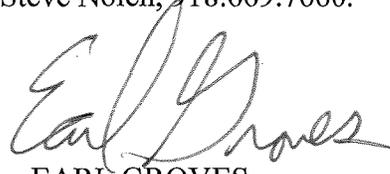


MEMORANDUM FOR Commander, Tulsa District

SUBJECT: Fall River Lake Revised Master Plan (September 2017)

1. Enclosed subject Master Plan is submitted for review and approval in accordance with ER 1130-2-550, Change 7 and EP 1130-2-550, Change 5.

2. Point-of-contact in Operations Division is Mr. Steve Nolen, 918.669.7660.



EARL GROVES  
Chief, Operations Division

Encl

Approved: CAH X Disapproved: \_\_\_\_\_



Christopher A. Hussin  
Colonel, U.S. Army  
District Commander

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# FALL RIVER LAKE MASTER PLAN

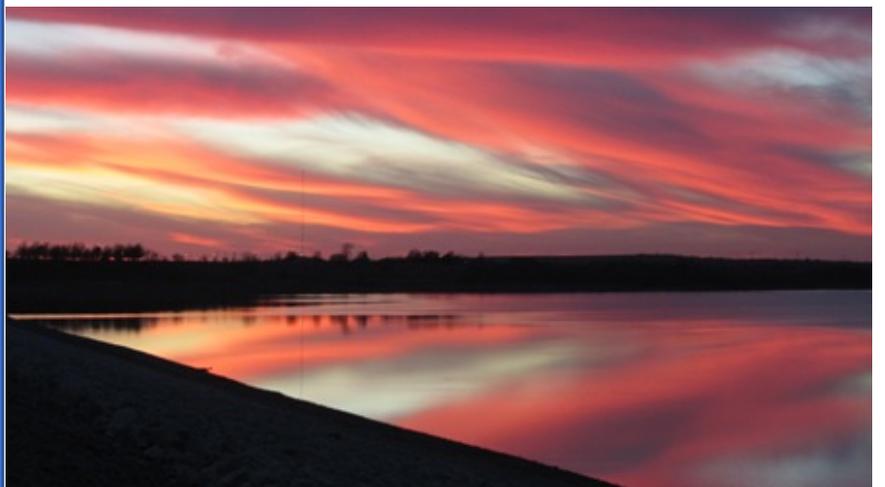


## FALL RIVER VERDIGRIS RIVER BASIN GREENWOOD COUNTY, KANSAS

September 2017



US Army Corps  
of Engineers®  
Tulsa District



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## **EXECUTIVE SUMMARY**

### **Fall River Lake Master Plan**

U.S. Army Corps of Engineers

Prepared by Tulsa District and the Regional Planning and Environmental Center

September 2017

### **PURPOSE**

The revision of the *Fall River Lake Master Plan* (Plan or Master Plan) is a framework built collaboratively to guide appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Fall River Lake over the next 25 years. The 1977 Master Plan for Fall River Lake was an update of the original 1948 Master Plan and has served well past its intended 25-year planning horizon. In addition to the inherent mission of environmental stewardship, the lake and dam's primary purposes are flood risk management, water quality, fish and wildlife conservation, recreation, and water supply. The 1977 Master Plan classifies a total of 12,797 acres of USACE land and 2,350 acres of surface water at conservation pool within the fee boundary. Due to land changes from erosion and sedimentation as well as better measurement technology, this number has increased. Currently, Fall River Lake encompasses 13,185 acres of land and 2,084 acres of surface water, protecting lands downstream from the dam through flood mitigation and low-flow regulation for pollution abatement on the Verdigris River while providing water for agriculture and town water supply, as well as conserving habitat for fish and wildlife conservation and public recreation. This Plan and supporting documentation provides an inventory, analysis, goals, objectives and recommendations for USACE lands and waters at Fall River Lake, Kansas.

### **PUBLIC INPUT**

To ensure a balance between operational, environmental, and recreational outcomes, public and agency input toward the Master Plan was obtained. An Environmental Assessment (EA) was completed in conjunction with the Master Plan Revision to evaluate the impacts of alternatives. The EA is included in Appendix B.

Approximately 45 individuals, not including USACE personnel, attended the public scoping meetings held at the onset of the process on 15 and 17 November 2016 for both the Fall River Lake Master Plan Revision and its sister lake, the Toronto Lake Master Plan Revision, whose master plan revisions are being developed simultaneously. USACE received a total of eight comments during the initial 30-day comment period, with Utility Track Vehicle / All-Terrain Vehicle Trails and Erosion/Dredging/Silting/Lake Level being the most significant issues. None of the comments received were directly related to changes to land classifications for the master plan, however, all the public comments received were noted and will be addressed as future funds and development are considered.

The final draft Master Plan, Shoreline Management Plan and Environmental Assessment with the accompanying Finding of No Significant Impact (FONSI) was made available for public and agency review online beginning 08 August 2017 and remained open for public and agency review through 08 September 2017. Two comments were received during this time; one “no comment” from the general public and one “no comment” from the State Historical Preservation Office (SHPO).

## RECOMMENDATIONS

The following land classifications changes (detailed in Chapter 8, Table 8.1) resulted from the inventory, analysis, and synthesis of data, documents, and public and agency input. In general, 986 total acres were reclassified, with fee and conservation pool acreage changes due in part to siltation and improvements in measurement technology using Geographical Information System (GIS) technology. This software allows for more finely tuned measurements and thus acreages may vary slightly from official land acquisition records.

Prior Land Classifications (1977)	Acres		New Land Classifications	Acres	Net Difference
Project Operations	126		Project Operations (PO)	81	-45
Recreation – Intensive Use	1,792		High Density Recreation (HDR)	1,911	119
			Environmentally Sensitive Areas (ESA)	200	200
Recreation – Low Density	493		Multiple Resource Management – Low Density Recreation (LDR)	-	-493
Wildlife Management	10,522		Multiple Resource Management – Wildlife Management (WMA)	11,007	485
			Multiple Resource Management – Vegetation Management (VMA)	-	-
			Future/Inactive Recreation Areas	-	-

\* **Note:** Acreage figures were measured using GIS technology and may vary slightly from official land acquisition records.

## PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction of Fall River Lake. Chapter 2 consists of an inventory and analysis of project resources. Chapters 3 and 4

lay out management goals, resource objectives, and land allocation and classification. Chapter 5 is the resource plan that identifies how project lands will be managed through a resource use plan for each land use classification. This includes current and projected park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details topics that are unique to Fall River Lake. Chapter 7 identifies the coordination efforts and stakeholder input gathered for the development of the Master Plan, and Chapter 8 gives a summary of the changes in land classification from the previous master plan to the present one. Finally, the appendices include information and supporting documents for this Master Plan revision, including Land Classification and Park Plate Maps (Appendix A).

An EA analyzing alternative management scenarios for Fall River Lake has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA); regulations of the Council on Environmental Quality; and USACE regulations, including Engineer Regulation 200-2-2: Procedures for Implementing NEPA. The EA is a separate document that informs this Master Plan and can be found in its entirety in Appendix B. It should be noted that the 1976 Lakeshore Management Plan (new nomenclature is Shoreline Management Plan) for Fall River Lake is being revised simultaneously with the Master Plan to ensure compatibility between the two plans. The EA analyzes and addresses impacts to both revision processes

The EA evaluated two alternatives as follows: 1) No Action Alternative, 2) Proposed Action. Three additional alternatives were considered but eliminated as follows: 3) Revise Master Plan to Only Reflect Changes in Land Classification Names with No Change in Operation and Use, 4) Revise Master Plan and Lakeshore Management Plan to Meet Authorized Project Purposes and to Maximize Recreation, and 5) Revise Master Plan and Lakeshore Management Plan to Meet Authorized Project Purposes and to Maximize Natural Resource Management. The EA analyzed the potential impact of the No Action and Proposed Action would have on the natural, cultural, and human environments. Because the Master Plan is conceptual, any action proposed in the plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation at the time the action takes place.

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# CHAPTER 1 - INTRODUCTION

## 1.1 GENERAL OVERVIEW

Fall River Lake is a multipurpose water resources project constructed and operated by the U.S. Army Corps of Engineers (USACE), Tulsa District. The lake and associated federal lands are located in Greenwood County, Kansas (KS). Fall River Dam is situated on the Fall River, a tributary of the Verdigris River, is about four miles northwest of the town of Fall River and 17 miles southeast of Eureka, KS. The dam and associated infrastructure, as well as all lands acquired for the Fall River Lake project, are federally owned and administered by the USACE.

This Master Plan is intended to serve as a comprehensive land and recreation management guide with an effective life of approximately 25 years. The focus of the Plan is to guide the stewardship of natural and cultural resources, and make provision for outdoor recreation facilities and opportunities on federal land associated with Fall River Lake. The Plan does not address the flood risk management, or water supply purposes of Fall River Lake (see the USACE Water Control Manual for Fall River Lake for a description of these project purposes). The Fall River Lake Master Plan was last updated in 1977, which is well past the intended planning horizon.

## 1.2 PROJECT AUTHORIZATION

Fall River Lake was authorized by the Flood Control Act of 18 August 1941 (Public Law 77-228; Project Document HD 440, 76<sup>th</sup> Congress, 1<sup>st</sup> Session). Construction was started in 1946 and the project was completed in 1949 and was authorized to provide flood control and low-flow regulation in the Verdigris River Basin. In addition to flood control storage, the conservation storage totals 23,900 acre-feet, of which 8,200 acre-feet is in permanent storage for sedimentation reserve, and the remaining 15,700 acre-feet is used for releases of water during dry periods for supplemental water supply. The pertinent data in Table 1.1 is based on a 1990 sedimentation survey and differs slightly from this data.

## 1.3 PROJECT PURPOSE

Fall River Lake is a multipurpose water resource project constructed and operated by USACE. The project is included in a four-lake system with Elk City, Toronto, and the authorized but never constructed Neodesha Lake for flood control and low-flow regulation for pollution abatement and supplemental water supply on the Verdigris River in Kansas. Fall River Lake has the following primary purposes:

- Flood risk management
- Water quality
- Water Supply
- Fish and wildlife
- Recreation

Environmental stewardship, though not listed as a primary project purpose, is a major responsibility and inherent mission in the administration of federally owned lands. Other laws, including but not limited to Public Law 91-190, National Environmental Policy Act of 1969 (NEPA) and Public Law 86-717, Forest Cover Act, place emphasis on the environmental stewardship of Federal lands and USACE-administered Federal lands, respectively.

#### **1.4 PURPOSE AND SCOPE OF MASTER PLAN**

In accordance with Engineering Regulation (ER) 1130-2-550 Change 07, dated 30 January 2013 and Engineering Pamphlet (EP) 1130-2-550 Change 05, dated 30 January 2013, master plans are required for most USACE water resources development projects having a federally owned land base. This revision of the Fall River Lake Master Plan is intended to bring the master plan up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are impacting the lake, as well as those anticipated to occur within the planning period of 2017 to 2042 (i.e., 25 years).

The Fall River Lake Master Plan is the strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Fall River Lake project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources. It makes provision for outdoor recreation facilities and opportunities on federal land associated with Fall River Lake for the benefit of present and future generations. The Plan guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is a dynamic and flexible tool designed to address changing conditions. The Plan focuses on carefully crafted resource-specific goals and objectives. It ensures that equal attention is given to the economy, quality, and needs in the management of Fall River Lake resources and facilities, and that goals and objectives are accomplished at an appropriate scale.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational and socioeconomic conditions and trends. With a generalized conceptual framework, the process focuses on four primary components, as follows:

- Regional and ecosystem needs
- Project resource capabilities and suitability
- Expressed public interests that are compatible with Fall River Lake's authorized purposes
- Environmental sustainability elements.

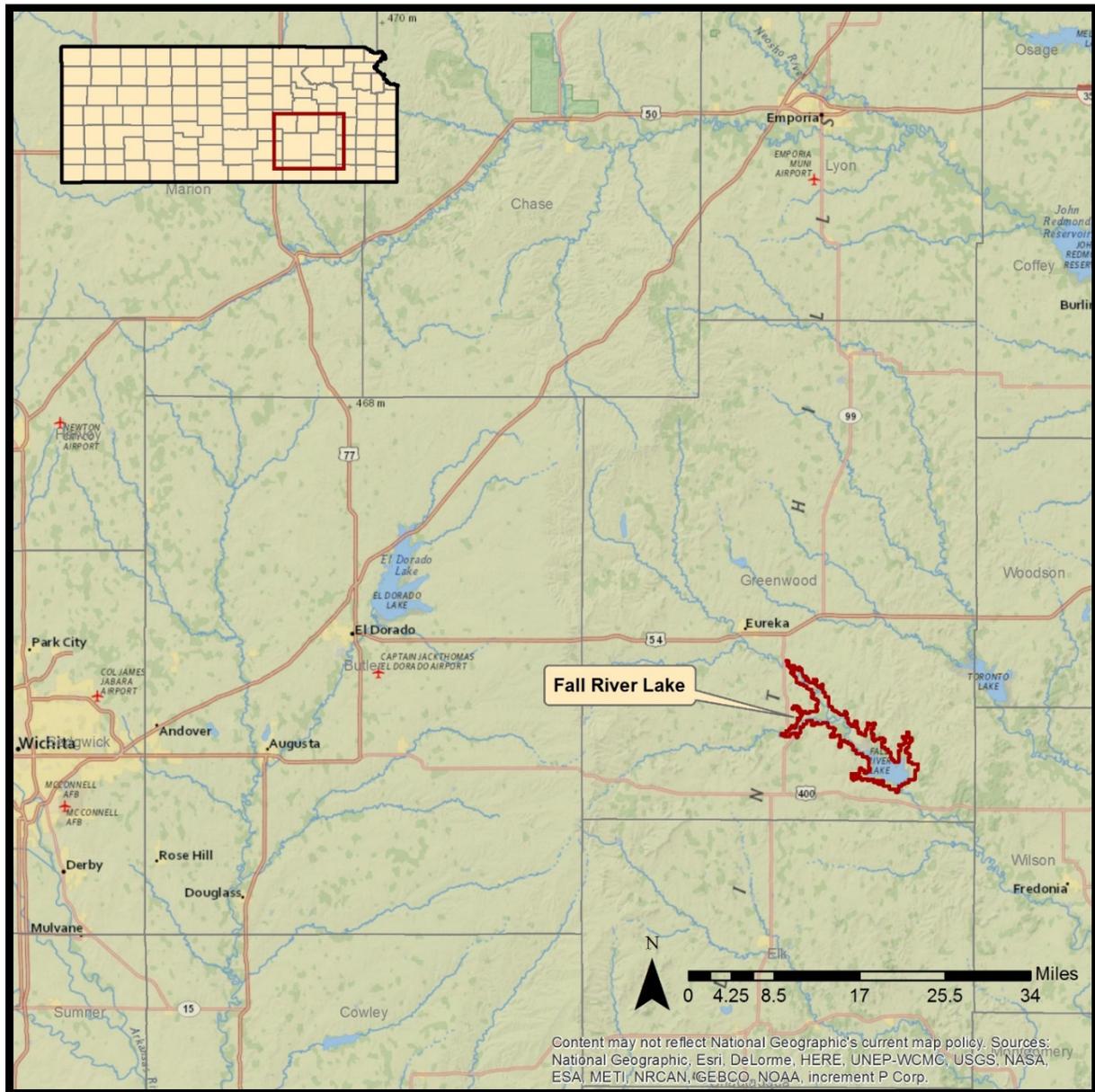
It is important to note what the Master Plan does not address. As noted in Section 1.1, the Plan does not address the flood risk management or water supply purposes of Fall River Lake. Not addressed in this plan are details of design; management and administration; and implementation, but they are addressed in the Fall River Lake Operational Management Plan (OMP). In addition, the Master Plan does not address the

specifics of regional water quality, shoreline management, or water level management. The operation and maintenance of primary project operations facilities, including but not limited to the dam, spillway, and gate-controlled outlet, are not included in this Plan.

The 1977 update to the Master Plan was sufficient for prior land use planning and management. Changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy have occurred over the past decades. Additionally, increasing fragmentation of wildlife habitat, national policies related to land management, climate change, and growing demand for recreational access and protection of natural resources are all factors affecting Fall River Lake and the region in general. In response to these continually evolving trends, USACE determined that a full revision of the 1977 Plan is required as set forth in this Plan.

## **1.5 BRIEF WATERSHED AND PROJECT DESCRIPTION**

Located in the Arkansas watershed, Fall River Lake is located on Fall River, a tributary of the Verdigris River, at river mile 54.2 in Greenwood County, Kansas. Construction of the dam was started on 9 May 1946 and the embankment closure was completed on 12 August 1948. Construction was completed for full flood control operation in April 1949, and the conservation pool was filled on 9 June 1949. The structure of the dam consists of a rolled impervious and random earth-filled embankment with rock protected slopes. The overall length is 6,015 feet (ft.) consisting of 5,545 ft. long embankment section and 470 ft. long spillway section.



**Figure 1.1 Fall River Lake Vicinity Map**

The spillway is a gate-controlled, concrete, gravity, ogee weir having a net overflow width of 400 ft., which is located across the existing stream channel between the embankment and the right abutment of the dam. Spillway discharges are controlled by eight 50-ft. by 25-ft. tainter gates. The concrete slab stilling basin has two rows of baffles and a 7-foot-high stepped-end sill. Spillway discharge at maximum pool is 229,000 cubic feet per second (cfs). Operating capacity of the channel below and at Fredonia, Kansas, is 6,500 cfs. The outlet works consist of seven 5- by 8.5-ft. rectangular sluices at invert elevation 915.0, which pass through the intermediate piers of the spillway. The sluices are controlled by hydraulically-operated slide gates. A 30-inch cast iron pipe passes through the weir with an invert elevation of 929.0 for low-flow releases. A 12-inch pipe is also located through the structure for future water supply.



**Photo 1-1 Fall River Dam and Spillway** (USACE Photo)

## **1.6 DESCRIPTION OF RESERVOIR**

Fall River Lake has approximately 2,084 water surface acres, as calculated using GIS technology, with 42 miles of shoreline at conservation pool elevation 948.5 National Geodetic Vertical Datum (NGVD). The lake is located in a rolling hill region of southeastern Kansas. The damsite is on the Fall River at river mile 54.2 in Greenwood County, Kansas about 4 miles northwest of the town of Fall River and 17 miles southeast of Eureka, Kansas. The flood control pool ranges from elevation 948.5 – 987.5 NGVD. At the top of the flood-control pool, the water surface of the lake covers 10,370 acres and holds back floodwaters originating from 585 square miles of drainage area above the dam. The total drainage area of the Fall River Basin is 884 square miles.

## **1.7 PROJECT ACCESS**

Primary roads furnishing access to the area in which the project is located are United States (US) Highway 54 and 400 and State Highway 99. US Highway 54 is an east-west road located north of the lake and runs through Eureka, Kansas. US Highway 400 is an east-west road located south of the lake. State Highway 99, a north-south road located west of the lake at its upper end, goes through Climax, Kansas. Fall River Lake is easily accessible via several smaller roads maintained by the state or county, as well as the Kansas Department of Wildlife, Parks, and Tourism (KDWPT) and USACE. At this time, no major roads are planned for this area.

## 1.8 PRIOR DESIGN MEMORANDA

Design Memorandums (DM) and planning reports approve and set forth design and development plans for all aspects of the project including the prime flood risk management facilities, real estate acquisition, road and utility relocations, reservoir clearing, and the master plan for recreation development and land management. The *Master Plan, Fall River Dam and Reservoir, Fall River, Kansas*, dated August 1948, presents a program for development and management of the Fall River area for recreation and other land and water uses. The following are DM's for Fall River Lake:

- Design Memorandum No. 2, Construction of Spillway and Completion of Embankment, dated May 1955.
- Design Memorandum No. 3, Concrete Aggregates, dated December 1955.
- Design Memorandum No. 4, Relocations, Greenwood County Roads, dated March 1956.
- Design Memorandum No. 5, Relocations: Texaco-Cities Service Pipeline Company Facilities, dated October 1956.
- Design Memorandum No. 6, Relocations – Woodson County Roads, dated March 1957.
- Design Memorandum No. 8, Relocation of Kansas Highway 105, dated May 1957.
- Design Memorandum No. 9, Relocations – Standard Oil Company Pipeline Facilities, dated May 1957.
- Design Memorandum No. 10, Relocations – Great Lakes Pipeline Company Facilities, dated May 1957.
- Design Memorandum No. 11, Preliminary Master Plan for Reservoir Development and Management, dated June 1957.
- Design Memorandum No. 11-2, Master Plan for Reservoir Development and Management, dated 20 March 1958, revised February 1959, updated June 1979.
- Design Memorandum No. 12, Access Roads and Recreational Facilities, dated July 1957.
- Design Memorandum No. 13, Relocations of Streets and Utilities, Toronto, Kansas, dated August 1957.
- Design Memorandum No. 14, Relocations – The McKrae Telephone Company, Inc. Facilities, dated September 1957.
- Design Memorandum No. 16, Relocations – Kansas Power and Light Company Facilities, dated November 1957.
- Design Memorandum No. 17, Relocations – Western Light and Telephone Company's Gas Pipeline, dated October 1957.

## 1.9 PERTINENT PROJECT INFORMATION

Pertinent information regarding operational pool elevations and existing reservoir storage capacity at Fall River Lake is provided in Table 1.1.

**Table 1.1 Fall River Lake Pertinent Data**

Feature	Elevation (feet, NGVD)	Lake area (acres)	Storage	
			(Acre-feet)	Equivalent Runoff <sup>(1)</sup> Inches
Top of Dam	996.5			
Maximum Pool <sup>(2)</sup>	991.0	11,140	287,700	9.22
Top of Flood Control Pool	987.5	10,370	254,876	8.17
Flood Control Storage	948.5-987.5	-	232,249	7.44
Spillway Crest	962.5	4,940	73,568	2.36
Top of Conservation Pool	948.5	2,350	22,627	0.73
Conservation Storage	940.0-948.5	-	14,931 <sup>(3)</sup>	0.48
Top of Minimum Pool	940.0	1,170	7,696	0.25
<sup>(1)</sup> From a 585-square mile drainage area above the dam. <sup>(2)</sup> Based on 51% of Probable Maximum Flood <sup>(3)</sup> For water quality control (7.7 mgd. yield). Lake data based on 1990 sedimentation survey.				

Current acreages for the various land classifications at Fall River Lake are shown in Table 1.2. These land classifications are standard throughout USACE and are set forth in EP 1130-2-550 dated January 2013. Acreages have been revised and updated from the previous Master Plan to reflect current and projected land use and resource management objectives. These acreages were calculated using Geographic Information Systems (GIS).

**Table 1.2 Acreage by Land Classification**

Classification	Acres
Project Operations	81
High Density Recreation	1,911
Environmental Sensitive Areas	200
Multiple Resource Managed Lands:	
Low Density Recreation	0
Wildlife Management	11,007
Vegetative Management	0
Future/Inactive Recreation Areas	0
Water Surface:	
Restricted	9
Designated No-wake	74
Fish and Wildlife Sanctuary	0
Open Recreation	2,001
<b>Total Acreage in Fee</b>	<b>15,269</b>
Note: Acreages are approximate and are based on GIS data. Totals vary depending on changes in lake levels, sedimentation, and shoreline erosion.	

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## CHAPTER 2 - PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

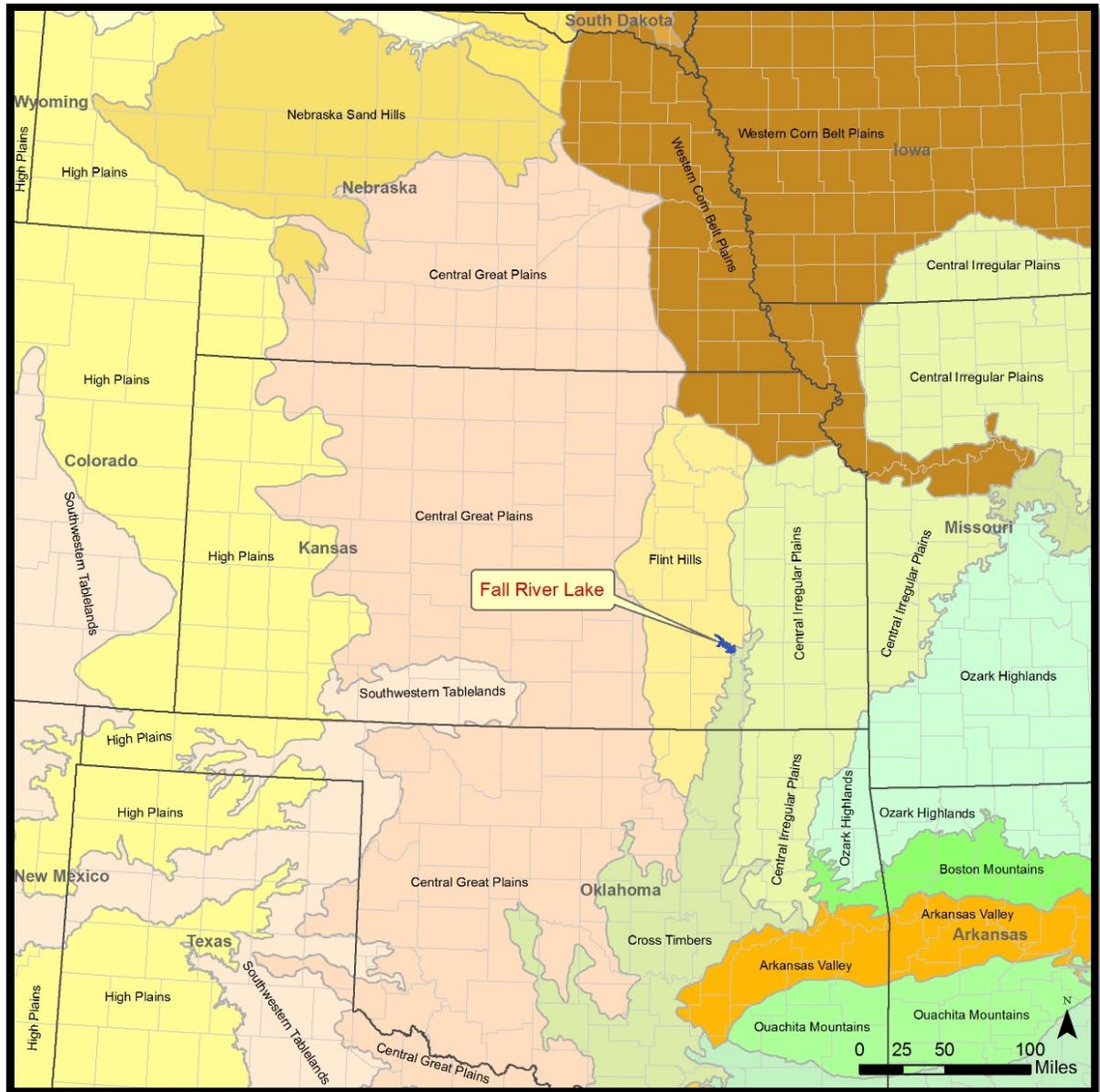
### 2.1 PHYSIOGRAPHIC REGION

#### 2.1.1 Ecological Setting

Ecoregions denote areas of general similarity in ecosystems and in the type, quantity, and quality of environmental resources. The Environmental Protection Agency (EPA) has developed a series of maps that categorizes these regions across the United States. Levels I and II divide the North American continent into 15 and 52 regions, respectively, while Level III ecoregions represent a subdivision of those into 104 unique regions and Level IV a finer sub-classification of those.

Fall River Lake lies at the northern end of the Cross Timbers ecoregion (Level IV) and extends into the Flint Hills ecoregion (Level IV). The Cross Timbers area extends through eastern Oklahoma into northern Texas. In Kansas, this region is known as the Chautauqua Hills and has a diversity of habitat that includes upland woodlands on sandstone outcrops dominated by post oak and blackjack oak, surrounded by terraces of prairie and gently rolling terrain gradually slopping to the water's edge.

The Flint Hills area is characterized by tall grasslands and is the smallest grassland ecoregion in North America. It covers the Flint Hills of Kansas and the Osage Plains of northeastern Oklahoma. It can be distinguished from other grasslands to the north by its low diversity of flora and fauna, and its thin soil layer spread over distinct beds of limestone. Abundant residual flint is eroding out of the bedrock in the rocky uplands. The Tallgrass Prairie National Preserve, operated by the National Park Service is located in the Flint Hills Ecoregion approximately 85 miles northwest of Fall River Lake.



**Figure 2.1 Ecoregions of Fall River Lake (Source: EPA)**

### 2.1.2 Climate

The climate of the region in which Fall River Lake is characterized by moderate winters and comparatively long, hot summers. Summer temperatures are often high, while subzero temperatures of short duration are not uncommon during the winter. High temperatures are experienced in July and August, with the average maximum highs of 87.5 and 89.3 and average minimum temperatures of 72.5 and 71.3, respectively. Lower temperatures come January, with the maximum average temperature of 44.2 and minimum average temperature of 16.6.

Average annual precipitation is 36.63 inches, predominantly from rainfall. The heaviest rains typically fall in May and June, with little precipitation in December, January and February. The highest single day rainfall was 11.76 inches on June 30, 2007. The highest rainfall in a single month was 22.82 inches and occurred in June 2007.

**Table 2.1 Temperature and Precipitation**

<b>Temperature. Fall River Period of Record (1902 – 2017)</b>	
Mean annual	69°F
Maximum	121° F (1936)
Minimum	-21° F (1949)
<b>Precipitation</b>	
Mean Annual (Period of record 1902 – 2017)	36.63"
Maximum annual (record)	62.96" (2008)
Minimum annual (record)	17.98" (1956)
Percent during growing season (Apr through Oct)	76.9%
Range of Annual Snowfall	0 - 34.5"

Source: National Weather Service <http://w2.weather.gov/climate/xmacis.php?wfo=ict>

**Table 2.2 Average Monthly and Annual Rainfall**

Month	Average Rainfall (inches) <sup>(1)</sup>	Percent of Average Annual Rainfall <sup>(1)</sup>	Average <sup>(2)</sup>		Percent of Average Annual Runoff
			(acre-feet)	Runoff (inches)	
Jan	1.25	3.32	9,520	0.31	3.76
Feb	1.34	3.56	13,490	0.43	5.33
Mar	2.39	6.34	27,990	0.90	11.05
Apr	3.61	9.58	36,060	1.16	14.24
May	5.12	13.59	39,210	1.26	15.48
Jun	5.44	14.44	42,420	1.36	16.75
Jul	3.77	10.01	17,200	0.55	6.79
Aug	3.55	9.42	9,530	0.31	3.76
Sep	4.27	11.33	15,030	0.48	5.93
Oct	3.20	8.49	15,030	0.48	5.93
Nov	2.31	6.13	16,890	0.54	6.67
Dec	1.43	3.80	10,880	0.35	4.30
<b>TOTAL</b>	<b>37.68</b>	<b>100</b>	<b>253,250</b>	<b>8.12</b>	<b>100</b>

<sup>(1)</sup> Source: National Weather Service <http://w2.weather.gov/climate/xmacis.php?wfo=ict>

<sup>(2)</sup> 2016 USACE Southwestern Division Reservoir Control Center Annual Water Control Report

National USACE missions associated with water resource development projects may include flood risk management, water conservation, navigation, and hydroelectric power generation, which all serve to protect the built and natural resources of a region from the climate extremes of drought and floods. This creates a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Maintaining a healthy vegetative cover and tree canopy on Federal lands within the constraints imposed by primary project purposes helps reduce stormwater runoff and soil erosion; mitigates air pollution; and moderates temperatures. The USACE Strategic Sustainability Performance Plan implements EO 13693, stating:

*“As a prominent Federal entity, a key participant in the use and management of many of the Nation’s water resources, a critical team member in the design, construction, and management of military and civil infrastructure, and responsible members of the Nation’s citizenry, the USACE strives to protect, sustain, and improve the natural and manmade environment of our Nation and is committed to sustainability and compliance with applicable environmental and energy statutes, regulations and Executive Orders.*

*Sustainability is ... a natural part of the USACE decision processes, [and is a] part of our organizational culture. USACE is a steward for some of the Nation’s most important natural resources and we must ensure our stakeholders and partners receive products and services that provide for sustainable solutions that address short and long-term environmental, social, and economic considerations.”*

### 2.1.3 Geology

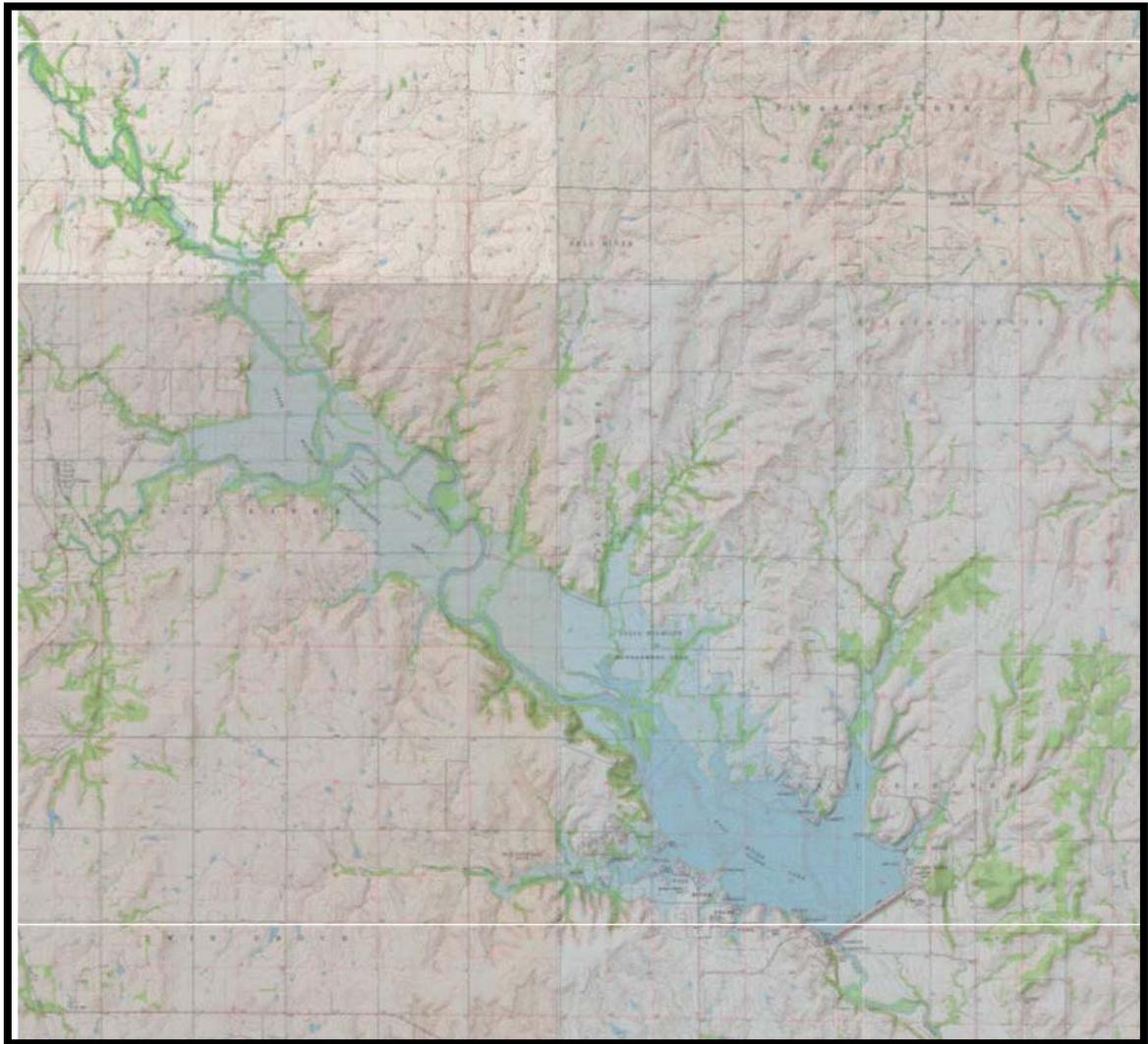
The Fall River Lake area contains rock formations dating back to the Pennsylvania Age. These formations are predominantly shale with a few limestone beds that have a slight regional dip to the west. To the east, the shale and limestone beds are overlain by a layer of sandstone of considerable thickness. With its rock outcroppings that create plateaus that vary the landscape and lend scenic value to the landscape, the vicinity has long been noted for its rolling prairies and tree-dotted valleys sheltered by limestone-capped ridges.

### 2.1.4 Topography

Though Fall River Lake Dam touches the Cross Timbers ecoregion on its southern border, the topography in which the lake lies is characteristic of the Flint Hills. This includes rolling plains, deeply incised valleys, limestone outcrops, and vegetative-covered shale intervals between the limestones. Figure 2.2 illustrates the variations in topography in the area.

The Fall River basin is formed by the junction of its east and west branches about 4 miles northwest of Eureka, Kansas and flows southeast for a distance of 89 miles to its confluence with the Verdigris River, approximately 4 miles downstream from Neodesha, Kansas. The channel of Fall River varies in width from 120 to 130 feet and is well defined, with banks that are from 15 to 35 feet in height, generally

stable, and thickly covered with trees and brush. The upper portion of the basin is characterized by steep, rocky slopes and rough, broken hills, rising in elevation of about 1,600 feet NGVD. The central and lower portions of the Fall River basin are rolling prairie, with general elevation of about 930 feet NGVD at the dam site and about 780 feet at the mouth of the river. The total drainage area of the Fall River Basin is 884 square miles, of which 585 square miles are upstream from the damsite.



**Figure 2.2 Fall River Lake Topography** (Source: Google Maps)

### 2.1.5 Hydrology and Groundwater

The Fall River flows into Fall River Lake after its confluence with Otter Creek. The watershed is dominated by the East and West Branches of Fall River, Otter Creek and Spring Creek. The watershed tends to be flashy during rainfall events but otherwise does not sustain flow during extended dry periods. The watershed drains steadily once rains cease with little support from base flow. The majority of the watershed is underlain by Pennsylvanian Wabaunsee Group of thick, water-tight shales, thus little ground water exists about the lake except in the stream alluvium. Surface water is used predominantly by municipalities and irrigators, with ground water use reported to the State for 2006 at 20 acre-feet for Greenwood County.

The flood of record occurred in June and July 1951. Maximum peak inflow (June 1951) was 105,000 cfs, and maximum flood volume (June and July 1951) was 368,000 acre-feet, which is equivalent to 11.8 inches of runoff.

### 2.1.6 Soils

A soil survey by the Natural Resource Conservation Service (NRCS) shows there are all eight possible general classifications (Classes I through Class VIII) occurring in the reservoir area. The erosion hazards and limitations for use increase as the class number increases. Class I has few limitations, whereas Class VIII has many. The soil class data for project lands is provided in Table 2.3. This data is compiled by the NRCS and is a standard component of natural resources inventories on USACE lands. This, and other inventory data, is recorded in the USACE Operations and Maintenance Business Information Link (OMBIL).

**Table 2.3 Soil Classes**

Soil Class	Acreage
Class I	2,516
Class II	5,174
Class III	1,142
Class IV	14
Class V	321
Class VI	3,203
Class VII	283
Class VIII	58

A general description of the soils at Fall River Lake and the land capability classes are described below.

- *Class I* soils have slight limitations that restrict their use.
- *Class II* soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- *Class III* soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
- *Class IV* soils have very severe limitations that restrict the choice of plants or require very careful management, or both.

- *Class V* soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- *Class VI* soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- *Class VII* soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
- *Class VIII* soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes.

The predominant soils at Fall River Lake in order of prevalence are Class I, II, and VI. In general, the soils in the watershed have low permeability and moderate erodibility, with the exception of the channel and flood plains of the Fall River and its tributaries. Detailed information on all soil types surrounding Fall River Lake is available on websites maintained by the NRCS, U.S. Department of Agriculture.

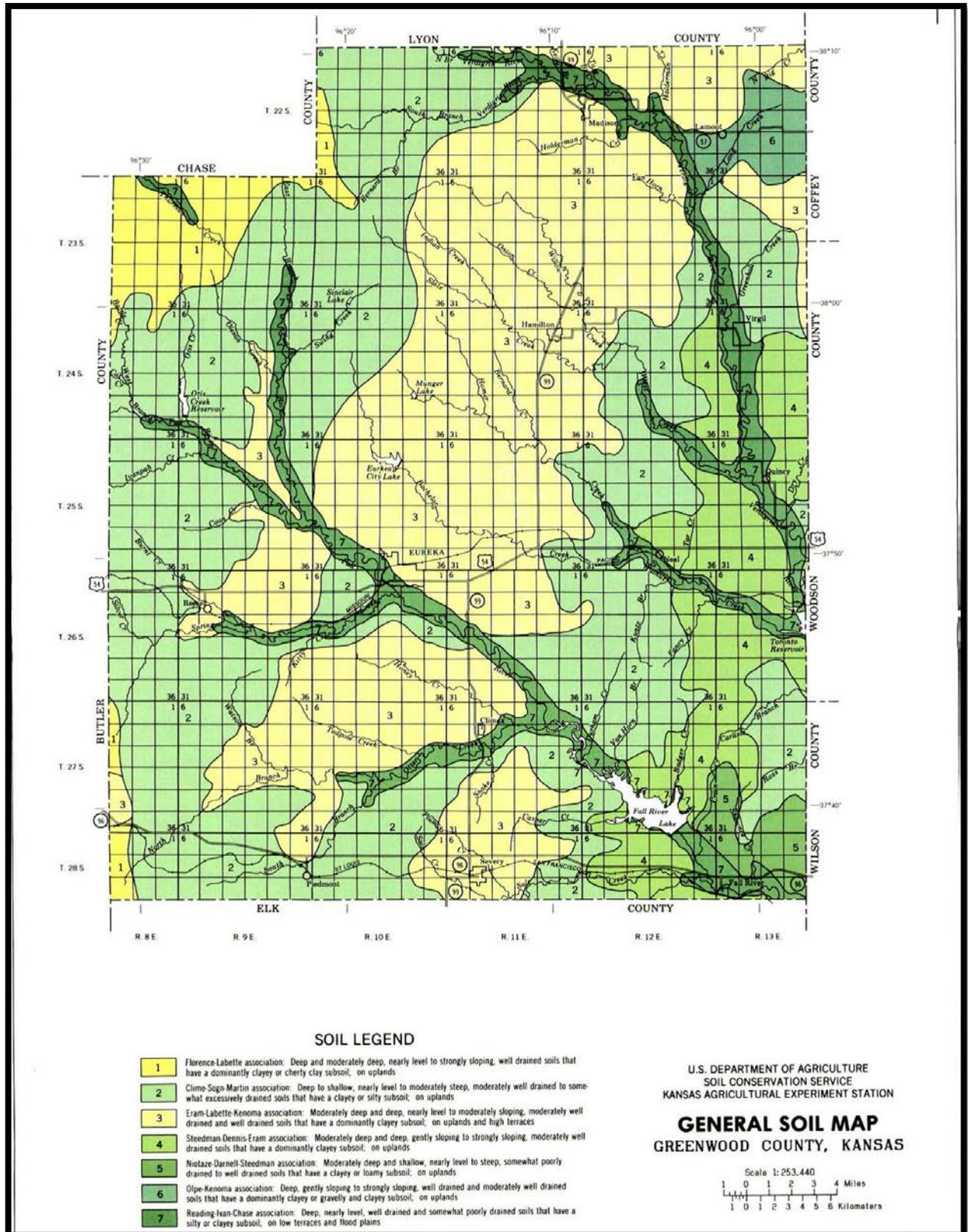


Figure 2.3 General Soils Map, Greenwood County, KS (Source: NRCS)

## 2.2 ECOREGION AND NATURAL RESOURCE ANALYSIS

Natural resources present at Fall River Lake include the waters, wetlands, soils, vegetation, and fish and wildlife, including those species listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) and the State of Kansas. The stewardship of natural resources on USACE administered lands adheres to ecosystem management principles as described in USACE regulations ER and EP 1130-2-540. Effective stewardship is imperative to the sustainability and use of project resources. The baseline analysis of the natural resources on USACE-administered lands relied heavily on the information provided in the 2016 KDWPT Strategic Wildlife Action Plan (SWAP) as well as fisheries reports generated by KDWPT.

### 2.2.1 Vegetative Resources

USACE regulations and policy require a basic inventory of the vegetation at all operational projects. This inventory, referred to in *EP 1130-2-540* as a Level 1 inventory, classifies the vegetation in accordance with the National Vegetation Classification System (NVCS) down to the Sub-Class level, which is a very broad classification level. The inventory data, presented in Table 2.4, is recorded in the USACE national database referred to as the OMBIL and is useful in providing a general characterization of the vegetation on all operational projects. Daily management of USACE lands requires more detailed knowledge of the vegetation down to the Association level within the NVCS, and for most management prescriptions, down to the individual species level of dominant vegetation.

**Table 2.4 Vegetation Classification and Condition 2016 Inventory**

Division	Order	Class	Sub Class	Total Sub-Class Acreage	Sustainable Areas	Transitioning Acres	Degraded Acres	Total Conditioned Acres
<b>VEGETATED (includes open water surface of the lake and eroded shoreline)</b>	Non-Vegetated	Non-Vegetated	Non-Vegetated	3,075	3,075	0	0	3,075
<b>VEGETATED</b>	Herb Dominated	Herbaceous Vegetation	Perennial graminoid vegetation (grasslands)	2,125	200	1,925	0	2,125
<b>VEGETATED</b>	Shrub Dominated	Shrubland (Scrub)	Deciduous shrubland (scrub)	5,625	0	5,625	0	5,625
<b>VEGETATED</b>	Tree Dominated	Closed Tree Canopy	Deciduous closed tree canopy	1,625	300	165	1,160	1,625
<b>VEGETATED</b>	Tree Dominated	Open Tree Canopy	Deciduous closed tree canopy	2,611	100	2,511	0	2,611
<b>Totals</b>				<b>15,061</b>	<b>3,675</b>	<b>10,226</b>	<b>1,160</b>	<b>15,061</b>

Note: Classification information derived from the National Vegetation Classification System

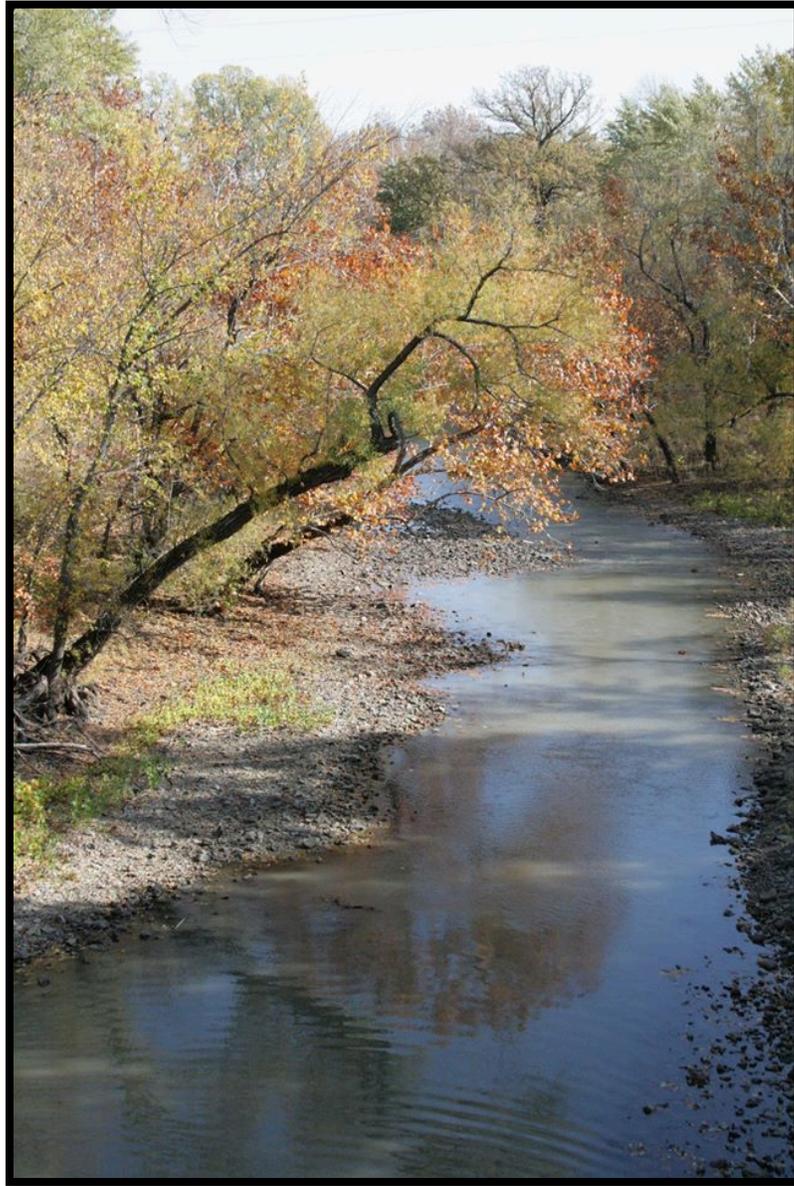
As described in the SWAP, the vegetation at Fall River Lake includes woodlands characteristic of the Chautauqua Hills Ecological Focus Area (EFA), and tallgrass prairie characteristic of the Flint Hills EFA. Woodlands include old growth stands of post oak – blackjack oak associations and oak-hickory associations. Riparian woodlands include stands of elm-ash-cottonwood associations. The native prairie consists of a mixture of tall and mid-grasses as well as numerous herbaceous and woody plants. These include, but are not limited to big and little bluestem, bitter sneezeweed, broomsedge, Canadian thistle, Indiangrass, purple top, ragweed species, sideoats grama, silver bluestem, and switchgrass. Johnsongrass is a common invasive species found in many native prairie areas. The largest expanse of native prairie on USACE-administered land is approximately 2,500 acres and is included in the KDWPT Fall River Wildlife Area.



**Photo 2-1 Wildflowers at Fall River Lake** (Source: USACE Facebook)

### 2.2.2 Wetlands

In accordance with national USACE policy, wetlands at operational projects are inventoried using the protocol established by the USFWS in their *Classification of Wetlands and Deepwater Habitats of the United States*. The majority of wetlands in the vicinity of Fall River Lake are in the palustrine system; however, wetlands classified in the lacustrine and riverine systems are also present (USFWS, 2016). Wetlands classified as palustrine are nontidal and are dominated by trees, shrubs, emergent aquatic plants, mosses, or lichens.



**Photo 2-2 Stream on Fall River Lake**

(Source: USACE Facebook)

Within these three systems (palustrine, lacustrine, and riverine), wetlands have been further classified as limnetic and littoral (lacustrine); emergent aquatic vegetation, forested, scrub-shrub, unconsolidated bottom, and unconsolidated shore (palustrine); and lower perennial (riverine). Many of the wetland types have been further classified as diked/impounded or excavated, indicating that they formed under conditions created by humans. The wetlands in the vicinity of Fall River Lake are also subject to different hydrologic regimes, including seasonally flooded, semi-permanently flooded, and permanently flooded.

Table 2.5 lists the acreages of various types of wetlands present at Fall River Lake. Data was retrieved from the FY2016 Project Wetland Classes reported in OMBIL. As noted in Table 2.5 all USACE land at Fall River Lake have been inventoried.

**Table 2.5 Wetland Classification 2016 Inventory**

<b>System</b>	<b>Sub-System</b>	<b>Class</b>	<b>Class Acres</b>
Lacustrine	Limnetic	Open water/Unknown Bottom	2,050
Lacustrine		Aquatic Bed	1
Lacustrine	Littoral	Unconsolidated Shore	5
Palustrine	-	Aquatic Bed	847
Palustrine	-	Emergent Wetland	210
Palustrine	-	Forested Wetland	272
Palustrine		Scrub-Shrub Wetland	74
Palustrine		Unconsolidated Bottom	2
Palustrine		Unconsolidated Shore	6
Riverine	Intermittent	Streambed	40
Riverine	Lower Perennial	Unconsolidated Bottom	104
Palustrine	Lower Perennial	Unconsolidated Shore	10
Total Un-inventoried Project Fee-Owned Area			0

Source: USACE OMBIL

### 2.2.3 Fish and Wildlife Resources

The interface of upland areas with the water of the lake and river directly and indirectly supports a wide diversity of aquatic and terrestrial wildlife. Fish and wildlife are an essential component of management and public use at Fall River Lake and include game and non-game species and their habitat. Fall River State Park encompasses 980 acres, and is adjacent to more the 9,000 acres of public wildlife management area managed by the KDWPT. The area provides needed habitat for many species of wildlife including some of the 8 species listed in the SWAP as Tier 1 Species in Need of Conservation (SINC) and 70 species listed as Tier 2 SINC within the Flint Hills and Chautauqua Hills EFAs. These SINC species require large contiguous tracts of native prairie. The following is a description of the fish and wildlife resources found at Fall River Lake.

#### Fisheries Resources

Fishing is a popular activity at Fall River Lake, offering more than 17 miles of public river access. A 2017 Fishing Report prepared by KDWPT provides the summary information for Fall River Lake by species, overall fishing quality, size of fish, baits and methods, and location. The report indicates that channel catfish,

crappie, largemouth bass and white bass are all of good quality. The information for 2017 was compiled by KDWPT following electrofishing in 2016.

KDWPT lists the Verdigris River and tributaries as being Eastern Stream/Small River Habitats. Other Eastern Stream/Small River Habitats in Kansas include rivers and tributaries in the Neosho, Missouri, Eastern Arkansas, Kansas, and Marais des Cygnes river basins, all of which are described by KDWPT as declining in terms of quantity and quality. In spite of overall declining quantity and quality of aquatic habitat within the southeastern region of Kansas, fishing at Fall River Lake remains popular and fishing for white bass is considered excellent particularly in early spring in both Otter Creek and Fall River above the reservoir. Fish species found in the lake include gizzard shad, drum fish, smallmouth buffalo, carp, green sunfish, crappie, largemouth bass, white bass, channel catfish, bluegill bullhead, carpsucker, flathead catfish, gar, walleye, largemouth buffalo, and redhorse. Fisheries management efforts are carried out primarily by KDWPT. Specific information on fish resources at Fall River Lake can be found on KDWPT's website.



**Photo 2-3 Angler at Fall River Lake** (Source: USACE Facebook)

### Wildlife Resources

Fall River Lake offers over 400 species of game and non-game wildlife. Fall River Lake is home to over 400 species of game and non-game wildlife. Bird populations include a mix of resident and migratory neotropical and nearctic species including, but not limited to prairie chickens, scissor-tailed flycatchers, Henslow's sparrows, eastern bluebirds, and northern orioles. Bald eagles are common in the Fredonia Bay area in winter. Canada geese are found year-round in Quarry Bay. Wild turkey, white tailed deer, raccoons, bobcats, coyotes, fox squirrels, beaver, and northern bobwhite quail are year-round residents. In the woodlands, northern flickers and downy and pileated woodpeckers make their home. During migrations, waterfowl such as bufflehead, scaup, mergansers, northern pintail northern shoveler, and mallards can be seen from the observation blind in the northeast part of the wildlife area.

Game species include bobwhite quail, cottontail rabbit, mourning dove, greater prairie-chicken, squirrel, mink, muskrat, beaver, raccoon, and white-tailed deer. Migratory ducks occurring seasonally are canvasback, redhead, scaup, goldeneye, ruddy duck, mallard, green-winged teal, blue-winged teal, northern shoveler, northern pintail, gadwall and American wigeon. Migratory geese include Canada (greater and lesser), greater white-fronted, and snow. Planting for wildlife, native plant restoration, timber management, and prescribed burning are management techniques used by KDWPT and USACE to provide food and cover for a variety of wildlife. Marsh and water management programs provide some excellent habitat for all types of waterfowl and shorebirds. The KDWPT manages the Fall River Wildlife Area and hosts special Youth Dove hunts each year for young hunters between 10 and 15 years of age. An adult, who is not allowed to hunt, must accompany each youth.



**Photo 2-4 Waterfowl on Fall River Lake** (Source: USACE Facebook)

In addition to managing lands where public hunting is allowed, the KDWPT maintains two areas with a total of 720 acres as waterfowl refuges. They provide feeding, resting and roosting sites to help maintain large, healthy populations of migrating waterfowl. These two refuge areas are closed to public use year round, and are clearly marked with standard red and white no hunting signage.

#### 2.2.4 Threatened and Endangered Species

Federally-listed threatened and endangered species having potential habitat on USACE lands and waters, as identified by USFWS Information for Planning and Conservation (IPAC) Trust Resources report, are listed in Table 2.6. The IPAC Trust Resources Report is provided in Appendix C. The report identifies two threatened, and two endangered species for the Fall River Lake area. In addition to the threatened and endangered species, there are a number of migratory bird species of particular conservation concern that may be affected by activities at Fall River Lake.

A complete listing of migratory birds with potential to be affected by activities at Fall River Lake is in the IPaC report found in Appendix C. The State of Kansas also lists a number of species similar to those the federally listed species. The Kansas State list for Greenwood County are also included in Appendix C.



**Photo 2-5 Neosho Mucket**

**Table 2.6 Federal Threatened and Endangered Species for Fall River Lake Area**

	<b>Status</b>	<b>Has Critical Habitat</b>	<b>Biological Opinion Issued</b>
<b>Mammals</b>			
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	Threatened	No	No
<b>Fish</b>			
Topeka Shiner ( <i>Notropis topeka</i> )	Endangered	No	No
<b>Clams</b>			
Neosho Mucket ( <i>Lampsilis rafinesqueana</i> )	Endangered	Yes	No
Rabbitsfoot ( <i>Quadrula cylindrical cylindrical</i> )	Threatened	No	No

Source: IPaC Report, U.S. Fish and Wildlife Service

### 2.2.5 Invasive Species

An invasive species is defined as a plant or animal that is non-native (alien) to an ecosystem and whose introduction causes, or is likely to cause, economic and/or environmental harm, or harm to human health. Invasive plants are introduced species that can thrive in areas beyond their normal range of dispersal. These plants are characteristically adaptable, aggressive, and have high reproductive capacity. Tables 2.7 and 2.8 lists the invasive species known to be present at Fall River Lake. This list is updated periodically to reflect changes as new species are found. As can be seen, both Johnsongrass and *Sericea lespedeza* have expanded, in part due to budget constraints preventing aggressive treatment.

**Table 2.7 Invasive Species 2005-2011**

Species	2011	2010	2009	2008	2007	2006	2005
Bull thistle	X	X	X	X		X	X
Field bindweed	X	X	X	X		X	X
Japanese honeysuckle	X	X	X	X	X	X	X
Johnsongrass	X	X	X	X	X	X	X
Multiflora rose							X
Musk thistle					X	X	
<i>Sericea</i> (Chinese) <i>lespedeza</i>	X	X	X	X			

Source: USACE Invasive Species Profile System OMBIL

**Table 2.8 Invasive Species 2010-2015 Acres Affected**

Common Name	2010	2011	2012	2013	2014	2015*
Bull thistle	5	5	5	5	5	5
Field Bindweed	10	10	10	10	10	10
Japanese honeysuckle	1	1	1	1	1	1
Johnson grass	300	300	300	300	300	1,200
<i>Sericea lespedeza</i>	300	300	300	300	300	2,400

Source: USACE Invasive Species Profile System OMBIL

\*Budget constraints prevented the treatment of 2,400 acres in 2014 and 2015

### 2.2.6 Visual and Scenic Resources

Fall River Lake boasts a predominately flat shoreline surrounded by tall, stable, well-defined banks. Rocky points jutting out along the north and south shoreline and the wooded slopes on the western and eastern banks enhance the scenic beauty of the lake, giving it a picturesque quality. The visual quality of the lake is good due to the limited amount of obstructions and uncleared water areas. Consequently, the lake is attractive to water-skiers. The lake bottom is muddy and the water somewhat turbid near the shoreline, making the lake less desirable for swimming.



**Photo 2-6 Setting Sun at Fall River Lake** (Source: USACE Facebook)

### 2.2.7 Sedimentation and Shoreline Erosion

Fall River Lake drains a watershed of approximately 585 square-miles. Land use/land cover is dominated by grasslands/herbaceous (73%), pasture/hay (14%), developed/open space (3%), and cultivated cropland (3%). Sedimentation surveys for Fall River Lake have been conducted at project construction (1948), again in 1973 and 1990, and most recently in 2010. These surveys estimate an approximate loss of 32% (9,708 acre-feet) of storage below the top of the conservation pool in the 61 years between the time of construction and 2010. Most recently, approximately 6% of original storage in this zone was lost in the 20 years between 1990 and 2010, for an annual rate of loss of approximately 0.3% over that period. To date, sediment accumulation in the conservation pool has not severely impacted authorized project purposes and, as is the case for nearly all federal reservoirs, there are no plans to dredge all or portions of Fall River Lake. A general discussion of sedimentation can be found in Chapter 6.

### 2.2.8 Water Quality

The Kansas Department of Health and Environment (KDHE) water quality data collected indicates the Fall River Lake has high inorganic turbidity and high levels of siltation, with indicators of increased nitrogen. The lake is shallow and sediment is easily re-suspended by wind, motorboat traffic, and moderate to high inflow events. In addition, siltation is aggravated during large runoff events, when releases from Fall River Lake are minimized to prevent downstream flooding along the Verdigris and Fall Rivers. This impoundment of flood water results in large silt deposits within the lake and inflowing river channels. Subsequent runoff events of moderate duration then re-distribute the deposited sediment throughout the Lake.

Water quality at Fall River Lake is lower overall than other federal lakes in the state, but is higher than the trophic benchmarks set by KDHE for Flint Hills region and statewide lakes. Chlorophyll levels are just below statewide values, but that likely reflects the diminished availability of light because of pervasive turbidity in the lake. The KDHE has set forth an implementation strategy for the watershed to reduce the amount of phosphorus and sediment entering the lake. For more information concerning water quality and strategies for Fall River Lake see the KDHE website ([www.kdheks.gov](http://www.kdheks.gov)).

Due to impairment issues, Fall River Lake has a high priority in the Water Restoration and Protection Strategy (WRAPS) program. The program establishes best management practices for improving water quality, and is funded in part through the Kansas Water Office, with appropriations from the Kansas Water Plan Fund; and the KDHE, through EPA Section 319 Nonpoint Source Pollution Control Grant # C9007405-11. For Fall River Lake, the program focuses on reducing sediment and phosphorus. A further discussion of the WRAPS program at Fall River Lake can be found in Chapter 6 of this Master Plan, and a copy of the Fall River Reservoir 9 Element Watershed Plan Summary can be found in Appendix D.

## **2.3 CULTURAL RESOURCES**

This section addresses both cultural resources and the socio-economic setting relative to Fall River Lake. The information presented is not intended to be a complete analysis of all available information but is sufficient to characterize the major factors affecting the management of USACE lands for environmental stewardship and outdoor recreation purposes. Much of the information presented is limited to an area described as the “zone of influence” which includes Woodson and Greenwood counties that adjoin USACE lands.

Cultural resources preservation and management is an equal and integral part of all resource management at USACE-administered operational projects. The term “cultural resources” is a broad term that includes, but is not limited to historic and prehistoric archaeological sites, deposits, and features. It can also refer to burials; historic and prehistoric districts comprised of groups of structures or sites; cultural landscapes; built environment resources such as buildings, structures (such as bridges), and objects; traditional cultural properties and sacred sites such as

burials, cemeteries, and features nor sites associated with significant events or practices in the traditional culture of an ethnic group. Cultural resources that are identified as eligible for listing in the National Register of Historic Places (NRHP) are referred to as “historic properties,” regardless of category.

There are more than 160 known archaeological sites located on USACE lands associated with Fall River Lake. Of these, one prehistoric site is currently listed on the NRHP, though others have been recommended as eligible. The majority of the sites identified at Fall River Lake do not have NRHP recommendations, and therefore their eligibility is unknown. Just over half of the sites recorded have prehistoric components or are prehistoric sites.

Numerous cultural resources laws establish the importance of cultural resources to our Nation’s heritage. With the passage of these laws, the historical intent of Congress has been to ensure that the Federal government protects cultural resources. Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Guidance is derived from a number of cultural resources laws and regulations, including but not limited to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended), as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

### 2.3.1 Archaeology

In 1947, Albert C. Spaulding of the Museum of Natural History, University of Kansas, was the first to officially survey the project area. He recorded six sites, five of which are in the conservation pool of Fall River Lake (one of these was likely destroyed by a borrow area), and one of which is in the flood pool. Large block surveys were conducted in the 1960s and 1970s for compliance with cultural resources legislation (Eoff and Johnson 1968; Elcock and O’Brien 1979). Eoff and Johnson (1968) recorded 42 sites in the Fall River watershed, only two of which were found to be in the impact area of the dam construction. Elcock and O’Brien (1979) recorded 76 prehistoric sites and 75 historic sites and bridges on lands associated with Fall River Lake. Their survey covered 12,147 acres (estimated at the time to be 96% of project lands).

In the larger regional area there are hundreds of archaeological sites and historic standing structures on record with the Kansas State Historical Society (KSHS). Limited archaeological investigations have been, and continue to be, carried out at Fall River Lake for compliance with Section 106 of the NHPA.

### 2.3.2 Cultural History Sequence

Six broad cultural divisions are applicable to a discussion of the culture history of the Fall River region: Paleoindian, Archaic, Woodland, Plains Village, Protohistoric, and Historic. These general adaptation types are adopted in this Master Plan to characterize prehistoric cultural traditions, within the following regional chronology.

Paleoindian: 13,500 to 8000 BP

Archaic: 8000 to 2000 BP

Woodland: AD 1 to 800

Plains Village: AD 800 to 1500

Protohistoric (Contact Period): AD 1500 to 1825

Historic: AD 1825 to present

#### *Paleoindian Period*

While it is becoming increasingly evident that humans likely arrived in the Central Plains as early as 30,000 years ago, the Paleoindian Period is the earliest well substantiated archaeological period in the project region. Signature stone tools are unnotched lanceolate projectile points, fluted (Clovis and Folsom) and unfluted (Plainview, Dalton, and others), often found in contexts where mammoth or bison remains also occur. During this period, small bands of hunters and gatherers relied largely on the hunting of megafauna such as mammoth and bison; however, sites in Eastern Kansas have exhibited evidence of reliance on a wide variety of plant and animal species. Many sites display evidence for hunting and processing large mammals, while others include a more generalized economy during most or all seasons.

The Dalton Complex is well represented in Eastern Kansas and spans the period from the end of the Paleoindian period and into the Early Archaic. This complex is based upon the presence of Dalton points and points known to be associated with Dalton points, and appears to represent more localized diverse economies, which may have included large game hunting. Paleoindian sites in most of the project area are deeply buried in alluvial stream deposits. A limited number of Paleoindian sites has been recorded in the project area, though sites with both Paleoindian and Archaic deposits are better represented.

#### *Archaic Period*

During the Archaic period, an increase in seasonal variability of resources and increasing populations resulted in changing settlement and subsistence patterns. Repeated occupation of sites, often on a seasonal basis, and features such as rock-lined hearths, roasting pits, and grinding tools reflect intensive plant processing and the cyclical exploitation of resources. Increasing diversity of stone tools through time reflects the increasing variability of faunal and floral resources and diversity of activities taking place at habitation sites. Projectile points from the Middle and Late Archaic are stylistically quite different (typically notched and stemmed) from those of the Paleoindian period. Archaic assemblages in the project

area include a variety of contracting and expanding stemmed large dart points, scrapers, and grinding implements (such as manos and metates). The Archaic period is traditionally divided into Early, Middle, and Late periods, the overall extent of which was approximately 8,000 BP to 2,000 BP. While the Archaic period is considered pre-ceramic (in that pottery for storage and cooking is not present), a ceramic bead from the Coffey site and small effigy heads from the William Young site are the earliest ceramic figures currently identified in the United States, both from Archaic horizons. Fiber tempered ceramics from the Nebo Hill phase in Northeast Kansas represent some of the earliest tempered pottery in the United States.

### *Woodland*

The Woodland Period in Kansas (referred to in Kansas as the Early Ceramic Period) was a time of continuity marked by incorporation of new technologies and intensification of resources. The appearance in the archaeological record of small corner notched projectile points indicates that the bow and arrow was in use. Cultivation of plants began during this period and is often referred to as “insipient horticulture”. The presence of ceramic sherds indicates that ceramic use in the form of pottery for storage and cooking had become widespread. Archaeological assemblages from this period indicate people were living in semi-permanent villages and dispersed communities, using settlement strategies such as seasonal mobility, targeted long distance resource procurement by portions of the community or household, and intensification of wild and domestic plants to meet their needs. Small game and aquatic resources remained essential in subsistence. Projectile points from this period include, in addition to the small corner notched points, large contracting stem points and large corner-notched projectile points in a variety of styles, indicating continued use of the atlatl and darts, as well as spears likely employed for symbolic political or religious effect.

The Cuesta Phase and the Greenwood Phase are the primary named Woodland phases present in the project area. Sites attributed to these phases in Southeast Kansas are characterized by large circular to oval houses (indicated by large diameter postmolds) and middens. Cuesta Phase pottery motifs and artifact styles mirrored those characteristic of earlier Hopewellian sites in Northeast Kansas and to the east in Ohio and Illinois. For this reason, sites attributed to the Cuesta Phase have long been referred to as Middle Woodland sites. However, radiocarbon dating of curated materials from excavations at sites attributed to the Cuesta phase indicates that the phase dates to the late Woodland. Additional radiocarbon dates obtained from recent fieldwork also yielded late Woodland dates. The differences between Cuesta Phase and Greenwood Phase are nominal and sites attributed to the two phases may represent the same archaeological culture. Many sites attributed to the Greenwood phase have yielded pottery motifs like those found on Cuesta Phase sites and house patterns and size are the same. It is often unclear on what basis a site is attributed to the Greenwood phase rather than the Cuesta phase.

### *Plains Village*

People during the Plains Village time period (A.D. 800 to 1500) grew crops and hunted and gathered wild resources. Artifact assemblages contain gardening tools along with triangular arrow points for hunting. Sites from this time are often identified in lowland terraces of waterways where gardening was viable. The Pomona Variant is the archaeological culture associated with watersheds in southeastern Kansas. Distinguishing traits include shell-tempered pottery of types attributed by Kansas archaeologists to the Middle Ceramic period, remains of round wattle and daub houses, and a scarcity of cultigen remains such as maize, possibly reflecting less dependence on farming than in other geographic areas during this time. However, the scarcity of identified cultigens is also the result of poor preservation and excavation and processing methods not designed to recover native cultigens, the remains of which are much smaller than maize.

### *The Protohistoric (Contact) Period*

The period from A.D. 1500-1825 is referred to as the Protohistoric (or Contact) Period. Villagers aggregated into large fortified villages situated along major rivers during this time period. Also during this time, non-native explorers, trappers, and traders visited the region, and land claims by first the Spanish, and then the French brought great change. Great Bend Aspect sites in central, south-central, and southeast Kansas represent the villages encountered by Francisco Coronado in 1541. People lived in large, circular grass houses, grew crops, and hunted bison and small game. The archaeological record documents significant long distance trade with the southwest. Items such as painted and glazed pottery, turquoise beads and pendants, and shell beads distinctive to the Southwest Pueblo cultures attest to the extent of the trade networks in place. This way of life continued into the eighteenth century and later sites are attributed to the Wichita and Affiliated Tribes.

In 1682, Robert Cavelier, Sieur de la Salle, claimed the territory drained by the Mississippi as part of the French Empire in North America. By 1700, French traders were established in the region and had developed trading relationships with Wichita groups in the Arkansas Valley and with the Osage to the east. The fur trade became a significant enterprise, and intergroup violence increased. Diseases swept through the region during this time period, dramatically reducing local populations. This, combined with increased intergroup violence, resulted in the coalescence of communities into large villages, often with defensive fortifications. The tribes today known as the Wichita and Affiliated Tribes and the Osage Nation are represented by such villages near the project area.

The Wichita and Affiliated Tribes were historically known as the Wichitas, Wacos, Taovayas, Tawakonis, and Kichais. Protohistoric Wichita sites from the early 1700's have been identified southwest of the Fall River area in Cowley County, Kansas, and in Kay County, Oklahoma, and to the east in Wilson County, Kansas. These Protohistoric Wichita sites, dating from the 1700s, provide evidence of the extent of French influence on the central and southern Plains, as artifact

assemblages from these sites contain metal musket parts from French firearms, glass trade beads, copper kettle pieces, and European gunflints. Villagers did not dramatically change the function of material culture in spite of this influx of European goods. Rather, they incorporated French goods into existing material culture frameworks. Guns were used until no longer viable, and then were hammered into hoes similar in shape to bison scapula hoes (which had seen long use on the Plains). Copper kettles were hammered flat and used to create tinklers- copper cones sewn to clothing- and other items of personal adornment. The Osage had villages to the east of the protohistoric Wichita Villages, including just to the east and southeast of the project area in Wilson County and Montgomery Counties, Kansas, and they often fought the Wichita over access to trade goods.

### 2.3.3 Historical Resources in Kansas

What is now the state of Kansas was included in the Louisiana Purchase in 1803, becoming part of what was known as the Louisiana Territory. When Louisiana joined the Union as a state in 1812, Louisiana Territory was renamed the Missouri Territory by the U.S. Congress to avoid confusion with the new state.

In the 1820s, Kansas was designated Indian Territory and closed to white settlement. Congress passed the Indian Removal Act in 1830, and the Cherokee were promised land in the project region by the U.S. Government. The land was already occupied by the Osage and this resulted in conflicts over territory and resources. The Nebraska-Kansas Act of 1854 delineated Kansas as an organized incorporated territory of the United States from May of 1854, until January 29, 1861, when the eastern portion of the territory was admitted to the Union as the state of Kansas. The period between 1854 and 1859 was a time of violence between anti-slavery abolitionists and pro-slavery groups, which led to Kansas Territory being called “Bleeding Kansas.” By the time the Civil War commenced, Kansas had joined the Union and formally rejected slavery, therefore Kansas regiments joined the Union Army. Pro-slavery Kansans fought for the Confederacy.

Kansas was an important state to bring into the Union, as transcontinental railroads were planned to cross through the area, and farmland was highly desirable. In the project region, several Grand Osage and Little Osage villages were inhabited until the Osage were relocated to the Osage Reservation in Oklahoma. The Osage occupied the region from the 1700s through their departure to Oklahoma in 1872. Historic Osage village sites are documented close to the project area.

Historic site types in the area include historic Indian villages, camps, towns, burials, and agencies, trading posts, Euroamerican homesteads and ranches, Indian homes, and farmsteads, and freed slave homesteads and farms. Related types of resources are trails, wells, cisterns, privies, rock walls, foundations or foundation piers, cellar depressions, chimneys (stone or brick), stairs, railroad lines, cattle trails, roads, schools, cemeteries, dumps, and water diversion features.

## 2.4 DEMOGRAPHIC AND ECONOMIC RESOURCES

The socio-economic data analysis encompasses both Fall River and Toronto Lakes due to their proximity to one another. Though the lakes each have unique circumstances in terms of adjacent development, the impact of the surrounding counties to the lakes is essentially the same.

### 2.4.1 Zone of Influence

The zone of interest for the purpose of the Fall River and Toronto Master Plans socio-economic analysis includes the neighboring counties of Greenwood and Woodson in southeast Kansas. Fall River Lake is located in Greenwood County, and Toronto Lake is located in Woodson County.

The total population for the zone of interest in 2015 was 9,604, as shown in

Table 2.9. Approximately 67% of the zone of interest's population resides in Greenwood County and 33% resides in Woodson County. Both are rural counties, with their combined population making up less than 1% of the total population of the state of Kansas.

Wichita State University's Center for Economic Development and Business Research forecasts negative growth in the zone of interest between 2015 and 2044 (as compared with the 2015 U.S. Census Bureau American Community Survey population estimates). Annual growth rates of -1.8% and -1.6% are projected in Greenwood and Woodson Counties, respectively. During the same period, the population of Kansas is projected to increase at an annual rate of 0.5%, and the national growth rate is expected to be 0.7% per year based on the U.S. Census Bureau's population estimates and projections.

**Table 2.9 2000 and 2015 Population Estimates and 2044 Projections**

Geographical Area	2000 Population Estimate	2015 Population Estimate	2044 Population Projection
Kansas	2,688,418	2,892,987	3,337,654
Greenwood County	7,673	6,393	3,776
Woodson County	3,788	3,211	2,014
<b>Zone of Interest Total</b>	<b>11,461</b>	<b>9,604</b>	<b>5,790</b>
Source: U.S. Census Bureau, Population Division (2000 Estimate); U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate) Wichita State University, Center for Economic Development and Business Research (2044 Projections)			

## 2.4.2 Population by Gender and Age

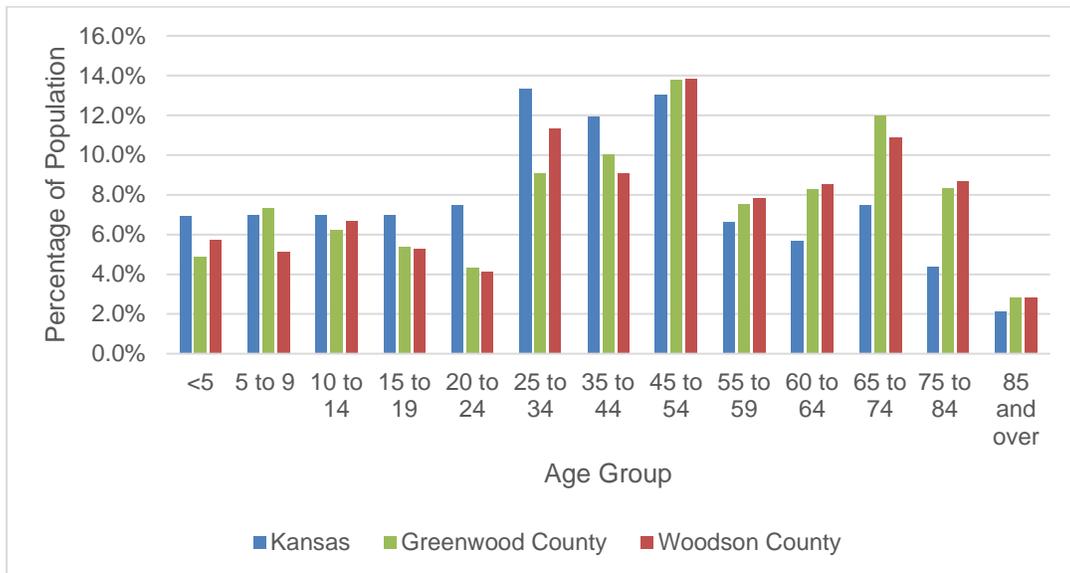
The distribution of the population among gender is displayed in Table 2.10. The zone of interest has a gender distribution of 49% male and 51% female, making it similar to the state of Kansas, which is approximately 50% male and 50% female. Greenwood County is 49% male and 51% female, and Woodson County is 50% male and 50% female.

**Table 2.10 2015 Percent of Population Estimate by Gender**

Geographical Area	Male	Female
Kansas	1,439,862	1,453,125
Greenwood County	3,120	3,273
Woodson County	1,606	1,605
Zone of Interest Total	<b>4,726</b>	<b>4,878</b>

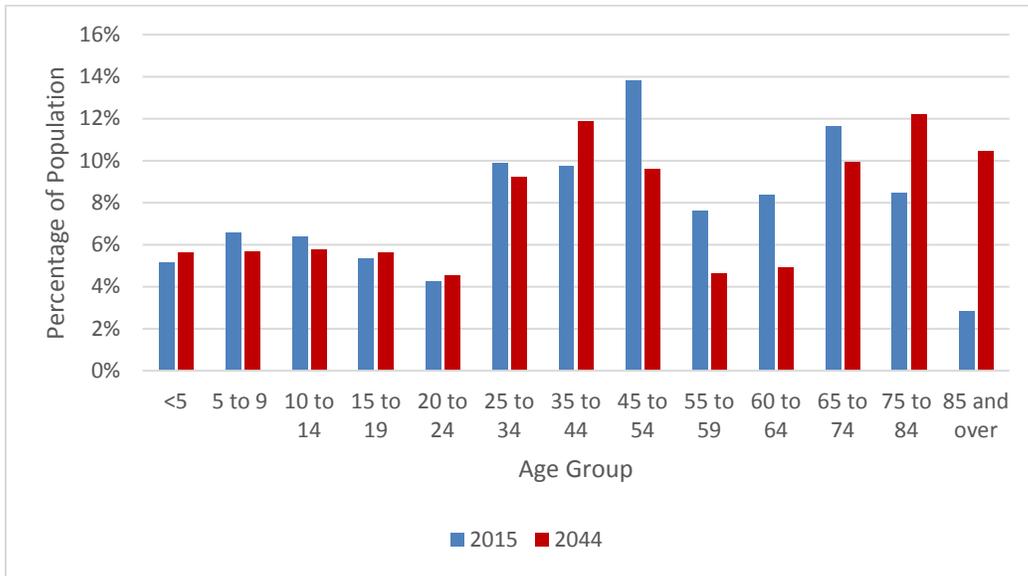
Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

Figure 2.4 shows the distribution of the population by age group. As displayed in Figure 2.4, Greenwood and Woodson Counties both have a smaller percentage of the population that are ages 0 to 44 and a larger percentage ages 45 and over as compared to the state of Kansas. Figure 2.5 displays the zone of interest's population estimate for 2015 compared to the 2044 projections. The forecast shows relatively stable distribution between the two years for ages 0 to 44. However, between 2015 and 2044, the population ages 45 to 64 will decrease while the population ages 75 to 85 will increase.



**Figure 2.4 2015 Percent of Population by Age Group**

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 estimate)



**Figure 2.5 2015 and 2044 Population Estimate and Projection by Age Group**  
 Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 estimate); Wichita State University Center for Economic Development and Business Research (2044 Projections)

### 2.4.3 Population by Race and Hispanic Origin

Population by race and Hispanic Origin is displayed in Table 2.112.11. The zone of interest population is approximately 93% White, 3% Hispanic or Latino, and 3% two or more races. The other race categories account for less than 1% each of the population. By comparison, the state’s population is approximately 77% White, 11% Hispanic or Latino, 6% Black, 3% Asian, and 3% two or more races.

**Table 2.11 2015 Population Estimate by Race/Hispanic Origin**

Area	White	Black	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some Other race alone	Two or more races	Hispanic or Latino
<b>Kansas</b>	2,228,789	164,058	20,209	75,045	1,627	1,928	78,113	323,218
<b>Greenwood County</b>	5,912	10	16	3	0	0	212	240
<b>Woodson County</b>	3,019	17	9	5	0	0	77	84
<b>Zone of Interest Total</b>	<b>8,931</b>	<b>27</b>	<b>25</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>289</b>	<b>324</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

### 2.4.4 Education

Table 2.12 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 3% of the population has less than a 9<sup>th</sup> grade education, and another 7% has between a 9<sup>th</sup> and 12<sup>th</sup> grade education; 40% has a high school diploma or equivalent and another 27% has some college and no degree; 7% has an Associate's degree; 12% has a Bachelor's degree; and 5% has a graduate or professional degree. In Kansas, 4% of the population has less than a 9<sup>th</sup> grade education; another 6% has between a 9<sup>th</sup> and 12<sup>th</sup> grade education; 27% has at least a high school diploma or equivalent; 24% has some college; 8% has an Associate's degree; 20% has a Bachelor's degree; and 11% has a graduate or professional degree.

**Table 2.12 2015 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older**

Area	Highest Level of Educational Attainment							
	Population 25 years and over	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate's degree	Bachelor's degree	Graduate or professional degree
<b>Kansas</b>	1,869,698	72,669	110,237	505,583	452,272	148,723	374,220	205,994
<b>Greenwood County</b>	4,596	145	320	1,845	1,220	308	518	240
<b>Woodson County</b>	2,347	32	198	911	622	209	299	76
<b>Zone of Interest Total</b>	<b>6,943</b>	<b>177</b>	<b>518</b>	<b>2,756</b>	<b>1,842</b>	<b>517</b>	<b>817</b>	<b>316</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 estimate)

### 2.4.5 Employment

Employment by sector is presented in Table 2.13 and Figure 2.6. The largest percentage of the zone of interest is employed in the Educational services, and health care and social assistance sector at 23%, followed by 14% in Agriculture, forestry, fishing and hunting, and mining, 10% in Manufacturing, and 9% in Retail Trade. The Transportation and warehousing, and utilities sector, the Arts, entertainment, and recreation and accommodation and food services sector, and the Public Administration sector each employ 7% of the zone of interest population. The Construction sector employs 6% of the population; 5% is employed in Other services, except public administration, and the remainder of the employment sectors each comprise less than 5% of the zone of interest's labor force. The Kansas Department of Labor, Labor Market Information Services projects the most growth (over 20% change each) between 2012 and 2022 for the state as a whole in the following ten industries: Non-store Retailers, Social Assistance, Professional,

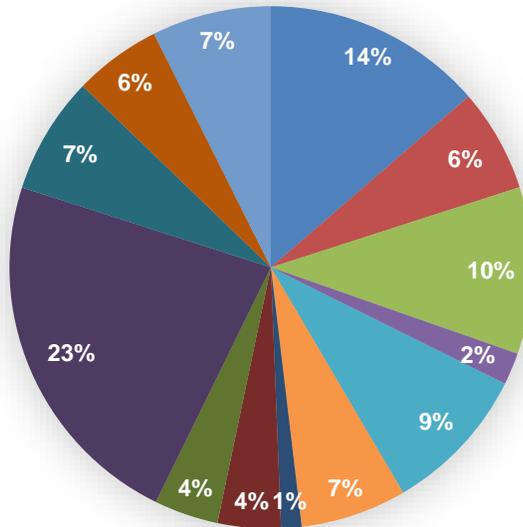
Scientific & Technical Services, Warehousing & Storage, Ambulatory Health Care Services, Administrative & Support Services, Nursing & Residential Care Facilities, Construction of Buildings, Waste Management & Remediation Services, and Crop Production.

**Table 2.13 Annual Average Employment by Sector**

Employment Sector	Geographic Area			
	Kansas	Greenwood County	Woodson County	Zone of Interest Total
<b>Civilian employed population 16 years and over</b>	1,401,197	2,876	1,557	4,433
<b>Agriculture, forestry, fishing and hunting, and mining</b>	49,432	375	230	605
<b>Construction</b>	88,203	189	94	283
<b>Manufacturing</b>	176,444	300	158	458
<b>Wholesale trade</b>	39,010	24	64	88
<b>Retail trade</b>	155,335	308	100	408
<b>Transportation and warehousing, and utilities</b>	66,266	147	144	291
<b>Information</b>	30,584	18	38	56
<b>Finance and insurance, and real estate and rental and leasing</b>	84,958	116	57	173
<b>Professional, scientific, and management, and administrative and waste management services</b>	125,338	122	54	176
<b>Educational services, and health care and social assistance</b>	345,985	655	351	1006
<b>Arts, entertainment, and recreation, and accommodation and food services</b>	111,387	243	79	322
<b>Other services, except public administration</b>	63,899	179	61	240
<b>Public administration</b>	64,356	200	127	327

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

## Percentage of ZOI



- Agriculture, forestry, fishing and hunting, and mining
- Construction
- Manufacturing
- Wholesale trade
- Retail trade
- Transportation and warehousing, and utilities
- Information
- Finance and insurance, and real estate and rental and leasing
- Professional, scientific, and management, and administrative and waste management services
- Educational services, and health care and social assistance
- Arts, entertainment, and recreation, and accommodation and food services

**Figure 2.6 Zone of Interest Employment by Sector**

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

### 2.4.6 Households, Income and Poverty

Table 2.14 displays an estimate of the number of households and average household sizes in the zone of interest as of 2015. There were approximately 1.1 million households in the state of Kansas with an average household size of 2.53. The zone of interest contained approximately 4,355 of those homes with an average household size of 2.23 in Greenwood County and 2.08 in Woodson County.

**Table 2.14 2015 Households and Household Size**

Area	Total Households	Average Household Size
<b>Kansas</b>	1,113,472	2.53
<b>Greenwood County</b>	2,824	2.23
<b>Woodson County</b>	1,531	2.08
<b>Zone of Interest Total</b>	<b>4,355</b>	<b>NA</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 estimate)

As shown in Table 2.15, median household income in the zone of interest in 2015 was \$38,838 in Greenwood County and \$35,787 in Woodson County, which is considerably lower than the median household income of \$52,205 in Kansas. Per capita income in the zone of interest (\$22,699) was also lower than the state, which had a per capita income of \$27,706 in 2015.

**Table 2.15 2015 Median and Per Capita Income**

Geographic Area	Median Household Income	Per Capita Income
<b>Kansas</b>	\$52,205	\$27,706
<b>Greenwood County</b>	\$38,838	\$23,335
<b>Woodson County</b>	\$35,787	\$21,432
<b>Zone of Interest Total</b>	<b>N/A</b>	<b>\$22,699</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

As shown in Table 2.16, in the zone of interest, 17.7% of the population's incomes fell below the poverty level within the last twelve months as of 2015 compared to 13.6% of the state. In terms of families below the poverty level, both counties within the zone of interest had a greater percentage of families below the poverty level than the state of Colorado (9.1%).

**Table 2.16 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2015)**

Geographic Area	All Persons	All Families
<b>Kansas</b>	13.6%	9.1%
<b>Greenwood County</b>	15.1%	11.9%
<b>Woodson County</b>	22.8%	14.9%
<b>Zone of Interest Total</b>	<b>17.7%</b>	<b>N/A</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

It is expected that both Woodson and Greenwood counties will continue to be rural in nature over the next 25 years. The population is expected to maintain or shrink from the current numbers, and no major change is expected in demographics.



**Photo 2-7 Fall River Lake Area** (Source: USACE)

## 2.5 RECREATION FACILITIES, ACTIVITIES, NEEDS AND TRENDS

Recreational facilities at Fall River Lake are comprised of seven parks; five are managed by USACE, and two are managed by the KDWP. Located between the Cross Timbers and Flint Hills Region, the Fall River Lake area has a large diversity of plant and animal life and a unique blend of forested flood plains, blackjack savannahs, and tallgrass prairie making for multiple recreational opportunities. Recreational activities at Fall River Lake include canoeing, hiking, bird watching, photography, hiking, fishing, hunting, and camping.

### 2.5.1 Zone of Interest

The visitation market area, or zone of interest, is the area from which the majority of visitors to the lake originate. This zone is the area within approximately a 100-mile radius of Fall River Lake, with the majority of visitation from within 70 miles.

### 2.5.2 Visitation Profile

Tables 2.17 and 2.18 below shows a breakdown of the visitors for Fall River Lake over the past 5 years by state and then by city. These figures are derived from the NRRS and reflect only campers. For the six recreational areas managed by USACE, the majority of visitors originated in Kansas, and of those 69% come from Wichita.

**Table 2.17 USACE Fall River Lake 5-Year Visitation Profile by State**

State/Province	Total Orders	% Orders	# Nights or Tickets	Avg # Nights or Tickets per Order	# Occupant	Avg # Occupants per Order
Kansas	2,115	93.0%	6,458	3.1	13,753	6.5
Oklahoma	78	3.4%	253	3.2	464	5.9
Missouri	31	1.4%	82	2.6	139	4.5
Texas	26	1.1%	21	0.8	58	2.2
Arkansas	10	0.4%	30	3.0	19	1.9
Colorado	14	0.6%	49	3.5	38	2.7
<b>Total</b>	<b>2,274</b>	<b>100.0%</b>	<b>6,893</b>	<b>2.7</b>	<b>14,471</b>	<b>4.0</b>

**Table 2.18 USACE Fall River Lake 5-Year Visitation Profile by City**

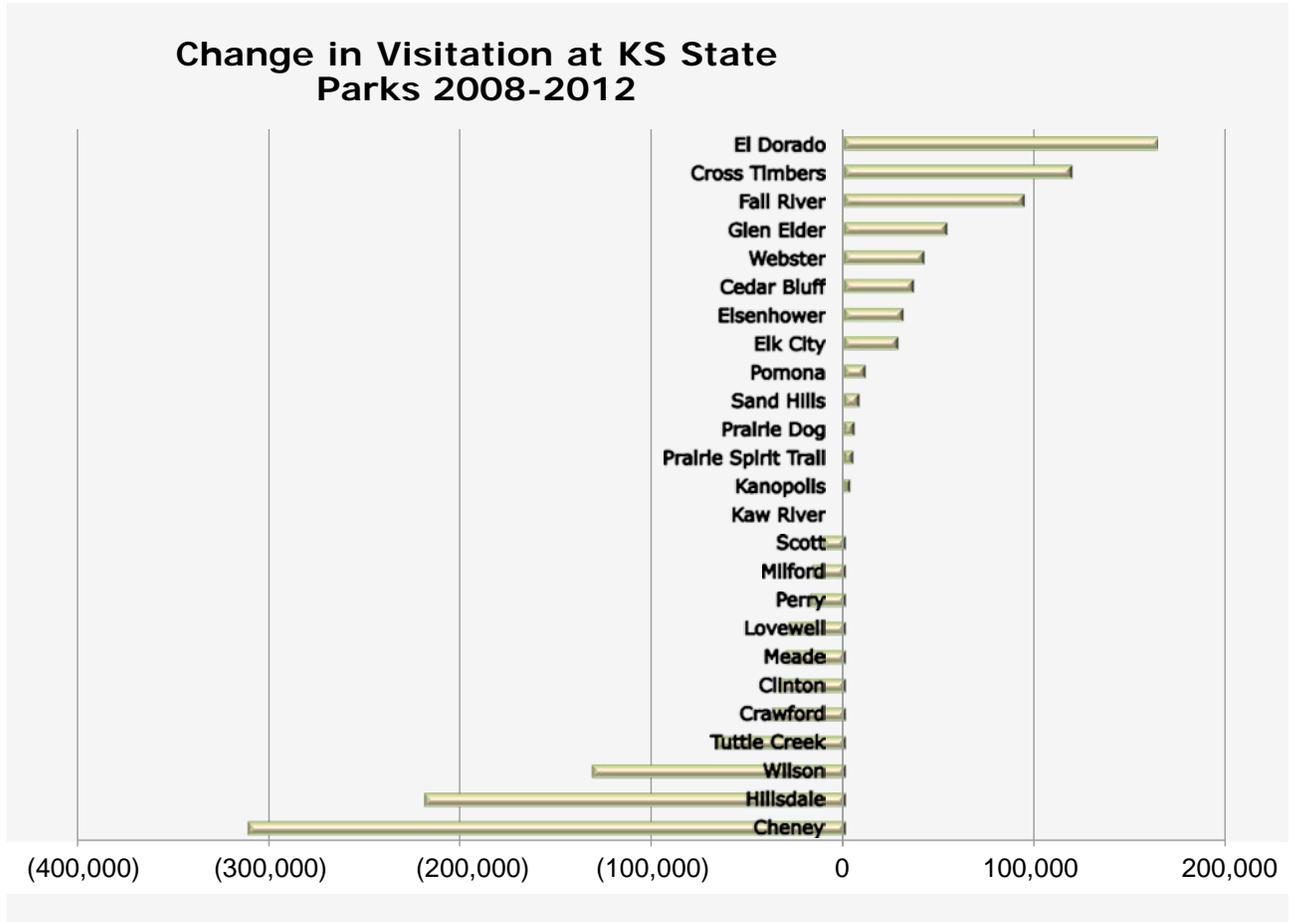
City	Total Orders	% Orders	# Nights or Tickets	Avg # Nights or Tickets per Order	# Occupant	Avg # Occupants per Order
WICHITA	600	69.04%	1,922	3.20	3,692	6.15
EUREKA	55	6.33%	144	2.62	821	14.93
FREDONIA	87	10.01%	204	2.34	667	7.67
HAYSVILLE	85	9.78%	285	3.35	320	3.76
NEODESHA	42	4.83%	103	2.45	228	5.43
<b>TOTAL</b>	<b>869</b>	<b>100.00%</b>	<b>2,658</b>	<b>2.79</b>	<b>5,728</b>	<b>7.59</b>

For State-managed parks, the following visitation information was retrieved for Fall River Lake from the Reserve America system. As can be seen, 28 percent of visitation to the State parks at Fall River Lake originate from Wichita, Kansas.

**Table 2.19 Top Five Percent State Park Visitation by State and City**

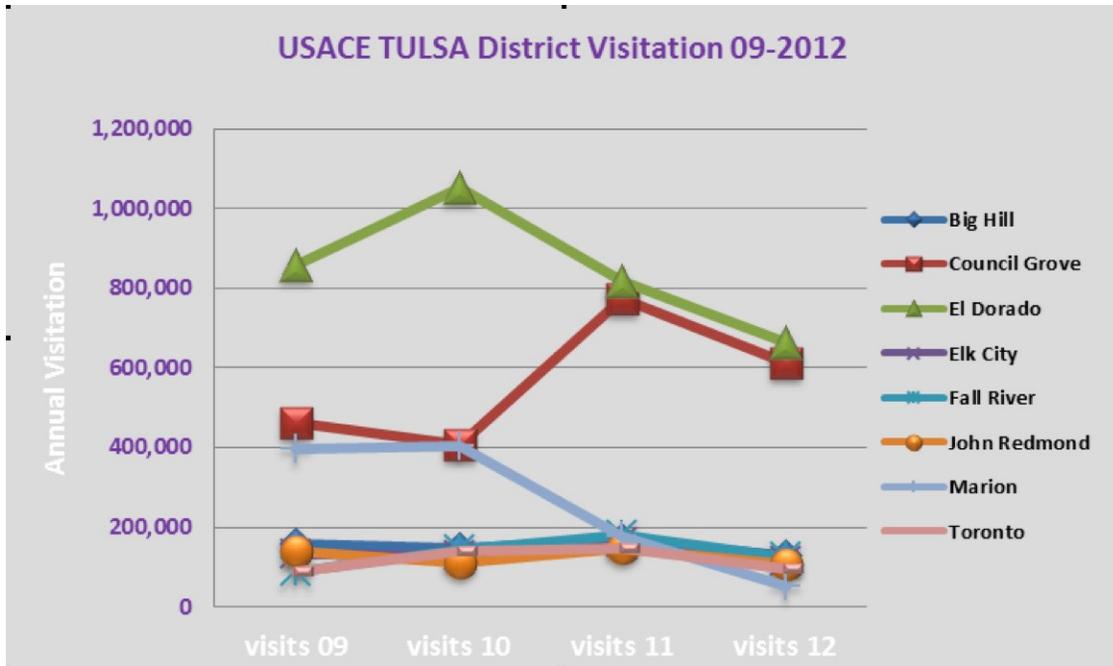
<b>State</b>	<b>Percent Visitation</b>	<b>City</b>	<b>Percent Visitation</b>
<b>Kansas</b>	88	<b>Wichita, KS</b>	28
<b>Arkansas</b>	2.3	<b>Augusta, KS</b>	5
<b>Oklahoma</b>	2.14	<b>Valley Center, KS</b>	5
<b>Missouri</b>	1.96	<b>Andover, KS</b>	4
<b>Texas</b>	.89	<b>Fredonia, KS</b>	4
<b>TOTAL</b>	95.29	<b>TOTAL</b>	46

As illustrated in Figure 2.7, visitation to Fall River State Park grew from 2008 to 2012 and is expected to continue growing. As discussed in the following sections, the recreation facilities and opportunities at Fall River Lake support many of the trends in outdoor recreation.



**Figure 2.7 Change in Visitation at State Parks 2008-2012** (Source Kansas SCORP)

Figure 2.8 illustrates USACE managed parks at Kansas lakes managed by the USACE Tulsa District. As can be seen, there is variation in visitation trends in many parks, most likely due to weather and related biological factors, such as blue-green algae blooms. For Fall River and its sister at Toronto Lake, visitation has remained relatively stable for USACE managed parks. Since Toronto's parks are managed by the State of Kansas, this serves to illustrate the trends in overall visitation and not necessarily the popularity of the parks at Toronto Lake.



**Figure 2.8 USACE Tulsa District Managed Lakes – Kansas 2009-2012** (Source: Kansas SCORP)

### 2.5.3 Recreation Areas and Facilities

Recreation areas and facilities are provided by federal and state agencies at Fall River Lake. Table 2.20 lists the various parks with their associated services and managing agencies. Upon completion of Fall River Dam, USACE developed eleven public-use areas at Fall River Lake: Browns Cove, Climax Landing, Damsite, Fredonia Bay, Overlook, Quarry Bay, Rock Ridge Cove (North), Rock Ridge Cove (South), Speers Cove, Whitehall Bay, and Sunflower Hill Club and Cottage Sites. To better manage the natural resources and provide more diverse recreation facilities, USACE leased Climax Landing, Fredonia Bay, Quarry Bay, and Rock Ridge Cove (South) to KDWPT for inclusion in the state-managed wildlife area. These areas are part of the Fall River State Park. The USACE at Fall River Lake closed Browns Cove and Speers Cove public-use areas due to low use and the need to reduce costs. The lots that contained cottages at the Sunflower Hill Club and Cottage Sites were sold to private individuals in early 1980 after the lease agreements expired, and ownership was transferred for the remaining land to the National Park Service who delegated the management to the KDWPT.

Currently, USACE manages six public-use areas at Fall River: Browns Cove, Damsite, Overlook, North Rock Ridge Campsite, Cedar Campground, and Whitehall Bay. Detailed descriptions of public use areas can be found in Chapter 5 of this Plan, where a listing of areas as well as a general summary of the primary facilities and future management is provided. Additionally, Appendix A of this Plan contains park plates and location maps.

**Table 2.20 Recreational Facilities and Operating Agencies**

FACILITIES	Designated Campsites	Boat Launching Ramps	Restrooms	Drinking Water	Group Shelter	Showers	Designated Picnic Area	Dump Stations	Swimming Beaches	Electrical (30 amp)	Electrical (50 amp)	Nature Trail	Playground
<b>LOCATION</b>													
Project Office													
Overlook			*	*									
Damsite	*		*	*	*	*	*	*		*	*		*
Whitehall Bay	*	*	*	*	*	*	*	*	*	*	*		
Browns Cove													
North Rock Ridge	*	*	*	*			*	*		*		*	
Cedar Campground	*		*										
Climax Ramp		*											
Fall River State Park													
*Fredonia Bay Area	*	*	*	*	*	*	*	*		*	*	*	*
**South Rock Ridge Area	*	*	*				*						
*Quarry Bay Area	*	*	*	*	*	*	*		*			*	*
Operating Agency		US Army Corps of Engineers											
		Kansas Department of Wildlife and Parks											

\*These parks are within the Fall River State Park

\*\*This campground is within the Fredonia Bay Area

*Fishing and Hunting*

Fall River Lake enjoys a moderate climate. Sun washed summers and mild winters provide for many high quality recreational days. Fishing is productive through the year with the greatest activity in the spring. Species of sport fish include crappie, large mouth and white bass. Channel and flathead catfishing is quite good and often spectacular.

Most lands at Fall River Lake are open for public hunting with the exception of the Fall River State Park and the 720 acres of waterfowl refuge within the state-operated wildlife area, developed camping areas, picnic areas, dam and project operation sites. Game species managed by KDWPT and USACE are primarily bobwhite quail, mourning dove, greater prairie chicken, cottontail rabbit, squirrel, whitetail deer, and turkey. Hunting and fishing is regulated by Kansas law and federal regulation.

### *Camping and Picnicking*

Opportunities for outdoor family fun and recreation at the park areas surrounding Fall River Lake include swimming, boating, water skiing, picnicking, and sightseeing. Facilities available at these areas include picnic and camping sites, boat ramps, and sanitary facilities, etc. Day use by the general public on all lands is free of charge with the exception of Fall River State Park. Visitors should contact KDWPT personnel for complete details. USACE parks in North Rock Ridge, Whitehall Bay, and Dam Site require a fee for overnight camping.

### *Boating*

Boating on the lake is in accordance with the Kansas boating laws and USACE regulations.

### *Sightseeing and Birdwatching*

The vicinity in which Fall River Lake is located has long been prized for its rolling prairie and tree-dotted valleys, sheltered by limestone-capped ridges. The lake is about a mile wide at the damsite and stretches up the picturesque Fall River for 15 miles. The scenic beauty of the area with its profusion of native wildlife and vegetation beckons all nature enthusiasts.

For bird watchers, there are more than 400 species of birds in the area, including migratory waterfowl. Many species of migratory and resident songbirds spend the summer on public land at Fall River Lake. In the spring and again in the fall, there are wildflowers in the open pastures, along fencerows and in the wooded areas. Hedgerows and former farmsteads produce persimmon, Osage orange, redbud, and dogwood.

### *Swimming*

The USACE swimming beach is located in the Whitehall Bay Campground, which is located on the northeast side of Fall River Lake. A KDWPT swimming beach is located in the Quarry Bay Area of the Fall River State Park.

### *Trails*

Various scenic hiking and bicycling trails are located around the shoreline of Fall River Lake. At Fall River State Park, there are six trails with 6.6 total miles:

- **Bluestem** - This 1.5-mile trail features native grasses that dominate the landscape as it changes from high prairie to low woodlands.
- **Casner Creek** - This 1.5-mile trail is accessible via the Casner Creek Campground trailhead, and passes through a wooded area with a profuse display of prairie wildflowers.
- **Catclaw** - The 1-mile trail passes through tallgrass prairie, sloping sandstone ridges, and wooded oak savannahs, with a panoramic view of Fall River Lake.
- **Overlook Trail** - This 0.10 mile long ADA accessible trail is intended for walking and mountain biking. Camping is located near the trail, and a permit is required to use the trail

- **Post Oak** - This gently rolling 0.75-mile trail travels along a portion of Craig Creek, highlights include post and blackjack oaks, lichen covered sandstone outcroppings, and open grass meadows.
- **Turkey Run** - This 1-mile trail runs through a wooded ravine, crosses a stream, and ascends across a tallgrass prairie that features a breathtaking view of Fall River Lake and the Flint Hills.

In addition to the hiking trails at Fall River State Park, Fall River Lake features the Badger Creek Mountain Bike and Hiking Trail, located on USACE property on the northeast side of the reservoir. Two separate loops provide riding options with the south trailhead leading to a 4.1 mile looped trail, and the north trailhead being a 2.7-mile loop.



**Photo 2-8 Swim Beach at Fall River Lake** (Source: USACE)

#### 2.5.4 Commercial Concession Leases

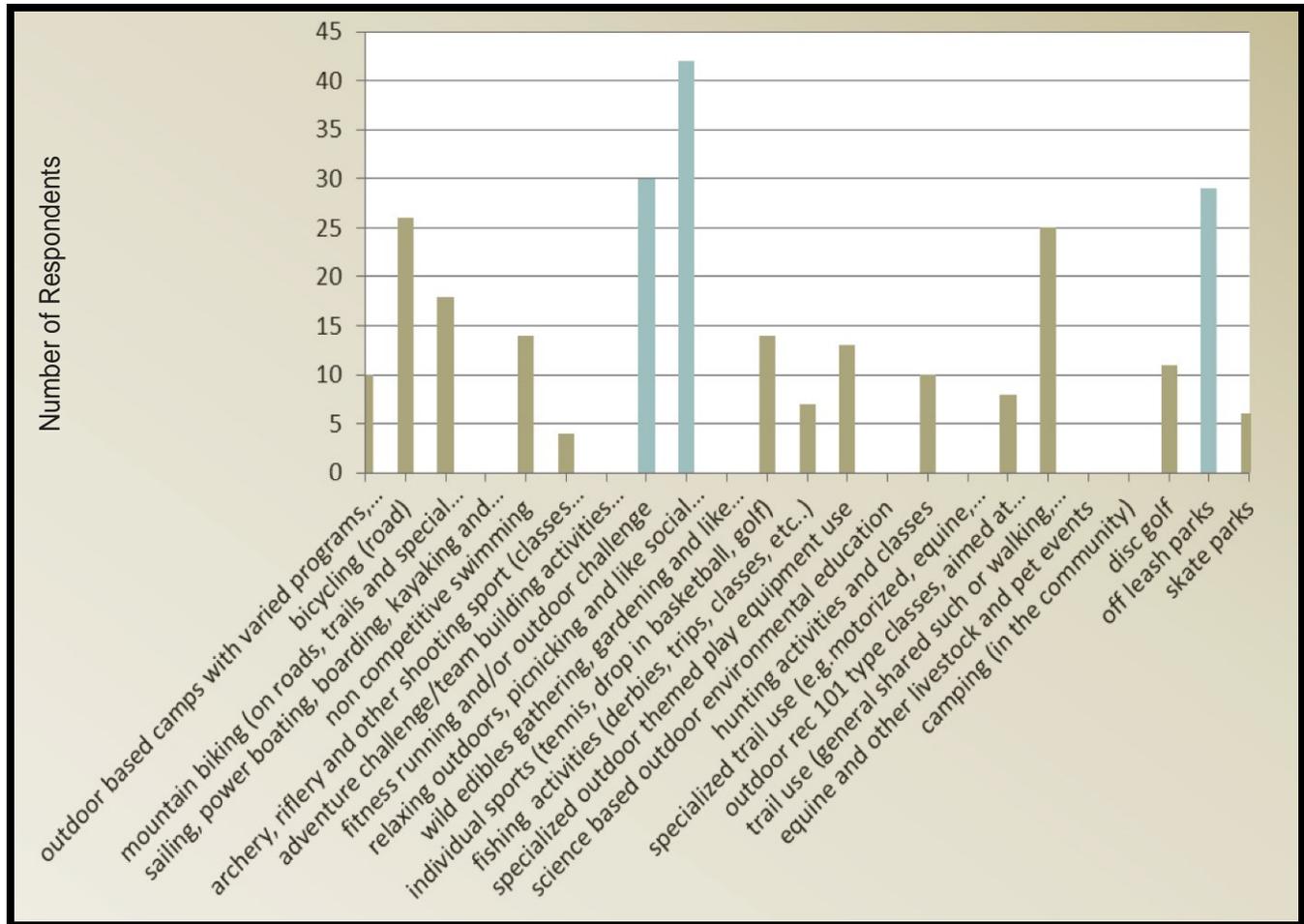
Concessionaires provide valuable services to the public at USACE lakes across the United States. USACE makes efforts to attract concessionaires that are able to establish suitable, well-maintained businesses that will offer desirable water-related services to the general public. Presently, at Fall River Lake demand for such facilities is non-existent. USACE will continue to provide outdoor recreation opportunities either directly or through leases with other agencies.

### 2.5.5 Recreation Analysis – Trends

To help provide Kansas communities statewide with informational resources for recreational needs and trends across the state, KDWP published the 2015 SCORP. The SCORP serves to address emerging issues in Kansas outdoor recreation and set goals for the next five years. According to the 2015 Kansas SCORP the following are activities showing significant participation increases:

- Wildlife based recreation show encouraging gains. Fishing and several forms of hunting saw new participants.
- Boating/Water Based Recreation (when grouped) all fared well. This includes paddleboards, kayaking, boardsailing, windsurfing, sailing and canoeing, as well as power boating.
- Health and fitness enhancing Activities dominated the list of activities attracting new participants. A subgroup (trail running – adventure racing – triathlons, etc.) leads specific activities. This participation is supported by input from agency professionals who rank it high in popularity. Recent “Warrior Dash” type activities in the Kansas City, Kansas metropolitan area drew as many as 30,000 young adults (ages 18-35).

Figure 2.9 illustrates the survey results from the 2015 Kansas SCORP of the most popular individual outdoor recreational activities. As seen, the most popular activities are relaxing outdoors, picnicking and other social activities, all activities supported by Fall River Lake.



**Figure 2.9 Most Popular Individual Outdoor Activities 2009-2012 – KS Public Supplier’s Survey** (Source: State of Kansas SCORP)

2.5.6 Recreation Analysis – Needs

The activities addressed above are supported by USACE at Fall River Lake. Wildlife based recreation accounts for a substantial amount of Fall River Lake’s outdoor recreation demand, both by adjacent residents and by visitors. After a period of decline, more recent statistics show generally favorable growth in various sectors of this user group according to the SCORP. Boating in Kansas, like hunting and fishing, has been noticeably impacted by drought since 2011. The 2012 year was particularly severe, with several water bodies completely inaccessible. However, 2013 brought some relief in the eastern half of the state.

For the 2013 to 2014 recreation period, responses to comment cards distributed by USACE at Fall River Lake indicated a high level of satisfaction amongst respondents to Fall River Lake’s amenities and services. Ratings for “Very Good” were received by 90-100% in the categories of suitability of park facilities for recreational equipment and activities, visitor waiting times for park facilities and

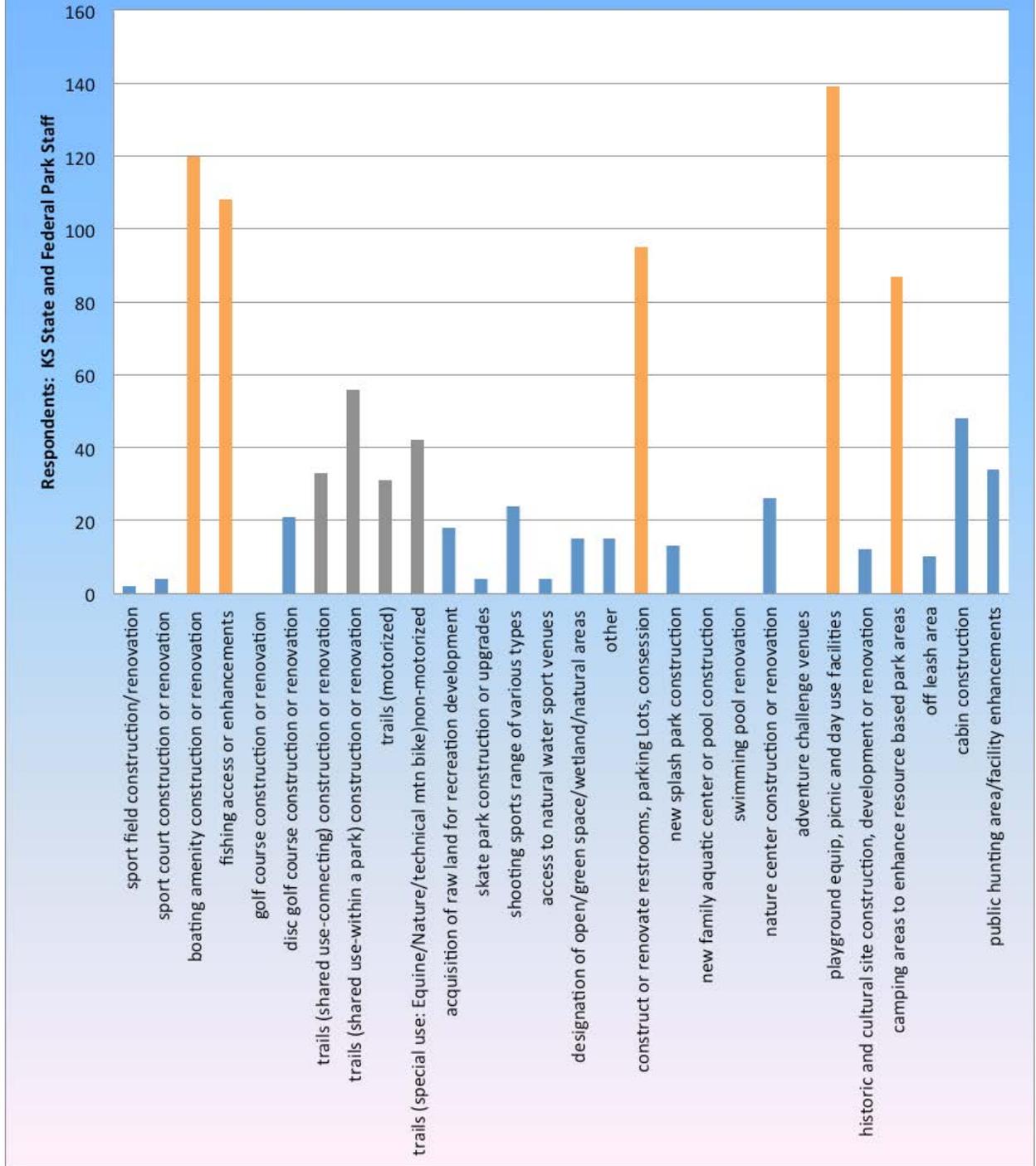
services, and value received for any visitor fees paid. The survey indicated that signage at the lake could be improved, but overall respondents felt that Fall River Lake was a beautiful, high-quality recreation destination.

Water based recreation is a crucial aspect of outdoor recreation in Kansas, making up a substantial core of the visitors to USACE and State managed parks. Recreational boating activities in Kansas are expected to increase following 2015 precipitation within the region. Fitness and health enhancing outdoor experiences are popular in a variety of formats. Those of an individual nature are increasing while traditional team sports (football, baseball, and soccer) are in decline. Triathlons and road racing both ranked in the top 5 outdoor activities attracting new participants. Support for this type of activity was also provided by agency professionals, who in a 2013 Supplier's Survey ranked fitness and trail running as the fastest growing outdoor pursuits. Figure 2.10 illustrates the areas and facilities identified as most needed in state and federal parks in Kansas.



**Photo 2-9 Boating at Kansas Lakes** (Source: USACE)

## Areas and Facilities most needed: State and Federal Parks



**Figure 2.10 Recreational Areas and Facilities Most Needed: State and Federal Parks** (Source: 2015 Kansas SCORP)

### 2.5.7 Summary Discussion – Needs and Trends

Given the outdoor recreation trends information shown in Figures 2.9 and 2.10 above, it is evident that future recreation development at Fall River Lake should focus on providing increased trail opportunities (of all kinds), more facilities for family and group gatherings, and more wildlife and nature-related viewing opportunities. USACE should also place a high priority on the protection and retention of large, undeveloped parcels of public land. Doing so responds to outdoor recreation needs expressed in the SCORP. The large expanses of natural habitat on public land are held in high regard by the citizens throughout the zone of interest for Fall River Lake. This Plan responds to these needs through revised land classifications, new management objectives and conceptual management plans for each land classification.

### 2.5.8 Recreation Carrying Capacity

The plan formulated herein proposes to provide a variety of activities and to encourage optimal, safe use of present public use areas without causing irreparable harm to natural resources. The carrying capacity of the land is determined primarily by the distinct characteristics of the site including but not limited to soil type, steepness of topography and available moisture. Recreational carrying capacity of the lake's water surface is based primarily on available space and numbers of users. These characteristics, both natural and manmade, are development constraints that often determine the type and number of facilities that should be provided.

No recreation carrying capacity studies have been conducted at Fall River Lake. Presently, USACE manages recreation areas using historic visitation data combined with best professional judgment to address recreation areas, including the water surface, considered to be overcrowded, overused, underused, or well balanced. Compared to other USACE lakes, Fall River Lake experiences low to moderate visitation. This trend is expected to continue based on regional population projections. However, USACE will continue to work with KDWPT to identify possible causes and effects of overcrowding and overuse and apply appropriate best management practices including: site management, regulating visitor behavior, and modifying visitor behavior as needed.

## **2.6 REAL ESTATE**

The total project area at Fall River Lake encompasses 15,061 acres acquired in fee simple title by USACE. Above the area acquired in fee simple title, nine acres were encumbered with a perpetual flowage easement. These are the official acres and may differ from those in other parts of this plan due to better measurement technology, erosion and sedimentation.

Purchase of flowage easement by the Government constitutes payment for the right to flood and for the damage and expense to the landowner resulting from project operation. Construction of buildings or facilities for human habitation, or alteration of the existing terrain to the extent that storage of flood water is reduced,

will not be permitted on flowage easement lands. Construction of most structures and improvements on flowage easement lands will require formal written authorization from USACE.

Prospective buyers of property adjacent to Fall River Lake are strongly encouraged to determine the location of the flowage easement line on any property they are considering purchasing. Flowage easements may or may not be located on deeds or plats provided by the seller(s).

Individuals and companies interested in leases to provide services to the public on public lands should be aware that there are specific restrictions and procedures they must follow. In many cases, individuals or companies will be encouraged to pursue a sublease with an existing lessee. In general, new leases that provide recreational amenities and services require market studies and competitive bidding before an award can be made. Questions regarding this topic should be directed to the USACE lake office at 2453 Lake Road, Fall River, KS 67047.

#### 2.6.1 Encroachments and Trespass

Individuals or entities without specific, written permission from the District Engineer are prohibited from conducting business on Government property under the Code of Federal Regulations, Title 36 CFR, 327.18. Government property is monitored by Toronto Lake personnel to identify and correct instances of unauthorized use, including trespasses and encroachments. The term “trespass” includes unauthorized transient use and occupancy, such as mowing, tree cutting and removal, livestock grazing, cultivation and harvesting crops, and any other alteration to Government property done without USACE approval. Unauthorized trespasses may result in a Title 36 citation requiring violators to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See 36 C.F.R. Part 327 Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers). More serious trespasses will be referred to the USACE Office of Counsel for enforcement under state and federal law, which may require restoration of the premises and collection of monetary damages.

The term “encroachment” pertains to an unauthorized structure or improvement on Government property. When encroachments are discovered, USACE lake personnel will attempt to resolve the issue at the project level. Where no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by Tulsa District Real Estate Division and/or Office of Counsel. USACE’s general policy is to require removal of encroachments, restoration of the premises, and collection of appropriate administrative costs and fair market value for the term of the unauthorized use.

At Fall River Lake, the most common encroachments are unauthorized mowing and paths, unauthorized structures such as fences and temporary

structures, grazing, storage of personal property on USACE lands, and tree and vegetation removal. Placement of private property, including livestock, on public land without written authorization is prohibited.

### 2.6.2 Outgrants

The term “outgrant” is a broad term used by USACE to describe a variety of real estate instruments wherein an interest in real property has been conveyed by USACE to another party. Outgrants at Fall River Lake include leases, licenses, easements, consents, permits, and others. Outgrants do not include the Shoreline Use Permits that authorize private structures and activities owned or conducted by adjacent landowners such as boat docks and vegetation modification. At present, there are approximately 23 recorded outgrants in effect on USACE lands and nine acres of flowage easement at Fall River Lake. These outgrants include the following:

- 18 Easements
- 1 Fish/Wildlife license
- 1 Recreational/Park lease
- Agriculture lease
- 1 Miscellaneous – Greenwood County Rural Fire District No. 1

## **2.7 PERTINENT PUBLIC LAWS**

The following Public Laws are applicable to Fall River Lake. Additional information on Federal Statutes applicable to Fall River Lake can be found in the Environmental Assessment for the Fall River Lake Master Plan revision in Appendix B of this Plan.

- Public Law 59-209, Antiquities Act of 1906. - The first federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.
- Public Law 74-292, Historic Sites Act of 1935. - Declares it to be a national policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".
- Public Law 75-761, Flood Control Act of 1938. - This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes including construction of Fall River Lake.

- Title 16 U.S. Code §§ 668-668a-d, 54 Stat. 250, Bald Eagle Protection Act of 1940, as amended. This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines “take” as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.
- Public Law 78-534, Flood Control Act of 1944. - Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to federal, state or local governmental agencies. This law also authorized the creation of the Southwestern Power Administration (SWPA), then within the Dept. of the Interior and now within the Dept. of Energy, as the agency responsible for marketing and delivering the power generated at federal reservoir projects.
- Public Law 79-525, River and Harbor Act of 1946. - This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- PL 79-526, Flood Control Act of 1946 (24 July 1946), amends PL78-534 to include authority to grant leases to non -profit organizations at recreational facilities in reservoir areas at reduced or nominal fees.
- Public Law 83-780, Flood Control Act of 1954. - This act authorizes the construction, maintenance, and operation of public park and recreational facilities in reservoir areas under the control of the Department of the Army and authorizes the Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the public interest.
- Public Law 85-624, Fish and Wildlife Coordination Act 1958. - This act as amended in 1965 sets down the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.
- Public Law 86-523, Reservoir Salvage Act of 1960, as amended. This Act provides for (1) the preservation of historical and archeological 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 reservoir construction projects; (2) coordination with the Secretary of the Interior whenever activities may cause loss of scientific, prehistoric, or archeological data; and (3) expenditure of funds for recovery, protection, and data preservation. This Act was amended by Public Law 93-291.

- Public Law 86-717, Forest Cover Conservation Act, 6 Sept. 1960. - This act provides for the protection of forest cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.
- Public Law 87-88, Federal Water Pollution Control Act Amendments of 1961, as amended. Section 2(b)(1) of this Act gives USACE responsibility for water quality management of USACE reservoirs. This law was amended by the Federal Water Pollution Control Act Amendment of 1972, Public Law 92-500.
- Public Law 87-874, Rivers and Harbors Act of 1962. - This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Public Law 88-578, Land and Water Conservation Fund Act of 1965. - This act established a fund from which Congress can make –appropriations for outdoor recreation. Section 2(2) makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act as amended.
- Public Law 89-72, Federal Water Project Recreation Act of 1965. - This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. A USACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.
- Public Law 89-90, Water Resources Planning Act (1965). - This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.
- Public Law 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated October 21, 1976. - This act authorized a research and development program with respect to solid-waste disposal. It proposes (1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid-waste disposal, including studies directed toward the conservation of national resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid waste; and (2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, and conduct of solid-waste disposal programs.
- Public Law 89-665, Historic Preservation Act of 1966. - This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties

listed, nominated, or considered important enough to be included on the National Register of Historic Places.

- Public Law 90-483, River and Harbor and Flood Control Act of 1968, Mitigation of Shore Damages. - Section 210 restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- Public Law 91-190, National Environmental Policy Act of 1969 (NEPA). - NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a “continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.” Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act.
- Public Law 91-611, River and Harbor and Flood Control Act of 1970. - Section 234 provides that persons designated by the Chief of Engineers shall have authority to issue a citation for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations.
- Public Law 92-347, Golden Eagle Passbook and Special Recreation User Fees. - This act revises Public Law 88-578, the Public Land and Water Conservation Act of 1965, to require Federal agencies to collect special recreation user fees for the use of specialized sites developed at Federal expense and to prohibit USACE from collecting entrance fees to projects.
- Public Law 92-500, Federal Water Pollution Control Act Amendments of 1972. - The Federal Water Pollution Control Act of 1948 (PL 805, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."
- Public Law 92-516, Federal Environmental Pesticide Control Act of 1972. - This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.
- Public Law 93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities. - This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended to require each Federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at Federal expense.
- Public Law 93-205, Conservation, Protection, and Propagation of Endangered Species Act of 1973, as amended. This law repeals the Endangered Species

Conservation Act of 1969. It also directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This Act establishes a procedure for coordination, assessment, and consultation. This Act was amended by Public Law 96-159.

- Public Law 93-251, Water Resources Development Act of 1974. - Section 107 of this law establishes a broad Federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plant installations.
- Public Law 93-291, Archeological Conservation Act of 1974. - The Secretary of the Interior shall coordinate all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs.
- Public Law 93-303, Recreation Use Fees. - This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restricted criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.
- Public Law 93-523, Safe Drinking Water Act. - The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish Federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint Federal-State system for assuring compliance with these standards and for protecting underground sources of drinking water.
- Public Law 94-422, Amendment of the Land and Water Conservation Fund Act of 1965. - Expands the role of the Advisory Council. Title 2 - Section 102a amends Section 106 of the Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.
- Public Law 95-217, Clean Water Act of 1977, as amended. This Act amends the Federal Water Pollution Control Act of 1970 and extends the appropriations authorization. The Clean Water Act is a comprehensive Federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4.
- Public Law 95-341, American Indian Religious Freedom Act of 1978. The Act protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objections, and the freedom to worship through ceremonials and traditional rites.
- Public Law 95-632, Endangered Species Act Amendments of 1978. This law amends the Endangered Species Act Amendments of 1973. Section 7 directs

agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a Federal agency's compliance with the requirements of Section 102 of NEPA.

- Public Law 96-95, Archeological Resources Protection Act of 1979. This Act protects archeological resources and sites that are on public and tribal lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archeological community, and private individuals. It also establishes requirements for issuance of permits by the Federal land managers to excavate or remove any archeological resource located on public or Indian lands.
- Public Law 98-63, Supplemental Appropriations Act of 1983. This Act authorized the USACE Volunteer Program. The United States Army Chief of Engineers may accept the services of volunteers and provide for their incidental expenses to carry out any activity of USACE, except policymaking or law or regulatory enforcement.
- Public Law 99-662, The Water Resources Development Act (WRDA) 1986. - Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure. Establishes new requirements for cost sharing.
- PL101-233, North American Wetland Conservation Act (13 Dec 1989), directs the conservation of North American wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- PL101-336, Americans with Disabilities Act of 1990 (ADA), 26 July 1990, as amended by the ADA Amendments Act of 2008 (PL110-325), prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodations for persons with disabilities.
- PL101-601, Native American Graves Protection and Repatriation Act (16 Nov 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.
- PL 102-580, Water Resources Development Act (WRDA) of 1992 (31 Oct 1992) authorizes USACE to accept contributions of funds, materials and services from non-Federal public and private entities to be used for managing recreational sites and facilities and natural resources.
- PL 103-66 Omnibus Reconciliation Act-Day use fees (10 Aug 1993), authorizes USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches and boat ramps.

- PL104-303, WRDA 1996. Authorizes recreation and fish and wildlife mitigation as purposes of a project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of a project.
- PL104-333, Omnibus Parks and Public Lands Management Act of 1996, (12 Nov 1996), created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes or reservoirs managed by the Federal Government and to develop alternatives to enhance such opportunities for such use by the public.
- PL106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000), promotes the conservation of habitat for neo-tropical migratory birds.
- The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

## CHAPTER 3 - RESOURCE GOALS AND OBJECTIVES

### 3.1 INTRODUCTION

This chapter sets forth goals and objectives necessary to achieve the USACE vision for the future of Fall River Lake. The terms “goals” and “objectives” are often defined as synonymous, but in the context of this Plan, goals express the overall desired end state of the cumulative land and recreation management programs at Fall River Lake. Resource objectives specify task-oriented actions necessary to achieve the master plan goals.

### 3.2 RESOURCE GOALS

The following goals are the priorities for consideration when determining management objectives and development activities. Implementation of these goals is based upon time, manpower, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources while still providing a high level of public service. These goals will be pursued through the use of a variety of mechanisms such as: assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions. It is the intention of Fall River Lake staff to provide a realistic approach to the management of all resources. The following statements, based on *EP 1130-2-550*, Chapter 3, express the goals for the Fall River Lake Master Plan.

- GOAL A.** Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- GOAL B.** Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- GOAL C.** Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- GOAL D.** Recognize the unique qualities, characteristics, and potentials of the project.
- GOAL E.** Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

### **3.3 RESOURCE OBJECTIVES**

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the Tulsa District, Fall River Lake Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, USACE Environmental Operating Principles (EOPs), and applicable national performance measures. The objectives also incorporate findings and recommendations included in the 2016 KDWPT Strategic Wildlife Action Plan (SWAP) and the 2015 SCORP. The objectives are consistent with authorized project purposes, federal laws and directives, regional needs, resource capabilities, and they take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan, as well as regional and state planning documents.

The objectives in this Master Plan are intended to provide project benefits, meet public needs, and foster environmental sustainability for Fall River Lake to the greatest extent possible. Implementation of the objectives will require close coordination between KDWPT and USACE and are dependent available funds. The following tables list the objectives for Fall River Lake.

**Table 3.1 Recreational Objectives**

Recreational Objectives	Goals				
	A	B	C	D	E
Renovate existing facilities to provide a quality recreation experience for visitors while protecting natural resources for use by others. Examples include: development of high impact zones at campsites, provision of universally accessible facilities, separation of day use and camping facilities, improved electrical service at campsites.	*		*		
Increase opportunities for day use activities, especially picnicking. Provide a sufficient number of campsites in popular areas.	*		*		
Optimize opportunities for hunting game wildlife species on all USACE lands where such activities are appropriate and in accordance with natural resource management objectives. Maintain the Fall River Lake Public Hunting Area Map and Guide to accurately reflect the status of hunting opportunities and special restrictions for all USACE lands.	*		*	*	*
Monitor boating traffic and evaluate the need to conduct a comprehensive recreation boating use study to ensure visitor safety and enjoyment.	*		*		
Provide new recreation facilities in accordance with public demand. Examples include: universally accessible fishing docks, fish cleaning stations near boat ramps, playground equipment in day use and camping areas.	*		*		
Work with various partners to expand existing and develop new trails.	*		*		*
Consider pool fluctuations in design and placement of recreation facilities such as campsites, boat ramps, courtesy docks and restrooms, as well as tree planting and general landscaping.	*	*	*	*	
Ensure consistency with USACE Recreation Strategic Plan.					*
Monitor the SCORP to insure that USACE is responsive to outdoor recreation trends, public needs and resource protection within a regional framework. All plans by others will be evaluated in light of USACE policy and operational aspects of Fall River Lake.					*

\*Denotes that the objective helps to meet the specified goal.

**Table 3.2 Natural Resource Management Objectives**

Natural Resource Management Objectives	Goals				
	A	B	C	D	E
Give priority to the preservation and improvement of wild land values in public use planning, design, development, and management activities. Give high priority to examining project lands for the presence of priority habitats identified for the Flint Hills and Chautauqua Hills Ecological Focus Areas described by KDWPT in the State Wildlife Action Plan (SWAP).	*	*		*	*
Consider partnering with the Ancient Cross Timbers Consortium, as Woodson and Greenwood Counties are on the farthest northern reaches of the target area.		*		*	*
Consider flood/conservation pool levels to ensure that natural resources are managed in ways that are compatible with project purposes.	*	*		*	
Actively manage and conserve fish and wildlife resources, especially threatened and endangered species and Species in Need of Conservation by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the Fall River Lake ecological regions in restoration and mitigation plans.	*	*		*	*
Actively manage principal game wildlife species by establishing means of taking within specified public hunting areas in accordance with the regulatory processes of KDWPT.	*	*	*		*
Manage high density and low-density recreation lands in ways that enhance benefits to wildlife while meeting recreation needs.					*
Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		*			*
Minimize activities that disturb the scenic beauty and aesthetics of the lake.	*	*	*	*	
Ensure that adverse impacts resulting from land use actions, including outgrants, are appropriately mitigated to restore the value of the land to the nation.		*		*	*
Implement prescribed fire as a management tool to promote the vigor and health of Cross Timbers and Flint Hills forests, woodlands, and prairie.	*	*			*

Natural Resource Management Objectives	Goals				
	A	B	C	D	E
Stop unauthorized uses of public lands such as off-road vehicle (ORV) use, trash dumping, unauthorized fires, fireworks, poaching, clearing of vegetation, agricultural trespass, timber theft, unauthorized trails and paths, and placement of advertising signs that create negative environmental impacts.	*	*	*	*	*
Monitor lands and waters for invasive, non-native and aggressively spreading native species and take action to prevent and/or reduce the spread of these species.	*	*		*	*
Protect and/or restore important native habitats such as prairies, bottomland hardwoods, riparian zones, and wetlands, where they occur, or historically occurred on project lands. Special emphasis should be taken to protect and/or restore special or rare plant communities. Emphasize actions that promote butterfly and /or pollinator habitat, migratory bird habitat, and habitat for birds listed by USFWS as Birds of Conservation Concern.	*	*		*	*

**Table 3.3 Visitor Information, Education, and Outreach Objectives**

Visitor Information, Education and Outreach Objectives	Goals				
	A	B	C	D	E
Provide more opportunities (i.e. comment cards, updates to local municipalities, web page) for communication with agencies, special interest groups, and the general public. Utilize social media to inform visitors.	*			*	*
Implement more educational, interpretive, and outreach programs at the lake office and around the lake. Topics to include: history, lake operations (flood risk management, and water supply), water safety, recreation, cultural resources, ecology, invasive species and USACE missions.	*	*	*	*	*
Work closely with the interest groups.	*			*	*
Promote USACE Water Safety message.	*		*	*	*
Educate adjacent landowners on shoreline management policies and permit processes in order to reduce encroachment actions.	*	*	*	*	*

**Table 3.4 General Management Objectives**

General Management Objectives	Goals				
	A	B	C	D	E
Resurvey and maintain the public lands boundary line to ensure it is clearly marked and recognizable in all areas to reduce habitat degradation and encroachment actions.	*	*		*	
Identify safety hazards or unsafe conditions; correct infractions and implement safety standards in accordance with EM 385-1-1.					*
Reference Recreation Infrastructure Investment Strategy (RIIS) if funding levels change in future years.					*
Ensure green design, construction, and operation practices, such as the Leadership in Energy and Environmental Design (LEED) criteria for government facilities, are considered as well as applicable Executive Orders.					*
Manage non-recreation outgrants such as utility and road easements in accordance with national guidance set forth in ER 1130-2-550 and applicable chapters in ER 405-1-12.	*				*
Manage project lands and recreational programs to advance broad national climate change mitigation goals.					*

**Table 3.5 Cultural Resources Management Objectives**

Cultural Resources Management Objectives	Goals				
	A	B	C	D	E
As funding permits, complete an inventory of cultural resources and implement the Cultural Resources Management Plan.	*	*		*	*
Increase public awareness and education of regional history.		*		*	*
Stop unauthorized excavation and removal of cultural resources.		*		*	*
Provide access by Tribal members to any cultural resources, sacred sites, or other Traditional Cultural Properties.	*	*			
Preserve and protect cultural resources sites in compliance with existing federal statutes and regulations		*			

\*Denotes that the objective helps to meet the specified goal.

# CHAPTER 4 - LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS

## 4.1 LAND ALLOCATION

All project lands at USACE water resource development projects are allocated by USACE into one of four categories in accordance with the congressionally authorized purpose for which the project lands were acquired. There are four possible categories of allocation identified in USACE regulations for acquisition: Operations, Recreation, Fish and Wildlife, and Mitigation. At Fall River Lake, the only land allocation category that applies is Operations, which is defined as those lands that are required to operate the project for the primary authorized purposes of flood risk management, water supply and navigation. The remaining allocations of Recreation, Fish and Wildlife, and Mitigation would apply only if lands had been acquired specifically for these purposes.

## 4.2 LAND CLASSIFICATION

### 4.2.1 General

The objective of classifying project lands is to identify how a given parcel of land shall be used now and in the foreseeable future. Land classification is a central component of this plan, and once a particular classification is established any significant change to that classification would require a formal process including public review and comment.

### 4.2.2 Prior Land Classifications

Previous versions of the Fall River Lake Master Plan included land classification criteria that were similar, but not identical to the current criteria. These prior land classifications were based more on projected need than on actual experience, which resulted in some areas being classified for a type of use that has not or is not likely to occur. Additionally, in the 40 years since the previous Master Plan was published, USACE land management policy, wildlife habitat values, surrounding land use, and regional recreation trends have changed significantly giving rise to the need for revised land classifications. Refer to Table 8.1 in Chapter 8 for a summary of land classification changes from the prior classifications to the current classifications.

### 4.2.3 Current Land Classifications

USACE regulations require the project lands and water surface to be classified in accordance with the primary use for which project lands are managed. There are six primary categories and four sub categories of classification identified in USACE regulations including:

- Project Operations
- High Density Recreation

- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Management Lands
  - Low Density Recreation
  - Vegetation Management
  - Wildlife Management
  - Future/Inactive Recreation Areas
- Water Surface

The land and water surface classifications for Fall River Lake were established after taking into account public comments, input from key stakeholders including elected officials, city and county governments, and lessees operating on USACE land. Additionally, wildlife habitat values and concerns, as well as outdoor recreation trends analysis provided in the SCORP were used in decision making. Also included in the analysis were historical public use and land management patterns that have developed since publication of the 1977 Master Plan. Maps showing the various land classifications can be found in Appendix A. Each of the land classifications, including the acreage and description of allowable uses, is described in the following paragraphs.

#### 4.2.4 Project Operations

This classification includes the lands managed for operation of the dam, project office, and maintenance yards, all of which must be maintained to carry out the authorized purpose of flood control. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to the fishing pier. Regardless of any limited recreation use allowed on these lands, the primary classification of Project Operations will take precedent over other uses. There are 81 acres of Project Operations land specifically managed for this purpose.

#### 4.2.5 High Density Recreation (HDR)

These are lands developed for intensive recreational activities for the visiting public including day use areas, campgrounds, marinas and related concession areas. Recreation development by lessees operating on USACE lands must follow policy guidance contained in USACE regulations at ER 1130-2-550, Chapter 16. That policy includes the following statement:

*“The primary rationale for any future recreation development must be dependent on the project’s natural or other resources. This dependency is typically reflected in facilities that accommodate or support water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps, and comprehensive resort facilities. Examples that do not rely on the project’s natural or other resources include theme parks or ride-type attractions, sports or concert stadiums, and standalone facilities such as*

*restaurants, bars, motels, hotels, non-transient trailers, and golf courses. Normally, the recreation facilities that are dependent on the project's natural or other resources, and accommodate or support water-based activities, overnight use, and day use, are approved first as primary facilities followed by those facilities that support them. Any support facilities (e.g., playgrounds, multipurpose sports fields, overnight facilities, restaurants, camp stores, bait shops, comfort stations, and boat repair facilities) must also enhance the recreation experience, be dependent on the resource-based facilities, and be secondary to the original intent of the recreation development...*"

Lands classified for High Density Recreation are suitable for the development of comprehensive resorts. The regulation cited above defines Comprehensive Resort as follows:

*"Typically, multi-faceted developments with facilities such as marinas, lodging, conference centers, golf courses, tennis courts, restaurants, and other similar facilities."*

At Fall River Lake there are 1,911 acres classified as High Density Recreation land. Refer to Table 2.20 for a listing of the current High Density Recreation Areas and who operates them at Fall River Lake. Each of the High Density Recreation areas is described briefly in Chapter 5 of this Plan.

#### 4.2.6 Mitigation

This classification is used only for lands allocated for mitigation for the purpose of offsetting losses associated with the development of the project. No Mitigation lands are allocated for Fall River Lake, therefore no lands are classified as Mitigation lands.

#### 4.2.7 Environmentally Sensitive Areas

These are areas where scientific, ecological, cultural, and aesthetic features have been identified. There are 200 acres classified as Environmentally Sensitive Areas at Fall River Lake. This classification is in the State of Kansas Waterfowl Refuge upstream from the lake and designated for the protection of cultural sites.

#### 4.2.8 Multiple Resource Management Lands (MRML)

This classification is divided into four sub-classifications identified as: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of land may be classified using one or more of these sub-classifications but the primary sub classification should reflect the dominant use of the land. Typically, Multiple Resource Management Lands support only passive, non-intrusive uses with very limited facilities or infrastructure. Where needed, some areas may require basic facilities that include, but are not limited to minimal parking space, a small boat ramp, and/or primitive sanitary facilities. There are 11,007 acres of land under this classification at Fall River Lake.

The following paragraphs list each of the sub-classifications, and the number of acres and primary uses of each.

- Low Density Recreation. These are lands that may support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc). There are no acres under this classification at Fall River Lake.
- Wildlife Management. This land classification applies to those lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels, most of which are located within the flood pool of the lake. Passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation are compatible with this classification unless restrictions are necessary to protect sensitive species or to promote public safety. There 11,007 acres of land included in this classification at Fall River Lake.
- Vegetative Management. These are lands designated for stewardship of forest, prairie, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are no acres of land included in this classification at Fall River Lake.
- Future or Inactive Recreation. These are lands with site characteristics compatible with High Density Recreation development. These are areas where High Density Recreation development was anticipated in prior land classifications, but the development either never took place or was minimal. These areas are typically closed to vehicular traffic and will be managed as multiple resource management lands until development takes place. There are no acres of land included in this classification at Fall River Lake.

#### 4.2.9 Water Surface

USACE regulations specify four possible sub-categories of water surface classification. These classifications are intended to promote public safety, protect resources, or protect project operational features such as the dam and spillway. These areas are typically marked by USACE or lessees with navigational or informational buoys or signs, or are denoted on public maps and brochures. The four sub-categories of water surface classification include:

- Restricted. These areas are restricted to the extent that public access is not allowed for reasons of public safety, and for project operations and security purposes. The areas include water surface in front of the intake gate control tower and the two designated swimming beaches. Approximately nine acres of water surface are classified as Restricted at Fall River Lake. These areas are depicted on the land classification maps in Appendix A.

- Designated No-Wake. There are eight boat ramps where approximately 74 acres of water surface are classified as Designated No-Wake for reasons of public safety and protection of property and shorelines. The water surface acreage in this classification can vary significantly depending on lake elevation. No-wake areas are typically denoted by buoys in appropriate areas.
- Fish and Wildlife Sanctuary. These areas are managed with annual or seasonal boating access restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no Fish and Wildlife Sanctuary areas at Fall River Lake.
- Open Recreation. This classification encompasses the majority of the lake water surface and is open to general recreation with boats being the primary means of transport. Boaters are advised through maps and brochures, or signs at boat ramps and marinas, that navigational hazards may be present at any time and at any location in these areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy. Approximately 2,001 acres of water surface at Fall River Lake are classified as Open Recreation.

A summary of land classifications at Fall River Lake is provided in Table 4.1. Acreages were calculated using historical and GIS data. A map representing these areas can be found in Appendix A.

**Table 4.1 Acreage by Land Use Classification**

<b>Classification</b>	<b>Acres</b>
Project Operations	81
High Density Recreation	1,911
Environmentally Sensitive Areas	200
Multiple Resource Managed Lands: Low Density Recreation	0
Multiple Resource Managed Lands: Wildlife Management	11,007
Multiple Resource Managed Lands: Vegetative Management	0
Future/Inactive Recreation	0
Water Surface: Restricted	9
Water Surface: Designated No-wake	74
Water Surface: Fish and Wildlife Sanctuary	0
Water Surface: Open Recreation	2,001

\* **Note:** These acreage figures were measured using GIS technology and may vary slightly from official land acquisition records.

### **4.3 PROJECT EASEMENT LANDS**

These are lands on which easement interests were acquired. Fee title was not acquired on these lands but the easement interests convey to the Federal government certain rights to use and/or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, and/or Conservation Easement. At Fall River Lake, only flowage easements exist. A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations and to prohibit activities on the flowage easement that would interfere with flood risk management operations such as placement of fill material or construction of habitable structures. There are 18 separate easements, totaling nine acres of flowage easement lands, at Fall River Lake.

## CHAPTER 5 - RESOURCE PLAN

### 5.1 RESOURCE PLAN OVERVIEW

This chapter describes in broad terms how each land classification within the Master Plan will be managed. All management goals described in Section 3.2 apply to each of the land classification, but the primary goal(s) for each classification is listed below for emphasis. Refer to section 3.3 for a listing of resource objectives applicable to each management goal. Refer to Appendix A for maps showing the various land classifications.

Management of all lands, recreation facilities, and related infrastructure must take into consideration the effects of pool fluctuations associated with authorized project purposes. Management actions are dependent on congressional appropriations, the financial capability of lessees and other key stakeholders, and the contributions of labor and other resources by volunteers. The land classifications and applicable management goals for each classification for Fall River Lake include the following:

- Project Operations ..... Goal A
- High Density Recreation ..... Goal C
- Environmentally Sensitive Areas ..... Goal B, D, E
- Multiple Resource Management Lands for:
  - Low Density Recreation ..... Goal C
  - Wildlife Management ..... Goal B, E
  - Vegetation Management ..... Goal B, E

A more descriptive and detailed plan for managing project lands can be found in the Fall River Lake OMP. The OMP is an annually-updated, task and budget oriented plan identifying tasks necessary to implement the Resource Plan and achieve the goals and objectives of the Master Plan.

### 5.2 PROJECT OPERATIONS

Project Operations is land associated with the dam, spillway, levees, lake office, maintenance facilities, and other areas solely for the operation of the project. There are 81 acres of lands under this classification, which are managed by the USACE. The management plan for this area is to continue providing physical security necessary to ensure sustained operations of the dam and related facilities including restricting public access in hazardous locations near the dam and spillway.

### 5.3 HIGH DENSITY RECREATION

Fall River Lake has 1,911 acres classified as High Density Recreation. These lands were developed for intensive recreational activities for the visiting public including day use and campgrounds. National USACE policy set forth in ER and EP 1130-2-550, Chapter 16, limits recreation development on USACE lands to those activities that are dependent on a project's natural resources and typically include water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps and comprehensive resorts. Examples of activities that are not dependent on a project's natural resources include theme parks or ride-type attractions, sports or concert stadiums, and stand-alone facilities such as restaurants, bars, motels, hotels, and golf courses.

The High Density Recreation areas at Fall River Lake include 930 acres in six park areas that are managed by USACE, and Fall River State Park with a total of 981 acres managed by KDWPT under a lease agreement with USACE. The KDWPT is responsible for the operation and maintenance of their leased areas, and although USACE does not provide direct maintenance within any of the leased locations, it may occasionally lend support where appropriate. The USACE reviews requests and ensures compliance with applicable laws and regulations for proposed activities in all leased and USACE-operated HDR areas. USACE works with partners to ensure that recreation areas are managed and operated in accordance with the objectives prescribed in Chapter 3.

The following is a description of the parks operated by USACE and by KDWPT on USACE lands at Fall River Lake, some of which are highly developed, while others have only basic facilities and limited development. Classifications for the various parks at Fall River Lake include Day Use, Class A (highly developed parks) and Class C (parks with basic facilities). Maps showing existing parks and facilities can be found in Appendix A.

#### 5.3.1 USACE Managed Parks

USACE' is the largest federal provider of outdoor recreation, managing 12 million acres of lands and waters across the county. The recreation mission and overarching strategy of USACE is to manage and conserve natural resources while continuing to deliver a quality recreation program that is resilient in light of today's fiscal realities and be responsive to the changing needs of the American people. The following parks are under USACE direct management.

##### 5.3.1.1 Day Use Parks

Overlook Park - Overlook Park encompasses 32 acres on the southeast side of Fall River Lake. Operated by USACE, the park serves as a day use area. The day use recreation offers a boat ramp, picnic areas, a shelter and a restroom.

Browns Cove – This 81-acre area, operated by USACE, is adjacent to the west side of Whitehall Bay and was developed by the State of Kansas during the

time they had a lease of all the public-use areas. This area is used in conjunction with Whitehall Bay and includes a small day use area on the western shoreline.

#### 5.3.1.2 Class A Parks

Damsite Campground - Damsite Campground encompasses 36 acres on the east and west side of the outlet channel below Fall River Lake dam. USACE operates the park, which serves as a combination of day use and camping recreation. The day use recreation offers fishing access and picnic areas in the outlet channel. The campground offers two volunteers sites with three storage sheds, 19 campsites with water, electric, and sewer, nine campsites with water and electric, four primitive campsites, a group camp with a shelter and 12 campsites with water and electric, a shower house, two vault privies, two playgrounds, and a dump station.

Cedar Campground – Cedar Campground encompasses approximately five acres on the southwest end of Fall River Lake. Operated by USACE, the park contains nine non-electric campsites and one volunteer ten campsite and a vault toilet.

Whitehall Bay Campground - Whitehall Bay Campground encompasses 102 acres on the north end of Fall River Lake. USACE operates the park, which serves as a combination of day use and camping recreation. The day use recreation offers picnic areas, a boat ramp, and beach. The campground offers two volunteers sites with three storage sheds, nine campsites with water and electric, 16 campsites with electric, two group camps with four campsites with a shelter and water and electric, one group camp with six campsites with a shelter and water and electric, one group camp with 12 campsites with a shelter and water and electric, two shower houses, one vault privy, two playgrounds, and a dump station.

#### 5.3.1.2 Class B Parks

North Rock Ridge Campground - North Rock Ridge Campground encompasses 244 acres. The park is operated by the USACE and serves as a combination of day use and camping recreation. The day use recreation offers a picnic area and two boat ramps. The campground offers 17 campsites with electric, four primitive campsites, a vault privy, a dump station, and four water spigots.

#### 5.3.2 Fall River State Park Lease

Climax Landing – This small, one-acre day use area is located in the wildlife area on the Fall River arm of the lake about 4.5 miles east of the town of Climax and is primarily a public access site. Originally managed by USACE, the park is now part of the KDWPT Wildlife Area. Facilities include a small boat ramp.

Fredonia Bay Area - Fredonia Bay Area within Fall River State Park encompasses 505 acres on the south end of Fall River Lake. The park is operated by KDWPT and serves as day use and camping recreation. The day use recreation offers picnic areas, a kid's fishing pond, trails, courtesy fishing dock, boat ramp, and basketball court. The campground offers 3 cabins, 1 campsite with water, electric and sewer, 44 campsites with water and electric, 32 primitive campsites, a shower house, and a vault privy.

South Rock Ridge Campground - South Rock Ridge Campground is located within the Fredonia Bay Area operated by KDWPT and encompasses 65 acres. Amenities at the park include a boat ramp, tables, grills, restrooms, trail access, and fish cleaning station and serves as a combination of day use and camping recreation.

Quarry Bay Area - Quarry Bay Area within Fall River State Park encompasses 350 acres on the northeast end of Fall River Lake. Operated by KDWPT, this park serves as day and camping recreation. The day use recreation offers a boat ramp, volleyball court, gazebo, amphitheater, and beach. The campground offers 17 primitive campsites, a shower house, and a park attendant booth.

### 5.3.3 Trails

There are a number of trails on USACE lands, all of which are managed by partner agencies. The Badger Creek Hike and Bike Trail at Fall River Lake is managed by USACE and maintained by the Kansas Trails Council and Kansas Singletrack Society. This trail is located on the northeast side of the reservoir. It is divided into two separate trails, with the south loop consisting of approximately 4.1 miles and the north loop at about 2.7 miles. Both are designated for hiking and biking, and feature varied terrain. There are six hiking trails and one orienteering course at Fall River Lake managed by KDWPT, all within Fall River State Park. All trails are open year round and offer a variety of activities and experiences.

- *Bluestem Trail* is a 1.5 mile long trail featuring native grasses ranging from the high prairie to low woodlands appropriate for walking and mountain biking. Camping is located near the trail, and a permit is required to use the trail.
- *Casner Creek Trail* is a 1.5 miles long trail through a wooded area with a profuse display of prairie wildflowers appropriate for walking and mountain biking. Camping is located near the trail, and permit is required to use the trail.
- *Catclaw Trail* is a one mile-long trail walking and mountain biking trail. It features tallgrass prairie, sloping sandstone ridges, and wooded oak savanna, with a panoramic view of Fall River Lake. Camping is located near the trail, and a permit is required to use the trail.

- *Overlook Trail* is a 0.10 miles long ADA accessible trail intended for walking and mountain biking. Camping is located near the trail, and a permit is required to use the trail.
- *Post Oak Trail* is a 0.75-mile trail along a portion of Craig Creek featuring post and blackjack oaks, lichen covered sandstone outcropping, and open grass meadows.
- *Turkey Run Trail* is a one-mile long trail through a wooded ravine, crosses a stream and ascends across a tallgrass prairie with a view of Fall River Lake. The trail is appropriate for walking and mountain biking. Camping is located near the trail, and a permit is required to use the trail.

#### **5.4 ENVIRONMENTALLY SENSITIVE AREAS**

ESA's are areas where scientific, ecological, cultural or aesthetic features have been identified. 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. These areas must be managed to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration and management. These areas are typically distinct parcels located within another, and perhaps larger, land classification, area. There are 200 acres at Fall River Lake under this classification. These acres are managed in cooperation with the State of Kansas for the protection of unique habitat, protected wildlife, or cultural resources.

#### **5.5 MULTIPLE RESOURCE MANAGEMENT LANDS**

Multiple Resource Management Lands (MRML) are organized into four sub-classifications. These sub-classifications are: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. The following is a description of each sub-classification's resource objectives, acreages, and description of use.



**Photo 5-1 Scenic Views at Fall River Lake** (Source: USACE Facebook)

#### 5.5.1 MRML - Low Density Recreation

These lands have minimal development or infrastructure that support passive public use such as hiking, nature photography, bank fishing, and hunting. Since these lands are typically adjacent to private residential developments, hunting is only allowed in select areas that are a reasonable and safe distance from adjacent residential properties. These lands are typically open to the public, including adjacent landowners, for pedestrian traffic and are frequently used by adjacent landowners for access to the shoreline near their homes. Prevention of unauthorized use on this land, such as trespassing or encroachment, is an important management and stewardship objective for all USACE lands, but is especially important for lands in close proximity to private development. Future management of these lands calls for maintaining a healthy, ecologically-adapted vegetative cover to reduce erosion and improve aesthetics. Maintenance of an identifiable property boundary is also a high priority in these areas. There are no acres of MRML – Low Density Recreation at Fall River Lake.

#### 5.5.2 MRML - Wildlife Management

There are 11,007 acres of MRML – Wildlife Management at Fall River Lake. The management of these lands is divided between USACE (809 acres) and KDWPT (10,183 acres). These include lands reaching upstream from the dam along the rivers that flow into the lake. In general, this land classification calls for managing the habitat to support native, ecologically adapted vegetation, which in turn supports native game and non-game wildlife species, with special attention given to federal

and state-listed threatened and endangered species (see Table 2.6 Chapter 2.). Future management practices by USACE may include such activities as placement of nesting structures, construction of water features or brush piles, prescribed fire, fencing, removal of invasive species, and planting of specific food-producing plants that may be necessary to support wildlife needs. KDWPT employs many of these same management practices on the Fall River Wildlife Area, but may also implement enhancement practices such as agricultural leases that may benefit waterfowl and planting sunflower fields to attract doves for hunters. Additional best management practices may include the following:

- Use of erosion control blankets that do not pose entrapment hazards to wildlife
- Minimize nighttime lighting and only use down-shielded lighting to prevent disorientation of night-migrating birds
- Follow USFWS guidelines for building glass to prevent bird collisions
- Preserve and restore wildlife habitat in high density recreation areas
- Ensure that mowing practices provide standing tallgrass over winter to provide essential cover for wintering birds
- Report sightings of state-listed species and presence of rare vegetative communities

There are federally-listed threatened or endangered species that could and do utilize habitat within the Fall River Lake area. Therefore, any work conducted on this project will be in accordance to the Endangered Species Act and will be appropriately coordinated with the USFWS. The species of focus within this area of consideration are animals listed as a threatened or endangered species under the Endangered Species Act. These species (Table 2.6) will continue to receive attention to ensure they are managed in accordance to their habitat needs.

USACE also manages non-game wildlife, with some non-game programs, such as songbird nest box construction and installation of bat boxes, performed on an intermittent basis. The plan is to continue these initiatives in order to provide some form of management for non-game species. Conservation and protection of habitat that is typical of the Flint Hills and Chautauqua Hills Ecological Focus Areas, especially highly unique or diverse areas will be given high priority. Priority will also be given to the improvement or restoration of existing wetlands, or the construction of wetlands where topography, soil type, and hydrology are appropriate.

Use of available funds for wildlife management must be prioritized to meet legal mandates and regional priorities. While exceptions can occur, management actions will be guided by the following, in order of priority: 1) Protect federal and state-listed threatened and endangered species, 2) Meet the needs of species protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, 3) Meet the needs of rare species and Species in Need of Conservation Need, and 4) Meet the needs of resident species not included in the above priorities.



**Photo 5-2 Geese at Fall River Lake** (source: USACE Facebook)

Additionally, agricultural leases for grazing or hay production may be employed when such actions are beneficial to long-term ecological management goals. Hunting and fishing activities are regulated by federal and state laws and special restrictions proposed by USACE and approved through state regulatory processes. Natural surface pedestrian trails are appropriate for most Wildlife Management areas.

#### 5.5.3 MRML-Vegetative Management

These are lands designated for stewardship of forest, prairie, and other native vegetative cover. Passive recreation activities, such as hiking on natural surface trails, wildlife photography, and hunting may be allowed in these areas. There are no acres of Vegetative Management at Fall River Lake.

#### 5.5.4 Future or Inactive Recreation Areas

These areas either have site characteristics compatible with potential future development or are currently closed recreation areas. These areas will be managed for multiple resources until opportunities to develop or reopen them arise. There are no acres of Future or Inactive Recreation at Fall River.

## 5.6 WATER SURFACE

Zoning of the water surface is intended to ensure the security of key operations infrastructure, promote public safety and protect habitat. In accordance with national USACE policy set forth in EP 1130-2-550, the water surface of the lake at the conservation pool elevation may be classified using the following classifications:

- Restricted
- Designated No-Wake
- Fish and Wildlife Sanctuary
- Open Recreation

At conservation pool level of 948.5 NGVD there are 2,084 acres of surface water. Buoys are managed by USACE with close coordination with the KDWPT. These buoys help mark hazards, swim beaches, boats keep-out and no-wake areas. The following water surface classifications are designated at Fall River Lake.

### 5.6.1 Restricted

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations and safety and security purposes. The total acreage of Restricted water surface is approximately nine acres. The Restricted water surface at Fall River Lake includes areas near the dam and the two swim beaches. Future management calls for one or more of the following management measures: placement of buoys, placement of signs near boat ramps, and describing the areas on maps available to the public.

### 5.6.2 Designated No-Wake

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve visitor safety near key recreation water access areas such as boat ramps and swim beaches. There are eight boat ramp areas at Fall River Lake where no-wake restrictions are in place for public safety and protection of property. Designated No-Wake areas at Fall River Lake include approximately 74 acres. Future management of these areas rests with USACE and our partner agencies at Fall River Lake. Specific measures to be taken include: placement of buoys, placement of signs near boat ramps, and describing the areas on maps available to the public.

### 5.6.3 Fish and Wildlife Sanctuary

This water surface classification applies to areas with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no acres of Fish and Wildlife Sanctuary water surface at Fall River Lake. The two waterfowl refuge areas within the KDWPT Fall River Wildlife Area are on areas lying above the conservation pool and are therefore not included in the zoning of the water surface.

#### 5.6.4 Open Recreation

Open Recreation includes all water surface areas available for year round or seasonal water-based recreational use. Approximately 2,001 acres of Fall River Lake water surface is designated as Open Recreation. Signs at boat ramps warn boaters that navigation hazards such as standing dead timber, shallow water, and floating debris may be present at any time and location and it is incumbent upon boat operators to exercise caution. Boating on the lake is in accordance with USACE regulations and water safety laws of Kansas. USACE encourages all boaters and swimmers to wear their lifejackets at all times and to learn to swim well.

### **5.7 RECREATIONAL SEAPLANE OPERATIONS**

Recreation seaplane landings and takeoffs may occur on water surface areas where this activity is not prohibited. Seaplane restrictions are published by the Federal Aviation Administration in their Notice to Airmen and are also set forth in Title 36 of the Code of Federal Regulations, Chapter III, Part 327.4. Restricted areas for seaplanes at USACE managed lakes were established through public meetings and an EA circa 1980. The seaplane policy for USACE Tulsa District is found in the Notice to Seaplane Pilots, which lays out the general restrictions as well as lake-specific restrictions for seaplane operation. Once on the water, seaplanes are considered to be water vessels and fall under guidelines for watercraft. Appendix E contains the seaplane map for Fall River Lake.

## **CHAPTER 6 - SPECIAL TOPICS/ISSUES/CONSIDERATIONS**

### **6.1 SEDIMENTATION**

By design, reservoirs constructed for flood control purposes drain extensive land areas and are therefore characterized by large watersheds. As a result, reservoirs may be subject to input and accumulation of large quantities of sediments transported from their watersheds, particularly when drainage areas are characterized by erodible soils and land uses which expose soils to erosion and transport during significant rainfall events. Such land uses may include agricultural practices such as row crop farming and other practices resulting in soil disturbance. Large federal reservoirs are designed to accommodate high sediment inputs over time, though sediment accumulation eventually decreases the capacity of these lakes for water storage. Typically, sedimentation is event-driven with most sediment loading occurring during major inflow events. The rate of storage loss varies by lake and sediment accumulation over time is typically monitored by periodic sedimentation surveys.

The conservation pool (the upper limit of which is sometimes referred to as “normal” pool level) contains all the water stored for project purposes such as water quality, water supply, fish and wildlife, and recreation. Over time, accumulation of sediment in the conservation pool decreases the capacity for water storage and, in extreme cases, may severely impact authorized project purposes. Watershed protection strategies which decrease soil erosion at the source are generally viewed as the most effective means of reducing reservoir sedimentation. Owing to prohibitively high costs and environmental effects, large-scale dredging of federal reservoirs is currently rarely employed as a means of restoring lost capacity. Details of sedimentation for Fall River Lake can be found in Chapter 2.

### **6.2 WATERSHED RESTORATION AND PROTECTION STRATEGY**

The WRAPS is a framework that allows for increased stakeholder involvement in issues that impact their watershed. Administered by the KDHE under the authority of the 1998 Clean Water Action Plan, this program helps communities identify protection needs and opportunities, create goals and action items to accomplish those goals, and funding to the stakeholders to implement the action items.

Each WRAPS group has a nine-element plan that guides their activities. The Fall River Watershed Nine Element plan is written to address impairments relating to dissolved oxygen, eutrophication, and siltation. Best management practices will be put in place specifically to address impacts from croplands, rangelands, and other livestock activities.

Specifically, impairments addressed in the Fall River Lake WRAPS are the impacts of eutrophication, dissolved oxygen, siltation and fecal coliform bacterial by

targeting rangeland, livestock, cropland and streambank areas. Best management practices for reducing phosphorus and sediment within croplands include riparian and vegetative buffers within the watershed. Best management practices for reducing phosphorus and sediment for livestock include relocating feeding pens and off stream watering systems. The steps within the WRAPS program involve building awareness and education, engaging local leadership, monitoring and evaluation of watershed conditions, and assessment, planning, and implementation of the WRAPS process at the local level.

### **6.3 POOL ELEVATION**

Fall River Lake possesses two active zones or “pools” defined by elevation and established at the time the reservoir was designed by the USACE and authorized by Congress. The flood control pool at Fall River Lake is normally kept empty but is periodically used to catch and control upstream flows, which, without the dam, could cause downstream flooding. Flood control storage at Fall River Lake exists between elevations 948.5 and 987.5 feet (ft.) NGVD. Storage in the flood control pool is only used to minimize downstream flooding during periods of rainfall and the objective of operating the lake is to evacuate this pool as quickly as possible while minimizing downstream flood impacts. The bottom elevation of the flood control pool (948.5 ft.) defines the transition point between flood control and conservation pools at Fall River Lake.

The conservation pool stores water to support authorized project purposes. The conservation pool for Fall River Lake exists between elevations 940.0 and 948.5 ft. NGVD. Accordingly, the top of the Fall River Lake conservation pool (sometimes referred to as “normal” pool elevation) is 948.5 ft. NGVD as authorized by Congress. Based on the most recent sediment survey (2010), Fall River Lake contains approximately 20,690 acre-feet (a unit of volume equal to one acre of surface area and a depth of 1 foot) of storage at the top of the conservation pool. While the lake level at any given time may vary depending upon withdrawals, reservoir releases, drought, or rainfall, which replenishes water in the conservation pool or fills portions of the flood control pool, the objective of operating the lake is to maintain a lake level as close to the top of the conservation pool as possible.

Changing the elevation of the top of the conservation pool of a federal reservoir from that authorized by Congress is not a simple, inexpensive, or trivial matter. This action requires redistribution or “reallocation” of storage between authorized pools, typically increasing the elevation of the conservation pool by reallocating from flood storage for some clearly identified and defined need – often an increase in storage for water supply. This requires detailed study of the impacts to authorized project purposes as well as associated environmental impacts. Depending upon the nature of the request, detailed studies and any mitigation required to change conservation pool elevations may require considerable cost sharing by non-federal entities requesting the changes. Finally, depending on the

extent and nature of reallocation of storage, final approval of such changes may require Congressional authorization.

There are currently no identified needs or requests for reallocation of storage or changes to authorized pool elevations at Fall River Lake. Accordingly, there are no current plans to study or implement changes to authorized pool levels or operations from those currently in place.

#### **6.4 MOTORIZED VEHICLES**

The operation of motorized vehicles on roadways within USACE managed property at Fall River Lake is governed by applicable Federal, state, and local laws and regulated by authorized enforcement officials (36 CFR 327.2 and 327.26). Off-road operation of any motorized vehicle is strictly prohibited at Fall River Lake except by those performing authorized volunteer or contract work on behalf of the government or those under special permit. When used in official capacities, drivers of off-road vehicles will wear clothing clearly identifying them as government employees, contractors, or volunteers. When not in use, these vehicles will be parked or stored at a designated location.

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## **CHAPTER 7 - PUBLIC AND AGENCY COORDINATION**

### **7.1 PUBLIC AND AGENCY COORDINATION**

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management for cultural, natural, and recreational resources of Fall River Lake. An integral part of this effort is gathering public comment and engaging stakeholders in the process of planning. USACE policy guidance in ER and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the master plan revision process including any associated environmental assessment process. Public involvement is especially important at Fall River Lake to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in a region. The following milestones provide a brief look at the overall process of revising the Fall River Lake MP and SMP.

The USACE began planning to revise the Fall River Lake MP and SMP in fall of 2016. The objectives for a master plan revision were to (1) update land classifications to reflect changes in USACE land management policies since 1977 and (2) update the Master Plan to reflect new agency requirements for master plan documents in accordance with ER 1130-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013.

### **7.2 INITIAL STAKEHOLDER INPUT AND PUBLIC MEETINGS**

The first action was a scheduled public scoping meeting providing an avenue for public and agency stakeholders to ask questions and provide comments. Two public meetings were held that included information from both Fall River and Toronto Lakes. The public scoping meetings were held on 15 November 2016 in Eureka, Kansas, and in Fredonia, Kansas on 17 November 2016. The Tulsa District placed advertisements on the USACE webpage, social media and print publications two weeks prior to the public scoping meeting.

USACE staff hosted the workshop, which was conducted in an open format. Participants were asked to sign in at a table where staff provided the participants with information regarding the structure of the scoping meeting and comment forms. After signing in, participants were directed to an area where topic-specific information tables were setup. Large-scale boards were displayed at each table to convey information about the following topics:

- Public Involvement Process
- Project Overview
- Overview of the National Environmental Policy Act process
- Master Plan and current land classifications
- How to Submit Comments

At each of the information tables and throughout the meeting room, USACE representatives were available to answer questions and receive written comments at information tables. Interested persons had the opportunity to comment about the project using a variety of methods, including the following:

- Filling out a comment form at the open house
- Taking a comment form home to be returned at a later date
- Submitting a comment using electronic mail
- Submitting a comment and mailing it in on letterhead or choice of paper

The 15 November 2016 scoping meeting was attended by nine people and the 17 November 2016 meeting was attended by 26 people, not including USACE personnel. Four of the nine attendees at the 15 November meeting were from agencies, while the majority of attendees at the 17 November meeting consisted of (22 of 26) were general public or local residents.

Following these meetings was a 30-day public comment period in which 13 different comments were made. Two of these were specific to Fall River Lake and concerned erosion and sedimentation of the lake with its associated problems. The master plan does not deal with issues such as these, but the issues was noted in Chapter 2, current conditions, and Chapter 6, special topics. An additional comment was received from the regional EPA, but it was simply a request to get a copy of the EA when it becomes available.

### **7.3 PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, SMP AND FONSI**

The final draft Master Plan, Shoreline Management Plan and Environmental Assessment was made available for public and agency review online beginning 08 August 2017. The process of announcing the availability of the draft final Master Plan and the requirements for submitting comments included sending an announcement via letters and e-mails to agencies and public officials, and e-mailing announcements to those who previously attended meetings or submitted comments leaving their e-mail address. A press release was submitted simultaneously to local and regional news agencies for publication.

Public and agency comments for the draft final master plan were accepted through 08 September 2017. During this timeframe, two written comments were received; one from the general public stating no comment, and one from SHPO stating no comment. A copy of the letter received from SHPO is included in the EA. The final version of the Master Plan, EA and FONSI is signed by the District Engineer for implementation. The final version of the SMP is signed by the Division Commander. The final versions will be posted on the District website.

## **CHAPTER 8 - SUMMARY OF RECOMMENDATIONS**

### **8.1 SUMMARY OVERVIEW**

The preparation of this Master Plan for Fall River Lake followed the recent USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 30 January 2013. Three major requirements set forth in the new guidance include the preparation of contemporary Resource Objectives, Classification of project lands using the newly approved classification standards, and the preparation of a Resource Plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include rigorous public involvement throughout the process, and consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities. The study team endeavored to follow this guidance to prepare a Master Plan that will provide for enhanced recreational opportunities for the public, improve environmental quality, and foster a management philosophy conducive to existing and projected USACE staffing levels at Fall River Lake. Factors considered in the Plan development were identified through public involvement and review of regional and statewide planning documents including the SCORP.

### **8.2 LAND RECLASSIFICATION PROPOSAL**

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to new land classification standards that reflect how lands are being managed now and in the foreseeable future. The new land classification standards will also comply with current USACE guidance. Public comment was solicited to assist in making these land reclassification decisions. Chapter 7 of this Plan describes the public involvement process and provides a summary of public comments received. After analyzing public comment, examining recreational trends, and taking into account regional natural resource management priorities, USACE team members reclassified the Federal lands associated with Fall River Lake as described in Table 8.1.

**Table 8.1 Change in Land Classification**

Prior Land Classifications (1977)	Acres	New Land Classifications	Acres	Net Difference
Project Operations	126	Project Operations (PO)	81	-45
Recreation – Intensive Use	1792	High Density Recreation (HDR)	1,911	119
		Environmentally Sensitive Areas (ESA)	200	200
Recreation – Low Density	493	Multiple Resource Management – Low Density Recreation (LDR)	0	-493
Wildlife Management	10,522	Multiple Resource Management – Wildlife Management (WM)	11,007	485
		Multiple Resource Management – Vegetation Management (VM)		
		Future/Inactive Recreation Areas		

\* **Note:** The new and total acreage figures were measured using GIS technology and may vary slightly from official land acquisition records.

Table 8.2 lists the descriptions and justifications for the reclassification of USACE lands at Fall River Lake. Some variation in total acreages occurred due to better measuring technology and changes in landforms over the past 40 years due to sedimentation and erosion.

**Table 8.2 Changes and Justifications for New Land Classifications <sup>(1)</sup>**

Land Classification	Description of Changes <sup>(2)</sup>	Justification
Project Operations	<p>The net decrease in Project Operations lands from 126 to 81 acres was due to the following:</p> <ul style="list-style-type: none"> <li>• 42 acres reclassified to MRL-WM.</li> <li>• 9 acres reclassified to HDR.</li> <li>• 6 acres reclassified from MRL-LDR to PO.</li> </ul>	<p>All lands classified as Project Operations are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management, and water conservation. Lands reclassified from PO to MRL-WM are being leased by USACE for agricultural</p>

Land Classification	Description of Changes <sup>(2)</sup>	Justification
		<p>purposes for the benefit of wildlife. The reclassification of lands from PO to HDR were done so to more appropriately align the classification with the actual use. Lands reclassified from MRL-LDR were for quarry and rock piles used for materials storage, which pose a safety risk to the public. The reclassification of these acres will have no effect on current or projected public use.</p>
High Density Recreation	<p>The net increase in High Density Recreation lands from 1,792 to 1,911 were the result of changes to three different areas:</p> <ul style="list-style-type: none"> <li>• 130 acres are reclassified to MRL-WM that were classified as HDR on the 1977 Master Plan, but were never developed, nor is there a demand to develop these areas as high-density recreation areas.</li> <li>• 240 acres of MRL-LDR that the State leased and is being managed by the State, who intends to use it as HDR.</li> <li>• 9 acres in a small area on the south side of the dam that is a favorite fishing area for visitors is reclassified from PO.</li> </ul>	<p>In general terms, the amount of land classified for Recreation – Intensive Use in the 1977 Master Plan was based on projected needs at the time. Management experience since 1977 has clearly revealed that reclassifications were needed to reflect actual use, evolving trends and regional priorities. The net gain in HDR resulted from making these adjustments to reflect current and expected use. The reclassification of areas and portions of actively managed HDR areas will not affect current or projected public use.</p>

Land Classification	Description of Changes <sup>(2)</sup>	Justification
Environmentally Sensitive Areas	The classification of 200 acres as ESA resulted from changing the land class from MRML-WM upstream of the dam along the river channel.	Reclassification of the 200 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, or cultural sites. Classifying these acres as ESA will afford these areas the highest level of protection from disturbance. The reclassification of 200 acres to ESA will have no effect on current or projected public use.
MRML – Low Density Recreation	<p>The decrease of MRL-LDR acres from 493 to 0 were the result of reclassifying the following lands:</p> <ul style="list-style-type: none"> <li>• 240 acres to HDR on the south east side of the lake.</li> <li>• 6 acres to PO for rock quarry.</li> <li>• 247 acres to MRL-WM that are currently being used for wildlife management activities and are not suitable for MRL-LDR.</li> </ul>	The lands were reclassified to reflect more accurately how the lands are being utilized. These changes support management actions and recreational trends identified in the SCORP. Public use of all areas that were reclassified will not be affected now or in the foreseeable future. Public access in the form of natural surface hiking and biking trails is compatible with these classifications.
MRML – Wildlife Management	<p>The increase of MRL-WM acres from 10,522 to 11,007 resulted from the reclassification of the following:</p> <ul style="list-style-type: none"> <li>• 130 acres from HDR.</li> <li>• 247 acres from MRL-LDR on sites on the south and northwest areas of the lake.</li> <li>• 42 acres from PO.</li> </ul>	The lands reclassified from MRL-LDR, HDR, and PO to MRL-WM were due to these areas being used as hay fields and similar wildlife supporting functions. These reclassifications will have no effect on current or projected public use.

Land Classification	Description of Changes <sup>(2)</sup>	Justification
	<ul style="list-style-type: none"> <li>• 266 additional acres due to sedimentation</li> <li>• 200 acres to ESA upriver from the lake.</li> </ul>	
MRML – Vegetation Management	No MRML-VM lands exist at Fall River Lake.	
Future/Inactive Recreation Areas	There are no Future/Inactive Recreation lands at Fall River Lake.	

<sup>(1)</sup>The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to several hundred acres. New acreages were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.

<sup>(2)</sup> Acreages are based on GIS measurements and may vary from Net Difference totals detailed in Table 8.1

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## CHAPTER 9 - BIBLIOGRAPHY

Elcock, David G. and Patricia J. O'Brien. 1979. *Cultural Resources Survey of Fall River Lake, Kansas*. Report prepared by Department of Sociology, Anthropology, and Social Work, Kansas State University. Submitted to the U.S. Army Corps of Engineers, Tulsa District. Contract DACW56-79-C-0037. Report on file at Kansas State Historical Society, Topeka, Ks, and U.S. Army Corps of Engineers, Tulsa District, Tulsa, Ok.

Environmental Protection Agency. 2016. <https://www.epa.gov/>

Eoff, John D. and Alfred E. Johnson. 1968. *An Archaeological Survey of the Fall River Watershed, Greenwood, Butler, and Chase Counties, South-Central Kansas*. Report prepared by Department of Anthropology, University of Kansas, Lawrence, for the National Park Service, Midwest Region, U.S. Department of the Interior under the Inter-agency Archaeological Salvage Program, No. 920-337. Report on file at Kansas State Historical Society, Topeka, and U.S. Army Corps of Engineers, Tulsa District, Tulsa, Ok.

Google Maps. 2016

Hoard, Robert J. and William E. Banks (editors). 2007. *Kansas Archaeology*. University Press of Kansas, Lawrence.

Kansas Department of Health and Environment. 2007. Water Quality Data 1992 to 2007

Kansas Department of Health and Environment, Fall River Lake Water Quality Status Fact Sheet

Kansas Department of Wildlife Parks and Tourism. 2016. Strategic Wildlife Action Plan.

KDWPT. 2016. Species of Greatest Conservation Need

KDWPT. 2015. Statewide Comprehensive Outdoor Recreation Plan

KDWPT. 2016. Strategic Wildlife Action Plan

Kansas State Historical Society. 2017 Kansas Historical Society: Your stories, our history. [www.kshs.org](http://www.kshs.org), accessed March 27, 2017.

Logan, Brad. 2007 Woodland Adaptations in Eastern Kansas. In *Kansas Archaeology*, edited by Robert J. Hoard and William E. Banks, pp. 76-92. University Press of Kansas, Lawrence.

Moorehead, W.K. 1931 *Archaeology of the Arkansas River Valley*. Yale University Press, New Haven.

National Vegetation Classification System. 2016. EP 1130-2-540. Level 1 inventory

National Weather Service. 2016. <http://w2.weather.gov/climate/xmacis.php?wfo=ict>

State of Kansas Comprehensive Outdoor Recreation Plan (SCORP), 2014

State Wildlife Action Plan (SWAP) – Kansas. 2016

US Army Corps of Engineers (USACE):

1996. ER 1130-2-540, Environmental Stewardship Operations and Maintenance Policies, USACE Headquarters, Washington, D.C.

1996. EP 1130-2-540, Operation and Maintenance Guidance and Procedures, USACE Headquarters, Washington, D.C.

2013. ER 1130-2-550, Project Operations, Recreation Operations and Maintenance Guidance and Procedures. HQ, USACE.

2013. EP 1130-2-550, Project Operations, Recreation Operations and Maintenance Guidance and Procedures. HQ, USACE.

2015. OMBIL Environmental Stewardship Module. USACE, Tulsa District, Oklahoma.

2015. OMBIL Recreation Module. USACE, Tulsa District, Oklahoma.

2016. Southwestern Division Reservoir Control Center Annual Water Control Report

2016. Strategic Sustainability Performance Plan implements EO 13693

1977. Fall River Lake Master Plan Update, Tulsa District, Oklahoma.

2004. Tulsa District Pertinent Data Book. USACE, Tulsa District, Oklahoma.

2016. Water Control Manual for Toronto Lake

US Bureau of the Census. 2016. American Fact Finder Website.

U.S. Census Bureau. 2016. Population Division (2000 Estimate)

U.S. Census Bureau. 2016. 2011-2015 American Community Survey 5-Year Estimates (2015 Estimate)

U.S. Department of Agriculture. 2017. NRCS

U.S. Department of Interior. 2016. Report on file at Kansas State Historical Society, Topeka, and U.S. Army Corps of Engineers, Tulsa District, Tulsa, Ok.

United States Geological Survey. 2016

Wichita State University. 2016. Center for Economic Development and Business Research (2044 Projections)

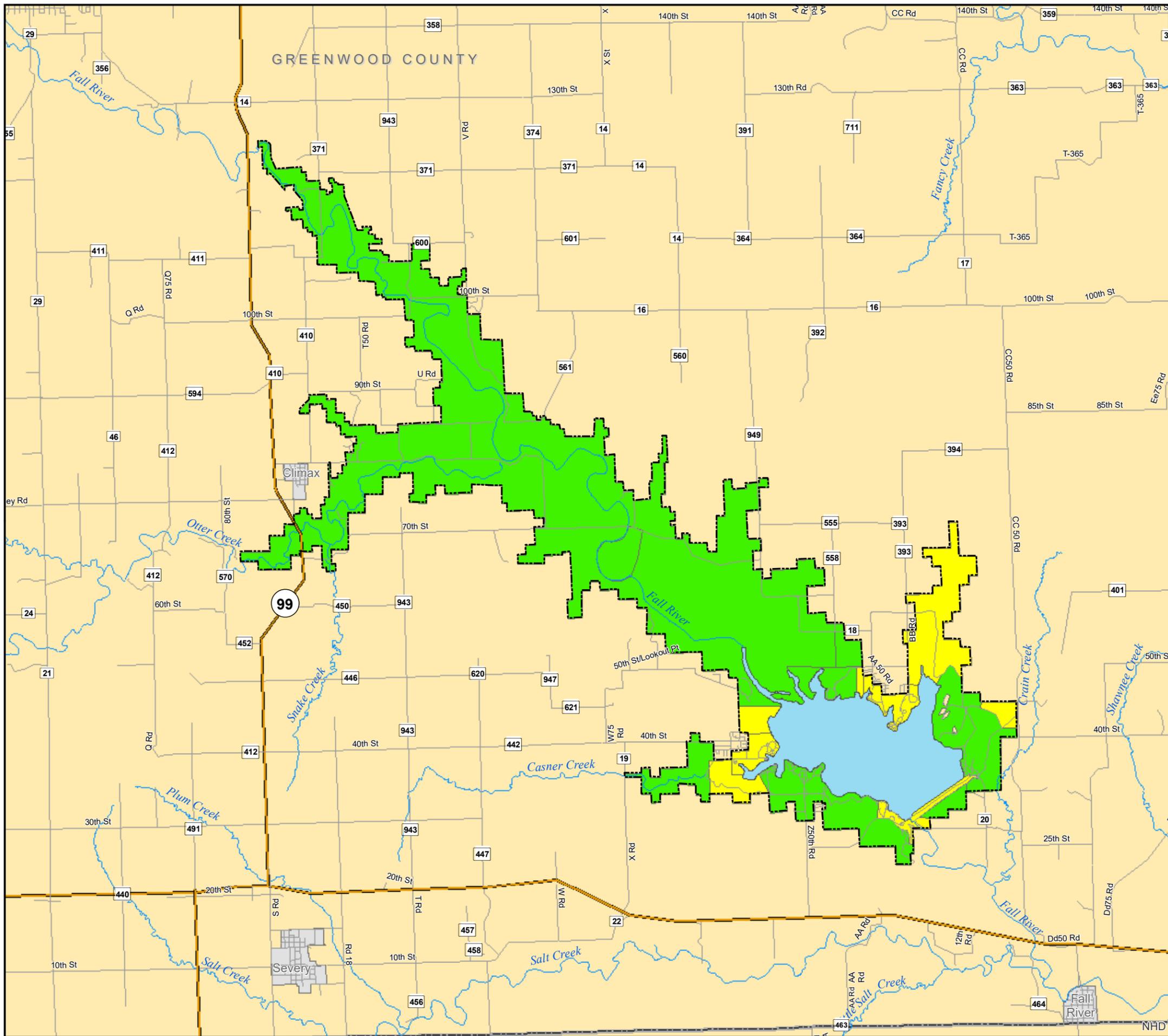
USFWS. 2017. Information for Planning and Conservation (IPaC) website:  
<https://ecos.fws.gov/ipac/>

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# **APPENDIX A - LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS**

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-  FEE BOUNDARY
-  KANSAS DEPT. OF WILDLIFE, PARKS & TOURISM
-  U.S. ARMY CORPS OF ENGINEERS
-  WATER SURFACE



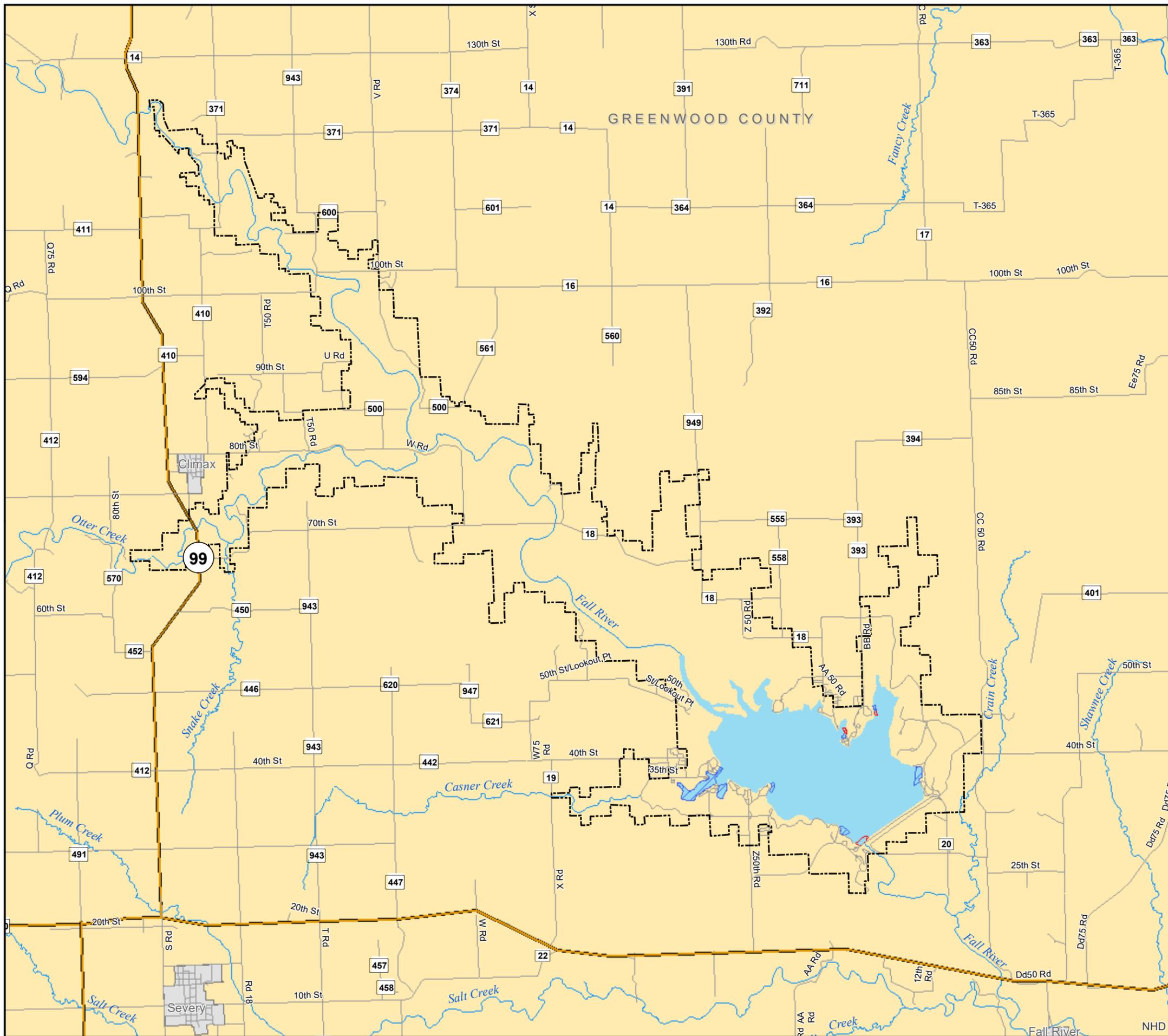
**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM FALL RIVER, KANSAS

**FALL RIVER DAM - FALL RIVER LAKE  
FALL RIVER LAKE MASTER PLAN  
AGENCY LAND MANAGEMENT**



DATE: SEPTEMBER 2017	MAP NO. FR17MP-OM-01
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-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS
-  WATER SURFACE: OPEN RECREATION



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

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FALL RIVER DAM
FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

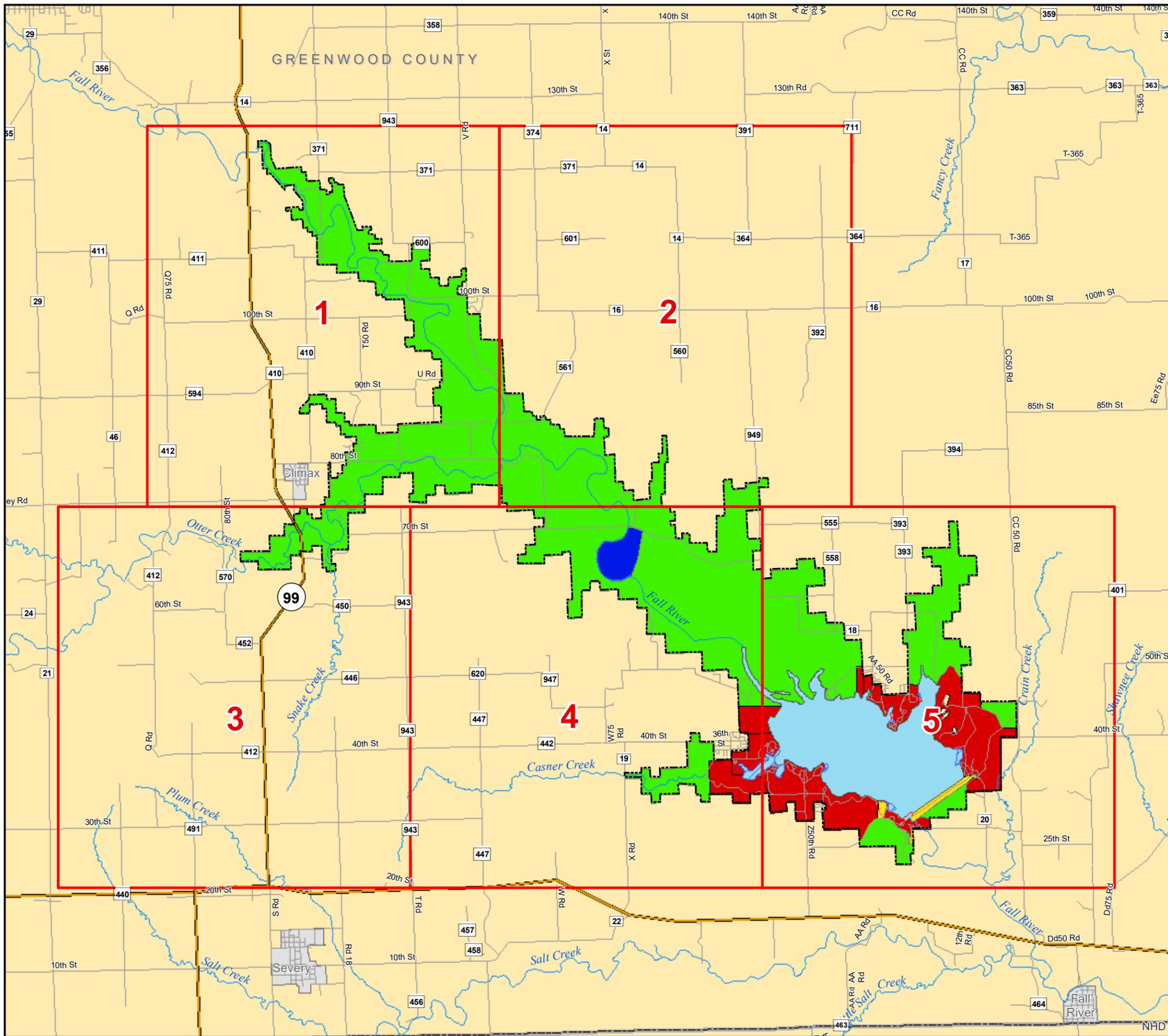
WATER SURFACE  
CLASSIFICATIONS



0 0.5 1 2 3 Miles



DATE:	MAP NO.
SEPTEMBER 2017	FR17MP-OW-01



-  INDEX GRID
-  FEE BOUNDARY
-  PROJECT OPERATIONS
-  HIGH DENSITY RECREATION
-  ENVIRONMENTALLY SENSITIVE AREAS
-  WILDLIFE MANAGEMENT
-  WATER SURFACE: OPEN RECREATION
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

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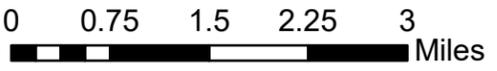
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FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

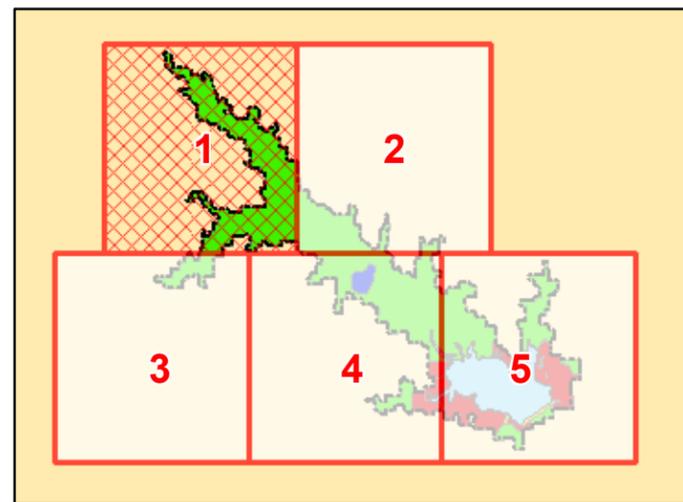
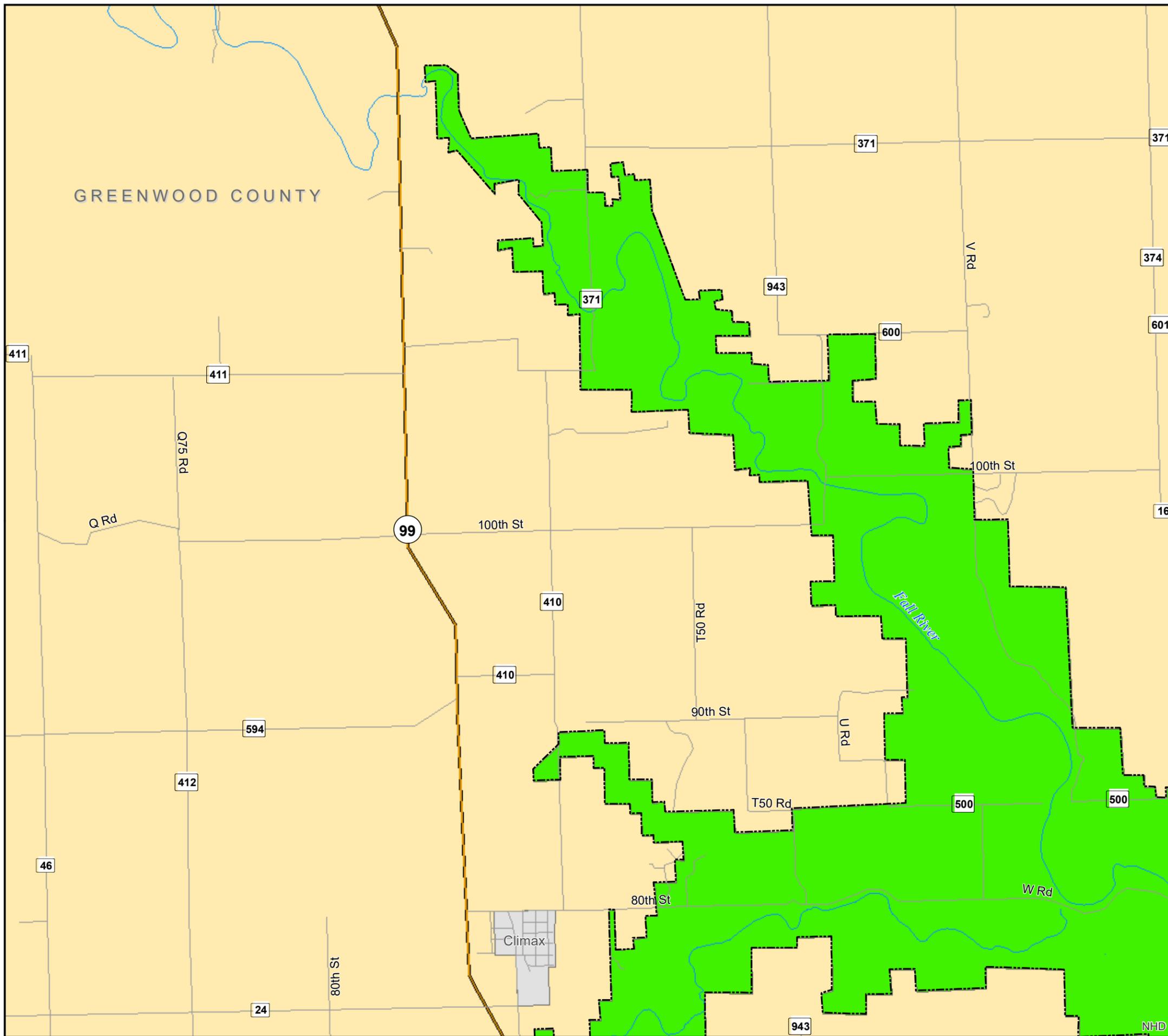
FALL RIVER LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS  
(INDEX SHEET 00)





DATE: SEPTEMBER 2017	MAP NO. FR17MP-OC-00
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-  FEE BOUNDARY
-  PROJECT OPERATIONS
-  HIGH DENSITY RECREATION
-  ENVIRONMENTALLY SENSITIVE AREAS
-  WILDLIFE MANAGEMENT
-  WATER SURFACE: OPEN RECREATION
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

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FALL RIVER DAM
FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

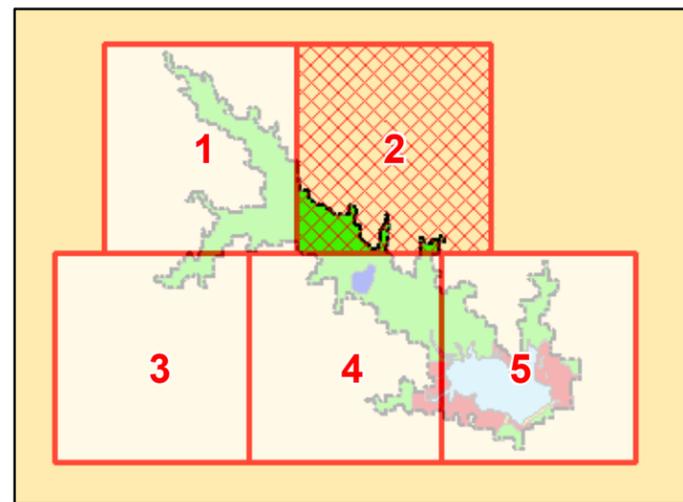
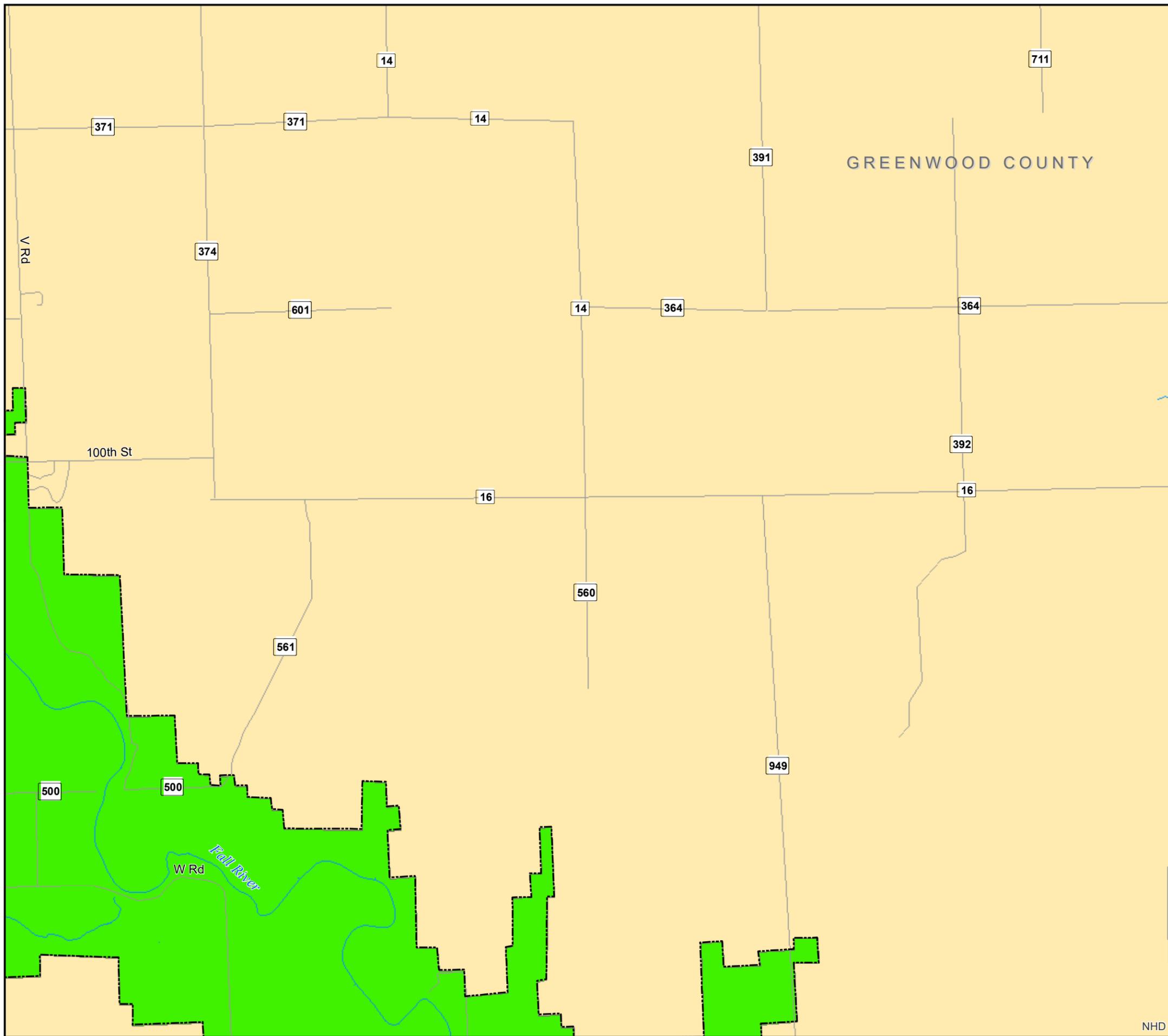
LAND AND WATER CLASSIFICATIONS  
(INDEX SHEET 01)



0 0.25 0.5 0.75 1 Miles



DATE:	MAP NO.
SEPTEMBER 2017	FR17MP-OC-01



-  FEE BOUNDARY
-  PROJECT OPERATIONS
-  HIGH DENSITY RECREATION
-  ENVIRONMENTALLY SENSITIVE AREAS
-  WILDLIFE MANAGEMENT
-  WATER SURFACE: OPEN RECREATION
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

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FALL RIVER DAM
FALL RIVER, KANSAS

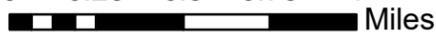
FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

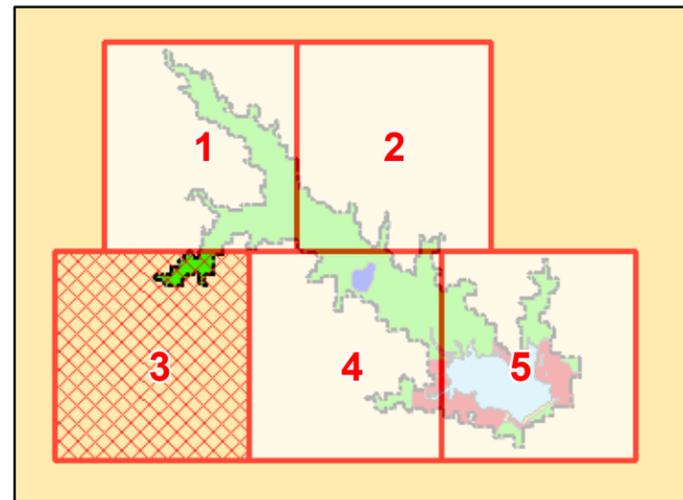
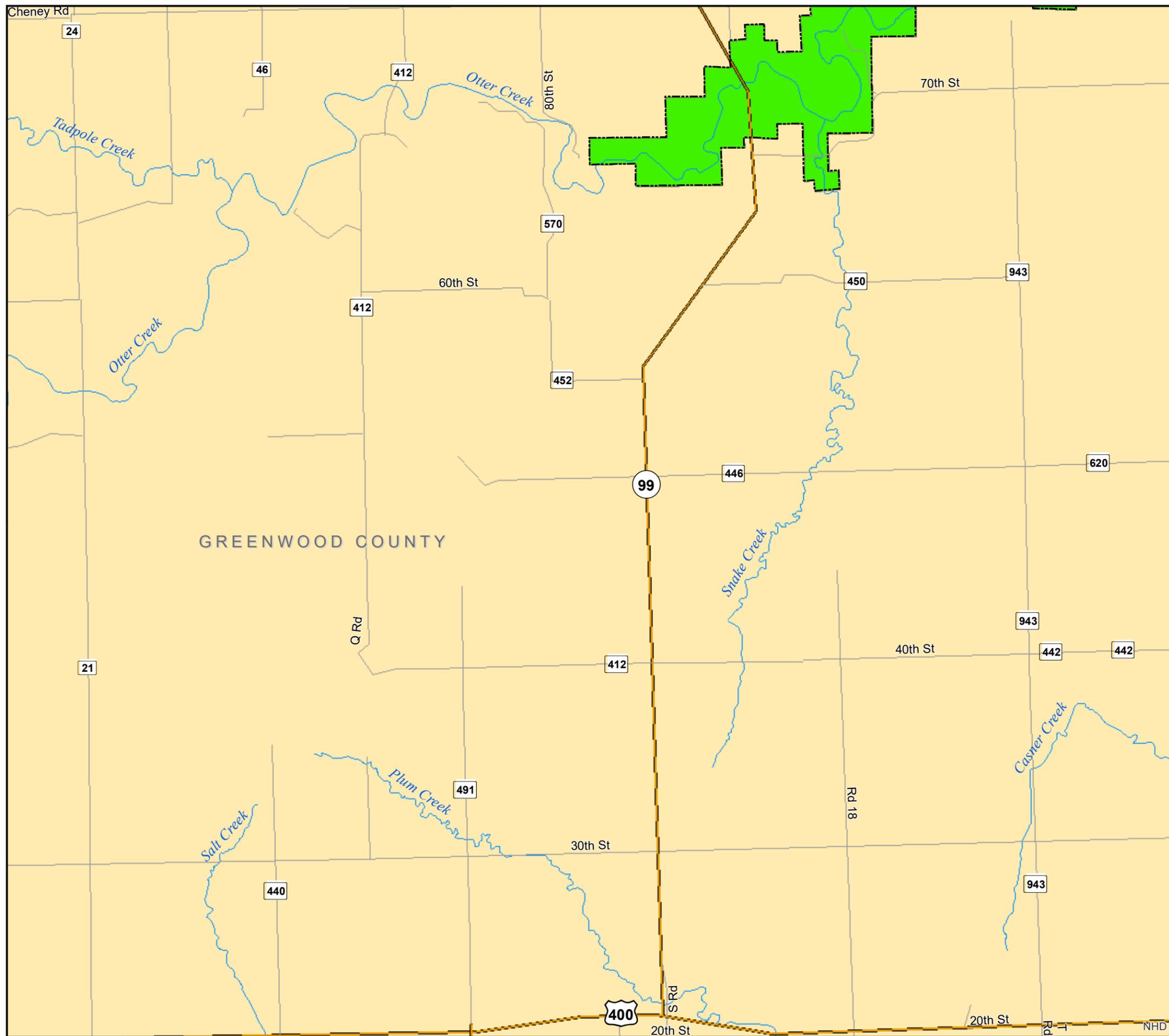
LAND AND WATER CLASSIFICATIONS  
(INDEX SHEET 02)



0 0.25 0.5 0.75 1  
Miles



DATE:	MAP NO.
SEPTEMBER 2017	FR17MP-OC-02



-  FEE BOUNDARY
-  PROJECT OPERATIONS
-  HIGH DENSITY RECREATION
-  ENVIRONMENTALLY SENSITIVE AREAS
-  WILDLIFE MANAGEMENT
-  WATER SURFACE: OPEN RECREATION
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

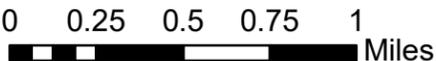
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FALL RIVER DAM
FALL RIVER, KANSAS

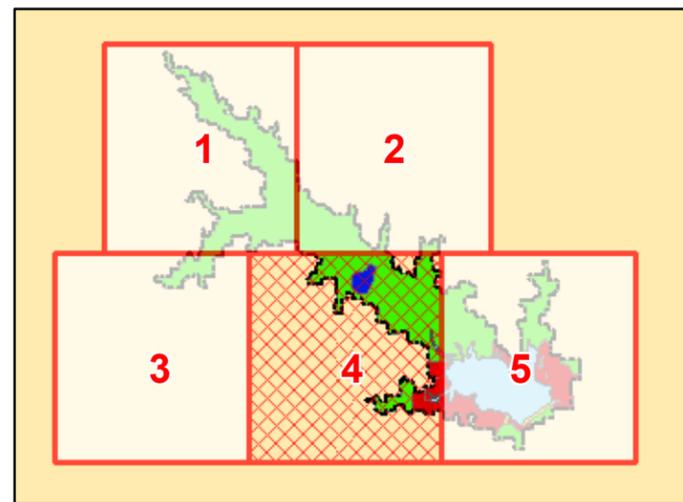
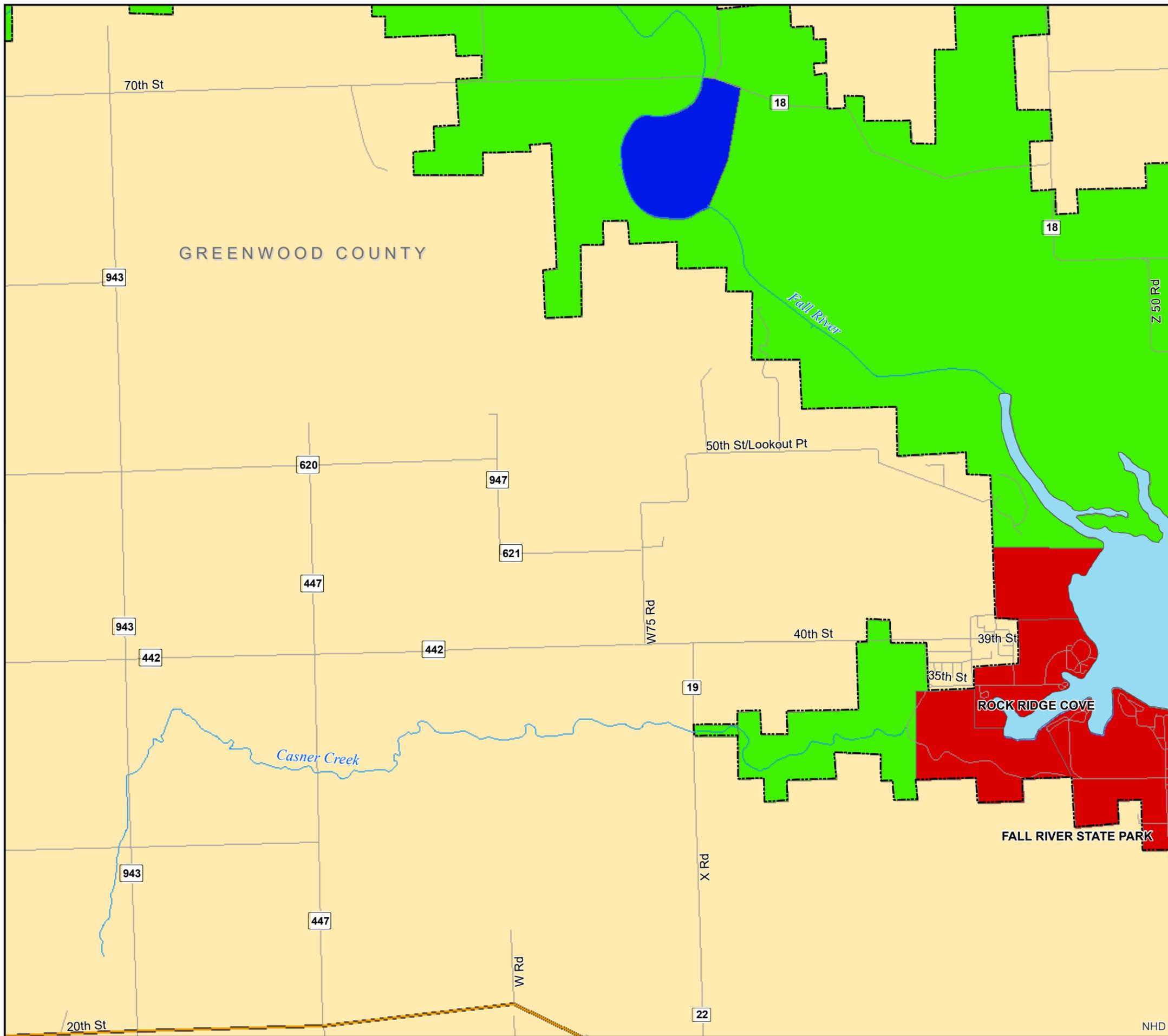
FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS  
(INDEX SHEET 03)

DATE:	MAP NO.
SEPTEMBER 2017	FR17MP-OC-03



-  FEE BOUNDARY
-  PROJECT OPERATIONS
-  HIGH DENSITY RECREATION
-  ENVIRONMENTALLY SENSITIVE AREAS
-  WILDLIFE MANAGEMENT
-  WATER SURFACE: OPEN RECREATION
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREAS



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

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FALL RIVER DAM
FALL RIVER, KANSAS

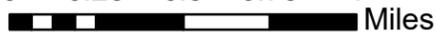
FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS  
(INDEX SHEET 04)



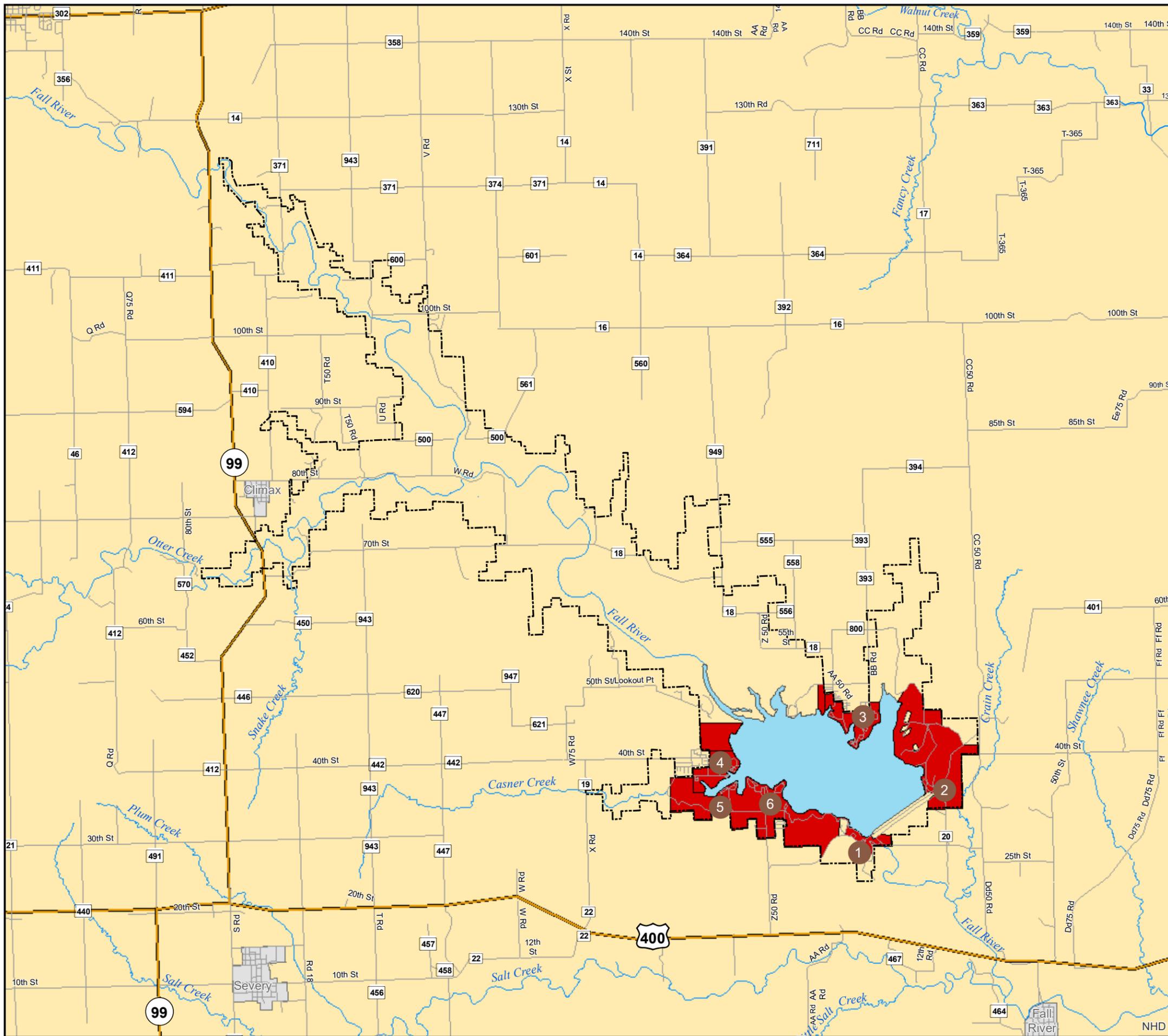
0 0.25 0.5 0.75 1 Miles



DATE:	MAP NO.
SEPTEMBER 2017	FR17MP-OC-04

NHD





- GOVERNMENT MANAGED PUBLIC USE AREAS**
- 1 DAM SITE CAMPGROUND & OVERLOOK
  - 2 QUARRY BAY - FALL RIVER STATE PARK
  - 3 WHITEHALL BAY & BROWNS COVE
  - 4 NORTH ROCK RIDGE
  - 5 CEDAR CAMPGROUND
  - 6 FREDONIA BAY - FALL RIVER STATE PARK



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM FALL RIVER, KANSAS

**FALL RIVER DAM - FALL RIVER LAKE**

**FALL RIVER LAKE MASTER PLAN**

**GOVERNMENT MANAGED  
PUBLIC RECREATIONAL AREAS**





DATE: SEPTEMBER 2017	MAP NO. FR17MP-OR-0A
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ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	
GROUP CAMPSITES	1
CAMPSITES	33
ELECTRICAL HOOK-UP	25
GROUP PICNIC SHELTER	
PICNIC SITES	2
VAULT TOILET	2
RESTROOMS	2
SHOWERS	1
DUMP STATION	1

-  SPILLWAY STRUCTURE
-  CAMPING
-  BOAT RAMPS
-  PICNIC SITES
-  RESTROOM
-  SHOWERS
-  VAULT TOILET
-  FEE BOUNDARY
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREA



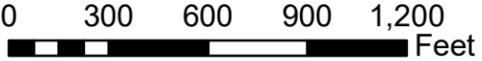
**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM
FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

RECREATIONAL AREAS  
DAM SITE AND OVERLOOK PARK

DATE:  
SEPTEMBER 2017

MAP NO.  
FR17MP-OR-01

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	
GROUP CAMPSITES	
CAMPSITES	17
ELECTRICAL HOOK-UP	
GROUP PICNIC SHELTER	
PICNIC SITES	
VAULT TOILET	
RESTROOMS	1
SHOWERS	1
DUMP STATION	

-  BOAT RAMPS
-  RESTROOM
-  SHOWERS
-  FEE BOUNDARY
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREA



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM
FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

RECREATIONAL AREAS  
QUARRY BAY  
FALL RIVER STATE PARK




DATE:  
**SEPTEMBER 2017**

MAP NO.  
**FR17MP-OR-02**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	
GROUP CAMPSITES	4
CAMPSITES	26
ELECTRICAL HOOK-UP	25
GROUP PICNIC SHELTER	
PICNIC SITES	2
VAULT TOILET	1
RESTROOMS	2
SHOWERS	2
DUMP STATION	1

-  CAMPING
-  CAMPING, GROUP
-  BOAT RAMPS
-  SWIM BEACH
-  GROUP SHELTERS
-  FEE BOUNDARY
-  WATER SURFACE: RESTRICTED
-  WATER SURFACE: DESIGNATED NO WAKE AREA



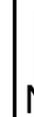
**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

RECREATIONAL AREAS  
WHITEHALL BAY & BROWNS COVE



0 300 600 900 1,200  
Feet

DATE:

SEPTEMBER 2017

MAP NO.

FR17MP-OR-03



ITEM	EXISTING
BOAT RAMP	2
COURTESY DOCK	
GROUP CAMPSITES	
CAMPSITES	21
ELECTRICAL HOOK-UP	17
GROUP PICNIC SHELTER	
PICNIC SITES	2
VAULT TOILET	1
RESTROOMS	
SHOWERS	
DUMP STATION	1

-  CAMPING
-  BOAT RAMPS
-  PICNIC SITES
-  RESTROOM
-  SANITARY DUMP STATIONS
-  VAULT TOILET
-  FEE BOUNDARY
-  WATER SURFACE: DESIGNATED NO WAKE AREA



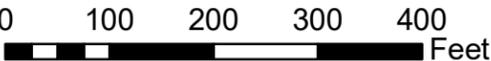
**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM
FALL RIVER, KANSAS

**FALL RIVER DAM - FALL RIVER LAKE**

**FALL RIVER LAKE MASTER PLAN**

**RECREATIONAL AREAS  
NORTH ROCK RIDGE**

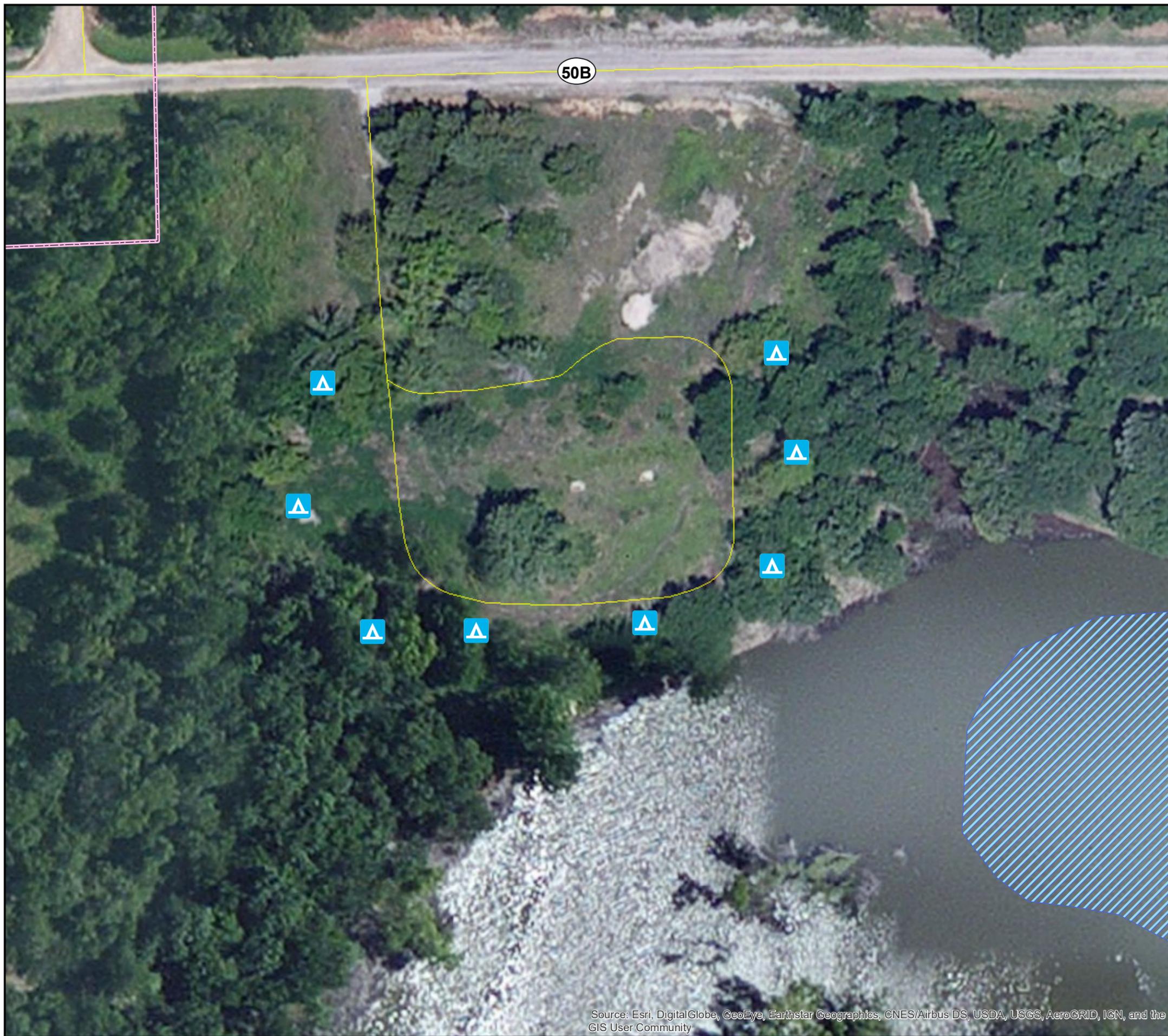



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DATE: **SEPTEMBER 2017**

MAP NO. **FR17MP-OR-04**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



ITEM	EXISTING
BOAT RAMP	
COURTESY DOCK	
GROUP CAMPSITES	
CAMPSITES	10
ELECTRICAL HOOK-UP	
GROUP PICNIC SHELTER	
PICNIC SITES	
VAULT TOILET	1
RESTROOMS	
SHOWERS	
DUMP STATION	

-  CAMPING
-  FEE BOUNDARY
-  WATER SURFACE: DESIGNATED NO WAKE AREA



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM FALL RIVER, KANSAS

FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

RECREATIONAL AREAS  
CEDAR CAMPGROUND



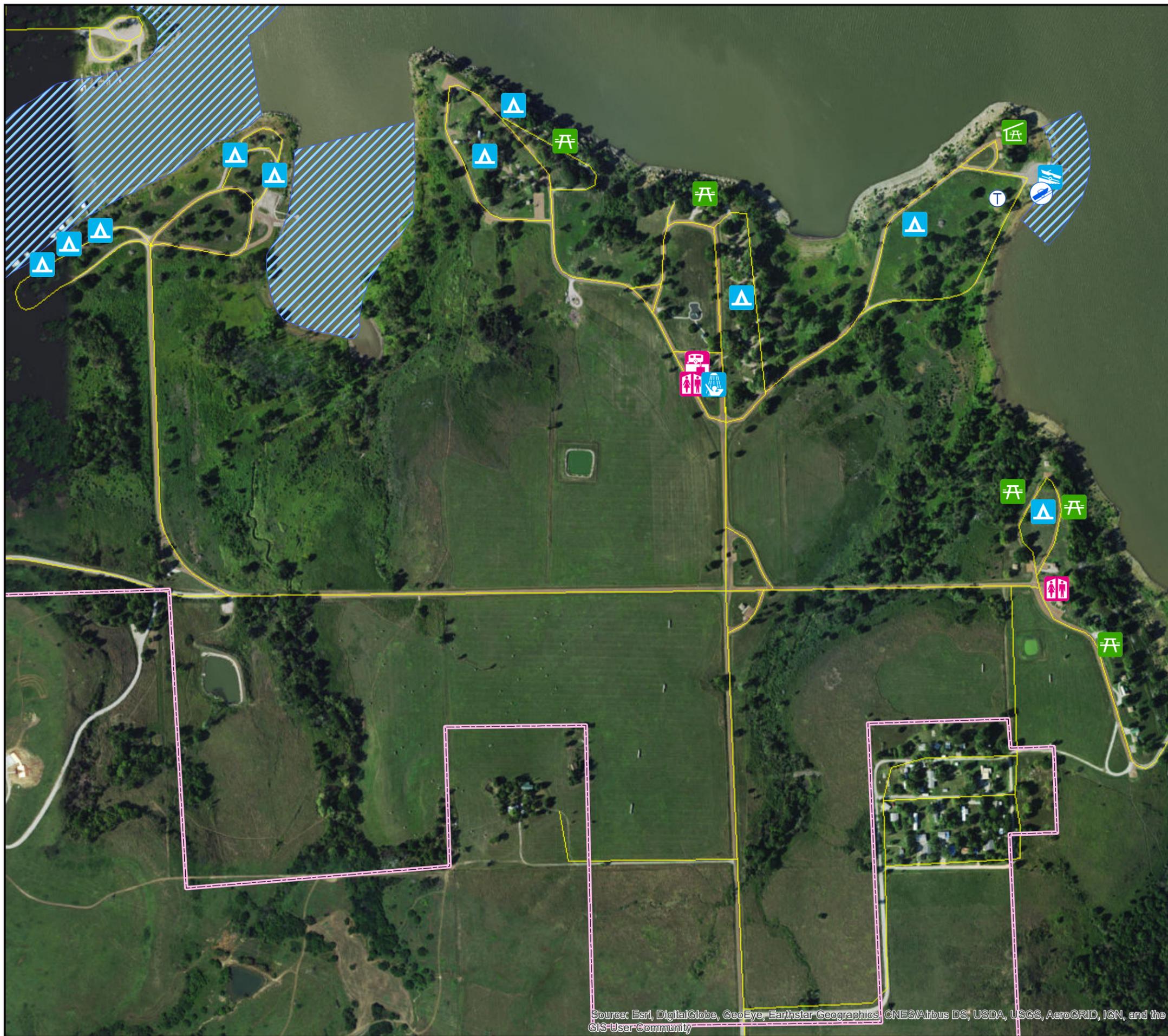
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Feet

DATE:

SEPTEMBER 2017

MAP NO.

FR17MP-OR-05



ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	2
GROUP CAMPSITES	
CAMPSITES	80
ELECTRICAL HOOK-UP	48
GROUP PICNIC SHELTER	1
PICNIC SITES	12
VAULT TOILET	1
RESTROOMS	
SHOWERS	
DUMP STATION	

-  COURTESY DOCK
-  CAMPING
-  BOAT RAMPS
-  PICNIC SITES
-  GROUP SHELTERS
-  RESTROOM
-  SANITARY DUMP STATIONS
-  SHOWERS
-  VAULT TOILET
-  FEE BOUNDARY
-  WATER SURFACE: DESIGNATED NO WAKE AREA



**U.S. ARMY CORPS  
OF ENGINEERS  
TULSA DISTRICT**

FALL RIVER DAM FALL RIVER, KANSAS

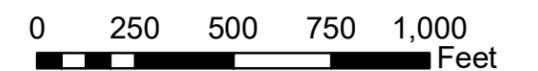
FALL RIVER DAM - FALL RIVER LAKE

FALL RIVER LAKE MASTER PLAN

RECREATIONAL AREAS

FREDONIA BAY

FALL RIVER STATE PARK



DATE:

SEPTEMBER 2017

MAP NO.

FR17MP-OR-06

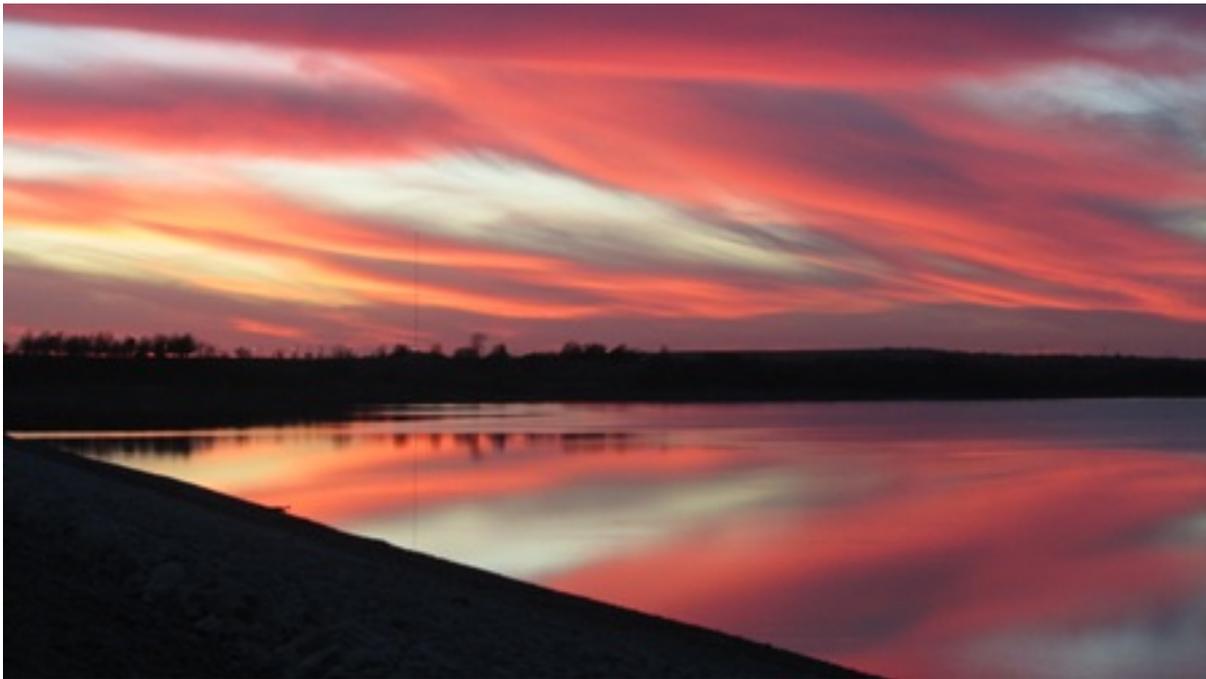
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# **APPENDIX B - NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION**

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# Environmental Assessment for the Fall River Lake Master Plan and Shoreline Management Plan

Fall River  
Verdigris River Basin  
Greenwood County, Kansas



September 2017



US Army Corps  
of Engineers®  
Tulsa District

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**FINDING OF NO SIGNIFICANT IMPACT  
ENVIRONMENTAL ASSESSMENT FOR THE  
FALL RIVER LAKE MASTER PLAN AND SHORELINE MANAGEMENT PLAN  
Greenwood County, Kansas**

In accordance with the National Environmental Policy Act of 1969, including guidelines in 33 Code of Federal Regulations Part 230, the Tulsa District and the Regional Planning and Environmental Center of the U.S. Army Corps of Engineers (USACE) have assessed the potential impacts that the alternative management scenarios set forth in the 2017 revisions of the Fall River Lake Master Plan (MP) and the Fall River Lake Shoreline Management Plan (SMP) would have on the natural, cultural, and human environments.

The 2017 MP is a revision of the 1977 MP, which was an update of the original 1948 MP. The MP is the strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Fall River Lake project. The 2017 MP revision is needed to comply with current USACE regulations and guidance, refine land classifications to meet authorized purposes, which identify current resource objectives that address a mix of natural resource and recreation management objectives that are compatible with regional goals.

The 2017 SMP is a revision to the 1996 SMP that was an update of the original 1975 Lakeshore Management Plan. The current revision is needed to update the SMP format and to document the current shoreline allocations and the extent to which management practices achieve a balance between permitted private uses and resource protection for general public use.

The Environmental Assessment (EA) evaluated the implementation of the 2017 MP and SMP with special attention given to revised land classifications, new resource management objectives, a conceptual resource plan for each land classification category, and shoreline allocation categories.

The Proposed Action includes both a revised MP and SMP, coordination with the public, and reflects ecological, socio-demographic, and outdoor recreation trends that are currently affecting the lake, as well as trends anticipated to occur within the planning horizon of 2017 to 2042, a 25-year period. Required surface water, land, and shoreline classification changes associated with the Proposed Action include reclassifications to balance resource objectives and include the following:

<b>Surface Water Classification</b>	<b>Proposed Action Description</b>	<b>Justification</b>
Restricted	Reclassification of 9 acres to Restricted in areas upstream and downstream of the dam and two swim beaches.	The Restricted classification are areas where recreational boating is prohibited or restricted for project operations, safety and security purposes.
Designated No-Wake	Reclassification of 74 acres of surface water to Designated No-Wake in areas near eight boat ramps.	Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve boating safety near key recreational water access areas, such as boat ramps.
Open Recreation	Reclassification of 2,001 acres to the Open Recreation classification.	Open Recreation includes all surface water areas available for year-around or seasonal water-based recreational use.
Fish and Wildlife Sanctuary	There are no surface water acres classified as Fish and Wildlife Sanctuary areas at Fall River Lake.	
<b>Land Classification</b>	<b>Proposed Action Description</b>	<b>Justification</b>
Project Operations (PO)	<p>The net decrease in PO lands from 126 to 81 acres was due to the following:</p> <ul style="list-style-type: none"> <li>• 42 acres reclassified to Wildlife Management (WM).</li> <li>• 9 acres reclassified to High Density Recreation (HDR).</li> <li>• 6 acres reclassified from Low Density Recreation (LDR) to PO.</li> </ul>	<p>All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management, and water conservation. Lands reclassified from PO to WM are being leased by USACE for agricultural purposes for the benefit of wildlife. The reclassification of lands from PO to HDR more appropriately align the classification with the actual use. Lands reclassified from LDR to PO were for quarry and rock piles used for materials storage, which pose a safety risk to the public. The reclassification of these acres will have no effect on current or projected public use.</p>
HDR	<p>The net increase in HDR lands from 1,792 to 1,911 were the result of changes to three different areas:</p> <ul style="list-style-type: none"> <li>• 130 acres reclassified to WM were classified as HDR on the 1977 MP, but were never developed, nor is there a demand to develop these areas as HDR areas.</li> <li>• 240 acres of LDR that the State leased and are being managed by the State, who intends to use it as HDR.</li> <li>• 9 acres in a small area on the south side of the dam that is a</li> </ul>	<p>In general terms, the amount of land classified for Recreation – Intensive Use in the 1977 MP was based on projected needs at the time. Management experience since 1977 has clearly revealed that reclassifications were needed to reflect actual use, evolving trends and regional priorities. The net gain in HDR resulted from making these adjustments to reflect current and expected use. The reclassification of areas and portions of actively</p>

	favorite fishing area for visitors is reclassified from PO.	managed HDR areas will not affect current or projected public use.
Environmentally Sensitive Areas (ESA)	The classification of 200 acres as ESA resulted from changing the land class from WM upstream of the dam along the river channel.	Reclassification of the 200 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, or cultural sites. Classifying these acres as ESA will afford these areas the highest level of protection from disturbance. The reclassification of 200 acres to ESA will have no effect on current or projected public use.
Multiple Resource Management Land (MRML) – LDR	The decrease of LDR acres from 493 to 0 were the result of reclassifying the following lands: <ul style="list-style-type: none"> <li>• 240 acres to HDR on the southeast side of the lake.</li> <li>• 6 acres to PO for rock quarry.</li> <li>• 247 acres to WM that are currently being used for wildlife management activities and are not suitable for LDR.</li> </ul>	These lands were reclassified to reflect more accurately how the lands are being utilized. These changes support management actions and recreational trends identified in the 2015 Statewide Comprehensive Outdoor Recreation Plan. Public use of all areas that were reclassified will not be affected now or in the foreseeable future. Public access in the form of natural surface hiking and biking trails is compatible with these classifications.
MRML – WM	The increase of WM acres from 10,522 to 11,007 resulted from the reclassification of the following: <ul style="list-style-type: none"> <li>• 130 acres from HDR.</li> <li>• 247 acres from LDR on sites on the south and northwest areas of the lake.</li> <li>• 42 acres from PO.</li> <li>• 266 additional acres due to sedimentation.</li> <li>• 200 acres to ESA upriver from the lake.</li> </ul>	The lands reclassified from LDR, HDR, and PO to WM were due to these areas being used as hay fields and similar wildlife supporting functions. These reclassifications will have no effect on current or projected public use.
MRML – Vegetation Management (VM)	No VM lands exist at Fall River Lake.	
Future/Inactive Recreation Areas	There are no Future/Inactive Recreation lands at Fall River Lake.	
<b>Shoreline Classification</b>	<b>Proposed Action Description</b>	<b>Justification</b>
Limited Development Areas	There are no shoreline areas classified as Limited Development Areas at Fall River Lake.	
Public Recreation Areas	Approximately 11.6 miles of shoreline are allocated as Public Recreation Areas, which is roughly 27 percent of the total shoreline at Fall River Lake.	Shoreline areas designated as Public Recreation Areas are Federal, State, or similar public use areas.
Protected Shoreline Areas	Approximately 29.7 miles of shoreline are allocated as Protected Shoreline	Shoreline areas designated as Protected Shoreline Areas are

	Areas, which is roughly 70 percent of the total shoreline at Fall River Lake.	primarily to protect or restore aesthetic, fish and wildlife, cultural or other environmental values.
Prohibited Access Areas	Approximately 0.9 miles of shoreline are allocated as Prohibited Access Areas, which is roughly two percent of the total shoreline at Fall River Lake.	Shoreline areas designated as Prohibited Access Areas are primarily for security reasons, the protection of ecosystems, and the physical safety of the recreation visitor.

(1)The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to several hundred acres. New acreages and shoreline miles were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.

The Proposed Action was chosen because it would meet regional goals associated with good stewardship of land and water resources, would meet regional recreation goals, and would allow for continued use and development of project lands without violating national policies or public laws.

The EA and comments received from other agencies have been used to determine whether the Proposed Action requires the preparation of an Environmental Impact Statement (EIS). All environmental, social, and economic factors that are relevant to the recommended alternative have been considered in this assessment. These include, but are not limited to, climate and climate change, recreation, environmental justice, cultural resources, air quality, visual aesthetics, prime farmland, water quality, wetlands, fish and wildlife, invasive species, migratory birds, and threatened and endangered species.

Based on the EA, it is my finding that implementation of the 2017 revisions in the MP and SMP for Fall River Lake will have no significant adverse impact on the environment and will not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an EIS will not be prepared.

30 JAN 2018

Date



PAUL E. OWEN, P.E.  
Brigadier General, U.S. Army  
Commanding

## ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment evaluates the potential environmental and socioeconomic impacts of the Fall River Lake Master Plan and Shoreline Management Plan revision. This Environmental Assessment (EA) will facilitate the decision process regarding the Proposed Action and alternatives.

- SECTION 1 INTRODUCTION* of the Proposed Action summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.
- SECTION 2 PROPOSED ACTION AND ALTERNATIVES* examines alternatives for implementing the Proposed Action and describes the recommended alternative.
- SECTION 3 AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting.
- ENVIRONMENTAL CONSEQUENCES* identifies the potential environmental and socioeconomic effects of implementing the Proposed Action and alternatives.
- SECTION 4 CUMULATIVE IMPACTS* describes the impact on the environment that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions.
- SECTION 5 COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements.
- SECTION 6 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES* identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented.
- SECTION 7 PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
- SECTION 8 REFERENCES* provides bibliographical information for cited sources.
- SECTION 9 LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.
- APPENDIX A PUBLIC AND AGENCY COORDINATION*

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# **ENVIRONMENTAL ASSESSMENT**

## **Master Plan and Shoreline Management Plan**

### **Fall River Lake Greenwood County, Kansas**

#### **SECTION 1: INTRODUCTION**

The United States Army Corps of Engineers (USACE) is proposing to adopt and implement the 2017 Fall River Lake Master Plan (MP) and 2017 Shoreline Management Plan (SMP). The 2017 MP is a revision of the 1977 MP which was an update of the original 1948 MP. The 2017 SMP is a revision of the 1996 SMP that was an update to the original 1975 Lakeshore Management Plan. The 2017 MP is the strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Fall River Lake project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources, as well as the provision of outdoor recreation facilities and opportunities on Federal land associated with Fall River Lake for the benefit of present and future generations. The 2017 SMP establishes policy and guidance for the protection of desirable environmental characteristics of the lake and restoration of the shoreline where degradation has occurred. The SMP also updates format and documents the current shoreline allocations and extent to which management practices achieve a balance between permitted private uses and resource protection for general public use.

Adoption and implementation of the 2017 MP and SMP (Proposed Action) would create potential impacts on the natural and human environments. To assess the potential impacts, this Environmental Assessment (EA) was prepared pursuant to guidance prescribed in the National Environmental Policy Act (NEPA) of 1969, (Public Law 91-190), and 33 Code of Federal Regulations (CFR) Part 230.

#### **1.1 PROJECT LOCATION AND SETTING**

Fall River Lake is a multipurpose water resources project constructed and operated by the U.S. Army Corps of Engineers (USACE), Tulsa District. Primary purposes for the lake include flood risk management, water quality, water supply, recreation, and fish and wildlife conservation. The lake and associated federal lands are located in Greenwood County, Kansas (KS) in the Arkansas watershed. Fall River Dam is situated on the Fall River, a tributary of the Verdigris River, about four miles northeast of the town of Fall River and 17 miles southeast of Eureka, KS.

Fall River Lake was authorized for construction in 1941 and the USACE began construction of the project in 1946. By June 1949 the dam was completed and the conservation pool was filled. The main dam structure consists of a rolled impervious and random earth-filled embankment with rock protected slopes. The overall length is 6,015 feet (ft.) consisting of a 5,545 ft. long earthen embankment section and 470 ft. long spillway section.

Fall River Lake has approximately 2,084 water surface acres, as calculated from GIS, with 42 miles of shoreline at conservation pool elevation 948.5 National Geodetic Vertical Datum (NGVD). The lake is located in a rolling hill region of southeastern Kansas. The flood control pool ranges from elevation 948.5 – 987.5 ft NGVD. At the top of the flood control pool the water surface of the lake covers 10,370 acres and holds back floodwaters originating from 585 square miles of drainage area above the dam. The total drainage area of the Fall River Basin is 884 square miles.

## **1.2 PURPOSE OF AND NEED FOR THE ACTION**

The purpose of the Proposed Action is to ensure that the conservation and sustainability of the land, water, and recreational resources on Fall River Lake are in compliance with applicable environmental laws and regulations and to maintain quality lands for future public use. The 2017 MP is intended to serve as a comprehensive land and recreation management plan with an effective life of approximately 25 years. The 2017 SMP is intended to establish policy and guidance for the protection of desirable environmental characteristics of the lake and restoration of the shoreline where degradation has occurred.

The need for the Proposed Action is to bring the 1977 MP up to date and to reflect ecological, socio-political, and socio-demographic changes that are currently impacting Fall River Lake, as well as those changes anticipated to occur through 2042. The 1977 MP was sufficient for prior land use planning and management until recently as changes in outdoor recreation trends, regional land use, population, current legislative requirements and USACE management policy have indicated the need to revise the plan. Additionally, increasing fragmentation of wildlife habitat, national policies related to climate change and growing demand for recreational access and protection of natural resources are all factors affecting Fall River Lake. In response to these continually evolving trends, the USACE determined that a full revision of the 1977 MP would be required. Similarly, the Proposed Action will update the last revision of the SMP that occurred in 1996. The current revision is needed to update the SMP format and to document the current shoreline allocations and the extent to which management practices protect shoreline resources while allowing safe unrestricted use.

The following factors may influence reevaluation of management practices and land uses:

- Changes in national policies or public law mandates
- Operations and maintenance or management budget allocations
- Recreation area closures
- Facility and infrastructure improvements
- Cooperative agreements with stakeholder agencies (such as Kansas Department of Wildlife, Parks and Tourism [KDWPT] and the U.S. Fish and Wildlife Service [USFWS]) to operate and maintain public lands
- Evolving public concerns
- Shoreline degradation and/or protection of desirable environmental characteristics

### **1.3 SCOPE OF THE ACTION**

This EA addresses the implementation of the 2017 MP and SMP with special attention given to revised land classifications, new resource management objectives, a conceptual resource plan for each land classification category, and shoreline allocation categories. The EA also analyzes the potential impacts that implementing the 2017 MP and SMP would have on the natural, cultural, and human environments.

The typical focus of NEPA compliance consists of environmental impact assessments for individual projects, rather than for long-range plans. However, application of NEPA to more strategic decisions not only meets the Council on Environmental Quality (CEQ) implementing regulations (CEQ 2005) and USACE regulations for implementing NEPA (USACE 1988), but also allows the USACE to consider the environmental consequences of its actions long before any physical activity is implemented. Multiple benefits can be derived from such early consideration. Effective and early NEPA integration with the master planning process can significantly increase the usefulness of the 2017 MP and the 2017 SMP to the decision maker.

NEPA documents prepared concurrently with a revised MP and SMP can influence and modify strategic land use decisions, whereas environmental impact documents prepared after a plan has been updated would have little influence on strategic decisions already included in the plan. The intention of the 2017 MP and SMP is to develop a strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Fall River Lake project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources, and the provision of outdoor recreation facilities and opportunities on Federal land associated with Fall River Lake for the benefit of present and future generations. The 2017 MP and SMP guides and articulates USACE responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is not feasible to define the exact nature of potential impacts for all potential actions prior to receiving specific project proposals. Therefore, environmental consequences may be less than or may, in fact, exceed what is described in this EA. To ensure that future environmental consequences are identified and documented as accurately as possible, additional NEPA coordination will be conducted, as appropriate, for future projects that are the result of the implementation of the 2017 MP or SMP.

### **SECTION 2: PROPOSED ACTION AND ALTERNATIVES**

The project need is to revise the 1977 MP and 1996 SMP so that they are compliant with current USACE regulations and guidance, incorporate public needs, and recognize surrounding land use and recreational trends. As part of this process, which includes public outreach and comment, five alternatives were developed for evaluation, including a No Action Alternative. The alternatives were developed using land classifications that indicate the primary use for which project lands would be managed. USACE regulations specify five possible categories of land classification: Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, and Multiple Resource Management Lands. Multiple Resource Management Lands are

divided into four subcategories: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. USACE regulations specify four possible categories of shoreline allocation: Limited Development Areas, Public Recreation Areas, Protected Shoreline Areas, and Prohibited Access Areas.

The USACE guidance recommends the establishment of resource goals and objectives for purposes of development, conservation, and management of natural, cultural, and man-made resources at a project. Goals describe the desired end state of overall management efforts, whereas resource objectives are specific task-oriented actions necessary to achieve the overall MP goals. Goals and objectives are guidelines for obtaining maximum public benefits while minimizing adverse impacts on the environment and are developed in accordance with 1) authorized project purposes, 2) applicable laws and regulations, 3) resource capabilities and suitabilities, 4) regional needs, 5) other governmental plans and programs, and 6) expressed public desires.

In the context of the 2017 MP, goals express the overall desired end state of the MP, whereas resource objectives are specific task-oriented actions necessary to achieve the MP goals. The objectives in the 2017 MP are intended to provide project benefits, meet public needs, and foster environmental sustainability of Fall River Lake to the greatest extent possible. The goals for the Fall River Lake MP include the following:

- Goal A: Provide the best management practices (BMPs) to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- Goal B: Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- Goal C: Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- Goal D: Recognize the unique qualities, characteristics, and potentials of the project.
- Goal E: Provide consistency and compatibility with natural objectives and other state and regional goals and programs.

In addition to the above goals, USACE management activities are also guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.

- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts on the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

Specific resource objectives to accomplish these goals can be found in Section 3.3 of the 2017 MP.

The Proposed Action would meet regional goals associated with good stewardship of land and water resources, would meet regional recreation goals, would address identified recreational trends, and would allow for continued use and development of project lands and shoreline without violating national policies or public laws.

## **2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE**

Under the No Action Alternative, the USACE would not approve the adoption or implementation of the 2017 MP or the SMP. Instead the USACE would continue to manage Fall River Lake's natural resources as set forth in the 1977 MP and 1996 SMP. The 1977 MP would continue to provide the only source of comprehensive management guidelines and philosophy. However, the 1977 MP is out of date and does not reflect the current ecological, socio-political, or socio-demographic conditions of Fall River Lake or those that are anticipated to occur through 2042. The No Action Alternative, while it does not meet the purpose of or need for the Proposed Action, serves as a benchmark of existing conditions against which Federal actions can be evaluated, and as such, the No Action Alternative is included in this EA, as prescribed by CEQ regulations.

## **2.2 ALTERNATIVE 2: PROPOSED ACTION**

Under the Proposed Action, the USACE proposes to adopt and implement the 2017 MP and SMP. The 2017 MP would replace the 1977 MP and provide an up-to-date management plan that follows current Federal laws and regulations while sustaining Fall River Lake's natural resources and providing recreational experiences for the next 25 years. The 2017 SMP would replace the 1996 SMP and provide policy and guidance for protection and restoration of the shoreline. Regulations call for SMPs to be reviewed by the District Commander on a 5-year cycle to determine the need for possible updates and public comment.

The 2017 MP proposes to classify all Federal land lying above the conservation pool elevation of 948.5 feet NGVD into management classification categories. These management classification categories would allow uses of Federal property that meet the definition of the assigned category and ensure the protection of natural resources and environmental stewardship while allowing maximum public enjoyment of the lake's resources.

The proposed land classification categories are defined as follows:

- Project Operations (PO): Lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas used solely for the operation of Fall River Lake.
- High Density Recreation (HDR): Lands developed for the intensive recreational activities for the visiting public including day use and campgrounds. These areas could also be for commercial concessions and quasi-public development.
- Environmentally Sensitive Areas (ESA): Areas where scientific, ecological, cultural, or aesthetic features have been identified.
- Multiple Resource Management Lands (MRML): Allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands.
  - MRML Low Density Recreation (LDR): Lands with minimal development or infrastructure that support passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.).
  - MRML Wildlife Management (WM): Lands designated for stewardship of fish and wildlife resources.
  - MRML - Vegetation Management (VM): Lands designated for stewardship of forest, prairie, and other native vegetative cover.
  - Future or Inactive Recreation. These are lands with site characteristics compatible with HDR development. These are areas where HDR development was anticipated in prior land classifications, but the development either never took place or was minimal. These areas are typically closed to vehicular traffic and will be managed as MRML until development takes place.
- Water Surface: Allows for surface water zones.
  - Restricted: Water areas restricted for Fall River Lake operations, safety, and security.
  - Designated No-Wake: Water areas to protect environmentally sensitive shoreline areas and recreational water access areas from disturbance and areas to protect public safety.
  - Fish and Wildlife Sanctuary: These areas are managed with annual or seasonal boating access restrictions to protect fish and wildlife species during periods of migration, resting, feeding, and/or nesting. The two refuge areas at Fall River Lake are above the conservation pool and are therefore not included in the zoning of the water surface.
  - Open Recreation: Water areas available for year-round or seasonal water-based recreational use.

The proposed shoreline allocations are defined as follows:

- Limited Development Areas: Shoreline areas allocated for private activities.
- Public Recreation Areas: Shoreline areas that are public recreational sites for Federal, State or similar public use and for commercial concessionaire facilities.
- Protected Areas: Shoreline areas that are designated to protect or restore aesthetic, fish and wildlife, cultural or other environmental values, or for physical protection of the shoreline.
- Prohibited Access Areas: Shoreline areas allocated for security reasons, the protection of ecosystems, and the physical safety of the recreation visitor.

Table 2-1 shows the proposed classifications and acres contained in each classification, Table 2-2 shows the water surface classifications, and Table 2-3 provides the shoreline classifications, and Table 2-4 provides the justification for the proposed reclassification.

**Table 2-1. Proposed Fall River Lake Land Classifications**

1977 Land Classifications	Acres	Proposed New Land Classifications	Acres
PO	126	PO	81
Recreation – Intensive Use	1,792	HDR	1,911
		ESA	200
Recreation – Low Density	493	MRML – LDR	0
WM	10,522	MRML – WM	11,007

\*Land classification acreages were derived using geographic information system technology and do not reflect the official land acquisition records. Source: USACE 2017

**Table 2-2. Proposed Fall River Lake Water Surface Classifications**

Classification	Acres
Water Surface: Restricted	9
Water Surface: Designated No-Wake	74
Water Surface: Fish and Wildlife Sanctuary	0
Water Surface: Open Recreation	2,001

Source: USACE 2017

**Table 2-3. Proposed Fall River Lake Shoreline Allocations**

Classification	Miles
Limited Development Areas	0
Public Recreation Areas	11.6
Protected Areas	29.7
Prohibited Access Areas	0.9

Source: USACE 2017

**Table 2-4 Justification for the Proposed Reclassification**

Land Classification	Proposed Action Description	Justification
PO	<p>The net decrease in PO lands from 126 to 81 acres was due to the following:</p> <ul style="list-style-type: none"> <li>• 42 acres reclassified to WM.</li> <li>• 9 acres reclassified to HDR.</li> <li>• 6 acres reclassified from LDR to PO.</li> </ul>	<p>All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management, and water conservation. Lands reclassified from PO to WM are being leased by USACE for agricultural purposes for the benefit of wildlife. The reclassification of lands from PO to HDR more appropriately align the classification with the actual use. Lands reclassified from LDR to PO were for quarry and rock piles used for materials storage, which pose a safety risk to the public. The reclassification of these acres will have no effect on current or projected public use.</p>
HDR	<p>The net increase in HDR lands from 1,792 to 1,911 were the result of changes to three different areas:</p> <ul style="list-style-type: none"> <li>• 130 acres reclassified to WM were classified as HDR on the 1977 MP, but were never developed, nor is there a demand to develop these areas as HDR areas.</li> <li>• 240 acres of LDR that the State leased and are being managed by the State, who intends to use it as HDR.</li> <li>• 9 acres in a small area on the south side of the dam that is a favorite fishing area for visitors is reclassified from PO.</li> </ul>	<p>In general terms, the amount of land classified for Recreation – Intensive Use in the 1977 MP was based on projected needs at the time. Management experience since 1977 has clearly revealed that reclassifications were needed to reflect actual use, evolving trends and regional priorities. The net gain in HDR resulted from making these adjustments to reflect current and expected use. The reclassification of areas and portions of actively managed HDR areas will not affect current or projected public use.</p>
ESA	<p>The classification of 200 acres as ESA resulted from changing the land class from WM upstream of the dam along the river channel.</p>	<p>Reclassification of the 200 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, or cultural sites. Classifying these acres as ESA will afford these areas the highest level of protection from disturbance. The reclassification of 200 acres to ESA will have no effect on current or projected public use.</p>
MRML – LDR	<p>The decrease of LDR acres from 493 to 0 were the result of reclassifying the following lands:</p>	<p>These lands were reclassified to reflect more accurately how the lands are being utilized. These changes support management</p>

Land Classification	Proposed Action Description	Justification
	<ul style="list-style-type: none"> <li>• 240 acres to HDR on the southeast side of the lake.</li> <li>• 6 acres to PO for rock quarry.</li> <li>• 247 acres to WM that are currently being used for wildlife management activities and are not suitable for LDR.</li> </ul>	actions and recreational trends identified in the 2015 Statewide Comprehensive Outdoor Recreation Plan. Public use of all areas that were reclassified will not be affected now or in the foreseeable future. Public access in the form of natural surface hiking and biking trails is compatible with these classifications.
MRML – WM	<p>The increase of WM acres from 10,522 to 11,007 resulted from the reclassification of the following:</p> <ul style="list-style-type: none"> <li>• 130 acres from HDR.</li> <li>• 247 acres from LDR on sites on the south and northwest areas of the lake.</li> <li>• 42 acres from PO.</li> <li>• 266 additional acres due to sedimentation.</li> <li>• 200 acres to ESA upriver from the lake.</li> </ul>	The lands reclassified from LDR, HDR, and PO to WM were due to these areas being used as hay fields and similar wildlife supporting functions. These reclassifications will have no effect on current or projected public use.
MRML – VM	No VM lands exist at Fall River Lake.	
Future/Inactive Recreation Areas	There are no Future/Inactive Recreation lands at Fall River Lake.	

<sup>(1)</sup>The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to several hundred acres. New acreages were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate. <sup>(2)</sup> Acreages are based on GIS measurements and may vary from Net Difference totals detailed in Table 2-1.

### Project Operations

In the 2017 MP, there are 81 acres of land under this classification, all of which are managed by the USACE. Land designated as PO lands are associated with the dam, spillway, powerhouse, levees, lake office, maintenance facilities, and other areas used primarily for the purposes of flood risk management, water quality, water supply, and fish and wildlife conservation. The management plan for this area is to continue providing physical security necessary to ensure sustained operations of the dam and related facilities, including restricting public access in hazardous locations near the dam and spillway.

### High Density Recreation

The 2017 MP stipulates that lands managed under this classification are lands developed for intensive recreational activities for the visiting public, including day use and campgrounds, and encompass 608 acres. National USACE policy set forth in Engineering Regulation (ER) and Engineer Pamphlet (EP) 1130-2-550, Chapter 16, limits recreation development on USACE lands to those activities that are dependent on a project's natural resources and typically include water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches,

boat launching ramps, and comprehensive resorts. Examples of activities that are not dependent on a project's natural resources include theme parks or ride-type attractions, sports or concert stadiums, and stand-alone facilities such as restaurants, bars, motels, hotels, and golf courses.

USACE operates and manages numerous areas designated as HDR. The 2017 MP, (Chapter 5) describes the various parks under management by the USACE, as well as parks that are leased by non-Federal grantees from the USACE, and provides a conceptual management plan for each park by classification group. Maps showing existing parks and facilities managed by the USACE can be found in Appendix A of the 2017 MP.

#### Environmentally Sensitive Areas

In the 2017 MP there are 200 acres designated as ESAs at Fall River Lake. These are areas where scientific, ecological, cultural, or aesthetic features have been identified. 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 (NHPA), or applicable state statutes. These areas must be managed to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration and management. These areas are typically distinct parcels located within another, and perhaps larger, land classification area.

#### Multiple Resource Management Lands

MRML are lands that serve multiple purposes but that are sub-classified and managed for a predominant use. The following paragraphs describe the various sub-classifications of MRML at Fall River Lake, as well as the resource objectives, acreages, and management plan for each sub-classification.

#### Multiple Resource Management Lands – Low Density Recreation

These are lands with minimal development or infrastructure that support passive public use including, but not limited to, hiking, nature photography, bank fishing, and hunting. Future management of these lands calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics. Prevention of unauthorized use such as trespass or encroachments is an important management objective for all USACE lands, but is especially important for those lands in close proximity to private development. These lands are typically open to the public, including adjacent landowners, for pedestrian traffic and are frequently used by adjacent landowners for access to the shoreline near their homes. Adjacent landowners may apply for a permit to mow a meandering path to the shoreline, and if conditions warrant, may apply for a permit to mow a narrow strip along the USACE boundary line as a precaution against wildfire. Mowing activity by adjacent landowners is addressed in the Fall River Lake SMP available at the Fall River Lake Project Office. The general public may use these lands for bank fishing, for hiking, and for access to the shoreline. Hunting may be allowed in select areas that are a reasonable and safe distance from adjacent residential properties. Future uses may include additional designated natural

surface hike/bike/equestrian trails. The placement of public trails in areas near residential properties will require public involvement prior to trail design. In the 2017 MP, there are zero acres of MRML -- LDR lands at Fall River Lake.

#### Multiple Resource Management Lands – Wildlife Management

These are lands designated for the stewardship of fish and wildlife resources and are managed by the USACE. In the 2017 MP, there are 11,007 acres of land designated as MRML – WM at Fall River Lake. Future management of these lands calls for managing the habitat to support native, ecologically adapted vegetation which in turn supports native wildlife species. Specific management techniques including, but not limited to, placement of nesting structures, construction of water features or brush piles, prescription burning, fencing, and planting of specific food producing plants may be necessary to support the needs of wildlife designated by the State as Species in Need of Conservation (see Appendix C of the 2017 MP for the KDWPT listing of species). Migratory species, both game and non-game, are generally given priority over non-migratory species when implementing wildlife management measures. Other management activities include the improvement or restoration of existing wetlands, or where topography, soil type, and hydrology are appropriate, the construction of wetlands. Where beneficial to long-term ecological management goals, agricultural leases for grazing or hay production could be employed. Hunting and fishing activities are regulated by Federal and state laws. However, management of these lands is directed to giving priority to accomplishing the Natural Resources Management objectives as identified in Chapter 3 of the 2017 MP.

Current public use of these lands includes hiking and horseback riding on existing trails, bank fishing, canoeing and kayaking, and hunting. Future public use includes all existing uses and expansion of trail opportunities where feasible. Some MRML – WM may support the establishment of nature centers or environmental learning areas.

#### Water Surface

In accordance with the national USACE policy set forth in EP 1130-2-550, the water surface of Fall River Lake at the conservation pool elevation may be classified using the following four classifications:

- Restricted
- Designated No-Wake
- Fish and Wildlife Sanctuary
- Open Recreation

At the conservation pool elevation of 948.5 feet NGVD, Fall River Lake has a water surface area of 2,084 acres. The following water surface classifications are designated at Fall River Lake:

#### *Restricted*

Restricted water surface includes those areas where recreation boating is prohibited or restricted for project operations, safety, and security purposes. There are

nine acres of water surface designated as restricted at Fall River Lake. These areas include the water surface upstream and downstream of the dam and the two swim beaches.

#### *Designated No-Wake*

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve visitor safety near key recreational water access areas such as boat ramps and swim beaches. Designated No-Wake areas at Fall River Lake include approximately 74 acres.

#### *Fish and Wildlife Sanctuary*

This surface water classification applies to areas that are managed with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, or spawning. No surface water at Fall River Lake is classified as Fish and Wildlife Sanctuary.

#### *Open Recreation*

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. With the exception of the Restricted and Designated No-Wake areas described in the above paragraphs, the remaining water surface of approximately 2,001 acres at Fall River Lake water surface is designated as Open Recreation. Boaters are advised through maps, brochures, and signs at boat ramps and marinas, that navigational hazards may be present at any time and at any location in these areas.

#### Project Easement Lands

Project Easement lands are lands on which easement interests were acquired. Fee title was not acquired on these lands, but the easement interests convey to the Federal government certain rights to use or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, or Conservation Easement. At Fall River Lake, the only easement lands are those lands where a Flowage Easement was acquired. A Flowage Easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations and to prohibit activities on the Flowage Easement that would interfere with flood risk management operations, such as placement of fill material or construction of habitable structures. In the 2017 MP, there are nine acres of land designated as Flowage Easement lands at Fall River Lake.

### **2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION**

Other alternatives to the Proposed Action were initially considered as part of the scoping process for this EA. However, none met the purpose of and need for the Proposed Action or the current USACE regulations and guidance. Furthermore, no other alternatives addressed public concerns. Therefore, no other alternatives are being carried forward for analysis in this EA.

The results of the public scoping process and planning team workshops formed the basis for the preferred alternative. In addition, the planning team determined that the following three additional alternatives, although ultimately eliminated from further consideration, should be explained to demonstrate that a wider range of alternatives were considered.

**Alternative 3:** Revise MP to Only Reflect Changes in Land Classification at Fall River with No Change in Operation and Use

Under this alternative, the MP would be reviewed, coordinated with the public, and revised with the limitation that the land classification would be changed to the extent that the new land classifications would essentially match the old classifications. The new classifications would comply with USACE regulations and guidance and would result in the following:

- 81 acres of PO
- 1,911 acres of HDR
- 0 acres of MRML - LDR
- 11,207 acres of MRML - WM

Alternative 3 would meet USACE regulations and guidance. However, this action would not reflect changes in land management and land uses that have occurred over time or that are needed to meet regional goals and objectives. Therefore, this alternative was eliminated from further consideration.

**Alternative 4:** Revise MP and SMP to Meet Authorized Project Purposes and to Maximize Recreation.

Under this alternative, the MP would be reviewed, coordinated with the public, and revised with the provision that all project lands (excluding PO lands) would be reclassified to HDR to intensify highly developed recreational use such as full-service campgrounds, day-use areas, comprehensive resorts, and concession facilities. This alternative would result in the following classifications of project lands:

- 81 acres of PO
- 13,118 acres of HDR

The SMP would also be reviewed, coordinated with the public, and revised to allow future development and expansion of private dock facilities to increase recreational access and opportunities.

Alternative 4 would provide recreation opportunities and economic uses to the public. However, it would eliminate ESA, LDR, WM, VM, and Future/Inactive Recreation land classifications, which would not support regional goals associated with good stewardship of land and water resources. Public scoping did not result in requests for this action and private home owners often lack access to the lake. Management of developed areas would require additional lake staff, as current staffing is limited. This

action would not be compatible with cultural resources management plans and could violate national policies or public laws. Therefore, this alternative was eliminated from further consideration.

**Alternative 5:** Revise MP and SMP to Meet Authorized Project Purposes and to Maximize Natural Resource Management.

Under this alternative, the MP and SMP revisions would be reviewed, coordinated with the public, and revised with the provision that all project lands (excluding PO lands) would be reclassified to a category that would intensify natural resource management. This would include reclassification of all project lands to either MRML - WM, VM, or ESA. This alternative would result in the following classification of project lands:

- 81 acres of PO
- 13,118 acres of WM/VM/ESA

The SMP would also be reviewed, coordinated with the public, and revised to require removal of all existing docks to emphasize natural resource management and comply with current shoreline allocations.

Alternative 5 would support regional goals associated with good stewardship of land and water resources. However, it would eliminate classifications such as LDR, HDR, and Future/Inactive Recreation Areas, which would reduce recreation opportunities and would not meet regional recreation goals. This action could violate national policies or public laws. Additionally, national USACE policy and public law requires that prior written commitments to existing grandfathered private dock owners on Fall River Lake be honored. Therefore, this alternative was eliminated from further consideration.

### **SECTION 3: AFFECTED ENVIRONMENT AND CONSEQUENCES**

This section of the EA describes the natural and human environments that exist at the project and the potential impacts of the No Action Alternative (Alternative 1) and Proposed Action (Alternative 2), outlined in Section 2.0 of this document. Only those issues that have the potential to be affected by any of the alternatives are described, per CEQ guidance (40 CFR § 1501.7 [3]). Some topics are limited in scope due to the lack of direct effect from the Proposed Action on the resource (hazardous materials and solid waste) or because that particular resource is not located within the project area (federally designated Wild or Scenic Rivers).

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8 [a]). Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable (40 CFR § 1508.8 [b]). As discussed in this section, the alternatives may create temporary (less than 1 year), short-term (up to 3 years), long-term (3 to 10 years following the MP revision), or permanent effects.

Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact (40 CFR § 1508.27). The context refers to the setting in which the impact occurs and may include society as a whole, the affected region, the affected interests, and the locality. Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate: Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

### **3.1 LAND USE**

Fall River Lake was originally authorized by the Flood Control Acts of 1941 and 1944. Construction of the Fall River Lake Dam began in 1946 and was completed in 1949. The total project area at Fall River Lake encompasses 15,283 acres and were acquired in fee simple title by USACE. The area includes 13,199 acres of land and 2,084 acres of surface water. Above the area acquired in fee simple title, nine acres were encumbered with a perpetual flowage easement. Purchase of flowage easement by the Government constitutes payment for the right to flood and for the damage and expense to the landowner resulting from project operation. Construction of buildings for habitation or alteration of the existing terrain are not permitted in the flowage easement area.

Outgrants at Fall River Lake include leases, licenses, easements, consents, permits, and others. Outgrants do not include the Shoreline Use Permits that authorize private structures and activities owned or conducted by adjacent landowners such as boat docks and vegetation modification. At present, there are approximately 23 recorded outgrants in effect on USACE lands and flowage easements at Fall River Lake. These outgrants include the following:

- 18 Easements
- 1 Fish/Wildlife license
- 1 Recreational/Park lease
- Agriculture lease

- 1 Miscellaneous – Greenwood County Rural Fire District No. 1

The USACE operates and manages numerous areas designated as HDR. In addition to the USACE-operated parks (Overlook Park, Damsite Campground, Whitehall Bay Campground, Browns Cove, Cedar Campground and North Rock-Ridge Campground), the USACE leases land to KDWPT for Fall River State Park. The KDWPT is responsible for the operation and maintenance of their leased area; USACE does not provide direct maintenance within any of the leased locations, but it may occasionally lend support where appropriate. The USACE reviews requests and ensures compliance with applicable laws and regulations for proposed activities in all leased and USACE-operated HDR areas. KDWPT refers to two distinct areas that comprise Fall River State Park. These areas are Fredonia Bay and Quarry Bay. Additionally, KDWPT operates Climax Landing, found in the KDWPT Wildlife Area. Chapter 5 of the MP provides detailed descriptions of the parks managed and operated by USACE.

### **3.1.1 Alternative 1: No Action Alternative**

The No Action Alternative for Fall River Lake is defined as the USACE taking no action, which means neither the MP or the SMP would be revised. No new resources analysis, resources management objectives, or land-use and shoreline allocations would occur. The operation and maintenance of USACE lands and shorelines at Fall River Lake would continue as outlined in the existing MP and SMP. Although this alternative does not result in a MP or SMP that meets current regulations and guidance, there would be no significant impacts on land uses on Fall River Lake lands.

### **3.1.2 Alternative 2: Proposed Action**

The objectives for revising the Fall River Lake MP and SMP were to describe current and foreseeable land uses, taking into account expressed public opinion and USACE policies that have evolved to meet day-to-day operational needs.

The USACE intends to continue to operate the Class A Campgrounds as well as the Day Use Areas and Access Points, by maintaining and improving existing facilities with no plans for expansion. Emphasis will be placed on improvements such as development of high impact zones at campsites, provision of universally accessible facilities (e.g. fishing docks), improved fish cleaning stations, separation of day use and camping facilities, improved electrical service at campsites, and playground equipment in day use and camping areas. The changes required for the Proposed Action were developed to help fulfill regional goals associated with good stewardship of land and water resources that would allow for continued use and development of project lands. Therefore, implementation of the Proposed Action would not result in significant impacts on land uses on project lands.

Under Proposed Action, existing docks would continue to be grandfathered and allowed to remain. Therefore, there would be minimal change in existing levels of access to the lake. Under the Proposed Action, there is also no change to the current shoreline allocation. Therefore, activities would remain the same for the foreseeable future.

## 3.2 WATER RESOURCES

### Surface Water

Fall River Lake has approximately 2,084 water surface acres with 42 miles of shoreline at conservation pool elevation 948.5 NGVD. The flood control pool ranges from elevation 948.5 – 987.5 feet NGVD. This creates a lake area of 10,370 acres at total flood control pool and holds back floodwaters originating from 585 square miles of drainage area above the dam. The total drainage area of the Fall River Basin is 884 square miles.

### Hydrology and Groundwater

The Fall River flows into Fall River Lake after its confluence with Otter Creek. The watershed is dominated by the East and West Branches of Fall River, Otter Creek and Spring Creek. The watershed tends to be flashy during rainfall events but otherwise does not sustain flow during extended dry periods. The watershed drains steadily once rains cease with little support from baseflow. The majority of the watershed is underlain by Pennsylvanian Wabauensee Group of thick, water-tight shales, thus little ground water exists about the lake except in the stream alluvium. Surface water is used predominantly by municipalities and irrigators, with ground water use reported to the state for 2006 at 20 acre-feet for Greenwood County. All recreational areas operated by the USACE and others at Fall River Lake are connected to municipal water supply providers.

### Wetlands

Waters of the United States are defined within the Clean Water Act (CWA), and jurisdiction is addressed by the USACE and United States Environmental Protection Agency (USEPA). Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

In accordance with national USACE policy, wetlands at operational projects are inventoried using the protocol established by the USFWS in their *Classification of Wetlands and Deepwater Habitats of the United States*. The majority of wetlands in the vicinity of Fall River Lake are in the palustrine system; however, wetlands classified in the lacustrine and riverine systems are also present (USFWS, 2016). Wetlands classified as palustrine are nontidal and are dominated by trees, shrubs, emergents, mosses, or lichens. Within these three systems (palustrine, lacustrine, and riverine), wetlands have been further classified as limnetic and littoral (lacustrine); emergent, forested, scrub-shrub, unconsolidated bottom, and unconsolidated shore (palustrine); and lower perennial (riverine). Many of the wetland types have been further classified as diked/impounded or excavated, indicating that they formed under conditions created by humans. The wetlands in the vicinity of Fall River Lake are also subject to different hydrologic regimes, including seasonally flooded, semi-permanently flooded, and permanently flooded.

**Table 3-1** lists the acreages of various types of wetlands present at Fall River Lake. Data was retrieved from the FY2016 Project Wetland Classes reported in OMBIL. As noted in Table 3-1 all USACE land at Fall River Lake have been inventoried.

**Table 3-1 Wetland Resources**

System	Sub System	Class	Class Acres
Lacustrine	Limnetic	Open water/Unknown Bottom	2050
Lacustrine		Aquatic Bed	1
Lacustrine	Littoral	Unconsolidated Shore	5
Palustrine	-	Aquatic Bed	847
Palustrine	-	Emergent Wetland	210
Palustrine	-	Forested Wetland	272
Palustrine		Scrub-Shrub Wetland	74
Palustrine		Unconsolidated Bottom	2
Palustrine		Unconsolidated Shore	6
Riverine	Intermittent	Streambed	40
Riverine	Lower Perennial	Unconsolidated Bottom	104
Palustrine	Lower Perennial	Unconsolidated Shore	10

Source: USACE OMBIL 2015

### Water Quality

The Kansas Department of Health and Environment (KDHE) water quality data collected indicates the Fall River Lake has high inorganic turbidity and high levels of siltation, with indicators of increased nitrogen. The lake is shallow and sediment is re-suspended easily due to wind, motorboat traffic, and moderate to high inflow events. In addition, siltation is aggravated during large runoff events, when releases from Fall River Lake are minimized to accommodate flood control along the Verdigris and Fall Rivers, which causes large silt deposits within the lake and inflowing river channels. Subsequent runoff events of moderate duration then re-distribute the deposited sediment throughout the Lake.

Water quality at Fall River Lake is lower than overall federal lakes in the state, but is higher than the trophic benchmarks set for Flint Hills region and statewide lakes. Chlorophyll levels are just below statewide values, but that likely reflects the diminished availability of light because of pervasive turbidity in the lake. The KDHE has set forth an implementation strategy for the watershed to reduce the amount of phosphorus and sediment entering the lake. For more information concerning water quality and strategies for Fall River Lake see the KDHE website ([www.kdheks.gov](http://www.kdheks.gov)).

#### **3.2.1 Alternative 1: No Action Alternative**

There would be no impacts on water resources as a result of implementing the No Action Alternative, since there would be no change to the existing MP or SMP.

### **3.2.2 Alternative 2: Proposed Action**

The reclassifications and resource management objectives required for the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of water resources (e.g., conservation of emergent wetlands, erosion control, and maintaining good water quality); therefore, there would be no significant adverse impacts on water resources.

### **3.3 CLIMATE**

Fall River Lake lies in a region characterized by moderate winters and comparatively long, hot summers. Summer temperatures are often high, while subzero temperatures of short duration are not uncommon during the winter. High temperatures are experienced in July and August, with the average maximum highs of 87.5 and 89.3 and average minimum temperatures of 72.5 and 71.3, respectively. Lower temperatures come in January, with the maximum average temperature of 44.2 and minimum average temperature of 16.6. In spring, summer, and fall, prevailing winds are from the south and southwest. Average annual precipitation is 36.63 inches, predominantly from rainfall. The heaviest rains typically fall in May and June, with little precipitation in December, January and February.

#### **3.3.1 Alternative 1: No Action Alternative**

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions. There would be no short- or long-term, minor, moderate or major, beneficial, or adverse impacts on climate as a result of implementing the No Action Alternative.

#### **3.3.2 Alternative 2: Proposed Action**

Revision of the Fall River Lake MP and SMP would have no impact on the climate of the study area.

### **3.4 CLIMATE CHANGE AND GREENHOUSE GASES**

Federal guidance and direction regarding climate change evaluation is currently in flux. Several Executive Orders (EO) have been issued in recent years that direct federal agencies to address climate change and Green House Gas (GHG) emissions with emission reductions and preparedness planning and implementation. President Obama issued EO 13653, preparing the U.S. for the Impacts of Climate Change in 2013, which was rescinded by President Trump's EO 13783, Promoting Energy Independence and Economic Growth in 2017. EO 13693, Planning for Federal Sustainability in the Next Decade (2015) requires federal agencies to meet emission-reducing goals associated with energy use, water use, building design and utilization, Fleet vehicles, and procurement and acquisition decisions.

Federal agencies are required to consider GHG emissions and climate change in environmental assessment in accordance with NEPA. On August 1, 2016, the CEQ issued final guidance on the consideration of GHG emissions and climate change in NEPA review, however, EO 13783 directed the CEQ to rescind that guidance. At the same time, case law in the Ninth Circuit still requires climate change analysis: "The impact of greenhouse gas emissions on climate change is precisely the kind of

cumulative impacts analysis that NEPA requires agencies to conduct” (Center for Biological Diversity v. National Highway Traffic Safety Administration, 538 F.3d 1172, 1217 (9<sup>th</sup> Cir. 2008)). Consistent with case law, an analysis of climate change impacts was conducted for this EA.

Fall River Lake is located in a rural section of Kansas with few, if any, major generators of greenhouse gas. The general operations activities and recreation facilities associated with Fall River Lake produce limited amounts of GHG that do not approach the reportable threshold. Fall River Lake Project Office has management plans in place such as routine equipment maintenance, holistic vegetative management plans, natural resource management plans, and public education and outreach programs to protect regional natural resources. In addition, the Fall River Lake Project Office will continue monitoring programs as required to meet applicable laws and policies.

Two Executive Orders (EOs), EO 13514 and EO 13693, as well as the President’s Climate Action Plan (CAP) set forth requirements to be met by federal agencies. These requirements range from preparing general preparedness plans to meeting specific goals to conserve energy and reduce GHG emissions. In response to the EOs and CAP, the USACE prepared an Adaptation Plan, which is still in effect. The Adaptation Plan includes the following USACE policy statement:

*It is the policy of USACE to integrate climate change preparedness and resilience planning and actions in all activities for the purpose of enhancing the resilience of our built and natural water-resource infrastructure and the effectiveness of our military support mission, and to reduce the potential vulnerabilities of that infrastructure and those missions to the effects of climate change and variability.*

The USACE manages project lands and recreational programs to advance climate change resilience and carbon sequestration, as set forth in EO 13693 and related USACE policy.

#### **3.4.1 Alternative 1: No Action Alternative**

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions. There would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on climate change or contributions to GHG emissions as a result of implementing the No Action Alternative.

#### **3.4.2 Alternative 2: Proposed Action**

Under the Proposed Action, current Fall River Lake project management plans and monitoring programs would not be changed. There would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on climate change or contributions to GHG emissions as a result of the updated 2017 MP or SMP. In the event that GHG emission issues become significant enough to impact the current operations at Fall River Lake, the 2017 MP, SMP, and all associated documents would be reviewed and revised as necessary.

### **3.5 AIR QUALITY**

The USEPA established nationwide air quality standards to protect public health and welfare in 1971. The State of Kansas has adopted the National Ambient Air Quality Standards (NAAQS) as the state's air quality criteria. NAAQS standards specify maximum permissible short- and long-term and concentrations of various air contaminants including primary and secondary standards for six criteria pollutants: Ozone (O<sub>3</sub>), Carbon Monoxide (CO), Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Oxide (NO), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and Lead (Pb). Based on both Federal and state air quality standards, an area can be classified as either an "attainment," "maintenance," or "non-attainment" area for each pollutant. According to the KDHE current State Implementation Plan (KDHE 2015), the Fall River Lake area (Greenwood County) is an attainment area and does not require a pollutant control strategy. KDHE maintains an air quality monitoring station at Chanute, Kansas about 40 miles east of Fall River Lake. The air quality data collected at that station on 13 July 2017 indicated that all measured indices were found to be in the Good range of 0 – 50 ppm. The Ozone measurement for 13 July 2017 was 8 ppm.

#### **3.5.1 Alternative 1: No Action Alternative**

There would be no short- or long-term, minor, moderate or major, beneficial, or adverse impacts on air quality as a result of implementing the No Action Alternative, since there would be no change to the existing MP or SMP.

#### **3.5.2 Alternative 2: Proposed Action**

Existing operation and management of Fall River Lake is compliant with the Clean Air Act and would not change with implementation of the 2017 MP and SMP. No short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on air quality would occur as a result of implementing the proposed revisions to the Fall River Lake MP and SMP.

### **3.6 TOPOGRAPHY, GEOLOGY, AND SOILS**

#### Topography

Though Fall River Lake Dam touches the Cross Timbers ecoregion on its southern border, the topography in which the lake lies is characteristic of the Flint Hills. This includes rolling planes, deeply incised valleys, limestone outcrops, and vegetative-covered shale intervals between the limestones.

The river basin is formed by the junction of its east and west branches about 4 miles northwest of Eureka, Kansas and flows southeast for a distance of 89 miles to its confluence with the Verdigris River, approximately 4 miles downstream from Neodesha, Kansas. The channel of Fall River varies in width from 120 to 130 feet and is well defined, with banks that are from 15 to 35 feet in height, generally stable, and thickly covered with trees and brush. The upper portion of the basin is characterized by steep, rocky slopes and rough, broken hills, rising in elevation of about 1,600 feet above mean sea level (msl). The central and lower portions of the basin are rolling prairie, with general elevation of about 930 feet msl at the dam site and about 780 feet msl at the

mouth. The total drainage area of the Fall River Basin is 884 square miles, of which 585 square miles are upstream from the damsite.

### Geology

The Fall River Lake area contains rock formations dating back to the Pennsylvania Age. These formations are predominantly shale with a few limestone beds that have a slight regional dip to the west. To the east the shale and limestone beds are overlain by a layer of sandstone of considerable thickness. With its rock outcroppings that create plateaus that vary the landscape and lend scenic value to the landscape, the vicinity has long been noted for its rolling prairies and tree-dotted valleys sheltered by limestone-capped ridges.

### Soils

A soil survey by the Natural Resource Conservation Service (NRCS) shows there are all eight possible general classifications (Classes I through Class VIII) occurring in the reservoir area. This data is compiled by the NRCS and is a standard component of natural resources inventories on USACE lands. This, and other inventory data, is recorded in the USACE Operations and Maintenance Business Information Link (OMBIL). Complete information regarding the 8 specific soil types making up the Fall River Lake Project is found within the Soil Survey of Greenwood County published by the United States Department of Agriculture, Natural Resources Conservation Service (NRCS).

Generally, the soils in the watershed have low permeability and moderate erodibility, with the exception of the channel and flood plains of the Fall River and its tributaries. Soils designated as Prime Farmlands by NRCS do exist within the Fall River Lake lands. Detailed information on all soil types surrounding Fall River Lake is available on websites maintained by the NRCS, U.S. Department of Agriculture.

Fall River Lake is bordered by two different major soil complexes. The upland areas, the Steedman-Dennis-Eram association, consists of sloping moderately well-drained soils with predominantly clayey subsoil. The Reading-Ivan Chase association consists of low terraces and flood plains that have silty or clayey subsoil with either well drained or poorly drained soils (GSA General Soils Map).

The lake inflow carries a minimum amount of sediment because of the stony soils upstream of the project. Much of the shoreline of Fall River Lake consists of limestone cliffs with very little erosion. Agricultural practices are the primary source of sedimentation in the watershed. To date, sediment accumulation in the conservation pool has not severely impacted authorized project purposes and, as is the case for nearly all federal reservoirs, there are no plans to dredge all or portions of Fall River Lake.

#### **3.6.1 Alternative 1: No Action Alternative**

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions, so there would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on topography, geology, soils,

sedimentation, or shoreline erosion as a result of implementing the No Action Alternative.

### **3.6.2 Alternative 2: Proposed Action**

Topography, geology, and soils were considered during the refining process of land reclassifications for the 2017 MP. Fall River Lake area lands were reclassified to reflect more accurately how the lands are currently being utilized. These changes support management actions and recreational trends (Table 8.2 in the MP). In many cases, only minimal changes in acreages were made. For example, HDR acreage increased from 1,792 acres to 1,911 acres, while all LDR acres were converted to other classifications. LDR acres were converted mostly to HDR and WMA, reflecting their current use. Areas currently developed as park would continue to operate as parks and no change would occur. The conversion of these lands would have no effect on current or projected public use. Any future soil disturbing activities within Prime Farmland soils would be coordinated with the NRCS. Therefore, under the Proposed Action, there would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on topography, geology, or soils as a result of implementing the 2017 MP or SMP.

### **3.7 NATURAL RESOURCES**

Section 2.2 of the MP details the rich natural resources of Fall River Lake. Fall River Lake provides habitat for an abundance of both game and non-game fish and wildlife species. The lake provides a quality fishery, as well as quality wildlife habitat on public lands. The vegetation at Fall River Lake include post oak–blackjack oak forest, oak hickory forest, elm-ash-cottonwood forest, and native prairies. A wide variety of oak, hickory, elm and ash occur within the Fall River Lake lands. The native prairie consists of a mixture of tall and mid-grasses as well as numerous herbaceous and woody plants.

Fall River Lake provides fishing opportunities for the boater and for the bank angler with more than 17 miles of public river access. A variety of fish species can be found in the lake and river. Stocking of Fall River Lake is conducted by KDWPT and varies annually but has included crappie (*Pomoxis spp.*), largemouth bass (*Micropterus salmoides*), white bass (*Morone chrysops*), channel catfish (*Ictalurus punctatus*), and bluegill (*Lepomis macrochirus*).

There are 15,283 acres of Federal land and water surface managed by USACE at Fall River Lake, with approximately 11,007 acres designated as MRML - WM. These management areas are popular with hunters and individuals wishing to observe wildlife in their natural habitat. Species often observed in these areas include white-tailed deer (*Odocoileus virginiana*), turkey (*Meleagris gallopavo*), feral hogs (*Sus scrofa*), waterfowl (ducks and geese), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), fox squirrel (*Sciurus niger*), cottontail rabbit (*Sylvilagus floridanus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and various raptors, shore birds and song birds. These wildlife management areas provide a great benefit to the public in a region with a limited amount of public land. Planting for wildlife, native plant restoration, timber management, and prescribed burning are used

to provide food and cover for a variety of wildlife. Programs of marsh and water management provide some excellent habitat for all types of waterfowl and shorebirds. KDWPT also maintains two waterfowl refuges (720 acres total) that provide feeding, resting and roosting sites to help maintain large, healthy populations of migrating waterfowl.

### **3.7.1 Alternative 1: No Action Alternative**

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions; therefore, no short- or long-term, major, moderate, or minor, beneficial, or adverse impacts on natural resources would be anticipated as a result of implementing the No Action Alternative.

### **3.7.2 Alternative 2: Proposed Action**

The reclassifications, resource management objectives, and resource plan required for the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of natural resources. The Proposed Action would allow project lands to continue supporting the USFWS and the KDWPT missions associated with wildlife conservation and implementation of operational practices that would protect and enhance wildlife and fishery populations and habitat. The addition of ESA and MRML-WM lands protects natural resources from various types of adverse impacts such as habitat fragmentation. In addition, the Proposed Action would be compatible with conservation principles and measures to protect migratory birds as mandated by EO 13186.

The reclassifications proposed in the 2017 MP include 200 acres as ESA and 11,007 acres as MRML – WM. Under the proposed reclassifications, multiple land parcels that were previously classified as PO, Recreation – Intensive Use, or Recreation - Low Density were converted primarily to MRML - WM. The ESA was previously classified as WM and were converted to recognize the areas as having high ecological, aesthetic or cultural value, being significant for public use and enjoyment, and by reclassifying those areas it would ensure they are given the highest order of protection among possible land classifications. The reclassification of these lands will have minimal effect on current or projected public use. However, long-term, beneficial impacts on natural resources could occur as a result of implementing the reclassifications outlined in the 2017 MP.

There would be no short- or long-term, major, moderate, or minor, beneficial or adverse impacts on natural resources anticipated as a result of implementing the 2017 SMP since the Plan is not proposing any significant modifications that would impact natural resources.

## **3.8 THREATENED AND ENDANGERED SPECIES**

The Endangered Species Act was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement protective measures for designated species and to use their authorities to further the purposes of the Endangered Species Act. The Secretary of the

Interior and the Secretary of Commerce (marine species) are responsible for the identification of threatened or endangered species and development of any potential recovery plan.

USFWS is the primary agency responsible for implementing the Endangered Species Act, and is responsible for birds and other terrestrial and freshwater species. USFWS responsibilities under the Endangered Species Act include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Although not afforded protection by the Endangered Species Act, candidate species may be protected under other Federal or state laws.

There are four Federally listed species that could be found at Fall River Lake (USFWS 2017). A list of these species is presented in Table 3-2. Critical Habitat has been designated within or near Fall River Lake for the Neosho Mucket (*Notropis topeka*).

**Table 3-2. Federally Listed Endangered and Threatened Species with Potential to Occur at Fall River Lake**

Common Name	Scientific Name	Federal Status	State Status
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Threatened
Topeka shiner	<i>Notropis topeka</i>	Endangered	Endangered
Neosho Mucket	<i>Lampsilis rafinesqueana</i>	Endangered	Endangered
Rabbitsfoot	<i>Quadrula cylindrical cylindrical</i>	Threatened	Threatened

Source: IPaC Report, USFWS 2017

### 3.8.1 Alternative 1: No Action Alternative

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions; therefore, no short- or long-term, major, moderate, or minor, beneficial, or adverse impacts on threatened and endangered species would be anticipated as a result of implementing the No Action Alternative.

### 3.8.2 Alternative 2: Proposed Action

Under the Proposed Action, the USACE would continue cooperative management plans with the USFWS and KDWPT to preserve, enhance, and protect wildlife habitat resources. To further management opportunities and beneficially impact habitat diversity, the reclassifications proposed in the 2017 MP include 200 acres as ESA to recognize those areas having special value and to ensure they are given the highest order of protection among possible land classifications. Long-term, beneficial impacts on natural resources could occur as a result of implementing the reclassifications outlined in the 2017 MP. Any future activities that could potentially result in impacts on Federally listed species will be coordinated with USFWS through Section 7 of the Endangered Species Act.

There would be no short- or long-term, major, moderate, or minor, beneficial or adverse impacts to Threatened or Endangered Species or their critical habitat anticipated as a result of implementing the 2017 SMP since the Plan is not proposing any significant modifications that would impact natural resources.

## 3.9 INVASIVE SPECIES

Invasive species are any kind of living organism which, if uncontrolled, causes harm to the environment, economy, or human health. Invasive species generally grow and reproduce quickly and spread aggressively. Non-native, or exotic, species have been introduced, either intentionally or unintentionally, and can out-compete native species for resources or otherwise alter the ecosystem. Native invasive species are those species that spread aggressively due to an alteration in the ecosystem, such as lack of fire or the removal of a predator from the food chain. Table 3-3 lists invasive and exotic species that occur at Fall River Lake.

**Table 3-3. Invasive Species Found at Fall River Lake**

<b>Common Name</b>	<b>Scientific Name</b>
Bull Thistle	<i>Cirsium vulgare</i>
Field Bindweed	<i>Convolvulus arvensis</i>
Japanese Honeysuckle	<i>Lonicera japonica</i>
Johnsongrass	<i>Sorghum halepense</i>
Multiflora Rose	<i>Rosa multiflora</i>
Musk Thistle	<i>Carduus nutans</i>
Sericea (Chinese) lespedeza	<i>Lespedeza cuneata</i>

### **3.9.1 Alternative 1: No Action Alternative**

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions, so Fall River Lake would continue to be managed according to the existing invasive species management practices. There would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts from invasive species as a result of implementing the No Action Alternative.

### **3.9.2 Alternative 2: Proposed Action**

The land reclassifications, resource objectives, and resource plan required to revise the Fall River Lake MP are compatible with the lake's invasive species management practices. Therefore, invasive species would continue to be managed, and no significant adverse impacts on resources would occur as a result of implementing the 2017 MP or SMP.

## **3.10 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES**

Historic site types in the area include historic Indian villages, camps, towns, burials, and agencies, trading posts, Euroamerican homesteads and ranches, Indian homes, and farmsteads, and freed slave homesteads and farms. Related types of resources are trails, wells, cisterns, privies, rock walls, foundations or foundation piers, cellar depressions, chimneys (stone or brick), stairs, railroad lines, cattle trails, roads, schools, cemeteries, dumps, and water diversion features.

Dependent on funding, a Cultural Resources Management Plan for Federal property at Fall River Lake would be developed and incorporated into the Operational Management Plan in accordance with Engineering Pamphlet (EP) 1130-2-540. The purpose of the Cultural Resources Management Plan would be to provide a comprehensive program to direct the historic preservation activities and objectives at Fall River Lake. Completion of a full inventory of cultural resources at Fall River Lake is a long-term objective that is needed for compliance with Section 110 of the NHPA. All currently known and newly recorded sites would be evaluated to determine their eligibility for the National Register of Historic Places (NRHP).

In accordance with Section 106 of the NHPA, any proposed ground-disturbing activities or projects would require cultural resource surveys to locate and evaluate historic and prehistoric resources. Resources determined eligible for the NRHP must be protected from proposed project impacts or the impacts must be mitigated. All future cultural resource investigations at Fall River Lake would be coordinated with the State Historic Preservation Officer and Federally recognized Tribes to ensure compliance with the NHPA, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.

### **3.10.1 Alternative 1: No Action Alternative**

There would be no additional short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on cultural, historical, or archaeological resources as a result of implementing the No Action Alternative, as there would be no changes to the existing MP.

### **3.10.2 Alternative 2: Proposed Action**

Impacts on cultural, historical, and archaeological resources were considered during the refinement processes of land reclassifications. Based on previous surveys at Fall River Lake, the required reclassifications, resource objectives, and resource plan would not change current cultural resource management plans or alter areas where these resources exist. All future activities would be coordinated with the State Historic Preservation Officer and Federally recognized Tribes to ensure compliance with Section 106 of the NHPA, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. Therefore, no significant adverse impacts on cultural, historical, or archaeological resources would occur as a result of implementing the 2017 MP or SMP.

### **3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE**

The socio-economic data analysis in Section 2.4 of the MP encompasses both Fall River and Toronto Lakes due to their proximity to one another. Though the lakes each have unique circumstances in terms of adjacent development, the impact of the surrounding counties to the lakes is essentially the same.

#### Demographic Characteristics

The 2017 MP details the demographics of the zone of interest. The zone of interest for the purpose of the Fall River and Toronto MP's socio-economic analysis includes the neighboring counties of Greenwood and Woodson in southeast Kansas. Fall River Lake is located in Greenwood County, and Toronto Lake is located in Woodson County. At the time of the construction of Fall River Lake, Greenwood County was at its highest population total on record. This was sparked by a local economy driven by oil, cattle, and the railroad. Overtime the oil business slowly dried up and the railroad companies abandoned many of their lines that support the local communities. Today, the population of Greenwood County is less than half as when Fall River Lake was constructed and the cattle ranching and farming industries have become the main source of economy for the local area.

The total population for the zone of interest in 2015 was 9,604, as shown in Table 2.8 of the 2017 MP. Approximately 67% of the zone of interest's population resides in Greenwood County and 33% resides in Woodson County. Both are rural counties, with their combined population making up less than 1% of the total population of the state of Kansas. Negative growth is forecast in the zone of interest between 2015 and 2044. Annual growth rates of -1.8% and -1.6% are projected in Greenwood and Woodson Counties, respectively.

The distribution of the population among gender is approximately 49 percent male and 51 percent female in all geographical areas, as shown in Table 2.10 of the 2017 MP. The largest percentage of the population is over age 45. Older age groups are expected to increase in size by 2044.

Race and ethnicity for the zone of interest are shown in Table 2.11 of the 2017 MP. The U.S. Census estimates show that the region is heavily White (93 percent).

Hispanic or Latino accounts for three percent, two or more races account for another three percent, while the other race categories account for less than one percent each.

Table 2.12 of the 2017 MP displays the highest level of education attained by the population age 25 and over in both Kansas and the zone of interest. The largest percentage in the zone of interest has a high school credential. Table 2.13 of the 2017 MP provides details of the labor force in the zone of interest. The largest percentage of the population from the zone of interest is employed in the educational services, and health care and social assistance sector. As shown in Table 2.15 of the 2017 MP, median household income in the zone of interest in 2015 was \$38,838 in Greenwood County and \$35,787 in Woodson County, which is considerably lower than the median household income of \$52,205 in Kansas (US Bureau of the Census 2015).

In terms of families below the poverty level, both counties within the zone of interest had a greater percentage of families below the poverty level than the state of Kansas. It is expected that both Woodson and Greenwood counties will continue to be rural in nature over the next 25 years. The population is expected to maintain or shrink from the current numbers, and no major change is expected in demographics.

#### Environmental Justice

Analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by the proposed actions. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level. A potential disproportionate impact may occur when the minority in the study area exceeds 50 percent or when the percent minority and/or low-income in the study area are meaningfully greater than those in the region.

Counties in the zone of interest have substantially lower minority populations than the state of Kansas, as shown in Table 2.11 of the 2017 MP, and all have minority populations that are below 50 percent. Both counties within the zone of interest had a greater percentage of families below the poverty level than the state of Kansas (9.1%).

It has been recognized that the potential for impacts on the health and safety of children is greater where projects are located near residential areas. The U.S. Census estimates show that persons 19 and under is roughly 22 percent of the population in Greenwood and Woodson Counties (Figure 2.5 of the MP).

#### **3.11.1 Alternative 1: No Action Alternative**

Under the No Action Alternative, there would be no changes to the existing MP or SMP, with the USACE continuing to manage Fall River Lake's natural resources as set forth in the 2017 MP. There would be no short- or long-term, minor, moderate, or major adverse impacts on socioeconomic resources. Beneficial socioeconomic impacts existing as a result of the implementation of the current MP would continue, as visitors would continue to come to the lake from surrounding areas. In addition to camping in

USACE-operated campgrounds, many visitors purchase goods such as groceries, fuel, and camping supplies locally, eat in local restaurants, stay in local hotels and resorts, play golf at local golf courses, and shop in local retail establishments. These activities would continue to bring revenues to local companies, provide jobs for local residents, and generate local and state tax revenues. There would be no disproportionately high or adverse impacts on minority or low-income populations or children with the implementation of the No Action Alternative.

### **3.11.2 Alternative 2: Proposed Action**

Under the Proposed Action, the land reclassifications, resources objectives, and resource plan reflect changes in land management and land uses that have occurred since 1977. Fall River Lake offers a variety of free recreational opportunities for visitors. It is beneficial to the local economy through direct and indirect job creation and local spending by visitors. Beneficial impacts would be similar to the No Action Alternative. There would be no adverse impacts on economy in the area and no disproportionately high or adverse impacts on minority or low-income populations or children as a result of the implementation of the 2017 MP and SMP.

### **3.12 RECREATION**

The primary area having a significant influence on the public use and management of Fall River Lake includes Greenwood and Woodson counties, Kansas. The majority of visitors to Fall River Lake come from within a 100-mile radius of the lake. Available data on the city of origin for campers in both USACE and KDWPT parks shows that a large majority of campers are coming from Wichita, Kansas. Fall River Lake visitors are a diverse group ranging from campers who utilize the campgrounds around the lake, full-time and part-time residents of the private housing developments that border the lake, hunters who utilize the Wildlife Management Areas around the lake, day users who picnic in the state- and Federally-operated parks, and many other user groups.

Located in the Chautauquau Hills and Flint Hills Ecological Regions, the Fall River Lake area has a large diversity of plant and animal life and a unique blend of forested flood plains, blackjack oak savannahs, and tallgrass prairie making for multiple recreational opportunities. Recreational activities at Fall River Lake include canoeing, hiking, bird watching, photography, hiking, fishing, hunting, and camping. Visitation to Fall River State Park grew between 2008 and 2012 and is expected to continue growing. Fall River Lake supports many of the current trends in outdoor recreation. Table 2.20 in the 2017 MP lists the details of the various parks with their associated services and managing agencies.

Fishing is productive through the year with the greatest activity in the spring. Most lands at Fall River are open for public hunting with the exception of the developed camping areas, picnic areas, dam and project operation sites, as well as two wildlife refuge areas within the KDWPT Fall River Wildlife Area. Hunting and fishing is regulated by Kansas law and federal regulation. Section 2.5 of the MP further outlines the many opportunities that Fall River Lake provides for other types of outdoor recreation including bird watching, swimming, recreational boating and hiking. Currently, there is no demand for concessionaires that would offer water-related services to visitors.

### **3.12.1 Alternative 1: No Action Alternative**

Under the No Action Alternative, there would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on recreational resources, as there would be no changes to the existing MP or SMP.

### **3.12.2 Alternative 2: Proposed Action**

Fall River Lake is beneficial to the local visitors and also offers a variety of free recreation opportunities. The natural habitat and expansive public lands at Fall River Lake are ideal for wildlife and nature related viewing activities, boating and water based activities, health and fitness activities, and trail use. The proposed action responds to these recent trends in outdoor recreation through revised land classifications, new management objectives and conceptual management plans for each land classification.

Even though the combined acreage available for Recreation would slightly decrease (2,285 to 1,911 acres) with implementation of the 2017 MP, these land reclassifications reflect changes in land management and land uses that have occurred since 1977 at Fall River Lake. The conversion of these lands would have no effect on current or projected public use. Similarly, privately owned docks that are grandfathered will remain and will continue to provide recreational access. Therefore, no adverse impacts on area recreational resources would result from the revision of the Fall River Lake MP or SMP.

## **3.13 AESTHETIC RESOURCES**

Fall River Lake is known for its rolling prairies and tree-dotted valleys, sheltered by limestone-capped ridges and abundant wildlife viewing opportunities; this makes it a popular destination for boating and camping. While Fall River Lake does not have a Visitor Center, the many trails can be used for interpretation, including nature walks and plant identification.

### **3.13.1 Alternative 1: No Action Alternative**

There would be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on visual resources as a result of implementing the No Action Alternative, as there would be no changes to the existing MP or SMP.

### **3.13.2 Alternative 2: Proposed Action**

Fall River Lake currently plays a pivotal role in availability of parks and recreation opportunities in Greenwood County. Even though the amount of acreage available for HDR and LDR would decrease with implementation of the 2017 MP, these land reclassifications reflect changes in land management and land uses that have occurred since 1977 at Fall River Lake. The conversion of these lands would have no effect on current or projected public use or visual aesthetics. Furthermore, the increase in the acreage of land classified as ESA and WM would protect lands that are aesthetically pleasing at Fall River Lake and limit future development. Therefore, no adverse impacts on visual resources would result from implementation of the 2017 MP or SMP.

### **3.14 HEALTH AND SAFETY**

As mentioned earlier in this document, Fall River Lake's authorized purposes include flood risk management, water quality, water supply and fish and wildlife conservation. Compatible uses incorporated in project operation management plans include conservation and fish and wildlife habitat management components. The USACE, with some assistance from the KDWPT, has established public outreach programs to educate the public on water safety and conservation of natural resources. In addition to the water safety outreach programs, the project has established recreation management practices to improve public safety. These include safe boating and swimming regulations, safe hunting regulations, and speed limit and pedestrian signs for park roads. Fall River Lake also has solid waste management plans in place for camping and day use areas and a water sampling program for designated swimming beaches. Fall River Lake has USACE personnel in place to enforce these policies, rules, and regulations during normal park hours.

#### **3.14.1 Alternative 1: No Action Alternative**

Under the No Action Alternative, the 2017 MP and SMP would not be revised. No significant adverse impacts on human health or safety would be anticipated.

#### **3.14.2 Alternative 2: Proposed Action**

Under the Proposed Action, the proposed revisions to the Fall River Lake MP would be compatible with project safety management plans. The revised classifications of Restricted water surface and Designated No-Wake areas would improve boating safety near key recreational water access areas such as boat ramps. The Project would continue to have reporting guidelines in place should water quality become a threat to public health. Existing regulations and safety programs throughout the Fall River Lake Project area would continue to be enforced to ensure public safety. There would be no short- or long-term, minor, moderate, or major, adverse impacts on public health and safety as a result of implementing the Proposed Action.

### **3.15 SUMMARY OF CONSEQUENCES AND BENEFITS**

Table 3-4 provides a tabular summary of the consequences and benefits for the No Action and Proposed Action alternatives for each of the 13 assessed resource categories.

**Table 3-4. Summary of Consequences and Benefits**

Resource	Change Resulting from Revised MP	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Land Use	No effect on private lands. Emphasis is on protection of wildlife and environmental values on USACE land and maintaining current level of developed recreation facilities and permitted private docks.	Fails to recognize recreation trends and regional natural resource priorities.	Recognizes recreation trends and regional natural resource priorities identified by USACE, KDWPT and public comment.	Land classification changes and new resource objectives fully recognize passive use recreation trends and regional environmental values such as protection of Cross Timbers forests.
Water Resources Including Groundwater, Wetlands, and Water Quality	Small change to recognize value of wetlands.	Fails to recognize the water quality benefits of good land stewardship and need to protect wetlands.	Promotes restoration and protection of wetlands and good land stewardship.	Specific resource objective promotes restoration and protection of wetlands.
Climate	Minor change to recognize need for sustainable, energy efficient design.	Fails to promote sustainable, energy efficient design.	Promotes land management practices and design standards that promote sustainability.	Specific resource objectives promote climate change resiliency. LEED standards for green design, construction, and operation activities will be employed to the extent practicable.
Climate Change and Greenhouse Gases	Same as for Climate	Same as for Climate	Same as for Climate	Same as for Climate
Air Quality	No change	No effect	No effect	No added benefit
Topography, Geology and Soils	Minor change to place emphasis on good stewardship of land and water resources.	Fails to specifically recognize known and potential soil erosion problems.	Encourages good stewardship that would reduce existing and potential erosion.	Specific resource objectives call for stopping erosion from overuse and land disturbing activities.

Resource	Change Resulting from Revised MP	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Natural Resources	Moderate benefits through land reclassification and resource objectives.	Fails to recognize ESAs, and regional priorities calling for protection of wildlife habitat.	Gives full recognition of sensitive resources and regional trends and priorities related to natural resources.	Reclassification of lands included 200 acres of ESA and an increase in lands emphasizing wildlife management. In the SMP, limits to vegetation modification by adjacent landowners are specified.
Threatened and Endangered Species	Minor change to recognize both federal and state-listed species.	Fails to recognize current federal and state-listed species.	Fully recognizes federal and state-listed species as well as Species in Need of Conservation listed by Kansas	The MP sets forth the most recent listing of federal and state-listed species.
Invasive Species	Minor change to recognize several recent and potentially aggressive invasive species.	Fails to recognize current invasive species and associated problems.	Fully recognizes current species and the need to be vigilant as new species may occur.	Specific resource objectives specify that invasive species shall be monitored and controlled as needed.
Cultural Resources	Minor change to recognize current status of cultural resources.	Included cursory information about cultural resources that is inadequate for future management and protection.	Recognizes the presence of cultural resources and places emphasis on protection and management.	Reclassification of lands included 200 acres of ESA and specific resource objectives were included for protection of cultural resources.
Socioeconomics and Environmental Justice	No change	No effect	No effect	No added benefit
Health and Safety	Minor change to promote public safety awareness.	Fails to emphasize public safety programs.	Recognizes the need for public safety programs.	Includes specific management objectives to increase water safety outreach efforts. Also, classifies 83 acres of water surface as restricted and designated no-wake for public safety purposes.

Resource	Change Resulting from Revised MP	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Recreation	Moderate benefits to outdoor recreation programs.	Fails to recognize current outdoor recreation trends.	Fully recognizes current outdoor recreation trends and places special emphasis on trails.	Specific management objectives focused on outdoor recreation opportunities and trends are included.

**SECTION 4: CUMULATIVE IMPACTS**

The most severe environmental degradation may not result from the direct effects of any particular action, but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 (CEQ Regulations), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

By Memorandum dated June 24, 2005, from the Chairman of the CEQ to the Heads of Federal Agencies, entitled “Guidance on the Consideration of Past Actions in Cumulative Effects Analysis”, CEQ made clear its interpretation that “...generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions...” and that the “...CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions.” This cumulative impacts analysis summarizes expected environmental impacts from the combined impacts of past, current, and reasonably foreseeable future activities affecting any part of the human or natural environments impacted by the Proposed Action.

**4.1 PAST IMPACTS WITHIN THE ZONE OF INTEREST**

Fall River Lake was originally authorized by the Flood Control Acts of 1941 and 1944. Construction of the Fall River Lake Dam began in 1946 and was completed in 1949. The total project area at Fall River Lake encompasses 15,283 acres and perpetual Flowage Easements were acquired on an additional nine acres

**4.2 CURRENT AND REASONABLY FORESEEABLE PROJECTS WITHIN AND NEAR THE ZONE OF INTEREST**

Future management of the nine acres of Flowage Easement Lands at Fall River Lake includes routine inspection of these areas to ensure that the Government’s rights specified in the easement deeds are protected. In almost all cases, the Government acquired the right to prevent placement of fill material or habitable structures on the easement area. Placement of any structure that may interfere with the USACE flood risk management and water conservation missions may also be prohibited.

Currently, the USACE manages its public-use areas at Fall River Lake. The USACE does not look to develop additional public-use areas, but improve on the infrastructure, amenities, and facilities within the public-use areas.

### **4.3 ANALYSIS OF CUMULATIVE IMPACTS**

Impacts on each resource were analyzed according to how other actions and projects within the zone of interest might be affected by the No Action Alternative and Proposed Action. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts will be classified as negligible, minor, moderate, or major. These intensity thresholds were previously defined in Section 3.0. Minimal growth and development are expected to continue in the vicinity of Fall River Lake and cumulative adverse impacts on resources would not be expected when added to the impacts of activities associated with the Proposed Action or No Action Alternative. A summary of the anticipated cumulative impacts on each resource is presented below.

#### **4.3.1 Land Use**

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Land use around Fall River Lake has experienced little change in the past several years. Under the No Action Alternative, land use would not change. Although the Proposed Action would result in the reclassification of project lands, the reclassifications were developed to help fulfill regional goals associated with good stewardship of land resources that would allow for continued use of project lands. Therefore, cumulative impacts on land use within the area surrounding Fall River Lake, when combined with past and proposed actions in the region, are anticipated to be negligible.

#### **4.3.2 Water Resources**

A major impact would occur if any action is inconsistent with adopted surface water classifications or water use plans, or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Fall River Lake was developed for flood risk management, water quality, water supply, and fish and wildlife purposes. The reclassifications and resource objectives required to revise the Fall River Lake MP and SMP are compatible with water use plans and surface water classification; further, they were developed to help fulfill regional goals associated with good stewardship of water resources that would allow for continued use of water resources associated with Fall River Lake. Therefore, cumulative impacts on water resources within the area surrounding Fall River Lake, when combined with past and proposed actions in the region, are anticipated to be minor.

#### **4.3.3 Climate**

The Proposed Action would neither affect nor be affected by the climate. Therefore, implementation of the revised land use classifications in the 2017 MP and the revision to the SMP, when combined with other existing and proposed projects in the region, would not result in cumulative impacts on the climate.

#### **4.3.4 Climate Change and GHG**

Under the Proposed Action, current Fall River Lake project management plans and monitoring programs would not be changed. In the event that GHG emission issues become significant enough to impact the current operations at Fall River Lake, the 2017 MP and all associated documents would be reviewed and revised as necessary. Therefore, implementation of the 2017 MP and SMP, when combined with other existing and proposed projects in the region, would result in negligible cumulative impacts on climate change or GHG.

#### **4.3.5 Air Quality**

No major highway or roadway projects are scheduled near the zone of interest for Fall River Lake; therefore, limiting the amount of new emissions that could potentially affect air quality within the region. The Proposed Action would not adversely impact air quality within the area. Vehicle traffic along park and area roadways and routine daily activities in nearby communities contribute to current and future emission sources; however, due to the remote nature of the area, those impacts are negligible. Seasonal prescribed burning could occur on Fall River Lake and would have minor, negative impacts on air quality through elevated ground-level O<sub>3</sub> and particulate matter concentrations; however, these seasonal burns would be scheduled so that impacts are minimized. Cumulative impacts associated with implementation of the 2017 MP and SMP, when combined with other existing and proposed projects in the region, are anticipated to be negligible.

#### **4.3.6 Topography, Geology, and Soils**

A major impact would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. However, implementation of the Proposed Action would not contribute significantly to cumulative impacts on topography, geology, and soils within the area surrounding Fall River Lake, when combined with past and proposed actions in the region.

#### **4.3.7 Natural Resources**

By implementing the 2017 MP, the required reclassifications, resource objectives, and resource plan would allow land management and land uses to be compatible with the goals of good stewardship of natural resources. The Proposed Action would allow project lands to continue supporting USFWS and KDWPT missions associated with wildlife conservation and implementation of operational practices that would protect and enhance wildlife and fishery populations and habitat. In addition, the Proposed Action would be compatible with conservation principles and measures to protect migratory birds as mandated by EO 13186. Long-term, beneficial impacts on natural resources could occur as a result of implementing the reclassifications outlined in the 2017 MP. Therefore, implementation of the 2017 MP and SMP, when combined with other existing and proposed projects in the region, would result in minor to moderate beneficial cumulative impacts on natural resources in the Fall River Lake area.

#### **4.3.8 Threatened and Endangered Species**

A major impact on protected species would occur if any action resulted in a jeopardy opinion for any endangered, threatened, or rare species. Under the Proposed Action, the USACE would continue cooperative management plans with USFWS and KDWP to preserve, enhance, and protect wildlife habitat resources. To further management opportunities and beneficially impact habitat diversity, the reclassifications, resources objectives, and resource plan proposed in the 2017 MP and SMP include 200 acres as ESA and 11,007 acres as MRML- WM lands. Cumulative impacts would be the same as described in Section 4.3.7.

#### **4.3.9 Invasive Species**

The Proposed Action would have beneficial impacts on native species as a result of continued efforts to manage invasive species. Therefore, implementation of the 2017 MP and SMP, when combined with other existing and proposed projects in the region, would not result in adverse cumulative impacts on native species as a result of invasive species control efforts. In fact, beneficial cumulative impacts would occur on native species through implementation of the 2017 MP and other programs within the region supported by agencies such as KDWP and USFWS.

#### **4.3.10 Cultural, Historical, and Archaeological Resources**

The Proposed Action would not affect cultural resources or historic properties. Therefore, this action, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on cultural resources or historic properties.

#### **4.3.11 Socioeconomics and Environmental Justice**

The Proposed Action would not result in the displacement of persons (minority, low-income, children, or otherwise) as a result of implementing the reclassifications, resources objectives, and resource plan proposed in the 2017 MP and SMP. Therefore, the effects of the Proposed Action on environmental justice and the protection of children, when combined with other ongoing and proposed projects in the Fall River Lake area, would not be considered a major cumulative effect.

#### **4.3.12 Recreation**

Fall River Lake provides regionally significant outdoor recreation benefits including a variety of free recreation opportunities. Even though the amount of acreage available for High Density Recreation and Low Density Recreation would decrease as a result of implementing the reclassifications, resources objectives, and resource plan proposed in the 2017 MP, these changes reflect changes in land management and historic recreation use patterns that have occurred since 1977 at Fall River Lake. The conversion of these lands would have no effect on current or projected public use. Similarly, implementation of the 2017 SMP would have no effect on current or projected public use. Therefore, the Proposed Action, when combined with other existing and proposed projects in the region, would result in negligible beneficial cumulative impacts on area recreational resources.

#### **4.3.13 Aesthetic Resources**

No impacts on visual resources would occur as a result of implementing the reclassifications, resources objectives, and resource plan proposed in the 2017 MP and SMP. The Proposed Action, in conjunction with other projects in the region, would result in minor beneficial cumulative impacts on the visual resources in the Fall River Lake area.

#### **4.3.14 Health and Safety**

No health or safety risks would be created by the Proposed Action. The effects of implementing the 2017 MP and SMP, when combined with other ongoing and proposed projects in the Fall River Lake area, would not be considered a major cumulative effect.

### **SECTION 5: COMPLIANCE WITH ENVIRONMENTAL LAWS**

This EA has been prepared to satisfy the requirements of all applicable environmental laws and regulations, and has been prepared in accordance with the CEQ's implementing regulations for NEPA, 40 CFR Parts 1500 – 1508, and the USACE ER 200-2-2, *Environmental Quality: Procedures for Implementing NEPA*. The revisions included in the 2017 MP and SMP are consistent with the USACE's Environmental Operating Principles. The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each:

Fish and Wildlife Coordination Act of 1958, as amended – The USACE initiated public involvement and agency scoping activities to solicit input on the 2017 MP and SMP revision process, as well as in identifying reclassification proposals, and significant issues related to the Proposed Action. Information provided by USFWS and KDWPT on fish and wildlife resources has been utilized in the development of the 2017 MP and SMP (KDWPT 2015, KDWPT 2016).

Endangered Species Act of 1973, as amended – Current lists of threatened or endangered species were compiled for the revision of the 2017 MP and SMP. There would be no adverse impacts on threatened or endangered species resulting from the implementation of the 2017 MP and SMP. However, beneficial impacts, such as habitat protection, could occur as a result of the revisions included in the 2017 MP.

Executive Order 13186 (Migratory Bird Habitat Protection) – Sections 3a and 3e of EO 13186 direct Federal agencies to evaluate the impacts of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative impacts on migratory birds. The 2017 MP and SMP revision will not result in adverse impacts on migratory birds or their habitat. Beneficial impacts could occur through protection of habitat as a result of the 2017 MP revision.

Migratory Bird Treaty Act – The Migratory Bird Treaty Act of 1918 extends Federal protection to migratory bird species. The nonregulated “take” of migratory birds is prohibited under this act in a manner similar to the prohibition of “take” of threatened and endangered species under the Endangered Species Act. The timing of resource

management activities for the Proposed Action would be coordinated to avoid impacts on migratory and nesting birds.

Clean Water Act of 1977 – The Proposed Action is in compliance with all state and Federal CWA regulations and requirements and Fall River Lake is regularly monitored by the USACE and KDHE for water quality. A state water quality certification pursuant to Section 401 of the CWA is not required for the 2017 MP and SMP revisions. There will be no change in the existing management of the reservoir that would impact water quality.

National Historic Preservation Act (NHPA) of 1966, as amended – Compliance with the NHPA of 1966, as amended, requires identification of all properties in the project area listed in, or eligible for listing in, the NRHP. All previous surveys and site salvages were coordinated with the Kansas State Historic Preservation Officer. Known sites are mapped and avoided by maintenance activities. Areas that have not undergone cultural resources surveys or evaluations will need to do so prior to any earthmoving or other potentially impacting activities.

Clean Air Act of 1977 – The USEPA established nationwide air quality standards to protect public health and welfare. Existing operation and management of the reservoir is compliant with the Clean Air Act and will not change with implementation of the 2017 MP or SMP.

Farmland Protection Policy Act (FPPA) of 1980 and 1995 – The FPPA's purpose is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. While there is Prime Farmland on Fall River Lake Project lands based on the National Resource Conservation Service (NRCS) Web Soil Survey Map, implementation of the 2017 MP and SMP is not expected to impact Prime Farmland as no ground disturbing activities are being proposed outside of areas already impacted by high intensity recreation usage.

Executive Order 11990, Protection of Wetlands – EO 11990 requires Federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in executing Federal projects. The Proposed Action complies with EO 11990.

Executive Order 13690, Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input, which amends Executive Order 11988, Floodplain Management – This EO directs Federal agencies to evaluate the potential impacts of proposed actions in floodplains. The operation and management of the existing project complies with EO 11988 and there would be no changes to that with implementation of the Proposed Action.

CEQ Memorandum dated August 11, 1980, Prime or Unique Farmlands – Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these

uses. The Proposed Action would not impact Prime Farmland present on Fall River Lake project lands as no ground disturbing activities are being proposed outside of areas already impacted by high intensity recreation usage.

Executive Order 12898, Environmental Justice – This EO directs Federal agencies to achieve environmental justice to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review. Agencies are required to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The revision of the 2017 MP and SMP will not result in a disproportionate adverse impact on minority or low-income population groups.

## **SECTION 6: IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES**

NEPA requires that Federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented” (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. The impacts for this project from the reclassification of land would not be considered an irreversible commitment because subsequent MP revisions could result in some lands being reclassified to a prior, similar land classification. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest). No irreversible or irretrievable impacts on Prime Farmland or Federally protected species and their habitat is anticipated from implementing revisions to the Fall River Lake MP or SMP.

## **SECTION 7: PUBLIC AND AGENCY COORDINATION**

In accordance with 40 CFR §§1501.7, 1503, and 1506.6, the USACE initiated public involvement and agency scoping activities to solicit input on the 2017 MP and SMP revision process, as well as in identifying reclassification proposals, and significant issues related to the Proposed Action. The USACE began its public involvement process with a public scoping meeting to provide an avenue for public and agency stakeholders to ask questions and provide comments. Two public meetings were held that included information from both Fall River and Toronto Lakes. The public scoping meetings were held on 15 November 2016 in Eureka, Kansas, and in Fredonia, Kansas on 17 November 2016. The USACE, Tulsa District, placed advertisements on the USACE webpage, social media, and print publications prior to the public scoping meeting.

Following the release of the Draft MP, Draft SMP, and Draft EA, with a Draft Finding of No Significant Impact (FONSI), a 30-day public review period was initiated to collect public comments. Appendix A includes the public news release and a sample letter sent to announce the initial public meetings. The EA was coordinated with agencies having legislative and administrative responsibilities for environmental

protection. Copies of agency correspondence will be included in Appendix A at the close of the comment period. Please refer to Chapter 7 of the 2017 MP for a summary of comments received at the public meetings.

#### **SECTION 8: REFERENCES**

- KDWPT. 2015. Kansas Statewide Comprehensive Outdoor Recreation Plan.
- KDWPT. 2016. Strategic Wildlife Action Plan.
- KDWPT. 2017. Fishing Report for Fall River and Toronto Lakes.
- USACE. 2013. EP 1130-2-550, Project Operations, Recreation Operations and Maintenance Guidance and Procedures. HQ, USACE.
- USACE. 2015. OMBIL Environmental Stewardship Module. USACE, Tulsa District, Oklahoma.
- USACE. 2015. OMBIL Recreation Module. USACE, Tulsa District, Oklahoma.
- US Bureau of the Census. 2015. American Fact Finder Website.
- USFWS. 2017. Information for Planning and Conservation (IPaC) website:  
<https://ecos.fws.gov/ipac/>

#### **SECTION 9: LIST OF PREPARERS**

Mandy McGuire – Regional Technical Specialist, Regional Planning and Environmental Center; 7 years of USACE experience.

Jennifer Morgan – Biologist, Regional Planning and Environmental Center; 2 years of USACE experience.

Jennifer Purcell – Regional Economist, Regional Planning and Environmental Center; 2 years of USACE experience

Holly C. Smith – Archaeologist, Natural Resources and Recreation Branch, Operations Division, Tulsa District; 7 years USACE experience





**DEPARTMENT OF THE ARMY**  
**UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT**  
**1645 SOUTH 101 EAST AVENUE**  
**TULSA OK 74128-4609**

Operations Division  
Fall River and Toronto Lakes

Example of Letter Sent to Stakeholders

Address

Dear Stakeholder:

The Tulsa District is initiating a review and revision of the master plan (MP) and the shoreline management plan (SMP) for Fall River Lake and Toronto Lakes, Kansas. The MP is the strategic land management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of a Corps lake project. It is a vital tool for efficient and cost-effective management, development, and use of project lands. The SMP is the document that helps to ensure the shoreline and adjacent public lands are managed and developed to protect the environment of our lakes.

Two informal public workshops for discussion of the MP, SMP, and associated National Environmental Policy Act process have been scheduled for 6:00 p.m. to 8:00 p.m. on **November 15, 2016**, at the Eureka Public Library, 606 N. Main, Eureka, KS and **November 17, 2016** at the Fredonia Public Library, 807 Jefferson, Fredonia, KS.

The workshops will be come-and-go format with no formal presentation. We invite and encourage you to attend one or both workshops anytime between listed times, visit the information tables, and discuss MP and SMP issues with our staff. Comment forms will be provided at the workshop or you are welcome to submit comments in any form throughout the MP revision process.

Thank you for your interest in Fall River and Toronto Lakes. We welcome your comments and participation at the public workshop and throughout the MP and SMP review process. Questions should be directed to me at 620-658-4445 or e-mail [Christopher.l.hammerschmidt@usace.army.mil](mailto:Christopher.l.hammerschmidt@usace.army.mil).

Sincerely,

Christopher Hammerschmidt  
Lake Manager



**U.S. ARMY CORPS OF ENGINEERS  
TULSA DISTRICT**

**BUILDING STRONG®**

Release No. 12  
For Immediate Release:  
October 31, 2016

Contact:  
Christopher Hammerschmidt, 620-658-4445  
Christopher.l.hammerschmidt@usace.army.mil

## **Public meetings announced for Fall River, Toronto Lake master plan**

**TULSA** – The Tulsa District, U.S. Army Corps of Engineers announces two public meetings to discuss the review and revision to the master plans and shoreline management plans for Fall River Lake and Toronto Lake, November 15 and November 17.

The first informal public meeting to discuss the master plan and shoreline management plan will take place at the Eureka Public Library, 606 N. Main St in Eureka, KS 67045, Nov. 15 from 6 p.m. to 8 p.m.

The second informal public meeting to discuss the master plan and shoreline management plan will take place at the Fredonia Public Library, 807 Jefferson St. in Fredonia, KS 66736, Nov. 17 from 6 p.m. to 8 p.m.

No formal presentation will take place but members of the public are invited to visit information tables and to ask questions and present any comments about the master plans and shoreline management plans to Corps of Engineers staff.

The master plan is the strategic land management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of a Corps lake project. It is a vital tool for efficient and cost-effective management, development, and use of project lands.

The shoreline management plan is the document that helps to ensure the shoreline and adjacent public lands are managed and developed to protect the environment and to achieve balance between permitted private uses and resource protection for general public use of Corps lakes.

Members of the public may submit comments by mail to Christopher Hammerschmidt, 2453 Lake Road, Fall River, KS 67047. Members of the public can also submit comments by e-mailing Christopher.l.hammerschmidt@usace.army.mil or by calling 620-658-4445.

KSR&C No. 17-08-116

August 22, 2017

Christopher Hammerschmidt  
US Army Corps of Engineers, Tulsa District  
1645 South 101 East Avenue  
Tulsa, OK 74128-4609

Via E-Mail

RE: Revised Master Plans, Fall River and Toronto Lakes  
U.S. Army Corps of Engineers  
Greenwood and Woodson Counties

Dear M. Hammerschmidt:

In accordance with 36 CFR 800, the Kansas State Historic Preservation Office has reviewed the revised Master Plans and Environmental Assessments for those actions as presented in your public notice dated August 8, 2017. We concur that adoption of the proposed Master Plans at the two lakes will have no adverse effect on cultural resources as defined in 36 CFR 800. We assume that ground-disturbing projects will continue to be submitted individually as they have in the past. Our office has no objection to adoption of the Revised Master Plans for Fall River and Toronto Lakes.

This information is provided at your request to assist you in identifying historic properties, as specified in 36 CFR 800 for Section 106 consultation procedures. If you have questions or need additional information regarding these comments, please contact Tim Weston at 785-272-8681 (ext. 214) or Lauren Jones at 785-272-8681 (ext. 225).

Sincerely,

Jennie Chinn, Executive Director and  
State Historic Preservation Officer



Patrick Zollner  
Deputy SHPO

**From:** [Hammerschmidt, Christopher L CIV USARMY CESWT \(US\)](#)  
**To:** [Nolen, Stephen L CIV USARMY CESWT \(US\)](#)  
**Subject:** FW: Fall river lake shoreline management plan  
**Date:** Tuesday, August 29, 2017 7:52:55 AM

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FYI. Another response.

-----Original Message-----

From: Chadic, Gary (CCI-Central Region) [<mailto:Gary.Chadic@cox.com>]  
Sent: Monday, August 28, 2017 10:15 AM  
To: Hammerschmidt, Christopher L CIV USARMY CESWT (US)  
<[Christopher.L.Hammerschmidt@usace.army.mil](mailto:Christopher.L.Hammerschmidt@usace.army.mil)>  
Subject: [EXTERNAL] Fall river lake shoreline management plan

Dear Sir,

This is a reply in regards to the information regarding the fall river lake shore management plan that was sent to us August 8, 2017.

We have not had time as a collective group to review the information that you sent to us.

Until we have had some ample amount of time to get together and meet and discuss we currently do not expect any of the changes regarding the fall river lake shore management plan.

If you have any questions regarding our response please feel free to reach out to me at 316-734-0313.

Thanks  
Gary Chadic

Sent from my iPhone

**APPENDIX C – FEDERAL AND STATE THREATENED AND  
ENDANGERED SPECIES LISTS**

TRUST RESOURCES REPORT – USFWS

STATE OF KANSAS -GREENWOOD COUNTY THREATENED AND  
ENDANGERED SPECIES LIST

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## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Kansas Ecological Services Field Office  
2609 Anderson Avenue  
Manhattan, KS 66502-2801  
Phone: (785) 539-3474 Fax: (785) 539-8567

In Reply Refer To:

July 24, 2017

Consultation Code: 06E21000-2017-SLI-0348

Event Code: 06E21000-2017-E-01268

Project Name: Fall River Lake, KS

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Kansas Ecological Services Field Office**

2609 Anderson Avenue

Manhattan, KS 66502-2801

(785) 539-3474

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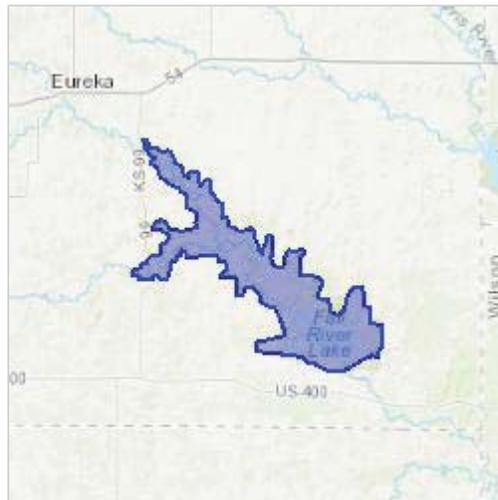
## Project Summary

Consultation Code: 06E21000-2017-SLI-0348  
Event Code: 06E21000-2017-E-01268  
Project Name: Fall River Lake, KS  
Project Type: LAND - MANAGEMENT PLANS  
Project Description: Master Plan/Shoreline Master Plan

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/37.713950235558855N96.1629598340043W>



Counties: Greenwood, KS

## Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

## Mammals

NAME	STATUS
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> ) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Fishes

NAME	STATUS
Topeka Shiner ( <i>Notropis topeka</i> (=tristis)) Population: Wherever found, except where listed as an experimental population There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4122">https://ecos.fws.gov/ecp/species/4122</a>	Endangered

## Clams

NAME	STATUS
Neosho Mucket ( <i>Lampsilis rafinesqueana</i> ) There is a <b>final critical habitat</b> designated for this species. Your location overlaps the designated critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3788">https://ecos.fws.gov/ecp/species/3788</a>	Endangered
Rabbitsfoot ( <i>Quadrula cylindrica cylindrica</i> ) There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5165">https://ecos.fws.gov/ecp/species/5165</a>	Threatened

## Critical habitats

There is 1 critical habitat wholly or partially within your project area.

NAME	STATUS
Neosho Mucket ( <i>Lampsilis rafinesqueana</i> )	Final designated

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[Print This Page](#)

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## Greenwood County



### Threatened and Endangered (T&E) Species

#### Critical

**OUACHITA KIDNEYSHELL MUSSEL** *Ptychobranchnus occidentalis*

State: Threatened Federal: N/A Critical Habitat: Yes

**WESTERN FANSHELL MUSSEL** *Cyprogenia aberti*

State: Endangered Federal: N/A Critical Habitat: Yes

**TOPEKA SHINER** *Notropis topeka*

State: Threatened Federal: Endangered Critical Habitat: Yes

**NEOSHO MUCKET MUSSEL** *Lampsilis rafinesqueana*

State: Endangered Federal: Endangered Critical Habitat: Yes

#### Non-Critical

**PLAINS MINNOW** *Hybognathus placitus*

State: Threatened Federal: N/A Critical Habitat: No

**WHOOPING CRANE** *Grus americana*

State: Endangered Federal: Endangered Critical Habitat: No

**BUTTERFLY MUSSEL** *Ellipsaria lineolata*

State: Threatened Federal: N/A Critical Habitat: No

**FLUTDSHELL MUSSEL** *Lasmigona costata*

State: Threatened Federal: N/A Critical Habitat: No

**LEAST TERN** *Sterna antillarum*

State: Endangered Federal: Endangered Critical Habitat: No

**PIPING PLOVER** *Charadrius melodus*

State: Threatened Federal: Threatened Critical Habitat: No

**SNOWY PLOVER** *Charadrius alexandrinus*

State: Threatened Federal: N/A Critical Habitat: No

**NORTHERN MAP TURTLE** *Graptemys geographica*

State: Threatened Federal: N/A Critical Habitat: No

**EASTERN SPOTTED SKUNK** *Spilogale putorius*

State: Threatened Federal: N/A Critical Habitat: No

**RABBITSFOOT MUSSEL** *Quadrula cylindrica*  
 State: Endangered Federal: Threatened Critical  
 Habitat: No

**AMERICAN BURYING BEETLE** *Nicrophorus americanus*  
 State: Endangered Federal: Endangered Critical  
 Habitat: No

### Species In Need of Conservation (SINC)

#### Critical

There are no SINC species with critical habitat in Greenwood county

#### Non-Critical

**Brindled Madtom** *Noturus miurus*  
 State: SINC Federal: N/A Critical Habitat: No

**Prairie Mole Cricket** *Gryllotalpa major*  
 State: SINC Federal: N/A Critical Habitat: No

**Spotted Sucker** *Minytrema melanops*  
 State: SINC Federal: N/A Critical Habitat: No

**Wartyback Mussel** *Quadrula nodulata*  
 State: SINC Federal: N/A Critical Habitat: No

**Western Hognose Snake** *Heterodon nasicus*  
 State: SINC Federal: N/A Critical Habitat: No

**Black Tern** *Chlidonias niger*  
 State: SINC Federal: N/A Critical Habitat: No

**Short-eared Owl** *Asio flammeus*  
 State: SINC Federal: N/A Critical Habitat: No

**Deertoe Mussel** *Truncilla truncata*  
 State: SINC Federal: N/A Critical Habitat: No

**Golden Eagle** *Aquila chrysaetos*  
 State: SINC Federal: N/A Critical Habitat: No

**Yellow Sandshell Mussel** *Lampsilis teres*  
 State: SINC Federal: N/A Critical Habitat: No

**Cardinal Shiner** *Luxilus cardinalis*  
 State: SINC Federal: N/A Critical Habitat: No

**Creeper Mussel** *Strophitus undulatus*  
 State: SINC Federal: N/A Critical Habitat: No

**Eastern Hognose Snake** *Heterodon platirhinos*  
 State: SINC Federal: N/A Critical Habitat: No

**Fawnsfoot Mussel** *Truncilla donaciformis*  
 State: SINC Federal: N/A Critical Habitat: No

**Bobolink** *Dolichonyx oryzivorus*  
 State: SINC Federal: N/A Critical Habitat: No

**Henslow's Sparrow** *Ammodramus henslowii*  
 State: SINC Federal: N/A Critical Habitat: No

**Crawfish Frog** *Lithobates areolata*  
 State: SINC Federal: N/A Critical Habitat: No

**Fatmucket Mussel** *Lampsilis siliquoidea*  
 State: SINC Federal: N/A Critical Habitat: No

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**APPENDIX D – FALL RIVER RESERVOIR – 9 ELEMENT  
WATERSHED PLAN SUMMARY**

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# Fall River Reservoir – 9 Element Watershed Plan Summary

## Impairments to be addressed:

### Directly impacted

Fall River Reservoir – High Priority TMDL for Eutrophication/ Dissolved Oxygen/ Siltation

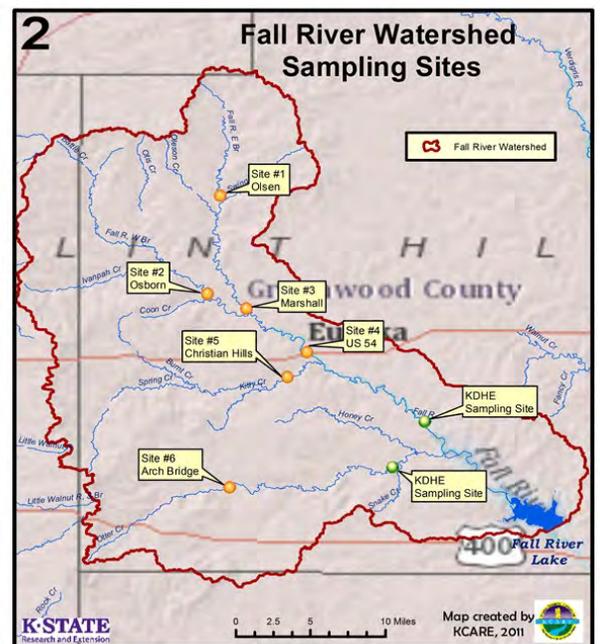
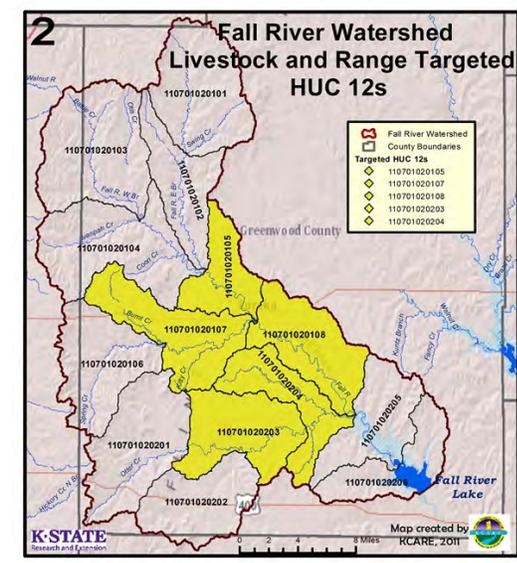
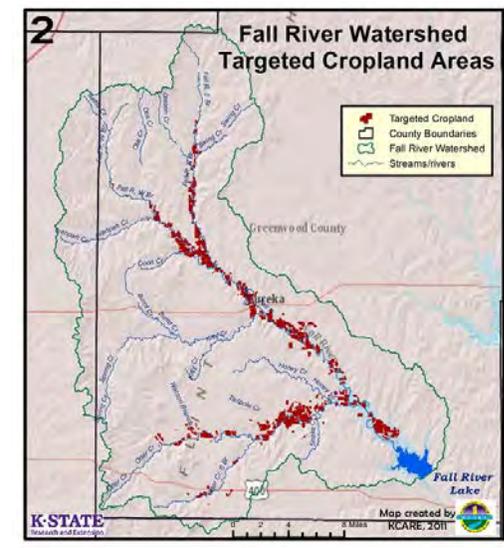
### Positively affected

Fall River – High Priority TMDL for Fecal coliform bacteria

## Prioritized Critical Areas for Targeting BMPs

## Targeting considerations:

- Rangeland targeted areas were chosen by identifying using 2008 and 2010 NAIP aerial imagery.
- Livestock targeted areas were chosen by talking to local SLT members and results from the water quality sampling completed in the watershed.
- Cropland BMP Targeted areas were identified as any cropland field contiguous fields, bordering either branch of Fall River or Otter Creek that is contained in the watershed.
- Streambank targeted areas were determined based on a 2006 watershed assessment prepared by the Kansas Alliance for wetland and Stream and a 2010 Fall River watershed assessment prepared by the Kansas Water Office.



# Fall River Reservoir – 9 Element Watershed Plan Summary



## Best Management Practices and Load Reduction Goals

Best Management Practices (BMPs) to address phosphorus and sediment in the watershed were chosen by the SLT based on local acceptance/adoptability and the amount of load reduction gained per dollar spent.

### Phosphorus/Sediment Reducing Cropland BMPs

- Terraces & Waterways
- Riparian Buffers
- Vegetative Buffers
- Water Retention Structures
- Wetlands
- No-Till

### Phosphorus/Sediment Reducing Livestock BMPs

- Relocate Feeding Pens
- Relocate Pasture Feeding Site
- Off Stream Watering System
- Grazing Mgt plans

### Phosphorus/Sediment Reducing Rangeland BMPs

- Repair Grazing Land Gullies
- Brine Site Repair

### Sediment Reduction:

Required load reduction for the Fall River high priority siltation TMDL.



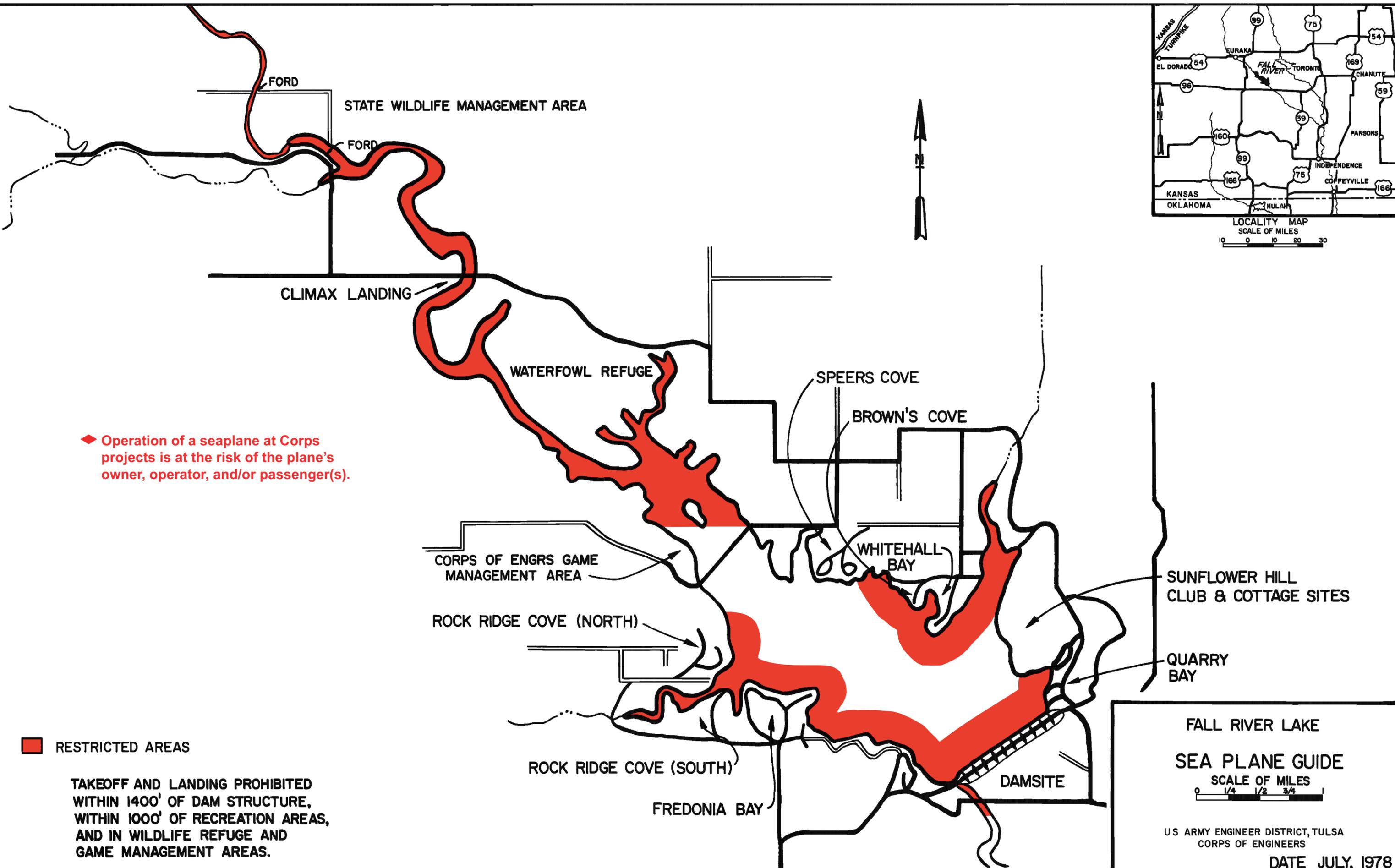
### Phosphorus Reduction:

Required load reduction for the Fall River high priority dissolved oxygen and eutrophication TMDL.



## APPENDIX E – SEAPLANE MAP

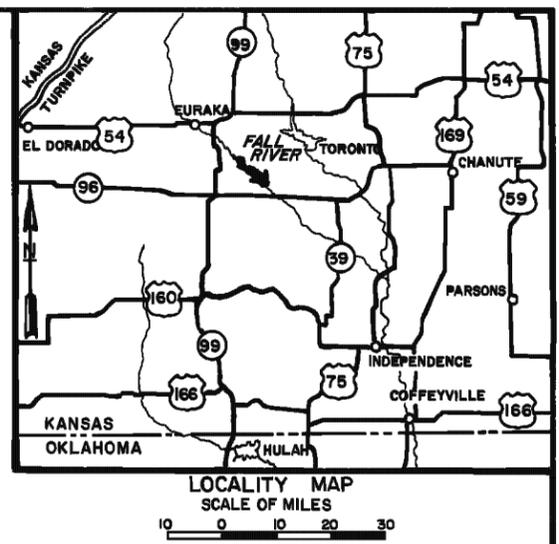
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◆ Operation of a seaplane at Corps projects is at the risk of the plane's owner, operator, and/or passenger(s).

■ RESTRICTED AREAS

TAKEOFF AND LANDING PROHIBITED WITHIN 1400' OF DAM STRUCTURE, WITHIN 1000' OF RECREATION AREAS, AND IN WILDLIFE REFUGE AND GAME MANAGEMENT AREAS.



FALL RIVER LAKE  
SEA PLANE GUIDE

SCALE OF MILES  
0 1/4 1/2 3/4 1

U.S. ARMY ENGINEER DISTRICT, TULSA  
CORPS OF ENGINEERS

DATE JULY, 1978

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## APPENDIX F – ACRONYMS

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ADA	Americans with Disabilities Act
ARPA	Archaeological Resources Protection Act of 1979
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
DC	District Commander
DM	Design Memorandum
DQC	District Quality Control
EA	Environmental Assessment
EC	Engineer Circular
EFA	Ecological Focus Area
EM	Engineering Manual
EO	Executive Order
EP	Engineering Pamphlet
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
ESA	Environmentally Sensitive Area
FONSI	Finding of No Significant Impact
FT	Feet
GIS	Geographical Information Systems
HDR	High Density Recreation
HQ	USACE Headquarters
IPaC	USFWS Information for Planning and Conservation

KDHE	Kansas Department of Health and Environment
KDWPT	Kansas Department of Wildlife, Parks, and Tourism
KS	Kansas
KSHS	Kansas State Historical Society
LDR	Low Density Recreation
MGD	Million Gallons per Day
MP	Master Plan or Master Planning
MRML	Multiple Resource Management Lands
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act, 1970
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NRCS	Natural Resource Conservation Service
NVCS	National Vegetation Classification System
O&M	Operations and Maintenance
OMB	Office of Management and Budget
OMBIL	Operations and Maintenance Business Information Link
OMP	Operations Management Plan for a specific lake Project
OPM	Operations Project Manager
PDT	Project Delivery Team
PM	Project Management or Project Manager

PMBP	Project Management Business Processes
PMP	Project Management Plan
PO	Project Operations
SINC	Species in Need of Conservation
SHPO	State Historical Preservation Office
SCORP	State Comprehensive Outdoor Recreation Plan
SWAP	Strategic Wildlife Action Plan
TP	Total Phosphorous
TSS	Total Suspended Solids
Ug/L	Micrograms per Liter
US	United States
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
USFWS	U. S. Fish and Wildlife Service
VMA	Vegetative Management Area
WMA	Wildlife Management Area
WRAPS	Water Restoration and Protection Strategy
WRDA	Water Resources Development Act