land acquisition, land protection and floodplain regulations.

Floodwater damages to agricultural land are predominant. However, significant residential and commercial flooding occurs near Russell, Gurnee, and Libertyville.

A reconnaissance study is underway by the Corps of Engineers to investigate the flood problems at North Libertyville Estates under authority of Section 205 of the 1948 Flood Control Act. The study is scheduled for completion in May 1987. Further, the State of Illinois has requested the Corps of Engineers to investigate the flood problem of the Upper Des Plaines River Basin. The reconnaissance study is scheduled to be completed in the Spring 1988.

Land Protection Program

The Lake County Soil and Water Conservation District, assisted by the Soil Conservation Service, provides technical assistance to landowners, and operators in planning and applying resource management systems on land they own or control. In addition, assistance is given to units or government with developing and implementing natural resource protection ordinances.

Agriculture remains the predominant land use in the watershed. Resource management goals in the watershed include conservation tillage systems and grass waterways for soil conservation, improvement of wildlife habitat, natural wetland retention and stream channel preservation.

Seven of the fourteen municipalities within the watershed and unincorporated Lake County presently have soil erosion and sediment control ordinances in various stages of implementation. These municipalities include Grayslake, Green Oaks, Libertyville, Lindenhurst, Mundelein, Thirdlake, and Waukegan.

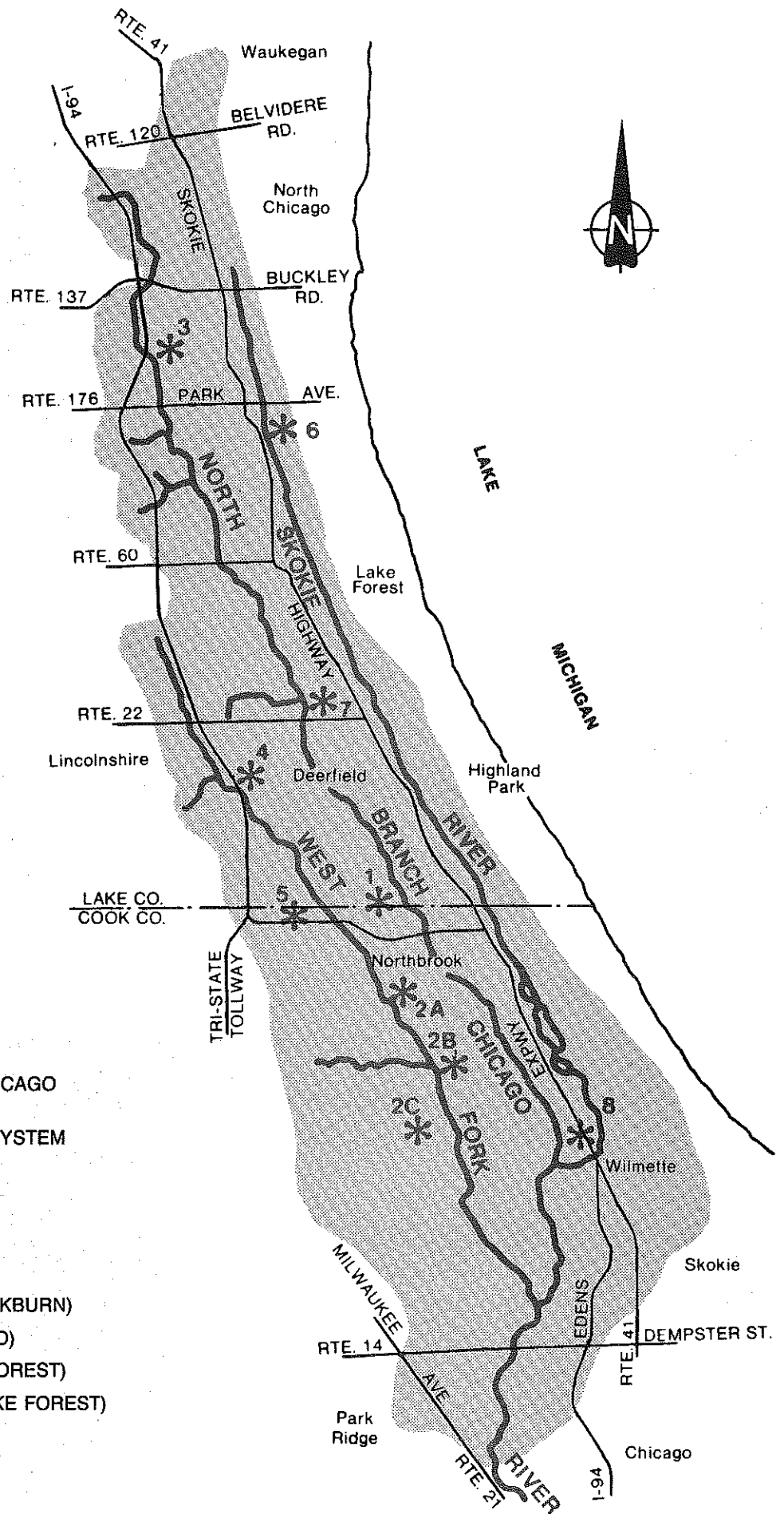
Land Acquisition Program

The Lake County Forest Preserve District has actively pursued a program of open land, wetland and floodplain purchase in the Upper Des Plaines River Watershed. To date, 4,100 acres of land adjacent to the River and its tributaries have been acquired by the District. Only a few parcels remain to be acquired to achieve the District's goal of providing continuous open space along the entire length of the Upper Des Plaines River.

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Upper Des Plaines Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

North Branch Chicago River Watershed



- * 1 MIDDLE FORK NORTH BRANCH CHICAGO RIVER RESERVOIR (NORTHBROOK)
- 2 TECHNY RETENTION RESERVOIR SYSTEM (UNINCORPORATED COOK)
 - 2A NORTHBROOK RESERVOIR
 - 2B TECHNY RESERVOIR
 - 2C GLENVIEW RESERVOIR
- 3 ATKINSON ROAD RESERVOIR (UNINCORPORATED COOK)
- 4 DUFFY LANE RESERVOIR (BANNOCKBURN)
- 5 DEERFIELD RESERVOIR (DEERFIELD)
- 6 SKOKIE ROAD RESERVOIR (LAKE FOREST)
- 7 WAUKEGAN ROAD RESERVOIR (LAKE FOREST)
- 8 WILLOW ROAD DAM MODIFICATION

Projects of the Metropolitan Sanitary District

- 1 MIDDLE FORK NORTH BRANCH CHICAGO RIVER RESERVOIR (COMPLETED IN 1975)
FLOOD STORAGE: 600 acre-feet
FLOOD PROTECTION TO: Northbrook, Northfield, Glenview, Morton Grové, Niles
COST: Construction - \$2,900,000 (MSD)
Land - 22 acres donated by the Homart Corp. (Sears Roebuck Inc.)
\$776,000 (Estimated Value)
MAINTENANCE: Homart Corp. and MSD
- 2 TECHNY RETENTION RESERVOIR SYSTEM (COMPLETED 1979)
- 2A NORTHBROOK RESERVOIR
FLOOD STORAGE: 300 acre-feet
- 2B TECHNY RESERVOIR
FLOOD STORAGE: 250 acre-feet
- 2C GLENVIEW RESERVOIR
FLOOD STORAGE 850: acre-feet
FLOOD PROTECTION TO: Glenview, Morton Grove, Niles
COST: Construction - \$3,831,000 (MSD)
Land 180 acres at three separate locations donated by Techny Orders,
\$5,280,000 (estimated value)
MAINTENANCE: MSD

Projects Planned by the Soil Conservation Service and Recommended for Construction by the U.S. Army Corps of Engineers and Authorized by Congress

(Preconstruction engineering and design is underway for the following three reservoirs.)

- 3 ATKINSON ROAD RESERVOIR (STRUCTURE 15)
VOLUME: 500 acre-feet
FLOOD PROTECTION TO: Lake Forest, Unincorporated Lake and Cook Counties
COST: Construction - \$4,140,000 (Estimate)
Land - \$427,400 (DWR)
- 4 DUFFY LANE RESERVOIR (STRUCTURE 27)
VOLUME: 525 acre-feet
FLOOD PROTECTION TO: Lincolnshire, Bannockburn, Deerfield
COST: Construction - \$5,422,000 (Estimate)
Land - \$945,000 (DWR),
\$61,500 (Lake Co. FPD)
- 5 DEERFIELD RESERVOIR (STRUCTURE 29A)
VOLUME: 575 acre-feet
FLOOD PROTECTION TO: Deerfield, Northbrook, Glenview
COST: Construction - \$4,354,000 (Estimate)
Land - \$250,000 (DWR) \$750,000 (Deerfield)

Projects of the Division of Water Resources

- 6 SKOKIE ROAD RESERVOIR (STRUCTURE 4)
VOLUME: 1,800 acre-feet
FLOOD PROTECTION TO: Lake Forest, Unincorporated Cook
COST: Construction - \$10,500,000 (Estimate DWR)
Land - DWR and Lake County Forest Preserve District \$958,300

Projects Planned by the Soil Conservation Service but Not Recommended for Construction by the U.S. Army Corps of Engineers

- 7 WAUKEGAN ROAD RESERVOIR (STRUCTURE 18)
VOLUME: 2,068 acre-feet
FLOOD PROTECTION TO: Bannockburn, Highland Park, Deerfield
COST: Construction - \$10,156,000 (Estimate)
Land - \$2,033,300 (DWR and Lake County Forest Preserve Dist.)
- 8 WILLOW ROAD DAM MODIFICATION
PURPOSE: Two automatic control gates to improve the flood control feature of the lagoon.
FLOOD PROTECTION TO: Northfield, Wilmette, Glenview, Niles, Morton Grove
COST: Construction - \$130,000 (Estimate)

Program Status

Federal Funding Status

The 1986 Water Resources Development Act authorized construction of reservoirs 3, 4, and 5 for the North Branch Watershed to be constructed by the Corps of Engineers. The preconstruction engineering and design is underway with construction initiation scheduled for 1988.

Land Protection Program

Soil erosion and sedimentation control ordinances have been enacted in the communities of Glenview, Lake Forest, North Chicago, Waukegan, Gurnee, Green Oaks, Bannockburn, and unincorporated Cook and Lake Counties.

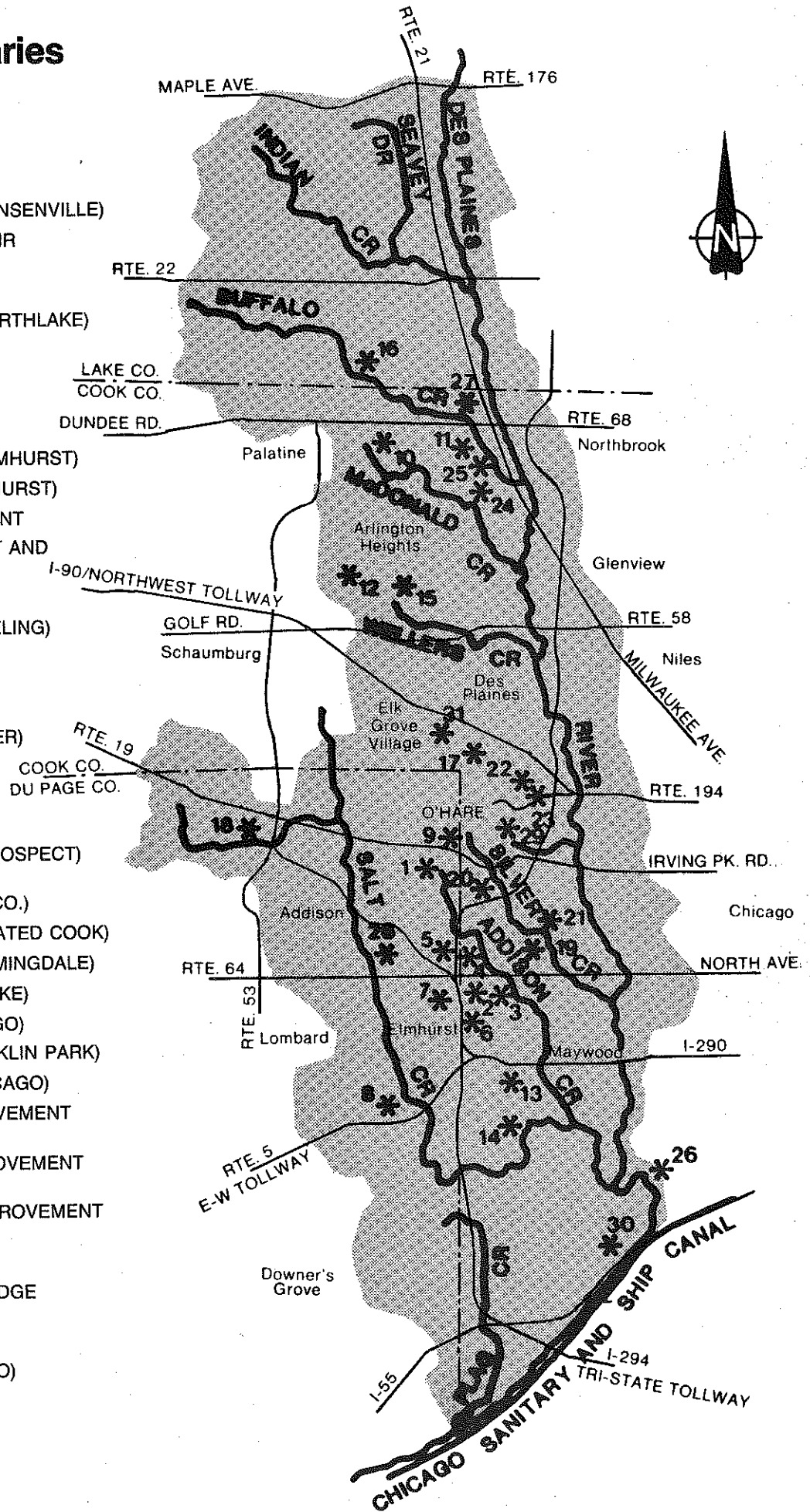
The Lake County and North Cook County Soil and Water Conservation Districts are providing technical assistance. The land protection programs are presently being evaluated by the Districts to determine their effectiveness and to make recommendations for improving them if necessary.

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the North Branch Chicago River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Lower Des Plaines Tributaries Watershed

- * 1 WILLIAM REDMOND RESERVOIR (BENSENVILLE)
- 2 GENE DOYLE DETENTION RESERVOIR (NORTHLAKE)
- 3 LAKE STREET CULVERT
- 4 RAILROAD AVENUE RESERVOIR (NORTHLAKE)
- 5 ARLINGTON CEMETERY RESERVOIR (NORTHLAKE)
- 6 LOWER ELMHURST RESERVOIR (ELMHURST)
- 7 YORK ROAD, I-90 RESERVOIR (ELMHURST)
- 8 SALT CREEK CHANNEL IMPROVEMENT
- 9 BENSENVILLE DITCH IMPROVEMENT AND RESERVOIR
- 10 WHITE PINE DITCH RESERVOIR
- 11 HERITAGE PARK RESERVOIR (WHEELING)
- 12 WILKE-KIRCHOFF RESERVOIR (ARLINGTON HEIGHTS)
- 13 HILLSIDE RESERVOIR (HILLSIDE)
- 14 MAYFAIR RESERVOIR (WESTCHESTER)
- 15 MT. PROSPECT RESERVOIR (MT. PROSPECT)
- 16 BUFFALO CREEK RESERVOIR (UNINCORPORATED LAKE & COOK CO.)
- 17 O'HARE RESERVOIR (UNINCORPORATED COOK)
- 18 SPRING BROOK RESERVOIR (BLOOMINGDALE)
- 19 NORTHLAKE RESERVOIR (NORTHLAKE)
- 20 SILVER CREEK RESERVOIR (CHICAGO)
- 21 FRANKLIN PARK RESERVOIR (FRANKLIN PARK)
- 22 WILLOW HIGGINS RESERVOIR (CHICAGO)
- 23 WILLOW HIGGINS CHANNEL IMPROVEMENT (ROSEMONT)
- 24 McDONALD CREEK CHANNEL IMPROVEMENT (PROSPECT HEIGHTS)
- 25 BUFFALO WHEELING CHANNEL IMPROVEMENT (WHEELING)
- 26 RIVERSIDE LAWN DIKE (RIVERSIDE)
- 27 BUFFALO WHEELING CHANNEL BRIDGE REPLACEMENT (WHEELING)
- 28 KINGERY WEST LEVEE (ADDISON)
- 29 LAKE O'HARE RESERVOIR (CHICAGO)
- 30 McCOOK LEVEE REHABILITATION
- 31 CUP O'HARE RESERVOIR



Projects of the Division of Water Resources

- 1 WILLIAM REDMOND RESERVOIR
(COMPLETED IN 1977)
VOLUME: 685 acre-feet
FLOOD PROTECTION TO: Bensenville, Broadview,
Northlake, Stone Park,
Bellwood
COST: Construction - \$4,588,000 (DWR)
Land - \$132,000 (Bensenville) \$83,000 (DWR)
MAINTENANCE: Bensenville
- 2 GENE DOYLE DETENTION RESERVOIR
(COMPLETED IN 1979)
VOLUME: 70 acre-feet
FLOOD PROTECTION TO: Northlake
COST: Construction - \$1,373,000 (DWR)
Land - \$165,000 (DWR)*
MAINTENANCE: Northlake
- 3 LAKE STREET CULVERT (FIRST STAGE
COMPLETED IN 1973)
PURPOSE: Improve drainage in the residential area
from Addison Creek to Lake Street and
Mannheim Road.
FLOOD PROTECTION TO: Northlake, Melrose Park,
Stone Park
COST: Construction - \$1,025,000 (DWR)
\$2,644,000 (Division of Highways)
Land - \$58,000 (DWR)*
MAINTENANCE: Northlake
(SECOND STAGE COMPLETED IN 1979)
PURPOSE: Improve the drainage in the residential area
along Lake Street from Railroad Avenue to
Mannheim Road
FLOOD PROTECTION TO: Northlake
COST: Construction - \$1,625,000 (DWR)
\$2,644,000 (Illinois Division of Highways)
- 4 RAILROAD AVENUE RESERVOIR
(COMPLETED IN 1981)
VOLUME: 47 acre-feet
FLOOD PROTECTION TO: Northlake, Addison Creek
Communities
COST: Construction - \$645,000 (DWR)
Land - \$215,000 (DWR)*
MAINTENANCE: Northlake
- 5 ARLINGTON CEMETERY RESERVOIR
(COMPLETED IN 1981)
VOLUME: 71 acre-feet
FLOOD PROTECTION TO: Addison Creek Communi-
ties, Northlake
COST: Construction - \$779,000 (DWR)
Land - \$362,000 (DWR)*
MAINTENANCE: Elmhurst
- 6 LOWER ELMHURST RESERVOIR
VOLUME: 104 acre-feet
FLOOD PROTECTION TO: Elmhurst, Berkeley
COST: Construction - \$1,300,000 (Estimate, 1986)
Land - Presently in public ownership
(Estimated value \$10,000)*
MAINTENANCE: Elmhurst
- 7 YORK ROAD, I-90 RESERVOIR (COMPLETED IN 1979)
VOLUME: 20 acre-feet
FLOOD PROTECTION TO: Elmhurst
COST: Construction - \$119,000 (Elmhurst)
\$202,000 (DWR)
Land - Presently in public ownership
(Estimated value \$10,000)
MAINTENANCE: Elmhurst

*Combined Land cost-local participation Northlake, \$65,000;
Melrose Park, \$44,000; Stone Park, \$50,000; Bellwood,
\$30,000; Elmhurst, \$190,000; Broadview, \$7,000; Westchester,
\$14,000; Addison Creek Conservancy District, \$68,000;
Leyden Township, \$70,000; Addison Township, \$25,000.

- 8 SALT CREEK CHANNEL IMPROVEMENT
16,100 foot channel improvement of Salt Creek in
Elmhurst and Oakbrook
FLOOD PROTECTION TO: Oak Brook, Oakbrook
Terrace, Elmhurst
COST: Construction - \$2,800,000 (Estimate)
Land - \$500,000 (Estimate)
MAINTENANCE: Oak Brook, Elmhurst
- 9 BENSenville DITCH IMPROVEMENT
CHANNEL IMPROVEMENT AND RESERVOIR
FLOOD PROTECTION TO: Bensenville
COST: Construction and Land: \$700,000 (Bensenville)

Projects of the Metropolitan Sanitary District

- 10 WHITE PINE DITCH RESERVOIR
(COMPLETED IN 1976)
FLOOD STORAGE: 50 acre-feet
FLOOD PROTECTION TO: Buffalo Grove
COST: Construction - \$120,000 (MSD)
\$130,000 (DWR)
\$ 7,400 (Buffalo Grove)
Land - 12 acres provided by Buffalo Grove,
\$240,000 (Estimated Value)
MAINTENANCE: White Pine Golf Course
and Buffalo Grove
- 11 HERITAGE PARK RESERVOIR
(COMPLETED IN 1972, Improved in 1982)
FLOOD STORAGE: 114 acre-feet
FLOOD PROTECTION TO: Wheeling
COST: Construction - \$225,000 (MSD)
\$215,000 (Wheeling)
\$ 93,000 (Wheeling Park District)
Land - 25 acres donated by Wheeling Park
District, \$545,000 (Estimated Value)
MAINTENANCE: Wheeling Park District and Wheeling
- 12 WILKE-KIRCHOFF RESERVOIR (COMPLETED IN 1973)
FLOOD STORAGE: 100 acre-feet
FLOOD PROTECTION TO: Arlington Heights
COST: Construction - \$736,000 (MSD)
- \$135,000 (Arlington Heights)
Land - 16 acres acquired by Arlington Heights,
\$232,000
MAINTENANCE: Arlington Heights
- 13 HILLSIDE RESERVOIR (COMPLETED IN 1976)
VOLUME: 100 acre-feet
FLOOD PROTECTION TO: Hillside, Westchester
COST: Construction - \$920,000 (MSD)
Land - 5 acres, \$371,000 (MSD); 2 acres
donated by Hillside (1976 Estimated Value
\$148,000)
MAINTENANCE: Hillside
- 14 MAYFAIR RESERVOIR (COMPLETED IN 1977)
VOLUME: 74 acre-feet
FLOOD PROTECTION TO: Westchester
COST: Construction - \$545,000 (MSD)
Land - 14 acres, \$280,000 (MSD)
MAINTENANCE: Westchester
- 15 MT. PROSPECT RESERVOIR (COMPLETED IN 1978)
VOLUME: 130 acre-feet
FLOOD PROTECTION TO: Mt. Prospect
COST: Construction - \$1,252,000 (MSD)
Land - 36 acres, \$3,175,000 (MSD)
MAINTENANCE: Arlington Heights and Mt. Prospect

Continued...

- 16 BUFFALO CREEK RESERVOIR**
(PHASE I COMPLETED 1983)
FLOOD STORAGE: Phase I - 280 acre-feet
Phase II - 420 acre-feet
Total - 700 acre-feet
FLOOD PROTECTION TO: Buffalo Grove, Wheeling,
Unincorporated Cook County
COST: Construction - Phase I - \$ 671,673 (MSD);
Phase II - \$3,000,000
(Estimate, MSD)
Land - 190 acres, \$2,000,000 (MSD)
MAINTENANCE: Lake County Forest Preserve District,
Buffalo Grove, and MSD
- 17 O'HARE RESERVOIR (COMPLETED 1982)**
VOLUME: 510 acre-feet
FLOOD PROTECTION TO: Des Plaines, Rosemont,
Unincorporated Cook County
COST: Construction - \$8,667,800 (MSD)
Land - 20 acres, \$904,000 (MSD)
MAINTENANCE: MSD

Projects of the Soil Conservation Service

- 18 SPRING BROOK RESERVOIR (STRUCTURE 5)**
FLOOD STORAGE: 870 acre-feet
FLOOD PROTECTION TO: Itasca, Wood Dale, Addison,
Unincorporated DuPage
County
COST: Construction - Flood Control - \$5,500,000
Estimate (DWR)
Recreation - \$446,800 (Estimate)
Land - \$3,120,000 (Estimate, DuPage County
Forest Preserve District)
MAINTENANCE: DuPage County Forest
Preserve District
- 19 NORTHLAKE RESERVOIR (STRUCTURE 86)**
FLOOD STORAGE: 380 acre-feet
FLOOD PROTECTION TO: Northlake, Melrose Park,
Bellwood
COST: Construction - \$2,449,700 (Estimate, SCS)
Land - 19 acres, \$556,000 (MSD)
MAINTENANCE: Northlake
- 20 SILVER CREEK RESERVOIR (STRUCTURE 102)**
FLOOD STORAGE: 500 acre-feet
FLOOD PROTECTION TO: Franklin Park, Unincor-
porated Cook County
COST: Construction - \$5,250,000 (Estimate, SCS)
Land - 24 acres, \$1,760,000 (MSD) plus 10
acres donated by Chicago,
\$884,000 (Estimated value)
MAINTENANCE: MSD
- 21 FRANKLIN PARK RESERVOIR (STRUCTURE 106)**
FLOOD STORAGE: 245 acre-feet
FLOOD PROTECTION TO: Franklin Park, Melrose Park
COST: Construction - \$2,827,900 (Estimate, SCS)
Land - \$462,000 (Franklin Park)
plus \$370,000 (DWR)
MAINTENANCE: Franklin Park
- 22 WILLOW-HIGGINS RESERVOIR (STRUCTURE 140)**
FLOOD STORAGE: 1,200 acre-feet
FLOOD PROTECTION TO: Des Plaines, Rosemont and
Chicago
COST: Construction - \$9,512,600 (Estimate, SCS)
Land - 45 acres, \$100,000 (Chicago)
MAINTENANCE: MSD

- 23 WILLOW-HIGGINS CHANNEL IMPROVEMENT**
DESCRIPTION: 2,200 foot long open channel
FLOOD PROTECTION TO: Des Plaines, Rosemont and
Chicago
COST: Construction - \$1,565,200 (Estimate, SCS)
Land - \$923,000 (Estimate, Rosemont, Des
Plaines)
MAINTENANCE: Des Plaines, Rosemont
- 24 McDONALD CREEK CHANNEL IMPROVEMENT AND
DIVERSION CHANNEL**
DESCRIPTION: Channel Improvement - 1,600 feet of
enlarged rip-rap lined channel;
Diversion Channel - 4,380 feet of new
channel
FLOOD PROTECTION TO: Arlington Heights, Prospect
Heights
COST: Construction - \$340,700 (Estimate, SCS)
Land - \$494,000 (Estimate, Prospect Heights)
MAINTENANCE: Prospect Heights
- 25 BUFFALO-WHEELING DIVERSION CHANNEL**
DESCRIPTION: 8,800 feet of new channel
FLOOD PROTECTION TO: Wheeling
COST: Construction - \$1,094,600 (Estimate, SCS)
Land - \$1,008,000 (Wheeling) plus \$703,000
(DWR) plus \$39,000 (Cook County Forest
Preserve District)
MAINTENANCE: Wheeling
- 26 RIVERSIDE LAWN DIKE**
DESCRIPTION: 2,500 foot earthen dike
FLOOD PROTECTION TO: Riverside Lawn (Unincor-
porated Cook County)
COST: Construction - \$261,300 (Estimate, SCS)
Land - \$88,000 (Estimate, Cook County Forest
Preserve District)
MAINTENANCE: Cook County FPD and MSD

Projects of the Division of Highways

- 27 BUFFALO-WHEELING CHANNEL BRIDGE
REPLACEMENT**
LOCATION: Route 83 and McHenry Road
FLOOD PROTECTION TO: Residential areas of
Wheeling
COST: Construction - \$241,000 (Illinois Divisions
of Highways and Water Resources.)

Projects of the DuPage County Forest Preserve District

- 28 KINGERY WEST LEVEE**
LOCATION: East side of Salt Creek between North
Avenue and Fullerton Avenue
FLOOD PROTECTION TO: Kingery West Subdivision
of Addison
COST: Construction - \$850,000 (Estimate DuPage Co.
Forest Preserve Dist.) \$1,015,000 (DWR)
Land - \$3,750,000 (DuPage County Forest
Preserve District)
MAINTENANCE: DuPage County Forest Preserve Dist.

Projects of the City of Chicago

29 LAKE O'HARE RESERVOIR

LOCATION: O'Hare Airport on Crystal Creek
VOLUME: 1,160 acre-feet
FLOOD PROTECTION TO: Neighboring O'Hare Airport Communities
COST: Construction - \$4,000,000 (Estimate)
Land - owned by Chicago (Estimated value - \$122,000, 1955)
MAINTENANCE: City of Chicago

Projects of the U.S. Army Corps of Engineers

30 McCOOK LEVEE REHABILITATION

LOCATION: West bank levee between 47th Street and Lawndale Avenue
FLOOD PROTECTION TO: Commercial/Industrial area of McCook
COST: Construction - \$1,650,000 (Corps of Engineers)
\$ 550,000 (MSDGC)

31 CUP O'HARE RESERVOIR

FLOOD STORAGE: 1,050 acre-feet
COST: Construction - \$18.1 million,
(\$13.6 million, Corps of Engineers; \$4.5 million, local share)
Land - 93.7 acres, 4,230,000 (MSD, 1974)

Program Status

Funding

The final Watershed Plan EIS for the Lower DesPlaines Tributaries Watershed was completed by the Soil Conservation Service in June 1985. It has been submitted to the U.S. Congress and is presently under review for authorization of construction funds.

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Lower Des Plaines Tributaries Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Stream Preservation Program

The Illinois Division of Water Resources is lead agency for the development and coordination of a watershed-wide stream preservation program. The proposed program will be presented to the watershed communities for implementation. The program will outline annual inspection and maintenance procedures.

Floodproofing Program

Approximately 1,500 existing structures will remain subject to flooding by the 100 year frequency flood event after installation of the structural measures. Floodproofing technical assistance to these owners is available through the Division of Water Resources.

Land Protection Program

Based upon an inventory of identified needs, a land protection program was developed by a subcommittee of the Lower Des Plaines Tributaries Steering Committee. Under this program the local Soil and Water Conservation Districts (SWCD), assisted by the Soil Conservation Service (SCS), will provide technical assistance to landowners, operators, and units of government to install the agricultural and urban land protection measures outlined in the plan.

When the plan was prepared, agriculture represented only 9 percent of total land use, with the majority being adequately protected from excess erosion. It is believed that increasing development within the watershed has led to a decline in this figure.

The land protection program will consist of accelerated technical assistance to individuals and local units of government for implementation of urban soil erosion and sediment control ordinances for land under their jurisdiction. The following municipalities have ordinances in various stages of implementation Arlington Heights, Bensenville, Bloomingdale, Buffalo Grove, Burr Ridge, Deer Park, Des Plaines, Elk Grove Village, Elmhurst, Glenview, Green Oaks, Hinsdale, Itasca, Kildeer, Lake Zurich, Libertyville, Lombard, Long Grove, Mt. Prospect, Mundelein, North Lake, Oak Brook, Palatine, Prospect Heights, Riverwoods, Rolling Meadows, Rosele, Schaumburg, Vernon Hills, Villa Park, Westchester, Westmont, Wheeling, Willowbrook, and Wood Dale. In addition, ordinances are in effect within unincorporated areas of Cook, DuPage, and Lake Counties.

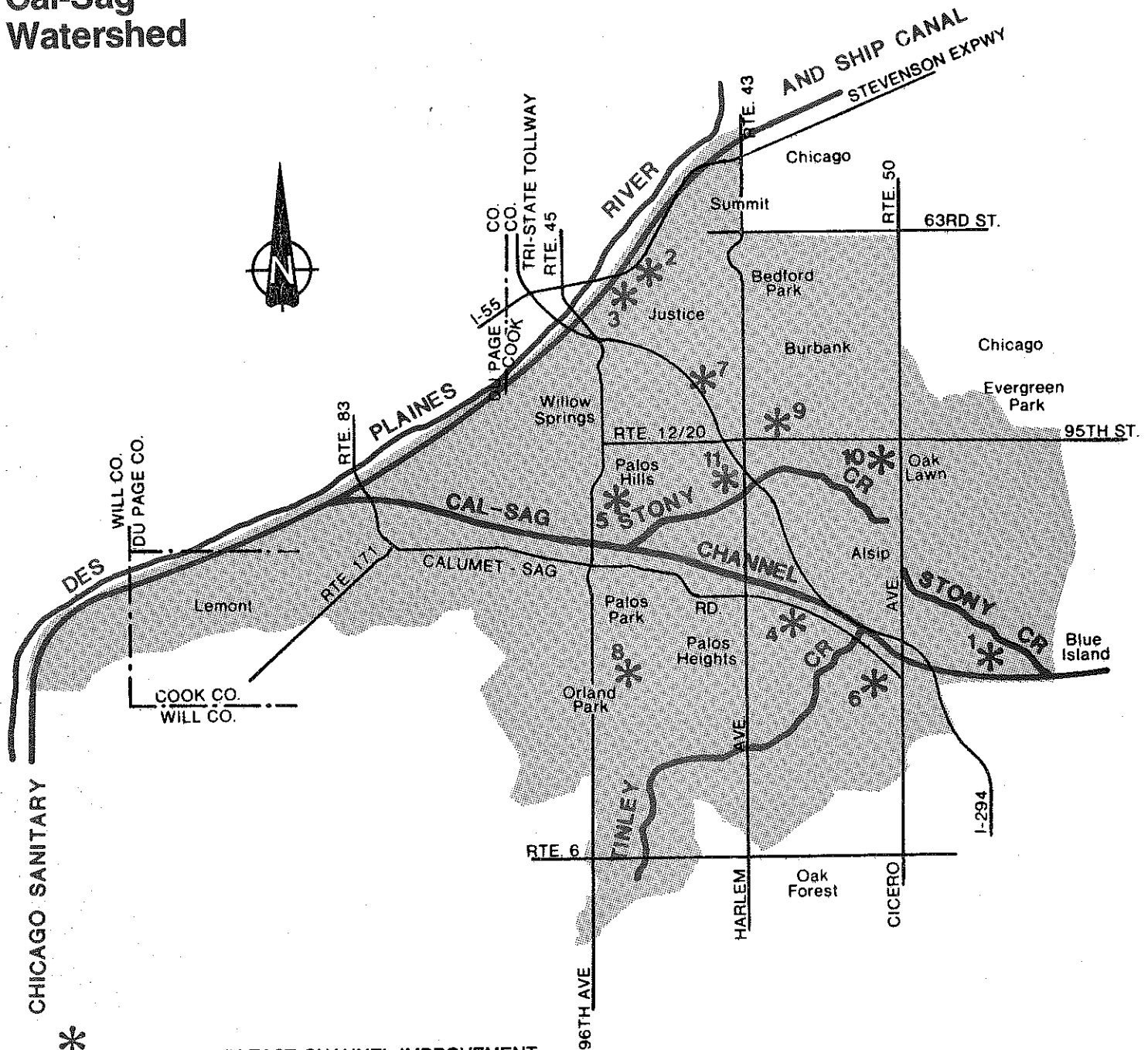
Structure Acquisition Program

The State of Illinois and the DuPage County Forest Preserve District have actively acquired residential buildings subject to frequent and severe flooding. To date, 62 structures have been acquired and removed.

Land Purchase Program

The purchase of open space and wetlands as identified in the Des Plaines Floodwater Management Plan continues. The DuPage County Forest Preserve District recently purchased Campbell Slough, a high quality wetland area, which it will preserve in its natural state.

Cal-Sag Watershed



- * 1 STONY CREEK EAST CHANNEL IMPROVEMENT AND OUTLET CHANNEL (ALSIP, BLUE ISLAND)
- 2 JUSTICE CREEK OUTLET (JUSTICE)
- 3 JUSTICE FLOOD CONTROL PROJECT (JUSTICE)
- 4 NAVAHO CREEK OUTLET (PALOS HEIGHTS)
- 5 LUCAS DITCH FLOOD CONTROL PROJECT (PALOS HILLS, HICKORY HILLS)
- 6 CRESTWOOD DRAINAGE PROJECT (CRESTWOOD)
- 7 HICKORY HILLS RESERVOIR (HICKORY HILLS)
- 8 MILL CREEK LEVEE
- 9 MELVINA DITCH RESERVOIR AND CHANNEL IMPROVEMENT (OAK LAWN)
- 10 OAK LAWN RETENTION RESERVOIR (OAK LAWN)
- 11 STONY CREEK WEST CHANNEL IMPROVEMENT (PALOS HILLS, HICKORY HILLS, WORTH, CHICAGO RIDGE)

Projects of the Division of Water Resources

- 1 EAST STONY CREEK CHANNEL IMPROVEMENT AND OUTLET CHANNEL (COMPLETED IN 1977)
PURPOSE: Improve flow in creek and discharge into Cal-Sag Channel; Approximate length 3.2 miles
FLOOD PROTECTION TO: Alsip, Blue Island, Merrionette Park
COST: Construction - \$1,262,000 (DWR)
Land - furnished by MSD
(1960 Estimated value \$10,000)
MAINTENANCE: MSD
- 2 JUSTICE CREEK OUTLET (COMPLETED IN 1974)
PURPOSE: Improve discharge into Sanitary and Ship Canal; length 450 feet
FLOOD PROTECTION TO: Justice
COST: Construction - \$96,000 (DWR)
Land - furnished by MSD
(Estimated value \$10,000)
MAINTENANCE: Justice
- 3 JUSTICE FLOOD CONTROL PROJECT (UNDER CONSTRUCTION)
PURPOSE: Alleviate flooding along Justice Creek and 71st Street Ditch
FLOOD PROTECTION TO: Justice
COST: Being estimated
Land - furnished by Justice
MAINTENANCE: Justice
- 4 NAVAHO CREEK OUTLET (COMPLETED IN 1975)
PURPOSE: Improve discharge into Calumet-Sag Channel
FLOOD PROTECTION TO: Palos Heights
COST: Construction - \$14,000 (Estimate, DWR)
- 5 LUCAS DITCH FLOOD CONTROL PROJECT
PURPOSE: 12,760 foot channel improvement and 4,200 foot diversion channel to improve drainage
FLOOD PROTECTION TO: Palos Hills, Hickory Hills
COST: Construction - \$185,000 (Estimate, 1961)
Land - 16 acres (Estimated Value \$32,000; MSD, 1962)
- 6 CRESTWOOD DRAINAGE PROJECT (COMPLETED IN 1974)
PURPOSE: Improve drainage in Crestwood and divert floodwaters from Tinley Creek
FLOOD PROTECTION TO: Crestwood
COST: Construction - \$179,000 (DWR)
MAINTENANCE: Crestwood
- 7 HICKORY HILLS RESERVOIR (Proposed for 1985)
VOLUME: 134 acre-feet
FLOOD PROTECTION TO: Approximately 44 structures in Hickory Hills
COST: Construction - \$1,914,000 (DWR plus Hickory Hills)
Land - 12 acres, 1983 estimate, \$277,000 (MSD)
MAINTENANCE: Hickory Hills
- 8 MILL CREEK LEVEE (PROPOSED FOR 1987)
PURPOSE: Flood protection to eight structures in unincorporated Cook County
COST: Construction - \$490,000 (DWR)
Land - \$72,000 (Orland Township)
MAINTENANCE: Orland Township

Projects of the Metropolitan Sanitary District

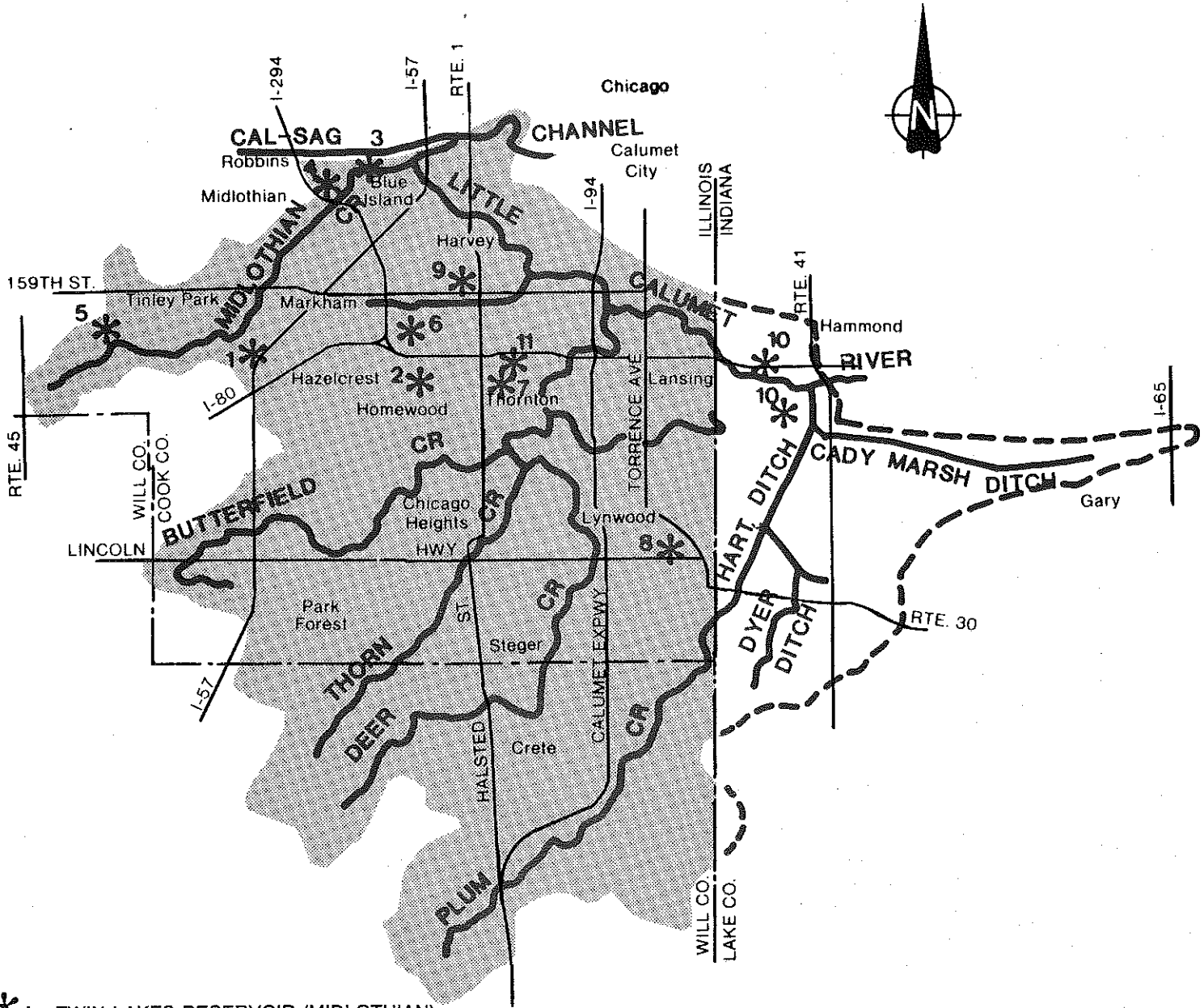
- 9 MELVINA DITCH RESERVOIR AND CHANNEL IMPROVEMENT (COMPLETED IN 1973)
VOLUME: 165 acre-feet
CHANNEL IMPROVEMENT LENGTH: Approximately 1 mile
FLOOD PROTECTION TO: Bedford Park, Oak Lawn
COST: Construction - \$1,900,000 (MSD)
\$ 500,000 (Oak Lawn)
Land - 12 acres, \$119,000 (MSD)
MAINTENANCE: Oak Lawn, Oak Lawn Park District and MSD
- 10 OAK LAWN RETENTION RESERVOIR (COMPLETED IN 1971)
VOLUME: 24 acre-feet
FLOOD PROTECTION TO: Oak Lawn
COST: Construction - \$120,000 (MSD)
Land - donated by Oak Lawn (1970 Estimated Value, \$83,000)
MAINTENANCE: Oak Lawn
- 11 WEST STONY CREEK CHANNEL IMPROVEMENT (COMPLETED IN 1972)
PURPOSE: Improve flow in Creek and discharge into Cal-Sag. Approximate length - 5.7 miles
FLOOD PROTECTION TO: Palos Hills, Hickory Hills, Worth, Chicago Ridge
COST: Construction - \$344,000 (MSD)
Land - obtained by MSD (1960 Estimated Value \$17,000)

Program Status

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Cal-Sag Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Little Calumet River Watershed



- *1 TWIN LAKES RESERVOIR (MIDLOTHIAN)
- 2 CALUMET UNION RESERVOIR (HAZELCREST)
- 3 MIDLOTHIAN CREEK DIVERSION CHANNEL (ROBBINS)
- 4 NATALIE CREEK DIVERSION CHANNEL (MIDLOTHIAN)
- 5 TINLEY PARK RESERVOIR (TINLEY PARK)
- 6 EDWARD C. HOWELL RESERVOIR (MARKHAM)
- 7 GEORGE M. O'BRIEN RESERVOIR (THORNTON)
- 8 DR. MARY WOODLAND RESERVOIR (LYNWOOD)
- 9 CAL-UNION CHANNEL IMPROVEMENT (HARVEY)
- 10 LITTLE CALUMET RIVER INDIANA LEVEES (HAMMOND & MUNSTER)
- 11 THORTON RESERVOIR

Projects of the Division of Water Resources

- 1 TWIN LAKES RESERVOIR (COMPLETED IN 1974)
 VOLUME: 950 acre-feet
 FLOOD PROTECTION TO: Midlothian, Tinley Park
 COST: Construction - \$939,400 (DWR)
 Land - furnished by Cook County Forest Preserve District, DWR, Village of Midlothian (1974 Estimated value \$273,000)
 MAINTENANCE: Cook County Forest Preserve District

Projects of the Metropolitan Sanitary District

- 2 CALUMET UNION RESERVOIR (COMPLETED IN 1976)
VOLUME: 500 acre-feet
FLOOD PROTECTION TO: Hazelcrest, Markham, Harvey
COST: Construction - \$2,838,000 (MSD)
Land - 44 acres, \$414,500 (MSD)
MAINTENANCE: Hazelcrest Park District and MSD

Projects of the Cook County Highway Department

- 3 MIDLOTHIAN CREEK DIVERSION CHANNEL (COMPLETED IN 1980)
DESCRIPTION: 1,200 feet channel improvement between 137th and 139th Streets; 2,500 feet, 7.5' x 12' twin box conduit along Kedzie Avenue to Cal-Sag Channel
FLOOD PROTECTION TO: Robbins, Midlothian
COST: Construction - \$1,482,000 (Cook County)
Land - Cook County, Robbins
MAINTENANCE: Cook County Highway Department
- 4 NATALIE CREEK DIVERSION CHANNEL
DESCRIPTION: 9,200 feet, 96" and 48" pipe (147th to 135th Streets)
700 feet 102" pipe from 135th to Cal-Sag Channel
FLOOD PROTECTION TO: Midlothian
COST: Construction - \$1,382,600 (Estimate) Plans and specifications have been prepared.
MAINTENANCE: Cook County Highway Department

Projects of the Soil Conservation Service

- 5 TINLEY PARK RESERVOIR (STRUCTURE 32, SCHEDULED COMPLETION - 1988)
FLOOD STORAGE: 616 acre-feet
FLOOD PROTECTION TO: Tinley Park, Midlothian
COST: Construction - Flood Control - \$7,932,000 (SCS)
Recreation - \$1,068,000 (Estimate, SCS) plus \$768,000 (Estimate, Tinley Park Park District)
Land - 98 acres, \$2,845,000 (MSD) plus 32 acres, \$1,450,000 (Estimated value, Tinley Park) plus 8 acres, \$313,000 (Estimated value, Tinley Park Park District)
MAINTENANCE: MSD and the Tinley Park Park District
- 6 EDWARD C. HOWELL (STRUCTURE 53, SCHEDULED COMPLETION - 1987)
(Approach channel completed 1984 - \$231,400; MSD)
FLOOD STORAGE: 589 acre-feet
FLOOD PROTECTION TO: Markham, Harvey, South Holland
COST: Construction - \$4,492,000 (SCS)
Land - 84 acres, \$990,000 (MSD) plus \$250,000 (Cook County); separate landscaping contract to follow \$25,000 (SCS Estimate)
MAINTENANCE: MSD
- 7 GEORGE M. O'BRIEN RESERVOIR (STRUCTURE 84) (Composite with TARP - Phase II, COE)
FLOOD STORAGE: 9,600 acre-feet
FLOOD PROTECTION TO: Dolton, South Holland, Hammond, Calumet City, East Chicago
COST: \$34,802,000
Land - 129 acres, \$9,905,000 (MSD) plus \$628,000 (DWR)
MAINTENANCE: MSD
- 8 DR. MARY WOODLAND RESERVOIR (STRUCTURE 143, SCHEDULED COMPLETION - 1988)
FLOOD STORAGE: 1,076 acre-feet
FLOOD PROTECTION TO: Lynwood, Lansing
COST: Construction - \$5,364,000 (SCS)
Land - 137 acres, \$1,417,500 (MSD), separate Landscaping Contract to follow, \$20,000 (SCS Estimate)
MAINTENANCE: MSD

- 9 CAL-UNION DRAINAGE DITCH IMPROVEMENT
DESCRIPTION: 1.74 miles improved channel; 0.25 miles of concrete lined channel
FLOOD PROTECTION TO: Markham, Harvey, South Holland
COST: Construction - \$4,192,000 (Estimate, SCS)
Land - \$167,000 (Estimate, Cal-Union Drainage District); separate Landscaping Contract to follow, \$75,000 (SCS Estimate)
MAINTENANCE: Calumet Union Drainage District

Projects of the Corps of Engineers

- 10 LITTLE CALUMET RIVER, INDIANA LEVEES (Under preconstruction engineering and design)
DESCRIPTION: 6 river miles of levees/floodways on both banks. Recreation trail and support facilities.
FLOOD PROTECTION TO: Hammond, Munster (Project continues through Griffith, Highland and Gary on Lake Michigan basin)
COST: Construction - \$70,700,000 (Estimate, Corps of Engineers)
Land - \$4,700,000 (Estimate, Little Calumet River Basin Development Commission)
- 11 THORTON RESERVOIR (TARP - Phase 11 Composite) See No. 18, Page 35

Program Status

Federal Funding for the Soil Conservation Service Proposed Program

In September 1982, the Little Calumet River Watershed Plan and Environmental Impact Statement were approved and funded. The local sponsors are proceeding to meet their commitments for land acquisition and non-structural program development and implementation.

Land Protection Program

Twenty-three communities as well as unincorporated Cook and Will Counties have passed and are enforcing ordinances to control soil erosion losses on developing land.

Three areas of high sediment production are included in this protected area. They are Plum Creek (16,700 acres) which is 85 percent adequately treated; Butterfield Creek (1,200 acres) which is 60 percent treated; and Midlothian Creek (2,400 acres) which is 65 percent treated. The protected area of Midlothian Creek is especially critical because it is upstream from the Tinley Park Reservoir. Likewise, the area upstream from the Lynwood Reservoir is 91 percent adequately treated. These measures will assure that sediment will not fill the reservoirs and rivers.

Federal Funding for the Corps of Engineers Proposed Program

In October 1986, the Little Calumet River, Indiana project was authorized. The Little Calumet River Basin Development Commission is proceeding to meet its commitment for land acquisition and the structural implementation.

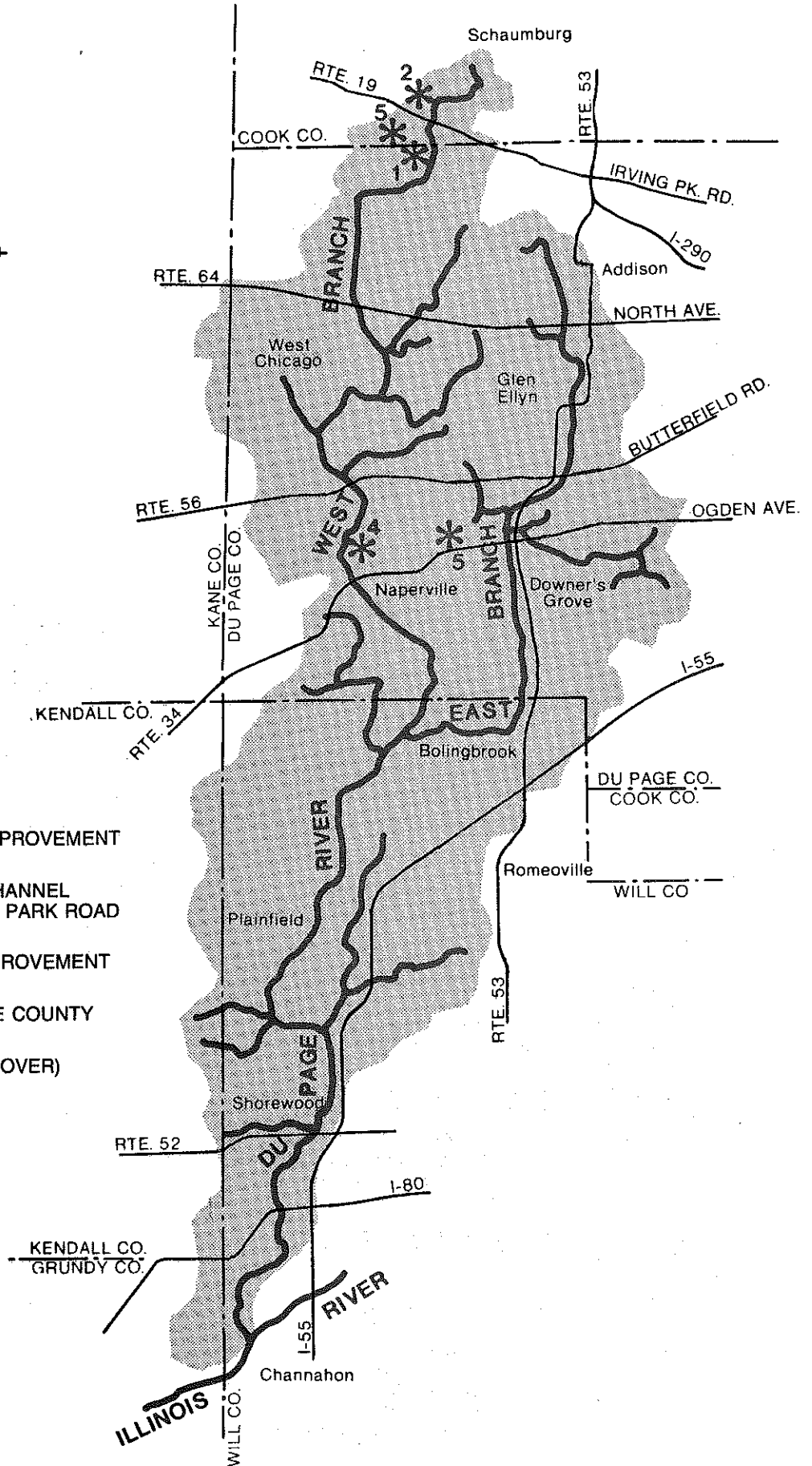
Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Little Calumet River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Stream Preservation Program

The Illinois Division of Water Resources is the coordinating agency for a proposed program that has been presented to the Little Calumet Steering Committee for implementation. The program outlines annual inspection and maintenance procedures. Memoranda of cooperation are in place for 28 of the 30 watershed governmental units.

DuPage River Watershed



- * 1 WEST BRANCH DUPAGE RIVER IMPROVEMENT (HANOVER PARK)
- 2 WEST BRANCH DUPAGE RIVER CHANNEL IMPROVEMENT NORTH OF IRVING PARK ROAD (HANOVER)
- 3 ST. JOSEPH CREEK CHANNEL IMPROVEMENT (LISLE, DOWNERS GROVE)
- 4 NAPERVILLE RESERVOIR (DUPAGE COUNTY FOREST PRESERVE)
- 5 UPPER DUPAGE RESERVOIR (HANOVER)

Projects of the Division of Water Resources

- 1 WEST BRANCH DUPAGE RIVER CHANNEL IMPROVEMENT
PURPOSE: Channel modification to improve drainage in the Hanover Park residential area adjacent to the river
FLOOD PROTECTION TO: Hanover Park;
LONG MEADOW ROAD TO CMSP & P RAILROAD TRACKS 4,700 FEET (COMPLETED IN 1977)
COST: Construction - \$280,000 (DWR)
Land rights furnished by MSD as part of Upper DuPage Reservoir Project
- 2 IRVING PARK ROAD TO LONG MEADOW ROAD 1,300 FEET (COMPLETED IN 1981)
COST: Construction - \$88,000 (DWR)
Land rights furnished by Hanover Park
Estimated value - \$10,000
MAINTENANCE: Hanover Park
WEST BRANCH DUPAGE RIVER CHANNEL IMPROVEMENT 1,700 FEET (NORTH OF IRVING PARK ROAD)
PURPOSE: Improve drainage in Hanover Park residential area.
FLOOD PROTECTION TO: Hanover Park
COST: Construction - \$1,300,000 Estimate 1980 (DWR)
Land rights furnished by Hanover Park
Estimated value \$20,000
MAINTENANCE: Hanover Park
- 3 ST. JOSEPH CREEK CHANNEL IMPROVEMENT (COMPLETED IN 1980)
PURPOSE: 14,200 feet of channel modification to improve drainage in Lisle and Downers Grove
FLOOD PROTECTION TO: Lisle, Downers Grove
COST: Construction \$1,320,000 (DWR)
Land - \$128,000 (DWR)
- 4 NAPERVILLE RESERVOIR (COMPLETED IN 1971)
VOLUME: 2,500 acre-feet
FLOOD PROTECTION TO: Naperville, Unincorporated DuPage County
COST: Construction - \$1,176,300 (DWR, estimated)
Land - \$975,000 (DWR)
MAINTENANCE: DuPage County Forest Preserve District

Projects of the Metropolitan Sanitary District

- 5 UPPER DUPAGE RESERVOIR (COMPLETED IN 1977)
VOLUME: 230 acre-feet
FLOOD PROTECTION TO: Hanover Park
COST: Construction - \$847,000 (MSD)
Land - 26 acres, \$212,000 (MSD)
MAINTENANCE: Hanover Park Park District and MSD

Program Status

Floodwater Management Planning

The Corps of Engineers through the Chicago-South End of Lake Michigan Urban Water Damage Study is investigating solutions to urban water damage problems caused by over-bank flooding and poor drainage. The investigation of drainage problems is limited to flooding that results from the submergence of sewer outlets by high river stages. Because of the large size of the area, the study is being conducted through a series of six interim reports.

Work on Interim Report No. 2 for the DuPage River was completed in August 1982. The report concluded that Corps of Engineers participation in implementing flood damage reduction measures in the DuPage River Basin is not justified at this time due to the lack of economic feasibility.

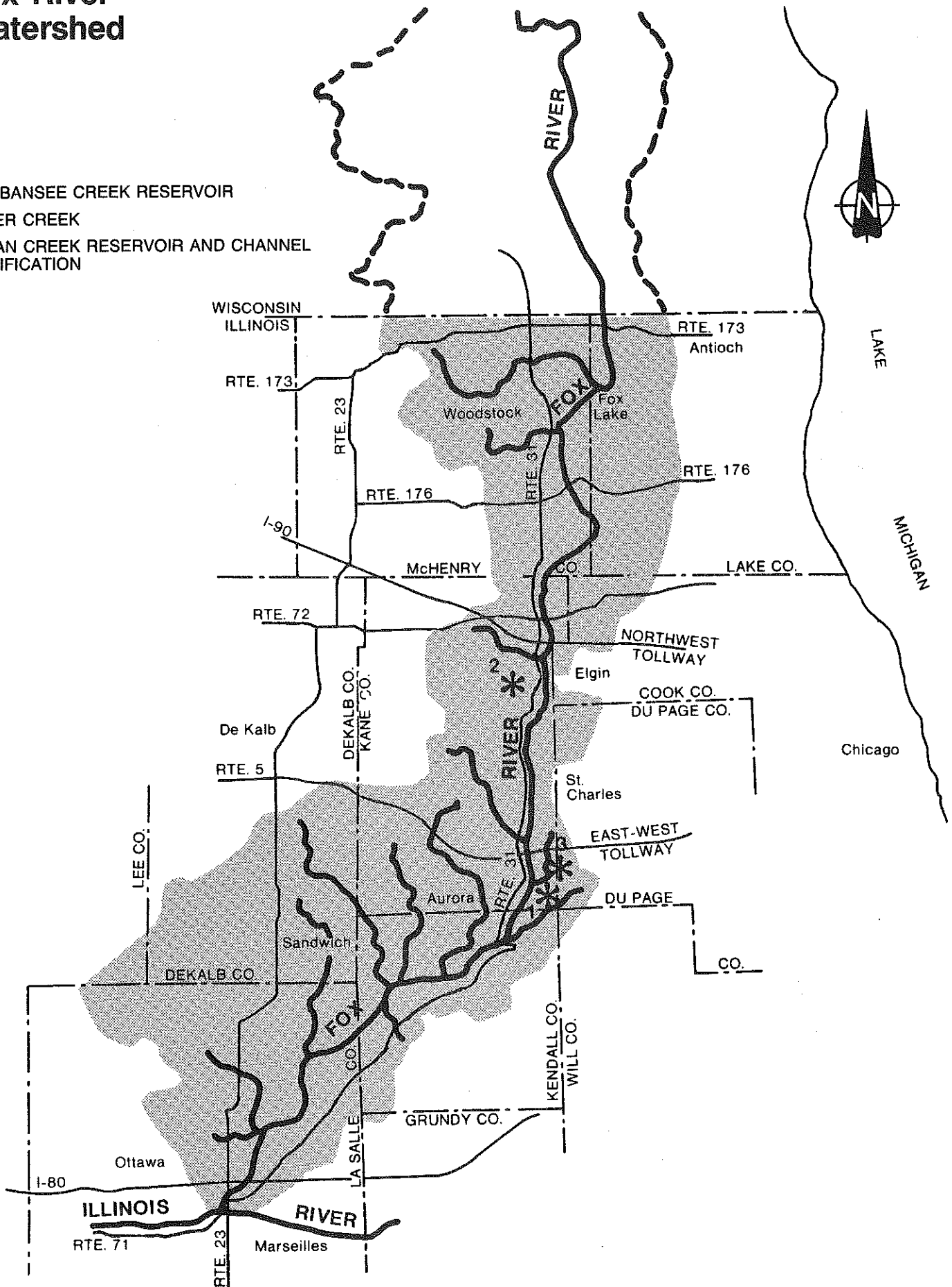
The DuPage County Forest Preserve District requested that the Corps reinvestigate the flood problems at the Valley View residential development on the East Branch under the authority of Section 205 of the 1948 Flood Control Act. The initial appraisal was initiated September 1983. The reconnaissance study will be completed in May 1987.

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the DuPage River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Fox River Watershed

- *1 WAUBANSEE CREEK RESERVOIR
- 2 OTTER CREEK
- 3 INDIAN CREEK RESERVOIR AND CHANNEL MODIFICATION



Projects of the Division of Water Resources

- 1 **WAUBANSEE CREEK RESERVOIR**
(COMPLETED IN 1979)
VOLUME: 50 acre-feet
LEVEE: 3,000 feet
FLOOD PROTECTION TO: 60 homes in Park View
Estate, Subdivision of
Village of Montgomery on
Fox River
COST: Construction - \$914,000 (DWR)
Land - \$119,000 (Montgomery)
MAINTENANCE: Montgomery
- 2 **OTTER CREEK CHANNEL IMPROVEMENT**
(COMPLETED IN 1982)
LENGTH: 5,295 feet
FLOOD PROTECTION TO: City of Elgin
COST: Construction - \$281,200 (DWR)
Land - Obtained by City of Elgin
MAINTENANCE: City of Elgin
- 3 **INDIAN CREEK RESERVOIR AND CHANNEL
MODIFICATION**
FLOOD STORAGE VOLUME: 310 acre-feet
CHANNEL LENGTH: 8,400 feet
FLOOD PROTECTION TO: 130 homes in Aurora and
Aurora Township
COST: Construction - \$2,300,000 (Estimate, DWR)
Land - 55 acres, \$600,000 (Estimate,
City of Aurora)
MAINTENANCE: City of Aurora

Program Status

Floodwater Management Planning

The Corps of Engineers is investigating the water resource problems and needs of the Fox River Basin to provide a plan for developing, utilizing, and conserving the basin's water and related land resources.

The Fox River Basin has a drainage area of 2,580 square miles and includes parts of both Illinois and Wisconsin. The character of the basin varies from resort-type developments in the north to predominantly rural areas in the south. The Fox River flows through the Chain of Lakes area, which contains several inter-connected lakes in northern Illinois.

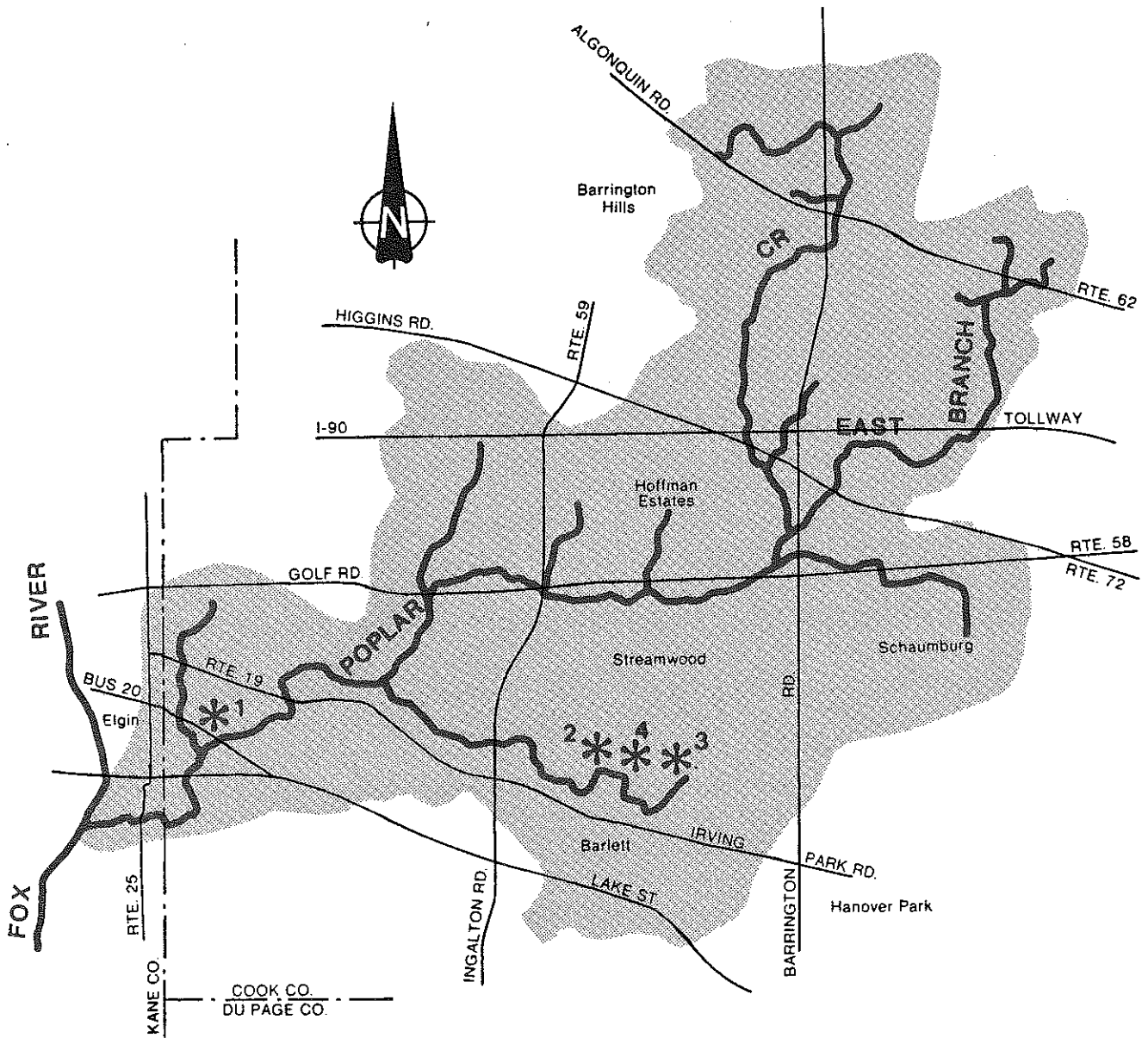
Among the study's objectives are flood control, floodplain management, wastewater management, including storm water runoff, regional water supply, water quality control, recreation, fish and wildlife conservation protection and enhancement of aesthetic qualities, and other measures for enhancement and protection of the environment on streams in the basin area.

A preliminary feasibility report was completed by the Chicago District in fiscal year 1978. A detailed feasibility study was completed in June 1984 with recommendations for new gate structures to be added to the Algonquin and McHenry dams and for non-structural protection to be provided to some 80 homes in Kane County to be constructed under the Corps of Engineers continuing authorities small project program. The final design study is scheduled to be completed in mid 1987.

Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Fox River Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Poplar Creek Watershed



- * 1 POPLAR CREEK LEVEE (ELGIN)
- 2 OAK HILL PARK RESERVOIR (STREAMWOOD)
- 3 DOLPHIN PARK RESERVOIR (STREAMWOOD)
- 4 HILLSIDE PARK RESERVOIR (STREAMWOOD)

Projects of the Division of Water Resources

- 1 **POPLAR CREEK LEVEE (Proposed for 1988)**
LENGTH: 1,400 feet
BENEFITED AREA: 102 residential properties;
28 businesses; City of Elgin
COST: Construction - \$500,000 (Estimate, DWR)
Land - \$88,000 (Estimate, Elgin)
MAINTENANCE: City of Elgin

Projects of the Metropolitan Sanitary District

- 2 **OAK HILL PARK RESERVOIR (COMPLETED IN 1976)**
VOLUME: 77 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - \$346,000 (MSD)
34 acres of land donated by Village
Estimated value \$340,000 (1976)
MAINTENANCE: Streamwood and Streamwood
Park Dist.
- 3 **DOLPHIN PARK RESERVOIR (COMPLETED IN 1976)**
VOLUME: 96 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - \$238,000 (MSD)
33 acres of land donated by Village
Estimated value \$330,000 (1976)
MAINTENANCE: Streamwood and Streamwood
Park Dist.
- 4 **HILLSIDE PARK RESERVOIR (COMPLETED IN 1976)**
VOLUME: 35 acre-feet
BENEFITED AREA: Streamwood
COST: Construction - \$87,000 (MSD)
18 acres of land donated by Village
Estimated value \$180,000 (1976)
MAINTENANCE: Streamwood and Streamwood
Park Dist.

Program Status

Land Protection Program

Soil Erosion and Sedimentation Control Ordinances have been enacted throughout the Poplar Creek Watershed which includes Barrington Hills, South Barrington, Hoffman Estates, Schaumburg, Hanover Park, Streamwood, Bartlett, Elgin, Inverness, and unincorporated Cook County.

These ordinances will control erosion and sedimentation from developing areas in the watershed to assure that excessive sediment does not find its way into the storm water conveyance systems. The North Cook Soil and Water Conservation District is providing technical assistance to the communities. The land protection programs are currently being evaluated by the Conservation District to determine the effectiveness of each and to make recommendations for improving them if necessary.

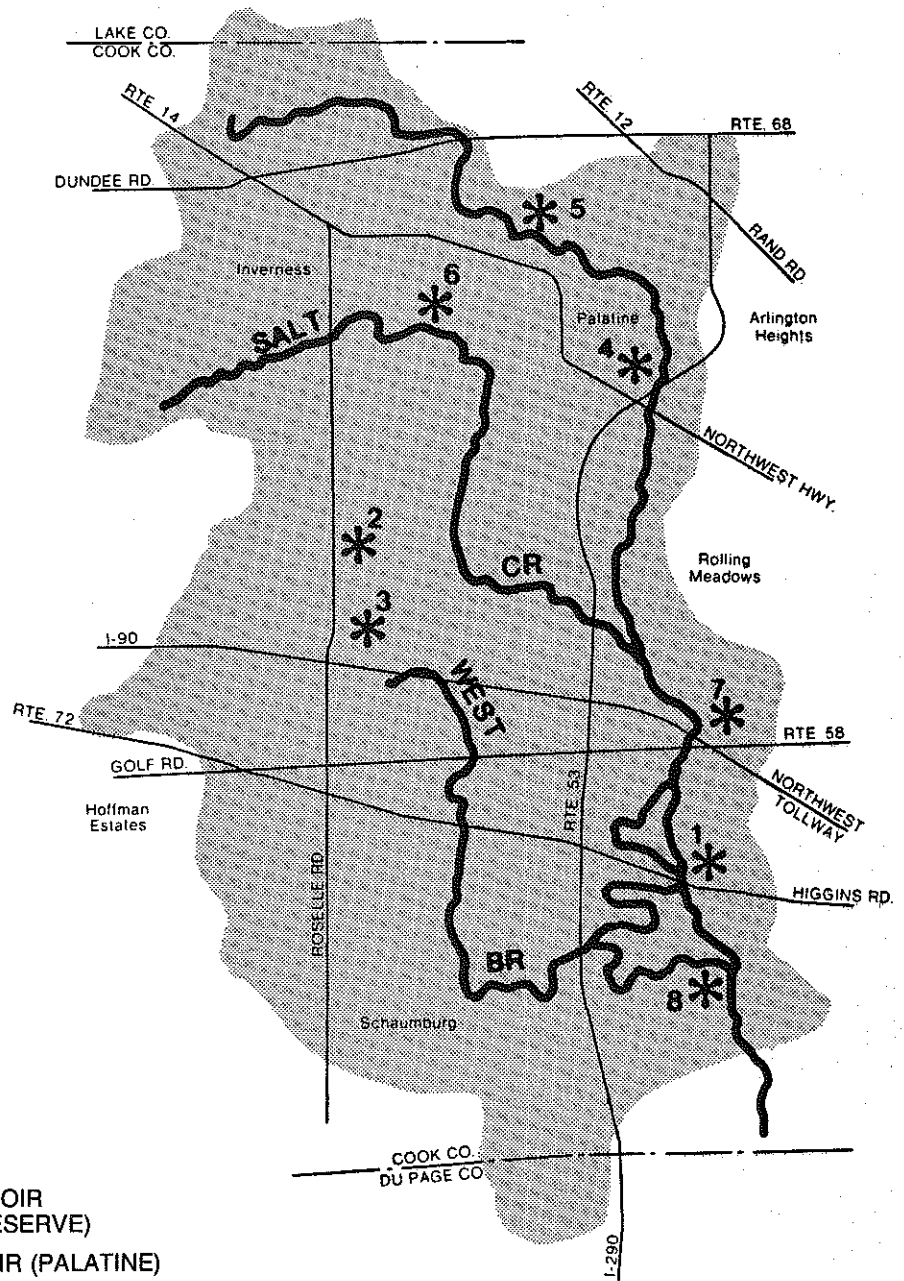
Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Poplar Creek Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Wetland and Open Space Acquisition

Communities in the Poplar Creek Watershed are actively acquiring and preserving open space and wetland to meet local needs. A green belt is planned to link municipalities with existing Cook County Forest Preserve District holdings. Approximately 435 acres of stream corridor is required for this need.

Upper Salt Creek Watershed



- * 1 BUSSE WOODS RESERVOIR (COOK CO. FOREST PRESERVE)
- 2 PLUM GROVE RESERVOIR (PALATINE)
- 3 ST. MICHAEL RESERVOIR (SCHAUMBURG)
- 4 TWIN LAKES RESERVOIR (PALATINE)
- 5 TOM T. HAMILTON RESERVOIR (PALATINE)
- 6 MARGRETH RIEMER RESERVOIR (PALATINE)
- 7 REACH F, PHASE I (ROLLING MEADOWS)
- 8 BUSSE WOODS DAM MODIFICATION

Projects of the Soil Conservation Service

- 1 **BUSSE WOODS RESERVOIR (COMPLETED IN 1978)**
 FLOOD STORAGE: 1,540 acre-feet
 FLOOD PROTECTION TO: Elk Grove Village, Wood Dale, Addison, Villa Park
 COST: Construction - Flood Control - \$4,300,000 (DWR) plus \$2,075,000 (SCS)
 Recreation - \$7,725,000
 \$3,792,100 (SCS)
 \$3,932,900 (CCFPD, DWR)
 Land - \$14,000,000 (estimated value, Cook County Forest Preserve District)
 MAINTENANCE: Cook County Forest Preserve District
- 2 **PLUM GROVE RESERVOIR (STRUCTURE 2, COMPLETED 1984)**
 FLOOD STORAGE: 218 acre-feet
 FLOOD PROTECTION TO: Rolling Meadows, Schaumburg
 COST: Construction - Flood Control - \$791,400 (SCS) plus \$39,300 (MSD)
 Recreation - \$81,500 (DWR) plus \$64,000 (Palatine Park District) plus \$15,000 (Palatine Township) plus \$4,500 (Village of Palatine)
 Land - 146 acres, \$2,790,000 (MSD)
 MAINTENANCE: Palatine Park District and MSD
- 3 **ST. MICHAEL RESERVOIR (STRUCTURE 3, COMPLETED 1986)**
 FLOOD STORAGE: 407 acre-feet
 FLOOD PROTECTION TO: Schaumburg, Rolling Meadows
 COST: Construction - \$3,565,800 (SCS) plus \$734,500 (MSD)
 Land - 215 acres, \$2,100,000 (MSD)
 Landscaping - Separate Contract to follow, \$85,000 (SCS Estimate)
 MAINTENANCE: Catholic Cemeteries and MSD
- 4 **TWIN LAKES RESERVOIR (STRUCTURE 4, COMPLETED 1986)**
 FLOOD STORAGE: 430 acre-feet
 FLOOD PROTECTION TO: Palatine, Arlington Heights, Rolling Meadows
 COST: Construction - Flood Control - \$3,183,400 (SCS) plus \$116,100 (MSD)
 Landscaping - \$94,000 (SCS)
 Land - 32 acres, \$1,400,000 (MSD) plus 47 acres from Village of Palatine, \$1,175,000 (Estimated Value)
 MAINTENANCE: MSD and Salt Creek Rural Park District
- 5 **TOM T. HAMILTON RESERVOIR (STRUCTURE 5, COMPLETED 1981)**
 FLOOD STORAGE: 537 acre-feet
 FLOOD PROTECTION TO: Palatine, Arlington Heights, Rolling Meadows
 COST: Construction - \$5,633,000 (SCS), \$56,000 (MSD)
 Land - 90 acres, \$1,447,000 (MSD)
 MAINTENANCE: Palatine Park District and MSD
- 6 **MARGRETH RIEMER RESERVOIR (STRUCTURE 6, COMPLETED 1983)**
 FLOOD STORAGE: 572 acre-feet
 FLOOD PROTECTION TO: Palatine, Rolling Meadows
 COST: Construction - \$7,230,000 (SCS), \$63,900 (MSD)
 Land - 90 acres, \$2,220,000 (MSD)
 MAINTENANCE: Palatine Park District and MSD

- 7 **REACH F PHASE I CHANNEL IMPROVEMENT (COMPLETED IN 1981)**
 DESCRIPTION: Improve channel to enhance flows for 0.38 miles
 FLOOD PROTECTION TO: Rolling Meadows
 COST: Construction cost included in Busse Woods Reservoir Contract.
 Land rights obtained by Division of Water Resources.
- 8 **BUSSE WOODS DAM MODIFICATION**
 VOLUME: Modification will increase volume for more frequent events.
 FLOOD PROTECTION TO: Elk Grove Village, Itasca, Wood Dale, Elmhurst, Addison, Villa Park and Oak Brook
 COST: Construction - \$1,500,000

Projects of the Division of Water Resources

Program Status

Land Protection Program

Soil erosion and sedimentation control ordinances have been enacted in the Upper Salt Creek Watershed which includes the communities of Inverness, Hoffman Estates, Palatine, Rolling Meadows, Schaumburg, Elk Grove, and unincorporated Cook County. These ordinances will control erosion losses from agricultural and developing areas in the watershed to assure that excessive sediment does not find its way into the storm water conveyance systems. Procedures and Standards for Urban Soil Erosion and Sedimentation for Illinois was developed in 1981 by the Northeast Illinois Soil Erosion and Sedimentation Control Steering Committee.

The Soil and Water Conservation Districts are conducting seminars for counties, municipalities, developers and consultants.

Stream Preservation Program

The Illinois Division of Water Resources is serving as lead agency for the development and coordination of a watershed-wide stream preservation program. The technical assistance program is available to communities in the watershed.

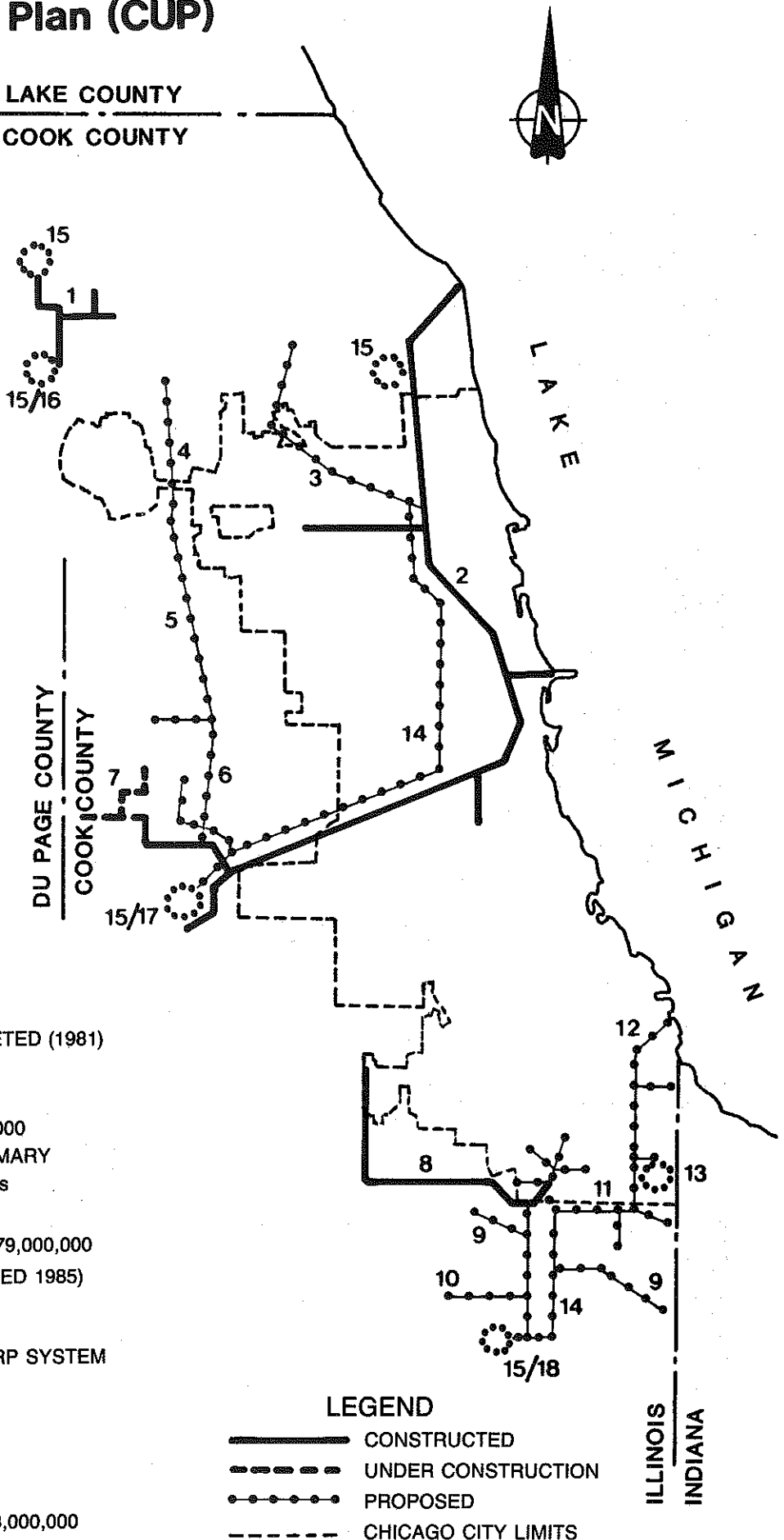
Floodplain Regulations

The Illinois Division of Water Resources regulates the floodways throughout the Upper Salt Creek Watershed in Illinois. Any construction proposed within the floodway areas must be permitted by the DWR and must not have significant adverse impacts.

Central Basin Watershed Tunnel and Reservoir Project (TARP) Chicago Underflow Plan (CUP)

- PHASE I TARP SYSTEMS
- 1 UPPER DES PLAINES
 - 2 MAINSTREAM
 - 3 MAINSTREAM, NORTH BRANCH LEG
 - 4 DES PLAINES, NORTH LEG
 - 5 DES PLAINES, MIDDLE LEG
 - 6 DES PLAINES, SOUTH LEG
 - 7 DES PLAINES, WEST LEG
 - 8 CALUMET, CAL-SAG LEG
 - 9 CALUMET, LITTLE CAL LEG
 - 10 CALUMET, INDIANA AVENUE AND MARKHAM LEG
 - 11 CALUMET, 140TH STREET LEG
 - 12 CALUMET, TORRENCE AVENUE LEG
 - 13 O'BRIEN PUMP STATION
- PHASE II TARP SYSTEMS (MSD)
- 14 TUNNELS
 - 15 RESERVOIRS
- CHICAGO UNDERFLOW PLAN (CORPS)
- 16 O'HARE RESERVOIR
 - 17 McCOOK RESERVOIR
 - 18 THORNTON RESERVOIR

LAKE COUNTY
COOK COUNTY



Projects of the Metropolitan Sanitary District

- 1 UPPER DES PLAINES SYSTEM (COMPLETED 1981)
 TRIBUTARY AREA: 13.7 square miles
 TOTAL TUNNEL LENGTH: 6.6 miles
 STORAGE VOLUME: 212.8 acre-feet
 TOTAL CONSTRUCTION COST: \$64,000,000
 TOTAL MAINSTREAM SYSTEM SUMMARY
 TRIBUTARY AREA: 219.9 square miles
 TOTAL TUNNEL LENGTH: 40.3 miles
 STORAGE VOLUME: 3,170 acre-feet
 TOTAL CONSTRUCTION COST: \$1,179,000,000
- 2 MAINSTREAM TARP SYSTEM (COMPLETED 1985)
 TUNNEL LENGTH: 31.2 miles
 CONSTRUCTION COST: \$975,000,000
- 3 NORTH BRANCH LEG MAINSTREAM TARP SYSTEM
 TUNNEL LENGTH: 9.1 miles
 CONSTRUCTION COST: \$204,000,000
 DES PLAINES SYSTEM SUMMARY
 RIBUTARY AREA: 34.8 square miles
 TOTAL TUNNEL LENGTH: 26.4 miles
 STORAGE VOLUME: 1,267 acre-feet
 TOTAL CONSTRUCTION COST: \$468,000,000

LEGEND

- CONSTRUCTED
- - - - - UNDER CONSTRUCTION
- · · · · PROPOSED
- - - - - CHICAGO CITY LIMITS

- 4 NORTH LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 8.9 miles
CONSTRUCTION COST: \$172,000,000
 - 5 MIDDLE LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 6.1 miles
CONSTRUCTION COST: \$140,000,000
 - 6 SOUTH LEG DES PLAINES TARP SYSTEM
TUNNEL LENGTH: 7.9 miles
CONSTRUCTION COST: \$133,000,000
 - 7 WEST LEG DES PLAINES TARP SYSTEM
(SCHEDULED COMPLETION 1988)
TUNNEL LENGTH: 3.5 miles
CONSTRUCTION COST: \$23,000,000
- CALUMET SYSTEM SUMMARY**
 TRIBUTARY AREA: 90.8 square miles
 TOTAL TUNNEL LENGTH: 36.7 miles
 STORAGE VOLUME: 1,638 acre-feet
 TOTAL CONSTRUCTION COST: \$566,000,000
- 8 CAL SAG LEG CALUMET TARP SYSTEM
(COMPLETED 1986)
TUNNEL LENGTH: 9.2 miles
CONSTRUCTION COST: \$153,000,000
 - 9 LITTLE CAL LEG CALUMET TARP SYSTEM
TUNNEL LENGTH: 7.7 miles
CONSTRUCTION COST: \$113,000,000
 - 10 INDIANA AVENUE AND MARKHAM LEG, CALUMET
TARP SYSTEM
TUNNEL LENGTH: 6.7 miles
CONSTRUCTION COST: \$50,000,000
 - 11 140th STREET LEG, CALUMET TARP SYSTEM
TUNNEL LENGTH: 5.2 miles
CONSTRUCTION COST: \$103,000,000
 - 12 TORRENCE AVENUE LEG, CALUMET TARP SYSTEM
TUNNEL LENGTH: 7.9 miles
CONSTRUCTION COST: \$106,000,000
 - 13 O'BRIEN PUMP STATION
Construction Cost \$41,000,000
 - 14 PHASE II TARP TUNNELS
 - 15 PHASE II TARP RESERVOIRS

Projects of the U.S. Army Corps of Engineers

- 16 O'HARE CUP RESERVOIR
FLOOD STORAGE: 1,050 acre-feet
COST: Construction - \$13.6 million (Federal share) plus
\$4.5 million (Non-Federal share)
Land - \$4,230,000 (MSD, 1974)
- 17 McCOOK RESERVOIR
FLOOD STORAGE: 32,100 acre-feet
COST: Construction - Estimated - \$238,060,000 (COE),
\$49,740,000 (Local)
Land - Estimated - \$29,620,000 (Local)
- 18 THORTON RESERVOIR
(To Be Combined With George M. O'Brien Reservoir,
See Page 25)
FLOOD STORAGE: 14,600 acre-feet
COST: Construction - (Estimated) \$59,210,000 (COE);
\$14,250,000 (Local)
Land - \$5,490,000 (Local)

Program Status

TARP consists of two phases. Phase I of the Plan is primarily a water pollution control project. Phase II is associated primarily with urban flood control.

Phase I

Phase I of TARP consists of 110 miles of tunnels ranging in size between 9 feet and 33 feet in diameter constructed 150 to 350 feet below grade in solid rock. These tunnels will intercept combined wastewater from the 645 existing overflow relief outlets by means of 252 drop shafts and convey it to huge pumping stations which will deliver this wastewater to treatment plants. All wastewater will be treated prior to being discharged to the area's waterways from combined sewer overflows. This will result in approximately 85 percent reduction in the total annual discharge of pollutants into the waterways. The estimated cost of Phase I is \$2.28 billion. As Phase I of TARP is primarily a pollution control project, the USEPA is providing grant funds for approximately 75 percent of the project cost.

As of January 1, 1984, approximately one-half of the TARP Phase I projects have been awarded. The cost of projects under construction or completed is \$1.215 billion, of which \$1.14 billion have been paid out to the contractors for work performed. The remaining (unawarded) portion of TARP Phase I has been designed and is awaiting further appropriations of USEPA funds. The estimated cost of remaining TARP Phase I projects is \$1.062 billion.

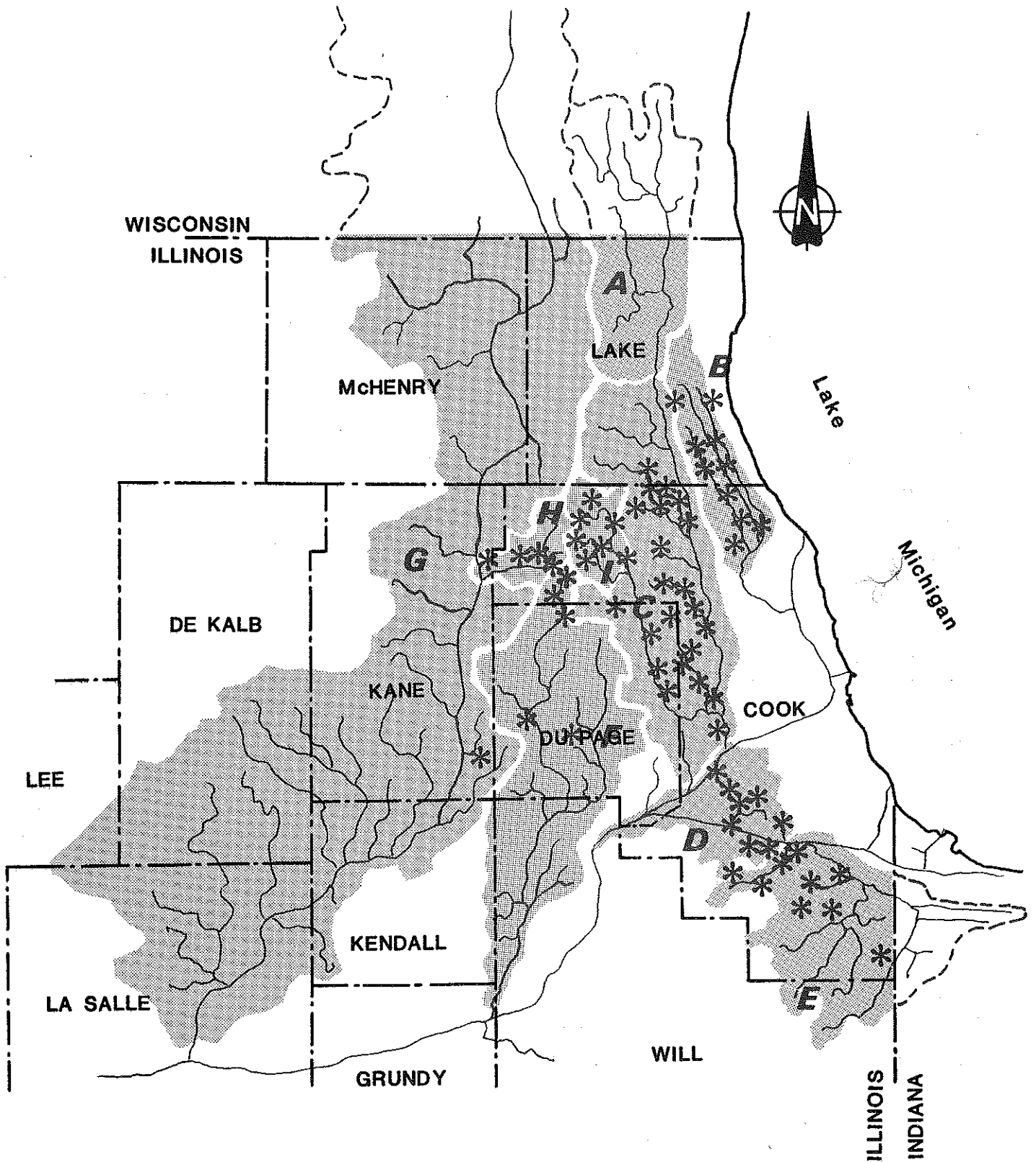
Phase II

The flood control benefits of TARP will be minimal until Phase II is operational. Phase II TARP consists of 21 additional miles of rock tunnels and three reservoirs with a total storage capacity of 127,550 acre-feet. During major storms, the discharge from the tunnels will be directed into the reservoirs for temporary storage and preliminary treatment followed by final treatment in the Sanitary District treatment plants.

Since Phase II is primarily a flood control project and not a pollution control project, authority for its implementation was assigned to the U.S. Army Corps of Engineers by Congress in 1976.

The Corps of Engineers has recommended a reservoir project for the O'Hare System of TARP. In October 1986, the construction of a 1,050 acre-foot O'Hare reservoir, a part of the Chicagoland Underflow Plan, was authorized under the Water Resources Development Act of 1986 at a cost of \$18.1 million with the Federal share of \$13.6 million and non-Federal share of \$4.5 million. The other systems of TARP, Mainstream, Des Plaines and Calumet, have been studied under the Chicagoland Underflow Plan, Phase I General Design Memorandum Study. The final report recommends a single reservoir project for the Mainstream and Des Plaines systems and another reservoir project for the Calumet System. The Calumet system reservoir would be combined with the unconstructed U.S. Soil Conservation Service Little Calumet River Thornton Reservoir. The final report is under review by the Office of the Chief of Engineers.

Watersheds of the Chicago Metropolitan Area



* Floodwater Management Projects

Structural Program Summary by Watershed

	B North Branch Chicago River	C Lower Des Plaines Tributaries	D Cal-Sal Channel	E Little Calumet River	F DuPage River	G Fox River	H Poplar Creek	I Upper Salt Creek
Reservoirs: Volume in Acre-Feet	Planned	4,769	134	9,600	-	310	-	-
	Constructed	3,411	189	3,731	2,730	50	208	3,704
	Total	8,180	323	13,331	2,730	360	208	3,704
Channel Improvements: Length in Miles	Planned	6.75	-	7.9	-	1.6	0.26	-
	Constructed	-	13.2	2.7	4.1	1.0	-	0.38
	Total	6.75	13.2	10.6	4.1	2.6	0.26	0.38
Construction: In \$1,000's	Planned	59,008	2,404	106,885	-	2,300	500	1,500
	Constructed	33,382	4,600	27,471	5,011	1,195	671	27,967
	Total	40,933	92,390	134,356	5,011	3,495	1,171	29,467
Land Costs: In \$1,000's	Planned	4,367	-	20,723	-	600	88	-
	Acquired	24,935	620	8,120	1,345	119	850	25,132
	Total	11,482	29,302	28,843	1,345	719	938	25,132
Total Costs In \$1,000's		52,415	121,692	163,199	6,356	4,214	2,109	54,599

Note: Floodwater Management activities in the Upper DesPlaines River Watershed (A) are non-structural and not included in the summary. See pages 34 & 35 for TARP & CUP data.

PART III – Where To Go For More Information

FLOOD CONTROL PROJECTS OF THE METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO

Metropolitan Sanitary District of Greater Chicago
Flood Control Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-3240

FLOOD CONTROL PROJECTS OF THE DIVISION OF WATER RESOURCES

Illinois Department of Transportation,
Division of Water Resources
Bureau of Planning
2300 South Dirksen Parkway
Springfield, Illinois 62764
(217) 782-4636

Illinois Department of Transportation,
Division of Water Resources
Chicago Engineering Studies Unit
201 West Center Court
Schaumburg, Illinois 60196-1096
(312) 705-4341

FLOOD CONTROL PROJECTS OF THE P.L. 566 PROGRAM, U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

U.S. Department of Agriculture
Soil Conservation Service
18 Heritage Plaza, Suite 101
Bourbonnais, Illinois 60914
(815) 937-3225

Joliet Field Office
(South Cook-Will Counties)
100 Manhattan Road
Joliet, Illinois 60433
(815) 723-5078

St. Charles Field Office
(Kane-DuPage Counties)
545 Randall Road
St. Charles, Illinois 60171
(312) 584-7960

Palatine Field Office
(North Cook County)
244 East West Court, Suite 140
Palatine, Illinois 60067
(312) 991-1189

Grayslake Field Office
(Lake County)
33040 North Route 45, Suite 205
Grayslake, Illinois 60030
(312) 223-1056

FLOOD CONTROL PROJECTS OF THE CORPS OF ENGINEERS

U.S. Army Corps of Engineers
Chicago District
219 South Dearborn Street
Chicago, Illinois 60604
(312) 353-6400

MISCELLANEOUS PROGRAMS

Stream Preservation Program

Illinois Department of Transportation,
Division of Water Resources
Chicago Engineering Studies Unit
21 West Center Court
Schaumburg, Illinois 60196-1096
(312) 705-4341

Floodplain Regulations

Illinois Department of Transportation,
Division of Water Resources
Bureau of Resource Management
21 West Center Court
Schaumburg, Illinois 60196-1096
(312) 705-4341

Floodproofing Information and Flood Insurance Program

Illinois Department of Transportation,
Division of Water Resources
Local Flood Plain Programs Section
310 South Michigan, Room 1606
Chicago, Illinois 60604
(312) 793-3123

Land Protection Programs

South Cook-Will County Soil and
Water Conservation District
Joliet Field Office
100 Manhattan Road
Joliet, Illinois 60433
(815) 723-5078

Lake County Soil and Water Conservation District
Grayslake Field Office
33040 North Route 45, Suite 205
Grayslake, Illinois 60030
(312) 223-1056

North Cook Soil and Water Conservation District
Palatine Field Office
244 East West Court, Suite 140
Palatine, Illinois
(312) 991-1189

Kane-DuPage Soil and Water Conservation District
St. Charles Field Office
545 Randall Road
St. Charles, Illinois 60174
(312) 584-7960

On-Site Storm Water Detention

Metropolitan Sanitary District of Greater Chicago
Local Sewer Systems Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-3260

Tunnel and Reservoir Plan (TARP)

Metropolitan Sanitary District of Greater Chicago
Sewer Design Section
111 East Erie Street
Chicago, Illinois 60611
(312) 751-4010
U.S. Army Corps of Engineers
Chicago District
219 South Dearborn
Chicago, Illinois 60604
(312) 353-6400

Floodplain Management Services

U.S. Army Corps of Engineers
Chicago District
219 South Dearborn
Chicago, Illinois 60604
(312) 353-6400

Cooperating Agencies

Addison
Addison Creek Conservancy District
Alsip
Arlington Heights
Arlington Heights Park District
Aurora
Bannockburn
Bellwood
Bloomingdale
Blue Island
Broadview
Brookfield
Buffalo Grove
Calumet City
Cal-Union Drainage District
Chicago Heights
Chicago Ridge
City of Chicago
Cook County
Cook County Forest Preserve District
Country Club Hills
Crete
Crestwood
Deerfield Park District
Des Plaines
Drainage District #2
DuPage County
DuPage County Forest Preserve District
East Chicago Heights
East Skokie Drainage District
Elgin
Elgin Sanitary District
Elk Grove
Elk Grove Park District
Elmhurst
Elmhurst Park District
Flossmoor
Franklin Park
Glenview
Glenwood
Gurnee
Hanover Park
Harvey
Hazelcrest
Hazelcrest Park District
Hickory Hills
Highland Park
Highland Park Park District
Hinsdale
Hoffman Estates
Homewood
Homewood-Flossmoor Park District
Itasca
Kane-DuPage Soil & Water
Conservation District
Kenosha County, Wisconsin
Kenosha County, Wisconsin Soil &
Water Conservation District
LaGrange
Lake Bluff
Lake County
Lake County Forest Preserve District
Lake County Soil & Water
Conservation District
Lake Forest
Lansing
Lansing Park District
Libertyville
Lincoln-Lansing Drainage District
Lincolnshire
Long Grove
Lynwood
Lyons
Markham
Markham Park District
Matteson
Melrose Park
Metropolitan Sanitary District of
Greater Chicago
Midlothian
Mt. Prospect
Niles
North Brook
North Chicago
North Cook Soil & Water
Conservation District
North Skokie Drainage District
Northeastern Illinois Planning
Commission
Northfield
Northlake
Oak Brook
Oak Forest
Oak Lawn
Olympia Fields
Orland Park
Palatine
Palatine Park District
Palos Heights
Palos Hills
Palos Park
Park Forest
Park Forest South
Prospect Heights
Richton Park
Riverdale
Riverside
Robbins
Rolling Meadows
Roselle
Salt Creek Rural Park District
Sauk Village
Schaumburg
Schaumburg Park District
Southeastern Wisconsin Regional
Planning Commission
South Chicago Heights
South Holland
State of Illinois, Department of
Conservation
State of Illinois, Division of
Water Resources
State of Illinois, Water Survey
Steger
Streamwood
Thornton
Tinley Park
Tinley Park District
Union Drainage District #1, #2, and #4
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Soil
Conservation Service Villa Park
West Skokie Drainage District
West Haven
Weller Creek Drainage District
Westchester
Western Springs
Wheeling
Wheeling Park District
Will County
Will County Forest Preserve District
Will South Cook Soil & Water
Conservation District
Wilmette
Winnetka
Wood Dale
Wood Dale Park District
Worth
Lower Des Plaines Tributaries
Watershed