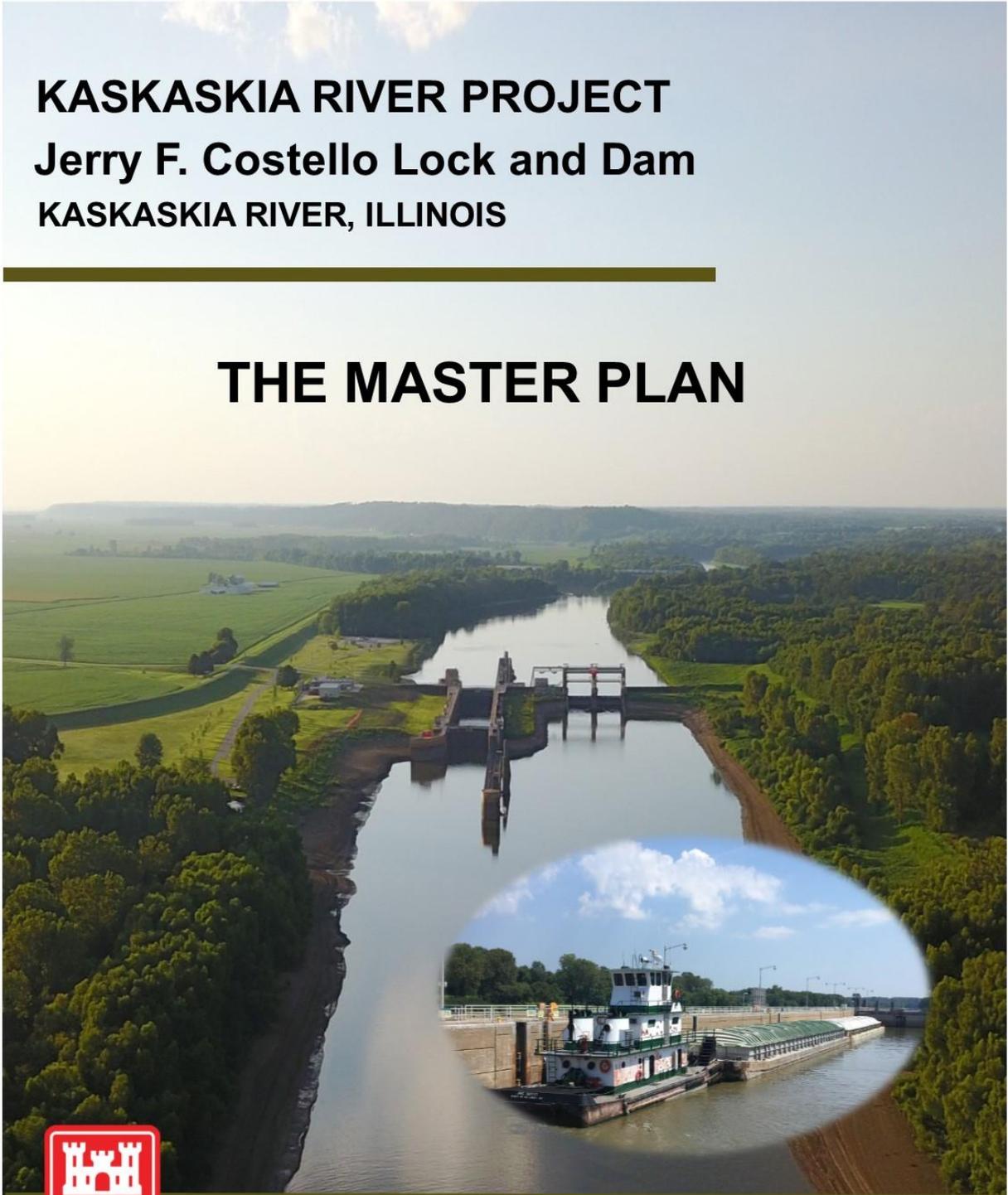


KASKASKIA RIVER PROJECT
Jerry F. Costello Lock and Dam
KASKASKIA RIVER, ILLINOIS

THE MASTER PLAN



**US Army Corps
of Engineers®**
St. Louis District

Prepared 2017

PREFACE

Construction of the Kaskaskia River Project began in December 1967 and the first barge locked through in December 1973. The project was dedicated in July 1974. The original Master Plan, prepared by the State of Illinois, was approved in 1978, then incorporated into the Rivers Project Master Plan update in 2001.

The Kaskaskia River Project and Jerry F. Costello Lock and Dam Master Plan – 2017, hereafter referred to as Plan or master plan, is the strategic land use management document that guides the comprehensive management, development, and use for recreation, natural resources, and cultural resources that is efficient and cost-effective throughout the life of the Kaskaskia River Project. It is a vital tool for responsible stewardship and sustainability of the facility's resources for the benefit of present and future generations. This Plan guides and articulates Corps responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is dynamic and flexible based on changing conditions. This Plan focuses on goals and objectives. Details of design, management and administration, and implementation are addressed in the Kaskaskia River Project Operational Management Plan. This Plan does not address the specifics of regional water quality, shoreline management, or water level management. Operation and maintenance of project operations facilities are also not included in this Plan.

This Plan was developed in accordance with current U.S. Army Corps of Engineers regulations and guidance and meets all Federal requirements contained in the National Environmental Protection Act (NEPA). All natural, cultural, environmental and recreation resources have been reevaluated using the most current data and visitor use trends.

Throughout the update process, input was obtained from stakeholders such as state and county government organizations, concessionaires, watershed associations, environmental groups, project users, local civic groups and members of the general public to ensure their needs were addressed. Recent scientific studies and reports related to outdoor recreation, natural, cultural and environmental resources were reviewed, evaluated and incorporated appropriately in this Master Plan update. All recreation area site plans were revised to reflect existing and proposed development.

The approval of this master plan does not assure that all proposed projects will be implemented. Upon approval of this Plan, funding to accomplish proposed activities must still be obtained through the U.S. Army Corps of Engineers budget formulation process. Further environmental reviews will be conducted and design requirements considered before moving forward.

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COMMONLY USED ACRONYMS AND ABBREVIATIONS

ABA	Architectural Barriers Act
ACRCC	Asian Carp Regional Coordination Committee
ADA	Americans with Disabilities Act
AR	Army Regulation
ARRA	American Reinvestment and Recovery Act
BCE	Before Common Era
BMP	Best Management Practices
CE	Common Era
CLA	Carlyle Lake Association
CY	Cubic Yards
E	Electric
EA	Environmental Assessment
EC	Engineer Circular
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineer Pamphlet
EPA	Environmental Protection Agency
ER	Engineer Regulation
FSA	Farm Service Agency
FY	Fiscal Year
GDM	General Design Memorandum
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
ISOP	Interpretive Services and Outreach Program
KRP	Kaskaskia River Project
KRPD	Kaskaskia River Project District
KRNP	Kaskaskia River Navigation Project
KRSFWS	Kaskaskia River State Fish and Wildlife Area
KRW	Kaskaskia River Watershed
KWA	Kaskaskia Watershed Association
KVA	Kaskaskia Valley Association
LKSI	Lower Kaskaskia Stakeholders, Inc.
LR	Letter Report
LSDA	Lake Shelbyville Development Association
MGD	Million Gallons Daily
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MP	Master Plan
MVD	Mississippi Valley Division
N	New
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	National Center on Accessibility

NEPA	National Environmental Policy Act
NGRREC	National Great Rivers Research and Education Center
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic & Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resource Conservation Service
O&M	Operations and Maintenance
OKAWI	Original Kaskaskia Area Wilderness, Inc.
OMP	Operational Management Plan
ORBC	Okaw River Basin Coalition
PA	Previously Approved
PL	Public Law
PSA	Project Site Area
R	Replacement
RC	Remnant Channel
RM	River Mile
S	Sewer
SCORP	State Comprehensive Outdoor Recreation Plan
SF	Square Feet
SWFWA	State Fish and Wildlife Area
SIUC	Southern Illinois University Carbondale
SWCD	Soil and Water Conservation District
T&E	Threatened and Endangered
UA	Universal Accessibility
USACE	US Army Corps of Engineers
USC	United States Code
USFS	United States Forest Service
USFWS	US Fish and Wildlife Service
V	Vault
VERS	Visitor Estimating and Reporting System
W	Water
WB	Waterborne
WMA	Wildlife Management Area
WQ	Water Quality
WRDA	Water Resources Development Act
WRRDA	Water Resources Reform and Development Act

**KASKASKIA RIVER PROJECT &
Jerry F. Costello Lock and Dam
MASTER PLAN - 2017**

**Kaskaskia River Watershed
Modoc, Illinois**

CHAPTER 1 - INTRODUCTION

1.1 PROJECT AUTHORIZATION

The Kaskaskia River Project (KRP) and Jerry F. Costello Lock and Dam was authorized for design, construction, operation and maintenance, and project purposes by the federal government through:

- a. The Rivers and Harbors Act of 3 July 1958 -Public Law (PL) 85-500, House Document No.232, 85th Congress
- b. The Rivers and Harbors Act of 1962, Section 10 PL 87-874.
- c. The Water Resources Development Act (WRDA) of 1996, Section 321, PL 104-303.
- d. The WRDA of 2000, Section 311, PL 106-541.
- e. The Water Resources Reform and Development Act (WRRDA) of 2014, Section 1050 ©, PL 113-121.

The KRP is located on the Kaskaskia River in southwestern Illinois and includes a lock and dam and a 36 mile stretch of the Kaskaskia River maintained to a depth of 9 feet and a width of 225 feet. The KRP navigation channel boundary begins at the Kaskaskia's confluence with the Mississippi River to Fayetteville, Illinois. Construction of the navigation channel shortened the natural river distance from 52 to 36 river miles - a total of 16 miles - by cutting off river meanders and straightening the channel to accommodate commercial tows and barges for reliable and safe navigation conditions for the shipment of bulk commodities.

The authorized purposes for the KRP are:

- a. **Navigation:** Authorized by PL 87-874, 23 October 1962, River and Harbor Act of 1962. The primary mission of navigation is to provide safe, reliable and efficient waterborne transportation systems for the movement of commerce, national security needs and recreation.
- b. **Fish & Wildlife and Habitat Restoration:** Authorized by PL 104-303, 12 October 1996, WRDA of 1996. The primary mission of fish & wildlife and habitat restoration is to manage, conserve, and restore natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of the present and future generations.
- c. **Recreation:** Authorized by PL 106-541, WRDA 2000. The primary mission of recreation is to provide a sustainable level of high quality, water-oriented outdoor recreation opportunities within a safe and healthful environment that meets the needs of present and future generations.
- d. Public Law 113-121 WRRDA 2014 re-designated the name of the Kaskaskia Lock and Dam to the Jerry F. Costello Lock and Dam

A complete list of applicable federal Public Laws, policies and regulations associated with the authorized project purposes and operation and maintenance of the Kaskaskia River Project can be found in Chapter 2.15.

1.2 PURPOSE AND SCOPE OF MASTER PLAN Purpose and Scope of Master Plan

This master plan was developed in accordance with guidance contained in Engineer Regulation (ER) 1130-2-550, Recreation Operations and Maintenance Policies and Engineer Pamphlet (EP) 1130-2-550, Recreation Operations and Maintenance Guidance and Procedures, both dated 15 November 1996, and updated January 2013 with new Master Plan and Operational Management Plan (OMP) guidance.

The Kaskaskia River Project and Jerry F. Costello Lock and Dam Master Plan – 2017, hereafter referred to as Plan or master plan, is the strategic land use management document that guides the comprehensive management, development, and use for recreation, natural resources, and cultural resources that is efficient and cost-effective throughout the life of the Kaskaskia River Project. It is a vital tool for responsible stewardship and sustainability of the facility's resources for the benefit of present and future generations. This Plan guides and articulates Corps responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is dynamic and flexible based on changing conditions. This Plan focuses on goals and objectives. Details of design, management and administration, and implementation are addressed in the Kaskaskia River Project Operational Management Plan. This Plan does not address the specifics of regional water quality, shoreline management, or water level management. Operation and maintenance of project operations facilities are also not included in this Plan.

A master plan is developed and kept current for all civil works projects operated and maintained by the USACE and includes all land and water (fee, easement, or other interests) originally acquired for the project and any subsequent land and water (fee, easement, or other interests) acquired to support the operations and authorized purposes of the project.

This master plan replaces the previous master plan and supplemental updates for the Kaskaskia River Project. This plan will serve as the first stand-alone USACE master plan in the history of the Kaskaskia River Project. The original master plan was prepared by the IL Department of Transportation (IDOT) Office of Water Resources (which is now under IDNR), with input from the USACE, the Illinois Department of Natural Resources (IDNR) and the Kaskaskia River Project Districts (KRPD) and was approved in 1978. A subsequent master plan that addressed KRP land use and management plans was developed by the USACE St. Louis District’s Rivers Project Office in which the Kaskaskia River Project was considered a subset of the Upper Mississippi River Navigation System.

Table 1-1, provides a summary of previous master plans, supplements and letter reports for the Kaskaskia River Project.

Master Plan Year	Supplement/Letter	Title & Brief Description	Date Approved
1978	N/A	Kaskaskia River Project Navigation Project Land & Water Use Master Plan prepared by IL Department of Transportation/IDNR/USACE/KRPD	1978
2001	N/A	USACE St. Louis District, Rivers Project Master Plan - Design Memo No. 3	2001
2009	1	Supplement 1, Kaskaskia River Navigation Project Master Plan-. Proposed Recreation Facility Improvements.	17 Feb 2009

Table 2-1: Summary of Kaskaskia River Project Master Plans

There are three USACE Civil Works Projects located within the Kaskaskia River Watershed – Lake Shelbyville, Carlyle Lake and the Kaskaskia River Project:

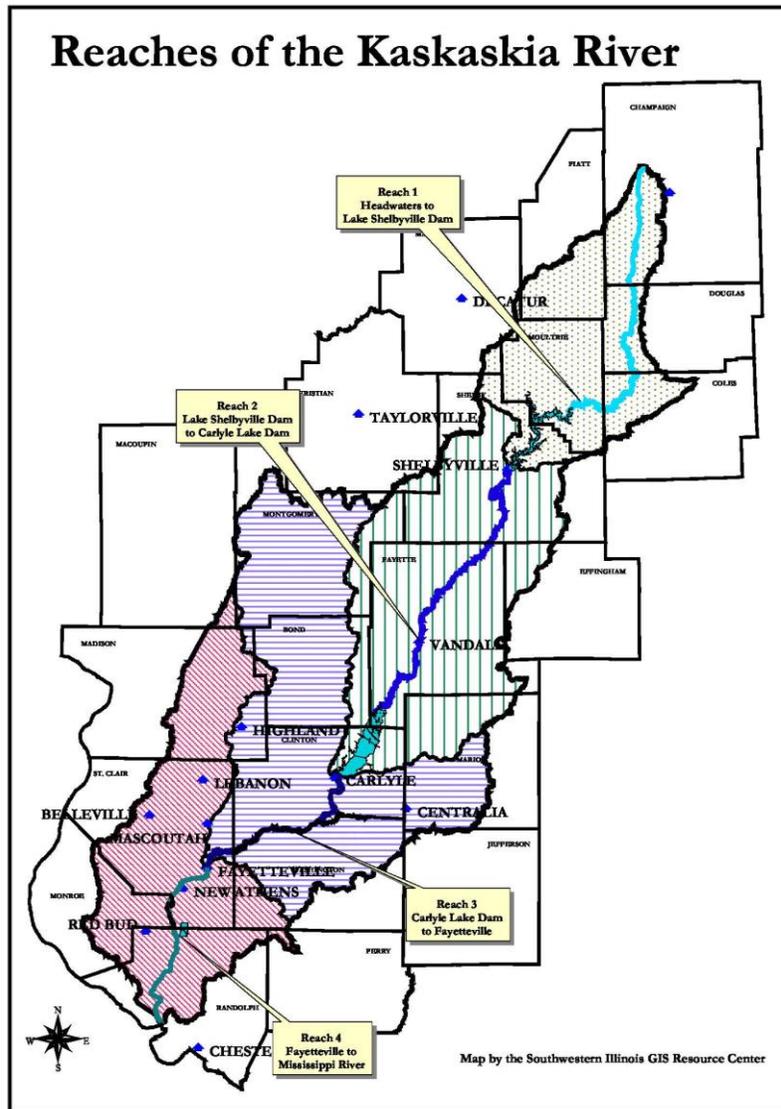


Figure 2-1: Kaskaskia River Watershed Map

1.3 KASKASKIA RIVER WATERSHED

The Kaskaskia River Watershed is comprised of more than 5,700 mi² (3.65 million acres) of land and includes all or parts of 22 counties within the state of Illinois. This represents approximately 10.2% of the state’s total surface area and is the second largest watershed in the state. The river length is approximately 290 miles and the watershed drains from a northeasterly to southwesterly direction, beginning in Champaign County to the north and ending in Randolph County to the south, where it flows into the Mississippi River. The watershed contains 8,680 miles of tributary streams, including the main channel (33% of state stream miles), approximately 840 lakes or ponds covering 79,000 acres, and two

large reservoirs, Carlyle Lake and Lake Shelbyville, that combined add another 37,000 acres of surface waters. The elevation at the Kaskaskia River headwaters is 740 feet National Geodetic Vertical Datum (NGVD) and drops to 368 feet NGVD at the Jerry F. Costello Lock and Dam near the confluence with the Mississippi River.

Prior to settlement, the northern third of the watershed was predominately comprised of prairies, while the southern two-thirds were predominately forests. Today, forests cover only about 13% of the watershed due to settlement and extensive agricultural development. The largest blocks of floodplain forest in the state today totaling 43,000 acres exist between Carlyle Lake and Fayetteville, IL. One notable tract is over 7,000 acres of mature floodplain forest and nearby post oak flat-woods and represent the largest contiguous blocks of these types of forests remaining in Illinois today. The watershed's habitats are also a critical component of the Mississippi River migratory flyway. The watershed is targeted for many diverse conservation efforts by multiple agencies and stakeholders due to its natural values and significance.

Agriculture is the predominant land use within the watershed. Currently, 82% of the land is used for agricultural purposes, while the state average is 78%. Of that 82%, most is cropland (63%) with other significant land utilized as grassland (19%). Since 1978, the number of farms has decreased by 25% but the acreage tilled has decreased by only 6%. Corn and soybeans are important to the region but producers also grow 25% of the entire state's crop of wheat. Livestock production, including dairy, swine, poultry and beef cattle is a significant industry, especially in Clinton, Randolph and Washington Counties.¹

1.3.1 Driven by Stakeholders

The Kaskaskia River Project is located on the lower 40 miles of the Kaskaskia River Watershed. The Corps also operates Lake Shelbyville and Carlyle Lake upstream that provide multiple benefits within the watershed. The three Corps projects produce major economic and environmental services annually in southern Illinois. In FY 2012, the three projects had approximately 7 million visitors, generated over \$166 million in visitor spending and provided water supply to 150,000 people and to two major power plants. Between 1993 and 2015, it is estimated that approximately \$670,410,712 in economic losses due to flooding were prevented by the Corps projects. The Kaskaskia River Project connects directly to the Upper Mississippi River navigation system and is a major transportation corridor for southern Illinois. It is one of the few navigation projects in the country with increasing tonnage trends. Tonnage is projected to increase to 1.5-2 M tons in the next few years.

Stakeholders throughout the Kaskaskia River Watershed began meeting in groups in 1934 in an effort to resolve flood issues, manage the river's resources and promote economic development and growth. In 1953, the Kaskaskia Valley Association (KVA) was formed to pursue development opportunities in the Watershed. Through stakeholder efforts, the Corps was authorized to construct and operate two reservoir projects within the watershed - Carlyle Lake in 1967 and Lake Shelbyville in 1970. They were established

¹ The Kaskaskia River Watershed - An Ecosystem Approach to Issues and Opportunities

primarily for flood control and other purposes such as fish and wildlife conservation, recreation, and water supply which stimulate tourism, economic development and community growth. The Kaskaskia Navigation Project was completed in 1974 with the purpose of providing a 36 mile navigation channel to the Mississippi River. After completion of the projects the KVA disbanded but other river focused groups continued to function and /or form to support their respective river related interests.

During the 1990s several river interest groups in the watershed began meeting and discussing ways to improve the river cooperatively. After submission of a nomination for a federally sponsored watershed development program known as American Heritage River's in December 1997, groups within the watershed began to meet regularly. For organization and management purposes the Kaskaskia River stakeholders divided the river into four reaches from the headwaters at Champaign to the confluence with the Mississippi River and began calling themselves the Kaskaskia Watershed Association (KWA). Their goal is to cooperatively manage the watershed in a sustainable manner to promote the multiple benefits of the river including diverse recreational opportunities and tourism, economic development, implementation of sound agricultural practices, improved water quality and supply and the restoration of natural ecosystems.

The KWA began holding an Annual Summit (2000-present) and other events such as "Showcasing" one river reach each year to help educate other stakeholders and elected officials of the diversity and the importance of the Kaskaskia River Watershed. The KWA incorporated as a not-for-profit organization in 2002.

Additional KWA partners include federal organizations like the USACE, the National Resources Conservation Service (NRCS), the US Environmental Protection Agency (EPA), the United States Fish and Wildlife Service (USFWS), and the Farm Service Agency (FSA); state organizations like the Illinois Department of Natural Resources (IDNR), the Illinois Department of Transportation (IDOT), the Illinois State Water Survey (ISWS), the Illinois State EPA, and the Illinois Department of Agriculture; local organizations like the Soil and Water Conservation Districts (SWCD), the Kaskaskia Regional Water Resources Planning Committee, the Kaskaskia Regional Port District and county and local governments; and diverse non-governmental groups representing interests in conservation, recreation, economic growth, tourism, and agriculture.

The Kaskaskia Watershed Association (KWA) includes representation from four regions of the watershed.

The reaches and key organizations are as follows:

Reach 1 – Headwaters to Lake Shelbyville Dam

Lake Shelbyville Development Association (LSDA) – 2001

Reach 2 – Lake Shelbyville Dam to Carlyle Lake Dam

Carlyle Lake Association, Inc. (CLA) –1998

Mid Kaskaskia Basin Association

Reach 3 – Carlyle Lake Dam to Fayetteville

OKAW River Basin Coalition (ORBC) – 1974

Original Kaskaskia Area Wilderness, Inc. (OKAW) – 1997

Reach 4 – Fayetteville to Mississippi River

Lower Kaskaskia Stakeholders Inc. (LKSI) – 1999

The Lower Kaskaskia Stakeholders Incorporated (LKSI) represents the section of the river encompassed by the Kaskaskia River Project from Fayetteville, IL to the confluence with the Mississippi River. The organization formed after Corps budget reductions and proposed reductions in project operations began in the late 1990s. LKSI has been an avid supporter of the project since that time. They also host an annual barge trip designed to promote and showcase the Kaskaskia River. The LKSI is a member of the Kaskaskia Watershed Association and represents the Kaskaskia Watershed from Fayetteville to the Mississippi River.

The goal of this organization has been to facilitate and carry out continuing discussions between the stakeholders having interests and concerns about conditions and activities in the Lower Kaskaskia Basin. They help to determine a consensus on policies and procedures for guiding public and private activities in the basin, and cooperative actions for putting those policies into practical effect. The organization focus includes water quality, recreation, transportation, economic development, sediment and erosion control, and fish and wildlife conservation.

1.4 KASKASKIA RIVER PROJECT DESCRIPTION

The Kaskaskia River Project (KRP) is located on the Kaskaskia River, approximately 20 miles north of Chester, Illinois in Randolph County. Channel improvements extend upstream through the eastern edge of Monroe County to Fayetteville in southeastern St. Clair County, Illinois. Through channelization, the river distance between Fayetteville, Illinois and the Mississippi River has been effectively reduced from 50 to 36 miles.

The Corps constructed and operates and maintains the KRP features consisting of a 600 foot long, 84 foot wide lock (which can pass a tow boat and 4 to 5 barges per lockage), upper and lower floating guide walls, a dam with two tainter gates and a gated spillway to manage navigation pool levels, 36 miles of channelized river maintained to 9 feet deep and 225 feet wide, a rock grade control structure at the head of the navigation channel at river mile (RM)35.9, 2,900 acres of fee and operational easement lands, 3,500 acres flowage easement lands, one major recreation area with visitor center at the lock and dam site, and several river access and habitat management sites along the river. The dam site is bounded on the west bank (right bank) by the Prairie du Rocher and Modoc Levee and Drainage District, and on the east (left bank) by a large, bermed dredged area. The KRP became operational on 10 July 1974 with a maximum

regulated pool elevation of 368.8 NGVD. See, Table 1-2 below for a summary of KRP information.

Congress authorized the single purpose Kaskaskia River Navigation Project (KRNP) construction and operation by the Corps through PL 87-874, the Rivers and Harbors Act of 1962. Due to the significant natural resources and public recreation benefits and demand, later legislation authorized the Corps to also manage for fish and wildlife conservation in 1996 and outdoor water- based recreation in 2000.

The Kaskaskia River Project differs from other facilities in the USACE St. Louis District. It is a unique partnership between the State of Illinois, the Kaskaskia Regional Port District and the US Army Corps of Engineers. When the project was originally authorized in 1962, the state of Illinois was (and still is today) the cost share sponsor for the federal project. The Corps and the state developed and approved a “Memorandum of Understanding between the U.S. Army Engineer District, St. Louis and the State of Illinois, Department of Public Works and Buildings” (MOU) to specify the project requirements and define Corps and State roles and responsibilities and the local cooperation required for completion of the KRP. This MOU was approved on 7 May 1964.

The State of Illinois, the non-federal cost share sponsor purchased approximately 17,000 acres of land for the project, relocated roads and utilities, provided disposal sites for the construction and for operation and maintenance of the project. The federal government relocated or replaced highway and railroad bridges .The State of Illinois provided the Corps with fee title to 433 acres of land where the Jerry F. Costello Lock and Dam is located today. They provided 2,465 acres of land to the Corps as an operational easement for the Corps to operate and maintain the KRP for authorized project purposes. The channelized river and raised navigation pool constructed and managed by the Corps also required the state to acquire and transfer to the Corps 3,496 acres of flowage easement lands to further accommodate pool management and periodic flooding impacts. See Plate 1 for Kaskaskia River Project’s Land Use Overview.

The Navigation pool is approximately 1,300 water surface acres in size at normal operating level. Twenty six remnant side channels were created through straightening of the river channel providing approximately 2,000 acres of off-channel water surface.

The Corps performs operation and maintenance activities for authorized project purposes (navigation, environmental stewardship and recreation) on the fee and operations easement lands only.

The Illinois Department of Transportation was called the Department of Public Works and Buildings in the 1960s. Their Office of Water Resources was the entity that coordinated the closest with the Corps during the design, agreements and construction and now operation of the KRP. The state acquired 17,000 acres of floodplain lands required for the project. Most of the lands were transferred to the Illinois Department of Conservation (now under the Department of Natural Resources) for establishment and management as the Kaskaskia River State Fish and Wildlife Area (KRSFWA) that extends along the KRP in Randolph, Monroe and St. Clair counties. The IDNR manages

approximately 16,000 acres of lands and waters as part of the KRSFWA today. They also manage two other State Fish and Wildlife Areas (SFWA) abutting the navigable river adjacent to KRSFWA - the 2,020 acre Dynegy Baldwin Lake SFWA and the 2,000 acre Peabody-River King SFWA - for a total of approximately 20,000 acres of IDNR managed fish and wildlife area lands and waters associated with the KRP.

The Kaskaskia Regional Port District (KRPD), a quasi-public state agency, was created by the 1965 Kaskaskia Regional Port District Act. This agency is managed by 15 Governor-appointed Board of Directors. The State General Assembly declared the main purpose of the Act was to promote industrial, commercial, transportation and economic activities. The KRPD plans, develops and operates public and private intermodal transportation facilities along the KRP in Randolph, Monroe and St. Clair Counties and on the Mississippi River encompassing a District of 1,800 miles² today. They manage approximately 825 acres of land for four port terminals in partnership with private sector, industrial and shipping businesses. A fifth port terminal is currently under development at Fayetteville.

Port terminals operated by KRPD include:

1. Evansville Export Grain Elevator, KRP RM 11.
2. Baldwin Industrial Park Port #2, KRP RM 18
3. New Athens Port #1, Inbound/Outbound Bulk Terminal, KRP RM 24.5
4. Fayetteville Terminal/Harbor, KRP RM 35 -Under Development
5. Kellogg Coal Dock, Mississippi RM 125.5
6. Several Barge Fleeting areas on the Kaskaskia and Mississippi Rivers

Public Act 099-0507 amended the original authorization for KRPD by adding homeland security, recreation, water supply and safety as authorized purposes of the port district. It also gave the KRPD the authority to borrow money against port district property and to petition any federal, state or local authority having jurisdiction for adoption and execution of any physical improvement or operation related to the management of fish and wildlife, recreation, water supply or flood control which in the opinion of the Board is for improving or bettering the quality of life in the port district and to remove sunken vessels and recover damages.

The inter-jurisdictional and inter-agency development and use of the KRP is guided by a 1978 master plan developed by IDOT/IDNR in coordination with the Corps and the KRPD. This previous plan represents the agreed upon land uses and management of the river corridor. Some minor updating has occurred since the plan went into effect and it still conceptually guides all three agencies' management efforts and coordination.

The Corps, the State of Illinois and the Kaskaskia Regional Port District continue to be vital partners in helping achieve the operational goals of the KRP.

The Kaskaskia River Project navigation channel serves as a major transportation corridor for southern Illinois. It is a high performing system generating many economic, recreation, and environmental benefits for the region. The Kaskaskia River Project is one of the few small commercial navigation projects in the country with increasing tonnage trends. The KRP supports three operational barge terminals (at Evansville, Baldwin, and New Athens), two marinas, four major recreation areas with boat ramps, numerous minor river access sites and 20,000 acres of state fish and wildlife management areas. The Kaskaskia River Project is a popular recreation destination for regional residents and visitors to southwestern Illinois. Located at the Kaskaskia and Mississippi Rivers Confluence Heritage Area, the Corps operates a major recreation area adjacent to the lock and dam that includes two major boat ramps (upstream and downstream of the lock and dam), a group shelter/multipurpose court, special events area, 15 public campsites that include amenities such as electric, picnic tables, grills, and comfort stations. The Corps also offers the fully accessible, one-mile round trip Confluence Heritage Trail that attracts more visitors each year providing numerous recreational opportunities including hiking, biking, picnicking, nature observation and bank fishing where the two rivers meet, and an amphitheater for interpretive programming. The number of visitors and visitor spending at the Kaskaskia River Project continues to increase every year. The project provides outdoor recreation opportunities for approximately 400,000 visitors annually, which generates over \$18 million in recreation economic benefits. A map of the Kaskaskia River Project is provided as **Figure 1-2**.

Item Description	Data
Number of Locks	1
Lock Dimensions (ft.)	84'x600'
Dam Length (ft.)	130'
Number of Gates and Width	2/60'
Gate Type	Tainter
Guide-walls	2
Year Placed in Operation	1974
Length of Pool (miles)	35.2
River Mile Limits	0.0- 36.2
Maximum Regulated Pool Elevation (NGVD)	368.8
Pool Surface Area (Acres)	1309
Fee Land (Acres)	433
Operational Easements (Acres)	2,465
Flowage Easements (Acres)	3,496
Maximum Lift of Lock Chamber	26.2'

Table 2-2: Kaskaskia River Project Pertinent Information

1.4.1 Summary of Prior Design Memorandums and Project Plans related to this Master Plan

1. Design Memorandum No. 3, Rivers Project Master Plan: Mississippi, Illinois, Missouri and Kaskaskia Rivers; Illinois and Missouri (July 2001)
2. Supplement 1 to Kaskaskia River Project Master Plan Recreation Facility Improvements (February 2009)
3. Kaskaskia River Navigation Project - Appendix C to Master Reservoir Regulation Manual (2005) (Water Control Manual)
4. Survey Report, Kaskaskia River, Illinois, Navigation Improvement, Mouth to Fayetteville, Senate Public Works Committee Resolution (August 1954)
5. Kaskaskia River, Illinois Navigation Project, Design Memorandum NO. 1, Hydrology and Hydraulic Analyses (July 1963)
6. Kaskaskia River, Illinois Navigation Project, Design Memorandum NO. 1A, Site Selection (October 1964)
7. Kaskaskia River, Illinois Navigation Project, Design Memorandum NO. 2, General Design Memorandum (May 1966)
8. Kaskaskia River, Illinois Navigation Project, Design Memorandum NO. 2, General Design Memorandum (May 1966),
9. Supplement NO. 1 (January 1983) Kaskaskia River, Illinois Navigation Project, Design Memorandum NO. 3, Relocations – State Highways (May 1968)
10. Final Environmental Statement for Kaskaskia Navigation Project (Operations and Maintenance) Illinois (September 1975)
11. Final Supplement I to Final Environmental Statement for Kaskaskia Navigation Project (Operations and Maintenance) Illinois (September 1975) (August 1983)
12. Maintenance of Navigation Pool at Elevation 368.8 Feet (NGVD) Kaskaskia River Navigation Project, Illinois - Final Supplemental EA with Signed FONSI (September 1992)
13. Maintenance of Navigation Pool at Elevation 368.8 Feet (NGVD) Kaskaskia River Navigation Project, Illinois - Final Supplemental EA with Signed FONSI (September 2004)
14. Letter Report – Jerry F. Costello Lock and Dam, Modoc, Illinois, Flood Prevention Alternatives Report, April 2017

15. Kaskaskia Regional Port District, Strategic Plan-A Vision for the Next Twenty Five Years, May 12, 2014

16. IDOT/IDNR/KRPD/USACE 1978 Master Plan

17. IDNR Kaskaskia River SFWA Management Plan

18. Kaskaskia River Project, Operational Management Plan

CHAPTER 2 – PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 HYDROLOGY

2.1.1 Surface Water

The watershed of the Kaskaskia River drains 5,750 square miles of land, making it the second largest watershed in Illinois behind the Illinois River. The watershed extends from the center of Champaign County in the east-central Illinois prairie lands and flows in a southwesterly direction to the Mississippi River in Randolph County (about 10 miles north of the City of Chester) in southwestern Illinois. The length of the watershed is about 175 miles, its maximum width is 55 miles and average width is 33 miles. The main river channel flows through the approximate center of the watershed and has a sinuous channel with a slight fall and low banks. The distance of the river channel is over 300 miles and the total elevation fall is about 390 feet.

The natural flow regime of the Kaskaskia River has been altered extensively by three major USACE facilities and by agricultural and urban development. The 26,000 acre Carlyle Lake project was completed in April 1967. The Carlyle Lake dam on the river in Clinton County is 94 miles above the mouth and creates the largest manmade lake in Illinois. In 1970, the upper reach of the Kaskaskia was dammed at RM 198 in Shelby County to create the 11,200 acre Lake Shelbyville. Both of these reservoirs were authorized for multiple benefits of flood damage reduction, water supply, recreation, fish and wildlife conservation and downstream navigation augmentation. The KRP was completed in 1974 and is authorized for navigation, recreation and fish and wildlife conservation and consists of a lock and dam and 36 mile navigation channel. Agriculture and urban development in the watershed over the last 175 years has resulted in several levee and drainage systems on the river floodplain and extensive drainage ditches, field tiling and storm water infrastructure systems that accelerate water flow to the main channel significantly increasing peak flows and frequency, erosion and sedimentation and non-point pollutants into the river.

Prior to channelization, the lower Kaskaskia River was approximately 52 meandering river miles long with an average channel width of approximately 125 feet. Construction of the KRP converted the lower river channel from highly sinuous to a straightened channel with only a few long bends. The excavation of the channel to authorized project dimensions shortened the distance from Fayetteville to the river mouth from 52 miles to 36 miles and cut off 26 river bends leaving remnant channel segments. Removing this river length steepened the slope of the river by 80%, from 0.25 to 0.45 feet per mile. The average channel width was expanded by 80% to approximately 225 feet and the natural river channel bottom was deepened an additional 5 to 10 feet. Regulated navigation pool elevation is maintained within 363.0 - 368.8 NGVD. Maximum pool elevation was originally authorized at 368.0 but was temporarily raised to 368.8 in 1988 due to extreme drought and continued on an annual approval basis until the 0.8 foot raise was permanently approved in the February 2005 update to the KRP Water Control Manual to

compensate for channel sedimentation and improve commercial navigation and recreation boat access. The channelized and pooled river segment today is approximately 300 feet wide, from bank to bank and 36 miles long and includes approximately 1,309 water surface acres.

The 26 remnant channel segments created by the construction of the navigation pool provide approximately 2,000 acres of surface waters. The lower end of each remnant channel is open and connected to the main channel for water exchange, fish and wildlife passage and spawning, and public recreational boater access. The upper ends of each remnant channel are earthen plugged by design to not connect to the main channel. The mouths of these remnant channels are maintained by the Corps on operations easement lands and waters for recreation and environmental stewardship purposes. The bulk of the remnant channels and surrounding lands are managed by the IDNR as part of the KRSFWA.

The lower Kaskaskia River is heavily influenced by the Mississippi River backwaters during higher flow periods. These backwaters extend up to New Athens, IL at RM 30. Significant backwaters occur up the Kaskaskia River when the Mississippi River stages exceed elevation 370 NGVD at the mouth of the Kaskaskia River.

The Kaskaskia River Project has no flood protection levees and is exposed to the full impact of flood events on the Mississippi (Flood Stage 27 ft. on Chester Gage) and Kaskaskia Rivers. Critical Pool Elevation starts at 375 feet NGVD with lock closure occurring at 380.5 and above. This includes the lock and dam, operations facilities, recreation areas and river accesses. The flood of 1973 was the first major flood event that impacted the KRP. The record flood occurred in 1993 reached 49.7 ft. on the Chester Gage (394.40 NVGD). Major flood events have increase in frequency since 2000, see Table 2-1. Major droughts impacted the project in 1988 and 2012. All of these events have caused temporary navigation and recreation closures and caused millions of dollars in damages and repair costs. Climate change trends are projected to increase frequency of future extreme weather events resulting in more frequent floods and droughts from a historical perspective.

The lock and dam and largest recreation area are located less than one mile upstream from the confluence with the middle Mississippi River (RM 117.5), therefore getting the full force of this river when at flood stage or above. This reach of the Mississippi River is strongly affected by flows from the Missouri River mouth near St. Louis along with the Upper Mississippi, the Illinois and Meramec Rivers.

Tributary creeks on the lower Kaskaskia River below Carlyle Lake dam that influence flows on the KRP navigation channel include Shoal (upstream of project), Silver, Mud, Richland, Doza, Plum, Horse, Camp, Crooked, and Nine Mile Creeks.

2.1.2 Groundwater

The modern groundwater geology over much of the Kaskaskia River Watershed is largely unfavorable for the development and extraction of significant groundwater supply for

municipal, industrial and agricultural purposes. Groundwater is available in the extreme northeast part of the watershed, which is rich in sand and gravel aquifers. Quality groundwater is much scarcer in the central and southern parts of the region. (The Kaskaskia River Basin: An Inventory of the Region's Water Resources, IDNR-OWR). The major source of groundwater in the area is within the sand and gravel deposits of the alluvial valleys and the sand bodies contained in glacial drift. Alluvial aquifers are primarily limited to areas within the flood plain of the Kaskaskia River. Glacial drift aquifers fill buried bedrock valleys created by the advances and retreats of the three Quaternary/ Pleistocene ice sheets that covered or impacted almost 80% of the landscapes within the state's present day boundary and occurred from approximately 1.6 million years to 10,000 years ago (Pre-Illinoian 1.6 M to 300,000, Illinoian 190,000 to 130,000, and Wisconsinan 15,000 to 10,000). **Figure 2-1** shows the extent of major sand and gravel aquifers and the location of active public water supply wells in the Kaskaskia River Watershed.

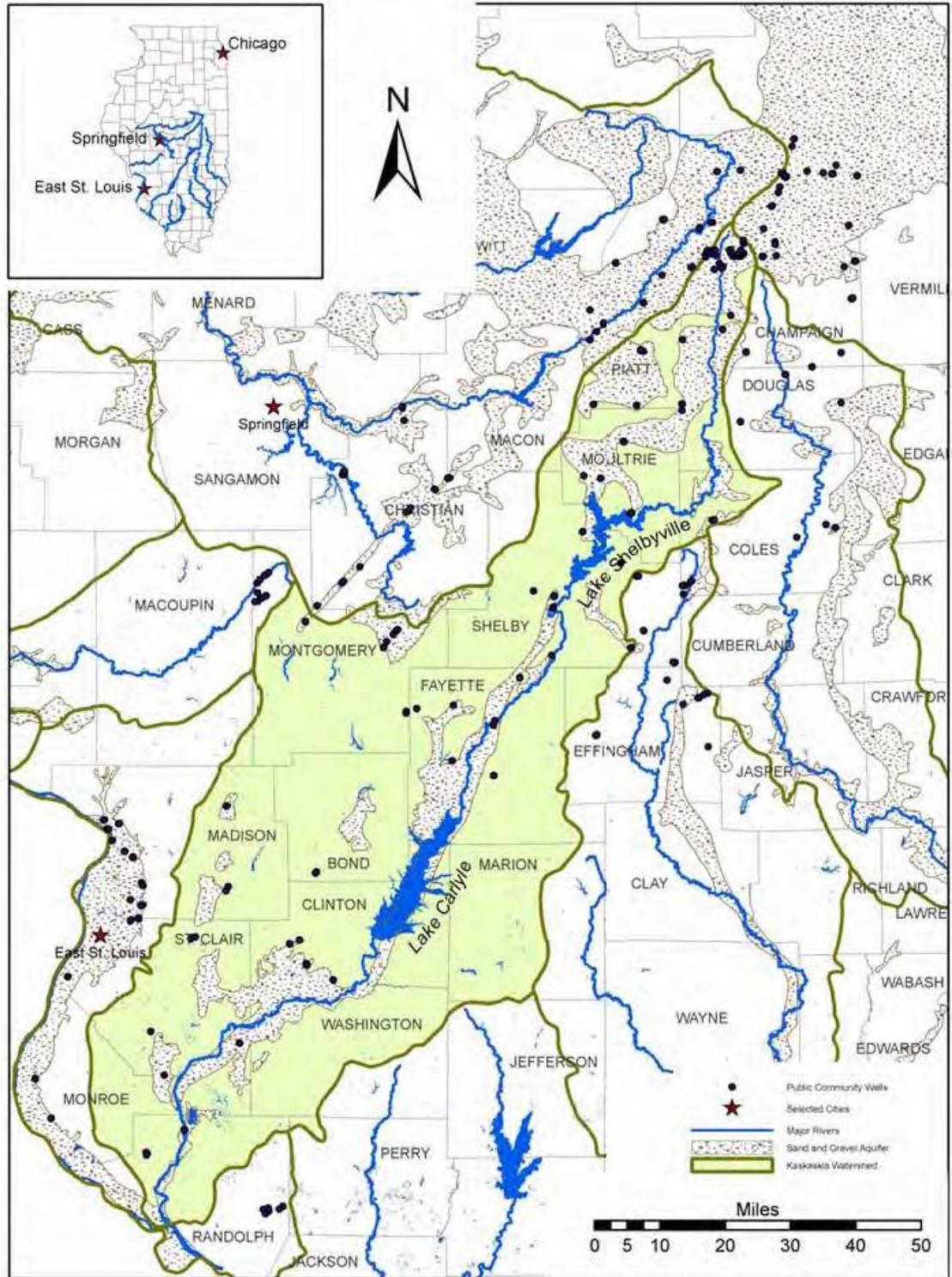


Figure 2-3: Location of Major Sand & Gravel Aquifers and Public Water Supply Wells in the Kaskaskia River Watershed

2.1.3 KRP Surface Water Supply

The KRP elevated slack water pool maintained for minimal navigation depths also facilitates reliable and efficient water supply intake and water quality for numerous communities and industries in the region. The stable minimum pool elevation allows for consistent operation and maintenance and protection from low river levels, drought and reduced water quality for installed water intake structures. Water supply allocations in the state are managed by the IDNR-Office of Water Resources. They develop and administer all contracts for municipal, industrial and agricultural water supply needs from the state's surface waters. The water supply allocations that are drawn through water intake structures, pump stations and pipelines from the lower Kaskaskia River are administered through allocation contracts approved for Carlyle Lake and Lake Shelbyville reservoirs by the state.

Approximately 36.85 Millions of Gallons Daily (MGD) of water are drawn through water intakes on the KRP. The current list of approved water allocation contracts on the KRP include:

1. Prairie State Energy Campus, LLC - 13.35 MGD (Millions of Gallons Daily)
2. Dynegy, Baldwin Power plant - 20.6 MGD
3. SLM Water Commission (Serve 7 communities) - 1.7 MGD
4. Kaskaskia Water District (Serve 10 communities) - 1.2 MGD
5. City of Sparta - 0.4 MGD
6. Village of Evansville - 0.1 MGD

Date	River Elevation (NGVD)	Chester Gage (FT)
05/06/2017	390.89	44.66
01/01/2016	392.49	45.6
07/02/2015	385.85	39.68
06/05/2013	388.82	42.41
04/30/2011	385.70	39.61
07/01/2008	385.34	39.46
05/17/2002	387.00	40.29
05/22/1995	390.28	43.37
09/30/1993	386.38	41.42
08/06/1993	394.36	49.45
10/11/1986	385.35	39.19
05/06/1983	386.16	40.69
12/09/1982	385.74	39.71
04/16/1979	385.46	39.74

Table 6-1: List of Floods Exceeding the Top of the Lock Wall (Elevation 385.0)

2.1.4 Major Project Flood Data

The KRP has a history of flooding since it was placed in operation and the pool was established on July 10, 1974, with 15 floods exceeding the top of the lock wall resulting in flood damage, flood fighting efforts, and impacts to normal operations. Table 2-1 presents a summary of flood events exceeding the top of the lock wall (elevation 385.0) and the corresponding river maximum elevation. The corresponding Chester Gage crest is provided for each flood for reference.

2. 2 SEDIMENTATION AND SHORLINE EROSION

2.2.1 Sedimentation² and Head Cutting

The channelization of the Kaskaskia River immediately resulted in a major change in the natural river regime upstream of the Project. The increased slope and additional channel width initiated a head cut that began at the upstream end of the navigation channel near Fayetteville, Illinois. The head cutting degraded the bed and widened the bank lines upstream of Fayetteville. The excessive material produced from this erosion was then deposited in the navigation channel between Fayetteville and New Athens. Between 1972 and 1981, approximately 2.5 million cubic yards (CY) of material were deposited in the upper 6 miles of the canal thereby reducing depths and closing this portion of the navigation channel. River Engineers/Potamologists were concerned that removing this material from the navigation channel would initiate a second head cut upstream of Fayetteville. It was concluded that somewhat of an equilibrium condition had begun to establish in this reach since the initial head cut had traversed through the area. In the

² Bank Erosion Study of the Kaskaskia River, Carlyle Lake to New Athens, IL 2000

mid-1970s, the St. Louis District initiated an engineering study. The study indicated that placement of a grade control structure, located at the upper end of the navigation project near Fayetteville, would alleviate additional upstream head cutting and reduce deposition within the navigation project.

In 1980, a physical model of the proposed grade control structure was constructed at the Waterways Experiment Station to study localized physical effects, including velocities and flow patterns. Results of this study were documented in Technical Report HL-80-20, entitled "Kaskaskia River Grade-Control Structure and Navigation Channel, Fayetteville, Illinois, Hydraulic Model Investigation", U.S. Army Engineer Waterways Experiment Station, December 1980. The two studies concluded that a structure was needed before the deposited material was dredged and the navigation channel reopened. This structure would maintain the upstream water surface profile so as not to disturb the state of dynamic equilibrium that had developed in the channel, both upstream and downstream of Fayetteville.

The St. Louis District began construction in 1981 of the grade control structure at the head of the navigation channel about 700 feet downstream from the State Route 15 bridge (RM 35.9) at Fayetteville, in St. Clair County, Illinois. The structure was completed at 100 percent federal cost in 1982. The purpose of the grade control structure was to prevent additional head cutting of the Kaskaskia River upstream of the navigation channel so the project would function as initially intended.

In 1983, General Design Memorandum (GDM) No. 2 was prepared by the St. Louis District as a supplement to the original Kaskaskia River Navigation Project GDM No. 1 (prepared in 1964). The Navigation Project work was conducted under the authority of the Senate Document No. 44, "all generally in accordance with the plan of the District Engineer, and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable." The channel was then re-dredged from RM 28.6 to 36.0 between 1983 and 1985. With the grade control structure installed and the last portion of the channel excavated to the approved FDM and GDM design, the KRP was considered complete.

In the early 1990s, the St. Louis District decided to indefinitely discontinue maintenance dredging within the upper 7 miles of the navigation project (between Fayetteville and New Athens). The decision was based on the fact that no facilities had been constructed within this particular reach and navigation had been non-existent since completion of the project. As a result, no maintenance dredging has been performed in this reach of the navigation channel since 1985.

In 1999, as a result of public and agency concerns about additional bank erosion and continued head cutting upstream of the Project, the St. Louis District conducted a planning assertive. This state funded survey was in partnership with the state of Illinois and the original Kaskaskia Area Wilderness Association. An erosion and sedimentation study was conducted on the Kaskaskia River, between Carlyle Lake, Illinois and New Athens, Illinois. The study results indicated that erosion was occurring due to on-going head cutting. The results of this study are documented in Technical Report M I 3 (TRM13) entitled "*Bank Erosion Study of the Kaskaskia River, Carlyle Lake to New Athens, Illinois*," USACE, St. Louis District, February 2000.

Since the head cutting was outside the Kaskaskia River Project boundaries the Corps did not have the legal authority to fix the problem on private property. In a first attempt to obtain authority was in May 2000. A memorandum was submitted to the Commander of the Mississippi Valley Division (MVD). The subject was "Reconnaissance Report, Correction of Design Deficiency: Grade Control Structure, Carlyle Lake/Kaskaskia Navigation Project." In this document it was recommended that approval be granted to initiate a design deficiency report with a view toward identifying the least cost measure, in an environmentally friendly manner to sustain the authorized project purposes. Much of the text from that original memorandum is included in this document for information purposes.

On 22 June 2000, MVD granted approval to initiate a design deficiency report. The memorandum stated, "We have reviewed the subject memorandum and concur with the District Commander's recommendation to initiate a design deficiency report. The purpose of the report will be to further analyze the head cutting and bank erosion, which is occurring on the Kaskaskia River, and develop a plan to address the problem."

Technical Report M27, Head Cutting Investigation Upstream of the Kaskaskia River Navigation Project, Illinois was prepared in partial fulfillment of the MVD guidance. The report concluded the grade control structure at mile 35.9 was working as designed. The report finds that the impacts are occurring off of project lands to private property, the associated watershed ecosystem, the river bed and channel as a result of the Kaskaskia Navigation Project's initial channelization. The report was submitted to MVD in September 2003.

Further review of the issue suggested that application of the economic and environmental criteria which governs Corps analysis of such situations would preclude the Corps from addressing this problem as a design deficiency. The lowest cost solution would be to purchase or pay the landowners for the private land and would not result in an acceptable solution to landowners, stakeholders or environmental interests.

Head cutting remains a high priority issue for stakeholders in the watershed. The Kaskaskia Watershed stakeholders and the State of Illinois have made the environmental and economic health of the watershed a priority including stopping head cutting, reducing sedimentation, improving water quality, and fostering economic development in the Kaskaskia Watershed.

Their efforts led to Section 5073 of WRDA 2007 which authorizes the Secretary, in consultation with appropriate federal agencies, the State of Illinois, and the Kaskaskia Watershed Association to develop a comprehensive restoration plan for the purpose of restoring, preserving, and protecting the Kaskaskia River Basin. Some of the items specifically identified in the legislation which should be addressed include enhancing the river as a transportation corridor, development of a sediment management program, and the study and design of necessary measures to reduce ongoing head cutting and restore the aquatic habitat of the basin. The Corps now had the authority and Congressional direction on how to proceed with resolving the head cutting.

A Channel Stability Assessment and a SIAM Assessment of the Sediment Management Alternatives was completed in 2015 using existing data from 2009, 2011 and 2015. These reports indicated that sediment deposited in the upper reach could be reduced. The report's recommendation was to thoroughly investigate any proposed sediment management measures with detailed sediment routing numerical models. This type of analysis could be accomplished in the Watershed Restoration Study.

Funding for the Kaskaskia River Basin Feasibility Study was received in FY 2016 however the non-federal sponsor has been unable to provide their full share of the costs due to the lack of funding in the State of Illinois budget. The study is currently suspended until the non-federal sponsor is able to obtain funds.

The damages induced by the head cutting have resulted in significant economic loss resulting in increased dredging, loss of private property, and unquantifiable ecosystem degradation to the riverine environment and bottomland hardwood forest.

The increased erosion induced by the head cut has introduced additional sediment load into the system. This increased load is responsible for the high rate of deposition in the navigation channel, which requires more frequent dredging. The majority of this material has deposited in the navigation channel just downstream of Fayetteville.

2.2.2 Bank Erosion

Bank erosion at the Kaskaskia River Project is caused by a combination of factors including head cutting, high water events, and saturated banks.

As discussed in section 2.2.1, head cutting is a major factor in channel cutting, widening and erosion along the Kaskaskia River upstream of Fayetteville. High water events compounded by faster runoff times due to upstream development and certain farming and landscaping practices are also a cause of shoreline erosion. High water events and saturated banks go hand in hand. As the water recedes, leaving banks saturated that are normally dry, tree loss and erosion more readily occur. Erosion is not caused by any one factor, but rather a constantly changing, living system of factors that are intertwined, making bank stabilization efforts difficult.

The primary methods used to control and stabilize land and minimize streambank erosion other than head cutting include:

- a. Promoting woody and herbaceous vegetative growth
- b. Manipulation of water run-off
- c. Establish stabilizing vegetation along the shoreline
- d. Promoting the use of farming/landscaping best management practices
- e. Revetting the bank with rock or installing bend way weirs

Streambanks upstream and downstream of the lock and dam that are vital to operation have been protected and reinforced with large riprap stone.

To stop head cutting will likely involve installation of grade control structures above the head cut on the river and tributaries. How many to install and where to place them will take additional data collection and evaluation which is not within the authority of this master plan.

2.3 Water Quality

Water quality sampling is conducted in a watershed approach to establish trend analysis and maintain water quality at or above state and federal standards. The purpose is to conduct water quality investigations to evaluate and develop practical water quality management methods.

Water quality monitoring for the Kaskaskia River occurs 3 times a year between April and September. The Kaskaskia River is sampled throughout the watershed with the closest site to the lock and dam at RM 1.25 (boat ramp above L&D). Monitoring includes field parameters such as pH, dissolved oxygen, Redox, temperature, and conductivity.

Analytical samples are collected for total dissolved solids, phosphates, nitrogen, chlorophyll, and total organic carbons. The overall water quality of the Kaskaskia River within the St. Louis District is considered fair, with the potential for improvement through continued environmental awareness by industry, government agencies, and the general public. Trends for this site over the last 15 years show an increase in Total Phosphate, no change in Volatile Suspended Solids, and decreasing levels of Ortho-Phosphate, Nitrate-Nitrogen, Ammonia Nitrogen, Total Kjeldahl Nitrogen, and Total Suspended Solids. :

Ongoing goals include: ensuring downstream water quality meets state and federal standards, ensuring water is suitable for aquatic and human life, and continue to evaluate trend analysis in relationship to baseline conditions. These monitoring programs and studies will provide the data necessary to support the achievement of balancing naturally occurring good water quality with the impacts of the general population.

A copy of the *Illinois Integrated Water Quality Report and Section 303(d) List, 2016* can be accessed at:

<http://www.epa.illinois.gov/topics/water-quality/watershed-management/tmdls/303d-list/>.

2.3.1 Water Quality of the KRP

A study prepared for the KWA and published in December 2016 entitled Water Quality Analysis of the Kaskaskia River Watershed (Karl Williard and Prabisha Shrestha, Dept. of Forestry, Southern Illinois University, Carbondale) provides an analysis of water quality for all reaches of the river utilizing data collected from 2005 to 2014. Pertinent information from this study is summarized below.

As the Kaskaskia River flows from central Illinois in a southwesterly direction to the Mississippi River in Randolph County, it transitions from having relatively high nitrate levels in its headwaters to having high phosphorus levels in its lower reaches. In a broad sense this is indicative of the presence of intense row crop agriculture with tile drainage in the upper reach, to a mix of row crop agriculture, livestock operations (dairy cows, beef cattle, hogs, chickens), and urban areas in the mid to lower reaches of the watershed. This is supported by an analysis of the EPA 303d list data of the identified sources of water quality impairment.

In the KRP project area on the lower reach of the river, municipal point source discharges and crop production are the leading sources of impairment and urban runoff, storm sewers and combined sewer overflows also being notable sources.

Fecal coliform levels remain a parameter of concern throughout the entire watershed. Levels commonly exceed the IL EPA standard of 400CFU/100mL. Possible sources of fecal coliform include animal feeding operations, pastures, urban runoff (pet waste), storm sewers, combined sewer overflows and wildlife (waterfowl).

Water quality trends over the period of the 10 year study shows that nitrate, ammonium, and fecal coliform levels have generally improved (decreased) compared to the baseline period, while turbidity, total phosphorus and dissolved phosphorus levels have increased.

Key tributary watersheds with the largest impact on the lower Kaskaskia River include Silver Creek (621 mile² watershed) and Richland Creek (130 mile² watershed).

In an effort to reduce nutrient pollution, Best Management Practices (BMPs) on the lower reach of the river should focus on a mix of urban, crop production, and livestock manure reduction practices. In particular, row crop agricultural BMPs to reduce phosphorus transport to surface waters should focus on proper fertilizer management (4R's- right source, right rate, right time, right place) and reduced surface runoff through encouraged use of no till, conservation tillage practices, cover crops and edge of field practices such as natural vegetative riparian buffers, and grass filter strips. Urban BMPs to reduce runoff and phosphorus levels in the river include storm water retention basins, green (natural vegetative buffer areas) infrastructure, wet ponds, storm water wetlands, rain gardens, porous pavements, sand filters, cisterns, filter strips, and improved piping and waste water treatment plant infrastructure to address combined sewer overflows.

The nutrient pollution that flows from the Kaskaskia watershed eventually ends up in the Mississippi River and ultimately the Gulf of Mexico. The concentrations of nitrogen and phosphorus carried by the Mississippi to the Gulf that emanates from dozens of large tributary watersheds with extensive agriculture and urban development creates toxic eutrophication conditions, particularly in the Gulf, which is the final sink for these high concentrations of nutrients. Eutrophication is the process of over enrichment of a body of water with nutrients that enhances primary production through plant and algae growth. The subsequent bacterial decomposition of the increased organic matter increases dissolved oxygen consumption resulting in hypoxic conditions (less than 2 mg/L dissolved oxygen) in the water body. The hypoxic conditions in the Gulf of Mexico create seasonal

"dead zones" that affect both fish and other aquatic organisms and ecosystems. While this is a natural process, it is greatly enhanced by human activity with extensive ecologic and economic impact in the Gulf.

Any of the documented improvements in water quality in the Kaskaskia Watershed is a testament to the efforts of the KWA, cooperating river reach stakeholder groups and federal, state and local conservation agencies working together for environmental, economic and sustainable solutions in the watershed. Much more needs to be done and the cooperative efforts are continuing.

2.4 Project Access

2.4.1 Major Highways

Major highways include Illinois Routes 3, 4, 13, 15, 159, and Highway 51 in MO. Generally the area lacks an interstate connection, although Interstate 64 is to the north, Interstate 255 is to the northwest, and Interstate 55 is west of the Mississippi River. Access to the KRP and the Jerry F. Costello Lock and Dam is primarily provided by Illinois Route 3. The state route runs north to south, parallel to much of the Kaskaskia River. Visitors coming from MO can access the project via Interstate 55 Highway 51 and cross over the Mississippi River on the Chester Bridge into IL, then follow Illinois Route 3 north.

2.4.2 County Roads

The roads leading from major highways to the KRP are maintained by county authorities. In general, the condition of these roads is good. Two county roads, St. Leo's Road in Ruma, IL and Roots Road in Ellis Grove, IL, provide access from Highway 3 to Lock and Dam Road, which leads to the KRP entrance.

2.5 Climate³

The overall climate in the region is relatively moderate. On average, the area receives about 41 inches of rain annually and about 13 inches of snow, which is usually very short-lived. On average, there are 205 sunny days per year. The July high temperature is around 91° F. The January low is 21° F See **Table 2.2** for average climate information for the Kaskaskia River Project compared to the U.S. average. See **Figure 2-2** for the average high and low temperatures and average precipitation by month.

³ Source: National Weather Service

Climate Attribute	Kaskaskia River Project Average	US Average
Rainfall (inches)	40.6	36.5
Snowfall (inches)	12.6	25
Precipitation Days	94	100
Average July High Temp (° F)	91.1	86.5
Average January Low Temp (° F)	21.4	20.5

Table 6-2: Climate Overview

Source: National Weather Service

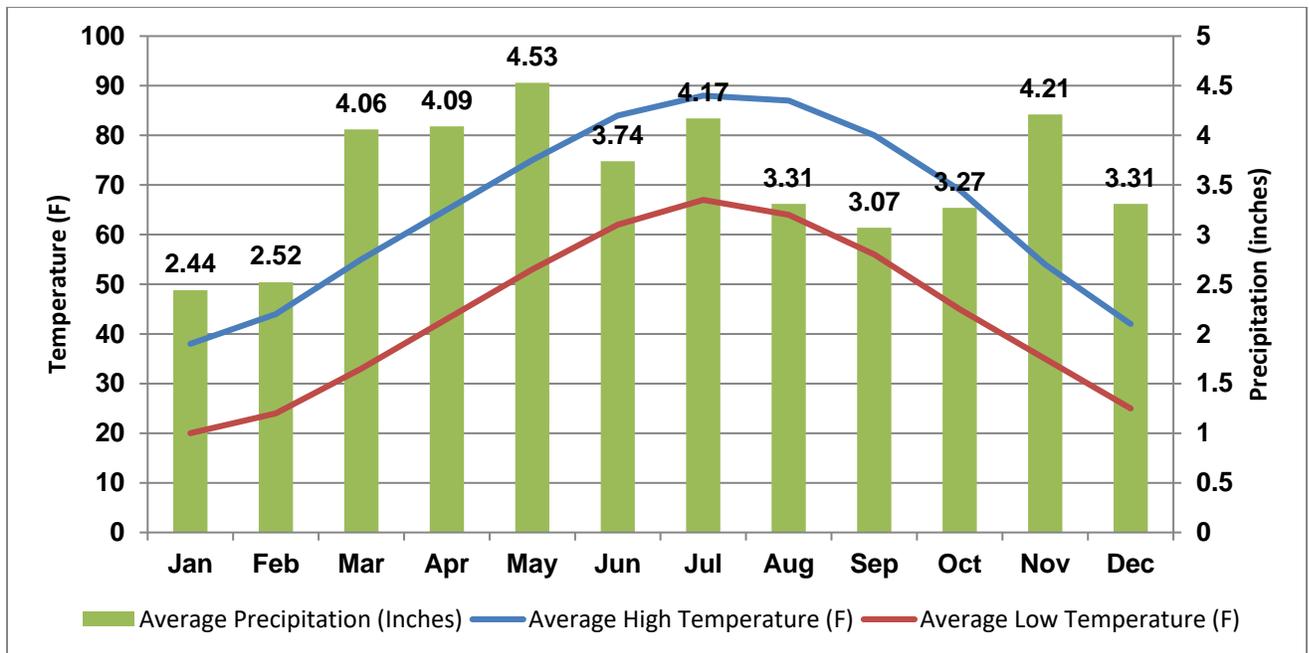


Figure 6-1: Average Temperature and Precipitation - Kaskaskia River Project
Source: National Weather Service

2.5.1 Temperature

Summers are generally mild with temperatures occasionally reaching 100° F or higher. The winters are short and moderate with temperatures occasionally reaching below 0° F. The overall average temperature at the Kaskaskia River Project is 54.5° F. The average annual high temperature is 65° F and the average low temperature is 44° F. The average high temperature occurs in July (88° F) and the average low temperature occurs in January (20° F).

2.5.2 Wind

The strongest winds typically occur in March and the mildest winds in August. The overall average wind speed at the project is approximately 7 miles per hour and the prevailing winds are typically from the south to southwest.

2.5.3 Precipitation & Humidity

The average relative humidity in mid-afternoon is approximately 65%. Humidity is typically higher at night, and the average at dawn is about 85%. The average annual precipitation is 42.72 inches of which 39% occurs from April to July. Although rainstorms are frequent in the spring, cellular storms also occur in July and August. Snowfall is usually limited to October through March and seldom covers the ground for more than a few days at a time. The average annual snowfall is about 12.6 inches.

2.6 Topography, Geology and Soils

2.6.1 Topography

Topographically, the area consists of six surface forms including (1) elongate ridges and hills of Illinois Age glacial drift consisting of moraines and kames, (2) level upland till plains, (3) erodible slopes, (4) level terraces which are a lacustrine zone of undetermined glacial age, (5) present day alluvial floodplains of the Kaskaskia River and its major tributaries, and (6) bluffs and karst areas consisting of water dissolved limestone bedrock creating porous underground streams, fissures, caves and sinkholes of the Ozark Salem plateau along the Mississippi near the Kaskaskia River confluence. Elevations in the region average between 350 to 500 feet NGVD, with a majority of the area gently sloping. Most of the gentle slope is on the upland surfaces. With only isolated areas of hills and steep slopes, most of the land is or can be under cultivation.

2.6.2 Geology

Geologically, the Kaskaskia River Basin lies in the Illinois Basin, a broad depression that covers most of Illinois and extends into portions of Kentucky and Indiana. The geologic features present in the area are products of complex depositional and erosional processes spanning millions of years.

Much like the Mississippi River valley, the underlying bedrock formations of the Kaskaskia River were deposited millions of years ago during the Paleozoic Era and were subjected to erosion and weathering during the late Mesozoic Era and the Tertiary Period. During the periods coinciding with the Ice Ages (Pleistocene Epoch), recurring continental glaciations scoured and scraped the ancient landscapes and deposited drift and till sediments which were over time broken down and altered by weathering and erosion processes. Following the last glaciation, loess - dust size particles of silt, clay and sand- was left in great deposits along the glacial outwash rivers. During dry, warmer periods it was transported by prevailing winds and redeposited over vast landscapes. Along the Mississippi River bluffs, loess deposits are 80-90 feet deep and gradually become thinner as you move eastward. For example, in Bond County, 60 miles east of the Mississippi River on the till plain, loess deposits are less than 5 feet. Loess is the mineral-rich parent material that formed about 90% of the region's rich modern soils and helped shape the present day topography.

As the last Ice Age ended, the molding of our present day landforms and soils began. The Kaskaskia River and tributaries began to down-cut and created the modern alluvial floodplain, leaving elevated terraces of higher floodplains isolated from the river. Modern soils began to develop on the uplands, modified by differing vegetation and slopes and by weathering. Flooding of the river and its tributaries covered the glacial fill with present day bottomland soils.

2.6.3 Soils

There are nine types of soil associations predominant in the area along the lower Kaskaskia River Channel. Five of the associations form the majority of soil types occurring within project lands. The predominant soil association within the Kaskaskia River Project belongs in the Darwin-Lawson-Wakeland-Belknap-Bonnie Association. This association is found in an almost continuous stretch along either side of the waterway from the mouth of the Kaskaskia River upstream to below Fayetteville. In general, the associations have moderate to severe limitations for most non-farm uses due to slow to moderated permeability and relatively poor drainage.

Many of the soils near the navigable channel have been modified by the construction of the navigation project and by the placement of excavated dredge material on the adjoining banks during channel maintenance activities.

2.7 ECOLOGICAL SETTING AND RESOURCE ANALYSIS

2.7.1 Ecological Overview

The Kaskaskia River Project region was historically an ecologically diverse mixture of forests, savannas, prairies, wetlands, rivers and streams. The regions geology, glacial history, hydrology and climate created a diversity of native communities and associated flora and fauna.

In the 1970s the IDNR developed a classification system of natural divisions in the state. These Natural Divisions of Illinois are scientifically established through analysis of

the state's features of topography, soil type, bedrock type, glacial history, hydrology, climate and distribution of native plants and animals and their ecological community compositions. There are 14 major natural division classifications in the state, each with two or more subsection classifications. The KRP, along its length, is located in three of these natural divisions. They are:

1. The Lower Mississippi River Bottomlands Division- Northern Section (12a). This includes the confluence area and the floodplain area around the lock and dam and recreation area to the bluff line.
2. The Ozark Division- Northern Section (11a). This includes a relatively narrow band of uplands from the bluff line to near Evansville on both sides of the Kaskaskia River.
3. Southern Till Plain Division- Mt Vernon Hill Country Section (9b) includes both sides of the river from Evansville area to New Athens area, and the Effingham Plain Section (9a) from New Athens area to Fayetteville and continuing upstream on both sides of the river to just south of Lake Shelbyville.

In the early 2000s the IDNR developed updated natural resource inventories and comprehensive wildlife action plans statewide. From this effort emerged 31 high priority Conservation Opportunity Areas (COAs) that are classified as "resource rich" with plans specifically focused on COAs. Three of these COA resource rich areas are defined on and adjacent to the KRP: (1) The Lower Kaskaskia River Bottoms from the KRP upstream to Carlyle Lake, (2) Hill Prairie Corridor (Bluffs along the Mid-Mississippi River)- Northern Ozark Section, and(3) The Sinkhole Plain- Ozark/Karst Northern Section.

2.7.2 Wildlife and Aquatic Resources

There is a significant diversity of plants and fish and wildlife species native to the lower Kaskaskia River region. Records indicate the presence of approximately 1,100 plant species, 100 fish species, 35 species of mussels, 25 species of amphibians, 40 species of reptiles, 285 species of birds, and 45 mammal species in the region.

Almost all lands and waters acquired by the state for the KRP and fish and wildlife management are located within the river's floodplain, elevated terraces or valley slopes. The IDNR acquired and manages approximately 16,000 acres of land and waters in Randolph, Monroe and St. Clair counties along the 36 mile channelized Kaskaskia River as the Kaskaskia River SFWA. The SFWA is comprised of 3,500 acres of open water, remnant side channels, backwaters, and shrubby and open wetlands. Land cover in the bottomland is predominantly bottomland forests - a forested wetland classification. The IDNR also manages the Baldwin Lake SFWA, a 2,020 acre manmade "perched" cooling lake under long-term lease from the Dynegy Baldwin Power Plant for fishing, boating and waterfowl refuge. This site abuts the river public lands and draws water from the river for operational purposes. They also own and manage the Peabody-River King SFWA along the river just outside New Athens IL. This 2,000 acre site is reclaimed strip mine land

(timbered, grass and wildlife crop areas) and includes 1,000 acres of reclaimed mine lakes and ponds.

The Corps manages 433 acres of fee lands at the lock and dam site for recreation and vegetative management at the confluence area. The Corps manages the river channel and approximately 2,500 acres under operational easement from the IDNR as shoreline lands along the 36 mile waterway for authorized operations and maintenance (O&M) of the navigation channel, public recreation and environmental stewardship of shoreline areas and the mouths of remnant side channels. Collectively, these public lands, backwaters and lakes along the KRP provide one of the largest, natural blocks of public green space in the state today.

The wildlife management and environmental stewardship activities conducted on KRP lands and water create a diverse and desirable ecological setting that has benefitted and attracted a wide variety of wildlife species, especially waterfowl.

The Kaskaskia River is an important mid-migration stopping point for migratory waterfowl, song birds, shorebirds and birds of prey, in both the fall and spring migrations. Teal, mallards, wood ducks, Canada geese, and more recently, bald eagles nest in the project area and are year-round residents.

Although Corps-managed lands and waters are limited, a variety of natural resource management practices are conducted that are beneficial to fish and wildlife. These efforts combined with the states' extensive land holdings and fish and wildlife management programs, create large scale, regional habitat and fish and wildlife benefits. In addition, both Corps- and state-operated recreation areas and minor public land and water accesses accommodate recreational use of these public lands and waters.

Select stewardship activities conducted at the KRP for fish and wildlife benefits include:

- a. Trees are planted to provide shelter from weather and precipitation, nesting cover and food.
- b. Wildlife food plantings of varying shapes, sizes and species composition are planted in areas where additional food for wildlife is desirable.
- c. Succession control, in the form of mowing, selective cutting and spraying, specialized agricultural plantings, and native herbaceous forb and grass plantings to create diverse habitat structure, composition, edge with adjacent old field and wooded habitats benefit many wildlife and pollinator insect species.
- d. Nesting boxes/platforms are constructed and placed to provide additional nesting spaces for several species of lowland and upland birds, bats and other tree dwelling mammals.
- e. Maintaining connectivity between the remnant side channels (river meanders that were cut off when the river was channelized) to the main river channel to provide an

exchange of water is critical to maintaining diverse aquatic habitat including wetlands for spawning/nesting and rearing of fish and aquatic wildlife.

- f. Managing water levels in wetland areas to maximize desirable vegetation and invertebrate foods and providing resting and feeding areas for migratory birds and other species is employed on sites where it is feasible.

These activities combined with adjacent private agricultural fields are critical to successfully provide ideal food and cover for wildlife within the KRP area.

Key wildlife habitats and populations (game and non-game) managed to enhance and sustain healthy populations include: all native species of migratory and resident ducks, geese, swans, pelicans, shorebirds, wading birds; migratory and resident birds of prey (hawks, owls, eagles, osprey); migratory and resident songbirds, mourning doves, quail, turkey; and deer, squirrel, rabbits, raccoon, opossum, fox, bobcat, beaver, muskrat, mink, bats, reptiles and amphibians.

The approximately 100 species of fish known to inhabit the Kaskaskia River are evidence of the large number and variety of aquatic habitats along various portions of the river. Aquatic habitats along the channelized portion of the river include deep pools in the channel itself plus area off the main channel such as swamps, tributaries, and remnant side channels, and natural oxbow lakes. These areas provide good fish habitat in the form of logs, exposed tree roots, fallen trees, submergent and emergent vegetation, sand-gravel riffles, shallow mud-bottom flats and deep pools. Conditions of the river itself are representative of a mid-western prairie stream, having a low stream gradient, turbid water, and a bottom of mud, clay, silt, or shifting sands (Yarbrough, et al, 1974).

Inhabitants of the channelized portion of the river include European and Asian carp, crappie, bass, catfish, gizzard shad, and an occasional walleye. The Asian Carp population has likely had a negative impact on other species of fish.

The fishes of the KRP are typical of Midwestern waters. Major sport, commercial, and forage species include:

- a. white and black crappie
- b. bluegill
- c. green sunfish
- d. long ear sunfish
- e. yellow and black bullhead
- f. channel and flathead catfish
- g. white and yellow bass

- h. walleye
- i. sauger
- j. largemouth bass
- k. freshwater drum
- l. carp
- m. three species of buffalo fishes
- n. three species of carp suckers
- o. bowfin
- p. three species of gar
- q. gizzard shad
- r. brook silversides
- s. red shiner bullhead minnow
- t. golden shiner
- u. western mosquito fish
- v. Alligator gar (re-introduced)

Possible management activities to improve the fisheries on the river include starting a Christmas tree recycling program or other types of physical habitat development techniques and developing brood ponds for bass and crappie. Stocking from hatcheries has been done by both the IDNR and USACE. The IDNR reintroduced the Alligator Gar in 2017, which was once abundant in the river, though it is early to tell if the effort is successful.

Partnerships are critical to successfully manage fish and wildlife activities. The Corps works with the IDNR, the Lower Kaskaskia Stakeholders Inc., and other organizations to enhance and sustain fish and wildlife resources.

2.7.3 Vegetative Resources

The riparian forest communities on the KRP are typical of a ridge and swale bottomland forest. Cottonwood, silver maple and black willow are the predominate species on the bottomlands with scattered mast trees(pin oaks/shellbark hickory, pecan, walnut)red maple, box elder, sycamore on the floodplain terraces and ridges. Oak-hickory community occurs on the slopes and highest areas along the river.

Within the forest complex there are several fallow, cultivated and old fields, which are slowly converting to forest, and open herbaceous and shrubby wetlands.

Vegetative management practices vary from tree planting in recreation areas and some old fields, maintaining wildlife clearings and edge habitats through succession control, wildlife food plots and restoring wetland habitat through water level management. A natural ecological setting is being maintained by using minimal management practices on existing woodlands and many old fields, controlling invasive/non-native plants, and by planting tree, shrub and herbaceous species that are native or indigenous to the area.

2.7.4 Threatened and Endangered Species

“Endangered” means a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects and non-native species of plants and animals, are eligible for listing as endangered or threatened.

There are numerous threatened and endangered species located within the region. **Table 2-3** provides a list of species found on the Federal Threatened and Endangered Species list and **Table 2-4** provides a list of species found on the State of Illinois Threatened and Endangered Species list.

Common Name	Scientific Name	Status
Indiana bat	<i>Myotis sodalis</i>	Endangered
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Gray Bat	<i>Myotis grisescens</i>	Endangered
Least Tern	<i>Sterna antillarum</i>	Endangered
Illinois Cave Amphipod	<i>Gammarus acherondytes</i>	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered
Eastern prairie fringed orchid	<i>Platanthera leucophaea</i>	Threatened
Decurrent False Aster	<i>Boltonia decurrens</i>	Threatened
Small Whorled Pogonia	<i>Isotria medeoloides</i>	Threatened

Table 6-3: Federally Threatened and Endangered Species List

Common Name	Scientific Name	Status/ County
American Eel	<i>Anguilla rostrate</i>	Threatened
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Blue Hearts	<i>Buchnera americana</i>	Threatened
Woolly Buckthorn	<i>Bumelia lanuginosa</i>	Endangered
Black-edged Sedge	<i>Carex nigromarginata</i>	Endangered
Common Striped Scorpion	<i>Centruroides vittatus</i>	Threatened
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Threatened
Timber Rattlesnake	<i>Crotalus horridus</i>	Threatened
Crystal Darter	<i>Crystallaria asprella</i>	Threatened
Small Yellow Lady's Slipper	<i>Cypripedium parviflorum</i>	Endangered
Cerulean Warbler	<i>Dendroica cerulean</i>	Threatened
Whitlow Grass	<i>Draba cuneifolia</i>	Endangered
Gravel Chub	<i>Erimystax x-punctatus</i>	Threatened
Spurge	<i>Euphorbia spathulata</i>	Endangered
Hydrobiid Cave Snail	<i>Fontigens antroecetes</i>	Endangered
Dwarf Bedstraw	<i>Galium virgatum</i>	Endangered
Common Gallinule	<i>Gallinula galeata</i>	Endangered
Illinois Cave Amphipod	<i>Gammarus acherondytes</i>	Endangered
Eastern Narrowmouth Toad	<i>Gastrophryne carolinensis</i>	Threatened
Slender Heliotrope	<i>Heliotropium tenellum</i>	Endangered
Crested Coralroot Orchid	<i>Hexalectris spicata</i>	Endangered
Mississippi Kite	<i>Ictinia mississippiensis</i>	Threatened
Least Bittern	<i>Ixobrychus exilis</i>	Threatened
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Endangered
Coachwhip	<i>Masticophis flagellum</i>	Endangered
Climbing Milkweed	<i>Matelea decipiens</i>	Endangered
Gray Bat	<i>Myotis grisescens</i>	Endangered
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened
Indiana Bat	<i>Myotis sodalist</i>	Endangered
Bigeye Shiner	<i>Notropis boops</i>	Endangered
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	Endangered
Black-crowned Bigh-Heron	<i>Nycticorax nycticorax</i>	Endangered
Great Plains Rat Snake	<i>Pantherophis emoryi</i>	Endangered

Common Name	Scientific Name	Status/ County
Shortleaf Pine	<i>Pinus echinata</i>	Endangered
Illinois Chorus Frog	<i>Pseudacris illinoensis</i>	Threatened
Madonna Cave Springtail	<i>Pygmarrhopalites masonnensis</i>	Endangered
Missouri Orange Coneflower	<i>Rudbeckia missouriensis</i>	Threatened
Fameflower	<i>Talinum calycinum</i>	Endangered
Flathead Snake	<i>Tantilla gracilis</i>	Threatened
Northern Harrier	<i>Cirus cyaneus</i>	Endangered
Small Whorled Pagonia	<i>Isotria medeoloides</i>	Endangered
Yellow Honeysuckle	<i>Lonicera flava</i>	Endangered
Mock Bishop's Weed	<i>Ptilimnium nuttallii</i>	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered
Carolina Whipgrass	<i>Sceria pauciflora</i>	Endangered
Ornate Box Turtle	<i>Terrapene ornate</i>	Threatened
Barn Owl	<i>Tyto alba</i>	Threatened
Smooth Softshell	<i>Apalone mutica</i>	Endangered
Short-eared Owl	<i>Asio flammeus</i>	Endangered
Decurrent False Aster	<i>Boltonia decurrens</i>	Threatened
Little Blue Heron	<i>Egretta caerulea</i>	Endangered
Snowy Egret	<i>Egretta thula</i>	Endangered
False Mallow	<i>Malvastrum hispidum</i>	Endangered
Blue Sage	<i>Salvis azurea</i>	Threatened
Buffalo Clover	<i>Trifolium reflexum</i>	Threatened
Green Trillium	<i>Trillium viride</i>	Endangered

Table 6-4: State Threatened and Endangered Species List

2.7.5 Invasive Species and Noxious Weeds

Invasive species continue to pose a significant threat to the project. An invasive species is a plant, fungus, or animal species that is not native to a specific location and which has a tendency to spread to a degree believed to cause damage to the environment, human economy or human health.

The most invasive vegetative species found around the Kaskaskia River include:

- a. Autumn Olive
- b. Bush Honeysuckle
- c. Common Reed
- d. Crown Vetch

- e. Multi-flora Rose
- f. Japanese Honeysuckle
- g. Johnson Grass
- h. Callery Pear
- i. Garlic mustard
- j. Thistle

Another invasive species of concern is the Asian Carp, which is found in the Kaskaskia River up to the spillway area at Carlyle Lake. Both the Bighead and Silver Carp have negatively impacted recreational boating and sport fishing and reduced native fish populations on the river.

The USACE is an active member of the Asian Carp Regional Coordinating Committee (ACRCC), which was established in 2009 to execute an aggressive multi-tiered strategy to prevent an Asian carp invasion into the Great Lakes and to ensure monitoring for necessary response actions. The ACRCC does not dictate management of fishery issues to individual states or provincial authorities and does not discourage or reject management principles, techniques or actions. While the ACRCC does not directly implement activities, it develops the overall, coordinated strategy for control and management of Asian carp with input from each member and relies on each member to implement actions. In June 2015, the ACRCC developed the "Asian Carp Control Strategy Framework," which is available at: www.asiancarp.us/documents/2015Framework.pdf

The number of invasive species at the Kaskaskia River Project will most likely increase in the future, which makes it incumbent on land managers to communicate with each other in order to provide early identification of invasive species and coordinate efforts to control and eliminate invasive species.

In addition to invasive species, plants can be labeled noxious weeds if they are known to be detrimental to human or animal health, the environment, public roads, crops, livestock or other property. The following are classified under Illinois law as a noxious weed and landowners are required to eradicate them.

Name		Scientific Name	
Anada thistle	Cirsium arvense(L.) Scop.	Asteraceae	Asterales
Common Ragweed	Ambrosia artemisiifolia L.	Asteraceae	Asterales
Giant Ragweed	Ambrosia trifida L.	Asteraceae	Asterales
Johnsongrass	Sorghum halepense (L.) Pers.	Poaceae	Cyperales
Kudzu	Pueraria montana var. lobate (Willd.) Maesen & S. Almeida	Fabaceae (Leguminosae)	Fabales
Marijuana	Cannabis sativa L.	Cannabaceae	Urticales
Musk thistle	Carduus nutans L.	Asteraceae	Asterales
Perennial Sowthistle	Sonchus arvensis L.	Asteraceae	Asterales
Sorghum-alum	Sorghum x alnum Parodi	Poaceae	Cyperales

Table 6-5: Illinois Noxious Weeds

Source: College of Agricultural, Consumer and Environmental Sciences, 2015. Home, Yard & Garden Pests Newsletter. University of Illinois at Urbana-Champaign.

2.7.6 Wetlands

The National Wetland Inventory classification system for Illinois lists the following aquatic community types and classification codes for the KRP:

1. The Kaskaskia River Main channel- Lower Perennial Stream (R2UBH)
2. Natural oxbows and remnant side channels- Open Lake (L1UBH, L2ABG)
3. Floodplain Forest - Forested Wetland (PFO1C, PFO1A)
4. Backwaters Shallow Areas- Scrub-Shrub Wetland (PSS1C, PSS1A, PSS1F)

Managed wetland sub-impoundments are developed by the IDNR at the Kaskaskia SFWA to facilitate waterfowl management activities. Doza Creek Wildlife Management Area (WMA) is the largest one. Others include Beaver Lodge, Reilly Lake, Griggs Waterfowl Refuge, and the Heritage Marsh WMA which is on both state and Corps fee

areas adjacent (east bank) to the lock and dam and is managed jointly. Water levels are manipulated seasonally in these wetlands to maximize resting and feeding habitat conditions for migrating waterfowl and other water dependent birds. The large dike contained dredge disposal area adjacent (east bank) to the lock and dam, is on Corps and IDNR property and is also jointly managed for wetland habitat.

2.7.7 Channel Maintenance and Dredge Disposal Areas

Dredging occurs in all the navigable rivers of the St. Louis District. Two dredges are used to dredge various reaches of the rivers. A dustpan dredge (the Dredge *Potter*) is owned and operated by the USACE and a cutter head dredge (the Dredge *Goetz*) is under contract to the District from the St. Paul District. Also, a habitat dredging contract is used to provide a 12" or 14" dredge and support plant for small recreation and stewardship projects to improve water access and aquatic/ wetland habitat enhancement.

The St. Louis District coordinates with affected agencies regarding locations that may require dredging and proposed disposal sites during the Clean Water Act regulatory process. Upland disposal is used at the KRP. Disposal sites are provided by the State of Illinois and the Kaskaskia Regional Port District (KRPD) through the terms of their June 1988 Memorandum of Agreement (MOA). Occasionally, emergency dredging may occur when the navigation channel is blocked. The mouth of the Kaskaskia, which generally needs to be dredged annually, is the most likely area for this to occur.

When maintenance dredging occurs, excavated material is placed in a contained upland disposal site on land and adjacent to the river. All dredging activities comply with all applicable federal and state laws and regulations.

Since construction of the KRP was completed channel maintenance dredging is only regularly needed in two areas, the mouth of the river and the upper 8 miles of river channel from Fayetteville at the Grade Control Structure downstream to New Athens (RM 36 to 28). The river channel at the mouth needs to be routinely dredged at least once each year to remove sediment accumulation from the Mississippi River and maintain safe connection between the two rivers by commercial navigation tows and barges.

The upper 8 mile reach of the river receives heavy sediment flows from upstream of the project due to ongoing head cutting that started before the Corps could install a grade control structure at Fayetteville to control head cutting. Once these upstream sediments reach the upper part of the pooled navigation channel, sediments start to drop out and settle on the bottom making the channel too shallow for commercial tows and even recreational crafts at times. This is especially pronounced in the upper 2 miles of the KRP. The accumulation of sediment decreases further downstream.

Following channelization of the river in the late 1960s and early 1970s, the upper channel had to be dredged in 1985 and 2011/2012. Approximately 2 million CY of sediment were removed each time. The average annual sediment accumulation is 75,000 CY. The dredged material was piped to upland disposal sites on state-owned floodplain lands adjacent to the channel. Surveys indicate that sediment accumulation is again a problem

since the last dredging in 2011/2012. This is a very expensive process and no operational port currently exists at Fayetteville. Resolving the head cutting problem upstream is the apparent solution, but no authority currently exists for the Corps to do this work. In 2017, approximately 170,000 CY of material was dredged to open a 100 foot wide and 9 foot deep channel between New Athens and Fayetteville.

On the east (left) and west (right) descending bank areas of the river from RM 36 to 28 there are a total 14 dredge disposal sites that are bermed to a minimum 100 year flood elevation of 395 NGVD

2.7.8 Remnant Side Channels

The lower Kaskaskia River nine foot navigation channelization project shortened the river from 52 to 36 miles (16 miles) through straightening, deepening and cutting off 26 natural river meanders and straightened four other channel sections. The lock and dam creates an elevated, slack water pool to maintain the minimum authorized 9 foot navigation depth that has increased inundation in these backwaters, wetlands and lower floodplain areas. The bulk of these remnant channels (RC) are located from RM 18 to 36 and include RC1-22. The remainder are located downstream to the confluence and include RC 23 (RM 14.5R) to RC 26 (RM 0.15L), plus four straightened natural channel segments that are low lying areas inundated by pool elevation known as section A (RM 1.05L), B (RM 2.1L), C (RM 7.6R), and D (RM 13.85 R). Most of the river navigation channel follows the natural river bed in the lower half of the navigation channel. These remnant channels are also referred to in literature and by locals as cut-off meanders, cutoff lakes, side channels and oxbow lakes.

All but two (RC 7 and 14), were plugged and closed by design at the upstream end with earthen berms during construction of the lock and dam and all of the lower ends were left open and connected to the main river channel to allow water flow, fish and wildlife ingress/egress, and recreational boating access.

The remnant channels are an important ecological component of the KRP. They provide open aquatic backwater habitat used by many native wildlife and fish species, migratory birds and year round indigenous species, for resting, feeding, reproducing, and as nurseries for several species of fish and wetland wildlife. Remnant channels are all designated "no wake" zones by IDNR and are heavily used by boat fisherman and hunters for species such as bass, bluegill, crappie, channel catfish, migratory waterfowl, deer and turkey.

Sedimentation within these remnant channels, especially at their opening connections to the main channel, is a recurring concern that is reducing water depths and restricting water flow connections to the main channel, interfering with the passage of fish and wildlife and recreational boaters, reducing water quality, and accelerating succession to less desirable terrestrial habitat.

Maintaining adequate connection and interior depths to the remnant channels is crucial to USACE and IDNR stewardship missions for sustaining and enhancing native fish

populations and species diversity. These areas are also critical habitat for resting, nesting and feeding for migratory and indigenous species.

An inventory and brief description of each remnant channel is provided in Table 2-6.

Remnant Channel Number	River Mile And Bank For Downstream Opening	Length (ft.)	Surface Water Acres(early 1990's)	Maximum Depth (ft.) (early 1990's)	Upstream Berm Plug Length (ft.)	Shoreline Development (cabins, boat access, rec. area) or Issue
1	34.8 L	2100	5	5	1500	Silted in
2	34.25 L	2200	7	8	2200	Silted in
3	34.0 R	2000	3	1	400	Silted in
4	33.4 L	1500	3	1	800	Silted in
5	32.35 L	6500	18	7	2500	Silted in
6	29.5 L	3500	15	6	1000	Silted in
7	28.5 L	600	1.5	8	No plug	New Athens Marina/Camp and levee
8	27.8 L	3600	13	5	1000	
9	26.7 R	10600	52	17	500	
10	25.05 L	11500	46	13	400	
11	25.25 L	2750	12	10	600	
12	23.75 R	11400	52	14	500	
13	22.7 R	4600	19	9	100	
14	22.05 R	1100	8	14	No plug	
15	21.5 L	4500	20	14	300	Becks Boat Access
16	21.15 R	1900	7	12	600	7 cabin leases
17	20.65 L	2100	11	12	600	
18	19.0 R	11600	55	17	700	Joes Boat Access, Day Use Area and Refuge, 36 cabin leases
19	18.95 L	2500	11	3	1500	Wood Duck Boat Access/Day Use Area
20	18.25 L	4000	18	19	400	16 cabin leases
21	18.05 R	4200	15	14	500	KRPD Port #2
22	17.70 L	5100	24	19	600	
23	14.15 R	2000	11	6	900	
24	13.20 L	2600	13	5	1500	
25	4.70 L	1900	16	4	1500	

Remnant Channel Number	River Mile And Bank For Downstream Opening	Length (ft.)	Surface Water Acres(early 1990's)	Maximum Depth (ft.) (early 1990's)	Upstream Berm Plug Length (ft.)	Shoreline Development (cabins, boat access, rec. area) or Issue
26	0.15 L	5000	30	6	1500	Lock and Dam, Disposal Area, 6 cabin leases
A	1.05 L	3000	26	5	1500	
B	2.10 L	3500	32	5	1200	
C	7.60 R	2000	18	4	1000	
D	13.85 R	5000	45	3	1500	
TOTAL Acres/lengths						*Cabins are privately owned/located on private property

Table 6-6: Remnant Channel Critical Data

Efforts by USACE and IDNR to clean out sediment at the mouths of the highest priority RCs was conducted as conditions and funding would allow from 1999 to 2011. Approximately \$1.8 M in excavation and dredging work was conducted over this 12 year period. \$1.4 M of that came from American Reinvestment and Recovery Act (ARRA) funds. From 1999 to 2004, RCs 7, 9, 18, 17, 15, and 20 were worked on. From 2006 to 2009, RCs 10, 21, 16 and 18 were worked on. From 2010 to 2011, ARRA funds were appropriated to further cleanout RCs 7, 9, 10, 15, 16, 19, and 20.

Maintaining the connections of these remnant channels with the main channel is a recurring maintenance requirement. Investigations for creating engineering solutions to reducing sedimentation accumulation at these openings is worthy of investigation and being planned. Long term control of head cutting upstream of the KRP may also reduce the severity of sediment transport and accumulation from the main channel.

Per Clean Water Act requirements, containment cells were constructed for upland disposal of dredged material with water control structures to allow for water to drain back to the river.

On the west (right) bank there are six dredge containment cells and eight are on the east (left) bank providing 707 acres of bermed dredge disposal sites that can stack sediments. Calculations indicate these dredge containment sites have disposal capacity for over 40 more years at the current rate of sedimentation. Most of these sandy and silty disposal sites become quickly vegetated through natural succession and state-prescribed post dredging stabilization plantings providing habitat benefits when they are idle.

A large bermed (to 395 NGVD) 161 acres upland disposal dredge containment site is operated adjacent to the east bank of the lock and dam and used for dredging maintenance from the mouth. The area is also managed to maintain fish and wildlife habitat by the Corps and IDNR.

2.8 PROJECT HISTORY AND REGIONAL HISTORIC SIGNIFICANCE AND CULTURAL RESOURCES

Official identification of the Kaskaskia River was first made in 1768 when the river was surveyed and listed in the records of the Pennsylvania Historical Society. Prior to this, the river had been used by resident Native American people, French fur traders and explorers. As settlement increased in the region during the late 1700s and early 1800s, efforts were made by the federal government and the Illinois territory and in 1818, the state of Illinois to improve navigation on the Kaskaskia River by removing log jams and other navigation hazards. During this period, the river was used to ship wheat flour from Carlyle, Fayetteville, New Athens and Evansville to southern markets on the Mississippi River. In 1819, the newly formed State of Illinois declared the Kaskaskia River a navigable waterway. In the late 1800s, work was completed in creating a three foot navigation channel as far upstream as Carlyle.

During the late 1940s and early 1950s, planning studies were conducted by the Corps to determine the feasibility of a nine-foot navigation channel on the lower Kaskaskia River in conjunction with flood control reservoirs being planned upstream at Carlyle and Shelbyville. In 1958, construction began on the Carlyle Lake reservoir, and in 1966, one year before completion of the lake, funds were appropriated for navigation improvements on the lower river.

Congress authorized construction of the Kaskaskia River Navigation Project in October 1962. The first construction contract to develop the navigation channel was awarded in June 1966 for channel work between RM 19 and 24, near Baldwin. Contracts were awarded in February 1967 for RM 10.5 to 18.3 and in September 1967 a contract was awarded to construct the lock and dam and work commenced in December. The final excavation contract for the navigation channel from RM 29.5 to 36.2 was completed in November 1972.

Changing the river's course made it necessary to relocate and raise roads, bridges and railroads that spanned the old river. Bridges had to be built with adequate clearances to allow passage of tows plying the channel. Four railroads and four highways were affected by the construction. Highways relocated and upgraded by the federal government were Illinois Route 3 at Evansville, Illinois Route 13 at New Athens, Illinois Route 154 near Baldwin, and Roots Road near Ellis Grove. The Missouri Pacific and Missouri-Illinois Railroads were routed onto a combined bridge two miles upstream of the lock and dam. The Illinois Central Gulf railroad was relocated near Baldwin and New Athens. The state relocated numerous power, telephone and gas pipeline utilities.

Construction of the navigation project was completed and dedicated in 1974. Upon completion, a nine-foot deep, 225 foot wide navigation channel extended from the

confluence of the Mississippi River upstream 36 river miles to Fayetteville. The new channel shortened the natural river by approximately 16 miles and sliced off 26 of the river's bends leaving remnant channel segments. The lock and dam impounds the water to the 368.8 NGVD minimum pool needed to ensure adequate channel depth and it raises and lowers boats to and from the pooled river to the open Mississippi River up to 29 feet in elevation difference. Lake Shelbyville and Carlyle Lake provide upstream water storage that can be released into the channel to aid navigation during low flow periods.

With the shortening of the river channel, the river flows on a steeper gradient causing headcutting to occur on the upper portion of the channel and continuing upstream, accelerating bank erosion and sedimentation into the navigation channel. In response to this problem, the Corps constructed a rock grade control structure at RM 35.9 in 1982 to stop the headcutting. During the brief period from 1972 to 1981, sedimentation accumulated in the upper 8 miles of the navigation channel due to head cutting. The upper 8 miles of the channel was dredged from 1983 to 1985, removing almost 3.5 million CY of sediment. Unfortunately, the headcutting had already migrated to a "knickpoint" 14 miles upstream. Today, headcutting is still an active issue on the river below Carlyle dam and multi-partner efforts, authorities and appropriations are being pursued to resolve this problem once and for all.

KASKASKIA RIVER PROJECT
Jerry F Costello Lock and Dam
Annual Tonnage 1989 - 2017

YEAR	ANNUAL TONNAGE (Ktons)
1989	4393
1990	3427
1991	3655
1992	3145
1993	1165
1994	986
1995	1135
1996	1110
1997	1171
1998	925
1999	584
2000	409
2001	533
2002	485
2003	492
2004	576
2005	661
2006	671
2007	589
2008	639
2009	707
2010	711
2011	826
2012	929
2013	1081
2014	1366
2015	1213
2016	1393
2017	1400

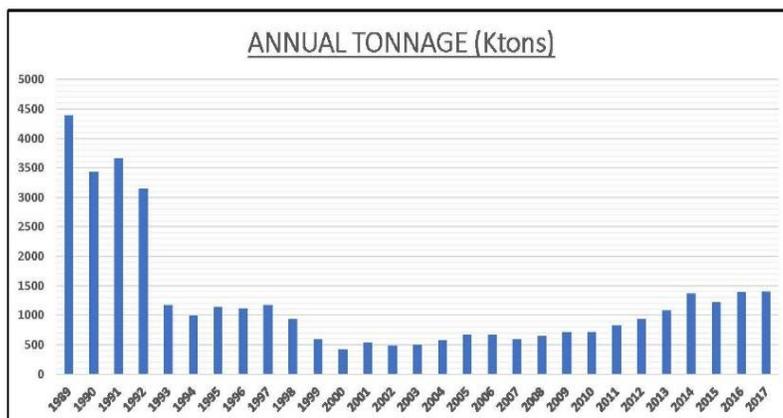


Table 6-7: Annual Commercial Tonnage 1989-2017

2.8.1 Regional Historic Significance

The KRP, Jerry F. Costello Lock and Dam, Kaskaskia River Recreation Area and the Kaskaskia-Mississippi Confluence Trail are located literally and figuratively in the heart of the Kaskaskia-Mississippi River Confluence Heritage Area, a region of state-wide and national historical significance. This was an important region in the settlement and expansion of the United States from the late 1600s to the early 1800s, and where the state of Illinois truly began.

Prehistoric, nomadic peoples and historic, native peoples lived continuously in this region of rich resources and many large rivers. The Mississippi, Ohio, Kaskaskia, Big Muddy, Meramec, Missouri and Illinois Rivers were their "highways" and established overland trails for hunting, gathering, trade and social/religious purposes since 11,000 BCE, according to archeological research. Randolph County's known history begins about 8,000 BCE with prehistoric hunters seeking refuge under a bluff rock shelter formation we now call the Modoc Rock Shelter. Its use has been documented until as late as 1200 CE.

The first European explorers and colonists in the region were the French. French Jesuit missionary Pere Jacques Marquette and French -Canadian explorer and trapper Louis Joliet and natives from the Illinois River near Starved Rock conducted an expedition to the area looking for new tribal villages and establishing new missions and trade in the region. In 1686, French explorer Robert de LaSalle's Lieutenant, Henri de Tonti, scouted the Illinois Country for possible French trading post locations. One location was the area where the Village of Kaskaskia developed. It was said that "an ll roads lead to Kaskaskia". In 1699, French missionaries established missions at tribal villages of Cahokia and, in 1703, in Kaskaskia, some 60 miles downstream. The Kaskaskia River confluence area was on a five mile wide peninsula between the Mississippi and Kaskaskia Rivers. A French settlement was established at the Kaskaskia village area on the banks of the Kaskaskia River approximately 7 miles upstream from its mouth, which was then located near present day Chester IL. The first French colonist's cohabitated, taught catholic religion and traded with the indigenous Illiniwek Confederation of tribes they encountered in the region. The Kaskaskia, Cahokia, Tamaroa, Peoria, Michigamea, Wea and as many as 12 other tribes were a part of this cooperative network.

As an alternative to water travel, the natives introduced the French to an overland trail connecting the French settlements of Kaskaskia and Cahokia, now known as the Kaskaskia-Cahokia Trail. The French embraced the trail, improved it over time, and called it Le Chemin du Roi, "The Kings Road", which further stimulated settlement throughout the region and catalyzed the development of other roads, forts and settlements. It was during the 1700s that it became Illinois' first permanently established and used road. The route and actual portions of the original road are still in use today. Lock and Dam Road is part of the original Kaskaskia-Cahokia Trail route and the Kaskaskia Tribal Village and mission that was a couple miles outside of the French developed town of Kaskaskia is now a protected archeological site along Lock and Dam Road, in the vicinity of the railroad embankment and bridge over the road.

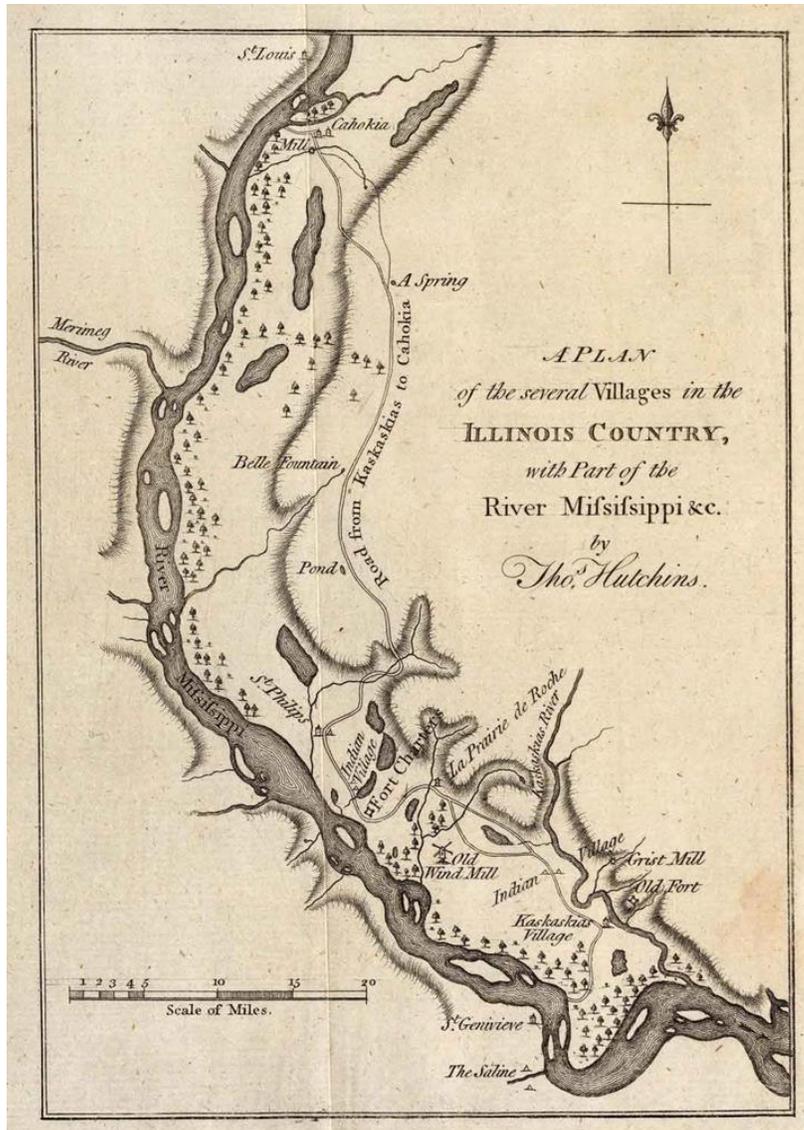


Figure 6-2: Kaskaskia-Cahokia Trail

Source: Thomas Hutchins Map, published 1778

Fur traders and farmers soon joined the mission village, living peacefully with the natives and often inter-marrying. By 1718, the Village of Kaskaskia was laid out with definite boundaries, Commons areas and Common Fields. Flour mills were in operation; grain was exported up and down the Mississippi River and the first cattle were brought to the mid-west. The Mission of the Immaculate Conception soon had a stone church and in 1720 became an established parish. The town was incorporated in 1725. King Louis XV of France sent the Kaskaskia colonists a bell for the church, in 1741, to honor their loyalty and success as a colonial settlement. This bell is still famous today.

In 1756, France and Britain went to war and the North American theater was known as the French and Indian War. The British defeated the French in 1763 and the British

officially took possession of the French holdings in the Illinois Country. Many French colonists fled to the west side of Mississippi River and became instrumental in the growth of Saint Genevieve, MO and the formal establishment of the City of St. Louis, founded in 1764. Fort Kaskaskia was built on Garrison Hill across the river from, and overlooking the Village of Kaskaskia during the French and Indian War. It was later burned by the local citizens after the war so the British could not take possession. The British did take possession of Fort de Chartres that was originally established by the French along with the nearby Village Prairie du Rocher in the 1720s.

In 1771, the British decided to abandon decaying Fort De Chartres and convert a Jesuit Mission with a wooden stockade in the town of Kaskaskia and named it Fort Gage. This became their major military post on the Mississippi River floodplain region. During the American Revolutionary War, on July 4 1778, Col. George Rogers Clark and his "Long Knives" soldiers took over Fort Gage without firing a shot and Prairie du Rocher and Cahokia in the next few days. This led to the British defeat throughout the Illinois country and the region became permanently American. Many of Clark's soldiers were paid in land grants in the region and were the first Americans to continue settlement in a region that became known as the American Bottoms.

During the late 1700s through the early 1800s western expansion of the new United States of America caused the Kaskaskia Village and region to swell with settlement and growth. From November 28 to December 5 1803, while stopping in Kaskaskia for equipment and supplies, Lewis and Clark recruited 11 men from the Kaskaskia Garrison to join the Discovery Expedition that explored the Louisiana Purchase via the Missouri River.

In 1800, Kaskaskia became part of the Indiana Territory with the capitol at Vincennes. The Illinois Territory was established in 1809 with Kaskaskia as the capitol. In the 1810 census, the population of the Kaskaskia area is listed as 7,267. That same year, the first newspaper of Illinois, The Illinois Herald, was printed at Kaskaskia. Illinois officially became the 21st state in the nation on December 3, 1818, with Kaskaskia designated as the first state Capitol. In 1820, the capitol was moved to Vandalia some 120 miles up the Kaskaskia River to be more centrally located for the population of the growing state. Kaskaskia remained an important "Gateway to the West" until the mid-1800s.

Historically, floods have had a profound effect on the town of Kaskaskia and the Kaskaskia and Mississippi River confluence area. One of the largest floods on the Middle Mississippi River region occurred in 1844 when water reached a level of 44.3 feet at St. Louis, covering Kaskaskia and the confluence region floodplains with over five feet of water. This prompted many to move away. In 1881, another extensive Mississippi flood occurred gouging a new river channel leading into and over taking the Kaskaskia River bed making it deeper and wider and washing out the lower 7 to 8 miles of Kaskaskia River. This put the Mississippi between Kaskaskia and the rest of Randolph County, making it an island with access only feasible from the Missouri side. Over the next several years, most of French Kaskaskia washed away as the Mississippi River channel grew and ate away the shorelines. The village began relocating about three miles south to the center of the new island and by 1893 was well established. Most of the old village was

gone by 1930. The cemetery was relocated to Fort Kaskaskia Historic site on Garrison Hill. In 1918, a levee approximately 15 miles long was built around the island encircling it.

The record flood of 1993 reached 49.6 feet on the St. Louis gage (49.7 on the Chester gage) devastating the region and breaching the newly rebuilt and elevated levee around Kaskaskia Island. All levees in the region, with rare exception, failed or were overtopped during this flood event. The lock and dam and all communities along the Kaskaskia River were extensively damaged.

From the Confluence amphitheater area on the Confluence Heritage Trail you can see where Old Kaskaskia used to be looking to your left at the bend on the other side of the river. You can also see Fort Kaskaskia Historic Site on Garrison Hill overlooking the old village site, which is now mostly river channel and low shoreline.

Today, the Kaskaskia and Mississippi Rivers Confluence Heritage Area includes the many historic areas and structures from Fort de Chartres and Prairie du Rocher to Modoc and the lock and dam area, to Ellis Gove and Chester areas and across the river at Saint Genevieve, Kaskaskia Island and surrounding areas. This region is classified by the states of IL and MO and the National Park Service as an official French Colonial Heritage District that also extends up to the Dupo, Cahokia region in Illinois and to St. Louis, MO.

Key public historic sites and other authentic river heritage sites open to the public in the confluence heritage area include:

1. Jerry F. Costello Lock and Dam, Kaskaskia River Recreation Area and Confluence Heritage Trail which is a federally designated National Recreation Trail.
2. Kaskaskia - Cahokia Trail, a designated State Historic and Scenic Trail by the Illinois General Assembly in December 2014.
3. Confluence Heritage Area Auto Tour Loop
4. Modoc Ferry to Saint Genevieve, MO
5. Modoc Rock Shelter National Historic Site (IHPA) (Now called IDNR-Historic Preservation Division)
6. Several sites at Prairie du Rocher
7. Fort de Chartres State Historic Site (IHPA)
8. Fort Kaskaskia State Historic Site (IHPA)
9. Pierre Menard Home State Historic Site (IHPA)
10. Several sites at Chester

11. Several sites on Kaskaskia Island including the Kaskaskia Bell Historic Shrine (IHPA)

12. Several sites at Saint Genevieve, MO

2.8.2 Cultural Resources

Archeologists have determined that people have utilized the lower Kaskaskia River basin for about 11,000 years. Most pre-historic and historic archeology sites discovered and surveyed are located on or at the base of bluffs and hills overlooking the valley, on terraces in the floodplain, or on natural levees and ridges along the Kaskaskia River and its tributary streams. Fewer sites have been found in the lower floodplain bottoms that characterize most of the KRP. Of special note is the Roots area just upstream of the lock and dam. This area contains many significant historic and prehistoric sites and should be given priority for further study and protection in compliance with all applicable laws, prior to any new development.

Much of the information on the archaeological resources of the area was obtained from reports from the University Museum of Southern Illinois University Carbondale (SIUC). An Archaeological Survey of the Lower Kaskaskia Canalization Project (Conrad, 1966; Iseminger and McNerny, 1970) provide the basis for a majority of the archaeological studies performed in the area. Another SIUC archeology site report prepared in 1977 for the Peabody Coal Company for the Kingfish mine site provides additional relevant regional data. The reports inventoried and listed 223 archeology sites from the mouth of the Kaskaskia River upstream to Fayetteville. The majority of the sites were not within state owned land and no sites were found on federally owned land. However this does not lessen the value of this data in providing an accurate archeological background and history of the area as it provides good baseline data and guidance for priority sites to protect and to guide future archeological investigations.

Most historic resources of the KRP are well documented in literature and under the care and concern of numerous organizations and agencies such as the IDNR Historic Preservation Division and local historical groups. Many sites are restored and set up to accommodate the visiting public such as Fort de Chartres, Fort Kaskaskia, Pierre Menard Home, the Modoc Rock Shelter, and the Kaskaskia Bell Shrine. Sites like these are key components of significant historical areas such as the French Colonial Heritage District, Prairie du Rocher, Kaskaskia Village and Island, Saint Genevieve and surrounding area, the Kaskaskia-Cahokia Trail and the Kaskaskia and Mississippi Rivers Confluence Heritage Area. These historic heritage sites and areas are of extreme importance to the citizens of the region and generate tourism, economic development and quality of life opportunities for the region.

2.9 DEMOGRAPHICS OF THE KASKASKIA RIVER PROJECT AREA

The KRP is located in portions of Randolph, Monroe and St. Clair counties IN Illinois. The county area encompasses 1,669 square miles in southwestern Illinois. Monroe and Randolph Counties are fairly rural each with less than 35,000 residents. However, Monroe

County with its close proximity to St. Louis and high quality of life is growing fast and is the fastest growing county, on a per capita basis, of all Illinois-St. Louis metropolitan area counties. It has the 4th fastest growth rate behind St. Charles, Lincoln and Warren Counties in MO for the entire St. Louis Metropolitan area. Nearby St. Clair County is a largely urban with over 260,000 residents. Combined, the 3 county area population was approximately 330,000 people in 2016. Population within the 50 mile Zone of Influence of the KRP in 2015 was approximately 2.1 million, 746,000 in IL and 1.36 Million in MO.

	Randolph County	Monroe County	St. Clair County	State of Illinois	United States
2016 population	32,621	33,879	262,759	12,801,539	323,127,513
2000 population	33,893	27,619	256,619	12,419,293	281,421,906
% pop. change 2000 – 2016	-3.8%	+18.5%	+2.5%	-3%	+13%
Median age	40	41	37.7	36	38
% female	44.7%	50.4%	51.8%	50.9%	50.8%
% white	87.5%	97.9%	65.6%	77.3%	77.1%
% African American	10.6%	0.4%	30.3%	14.7%	13.3%
% Hispanic	2.9%	1.6%	3.9%	16.9%	17.6%
% Asian	0.4%	0.6%	1.4%	5.5%	5.6%
Owner -occupied Housing rate -%	77.4%	82.1%	66.3%	66.4%	63.9%
Median value- Owner occupied housing	\$96,700.	\$191,200.	\$120,400.	\$173,800.	\$178,600.
High School graduation Rate- %	84.7%	94%	90.3%	87.9%	86.7%
BS or higher college graduation rate - %	12%	27.5%	26%	32.3%	29.8%
Median household income	\$48,158.	\$70,859.	\$49,895.	\$57,574.	\$53,889.
Per capita income	\$22,895.	\$32,889.	\$26,738.	\$30,494.	\$28,930.
% Persons in Poverty	14.3%	5.0%	16.4%	13.6%	13.5%
Population/square mile	58.2	85.6	410.6	231.1	87.4
Land area in square miles	575.5	385.0	657.76	55,518.93	3,531,905.43

Table 6-8: Key Demographic Data for KRP Counties

Source: US Census Bureau, 2016 Quick Facts

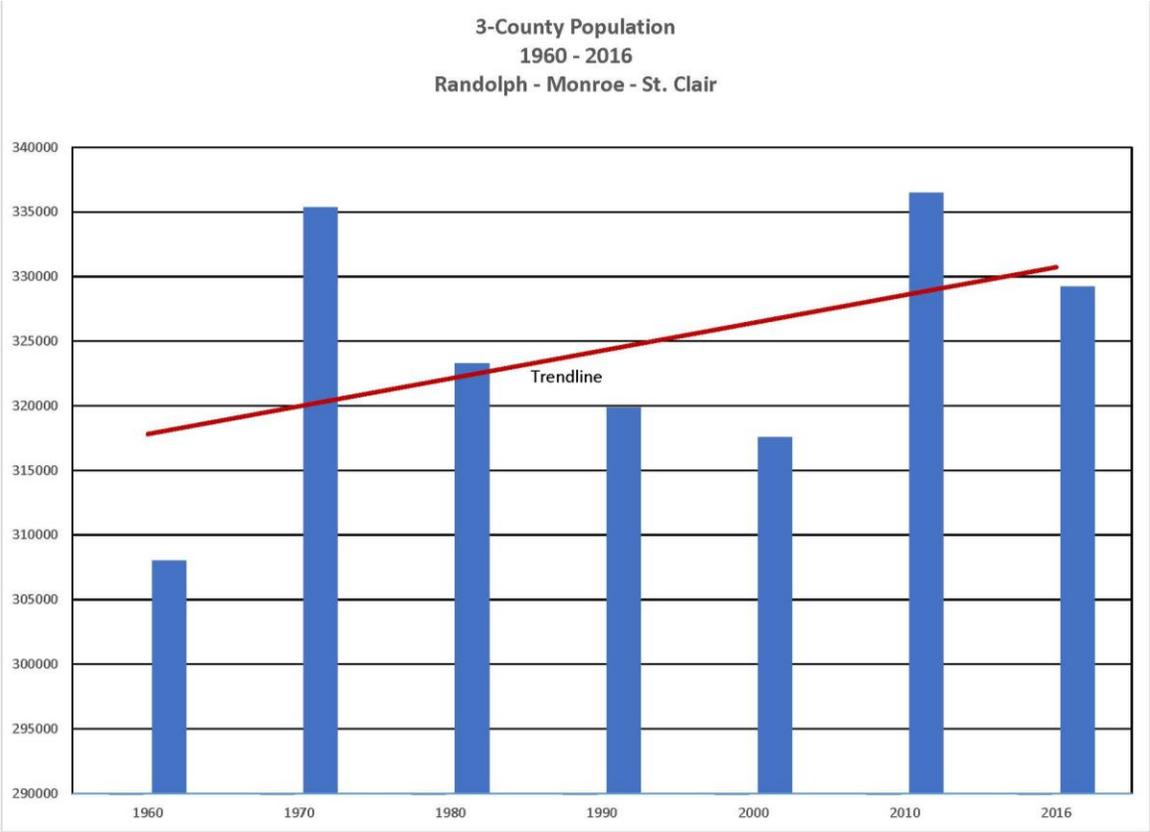


Figure 6-3: Three-County Population between 1960 and 2016

Source: US Census Bureau

Demographic	Three-County Average	State Average	National Average
Percent of Population Living in Poverty	12.7%	14.4%	14.5%
Median Household Income	\$56,407	\$57,166	\$51,939
Percentage White	83.7%	71.5%	72.4%
Percentage Black or African American	13.5%	14.5%	12.6%
Percentage Hispanic or Latino	2.4%	15.8%	16.3%
Percentage Foreign Born	1.7%	13.9%	13.1%
Owner-Occupied Housing Unit Rate	75.2%	66.9%	64.4%
Median Gross Monthly Rent	\$756	\$903	\$920
Percent with Bachelor's Degree or Higher	21.4%	31.9%	29.3%
Percent of People, Under Age 65, With A Disability	8.5%	7%	8.5%
Percent of People, 16 Years and Older, in the Civilian Working Pool	61.6%	65.9%	63.5%

Table 6-9: Demographic Facts for the Three-County Region Compared to State and National Data

Source: US Census Bureau

The demographic data reveal that population growth is significantly slower than the rest of the nation. Also, the percentage of people that are Hispanic or Latino are significantly under-represented compared to the rest of the state and nation. This is also true for the percentage of the population that is foreign born.

2.10 Economics ⁴

Natural and recreation resources at the Kaskaskia River Project provide social, economic and environmental benefits for all Americans. Recreation promotes economic as well as personal and social well-being by providing jobs and income stability for local communities, outdoor leisure opportunities and overall quality of life for residents, visitors and regional tourists.

Recreation on the Kaskaskia River is an economic engine for several business sectors in the local communities and the region. Campgrounds, marinas and grocery stores provide goods and services to recreational visitors. Nearby establishments provide visitors with gas, food and lodging. Visitor use also contributes to sales of recreation equipment, such as boats, campers, tents and fishing gear.

In an average year, based on approximately 400,000 visits, Kaskaskia River Project visitors spend approximately \$18,847,000 within 30 miles of the project for things like gas, food and lodging. An additional \$8,104,000 in sales is generated for durable goods, such as boats and camping equipment. This spending supports approximately 142 jobs resulting in labor income of about \$3,171,000 within 30 miles of the project.

With multiplier effects, Kaskaskia River Project visitor spending results in:

1. \$12,115,000 in total sales
2. 176 jobs
3. \$4,336,000 in labor income
4. \$7,637,000 in value added (wages & salaries, payroll benefits, profits, rents and indirect business taxes)

⁴ Source: USACE Value to the Nation – Fast Facts

CHAPTER 3 – RECREATION DESCRIPTION

3.1 Pre-Project Recreation Description

Prior to construction of the KRP, the lower 52 miles of the Kaskaskia River was a slow, low gradient, heavily meandering stream through dense forest and floodplain agricultural areas. The river was narrow, approximately 150 to 200 feet wide, muddy and turbid. The general morphology of this reach of river was typical for prairie streams near their confluences with larger rivers. Recreation on the river was restricted to fishing and hunting with some riverside cabins. Limited access and heavy vegetation, river snags, insects and low water conditions during dry periods often limited recreation (hunting/fishing/paddling) on the river to only the most seasoned and hardy sportsmen.

3.2 Project Recreation Description

Construction of the KRP transformed the river into a straighter, wider, deeper, 36 mile long elevated, slack water pool maintained at a minimum depth for commercial navigation by the lock and dam. It also improved connectivity to the Middle Mississippi River providing reliable river access and navigation for commercial and recreational use under a wide range of river conditions at the confluence and on the lower 36 miles of channelized Kaskaskia River.

All KRP constructed features are ideal for water based recreational activities such as motor boating, water skiing, swimming, paddling, fishing, hunting, sightseeing, nature watching and photography. Many shoreline land areas are now cleared, developed, and accessible for public recreational use. The 16,000 acres of IDNR lands and waters acquired for the project are managed as the Kaskaskia River SFWA. Two other SFWA areas (2020 ac. Baldwin Lake SFWA, and 2,000 ac. Peabody-River King SFWA) abutting the KRP boundary add another 4,000 plus acres of public lands and waters on the river corridor amounting to more than 20,000 acres of continuous public lands and waters. The 2,900 acres of USACE lands and waters acquired and managed for the project also offer improved habitat, access, day use recreation facilities such as trails, picnic areas, boat ramps with support facilities, as well as a camping area for public use. The nearby riverfront communities such as Evansville, Baldwin, New Athens and Fayetteville have also developed river access recreation facilities and services and promote and attract visitors to their communities and the river, reaping economic benefits.

Over 20 remnant side channels created when the project was constructed, provide excellent quiet, back waters accessible by boat and shoreline in some areas. Numerous tributary creeks flowing into the project (Silver, Mud, Richland, Doza, Horse, Plum, Camp, Nine Mile Creeks) also provide off channel water for paddling, fishing, hunting, nature observation, etc. Habitat enhancement by the IDNR and USACE provide improved fish and wildlife populations and diversity, further improving public recreation opportunities.

Since the KRP's completion in 1974, recreational use of the project has grown dramatically and become another significant benefit beyond the benefits of commercial navigation shipping. Due to recreation's importance, Congress officially authorized

USACE in 2000 to recognize and manage their areas to provide recreation facilities and services for the approximate 400-500 thousand annual recreation visitors and their needs and safety. Likewise, the IDNR and regional communities embrace, manage and promote recreation on the KRP. Recreation is, on average, an annual \$18 million dollar industry for the KRP region. The location is in close proximity to the St. Louis metropolitan area and the 50 mile zone of influence includes approximately 2.1 million people and attracts many recreationists, primarily for day use recreation activities.

Visitor surveys reveal that recreation activity rates (percent use) on average at the KRP are: Boating (all types) 95%; Fishing 62%; Swimming 8%; Water skiing 6%; Sightseeing 6%; Picnicking 3%; Camping 3%; Hunting 3%.

Recreation Area	River Mile(RM),Bank (L or R), Remnant Channel (RC)	Major Features	Managing Agency (s)	Facilities	Special Notes
Kaskaskia River Confluence Recreation Area	RM 0 to 1.0 R	Day Use area upstream Of L&D. Day Use area and Campground -downstream of L&D. Public Visitor Center and waterborne restroom at Jerry Costello Lock and Dam facility.	USACE	Upstream 2 lane boat ramp (concrete) with Courtesy dock. Accessible fishing pier. Asphalt parking lot - 33 boat trailer spaces 30 car spaces. Group shelter/Grill. Picnic area (4 sites). Multipurpose court/special event site. Two Vault Restroom. Water hydrant. Downstream 1 lane boat ramp (concrete). Asphalt parking lot- 10 boat trailer spaces 5 car spaces. Confluence Trail (1/2 mi. one way) with Interp. Kiosk Trailhead. Stone amphitheater. Stone fire ring. 5 Picnic sites. 15 campsites with asphalt pads, electric, tables, grills/fire rings. Two Vault Restroom. Water hydrant. Info/safety signs.	

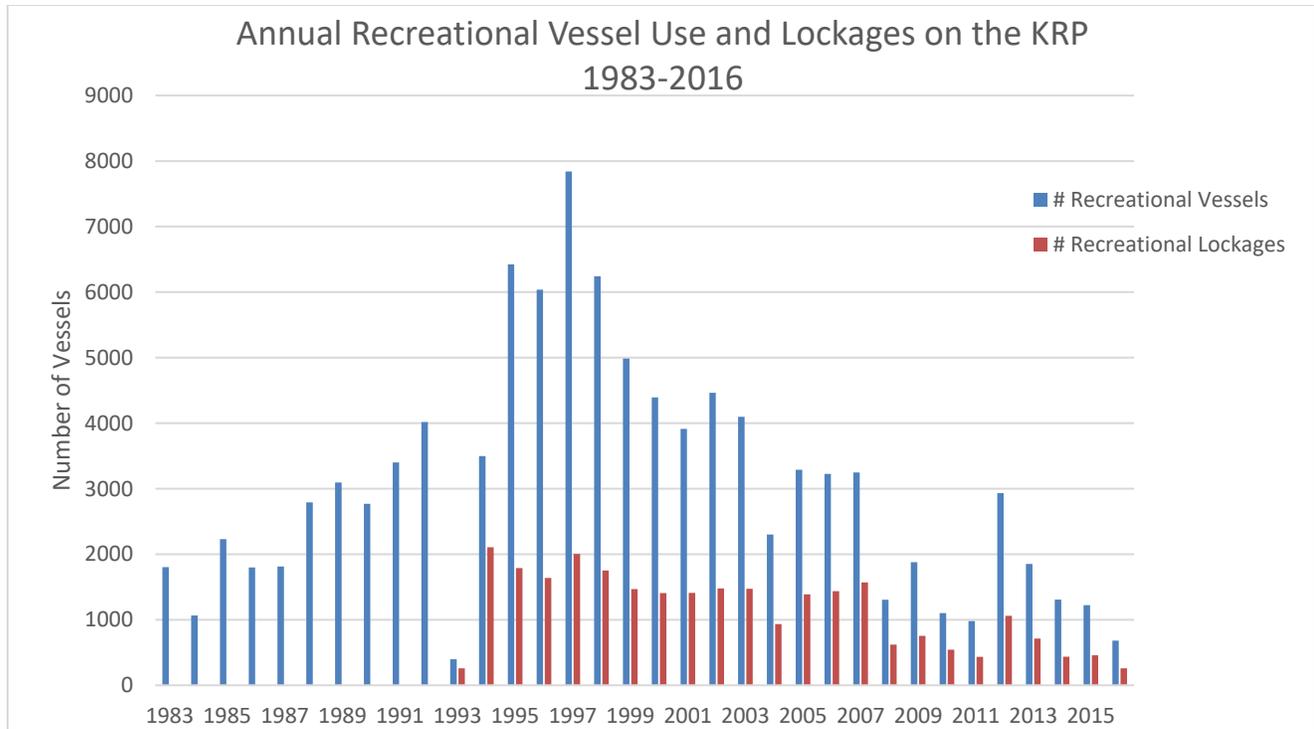
Recreation Area	River Mile(RM),Bank (L or R), Remnant Channel (RC)	Major Features	Managing Agency (s)	Facilities	Special Notes
				Type C KRP Visitor Center and waterborne men/woman restrooms.	
Phegley's River Access	RM 6 R	1 lane rock boat ramp	IDNR USACE	Boat ramp and 2 boat trailer parking spaces	
Camp Creek River Access	RM 9 R	1 lane concrete boat ramp	IDNR USACE	One lane concrete boat ramp. 10 boat trailer rock parking lot. Info/safety signs	
Evansville Riverfront Recreation Area	RM 11 -12 L	Marina 2 lane Boat ramp Visitor center	Village of Evansville KRPD IDNR USACE Concession	Marina concession- 10 slip courtesy docks with Floating restaurant/restrooms. Special event area. 30 car parking lot. 3 lane concrete boat ramp. Asphalt parking lot- 72 boat trailer spaces, Two porta-toilets, Info/safety signs. Village Visitor Center.	
The Island Public Access Area	RM 14.5	Picnicking, Primitive camping	IDNR	No facilities.	
White Swan River Access	RM 17.5 R	1 lane concrete boat ramp	IDNR USACE	One lane concrete boat ramp with courtesy dock. Rock parking lot with 15 boat trailer parking spaces. Info/safety signs.	
Wood Duck Recreation Area	RM 19 L RC 19	2 lane concrete boat ramp. Group picnic shelter/area.	IDNR	Two lane concrete boat ramp with courtesy docks, Asphalt parking lot- 30 boat trailer spaces 6 car spaces. Two vault restrooms.	Kaskaskia River SFWA encompasses

Recreation Area	River Mile(RM),Bank (L or R), Remnant Channel (RC)	Major Features	Managing Agency (s)	Facilities	Special Notes
				Water hydrant. Info/safety signs, picnic sites.	16,000 acres of lands/waters from RM 1 to RM 36
Kaskaskia River Day Use Area	RM 19 R RC 18	1 lane boat ramp Picnic area	IDNR USACE	One lane concrete boat ramp, 12 boat trailer parking spaces. Floating two vault restroom.	
Becks Landing River Access	RM 21-22 L RC 15	Rock small boat launch	IDNR	12 boat trailer parking spaces.	
New Athens Recreation Area	RM 28.5 L	Marina , restaurant/bar/ Convenience store and campground concession. 3 lane boat ramp.(Marina, Restaurant store closed – 2017)	Village of New Athens Concession IDNR USACE	Boat slip rental docks-cov. /uncov. Restaurant/bar/convenience store sales-snacks, beverages/boating/fishing equip. /bait etc. Campground with 50 sites full hookups, 20 sites electric, and 40 primitive sites. 3 lane concrete boat ramp with courtesy docks. Waterborne men/women restroom. Asphalt parking lot with 200 boat trailer spaces and 30 car spaces.	
Fayetteville River Access	RM 36 R	1 lane concrete boat ramp	IDNR USACE	1 lane concrete boat ramp, Rock parking lot with 15 boat trailer spaces and 15 car spaces. Info/safety signs.	
IDNR/Dynegy Baldwin Lake Recreation	RM 20-22 L	Day use area and power plant lake for	IDNR	2 lane boat ramp 50 car-trailer parking Picnic area/shelter	2020 acre SFWA

Recreation Area	River Mile(RM),Bank (L or R), Remnant Channel (RC)	Major Features	Managing Agency (s)	Facilities	Special Notes
Area and Refuge		fishing and waterfowl refuge		Vault restrooms Info/safety signs 8 miles Trail	abutting KRSFWA
IDNR Peabody-River King SFWA	RM 30-33 L	Boat access to strip mine lakes Public hunting access/areas	IDNR	2 boat launch ramps/areas Vault restrooms 30 car-trailer parking	2000 acre SFWA with approx. 500 acres of reclaimed strip mine lakes for fishing Abuts river and KRSFWA

Table 6-10: Recreation areas, facilities and services developed and managed for public use on the KRP

Annual recreational lockages for KRP boaters navigating to and from the Mississippi River is significant. Recreational lockages on the KRP often exceed the number of recreational lockages on Mississippi River Pools 24, 25, Melvin Price (26R) and 27.



3.3 Recreation Activities

Water-based, outdoor recreation opportunities provided at the Kaskaskia River Project are designed to support a wide range of recreational activities and interests. Major activities include: fishing, boating and water sports, camping, picnicking, hunting, hiking and walking, fitness activities, biking, wildlife viewing, nature photography, and sightseeing.

3.3.1 Fishing

The IDNR Division of Fisheries and the Corps manages waters on the Kaskaskia River to assure the conservation and enhancement of the fishery resource and the equity of the fishing public, while providing the maximum enjoyment. The Kaskaskia River offers good fishing opportunities for crappie, white bass, largemouth bass, bluegill, channel and flathead catfish, freshwater drum and carp.

Fishing is the most popular activity on the Kaskaskia River, with its 36 miles of channelized river, plus additional remnant side channels, creeks, and floodplain lakes. Channel catfish and flathead catfish, largemouth bass, crappie, bluegill, carp and freshwater drum are the most sought after sport fish.

Baldwin Lake, a 2,018 acre reservoir built by Illinois Power Company (now Dynegy), is managed as part of the Kaskaskia River Fish and Wildlife Area. The lake serves as a source of cooling water in the operation of a nearby electric generating station. Baldwin Lake is open to the public for fishing and is a major part of the waterfowl refuge area.

3.3.2 Hunting

Part of the wildlife management program at Kaskaskia River Project includes development of food plots that include planting sunflowers, corn, beans, winter wheat, clover, milo, and millet. These food plots are essential in providing quality wildlife habitat. Other land management techniques such as conducting prescribed burns, restoring native prairies, wetland restoration, and reforestation efforts also provide benefits to a wide variety of wildlife populations.

The Kaskaskia River Project is a popular waterfowl hunting area in the state, because it serves as a mid-migration resting area for waterfowl and other migrating birds. The Corps of Engineers manages one wetland restoration project along the river (Heritage Marsh) where activities consist of planting crops and promoting growth of natural wetland vegetation (moist soil management) through manipulation of water levels. The project also provides quality hunting opportunities for white-tail deer, turkey, rabbits, squirrels, doves and bobwhite quail.

The State of Illinois owns approximately 17,000 acres adjacent to the Kaskaskia River Project land and water navigation pool. This area is known as the Kaskaskia State Fish and Wildlife Management Area (KRFWA), these lands are managed for fish and wildlife management purposes, recreation and economic development. These lands also contain the dredge disposal sites used by the Corps for dredging.

Public lands along the river include an extensive mixed bottomland forest comprised of pecan, soft maple, burr oak, pin oak, shellbark hickory, and willow. Many cultivated and fallow fields, native grass patches, brushy areas, and other “open” areas are interspersed with the stands of mature bottomland timber. Due to this great diversity of habitats, healthy wildlife populations exist in the area. Hunting and nature study are popular uses of the KRFWA.

Approximately 14,000 acres are available for hunting of forest game, small upland game and waterfowl. Hunter check stations are maintained in the area and access is primarily from the boat ramps and parking lots.

3.3.3 Trapping

Trapping is permitted on public lands except where posted. Trapping helps manage the density of furbearer wildlife populations and helps prevent disease.

3.3.4 Camping

Campgrounds at the Kaskaskia River Project provide a variety of camping opportunities and types of facilities. There is one campground managed by the USACE.

The Confluence Campground is located at the Lower Kaskaskia Recreation Area. The 15 campsites include amenities such as fire rings/grills, impact area, 50-amp electrical service, drinking water, picnic table and vault comfort stations.

As camping equipment and recreation vehicles continue to change, upgrades and modifications to campgrounds and campsites will be required. Recreational vehicles continue to increase in size. Campsites will need to be modified and redesigned in order to keep pace with market trends.

3.3.5 Boating

The Kaskaskia River is capable of accommodating all types of water recreation activities including fishing, kayaking, canoeing, water skiing, wake boarding and tubing. The river is well suited for smaller vessels and associated activities.

3.3.6 Trail Activities

The use of recreational trails has become one of the most popular outdoor recreation activities in the region. The wide variety of recreation activities that trails support, contribute to their popularity. The majority of trails at the project are classified as multi-use trails and can be used for walking, running, jogging, hiking, and bicycling. The Kaskaskia Regional Port District has completed a trail plan (Appendix E) for the project.

3.3.7 Picnicking

The recreation areas located upstream and downstream of the lock and dam have picnic sites consisting of a picnic table and pedestal grill. Also available is a covered picnic shelter and multipurpose court located at the Upper Kaskaskia Recreation Area, which also is well suited for hosting special events.

3.3.8 Sightseeing

Sightseeing on the Kaskaskia River continues to be a popular activity. Activities such as wildlife watching, birding and nature photography are rapidly increasing. Auto touring on the Kaskaskia-Cahokia Trail and the Confluence Heritage Area Auto tour loop is popular and portions focus on public natural lands, historic sites, small historic communities, the scenic American Bottoms and adjacent bluff lands. The area offers some of the region's most distinctive and diverse natural environments, with unique wildlife and landscapes. Visitors have the opportunity to view migratory waterfowl, shorebirds, bald eagles and other types of wildlife.

3.4 Recreation Needs

In 1968, Congress passed the Architectural Barriers Act (ABA) which requires any building or facility that is constructed, altered, or leased with federal funds to be accessible to and usable by people with disabilities. In 1990, Congress passed and the President enacted the Americans with Disabilities Act (ADA) that further strengthened universal accessibility requirements for all structures, facilities, and areas open for public use, whether owned by the private sector or units of government. As a federal entity, the USACE is responsible for ensuring all recreation facilities and opportunities are accessible to everyone.

One of the primary proposed actions in this master plan is to ensure all facilities meet the requirements and standards of the ABA and ADA. Accomplishing this will improve public health, safety, and customer service.

3.4.1 The 2015 Illinois Statewide Comprehensive Outdoor Recreation Plan⁵

According to the most recent Illinois Statewide Comprehensive Outdoor Recreation Plan (SCORP), trails are among the most popular and requested outdoor recreation facility in the state. Trails are integral connectivity routes, linking communities and park visitors to neighborhoods, schools, recreation areas and shopping opportunities. As a result, many communities are doing more than simply adding sidewalks. Multi-use trails have been built to provide a variety of recreation opportunities. Nearly 3,000 miles of trails have been built by communities throughout the state in recent years. In May 2015, the KRPD led the effort to develop a Kaskaskia River Trail Plan and it is included as **Appendix E**.

The 2013-2014 Illinois Outdoor Recreation Survey⁶ revealed the following information:

- a. 85.4% of respondents indicated that outdoor recreation was of some importance in their everyday lives.
- b. 80.7% of respondents reported pleasure walking as the most popular outdoor activity in the state.
- c. Pleasure walking and observing wildlife/bird watching were the two activities with the highest participation rate.
- d. Half of the respondents engage in pleasure walking over 30 times per year.
- e. Half of the respondents engage in nature observation and bird watching over 10 times per year.

Other information identified in the 2013-2014 Illinois Outdoor Recreation Survey, indicate that over 80% of respondents felt that spending time with family and friends, exposing children to nature, and escaping their daily routines were important contributing factors affecting their decision to engage in outdoor recreation activities. Respondents were asked to provide their opinions about outdoor recreation resource issues in general and were asked to indicate agreement or disagreement regarding a variety of issues. Over 90% of respondents consider outdoor recreation areas to be important for general health and fitness (96.1%). Further, respondents indicated that recreation areas should serve the needs of all people, regardless of their physical ability, ethnic background, or economic means (93.4%); and that community recreation areas make a valuable contribution to the quality of life and economic vitality of communities.

⁵ 2015 Illinois Statewide Comprehensive Outdoor Recreation Plan

⁶ 2013 Illinois Outdoor Recreation Survey

3.4.2 Zone of Influence

The zone of influence is the geographic area surrounding the project where most public awareness and use originates and actions within the boundary of KRP may have regional impact. The recreation zone of influence for the Kaskaskia River Project has been determined to be a 50-mile radius from the boundary line of the project (See Figure 3-1). This area is where the majority of overnight and day-use visitors originate from, when visiting the project. This is the most common distance used by the USACE in recreation-related studies and master plan documents for projects with a regional impact.

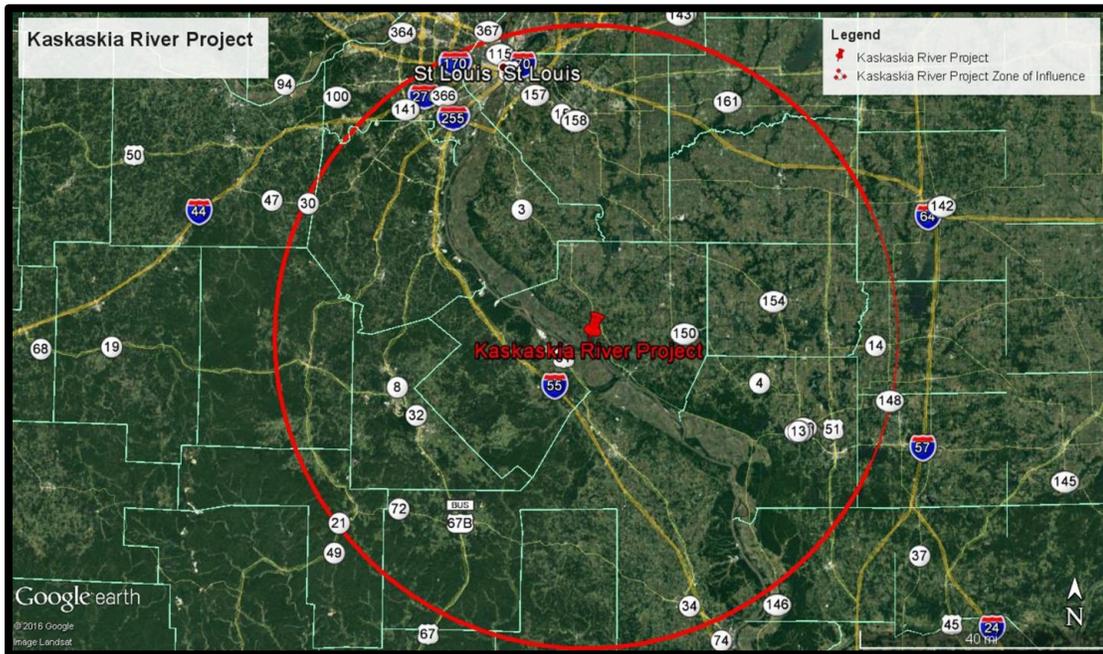


Figure 6-4: Kaskaskia River Project - Zone of Influence

For the Kaskaskia River Project this area comprises parts of Illinois and Missouri, including the metropolitan St. Louis area. Counties within the zone of influence include all or portions of the following counties in Illinois and Missouri listed in **Table 3-3**.

<u>Illinois Counties</u>	<u>Missouri Counties</u>
Clinton	Jefferson (urban)
Union	Madison
St. Clair (urban)	Perry
Monroe	St. Francois
Randolph	St. Genevieve
Jackson	St. Louis (urban)
Madison (urban)	Washington
Washington	

Table 6-11: Counties within the Zone of Influence at Kaskaskia River Project

3.4.3 Visitation Profile

The KRP averages 380,970 visits annually. A “visit” is defined as one person participating in recreation activities within a developed recreation area for any period of time. For instance, one person picnicking for 30 minutes is one visit; likewise one person camping for 2, 5 or any number of consecutive days is also one visit.

Figure 3-2 depicts the annual visits to the KRP between 2002 and 2016. High water levels during the recreation season on the Mississippi River in the project region has impacted visitation.

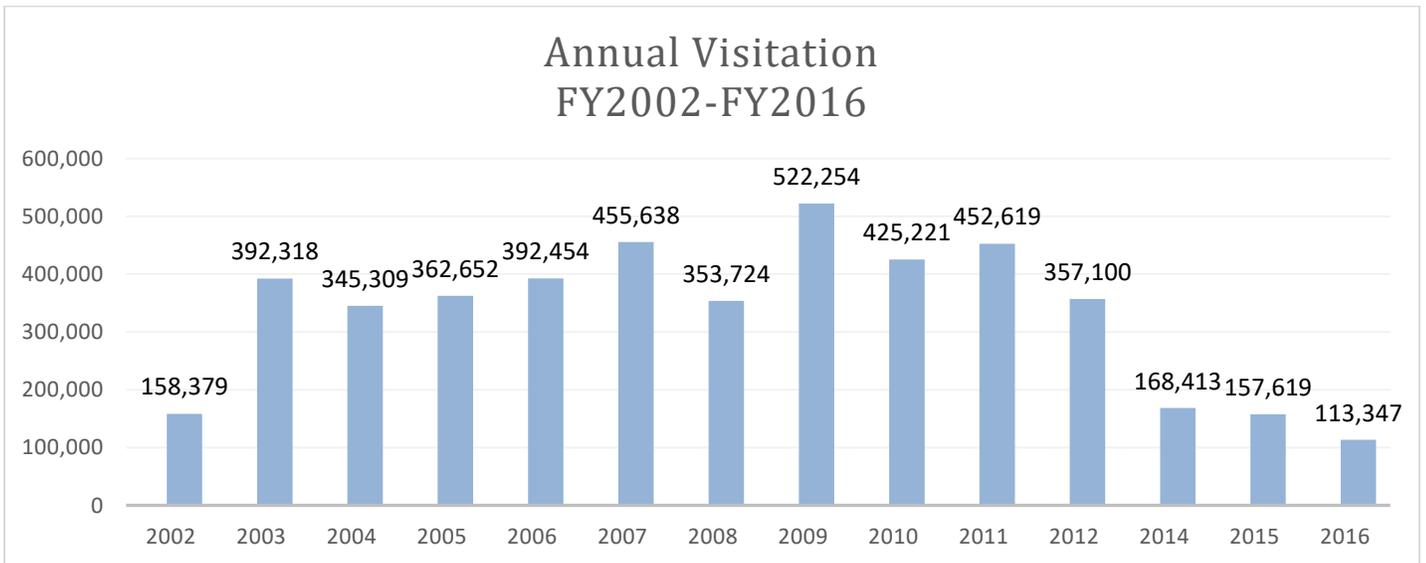


Figure 6-5: Kaskaskia River Project Annual Visitation

Source: OMBIL (FY2002-FY2012), VERS (FY2014-FY2016).

Please note: Visitation data for 2013 is currently not available. A change in the methods used to calculate project visits occurred in 2014. It is important to note that the actual number of visits to the Kaskaskia River Project has not changed, but improvements in the Visitation Estimation Reporting System (VERS) has resulted in a more accurate calculation of visitation.

3.4.4 Recreation Analysis

There are a variety of outdoor recreation opportunities, activities, areas, and facilities located at Kaskaskia River Project and within the region. These activities include motor-boating, paddling, fishing camping, hiking, hunting, picnicking, wildlife/bird viewing, and sightseeing.

3.4.4.1 Land-Based Recreation Areas in the Region

In order to have a better understanding of the current recreation conditions at Kaskaskia River Project, a desktop inventory of recreation areas and facilities located within a 50-mile radius of Kaskaskia River Project was conducted. This area was established based on studies conducted by USACE, which establish the camping market area for USACE lake projects to be approximately 50 miles and the day-use market area to be approximately 30 miles. These mileage limits are used as a standard in the majority of USACE studies and reports. Also, a survey conducted by the Outdoor Foundation, “*A Special Report on Camping – 2011*,” found that not more than 64% of people who participate in outdoor recreation activities will travel further than 100 miles from their home to participate in those activities. Since land-based recreation activities are comprised of overnight and day-use visitors, a 50-mile radius from Kaskaskia River Project was considered adequate, and is used to define the region for this analysis.

Regional recreation facilities were divided into two main categories. These categories include recreation facilities managed by USACE, and those managed by others. For facilities managed by entities other than USACE, some information about the types of recreation facilities and visitation was not available. For example, the number of picnic sites at state, county, or city recreation areas was not available. Therefore, comparisons about recreational facilities and activities were sometimes difficult to establish on a regional basis.

3.4.4.2 Regional Recreation Areas and Facilities Managed by USACE

There are two other USACE facilities within 50 miles of the Kaskaskia River Project. They are Carlyle Lake and Rend Lake.

Each of these projects has a variety of land and water based recreation areas and facilities. **Table 3-4** depicts the number and type of land-based recreation features, visitation and acreage data for these projects, including the Kaskaskia River Project. **Figure 3-3** depicts the location of these projects and their respective zones of influence of which there is some overlap.

Although the land-based recreation facilities located at KRP are a small percentage of the total available within the region, they are no less important to the thousands of recreation customers who use them each year.

Project Name	Recreation Areas	Picnic Sites	Camp Sites	Trail Miles	Annual Visits	Land Acres	Water Surface Acres	Shoreline Miles	Total Acres
Carlyle Lake	41	424	726	25	2,521,926	12,833	24,710	88	37,543
Kaskaskia River Project	14	42	97	14.5	357,100	5085	1309	80	6394
Rend Lake	53	104	756	34	3,672,181	21,329	18,900	162	40,229
Total	96	536	1,497	63	6,551,207	37,060	43,610	250	80,670

Table 6-12: Regional USACE-Managed Projects with Land-based Recreation Facilities

Source: USACE 2013. “Value to the Nation” report data from 2012

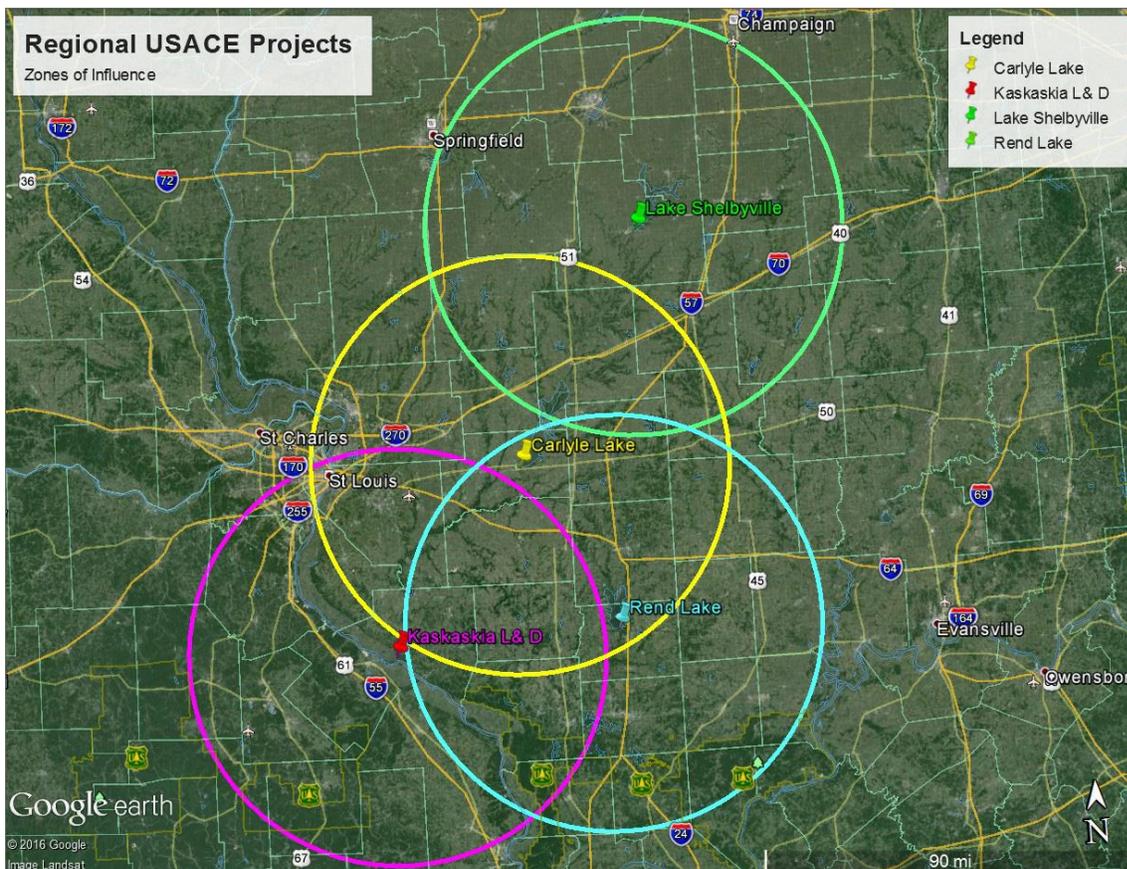


Figure 6-6: Location of USACE Projects in the Region

3.4.4.3 Regional Recreation Areas and Facilities Managed by Others

There are twenty-three State, County and City Parks within the region. Campsites and trails are the primary land-based recreation facilities provided at these parks. **Table 3-5** identifies a few of these parks, their managing entity, number of acres and the number of

campsites and/or miles of trails located at each. These areas and facilities were selected because they are the most comparable areas and facilities, of those managed by others within the region.

PARK	MANAGEMENT	CAMPSITES	TRAILS (miles)	ACRES
Pyramid State Park	IDNR	59	16.5	19,701
Lake Murphysboro SP	IDNR	74	3	1022
Fort Kaskaskia SHS	IHPA*	32	N/A	200
Randolph County State Conservation Area	IDNR	107	11.6+	1101
World Shooting and Recreation Complex	IDNR	1,001	N/A	1600
Horseshoe Lake State Park	IDNR	88	4	2960

Table 6-13: Campgrounds within the Region - Managed by Others

Source: Websites of Managing Entity

* *Illinois Historic Preservation Agency (IHPA)*

3.4.4.4 Water-Based Recreation

On the Kaskaskia River Project, the Jerry F. Costello Lock and Dam provides additional water-based recreation opportunities for boaters, as it allows for recreational lockages to and from the Mississippi River. Without this facility, recreational boaters would not have the opportunity to experience the connectivity provided by the country's inland waterways.

3.4.5 Recreational Development along the Kaskaskia River

Table 3-6 provides a list of recreation areas and access points, their managing entity and the river mile where they are located.

Area Name	Managed By	River Mile (East/West Bank)
Kaskaskia River Confluence Recreation Area	USACE	0.0-1.0 (W)
Phegleys River Boat Access	USACE/IDNR	6 (W)
Camp Creek River Boat Access	USACE/IDNR	9 (W)
Riverfront Recreation Area	City of Evansville/Private	11 (E)
The Island Public Access	IDNR	14.5
White Swan River Boat Access	USACE/IDNR	17.5 (W)
Kaskaskia River Day Use Access	IDNR/ USACE	19 (W)
Beck's Landing River Access	IDNR	21-22 (W)
Baldwin Lake Recreation Area & Refuse	IDNR	20-22
Beck's Landing River Access	IDNR	21.5 (E)
Kaskaskia State Fish & Wildlife Area	IDNR	28 (E)
New Athens Recreation Area	City of New Athens	28.5 (E)
Peabody King State Fish and Wildlife Area	IDNR	30-33 (E)
City of Fayetteville Boat Access	City of Fayetteville	35.5 (W)

Table 6-14: Recreation Areas and Access Points along the KRP

3.4.6 Recreational Carrying Capacity

A variety of boating capacity studies have been conducted for a wide range of lakes throughout the United States. No two studies or outcomes from those studies are the same and there are no agreed-upon scientific standards, processes or procedures for establishing a definitive boating capacity for a particular body of water. Corps of Engineers resource managers have used various processes to estimate the maximum capacity of recreation facilities and resources over the years. These estimations were used to balance the need of visitors to enjoy natural resources with the Corps' need to sustain high quality recreation opportunities for present and future generations. Managers have implemented a variety of techniques based on this analysis, for example a number of Corps Districts have lakes where public hunting is tightly controlled via permit systems.

This is done for many reasons including wildlife resource carrying capacity and carrying capacity as it relates to public safety and user enjoyment.

On the Kaskaskia River, some portions of the river are more heavily used than others. This is related to location of boat ramps along the channel, shoreline development, and channel depth. The channel adjacent to the Village of New Athens, Village of Evansville, and areas immediately upstream and downstream of the lock and dam see the largest number of recreational boats. Requests for future recreational development along the river should consider carrying capacity of the area.

3.5 RELATED RECREATIONAL, HISTORICAL AND CULTURAL AREAS

Please refer to the areas included in the Recreational Analysis contained in Section 2.8.

3.6 REAL ESTATE ACQUISITION POLICY

All of the USACE-managed lands at the KRP were acquired by the Illinois Department of Transportation and then title transferred to the USACE. There are 433 acres of fee land, 2,465 acres of operations and maintenance (O&M) easement and 3,496 acres of flowage easement land. The acreages composition of the KRP is depicted in **Figure 3-4**.

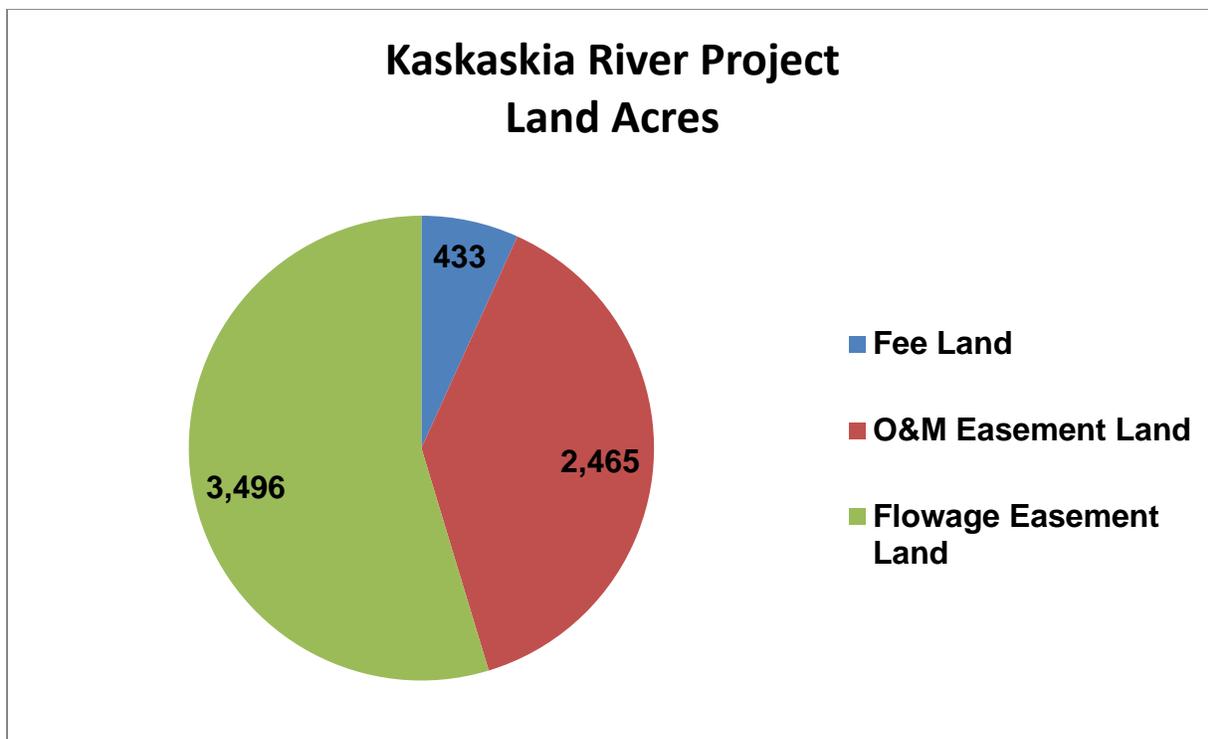


Figure 6-7: Kaskaskia River Project Land Acres

3.7 PERTINENT PUBLIC LAWS

Development and management of federal water resource projects is provided through enactment of several public laws. These laws direct the USACE to provide recreation

opportunities and facilities, maintain and enhance fish and wildlife habitat and protect natural resources.

3.7.1 Recreation

Development and management of recreation opportunities and facilities by the USACE, other governmental agencies, local groups, or individuals is authorized through the following public laws:

- a. **Section 4 of the Flood Control Act (PL 78-534)**, 22 December 1944, authorizes providing facilities for public use, including recreation, and conservation of fish and wildlife.
- b. **The River and Harbors Act (PL 79-14)**, 2 March 1945, specifies the rights and interests of the states in watershed development and water utilization and control, and the requirements for cooperation with state agencies in planning for flood control and navigation improvements.
- c. **Section 209 of the Flood Control Act of 1954 (PL 83-780)**, 3 September 1954, amended the Flood Control Act of 1944. Authorizes the Secretary of the Army to grant leases to federal, state or governmental 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.
- d. **The Land and Water Conservation Fund Act of 1965 (PL 88-578)**, 1 September 1964, contains provisions by which the USACE may charge for admission and use of its recreation areas under prescribed conditions.
- e. **The Federal Water Project Recreation Act (PL 89-72)**, 9 July 1965, contains cost sharing provisions for acquisition of lands and development of recreation facilities for water resource projects authorized after 1965. It also provides for cost sharing development of new areas that were not part of initial project construction.
- f. ***The Architectural Barriers Act of 1968 (PL 90-480)**, provides information and guidance regarding universal accessibility to Federal recreation facilities and programs for persons with disabilities.
- g. **The Rehabilitation Act of 1973 (PL 93-112) and the Rehabilitation Act Amendments of 1974 (PL 93-516)**, (see Architectural Barriers Act above).
- h. **The Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (PL 95-602)**, (see Architectural Barriers Act above).
- i. **The Americans with Disabilities Act of 1990 (PL 101-336)**, (see Architectural Barriers Act above).
- j. **Architectural Barriers Act (ABA)**, Standards and Guidelines for Accessible Design, 2004.

k. **Accessibility Guidelines for Outdoor Developed Areas**, 26 September 2013, provides guidance published by the Architectural and Transportation Barriers Compliance Board for outdoor recreation areas and facilities.

l. **The Water Resources Development Act of 1992 (PL 102-580)**, 31 October 1992, authorizes the Challenge Cost Sharing Program (Section 225) that permits the USACE to develop and implement a program to accept contributions of funds, materials and services from non-Federal public and private entities for use in managing recreation facilities and natural resources. This is known as the Challenge Partnership Program.

m. **The Omnibus Budget Reconciliation Act - Day Use Fees (PL 103-66)**, 10 August 1993, contains provisions by which the USACE may collect fees for use of developed recreation sites and facilities, including campsites, swimming beaches, and boat launching ramps. However, it excludes assessing fees for boat launching ramps in undeveloped or lightly developed areas where only minimum security and illumination is provided.

n. **The Water Resources Development Act of 1996**, 12 October 1996. Section 208 (Recreation Policy and User Fees) directed that increased emphasis be placed on recreation opportunities at USACE projects and specifies that a portion of recreation fees collected at USACE projects remain for use at the project where they are collected. Section 519 (Recreation Partnership Initiative) directed the USACE to promote federal, non-federal, and private sector cooperation in creating public recreation opportunities at USACE projects.

3.7.2 Fish and Wildlife

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

a. **The Fish and Wildlife Coordination Act**, 10 March 1934, as amended, 14 August 1946 (PL 79-732), 1958 (PL 85-624), provides authority for making project lands available for management by interested federal and state wildlife agencies, for wildlife management purposes. It further provides for more effective integration of fish and wildlife conservation programs at federal water resource projects.

b. **The National Environmental Policy Act of 1969**, as amended (42 USC 4321 et seq), declares a national environmental policy and requires that all federal agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach which integrates natural and social sciences and environmental design in their planning and decision making processes.

c. **The Endangered Species Act of 1973** as amended (16 USC 1531 and 1536) requires that federal agencies shall, in consultation with the U.S. Fish and Wildlife Service (USFWS) (or the National Marine Fisheries Service), use their authorities in furtherance of conserving endangered and threatened species and take such action

as necessary to assure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

d. **The Water Resource Development Act of 1986**, Section 1135, provides for modification to structures or operations of a project, consistent with authorized project purposes, to improve the quality of the environment, i.e. restoration of fish and wildlife habitat. WRDA 1996 amended Section 103 of WRDA 1986 by specifying that the non-federal share of environmental restoration and protection projects shall be 35 percent.

e. **Executive Order 12962**, 7 June 1995, entitled Recreational Fisheries, directs federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities. In addition, it establishes a National Recreational Fisheries Coordination Council consisting of seven members (including one designated by the Secretary of Defense). The "Coordination Council" is charged with developing a comprehensive Recreational Fishery Resources Conservation Plan. This EO also directs all Federal agencies to identify and minimize conflicts between recreational fisheries and their responsibilities under the Endangered Species Act of 1973 and expands the role of the Sport Fishing and Boating Partnership Council.

3.7.3 Forest Resources Protection and Improvement of Natural Resources

a. **The Forest Conservation Act (PL 86-717)**, 6 September 1960, provides for the protection of forest cover in reservoir areas, and specifies that reservoir areas of projects for flood control, navigation, hydroelectric power development, and other related purposes, owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers, shall be developed and maintained so as to encourage, promote and assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation, and accepted conservation practices, and to increase the value of such areas for conservation, recreation and other beneficial uses; provided, that such development and management is accomplished to the extent practicable and compatible with other authorized project purposes. The law further provides in order to carry out the national policy declared in the first section of this Act, the Chief of Engineers, under the supervision of the Secretary of the Army, shall provide for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures on reservoir areas under his jurisdiction, so as to yield the maximum benefit and otherwise improve such areas. Programs and policies developed pursuant to this act are to be coordinated with the Secretary of Agriculture, and appropriate state conservation agencies.

b. **Other Incidental Uses. Title 10, United States Code, Section 2667**, authorizes the lease of land and water areas at Civil Works projects for any commercial or private purpose, not inconsistent with authorized project purposes and subject to specific restrictions thereupon, as set out in regulations, policy, and Delegations of Authority. The use of project lands for easements and licenses is authorized in various

Congressional Acts and codified in Titles 10, 16, 30, 32 and 43 of the United States Code.

c. **Title 16, United States Code, Section 460d**, authorizes use of public lands for any public purpose, including fish and wildlife management, if it is in the public interest.

d. **Uniform Real Property Acquisition and Relocation Assistance Act of 1970, (PL 91-646)**, as amended, requires lands and right-of-ways to be acquired pursuant to provisions of the act.

3.7.4 Cultural and Historical Resource Considerations

A variety of public laws mandating the protection of cultural resources on public lands have been enacted. They include:

a. **The National Historic Preservation Act of 1966 (PL 89-665)**, 15 October 1966, as amended through 2000 (PL 91-243, PL 93-54, PL 94-422, PL 94-458, PL96-1999, PL 96-244, PL 96-515, PL98-483, PL 99-514, PL 100-127, PL 102-575, PL 103-437, PL 104-333, PL 106-113, PL 106-176, PL 106-208, and PL 106-355), states a policy of preserving, restoring, and maintaining cultural resources and requires federal agencies to take into account the impacts their activities may have on sites potentially eligible for inclusion in the National Register of Historic Places.

b. **The Archaeological and Historic Preservation Act of 1974**, as amended (16 USC 469-469c), amended the 1960 Reservoir Salvage Act (PL 86-523), provides for the preservation of historical and archaeological data that 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.

c. **American Indian Religious Freedom Act of 1978 (PL 95-341)**, 11 August 1978, protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

d. **The Archeological Resources Protection Act of 1979**, (16 USC 470 et seq.), PL 96-95, 96th Congress Revision and update of 1906 Antiquities Act 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.

e. **The Native American Graves Protection and Repatriation Act (PL 101-601)**, 16 November 1990, requires federal agencies and museums to inventory and summarize human remains, funerary objects, sacred objects, and objects of cultural patrimony and to provide this information to potentially affiliated Native American Tribes. The Act requires repatriation of these items, upon request and following the guidelines in 43 CFR Part 10, to the cultural affiliated tribe(s) and establishes a grant program within the Department of the Interior to assist tribes with repatriation and museums in preparing the inventories and collection summaries. The act also outlines

the procedures that federal agencies must follow in the event of an inadvertent discovery or unintentional excavation of human remains and funerary objects from federal or tribal lands.

f. **Indian Sacred Site, Executive Order 13007**, 24 May 1996, directs federal land-managing agencies to accommodate Native American use of sacred sites for religious purposes and to avoid adversely affecting the physical integrity of sacred sites. Agencies are required to develop procedures for reasonable notice to tribes of a proposed action or land management policy that may restrict access to, or ceremonial use of, a sacred site or adversely affect its physical integrity.

g. **The Water Resources Development Act of 2000**, Section 208, authorizes the Army to rebury Native American human remains that were discovered on civil works project lands and have been rightfully claimed by a tribe on those lands.

3.8 MANAGEMENT PLANS

A variety of management plans are used to guide the Operation and Maintenance activities at KRP. The name of the plan, a brief description about the plan and the year the plan was approved is presented in **Table 3-7**.

Name of Plan	Plan Description	Year Approved/ Updated
Emergency Action Plan	This plan identifies actions to be implemented during emergency situations.	2009
High Water Action Plan for Kaskaskia L&D	This plan identifies the procedures that are implemented when the pool elevation exceeds 390.0 ft. NGVD.	2015
Operational Management Plan (OMP)	The OMP provides a detailed description of facilities and specific actions required to meet the requirements identified in the master plan. Once the updated Master Plan – 2017 is approved, this plan will be updated.	1998
Jerry F. Costello Lock and Dam, Flood Prevention Alternatives Report,	This plan provides management repair/flood proofing options to better prepare the project for a major high water event post winter flood of 2015/2016. Plan serves as a basis for budget planning.	2017
Emergency Plan for Marine Disasters (fire protection, marine safety, and project safety)	This plan describes policies, procedures and responsibilities to ensure the safety and emergency response to marine disasters.	1985
St. Louis District Cultural Resources Management Policy	Provides policy guidance for the protection of cultural resources located on projects within the St. Louis District.	1982
St. Louis District Policy for the Management of Flowage Easement Lands	Provides guidance and policy for management of flowage easement lands. The construction permit approval process is identified.	2011
Site Specific Security Plan	This plan works in concert with the Emergency Action Plan and provides guidance for assessing risks and identifying vulnerabilities for facilities located at the KRP.	2016
Water Control Manual – Appendix C to the Master Reservoir Regulation Manual	Provides a detailed water control plan for managing releases and pool elevation at KRP	2005

Table 6-15: Summary of Management Plans at Kaskaskia River Project

CHAPTER 4 – RESOURCE OBJECTIVES

4.1 RESOURCE OBJECTIVES

Resource objectives are clearly written statements that set forth measurable and attainable current and future management and development activities that support the

stated goals in this master plan and take into consideration any current applicable Corps performance measures. They are guidelines for obtaining maximum public benefits while maximizing adverse impacts and protecting and enhancing environmental quality. They are developed with full consideration to the Kaskaskia River Project's authorized project purposes; applicable laws and directives; recourse capabilities; regional needs, recreational and natural resources carrying capacity, State Comprehensive Outdoor Recreation Plans (SCORP), and public input.

Nine major categories of resource objectives have been established for the Kaskaskia River Project. The categories are:

1. General Administration and Management
2. Recreation Management
3. Natural Resources Management
4. Environmental Compliance Management
5. Interpretive Services and Outreach Management
6. Shoreline Management
7. Navigation Management
8. Economic Impacts Management
9. Cultural and Historical Management

Specific objectives for each of these categories is presented in the following sections.

4.1.1 General Administration and Management Objectives

- a. Ensure that quality administration and management of all project lands, waters and other associated constructed and natural resources are consistent and thorough.
- b. Seek to continually increase efficiency, cost effectiveness and innovation in projects while keeping public use and enjoyment a goal of achievement.
- c. Ensure that all project activities address safety concerns.
- d. Ensure that all project administration and management decisions and actions adhere to all applicable laws, regulations, policies, and agreements.
- e. Develop consistent coordination and partnership efforts, both internally and with other applicable federal, state and local government agencies, private organizations and individuals.

- f. Implement all actions and plans in a manner compatible with authorized project purposes and all applicable social and environmental and safety factors, to ensure maximum benefits. Compromise will be considered when appropriate to minimize conflicts in project uses and developments.
- g. Identify facilities for construction, renovation or replacement.
- h. Provide efficient support facilities for public health and safety.
- i. Provide accessible facilities.
- j. Maintain a strong public education program.
- k. Provide sound environmental stewardship of public lands and waters.
- l. Maintain integrity of operational structures (i.e., the lock and dam and the navigation channel).
- m. Ensure all programs are accomplished in compliance with the "Green" initiative.

4.2.2 Recreation Management Objectives

1. Recreation Opportunities

Seek to increase the quality of the visitor experience by maintaining and developing purposeful, functional recreation facilities and services that meet the needs of visitors, while maintaining the aesthetic and ecological integrity of public lands and waters.

- a. Improve and maintain the quality of all recreation areas.
- b. Maintain as a top priority rehabilitation efforts designed to stop environmental degradation and facility deterioration.
- c. Provide visitors with diverse recreational opportunities.

2. Facilities Management

- a. Evaluate and provide facilities that meet the needs of the visitors to the project.
- b. Maintain, develop and/or modify cost effective facilities in order to meet the changing and diverse needs of visitors.
- c. Provide visitors with the necessary facilities or services to support a diverse range of recreational activities, such as boating, hiking, biking, picnicking, hunting, fishing, and sight-seeing, wildlife viewing and environmental education.

3. Barrier-Free Access

Increase outdoor recreation opportunities for disabled visitors by providing barrier free access to recreation areas and facilities.

4. Public Access, Trails and Greenways

- a. Conduct a comprehensive project-wide evaluation of public access to public lands and waters to ensure environmental sustainability of project resources.
- b. Expand partnerships with others to pursue connecting existing trails and greenways and identify potential future initiatives.

4.1.3 Natural Resource Management Objectives

1. Protect Natural Resources

- a. Encourage the use of all project lands for public enjoyment by both consumptive and non-consumptive users while protecting and sustaining viable fish and wildlife populations and habitats.
- b. Provide invasive species control through preventive and corrective measures.

2. Forest Habitats

- a. Forests will be managed for ecological integrity, erosion control, water quality protection and wildlife habitat values.
- b. Concentrate efforts on inventory, reforestation and protection of bottomland forests to ensure they provide sustainable wildlife habitats, recreation and scenic values.

3. Wetlands

Reclaim, protect, restore, and maintain high-quality wetland habitats for all fish and wildlife wetland species.

4. Soils

- a. Ensure all land management activities consider soil types and their land use capabilities.
- b. Prevent soil erosion.
- c. Implement conservation measures designed to prevent soil loss, such as conversion to permanent vegetative cover, water drainage control, stream bank protection, where problems exist.

4.1.4 Environmental Compliance Objectives

1. Water Quality

- a. Seek to improve the general water quality of the river system in cooperation with the USFWS, IDNR, NRCS and IEPA.
- b. Aggressively seek ways to work with the NRCS and other relevant agencies to reduce erosion along the river corridor, which will in turn, reduce the silt and chemical load of the river.
- c. Work with our industrial partners and the EPA to find ways to reduce pollution.
- d. Work with local government to find ways to improve sewage and sanitation standards for public and private developments along the river corridor.

2. Threatened and Endangered Species

- a. Complete inventories, identify existing populations of federal and state endangered and threatened plant and animal species, and develop and implement recovery actions in cooperation with the USFWS and state agencies.
- b. Seek and/or develop management techniques and strategies where populations of endangered species exist to enhance these populations while permitting other compatible management activities to occur.

3. General Compliance

- a. Ensure that all activities, developments and other management actions comply with National Environmental Policy Act (NEPA) requirements.
- b. Ensure all activities occurring on federal lands and waters fully comply with federal, state and local laws, regulations, ordinances and other environmental protection requirements.

4.1.5 Interpretive Services and Outreach Management Objectives

1. Visitor Interpretive and Outreach Services

- a. Develop an expanded Interpretive Services Outreach Program (ISOP) to provide effective and efficient distribution of KRP-related information. Provide information concerning facilities and services, rules and regulations, and land and water safety.
- b. Provide information regarding Corps missions and responsibilities.
- c. Maximize and expand non-personal services, such as visitor centers, overlooks, bulletin boards, brochures, news media and cooperating association outlets.

- d. Increase personal services, such as Park Ranger conducted interpretive programs and tours.
- e. Develop partnered special events, cooperating association programs, school partnerships, and distance learning opportunities.
- f. Ensure that all program initiatives provide project information, enhance the quality experience for the public and promote awareness and understanding of the river basin environment and the importance of sustaining its future.

2. Environmental Education

- a. Provide programs that can be certified by the Illinois Develop and Expand Curriculum, “hands-on” activities and educational State Board of Education for the purpose of involving students, teachers and other organized groups in appropriate outdoor and classroom educational activities.
- b. Provide facilities and outdoor classrooms on public lands that will accommodate school groups and other organizations on a regular basis.

3. Information Access

Establish an electronic network and other mechanisms among local, state and federal agencies and organizations to share information on river related activities throughout the basin and make the information available to the public throughout the river basin.

4.1.6 Shoreline Management Objectives

It is the policy of the Chief of Engineers to protect and manage shorelines of all civil works water resource development projects under Corps jurisdiction in a manner which will promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. Public pedestrian access to and exit from these shorelines shall be preserved. For projects or portions of projects where federal real estate interest is limited to easement title only, management actions will be appropriate within the limits of the estate acquired.

There are no private facilities on the project that are not open to the public. The three private boat ramp/access areas are now public. The IDNR is continuing to phase out private docks in the side channels. They are not within the Corps project.

Since there are no private facilities on the Kaskaskia River Project, it is the policy of the Corps and IDNR that private exclusive use will not be permitted on the Kaskaskia River Project.

4.1.7 Navigation Management Objectives

1. Navigational Compatibility with Other KRP Authorized Purposes

Promote facilities, conditions, O&M activities and best management practices required to ensure efficient commercial navigation in a manner that avoids or minimizes negative impacts to environmental and recreation features of the project.

4.1.8 Economic Impacts Objectives

Contribute to regional economic growth developing partnerships with agencies, groups, and individuals with the common goal of quality river region eco-tourism and sustainable economic development with effective environmental protection.

4.1.8 Historic and Cultural Resources Management Objectives

Work closely with the IDNR, including their Division of Historic Preservation, and other applicable agencies and organizations to identify historic properties and develop a management plan for historic properties that is in full compliance with all pertinent federal and state laws and regulations.

CHAPTER 5 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE & EASEMENT LANDS

5.1 Land Allocation

Land Allocation refers to the congressionally authorized purposes for which the project lands were acquired. For the Kaskaskia River Project all lands acquired by the USACE were allocated as Operations lands.

5.2 Land Classification

In the 1970s, the State of Illinois prepared a master plan for the KRP to address the current and future uses and management of the approximately 23,000 acres of acquired lands and waters and associated resources of the navigation project. The plan was approved in 1978 jointly by the key partners: IDOT, the USACE, Kaskaskia Regional Port District and IDNR.

The outcome of the master planning process resulted in the identification of the following land use classifications for the project. See **Table 5-1**.

Lands acquired by the Corps of Engineers (Total = 6,394)	
Project Operations	2,988 acres
Fee	433 acres
O&M Easement	2,465 acres
Flowage Easement	3,496 acres
Lands acquired by the State of Illinois (Total = 16,517)	
Natural Areas	251 acres
Prime Industrial Areas	670 acres
Wildlife/Resource Management Areas	6,297 acres
Low Density Recreation Areas	403 acres
Intensive Use Recreation Areas	222 acres
Multiple Use Management Areas	8,674 acres
Grand Total 16950 Fee lands	16,950 acres

Table 6-16: Land Classification from 1978 Master Plan

In 2001, the Rivers Project Master Plan was completed, which included the KRP. In that Plan the KRP Operations land (2,898 acres) were re-classified as follows:

Land Classification	Acres
Project Operations	262
Multiple Resource Management - Vegetative Management	171
Operations Easement - Vegetative Management on state lands	2,465
Flowage Easement on state and private lands	3,496
Total	6,394

Table 6-17: KRP Land Classification - 2001 Rivers Project Master Plan

This master plan does not propose any changes in Land Classifications. All classifications will remain the same as listed in the 2001 Rivers Project Master Plan as referenced above in **Table 5-2**.

The following paragraphs describe each of the land classifications as required by ER 1130-2-550.

5.2.1 Project Operations

This category includes those lands required for the dam, spillway, levees, offices, maintenance facilities and other areas that are used solely for the operation of the project.

5.2.2 High Density Recreation

This category includes lands developed for intensive recreational activities for the visiting public including: day-use areas, campgrounds, commercial concessions, marinas, resorts and quasi-public development.

Activities and facilities that interfere with the public recreational use of these lands is prohibited. Other types of use such as low-density recreation activities and wildlife management activities are acceptable, especially on an interim basis. Agricultural activities are not permitted on these lands. No permits, licenses, or easements are issued for utilities, pipelines, overhead transmission lines, or roads on lands classified as high density recreation.

5.2.3 Mitigation

Although there are no lands with this classification located at KRP, this classification is only used for lands with an allocation of Mitigation and that were acquired specifically for the purposes of off-setting losses associated with development of the project.

5.2.4 Environmentally Sensitive Areas

Even though there are no lands at KRP with this classification, it is used in areas where scientific, ecological, cultural or aesthetic features exist. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species

Act, the National Historic Preservation Act or applicable state statutes. Any activities or uses proposed for these lands must be carefully evaluated to ensure these lands are not adversely impacted. Typically, development of any kind is not allowed on these lands. No agricultural or grazing is permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration.

5.2.5 Multiple Resource Management Lands

This classification allows for designating lands using one or more of the following classifications:

1. Low Density Recreation

This classification is used for lands with minimal development or infrastructure. These lands support passive types of recreational use (e.g. primitive camping, fishing, hunting, hiking, walking, wildlife viewing, etc.). Facilities may include boat ramps, trails, small parking areas or vault toilets. Activities or facilities may be permitted for such things as; erosion control, scenic quality improvement and wildlife management. Hunting and fishing are typically allowed in accordance with state fish and wildlife regulations and where the activity or facility does not create a safety issue.

2. Wildlife Management

This classification is used for stewardship of fish and wildlife resources.

3. Vegetative Management

This classification is used for stewardship of forest, prairie and other native vegetative resources.

4. Future or Inactive Recreation Areas

There are no lands with this classification located at KRP.

5.2.6 Water Surface Classification

All water surfaces of KRP are zoned using one of the following classifications.

a. Restricted

This classification is used for water areas restricted for project operations, safety and security purposes. Public access to these areas is not permitted. These areas are marked with buoys that physically prevent access.

b. Designated No-Wake

This classification is used to protect environmentally sensitive shoreline areas and recreational water access areas from disturbance, and/or for public safety. Generally, all areas marked as “no-wake” are located at boat ramps.

c. Fish and Wildlife Sanctuary

This classification is used to identify areas where annual or seasonal restrictions are in place to protect fish and wildlife species during periods of migration, resting, feeding, nesting and/or spawning. These areas are marked with a combination of signs and/or buoys.

d. Open Recreation

This classification is used for water areas available for year-round or seasonal water-based recreational use. Generally, these waters can be used by most types of vessels for all types of water-based recreational activities.

5.2.7 Easement Lands

a. Operations Easement Lands

There are 262 acres of operations easement lands at the KRP. These are lands required for the Corps to operate the project for authorized project purposes.

b. Flowage Easement Lands

There are 3,496 acres of flowage easement land located at KRP required for project operations. This allows for the land to be occasionally flooded and inundated during high water events. These lands were purchased by the State and an easement granted to the Corps for project operation.

The Corps does not issue permits for construction under the flowage easement estate.

c. Conservation Easement Lands

There are no conservation easement lands located at KRP.

CHAPTER 6 – RESOURCE PLAN

6.1 Introduction

This master plan is the first stand-alone Recreation and Environmental Stewardship Master Plan for the Kaskaskia River Project. As such, the Plan provides guidance for the orderly development, use and management of KRP resources. Resource planning takes into consideration:

- a. Authorized Project Purposes
- b. Public input and interests
- c. Regional needs, opportunities and constraints

All proposed development is designed to be compatible with the KRP's natural and cultural resources. Project planning and land classification take several factors into consideration:

- a. Seasonal Flooding
- b. Soils
- c. Ecological Conditions
- d. Existing and Projected Recreation Demand
- e. State and Local Interests
- f. Applicable Laws, Regulations and Policies
- g. Compatibility with other project purposes

6.2 Resource Plans

Implementation of resource management objectives is dependent upon land classification, anticipated concurrent use and other environmental, geologic and topographic variables. The Operational Management Plan (OMP) subdivides land and water classifications into management units based upon land use objectives, natural and man-made resources and environmental sustainability. The OMP defines and details program and management objectives and work activities to implement in order to maintain and improve ecological conditions and outdoor recreation opportunities in compliance with master plan guidance.

This section provides basic information about each Project Site Area (PSA) at KRP and provides an accounting of all land and water classifications. For each PSA, the following information is identified:

- a. Basic information including land classification type, managing entity, and acreage
- b. Description of PSA including existing facilities
- c. Description and discussion of proposed actions at that PSA

“Proposed Actions” are actions being proposed in this master plan and are intended to be implemented within approximately ten years or by the next master plan update.

The Land Classifications for the Kaskaskia River Project are:

- a. Project Operations
- b. Multiple Resource Management- Vegetative Management
- c. Flowage Easement Lands

These land classifications are described fully in Chapter 4. **Table 6-1** provides a summary of land classification acreages for the KRP. **Plates 1-12** show locations of each land classification type within the KRP.

Land Classification	Acres	Total Acres
Project Operations		262
Multiple Resource Management		1336
Vegetative Management- Fee lands	171	
Vegetative Management - Operations Easement	1156	
Water Surface		1309
Open Recreation	1209	
Designated No Wake	808	
Restricted	208	
Fish & Wildlife Sanctuary	N/A	
Flowage Easement		3,496
TOTAL		6,394

Table 6-18: Land Classification Acreages (See Plates 1-12)

***Please Note: Water Surface Acres are accounted within the Operational Easement**

6.2.1 Jerry F. Costello Lock & Dam and Kaskaskia River Confluence Recreation Area

Location: RM 0.8, Randolph County

Land Classification: Project Operations

Managing Entity: USACE

Plate #: 6

Acres: 101

Description of Area: This area includes the lock & dam as well as the recreation facilities located upstream and downstream of the lock on the west bank. The administrative and maintenance facilities are located here, as well as the Visitor Information Center. Recreation facilities include a campground, day-use area and boat ramps. Even though the area is classified as Project Operations, the recreation activities that occur here do not impede or conflict with operational activities of the project. The Prairie du Rocher and Modoc Levee system form the western boundary of the area.

Day Use Facilities		Camping Facilities		Operational Facilities	
Picnic Sites	9	Campsites (E/W/S)*	15/0/0	Administration Bldg. and Maintenance Complex	1
Picnic Shelters	1	Dump Station		Visitor Center	1
Boat Ramp/Lanes	2/3	Playgrounds		Lock & Dam	1
Car Parking	30	Rest Rooms (V/WB)*	1/0		
Trailer Parking	43	Amphitheater			
Trails/Trail Miles	0.5	Water Hydrants	2		
Water Fountains	1				
Rest Rooms	3				
Playground					
Fishing Pier	1				
Amphitheater					

Table 6-19: Jerry F. Costello Lock & Dam and Kaskaskia River Confluence Recreation Area Existing Facilities

(E=Electric, W=Water, S=Sewer, V=Vault, WB=Waterborne)

Existing Facility: The administrative offices and the visitor information center are located inside the lock & dam structure. The majority of the recreation facilities of the project are located here. Just downstream from the lock & dam is a small campground, boat ramp and support facilities for camping and boater access such as single and car -trailer parking, vault toilets, hydrant and campsite amenities. Parking and the trailhead for the Confluence Heritage Trail is here. Upstream offers a day-use area that includes a picnic shelter with grills, multipurpose court, picnic sites, boat ramp, vault restroom, water hydrant, accessible fishing pier, courtesy mooring and large single/car-trailer parking lot. Only existing waterborne rest room in central location at operations/visitor center area.

Proposed Action	Type of Action (R/N/PA)*	Description
Provide Administration building that does not flood	R	Relocate administrative operations and the visitor information area to a building that will not flood. (See Chapter 6 for information and Appendix A Flood Prevention Alternatives Report)
Provide additional campsites	R	When demand warrants, provide additional camping opportunities. Two adjacent locations for expansion available- each with 10 site potential including circulation road
Provide Dump Station	N	Provide dump station for the campground. Currently the nearest dump station is over 20 miles away. This service is critical for operation of a campground.
Upgrade Sewage System	R	Upgrading the sewage system will allow for campsites to be connected. When the system is upgraded, it should include the capability for campsite hookups to increase use, fees, and public health and safety
Provide full hookup campsites	R	Currently campsites only provide electrical service. Water and sewer service will provide for greatly increased customer satisfaction, use and fee revenues
Renovate existing campsites to meet design guidelines	R	All campsites need to be updated to be in compliance with USACE design guidelines where feasible.
Implement tree replacement Plan	R	As a result of frequent inundation, many of the trees in certain locations have become extremely stressed. An aggressive tree replacement plan will be

Proposed Action	Type of Action (R/N/PA)*	Description
		developed and implemented with flood adapted species.
Provide leash-free dog area	N	There is ample room to provide a fenced leash-free dog area. This will greatly improve customer satisfaction.
Provide Wi-Fi for campground visitors	N	Campground Wi-Fi has become a standard utility for most campgrounds. Providing this service for our customers will greatly improve their satisfaction.
Provide Playground	N	A small natural, flood proof playground will be installed.
Provide trail connectivity within recreation area to levee systems and bike routes	N	Develop bike-hike trails as part of new administration building plan to connect all upstream and downstream park areas. Connectivity to existing trail systems will be pursued. Ultimately the objective is to connect as many existing trails as possible. Of particular interest is connecting the Kaskaskia levee system to the Mississippi Levee system.
Replace restroom with Shower/Restroom combination	R	The existing waterborne restroom will be replaced with a combination restroom/shower facility.
Geocaching Trail	N	Develop geocaching trail.
Disc Golf Course	N	Develop disc golf course.

Table 6-20: Jerry F. Costello Lock & Dam Proposed Actions

***(R=Replacement, N=New, PA=Previously Approved)**

Proposed Actions: Improvements to the campground will include an expansion of additional sites as demand warrants. Installation of a dump station would provide an important RV camper demanded sanitary service. Currently the closest dump stations are approximately 20 miles to the south or 60 miles west of the project. Lack of a dump station creates an inconvenience and potential health and safety issue for our customers and is likely deterring many from visiting the project. Future upgrading of the sewage system could provide an opportunity for full hookup sites. If full hookup sites become a reality, water hydrants at each site should also be included. Installation of a shower facility will benefit the users of the campground providing a basic public health and safety need. Initially, a simple shower facility utilizing a holding tank may be the most efficient option since water connection is very close.

The current administration building and visitor center is located inside the lock’s control structure. Due to the building being located on the lock and dam structure, over the river and within the flood plain, it has sustained water damage many times, most notably in the

1993, 2015 and 2017 flood events. The building also has structural reinforcement issues that have been identified and are addressed in the Flood Recovery Plan (**see Appendix A**). See Plate 6 for layout of facilities. These building deficiencies, and public and occupational health and safety issues make relocation of administrative and visitor information functions to a new building, located above the flood plain, very critical and the lowest cost alternative long term. The addition of a new building would greatly reduce flood preparation efforts, repetitive funding needs for recovery and rehabilitation after a flood, and provide safe, reliable work space for staff, that meets project security, ADA universal accessibility and safety requirements.

Providing a recreation area, facilities and services that meet Corps Customer Service Standards, security and safety requirements will improve customer satisfaction, attract new users, and help reduce annual O&M costs and increase efficiency. A tree replacement plan will be implemented to ensure environmental sustainability of the area is attained. The addition of a leash-free dog area, outdoor Wi-Fi, natural playground, hike-bike trail, disc golf, and geocaching trail will enhance recreation opportunities for both the campground and day-use users and greatly improve customer satisfaction. All new facilities will be designed to withstand flooding or be easily removable.

The USACE will also work to clearly mark the KRP fee title lands boundary and re-survey as needed.

6.2.2 Kaskaskia Dam and Disposal Area

Location: RM 0.8; Randolph County, IL

Land Classification: Multiple Resource Management, Vegetative Management

Managing Entity: USACE

Plate #: 5

Acres: 161

Description of Area: This area lies both upstream and downstream of the lock on the east bank. Lands within this area lie low in the floodplain and are inundated on a routine basis. The west boundary of the area is approximately at the centerline of the navigation channel, the southern boundary at the downstream dredge containment levee, and the northern boundary at the old channel cut off. The eastern boundary follows the federal ownership line, which bisects the dredge disposal containment area.

The area is comprised of developed and non-developed lands and contains the dam and tainter gates, spillway, the old river channel cut off, a portion of the old river channel, and the dredge disposal containment area for the lower navigation channel and lower lock locations. Service access to the area is mainly by boat. A gravel road is maintained on

the dredge containment berm to provide access for maintenance and operation of dredge disposal site.

This area is managed to support the Corps navigation, recreation and fish and wildlife missions. The dam, which controls water levels for the navigation pool, is operated continuously following the Water Control Manual. The old river channel cut off also serves to maintain the navigation pool by preventing the normal flows from entering the old river channel. In addition, this structure also acts as a spillway during flooding and allows excess flows to enter the old river channel bypassing the dam. Both of these structures must be maintained. The navigation channel is maintained through dredging as indicated by hydrologic surveys and available funding. The dredge material is placed in the dredge disposal containment area. The dredge disposal containment area also requires maintenance to operate properly and maintain acceptable water quality. This maintenance provides an opportunity to maintain wildlife habitat. The levees surrounding the containment area have had some structural problems primarily due to floods. The levee is monitored and repaired based on available funding. The dredge containment area is managed in cooperation with the Kaskaskia Regional Port District and IDNR.

Although public access to the area is limited, visitor use does occur. Popular pursuits include fishing and boating on the main channel, bank fishing, fishing and boating in the old river channel, sightseeing, bird watching, mushroom gathering, and hunting in accordance with state regulations. Portions of this area may be restricted at times due to maintenance or operational activities.

Proposed Actions: The gravel access road will be continually maintained. No development is currently planned for this PSA, but as visitor demand arises featured including but not limited to parking lots, hiking trails, boat launching facilities could be added in partnership with IDNR and KRPD. Any new facility features will be designed to withstand flooding.

6.2.3 Kaskaskia and Mississippi Rivers Confluence Heritage Area

Location: RM 0.0-0.4, Randolph County

Land Classification: Multiple Resource Management - Vegetative Management

Managing Entity: USACE

Plate #: 5

Acres: 77

Description of the Area: This area is located downstream of the lock. It encompasses the west bank area of the confluence of the Kaskaskia River and the Mississippi River and is a scenic mature floodplain forested area. It is the only area that provides public access to the Mississippi River from the Illinois shore for 9 miles downstream (Chester riverfront) and 85 miles upstream (Alton riverfront). Public use of the area includes fishing

and boating on the Kaskaskia and Mississippi Rivers, bank fishing, bird watching, sightseeing, mushroom gathering, hiking and hunting, and interpretive programs and special events.

The Confluence Heritage National Recreation Trail bisects the area providing visitors' hike-bike access from the lower boat ramp area, where a trailhead and parking are provided, to the confluence of the Kaskaskia and Mississippi Rivers. The trail is asphalted, 12 foot wide and 1/2 mile each way. A flood proof native stone amphitheater and fire ring along with 6 picnic sites are located at the confluence. It is used for environmental education programs and sightseeing. The Flood Plain Forest Nature Trail, a primitive natural surface trail, is also located in the area, connects with the main confluence trail, and creates opportunity for a loop trail experience. The Beaver Island Division of the USFWS Middle Mississippi River National Wildlife Refuge is located directly across the Mississippi River as is the original Kaskaskia Village site and Fort Kaskaskia SHS on the bluffs off in the distance.

The lands in this area lie low within the floodplain and are subject to frequent inundation. Both the Mississippi and the Kaskaskia Rivers play major roles in the hydrologic regime of this area. The land area is heavily forested with the primary species being cottonwood, silver maple, black willow and ash. The area contains approximately 3 acres of abandoned agricultural fields, which are fast returning to forested bottomland through natural succession. The topography is characteristic of a bottomland forest with an extensive well developed ridge and swale component. Some of the depressed areas hold water into the summer months without the necessity of significant rainfall.

Proposed Actions: This area is managed for recreation and to provide a healthy bottomland forest and a diversity of high quality wildlife habitat. Vegetative management activities promote native herbaceous, shrub and tree growth to minimize erosion and sedimentation, improve water quality and sustain adequate aquatic and terrestrial habitats. The forest will be maintained through planting and selective harvesting as indicated by inventory and routine inspection. The 1993 flood, along with more recent floods, have caused extensive mortality of the mature trees, particularly of the mature cottonwoods and the scattered pecan trees along the ridges. Plantings will seek to reinforce the floodplain mast producing species and maintain adequate densities of major bottomland species. Nesting structures will be placed and monitored under a volunteer agreement. Partnerships and volunteer initiatives will be pursued to maintain and interpret the trails and the site.

The standing water component of the bottomland habitat will be increased through the use of passive water control structures and reopening some of the interior drains to reconnect the naturally occurring low areas to the river. Seedlings and saplings of desirable mast producing species will be individually planted in appropriate areas to increase and improve habitat diversity.

As visitors demand warrant, additional facilities will be considered including but not limited to additional interpretive features, picnic sites, wildlife viewing areas, improved parking

areas and hiking trails. Any additional facilities will consider the flooding that occurs in the area.

6.2.4 Old River Confluence Area

Location: RM 0.2, Randolph County

Land Classification: Multiple Resource Management-Vegetative Management

Managing Entity: USACE

Plate #: 5

Acres: 23

Description of Area: This wooded area is located downstream from the dam and the dredge containment area on the east bank of the Kaskaskia River and extends to the confluence with the Mississippi River and the mouth of the old Kaskaskia River Channel. The area is heavily forested. The area is managed to provide a healthy bottomland forest and a diversity of high quality wildlife habitat. Primary recreation activities include hunting, bank fishing, and bird watching, hiking and sightseeing.

Existing Facilities: There are no existing facilities located in this area

Proposed Actions: The Corps will continue to maintain this area as natural, native floodplain habitat conditions.

6.2.5 Heritage Marsh

Location: RM 0.8, Randolph County

Land Classification: Multiple Resource Management - Vegetative Mgmt.

Managing Entity: USACE

Plate #: 5

Acres: 71

Description of Area: This area is located upstream from the dam on the east bank. The area is heavily forested, but does contain approximately 10 acres of abandoned agricultural fields, which are managed for moist soil habitat and open aquatic wetland habitat. A water control structure is installed to manage water levels for migratory waterfowl habitat. Management of water levels is a combination of gravity flow and portable pumping depending on site conditions, season of the year and management objectives. Primary access to the area is by boat or via disposal site access road. A primitive hiking trail extends through portions of the area. Convenient boat access is

provided at the Kaskaskia River Recreation Area upstream boat ramp, which is just across the river from the site.

Day Use Facilities		Camping Facilities		Operational Facilities	
Picnic Sites		Campsites (E/W/S)*		Administration Bldg.	
Picnic Shelters		Dump Station		Visitor Center	
Boat Ramp/Lanes	1/1	Playgrounds			
Car Parking	5	Rest Rooms			
Trailer Parking	5	Amphitheater			
Trails/Trail Miles	1/6	Water Hydrants			
Water Fountains					
Rest Rooms					
Playground					
Fishing Pier					
Amphitheater					

Table 6-21: Heritage Marsh Existing Facilities

***(E=Electric, W=Water, S=Sewer, V=Vault, WB=Waterborne)**

Existing Facilities: There is a gravel access road to the area and includes a small unimproved parking area. A primitive boat ramp is located here. Primary recreational activities include bank fishing, boating, hiking, and hunting. Vegetative management activities are conducted in the area. A water control structure is used to manage approximately 47 acres of moist soil habitat for migratory waterfowl. Other vegetative management practices are used to stabilize the shoreline, improve water quality, sustain high quality aquatic habitats and help limit sedimentation into the river. As funds are available, the mouth of the remnant side channel is dredged to maintain connectivity to the river channel.

Proposed Action	Type of Action (R/N/PA)*	Description
Provide replacement gravel for road, parking and ramp	R	Gravel and grade the access road, parking area and boat ramp to provide for visitor safety and improved access
Mark hiking trail	N	Mark hiking trail with appropriate signage

Improve boat ramp	R	Provide improvements to boat ramp for visitor safety and modify ramp for use by kayakers.
Conduct vegetative management activities	R	Conduct vegetative management activities to encourage the growth of favorable vegetation
Kayak launch	N	Develop kayak launch
Maintain healthy forest	R	Maintain forest through natural regeneration, supplemented with Timber Stand Improvement and plantings as indicated by forest inventory
Remove silt plug	R	Remove silt plug at mouth of slough to promote free exchange of water, which will provide nursery habitat for fish.

Table 6-22: Heritage Marsh Proposed Actions

****(R=Replacement, N=New, PA=Previously Approved)***

Proposed Actions: Providing replacement gravel for the access road, parking area and unimproved boat ramp will improve visitor safety and properly delineate vehicle travel routes and parking location. Improvements to the boat ramp will provide for increased visitor safety and satisfaction. Marking the trail with interpretive and way finding signage will improve visitor satisfaction and safety.

6.2.6 Kaskaskia River Channel and Shoreline Lands and Waters

Location: RM 0.8-36, Randolph, Monroe, and St. Clair Counties

Land Classification: Multiple Resource Management - Vegetative Management

Managing Entity: USACE

Total Acres: 2,465 (Water = 1309; Land = 1165)

Plate #: 12

Description of Area: This area is the Kaskaskia River navigation channel and adjoining shoreline lands that extend from the lock and dam upstream to the head of the navigation channel at Fayetteville, Illinois. This area is managed by the Corps to support the navigation, fish and wildlife and recreation missions. Heavy recreation activities occur, such as fishing, boating, and hunting, as well as non-consumptive recreational activities such as bird watching, paddling and nature photography.

During project construction, 26 river bends were sliced off as the river was straightened and channelized for navigation shortening the distance from the mouth of the river to Fayetteville by 16 miles. These 26 cut off original channel meanders, or remnant side channels or oxbows as they are commonly called, were closed off on the upstream end in order to minimize sediment introduction. The lower ends were left open, to maintain aquatic connectivity with the main channel, creating a significant backwater system. The lower ends of the remnant channels experience significant siltation, causing the backwaters to become isolated from the river system. When funding is available, the Corps dredges the mouths of these side channels to maintain connectivity and sustain desirable fish and wildlife habitat for spawning, rearing, resting and feeding.

There are 9 boat ramps that access this area along the river. Four in developed recreation areas at Jerry F. Costello Lock and Dam (RM 0.5-0.8 W), Evansville (RM 11 E), Wood Duck (RM 19 E), and New Athens (RM 28.5 E). Several other minor boat access sites are located on these lands to access the channel. These are Fayetteville (RM 36 W), Becks Landing (RM 21.5 E), Joes Landing (RM 19 W), White Swan (RM 17.5 W), Camp Creek (RM 9 W), and Phegleys (RM 6 W).

The following is a list of the areas located in this river section and summary of recreation facilities available. Recreation areas are also identified on **Plates 5 – 12**.

Recreation Area		Managing Agency	Amenities
Evansville Recreation Area Plate 7	Evansville Day Use	Village of Evansville, Illinois (Supported by Illinois Department of Natural Resources/Corps)	Boat Ramp, Parking, Board, Water Safety Restrooms, Seating Area
	Evansville Marina	Kaskaskia Regional Port District	Docks, Parking, Restaurant, Fuel, Pump Out, Water Concessionaire
	Evansville Visitor Center	Village of Evansville, Illinois	
	Phegleys Water Access Plate 10	IDNR/USACE	Boat Ramp, Parking, Information Board, Water Safety Information
	Camp Creek Water Access Plate 10	IDNR/USACE	Boat Ramp, Parking, Information Board, Water Safety Information
	White Swan Water Access Plate 10	IDNR/USACE	Boat Ramp, Parking, Information Board, Water Safety Information
Baldwin Recreation Area Plate 8	Wood Duck Day Use	IDNR	Parking, Boat Ramp, Picnic Shelter, Picnic Sites, Restroom, Water Safety Information
	Kaskaskia Day Use	IDNR/USACE	Parking, Restroom, Boat Ramp, Picnic Tables
New Athens Recreation Area Plate 9	New Athens Day Use	Village of New Athens, Illinois (Support by IDNR/USACE)	Boat Ramp, Parking, Restrooms, Public Information, Loading Docks, Seating Area
	New Athens Marina	Village of New Athens, Illinois/ Concessionaire	Docks, Restaurant, Restrooms
	New Athens Campground	Village of New Athens, Illinois/ Concessionaire	Campground
	Fayetteville Access Area Plate 10	Village of Fayetteville, Illinois (Support IDNR/USACE)	Boat Ramp, Parking, Information Board

Table 6-23: Kaskaskia River Channel and Shoreline Lands Summary of Recreation Areas and Facilities

Facility/Totals					
Picnic Sites	30	Campsites (E/W/S)*	82/8/8	Wet Slips	275
Picnic Shelters	1	Dump Station	1	Dry Slips	200
Boat Ramp/Lanes	2/5	Playgrounds	1	Gas Sales	1
Car Parking	209	Rest Rooms	4	Boat Ramps/Lanes	1/1
Trailer Parking	163	Amphitheater	1	Restrooms (V/WB)*	0/1
Courtesy Dock	1	Water Hydrants	6		
Trails/Trail Miles	1/6	Shower Building	1		
Water Fountains	1	Laundry	1		
Rest Rooms (V/WB)*	0/1				
Playground	1				
Fish Cleaning Station	1				

Table 6-24: Summary of Existing Facilities within the Kaskaskia River Channel and Shoreline Lands and Waters

***(E=Electric, W=Water, S=Sewer, V=Vault, WB=Waterborne)**

Proposed Actions: Continue to operate the area to support the KRP missions of navigation, recreation and fish and wildlife habitat.

The navigation channel will be maintained based on funding. The channel above the lock and dam to New Athens has not required dredging. The 8 miles of channel from New Athens to Fayetteville, especially the upper two miles, receives siltation at an annual average load of approximately 75,000 CY and will likely require annual dredging until the upstream headcutting issue is resolved. The mouth of the river requires annual dredging due to sediment deposition from the Mississippi River and is the first priority for channel maintenance. When the Kaskaskia Regional Port District completes their most recent port terminal development at the head of navigation at Fayetteville and secures an operator for the terminal, then dredging will be required to keep the terminal in operation.

Corps recreation operations include a visitor assistance program including safety boat and land patrols, an interpretive services and water safety program, maintaining mile markers and emergency pick up point signs, maintaining no wake zones and restricted boat areas, operating the floating restroom at Joes Landing, working with the IDNR to operate White Swan, Camp Creek, Phegleys and Joes Landing Boat Access Areas,

issuing Special Use and Events Permits according to Corps policy, working with partners through Challenge Partnership and Volunteer Agreements to provide additional services and facilities and working to establish kayak put in and take out locations and developing a water trail in partnership with IDNR, KRPD, LKSI and others.

The Corps will (1) continue to provide healthy bottomland forest and desirable wildlife habitat on shoreline lands in partnership with the IDNR through vegetative management practices that sustain stable shoreline areas and utilize revetment, geotubes or other armoring methods to control erosion and sedimentation on unstable, problem areas; (2) continue to remove accumulated sediments blocking remnant side channel mouths to maintain connectivity and free exchange of adequate water depth for environmental and recreation purposes; (3) research new approaches to sustain the opening of side channel mouths through engineering solutions such as deflection/scouring dikes or other techniques; (4) when funding is available, remove sediments plugging side channel mouths and work with the IDNR, KRPD and stakeholders to determine priorities for reopening side channels; (5) conduct baseline inventories, in cooperation with IDNR, to achieve and maintain quality aquatic, wildlife and vegetative resources in the area. (Management activities will be based on Habitat Needs Assessment, which is founded on baseline inventory data. Designated dredge disposal areas will be subject to periodic vegetative management and site grading activities in order to assure continued availability. This activity will be in accordance with specific management objectives and techniques developed in cooperation with IDNR.) (6) continue to improve the fisheries at the project through stocking, development of brood ponds, placement of fish structures and establishing partnerships to enhance the fisheries; And (7) identify and conduct wetland habitat enhancement projects as feasible in partnership with IDNR and others.

As funds are made available, the KRP, with support from the St. Louis District Office, will research, re-survey as needed, and sign the USACE KRP Fee title and Operations Easement boundary project-wide.

As demand warrants additional facilities will be considered. These could include additional interpretive features, picnic sites, wildlife viewing areas, improved parking areas and hiking trails, etc. Any additional facilities will consider the flooding that occurs in the area.

The Lower Kaskaskia River Stakeholders, Inc. the IDNR, KRPD will be a major stimulus for future development of this area. KRPD recently had recreation, safety, fish and wildlife, added as a purposes to their operations. Through opportunities for identifying mutually beneficial, recommended projects and partnerships, the KRP will seek ways to participate, support implementation and leverage resources through various existing O&M authorities, special project appropriations, in-kind labor/technical support, pilot programs, challenge cost share agreements, volunteer agreements, Memoranda of Agreement/ Memoranda of Understanding, and USACE Continuing Authorities Program (CAP).

6.2.7 Kaskaskia River Project Flowage Easement Lands

Location: RM 0.8-36, Randolph, Monroe, and St. Clair Counties

Land Classification: Flowage Easement

Managing Entity: USACE & IDNR

Plate #: 3

Acres: 3,496

Description of Area: This area is located on adjacent floodplain lands along the navigation channel that are occasionally inundated by flood waters. Almost all of the flowage easement lands are on IDNR owned land and managed for a variety of fish, wildlife, vegetative and recreation management activities. A very small amount of private lands adjacent to the state owned lands, primarily on some of the creek tributaries, were also acquired for flowage easement.

The flowage easement acquisition elevation limits for inundation are:

Elev. 371 for River miles 10.5 to 16

Elev.372 for RM 16 - 19

Elev.373 for RM 19 - 20.25

Elev. 374 for RM 20.25 - 21.5

Existing Facilities: There are no existing facilities in this area.

Proposed Actions: There are no proposed actions for this area.

CHAPTER 7 – SPECIAL TOPICS

7.1 Performance Measures: Low Tonnage and Budget Considerations

The Kaskaskia River Project and Jerry F. Costello Lock and Dam was placed in operation in 1974 and used by Peabody Energy, Inc. to ship coal. In the late 1990s, due to environmental regulations, Peabody stopped shipping high sulfur coal through the KRP. Concurrently, the Corps of Engineers began to develop metrics to prioritize funding for navigation projects. The Kaskaskia River Project is considered a low tonnage waterway within the Corps as it falls below the performance metric of 1 billion ton miles. There is no way for a small navigation project of only 36 river miles to exceed a billion ton miles. To address this issue, Congress directed the Corps to complete a Performance Measures Report in House Resolution 58, 2005 Omnibus Appropriations Bill (approved 8 December 2004). Reports were submitted to HQUSACE in 2006, 2009 and 2011. See **Appendix B** for Report to Congress, Kaskaskia River, Illinois Watershed Performance Measures, December 2011.

The Corps' performance measures now consider other factors in the budget process for low tonnage navigation projects. At KRP those factors include:

1. Upward tonnage trends
2. Port investment and expansion efforts
3. The fact that it is a multi-purpose project with navigation, environmental stewardship and recreation funds leveraging each other
4. Support of power generation
5. Safe harbor designation

However, projects with under one billion ton miles of cargo are still classified as “low tonnage” and are not a priority for funding. The competition for federal funds is very keen and gets tighter each year. In recent years, hard choices were necessary in distributing scarce federal dollars across a large and aging navigation infrastructure. In a constrained environment, the many worthwhile investment opportunities and ongoing maintenance must be prioritized across the entire spectrum of projects. Resources are focused on the highest priority projects in terms of reducing risk and providing optimal reliability to maximize benefits. The Navigation programs directs funds primarily to those channels, harbors and waterways systems that provide the highest return from the investment.

Although tonnage continues to trend upward, the Kaskaskia River Project is still programmatically a low-use navigation project based on 5-year average tonnage and national metrics. When studied from a much closer, regional level, the watershed, as a system, is a much higher performing project with considerable economic, recreation, and environmental benefits for the region. The lower river navigation channel serves as a major transportation corridor for southern Illinois. The KRP is one of the few navigation

projects in the country where performance relating to all of the national metrics is improving.

The project significantly reduced its operating costs since 2000 and with KRPD and private sector investments in navigation infrastructure, tonnage is up significantly from the early 2000s and continues to trend upward. Both actions have reduced the cost per ton. The Corps has made a large investment at Kaskaskia and the goal is to keep the KRP operating as a low tonnage waterway within the current budget criteria. Over the last 17 years we have been able to keep the project operating within the Corps budget guidelines with an average expenditure from all sources and across business lines of over \$3.5 million annually.

7.2 Low Tonnage Pilot Program

The U.S Army Corps of Engineers (USACE) Navigation Business Line Manager at Headquarters (HQ) selected the Kaskaskia River Project (KRP), in September 2011, to participate in a national operation and maintenance (O&M) funded initiative to evaluate methods to reduce channel maintenance costs. The focus of this initiative was low use navigation projects managed by the Corps with the goal of finding alternative non-traditional funding streams for maintenance of the channel. The end product of this effort was a report of findings to HQ. KRP received \$100,000 to conduct the study.

At the district level, one goal of the study was to examine the current channel maintenance funding issues facing the Kaskaskia River Project with the goal of developing innovative and sustainable solutions, potentially through partnering and leveraging of resources, to keep the channel at authorized dimensions. To achieve the goal of developing mechanisms to reduce federal costs associated with maintaining the 9-foot navigation channel, the Corps collaborated with state and local stakeholders to develop long-term scenarios to maintain channel availability. This will also help to facilitate opportunities for regional economic development. As part of the collaboration process, the team sought to define efficiencies, identify benefits, streamline environmental permit and compliance processes, address dredge spoil placement, and identify ways to recover dredging costs from direct beneficiaries. The Corps team provided technical expertise on data collection, planning, design effort, and permitting related to maintenance channel dredging.

Meetings were held with the local sponsors, Illinois Department of Natural Resources and the Kaskaskia Regional Port District to discuss methods to reduce the cost of maintaining the Kaskaskia River Project's 36 mile long navigation channel. The trend of economic development within the district was also discussed. Through discussions with partner organizations the following opportunities for reducing the cost of achieving channel maintenance objectives were identified:1. State of Illinois

The State of Illinois owns a dredge that was not in use and might be capable of dredging the channel. A visit to inspect the dredge was made by the St. Louis District Dredging Project Manager and key Corps staff. The dredge is an Ellicott 12 inch dredge with rebuilt

motor (never used), new booster pump, new pipe and new gaskets. The dredge happens to be the same model recommended in the Corps contract request for bids for dredging and can be transported overland by truck.

2. Kaskaskia Regional Port District

The Kaskaskia Regional Port District (KRPD) is working to develop a new port facility on the upper reach of the navigation channel at Fayetteville, IL (RM 35-36). The Illinois Department of Transportation, St. Clair County and KRPD have completed roller compacted road to the site. The site was annexed by the Village of Fayetteville. The KRPD's engineering firm estimated the facility to cost \$5 M. It was agreed between the Corps of Engineers, KRPD and Southern Illinois Transfer Company (SITCO) that rather than maintain the authorized 225 feet wide channel from New Athens to Fayetteville a 125 feet wide channel would be maintained. The area is currently managed to the agreed upon channel width of 125 feet wide.

3. Holcim Cement

The Kaskaskia Regional Port District contacted the Holcim Cement Plant, which operates a manufacturing plant at St. Genevieve Missouri just up river from the mouth of the Kaskaskia. They own a dredge which is used to maintain their terminal and harbor on the Mississippi. The dredge could be available for use on the Kaskaskia at a cost less than normal commercial rates. A meeting was held with Holcim Cement to discuss possible use of their dredge. Unfortunately, Holcim Cement attorneys concluded that because Holcim USA is foreign-owned they could not do the work because of the Jones Act.

Potential alternatives evaluated in the study in coordination with Illinois Department of Natural Resources, and Kaskaskia Regional Port District include the following:

1. Sole Source Contract
2. Donation of Illinois Dredge
3. Leasing of Illinois Dredge
4. Dredging By Others
5. Contribution of Funds
6. Challenge Partnership Agreement

See **Appendix C** to reference the full study. The primary problem addressed by this study is the need for dredging along the upper the three mile stretch between Fayetteville and New Athens. Under ARRA appropriated O&M funding, 25 years' worth of silt was removed from this reach which triggered KRPD to push for development of a new port terminal.

Annual dredging will be required in order to maintain the channel for industrial development and access to the new terminal. The St. Louis District will continue to pursue efforts described to determine the annual dredging requirement, find ways to reduce sedimentation into the project along with other means to reduce dredging costs.

By entering into a sole source contract with KRPD or another entity, the Corps could potentially save money under a dredging maintenance contract. However, due to regulations, entering into a sole source contract to have either KRPD or a private entity dredge the Kaskaskia is not a viable option. ER 1130-2-520, Chapter 8 on dredging, states that solicitation is the preferred method for outsider dredging contracts. Further, FAR 6.302-1, et seq., provides the justifications for awarding a sole source contract: (1) there is no other source for the service, (2) there is an unusual and compelling urgency, (3) specific capabilities or expertise are required for the service, (4) international agreement, (5) by statute or there is a need for a brand name, (6) National security and (7) public interest, which is an extensive process requiring approval by the Secretary of the Army. None of these are applicable in this situation.

At this point in time, common sense solutions that would maintain the channel and save tax payer dollars are unavailable for legislative and policy reasons. It is recommended that the appropriate legislative and policy language be amended to allow these solutions to be utilized.

7.3 Kaskaskia River Basin Feasibility Study

The Water Resources Development Act (WRDA) is the primary legislation by which Congress authorizes the U.S. Army Corps of Engineers' (Corps) key civil works missions, including navigation, flood risk management and ecosystem restoration. The authorities provided in WRDA enable the Corps to continue to provide value to the nation in developing and maintaining the nation's waterways, reducing damages from storm and flood events, and restoring the environment. WRDA 2007 (Section 5073) authorized the Corps, in consultation with the State of Illinois, the Kaskaskia Watershed Association, and appropriate Federal agencies to develop and carry out a study of the Kaskaskia River Basin.

Public Law (113-235) allowed the Corps to fund up to 10 previously authorized but unfunded studies. Through its performance based budget process, the Corps selected the study as 1 of 10 studies to be started nationally. This study was selected because it meets the Corps standards and has the potential to accomplish the Corps missions.

SMART studies have a maximum total study cost of \$3 million dollars with 50% of the study costs provided by the federal government and a 50% matching contribution by the non-federal sponsor. It is anticipated that a study extension above the three years will be needed because of the financial delay the non-federal sponsors encountered in FY 2016. The study's anticipated completion was late summer 2019.

The National Great Rivers Research and Education Center (NGRREC) and the U.S. Army Corps of Engineers (USACE) started a federal feasibility study in the Kaskaskia

River Basin in the fall of 2015. The purpose of the study was to identify significant aquatic resources, determine how those resources are being impacted now and will be in the future, and evaluate how various alternatives could restore its structure, function and processes to a more natural condition. In December 2015, NGRREC and USACE conducted a workshop identifying current problems, opportunities, constraints, objectives, solutions, and existing data and tools. In the following months, the team also conducted site visits, with support from local entities, within Reach I (Headwaters to Lake Shelbyville), II (Lake Shelbyville Dam to Carlyle Lake Dam) and III (Carlyle Lake Dam to Fayetteville). In the fall of 2016 USACE headquarters agreed that there is a federal interest to continue the evaluation of the Kaskaskia River Basin Feasibility Study as scoped by the team. This included evaluation of various solutions in all four reaches to address altered stream morphology, aquatic connectivity, decline in riparian diversity and a decrease in functional wetlands. The team utilized four distinct strategies to group solutions: (1) systemic approach to restore degraded channel morphology, (2) distributive approach to identify restoration potential in each reach, (3) critical habitat approach to identify ecologically scarce areas, and (4) a multi-objective approach to identify multiple project objectives.

An initial allocation of \$50,000 in federal funds were made available in late FY15. The sponsor provided a matching \$50,000 for project scoping. Acknowledging a shortage of non-federal funds, the project became inactive in February 2017. Since the project is inactive, minimal federal dollars will be spent to complete outstanding administrative items. Federal funds cannot be requested for a future fiscal year budget until the project is reactivated. Per current USACE regulation a project can remain inactive for five years prior to termination. NGRREC remains committed to the Kaskaskia Watershed effort and will continue to accrue water quality data as work in-kind match to federal dollars into the spring of 2017. The Corps is continuing to identify a non-Federal sponsor and has funds available to restart the study in a non-Federal sponsor comes forward with required funds or in kind work.

7.4 Remote Operations

In 1997, a concept study was approved by HQUSACE for a detailed analysis of remote operation of the lock and dam. Funds were provided in 1998 to complete the analysis. In December 1998, the Kaskaskia Lock and Dam Remote Control Study was complete. There were no insurmountable problems. Construction costs were estimated at \$3.4 million. The economic analysis resulted in a projected annual savings of between \$16,000 and \$89,000 depending on the scenario. This estimate did not include any funds for payment for the offsite operating location. The study also recommended that the lock and dam at the Kaskaskia River Project be a demonstration project for remote operation.

Tonnage locked at the KRP averaged over 2.5 million tons until the 1990s when air quality standards reduced demand for Illinois coal and tonnage dropped. In 1998, the Corps made a proposal to reduce hours of operation from 24 to 12 hours per day. A public meeting was held at Evansville, Illinois. There was intense public outcry and opposition to the reduced hours of operation.

In response, cost savings measures were implemented including adding fish and wildlife as a project purpose and combining the Kaskaskia River Project with the Carlyle Lake Project for operational efficiencies and to facilitate a watershed approach. Also, in 2000, recreation was added as a project purpose and administrative actions were completed by Carlyle Lake Project. In 2002, multiple responsibilities were added to the position description for Park Ranger and Lock Operator positions and recreation and environmental stewardship responsibilities were added to the onsite supervisor position. In 2006, three permanent positions were eliminated and 16 cameras were installed capable of being monitored onsite or offsite, and a security system for buildings and the main lock and dam was installed. During 2007, one person lock operations was implemented using onsite remote operations. During the period 2009-2011, investment in project infrastructure was completed with ARRA and flood supplemental funds.

In April 2012, an annual O&M cost estimate was completed for remote operations. There was a very small annual savings and with contingencies there was no savings. Based on the expected small costs savings, increased risk, reduced reliability, and negative impact of reduced hours of operation on continued private sector investment in navigation infrastructure a decision was made to stop pursuing offsite remote operations. If advances in technology reduce operating costs, remote operation could again be evaluated.

CHAPTER 8 – AGENCY AND PUBLIC COORDINATION

All materials and information used for public coordination activities in the development of this master plan are included as **Appendix D**.

Obtaining public input and coordinating with stakeholders, affected agencies and organizations was an important part in updating the Kaskaskia River Project Master Plan. Throughout the master plan update process every effort was made to involve the public, and coordinate with appropriate federal, state, and local agencies.

On November 5, 2015, letters were sent to affected agency officials and congressional interests, informing them about the master plan update process and timeline.

On November 12, 2015, letters were sent to stakeholders and partners, informing them about the Master Plan update process and timeline.

In November 2015, news releases were sent to local and state newspapers, television and radio stations, to inform the public about the master plan update, including dates, times and locations of public workshops, designed to provide information and obtain input for the updated master plan.

A web page was developed that included information about the master plan update process, public meeting dates, times and locations, as well as a way to provide input electronically through the website. A copy of the existing Kaskaskia River Project Master Plan was also accessible through the website.

In December of 2015 and January 2016, five public workshops were conducted at the following locations, dates and times:

1. Carlyle, IL: December 3, 2015, 2:30-5:50 pm at the Mariners Village Resort Conference Center, 1 Resort Drive
2. Vandalia, IL: December 8, 2015, 5-7 pm at the Americas Best Value Inn, 1920 N. Kennedy Blvd.
3. Germantown, IL: January 12, 2016, 5-7 pm at the Germantown American Legion, 1105 Sycamore St.
4. Red Bud, IL: January 13, 2016, 5-7 pm at the Kaskaskia Regional Port District Office, 336 N. Main St.
5. Chester, IL: January 14, 2016, 5-7 pm at the Chester Public Library, 733 State St.

Each of the workshops were well attended. Fact sheets about the master plan update process and a presentation was provided along with blank comment cards and an invitation to provide input concerning the Kaskaskia River Project Master Plan update.

In January and February 2016, coordination meetings were held with other federal, state and local agencies to discuss issues and identify areas of concern for the master plan update.

Written comments on the plan were received through 29 February 2016. A summary of all comments received can be found in **Appendix D**.

On April 8, 2016, a letter was sent to everyone that provided input, thanking them for their involvement and included a schedule for review of the updated Kaskaskia River Project Master Plan.

The initial draft of the updated Kaskaskia River Project Master Plan was completed by the end of June 2016 and sent to the St. Louis District Office for internal review and Quality Assurance and Quality Control evaluation.

In July 2016, a news release was sent to appropriate media outlets to inform the public about the availability to review the updated master plan and to identify the dates, times and locations for a second round of public information meetings to present highlights and significant changes to the Kaskaskia River Project Master Plan - 2016. In addition the updated master plan was made available for viewing on the website. <http://www.mvs.usace.army.mil/Missions/Recreation/Kaskaskia-River-Project/>

CHAPTER 9 – SUMMARY OF RECOMMENDATIONS

This chapter provides a summary of all of the proposed actions contained in this master plan. Proposed actions are intended to be accomplished during the next 10 to 15 years and were developed using the most current data available at the time this plan was developed. They take into consideration existing conditions, public and agency input, as well as future trends in outdoor recreation. Each of the proposed actions will require funding through the USACE budget formulation process and may require additional coordination with stakeholders and partners to achieve implementation. Even though most of the proposed actions were determined to be categorically excluded from further NEPA action, when implemented, some may require additional documentation in order to ensure compliance. Actions not captured by this master plan can still be completed by obtaining approved supplements.

Table 9-1 Identifies each proposed action, its location, type of action, a brief description and reference page within this document.

Proposed Action	Location	Type of Action (R/N/PA)*	Description	Page
Provide replacement gravel for road, parking and ramp	Old River North Cut-Off	R	Gravel and grade the access road, parking area and boat ramp to provide for visitor safety	
Mark hiking trail	Old River North Cut-Off	N	Mark hiking trail with appropriate signage	
Improve boat ramp	Old River North Cut-Off	R	Provide improvements to boat ramp for visitor safety and modify ramp for use by Kayakers	
Conduct vegetative management activities	Old River North Cut-Off	R	Conduct vegetative management activities to encourage the growth of favorable vegetation	
Maintain healthy forest	Old River North Cut-Off	R	Maintain forest through natural regeneration, supplemented with plantings as indicated by forest inventory	
Remove silt plug	Old River North Cut-Off	R	Remove silt plug at mouth of slough to promote free exchange of water, which will provide nursery habitat for fish.	

Proposed Action	Location	Type of Action (R/N/PA)*	Description	Page
Provide Administration building and Visitor Center	Lock & Dam Operations Area	R	Construct new administration building to include a visitor information center with display space and an open area for conducting presentations and public meetings. (See Chapter 6 for detailed information)	
Provide additional campsites	Lock & Dam Operations Area	R	When demand warrants, provide additional camping opportunities	
Provide Dump Station	Lock & Dam Operations Area	N	Provide dump station for the campground. Currently the nearest dump station is over 20 miles away. This service is critical for operation of a campground.	
Upgrade Sewage System	Lock & Dam Operations Area	R	Upgrading the sewage system will allow for campsites to be connected. When the system is upgraded, it should include the capability for campsite hookups	
Provide full hookup campsites	Lock & Dam Operations Area	R	Currently campsites only provide electrical service. Water and sewer service will provide for greatly increased customer satisfaction.	
Renovate existing campsites to meet design guidelines	Lock & Dam Operations Area	R	All campsites need to be updated to be in compliance with USACE design guidelines.	
Implement tree replacement Plan	Lock & Dam Operations Area	R	As a result of frequent inundation, many of the trees in certain locations have become extremely stressed. An aggressive tree replacement plan will be developed and implemented.	

Proposed Action	Location	Type of Action (R/N/PA)*	Description	Page
Provide leash-free dog area	Lock & Dam Operations Area	N	There is ample room to provide a fenced leash-free dog area. This will greatly improve customer satisfaction.	
Provide Wi-Fi for campground visitors	Lock & Dam Operations Area	N	Campground Wi-Fi has become a standard utility for most campgrounds. Providing this service for our customers will greatly improve their satisfaction	
Provide Playground	Lock & Dam Operations Area	N	A small natural playground will be installed	
Provide trail and connectivity to levee systems	Lock & Dam Operations Area	N	Connectivity to existing trail systems will be pursued. Ultimately the objective is to connect as many existing trails as possible. Of particular interest is connecting the Kaskaskia levees system to the Mississippi Levee trail system.	
Replace restroom with Shower/Restroom combination	Lock & Dam Operations Area	R	The existing restroom will be replaced with a combination restroom/shower facility.	

Table 6-25: Summary of Proposed Actions *(Replacement/New/Previously Approved)

CHAPTER 10 - BIBLIOGRAPHY

The Kaskaskia River Project Master Plan was developed using the following USACE guidance:

- a. ER 200-2-3 Environmental Compliance Policies (29 OCT 2010)
- b. EP 200-2-3 Environmental Compliance Guidance and Procedures (15 DEC 2001)
- c. ER 405-1-11 Real Estate Acquisition (28 NOV 2014)
- d. ER 405-1-12, Chapter 8 (Real Property Management) (30 SEP 1994)
- e. ER 1105-2-100 Planning Guidance Notebook (22 APR 2000)
- f. EM 1110-1-400 Recreation Planning and Design Criteria (1 NOV 2004)
- g. ER 1110-2-400 Design of Recreation Sites, Areas, and Facilities (31 MAY 1988)
- h. ER 1130-2-406 Shoreline Management at Civil Works Projects (28 MAY 1999)
- i. ER 1130-2-500 Partners and Support (Work Management Policies) (1 JUN 2006)
- j. ER 1130-2-540 Environmental Stewardship Operations and Maintenance Policies (11 AUG 2008)
- k. EP 1130-2-540 Environmental Stewardship Operations and Maintenance Guidance and Procedures (11 AUG 2008)
- l. ER 1130-2-550 Recreation Operations and Maintenance Policies (30 JAN 2013)
- m. EP 1130-2-550 Recreation Operations and Maintenance Guidance and Procedures (30 JAN 2013)
- n. ER 1165-2-400 Water Resource Policies and Authorities, Recreation Planning, Development, and Management Policies (31 MAY 1988)
- o. Water Control Manual – Appendix A to Master Reservoir Regulation Manual (27 OCT 2008)

The following studies, reports and documents were reviewed, evaluated and used as reference material in developing this master plan.

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- b. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, US Fish & Wildlife Service
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- o. Full to Overflowing: A Study of Lake Carrying Capacity, LaGrange County Lakes Council, Inc., LaGrange, Indiana, and Steuben County Lakes Council, Inc., Angola, Indiana, May 23, 2006.
- p. Global Climate Change Impacts in the United States, U.S. Global Change Research Program, June 2009
- q. Guidelines for the Safe Operation and Maintenance of Marinas, National Water Safety Congress, 2001
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- s. Illinois Public Hunting Areas Report, 2013-2014 Season, IDNR, April 1, 2014
- t. Illinois Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2015-2019, IDNR
- u. Illinois: 2010 - Summary Population and Housing Characteristics, U.S. Department of Commerce, November 2012
- v. Land & Water Report, IDNR, June 30, 2013

- w. Managing for Ethnic Diversity: Recreation Facility and Service Modifications for Ethnic Minority Visitors, USACE, June 2002
- x. Multi-Hazard Mitigation Plan, Clinton County, IL, February 2010
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- aa. Outdoor Recreation Participation Report 2015, Outdoor Foundation, 2015
- bb. Outdoor Recreation Trends and Futures, USFS, 2010
- cc. Program Management Plan for the Recreation Program, USACE, 2004-2007
- dd. Project Management Plan (PMP): Lake Shelbyville, Carlyle Lake & Kaskaskia River Project Master Plans - Kaskaskia River Watershed, August 2015
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<http://www.corpsresults.us/recreation/index.cfm>
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