

SECTION I

INTRODUCTION

1.1. PROJECT ORIENTATION

The Mississippi River Basin

The Mississippi River is one of the world's major river systems in size, habitat diversity, and biological productivity. It is the longest and largest river in North America, flowing 2,256 miles from its source at Lake Itasca in the Minnesota North Woods, through the mid-continental United States, the Gulf of Mexico Coastal Plain, to its subtropical Louisiana Delta. "Mississippi" is an Ojibwa (Chippewa) Indian word meaning 'great river' or 'gathering of waters' – an appropriate name because the river basin, or watershed, extends from the Allegheny Mountains in the eastern United States to the Rocky Mountains, including all or parts of 31 states (Figure 1–1) and two Canadian provinces. The river basin measures 1,857,840 square miles, covering about 40 percent of the United States and about one-eighth of North America. Of the world's rivers, the Mississippi ranks third in length, third in watershed area, and seventh in average discharge.

The Mississippi River and its adjacent forests and wetlands provide important habitat for fish and wildlife and include the largest continuous system of wetland in North America. The river supports a diverse array of wetland, open-water, and floodplain habitats. Most of the river and its floodplain (defined as the adjacent, generally flat surface that is periodically inundated by floodwaters overflowing the river's natural banks) have been altered by human development. Much of the watershed is intensively cultivated, and many tributaries deliver substantial amounts of sediment, nutrients, and pesticides into the river. Pollutants also enter the river from metropolitan and industrial areas.

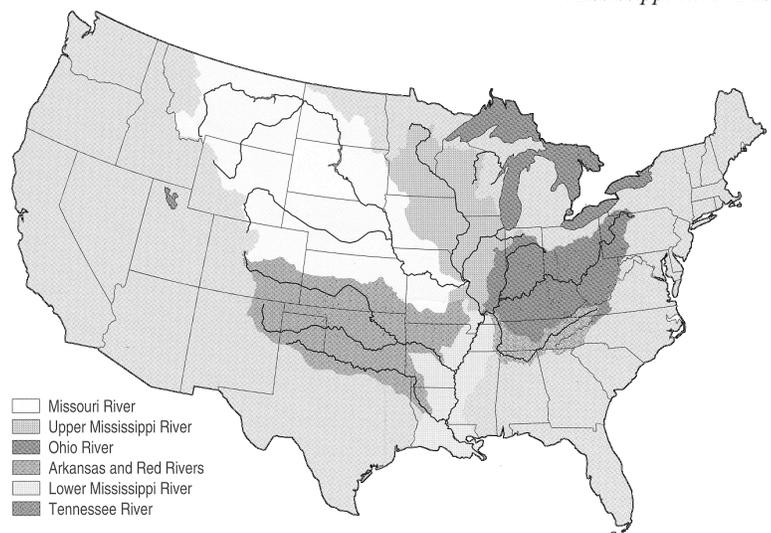


Figure 1 – 1
Mississippi River Basin

The Mississippi River is divided into three segments: the Headwaters, the Upper Mississippi River, and the Lower Mississippi River. The Headwaters is the reach from the source (Lake Itasca) downstream to St. Anthony Falls in Minneapolis, Minnesota, whereas the Upper Mississippi River extends from St. Anthony Falls downstream to the mouth of the Ohio River at Cairo, Illinois. The Lower Mississippi River flows from Cairo to Head-of-Passes in the Gulf of Mexico. The segment of the Upper Mississippi River extending from the mouth of the Missouri River (near St. Louis, Missouri) to the mouth of the Ohio River is often termed the Middle Mississippi River. For this report, it is referred to as the Unimpounded or Open River.

Location along the main channel of the river is denoted by river miles (RM), starting with RM 0.0 at Head-of-Passes in Louisiana and

proceeding 953.8 river miles upstream to the mouth of the Ohio River. Numbering of river miles starts at 0.0 again at the mouth of the Ohio and continues up the Mississippi to Lake Itasca.

Commercially, the Mississippi is one of the world's most important rivers.

The Upper Mississippi River

The Upper Mississippi River System (UMRS), (Figure 1 - 2) includes all the commercially navigable waterways on the Mississippi River and tributaries above Cairo, Illinois, with the exception of the Missouri River and its tributaries. The St. Louis District Corps of Engineers is responsible for the southern portion of the UMRS between Saverton, Missouri, and Cairo, Illinois (300 river miles) and the lower 80 miles of the Illinois River. On this portion of the UMRS, the Rivers Project Office manages 47,641 acres of public operational lands and maintains navigation through a series of four locks and dams, numerous channel regulating structures and by managing dredging operations on 416 miles of navigable waterway. In addition to the primary navigation purpose, the pools behind the dams provide opportunities for a broad spectrum of outdoor recreation. Each pool area and the open river possess varied natural and recreation resources, often with high scenic, educational, scientific, environmental and cultural values. Protection and stewardship of these resources are the major challenges of the Corps and its partners.

Rivers Project Location

The Rivers Project is located on the Mississippi, Illinois, Kaskaskia and Cache Rivers in the vicinity of the city of St. Louis, Missouri, and includes land in both Missouri and Illinois. Between Saverton, Missouri, and Cairo, Illinois, the Mississippi River generally flows in a southeasterly direction. The Corps of Engineers, St. Louis District is responsible for navigation and resources management on the Mississippi River from the confluence with the Ohio River at River Mile (RM) 0.0 to RM 300.1 near Saverton, Missouri (Figure 1 – 3). The District's responsibility also includes the Illinois River from its confluence with the Mississippi at Grafton, Illinois, (RM 218) to immediately below LaGrange Lock and Dam (Illinois RM 79.8); the Kaskaskia River from its mouth on the Mississippi River (RM 117.5) to Fayetteville, Illinois (RM 57.2); and the Cache River Diversion Channel. On the lower 60 miles of the Missouri River, adjacent to St. Charles and St. Louis Counties, the St. Louis District is responsible for Clean Water Act regulatory matters and flood control.

Nine-Foot Navigation Channel

The Nine-Foot Navigation Channel Project was authorized by Congress in 1930 to provide navigation in the Upper Mississippi River above Cairo, Illinois. The Nine-Foot Channel Project within the St. Louis District is defined as the Illinois waterway downstream of the LaGrange Lock (lower 80 miles), and the Mississippi River from the confluence with the Ohio River to Lock and Dam 22 at Saverton, Missouri (301 miles).

The UMRS navigation projects have converted the Mississippi River (St. Louis to Minneapolis/St. Paul) into a series of pools at low and normal flow. Navigation dams, each consisting of a row of gates mounted

Figure 1-2
The Upper Mississippi River System



between piers over a low sill, are used to maintain sufficient water depth for navigation. During periods of high flow, the navigation gates are completely opened to allow passage of the flood flows.

There are two types of navigation improvements present in the St. Louis District. On the portion of the Mississippi River above Locks 27, impounded slack water navigation pools created and controlled by a system of locks and dams are herein referred to as the Pooled River. On the Middle Mississippi River, a combination of rock dikes, revetments and dredging are used to maintain navigable river conditions.

The UMRS provides a variety of functions: commercial transportation, recreation, environmental resources, and water supplies for domestic and industrial use. The Water Resources Development Act of 1986 declared the UMRS to be a nationally significant ecosystem and a nationally significant commercial navigation system.

Locks and Dam 26 near Alton, Illinois, was replaced during the late 1980s with the Melvin Price Locks and Dam. Lock and Dams 24 and 25 have undergone major rehabilitation. Other Corps districts in the UMRS include St. Paul and Rock Island. *Figure 1-4* shows the UMRS project on the Mississippi River and the districts that are responsible for maintaining them.

Kaskaskia River Navigation Project

The Kaskaskia River Navigation Project was authorized by Congress in 1962 under separate legislation (PL 87-874) from the Mississippi River Nine-Foot Channel Navigation Project. The project included construction of a lock and dam and maintenance of a nine-foot navigation channel from its mouth to Fayetteville, Illinois (36 miles), shortening the natural river distance from Fayetteville to the river mouth by approximately 14 miles.

Cache River Diversion Channel

The Cache River Diversion Channel Project was authorized by the Flood Control Act of 1938. The project included construction of a 5,260-foot diversion channel from the point where the former channel of the Cache River intersected the Mounds and Mound City Levee to the new outlet into the Mississippi River at RM 13. Three new railroad and highway bridges were also constructed. Land acquired for the project included 89.14 acres in fee simple and 3.63 acres in easements.

The project purpose was to divert the Cache River to avoid intersecting a Corps of Engineers Memphis District levee which provided protection for the Mound City area. Construction on the \$2,837,100 project was initiated in June 1940, and was ready for use in December 1950.

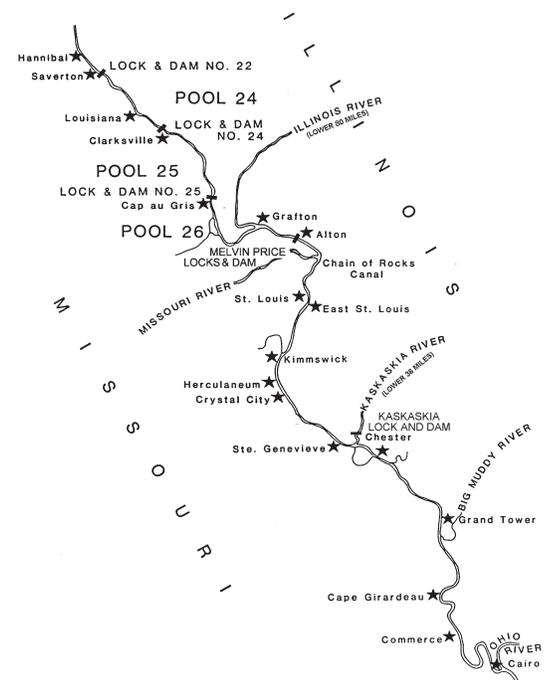


Figure 1-3

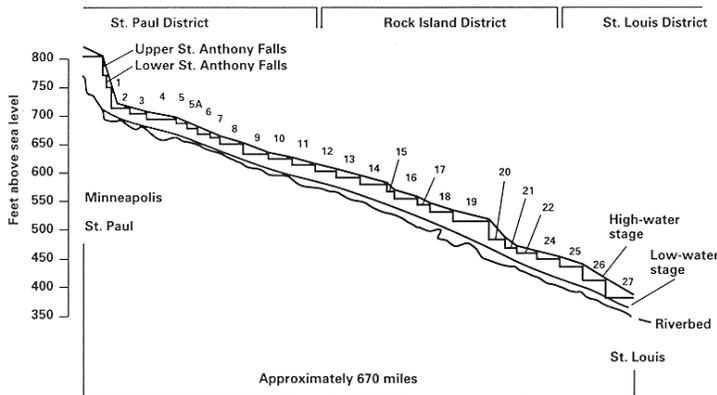
1.2. PROJECT PURPOSES

Navigation

The Nine-Foot Channel Navigation Project and attendant locks and dams were originally constructed for the sole purpose of providing sufficient water depth for river traffic during low flows in the Mississippi and Illinois Rivers. Before the Corps constructed the Nine-Foot Channel Navigation Project, the Mississippi River periodically had so little flow that navigation was impossible. It also caused many fish to be stranded, necessitating rescue by conservation agencies. Since the locks and dams have been built, flatwater pools have been created and the minimum water level has been raised. The St. Louis District dredges within the navigation pools as well as the open river to ensure navigable depths and widths are sufficiently maintained.

The Kaskaskia River Navigation Project was constructed primarily for the purpose of transporting coal out of the area, and secondarily as a way to move other barge transported materials into and away from the area.

Figure 1-4
Diagram of the descent of the Mississippi River



Recreation and Environmental Stewardship

The locks and dams now provide a series of slack-water pools throughout the year that attract thousands of people to fish, swim, boat, hunt and sightsee. Pleasure craft on the rivers abound every summer, and each fall finds many hunters on project lands and waters. Fish and wildlife are attracted to the off-channel areas that provide habitat for feeding, spawning and nesting.

Congress has authorized the Corps to develop recreational facilities and requires the consideration of fish and wildlife conservation at Corps water resource projects. The Flood Control Act

of 1944, as amended, authorized the Corps to construct recreational developments at water resource projects. In 1958, the Fish and Wildlife Coordination Act (FWCA) stated that fish and wildlife conservation should receive consideration equal to that of other project purposes and should be coordinated with other features of water resource development. In accordance with these laws, environmental stewardship and recreation are now major features of the nine-foot channel navigation project for lands along the Mississippi and Illinois rivers. The intent of the Corps is to provide optimal sustained use and public enjoyment while protecting the project's natural resources. The Water Resources Development Acts of 1996 and 2000 authorized fish and wildlife conservation, habitat restoration and recreation as full project purposes for the Kaskaskia River Navigation Project.

The Corps operates and maintains recreation areas and provides basic stewardship of the natural resources on the project lands and waters. Federal, state, public and private institutions and individuals also provide recreation facilities and services and natural resources management in the public interest.

In cooperation with the United States Fish and Wildlife Service (USFWS), the Illinois Department of Natural Resources (IDNR), and the Missouri Department of Conservation (MDC), 32,329 acres are made available for

fish and wildlife management by General Plan (land use proposals) and Cooperative Agreements.

Under cooperative agreements, the USFWS on Designated Refuges, or appropriate states on General Plan Lands, will manage the resources for enhancement of fish and wildlife. The FWCA of 1958 also requires that planning and project development be coordinated with the USFWS.

Flood Damage Reduction

Flooding is a natural phenomenon of every river. Historically, floodwater enriched bottomlands and provided spawning habitats for native fish. The ecological value of maintaining connections between the river and its floodplain, and the flood-pulse advantage are some of the benefits of flooding.

However, human developments in the floodplains of the Midwest over the last three centuries have placed people and property at risk. Local and federal flood damage reduction projects, such as levee and drainage projects have been constructed to minimize the annual risk.

Historically, structural programs such as levees, floodwalls, drainage, and retention reservoir projects were primarily funded, built, and operated to reduce flood damages. In recent years, federal projects have included non-structural approaches as well.

Many states and local governments have also developed and carried out floodplain management efforts that both reduced flood damages and enhanced the natural functions of the floodplains. This mandate for holistic management of the floodplain will likely continue.

Other agency efforts, such as watershed projects built by the Natural Resource Conservation Service (NRCS), and land-use controls required by the National Flood Insurance Program (NFIP) and state floodplain management programs, have reduced flood damages throughout the basin as well.

Hydraulic investigations by the University of Iowa, and evaluations of the 1993 flood show that navigation dams cause slight, localized increases (less than one-half foot) in flood height just upstream of a dam. They do not cause increases in flood elevations for the entire UMRS. In the unimpounded Mississippi, the navigation channel has no locks and dams; the dikes and revetments which are in place cause little or no restrictions to flow.

A newly developed hydraulic computer model is used in the routine day-to-day regulation and forecasting for the Corps locks and dams on the Mississippi and Illinois Rivers. It provides a uniform, system-wide unsteady flow model of the Mississippi and Missouri River basins to analyze and predict system-wide impacts of various alternative actions during flood events.

Electric Generation/Hydropower

At the present time, no project dam is being considered for hydropower production.

1.3. APPLICABLE PROJECT AUTHORIZATIONS AND GUIDANCE

Public Laws

With the development of navigation structures and the purchase of project lands through the River and Harbor Acts, the opportunity for the multi-use purposes of project lands was soon recognized. Recreation interest was established by Congress in 1944 and in subsequent legislation. Interest in the fish and wildlife resources pre-dated the construction of the locks and dams with the passage of the Fish and Wildlife Coordination Act of 1934 and the Migratory Bird Treaty Act of 1918. The Forest Cover Act of 1960, the National Environmental Policy Act of 1969, the Endangered Species Act of 1973 and the Clean Water Act of 1977 provided a background for the protection, conservation and preservation of public lands. Cultural considerations on public lands were first addressed in the Archeological and Historic Preservation Act of 1960. These and other additional authorities are organized by project purpose below.

Navigation

■ Specific Projects

Upper Mississippi River – Modifications to the Mississippi River for navigation began in 1824 when the government authorized removal of snags, shoals and sandbars; excavation of rock at several rapids; and the closing off of meandering sloughs and side channels to maintain flow in the main channel. The first comprehensive modification of the river was authorized by the River and Harbor Act of 18 June 1878. A four and one half-foot channel was maintained from the mouth of the Mississippi River to St. Paul, Minnesota, by construction of dams at the headwaters of the Mississippi River. The dams served to impound water for low flow supplementation, bank revetments, closing dams, and longitudinal dikes. The increase to a six-foot channel was authorized by the River and Harbor Act of 2 March 1907. The additional depth was obtained primarily by the construction of rock and brush wing dams which were designed to constrict low water flows into a narrower channel. On 3 July 1930, Congress passed legislation (PL 71-520) authorizing a nine-foot channel project. The project consisted of a series of low-head navigation locks and dams to be constructed to provide a minimum nine-foot deep and 300-foot wide navigation channel on the Mississippi River from Alton, Illinois to Minneapolis, Minnesota. Later congressional actions provided for improvements to ensure consistent navigation around the Chain of Rocks section of the Mississippi River at Granite City, Illinois.

Illinois River – The River and Harbor Act of 3 July 1930 authorized the Corps to finish the 75 percent complete State of Illinois Nine-Foot Navigation Project on the Illinois River and assigned responsibility for facilities operation to the federal government. The St. Louis District is responsible for the lower 80-mile reach of the Illinois River from LaGrange Lock to Grafton, Illinois, which is the Illinois Waterway portion of the Melvin Price Locks and Dam pool.

Kaskaskia River – The Kaskaskia River Navigation Project was authorized by the 1962 River and Harbor Act to provide a navigation channel nine-feet deep and 225-feet wide on the lower 50.5 miles of the Kaskaskia River and tributaries. The project shortened the river between its mouth and Fayetteville, Illinois from 50.5 to 36 miles. Meanders were left as cut-offs, and much of the channel was excavated with flow partially regulated by a lock and dam near the river's mouth.

■ Applicable Legislation

The **River and Harbor Act of 1935** (PL 74-409), approved 30 August 1935, determined that non-navigable types of dams would be used for the Nine-Foot Channel Navigation Project. Non-navigable dams are those which will not pass vessels without the use of locks. It also identified the improvements that were to be made on the Illinois River, which included dredging and the construction of modern locks and dams at Peoria and La Grange and the removal of the earlier navigation structures at La Grange and Kampsville. The construction of Lock and Dam 26 on the Mississippi at Alton, Illinois made the Illinois River navigable from its mouth to RM 80.

The **River and Harbor Act of 1945** (PL 79-14), approved 2 March 1945, authorized the construction of Locks 27 and the Chain of Rocks Canal (59 Stat. 10).

The **River and Harbor Act of 3 July 1958** (PL 85-500) authorized the construction of Dam 27, a low-water, rock-filled dam, and other bank improvements to support navigation below old Locks and Dam 26.

The **River and Harbor Act of 1962** (PL 87-874), approved 23 October 1962, authorized the construction of the Kaskaskia River Navigation Project which includes the Kaskaskia Lock and Dam and channelization from the mouth of the river to Fayetteville, Illinois (76 Stat. 1173).

The **UMRS Comprehensive Plan** (Inland Waterways Revenue Act of 1978; Titles I & II) (PL 95-502) was approved 21 October 1978 (92 Stat. 1693).

Title I, Section 101 authorized the replacement of Locks and Dam 26 with a new dam and a single lock. Section 102 required the preparation of a comprehensive master plan of the UMRS and evaluation of the need for a second lock.

Title II - Established the Inland Waterways Revenue Act of 1978 to place a tax on fuel used in commercial transportation on inland waterways as well as a trust fund for navigational construction on inland waters.

The **Supplemental Appropriation Act of 1985** (PL 99-88), approved 15 August 1985, and the Water Resources Development Act (WRDA) of 1986 (PL 99-662), approved 17 November 1986, authorized the construction of a 600-foot by 110-foot auxiliary lock at Lock and Dam 26 (Replacement), now known as Melvin Price Locks and Dam.

The **Water Resources Development Act of 1996**, was approved 12 October 1996.

Section 415, Chain of Rocks Canal, Illinois, authorized completion of a limited re-evaluation of the authorized St. Louis Harbor Project to include evacuation of water collecting on the land side of the Chain of Rocks Canal, East Levee.

Recreation

■ Applicable Legislation

The **Flood Control Act of 1944** (PL 78-534) was approved 22 December 1944.

Section 4, as amended, authorized the Chief of Engineers to construct, operate and maintain public park and recreational facilities in reservoir areas. It also required that water areas of all such projects are open to boating, fishing, and other recreation and that ready access to such areas are maintained for general public use when in the public interest (48 Stat. 887).

The **Flood Control Act of 1946** (PL 79-526) was approved 24 July 1946.

Section 4 (60 Stat. 641) amended PL 78-534 to include authority to grant leases of lands in reservoir areas and licensing of lands to federal, state and local government agencies when in the public interest.

The **Flood Control Act of 1954** (PL 83-780) was approved 3 September 1954.

Section 209 amended the Flood Control Act of 1944. It authorized the Secretary to grant leases to federal, state or local government agencies without monetary considerations for use and occupation of land and water areas under the jurisdiction of the Department of the Army for park and recreation purposes when in the public interest (68 Stat 1256).

The **Flood Control Act of 1962** (PL 87-874) was approved 23 October 1962.

Section 207 amended Section 4 of the Flood Control Act of 1944, permitting recreational developments at non-reservoir projects (76 Stat. 1195).

The **Land and Water Conservation Fund Act of 1965** (PL 88-578), approved 1 September 1964, amended by PL 94-422. This act established a fund from which Congress can make appropriations for outdoor recreation. The fund derives revenue from entrance and user fees, sale of surplus federal property, and the federal motorboat fuel tax.

The **Federal Water Project Recreation Act of 1965** (PL 89-72), approved 9 July 1965 as amended, established recreation at federal water resource projects as a full project purpose. This act requires consideration of recreation opportunities and of fish and wildlife enhancement in planning water resources projects.

Section 9 limited the maximum allocation for recreation and fish and wildlife enhancement to 50 percent of the total project cost. This act further required beneficiaries to bear part of the costs of operating and maintaining recreation developments at federal water resources projects (79 Stat. 213).

Public Law 97-140, was approved December 29, 1981.

Section 6 imposed a moratorium through 30 December 1989 on enforced removal of certain private-use facilities from any Corps reservoir or lake project. Subsequently, by *Section 1134*, Public Law 99-662, the moratorium was extended indefinitely.

The **Water Resources Development Act of 1990** (PL 101-640) was approved 28 November 1990.

Section 102 (1) of the Water Resources Development Act of 1990 provided authorization for project related recreational development in the State of Illinois in conjunction with the Lock and Dam 26 Replacement Project (now Melvin Price Locks and Dam). As specified therein, the work includes site preparations and infrastructure for a marina and docking facilities, access roads and parking, a boat launching ramp, hiking trails and picnicking facilities. This authorization was furthered by WRDA 1992, which extended to "other non-federal interests" the opportunity to serve as the non-federal sponsor for recreation development in conjunction with the Melvin Price project. Subsequently, on 7 December 1992, the City of Alton submitted a letter of intent in this regard to the St. Louis District Engineer.

The **Water Resources Development Act of 1992**, (PL 102-580) was approved 31 October 1992.

Section 103 of the Water Resources Development Act of 1992, authorized the development of a Regional Visitor Center of at least 24,000 square feet at the Melvin Price Locks and Dam site. The purpose of the visitor center is to inform the public of the role of the U. S. Army Corps of Engineers in inland navigation along the Mississippi River and its tributaries. In addition, it includes the role of the Melvin Price Locks and Dam in inland navigation, the socioeconomic development of the surrounding area, and events of historical, archaeological, cultural, and natural significance in the area.

Section 225 authorized the Challenge Cost Sharing Program that permits the Secretary to develop and implement a program to accept contributions of funds, materials and services from non-federal public and private entities to be used in managing recreation facilities and natural resources.

The **Water Resources Development Act of 1996** (PL 104-303) was approved 12 October 1996.

Section 208 – RECREATION POLICY AND USER FEES directed the Secretary to put increased emphasis on recreation opportunities at Corps projects and specifies that recreation fees collected at Corps projects remain for use at the project where they are collected.

Section 322 – LOCKS AND DAM 26, ALTON, ILLINOIS AND MISSOURI modified the project to allow recreation development on contiguous non-project lands, including the Alton Commons.

Section 519 – RECREATION PARTNERSHIP INITIATIVE directed that, in general, the Secretary is to promote federal, non-federal, and private sector cooperation in creating public recreation opportunities at Corps projects.

The **Water Resources Development Act of 2000** was approved 11 December 2000.

Section 311 – KASKASKIA RIVER NAVIGATION PROJECT included recreation as a project purpose.

Fish and Wildlife

Fish and wildlife resources are maintained and protected in compliance with the following public laws:

■ **Applicable Legislation**

The **Fish and Wildlife Coordination Act (FWCA)** was enacted 10 March 1934, and amended 14 August 1946 (PL 76-732) and 12 August 1958 (PL 85-624).

The *FWCA 1946, Section 3* provided for the use of water resources projects for conservation, maintenance, and management of wildlife resources and wildlife habitat, to be administered by state agencies or the Secretary of the Interior. In accordance with this act, General Plans for the use of lands and waters of the navigation channel project for wildlife conservation and management were formulated and approved by the Secretary of the Army, the Secretary of the Interior, and the heads of pertinent state agencies.

The *FWCA of 1958* required that fish and wildlife conservation receive equal consideration with other project purposes and that they be coordinated with other features of water resource development programs. All planning and project development must be coordinated with the USFWS.

General Plans (land use maps) and Cooperative Agreements are the instruments used to establish a structured arrangement between the USFWS and Corps, and the USFWS and the states, for managing public lands.

The **Forest Conservation Act** (Reservoir Area–Forest Cover) (PL 86-717) (74 Stat. 817) was approved 6 September 1960. PL 86-717 and applicable implementing regulations declared the policy of the United States to provide that areas owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers shall provide for the protection and development of forest and other vegetative cover and the establishment and maintenance of other conservation measures. The basic Corps environmental stewardship mission is carried out by identifying and implementing management practices that insure the conservation, preservation and protection of resources for present and future generations. The Corps will continue to promote the establishment, maintenance, and protection of vegetative cover, to include forest cover, grasses and other herbaceous communities, in order to sustain the potential for forest production, to sustain wildlife populations, and to provide for basic erosion control during the life of the project. Corps natural resource management strategies are identified in this Project Master Plan and further detailed and specifically explained and scheduled in the Project Operational Management Plan (to be developed subsequent to the Master Plan). The development of plans or other vegetative management activities are fully coordinated with the USFWS. The USFWS provides their comments, and reviews the compatibility of proposed actions on the wildlife enhancement uses of the project. Under the terms of this agreement, the USFWS on Designated Refuge lands, or the appropriate states on General Plan/Coordination lands, will manage resources for enhancement of fish and wildlife.

The **Endangered Species Act (ESA) of 1973** (PL 93-205) (87 Stat. 884), amended by PL 95-632 and PL 97-3040, stated the policy of Congress that all federal departments and agencies must seek to conserve endangered and threatened species.

Section 7(a)(1) stated that all federal agencies shall, in consultation with and with the assistance of the USFWS, utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species.

Section 7(a)(2) required each federal agency to consult with the Secretary of the Interior to insure that authorized actions neither jeopardize the continued existence of any endangered or threatened species nor results in adverse modification of critical habitat. Unless previously completed and included in the project environmental impact statement, a biological assessment must identify any endangered species that, in the opinion of the USFWS, may be affected by the project. This requirement applies to all civil works studies, projects, or programs and includes the operation and maintenance of completed projects. A 1982 amendment made the act a more effective and efficient tool for the conservation of the species affected.

The **Water Resources Development Act of 1974** (PL 93-251) (88 Stat. 33) was approved 7 March 1974, and provided for 25 percent/75 percent cost-sharing between federal, state, and local governments to enhance fish and wildlife on project lands.

The **Fish and Wildlife Conservation Act of 1980** (PL 96-366), approved 16 September 1980, provided funds to states to conduct inventories and conservation plans for conservation of non-game wildlife. It also encouraged federal departments and agencies to use their statutory and administrative authority to conserve and promote conservation in accordance with this act.

The **Water Resources Development Act of 1986** (PL 99-662) was approved 17 October 1986. The Environmental Management Program, the second lock at Melvin Price Locks and Dam, and Navigation Impact Studies are the major activities authorized by this Act.

Section 1103 of the same law is cited as the *UMRS Management Act of 1986* and authorized a number of plans and actions for improving coordinated development and enhancement of the UMRS, due to its national significance as an ecosystem and commercial navigation system.

Section 906 provided that necessary mitigation measures for new projects be undertaken before or concurrently with project construction. It provided general authority to undertake mitigation measures for projects, whether completed, underway or not started. This includes acquisition of any needed related lands, excluding condemnation in connection with projects already completed or well underway. Under this section, mitigation costs shall be allocated to the project purposes and cost-shared accordingly. It required that feasibility reports contain a specific plan to mitigate fish and wildlife losses, unless a determination is made that there would be negligible adverse impact. Such plans shall provide that impacts on bottomland hardwood forests are mitigated in-kind to the extent possible.

Section 906 also provided that, for any project measures recommended to enhance fish and wildlife, costs will be entirely federal when the benefits have a national character and, where they do not, non-federal interests shall reimburse 25 percent of the costs. The non-federal share of operations, maintenance and rehabilitation costs will, in all cases, be 25 percent. To date, the Corps has not funded activities covered under Section 906.

The **Water Resources Development Act of 1996** (PL 104-303) was approved 12 October 1996.

Section 201 – COST SHARING FOR DREDGED MATERIAL DISPOSAL AREAS designated that land based and aquatic dredged material disposal (DMD) areas built for construction and O&M shall be considered a General Navigation Feature and cost shared in accordance with Title I of WRDA 1986.

Section 201 also provided that dredging funds must be considered on an equitable regional basis prior to constructing new DMD facilities. Use of private DMD facilities are permitted if least cost alternative. Non-federal interests may request amendment of Project Cooperation Agreements (PCA) executed before the date of enactment of this act. No increases to the non-federal interest's cost share are to result from this provision.

Section 204 – RESTORATION OF ENVIRONMENTAL QUALITY authorized small environmental restoration projects, either at the project site or off the project site, when it is found that the Corps project has contributed to the degradation of the environment. This section clarified that the \$5 million limit is for the federal share of the project only and specifies that the non-federal cost share is 25 percent and that not more than 80 percent of the non-federal share may be in-kind. The section also defined water resources projects constructed by the Secretary to include projects constructed or funded jointly by the Corps and some other federal agency.

Section 206 – AQUATIC ECOSYSTEM RESTORATION authorized small aquatic ecosystem restoration projects (\$5 million federal cost) to improve the quality of the environment, if they are in the public interest and cost effective; The projects are to be cost-shared 35 percent non-federal with 100 percent non-federal O&M. Under this section, there is a \$25 million per year authorization of appropriations.

Section 207 – BENEFICIAL USES OF DREDGED MATERIALS directed that, in carrying out navigation projects, the Secretary may select a disposal method that is not the least-cost-option if the incremental costs are reasonable in relation to the environmental benefits, including creation of wetlands and shoreline erosion control.

Section 210 – COST SHARING FOR ENVIRONMENTAL PROJECTS amended Section 103 of WRDA 1986 by specifying that the non-federal share of environmental restoration and protection projects shall be 35 percent.

Section 212 – ENGINEERING AND ENVIRONMENTAL INNOVATIONS OF NATIONAL SIGNIFICANCE authorized the Secretary to undertake studies and prepare reports that may lead to work under current civil works authorities or to make recommendations for authorizations. This section authorized \$1 million annually for fiscal years 1997-2000. The Corps may accept funds from other agencies, states, or non-federal interests.

Section 321 – KASKASKIA RIVER, ILLINOIS modified the navigation project to add fish and wildlife and habitat restoration as project purposes.

Environmental Stewardship

■ Applicable Legislation

The **National Environmental Policy Act (NEPA) of 1969** (PL 91-190) (83 Stat. 852), approved 1 January 1970, declared a national environmental policy for protection and enhancement of the environment and established a Council on Environmental Quality (CEQ). NEPA set forth the requirement for an environmental impact statement on any major federal action significantly affecting the quality of the human environment.

The **Forest Conservation (Reservoir Areas-Forest Cover) Act of 1960** (PL 86-717) (74 Stat. 817), approved 6 September 1960, required that projects be developed and maintained to encourage adequate forest resources. Forest management programs must be administered to increase the value of project lands for recreation and wildlife and to promote natural ecological conditions by following accepted conservation practices

The **Federal Water Pollution Control Act Amendments of 1961** (PL 87-88), approved 20 July 1961, provided for a more effective program of water pollution control. Amended by PL 92-500, Section 404, approved 18 October 1972, regulates the placement of dredged or fill material into jurisdictional waters.

The **Clean Water Act of 1977** (PL 95-217), approved 27 December 1977, amended the Federal Water Pollution Control Act and extends the appropriations authorization.

The **Farmland Protection Policy Act** (PL 97-98), approved 22 December 1981, minimized the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.

The **Water Resources Development Act of 1986** (PL 99-662) was approved 17 October 1986

Section 1135 – PROJECT MODIFICATIONS FOR IMPROVEMENT OF ENVIRONMENT stated that the Corps, under the auspices of the Secretary, is authorized to review the operation of water resources projects constructed by the Secretary before the date of enactment of this Act to determine the need for modifications in the structures and

operations of the projects for the purpose of improving the quality of the environment in the public interest.

The Secretary is authorized to review the operation of water resources projects constructed by the Secretary to determine the need for modifications in the structures and operations of such projects for the purpose of improving the quality of the environment in the public interest.

The Secretary is authorized to carry out a program for the purpose of making such modifications in the structures and operations of water resources projects constructed by the Secretary which the Secretary determines are both feasible and consistent with the authorized project purposes, and will improve the equality of the environment in the public interest. The non-federal share of the cost of any modifications carried out under this section shall be 25 percent.

The Secretary shall coordinate any actions taken pursuant to this section with appropriate federal, state and local agencies.

Beginning in 1992 and every two years thereafter, the Secretary shall transmit to Congress a report on the results of reviews conducted under Subsection (a), and on the program conducted under Subsection (b). The report shall contain any recommendations of the Secretary concerning modifications and extension of the program.

An amount not to exceed \$15,000,00 annually is authorized to be appropriated to carry out this section.

The **Water Resource Development Act of 1990** (PL 101-640) was approved 28 November 1990.

Section 306 stated that environmental protection was one of the primary considerations of the Corps in the planning, design, construction, operation, and maintenance of water resource projects.

Section 307 stated two goals for the Corps water resource development program: (1) An interim goal of no overall net loss of the nation's remaining wetlands base, as defined by acreage and function, and (2) a long-term goal to increase the quality and quantity of the nation's wetlands as defined by acreage and function.

Section 509 of the Water Resources Development Act of 1999 reauthorized the EMP program as a continuing authority type program. *Section 514* authorized development of a project to enhance fish and wildlife habitat on the Missouri River and the middle Mississippi River.

Cultural and Historical Considerations.

A number of laws mandating the protection of cultural resources on public lands have been passed during the past 75 years. These laws and Executive Orders are summarized in Appendix A of the St. Louis District Cultural Resource Management Policy (April 1982). The following laws subsume, clarify, or supersede all previous cultural resources law:

The **Archaeological Resources Protection Act of 1979** (16 USC 470 et seq.) (PL 96-95), approved 31 October 1979, revised and updated the 1906 Antiquities Act. It protects archaeological resources and sites that are on public lands and Indian land, and fosters increased cooperation and exchange of information between governmental authorities, the professional community, and private individuals. The Act required and provided for permits to conduct scientific archeological excavations by qualified individuals and also specifies criminal acts and provides for criminal and civil penalties.

The **National Historic Preservation Act Amendments of 1980** to the National Historic Preservation Act of 1966, (PL 96-515) stated a policy of preserving, restoring, and maintaining cultural resources. It also required

that federal agencies take into account the effect of any undertaking on any site on or eligible for the *National Register of Historic Places*.

The **Archaeological and Historic Preservation Act** (Reservoir Salvage Act) (PL 86-523) (16 USC 469 et seq.), approved 27 June 1960 as amended, provided for the preservation of historical and archaeological data which might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal construction projects.

The **Native American Graves Protection and Repatriation Act** (PL 101-601) 16 November 1990, required museums and federal agencies to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collection. The Act required repatriation, on request, to the culturally affiliated tribes and established a grant program within the Department of the Interior to assist tribes in repatriation and to assist museums in preparing the inventories and collections summaries.

1.4. POLICY CONSIDERATIONS

The following statements provide general guidance for the plan of development and future management arrangements.

Corps management activities will be directed towards fostering a balance between the economic, environmental, and recreational demands on the Upper Mississippi River within constraints of the authorized purposes of its navigation projects (navigation, recreation and fish and wildlife) and recognizing the multi-use, multi-purpose character of the resource as well as the national importance of the river for its ecological value.

A portion of the land parcels purchased by the federal government along the river are submerged (below normal pool levels) as a result of construction and operation of the navigation project. To the degree possible, these submerged lands will be treated in a manner consistent with adjacent land-use classification designations.

Private exclusive use, the use and occupancy, over an extended period of time of individually owned permanent structures, is prohibited at the navigational pools in this region, because the project resources are required for the benefit of the general public in the foreseeable future. Use and development of project lands will be in accordance with the MVD Regional Plan concerning Private Exclusive Use and Navigational Pool Projects.

Access to public lands will be maintained at existing locations until an Access Study is completed.

The Corps and USFWS recognize the need for jointly planned and fully coordinated actions on federal lands covered under the long term General Plan agreement. This Master Plan will lay the groundwork for further joint action. The resource plan (*Section 7 – Land and Water Area Management Plans*), in accordance with the Cooperative Agreement, promotes more efficient operation of the project.

Management programs established by the St. Louis District for lands and waters under its jurisdiction will be consistent with the following established environmental objectives for the Corps: (1) To preserve unique and important ecological, aesthetic, and cultural aspects of our national heritage; (2) to conserve and use wisely the natural resources of our Nation for the benefit of present and future generations; (3) to enhance, maintain, and restore the natural and constructed environment in terms of its productivity, variety, spaciousness, beauty, and other measures of quality; and (4) to create new opportunities for project visitors to use and enjoy their environment.

1.5. ENGINEERING REGULATIONS AND ENGINEERING PAMPHLETS

The following Corps engineering regulations (ERs) and pamphlets (EPs) govern activities on Rivers Project lands:

ER 405-1-12 - Real Estate Handbook (1985)

ER 1105-2-100, 28 December 1990 – Policy and Planning: Planning Guidance

This regulation describes the types of Army Civil Works planning programs and studies, the various purposes served by water resource projects, principle guidelines and procedures for formulating and evaluating water resource plans, and the Washington-level review process.

ER 1110-2-400, 1988 – Design of Recreation Sites, Areas, and Facilities

This regulation provides information and criteria related to planning and design of recreation facilities at water resource projects.

EM 1110-1-400, 31 July 1987 – Engineering and Design, Recreation Planning and Design Criteria

This regulation provides guidance compiled from experience and research for use in the planning and design of recreation areas, sites and facilities.

EM 1110-2-400, 31 May 1988 – Engineering and Design, Design of Recreation Sites, Areas and Facilities

This regulation establishes policy and guidance for the design of recreation sites, areas and facilities.

ER 1120-2-401, 14 August 1970 – Investigation, Planning and Development of Water Resources: Preservation and Enhancement of Fish and Wildlife Resources

This regulation prescribes policies and procedures for consideration of the preservation and enhancement of fish and wildlife resources in the planning and development of Corps water resource projects.

ER 1120-2-404, 14 August 1970 – Investigation, Planning and Development of Water Resources: Federal Participation in Recreational Development

This regulation provides guidance on federal participation and non-federal cooperation in the development of outdoor recreation and fish and wildlife enhancement at Corps water resource projects, plus guidance on the need and timing of assurances of non-federal cooperation in such features.

ER 1130-2-406, 31 October 1990 – Shoreline Management at Civil Works Projects

The purpose of this regulation is to provide policy and guidance on management of shorelines of Civil Works projects where 36 CFR Part 327 is applicable.

ER 1130-2-500, 27 December 1996 – Partners and Support (Work Management Policies)

This regulation establishes the policy for the management of operations and maintenance (O&M) activities of Corps personnel performing civil works functions related to navigation, dredging, environmental stewardship, and recreation services at water resource projects. Programs

described include Cooperating Associations, Volunteer, Contributions and Challenge Cost-sharing among others.

EP 1130-2-500, 27 December 1996 – Partners and Support (Work Management Guidance and Procedures)

This Operations and Maintenance (O&M) pamphlet establishes guidance and procedures for the management of activities at Corps water resource development projects and supplements ER 1130-2-500

ER 1130-2-530, 30 October 1996 – Flood Control Operations and Maintenance Policies

This regulation, in addition to ER 1130-2-500, established the policy for O&M of Corps flood control and related structures at civil works water resource projects and of Corps-built flood protection projects operated and maintained by non-federal sponsors.

ER 1130-2-540, 15 November 1996 – Environmental Stewardship Operations and Maintenance Policies

This regulation establishes the policy for the management of O&M activities of the Corps personnel performing civil works functions related to flood control, navigation, dredging, hydroelectric power generation, environmental stewardship, and recreation services at water resource, waterway, and other Corps projects.

EP 1130-2-540, 15 November 1996 – Environmental Stewardship Operations and Maintenance Guidance Procedures

This pamphlet establishes guidance for the management of environmental stewardship related O&M activities at Corps civil works water resource projects and supplements ER 1130-2-540, Environmental Stewardship Operations and Maintenance Policies.

ER 1130-2-550, 15 November 1996 – Recreation Operating and Maintenance Policies

This regulation establishes the policy for the management of recreation programs and activities, and for the operation and maintenance of Corps recreation facilities and related structures and civil works resource projects.

EP 1130-2-550, 15 November 1996 – Recreation Operations and Maintenance Guidance and Procedures

This pamphlet establishes guidance for the management of recreation programs and activities and for O&M of Corps recreation facilities and related structures, at civil works water resource projects and supplements ER 1130-2-510, Recreation Operations and Maintenance Policies.

ER 1165-2-27, 18 August 1989 – Establishment of Wetlands Areas in Connection with Dredging

This regulation provides guidance for the establishment of wetlands areas in connection with dredging required as part of water resource development projects.

ER 1165-2-28, 30 April 1980 – Corps of Engineers Participation in Improvements for Environmental Quality

This regulation provides guidance for including Environmental Quality (EQ) measures in Corps water resource development plans.

ER 1165-2-400, 9 August 1985 – Water Resource Policies and Authorities: Recreation Planning, Development and Management Policies

This regulation defines objectives and policies governing planning, development and management of outdoor recreational resources, plus enhancement of fish and wildlife at Corps water resource projects.

ER 200-2-3 Environmental Quality — Environmental Compliance Policies, 30 October 1996

This regulation established the policy for the management of environmental compliance related O&M activities at Corps civil works and military projects and facilities.

1.6. PURPOSE OF THE MASTER PLAN

There is currently no master planning type document that provides a regional conceptual plan for the management and development of Corps federal lands and waters under the jurisdiction of the St. Louis District Rivers Project Office.

The primary objective of this master plan is to publish a clear, practical and balanced plan that will guide future Corps and partner agencies land use decisions as well as public use development actions on the St. Louis District's portion of the UMRS. The intent of the Master Plan is to provide a guide for effective management of the federal lands natural and constructed resources while preserving habitat, accommodating public recreational demands and insuring continued river navigation.

1.7. SCOPE OF THE MASTER PLAN

Since 1977, there have been many changes in public recreation perceptions and demands, in natural and constructed resources along the river, and in federal roles in the project area. These changes have resulted in the recognition of the need to develop a comprehensive meaningful guide for the future management of the federal lands and waters of the Mississippi, Illinois and Kaskaskia Rivers within the St. Louis District. This Master Plan will incorporate all of the Rivers Project management areas and address current and future programmatic and management needs. It will also address the Corps and partner agency responsibilities on the open Mississippi River between Cairo, Illinois and Locks 27 as well as the fee title and operational easement lands along the lower 36 miles of the Kaskaskia River.

The general objectives, scope, and format of this document follows laws and guidelines as cited above (Sections 1.3 and 1.5). This master plan can not resolve many broad based and long-term problems associated with the UMRS. Examples of such problems include sedimentation, water quality issues, balancing the growth of commercial navigation with other needs, developments that are not on federal lands, and many others. However, the Corps will integrate the watershed perspective into opportunities and action within its authority to operate and maintain the UMRS. Opportunities will be explored and identified where joint-use watershed resource management efforts can be pursued to improve the efficiency and effectiveness of the Corps Civil Works Programs. Participation will be solicited from federal, state and local agencies, organizations, and the local communities to ensure that their interests are incorporated into the formulation and implementation of the effort. The Corps and other appropriate agencies may address these problems in separate future studies.