MARION RESERVOIR
DRAFT
MASTER PLAN

COTTONWOOD RIVER BASIN

MARION COUNTY, KANSAS

APRIL 2021

US Army Corps
of Engineers
Tulsa District

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EXECUTIVE SUMMARY

Marion Reservoir Draft Master Plan

U.S. Army Corps of Engineers

Prepared by Tulsa District and the Regional Planning and Environmental Center

April 2021

PURPOSE

The revision of the Marion Reservoir 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 Marion Reservoir over the next 25 years. The 1981 Supplement Number 1 (Land Use) Master Plan for Marion Reservoir was an update to the original 1977 Master Plan and has served well past its intended 25-year planning horizon. In addition to the primary mission of flood risk management, water supply, water quality, recreation, and conservation USACE also carries out the inherent mission of environmental stewardship on the Federal lands and water surface at Marion Reservoir.

The 1981 Master Plan update classified a total of 60 acres for Project Operations, 1,620 acres for High Density Recreation, 847 acres for Low Density Recreation, 3,522 acres for Wildlife Management and 6,200 acres of surface water at the conservation pool for a total of 12,249 acres in fee lands. Due to land changes from erosion and sedimentation as well as more precise measurement technology, the total fee lands has increased by 27 acres. Currently, Marion Reservoir encompasses 5,688 acres of fee land and 6,588 acres of surface water, protecting lands downstream from the dam through flood mitigation on the Cottonwood River, as well as conserving habitat for fish and wildlife conservation and public recreation. This Plan with its supporting documentation, provides an inventory, analysis, goals, objectives, and recommendations for USACE lands and waters at Marion Reservoir, 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 as Appendix B.

The USACE is dedicated to serving the public interests through collaborative development of land use classifications intended to manage for cultural, natural, and recreational resources of Marion Reservoir. This Plan also establishes a classification of surface waters related to outdoor recreation. 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 Marion Reservoir to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in a region while supporting the primary missions of the Reservoir. The following milestones provide a brief look at the overall process of revising the Marion Reservoir Master Plan.

The USACE began the revision process for the Marion Reservoir Master Plan in the Fall of 2019. The objectives for the master plan revision are to (1) revised existing land classifications and develop natural resource management objectives 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.

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, 12,276 total acres were reclassified, with fee and conservation pool acreage changes due in part to sedimentation deposition 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.

ES TABLE 1 - Prior and Current Land and Water Surface Classifications and Acreages

Prior Land Classifications (from 1981)	Acres	New Land Classifications (2021)	Acres	Net Difference
Project Operations	60	Project Operations (PO)	111	51
Recreation – Intensive Use	1,620	High Density Recreation (HDR)	582	(1,050)
		Environmentally Sensitive Areas (ESA)	0	0
Recreation – Low Density	847	Multiple Resource Management – Low Density Recreation (LDR)	354	(481)
Wildlife Management	3,522	Multiple Resource Management – Wildlife Management (WM)	4,641	1,119
		Multiple Resource Management – Vegetation Management (VM)	0	0

		Future/Inactive Recreation Areas	0	0
TOTAL	**6,049**		**5,688**	**(361)**
Prior Water Surface Classifications (from 1981)	Acres	New Water Surface Classifications (2021)	Acres	Net Difference
Water Surface	6,200	Open Recreation	6,308	108
		Designated No-Wake	44	44
		Fish and Wildlife Sanctuary	193	193
		Restricted	43	43
TOTAL	**6,200**		**6,588**	**388**
TOTAL FEE	**12,249**		**12,276**	**27**

* 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 Marion Reservoir. 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 Marion Reservoir. 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 Marion Reservoir 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.

The EA evaluated two alternatives as follows: 1) No Action Alternative, and 2) Proposed Action. The EA analyzed the potential impact 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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1 INTRODUCTION

1.1 GENERAL OVERVIEW

Marion Reservoir is a multipurpose water resources project constructed and operated by the U.S. Army Corps of Engineers (USACE), Tulsa District. The Reservoir and associated federal lands are in Marion County, Kansas (KS). Marion Dam is situated on the Cottonwood River, a tributary of the Grand (Neosho) River. The dam is about three miles northwest of the town of Marion, KS and 46 miles north-northeast of Wichita, KS. The USACE is the operating and regulatory agency for Marion Reservoir.

Council Grove Lake, Marion Reservoir, and John Redmond Reservoir are integral units in a three-unit system. This system is a part of the multi-purpose plan for flood control, generation of hydroelectric power, navigation, and allied water uses on the Arkansas River and tributaries in Kansas, Arkansas, and Oklahoma. Reservoir and dam construction began in March 1964 and final water storage began February 1968. The conservation pool was filled in May 1969.

Four public use areas have been developed at Marion Reservoir. They are: Cottonwood Point, Hillsboro Cove, Marion Cove, and French Creek Cove. The Kansas Department of Wildlife, Parks, and Tourism is operating approximately 4,641 acres of the project lands located in the upper reaches of the reservoir for wildlife management and public hunting.

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 the federal land and water surface associated with Marion Reservoir. The Plan does not address the flood risk management, or water supply purposes of Marion Reservoir (these missions are described in the USACE Water Control Manual for Marion Reservoir which is not included in this Master Plan). The Marion Reservoir Master Plan was last updated in 1981, which is well past the intended planning horizon.

1.2 PROJECT AUTHORIZATION

Marion Lake was authorized by the Flood Control Act of 17 May 1950 (Public Law 81-516a, 81st U.S. Congress, 2nd Session, Section 204) substantially in accordance with the recommendations by the Chief of Engineers in House Document No. 442, 80th U.S. Congress, 2nd Session. Recreation facilities were authorized by the Flood Control Act of 22 December 1944, Section 4. Marion Lake was authorized for flood risk management, water supply, water quality, fish and wildlife conservation, and recreation.

The project name was officially changed from Marion Lake to Marion Reservoir by Public Law 101-253 (S1016) to prevent confusion with the Marion County Lake.

1.3 PROJECT PURPOSE

Marion Reservoir is a multi-purpose water resource project constructed and operated by USACE. Marion Reservoir has the following primary purposes:

- Flood Risk Management
- Water Supply
- Water Quality
- Fish and Wildlife Conservation
- 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 Marion Reservoir 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 Reservoir, as well as those anticipated to occur within the planning period of 2021 to 2046 (i.e., 25 years).

The Marion Reservoir 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 Marion Reservoir project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources. The Plan makes provision for outdoor recreation facilities and opportunities on federal land associated with Marion Reservoir 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 Marion Reservoir resources and facilities, and that goals and objectives are implemented 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 Marion Reservoir'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 Marion Reservoir. Not addressed in this plan are details of design, management and administration, and implementation, but they are addressed in the Marion Reservoir 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 Master Plan and related 1981 Supplemental 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, and growing demand for recreational access and protection of natural resources are all factors affecting Marion Reservoir and the region in general. In response to these continually evolving trends, USACE determined that a full revision of the Marion Reservoir Master Plan is required as set forth in this Plan.

1.5 BRIEF WATERSHED AND PROJECT DESCRIPTION

Located in the Neosho Basin of the Arkansas River Watershed, Marion Reservoir is located on the Cottonwood River, at river mile 126.7, three miles northwest of Marion in Marion County, Kansas, and 46 miles north-northwest of Wichita, KS. This portion of the basin is characterized by flat-floored stream and river valleys with margins of rolling uplands. Trees are generally found only along the tributary stream channels and bordering the main river channel. The valleys are devoted to tillable crops with petroleum production and cattle grazing prevalent in the uplands.

The Grand River, known as the Neosho River above the mouth of Spring River (mile 131), is approximately 478 miles long and has its source in the Flint Hills region of east central Kansas. From its source, the stream flows in a southeasterly direction to the Kansas-Oklahoma State line near Commerce, Oklahoma. The Neosho River above the Kansas-Oklahoma State line is 314 miles long and drains an area of 6,220 square miles.

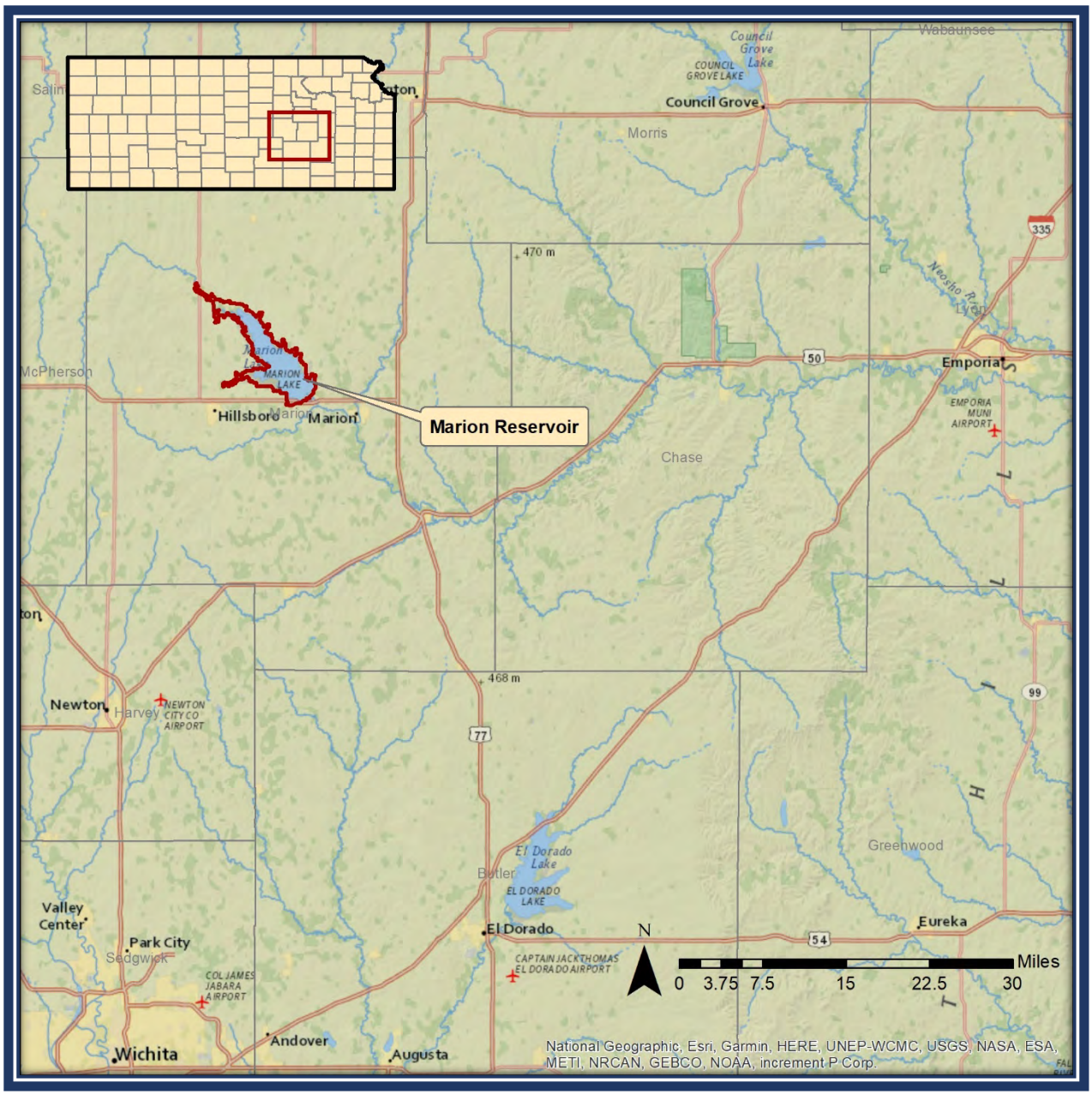

Figure 1-1 Marion Reservoir Vicinity Map

The structure of the dam consists of a rolled impervious and random earth-filled embankment protected by 18 inches of placed riprap on nine inches of crushed rock backing material on the upstream slope. The downstream slope is seeded grass. The overall length is 8,403.23 feet consisting of a 6,000 feet long embankment section and 500-foot-long gate-controlled, concrete-gravity, ogee weir spillway section. A 24-foot-wide public roadway crosses the embankment and spillway.

The spillway has a gross width of 136 feet. The spillway is located near the center and connects to the embankment with two concrete non-overflow sections 142 feet long. Three 40-foot x 40-foot tainter gates control flows through the spillway. Maximum discharge is 132,000 cubic feet per second (cfs). Two 24-inch diameter pipes are

located through the left non-overflow section; one for low flow and the other for municipal and industrial water supply connections. Maximum channel capacity of the stream at the dam site is 4,000 cubic feet per second (cfs).

The release of record occurred in June and July 1951 (pre-construction) with a peak discharge of 54,000 cfs and a volume of 78,950 acre-feet(ac-ft), which is equivalent to 7.40 inches of runoff from the drainage area above the dam site.

Table 1-1 Marion Reservoir Construction Activities

Activity	Date
Construction Began	24 March 1964
Date of Diversion	4 October 1967
Final Water Storage Began	26 February 1968
Conservation Pool Filled	25 May 1969

1.6 DESCRIPTION OF RESERVOIR

Marion Reservoir has a conservation pool covering 6,386 acres (elevation 1,350.5 feet National Geodetic Vertical Datum [NGVD]) and inundates a total of 9,378 acres at flood control pool elevation 1,358.5 feet NGVD (Table 1-2) as calculated using Geographic Information System (GIS) technology. The reservoir has approximately 69 miles of shoreline at the top of the conservation pool. The shoreline is composed of gentle slopes made up of beaches, cottonwood-willow, and in more protected locations, cattail marsh, native grasses, and cropland on occasion.

The flood control pool ranges between elevation 1,350.5 – 1,358.5 feet NGVD and covers between 6,386 and 9,378 water surface acres. The conservation storage totals 80,658 acre-feet and includes 36% water quality allocation and 64% water supply allocation. The minimum storage pool totals 20 acre-feet at elevation 1,320.0 feet NGVD (Table 1-2).

1.7 PROJECT ACCESS

The project lies in the center of a large triangle formed by three interstate highways: I-35 to the east, I-35W to the west, and I-70 to the north. Access to the project areas from these interstate highways is available via U.S. Highway 56 from the south, U.S. 56 and U.S. 77 from the east, and Kansas State Highway 15 from the west. Direct access to the reservoir is furnished by a system of Marion County roads. At this time, no major roads are planned for this area.

Pedestrian access has been allowed to all areas that are not restricted for storage, operation or maintenance of the project. Ramps for wheelchairs are provided at the

administration building. All other convenience facilities are designed and constructed for universal access.

Portions of game management areas are open to public hunting. Numerous gravel and dirt county roads provide access to the areas. No hunting is permitted in developed recreational areas on the reservoir or in the vicinity of the dam and other project structures.

Marion Reservoir has 253 campsites located in four parks - Cottonwood Point, Hillsboro Cove, Marion Cove, and French Creek Cove. Access roads lead into the four park areas on the reservoir and to the spillway area below the dam.

Boat ramps are located around the reservoir at Cottonwood Point (2 ramps, 4 lanes), Hillsboro Cove, Marion Cove (2 lanes), French Creek, Durham Cove and Broken Bridge. Ramps at Durham Cove and Broken Bridge are primitive shallow ramps with Broken Bridge being a river access ramp. Developed ramps provide lights and courtesy docks. There are three designated swim beaches, Cottonwood Point Park, Hillsboro Cove, and Marion Cove Beach located on the north side of the dam near the project office.

The Willow Walk Nature Trail, located at Cottonwood Point, is one mile long.

Nationwide, USACE manages shoreline use of public property to provide maximum benefits to the public. There are no existing private facilities on Marion Reservoir. No future private facilities will be permitted in accordance with ER 1130-2-406, dated 31 October 1990.

1.8 PRIOR DESIGN MEMORANDA

Design Memoranda (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 Marion Lake, Cottonwood River, Kansas, Design Memorandum No. 3B, Master Plan dated November 1977 presents a program for development and management of the Marion Reservoir for recreation and other land and water uses. The following are DM's for Marion Reservoir:

- Design Memorandum No. 1, General Design Phase 1 – Plan Formulation, February 1974
- Design Memorandum No. 2, General Design, August 1964
    - Supplement #1 Fish & Wildlife Service Report, November 1964
    - Supplement #2 Boundary Line Monumentation, March 1966
- Design Memorandum No. 3b, Master Plan – Updated, Nov 1977
    - Supplement #3b, April 1981
- Design Memorandum No. 4-1, Real Estate for Dam Site, Access Road & Public Use Areas, September 1962
- Design Memorandum No. 4-2, Real Estate for Reservoir Area, May 1964

- Design Memorandum No. 4-3, Real Estate for Relocation of Marion County Roads, June 1964
- Design Memorandum No. 5, Right Abutment Access Road, July 1965
- Design Memorandum No. 6, Project Buildings, June 1964
    - Supplement #1 Addition of Overlook Structure, July 1966
- Design Memorandum No. 8, Spillway & Completion of Embankment, March 1964
- Design Memorandum No. 9, Relocation of Marion County Roads, April 1964 Supplement #1, November 1964
- Design Memorandum No. 10, Relocation of Kansas Power and Light Company Facilities- Revised, April 1964
- Design Memorandum No. 12, Relocation of Flint Hills Rural Electric Cooperative Assn. Inc. Facilities, April 1964
- Design Memorandum No. 15, Relocation of Southwestern Bell Telephone Company Facilities, March 1964
- Design Memorandum No. 16, Construction Materials –Concrete Aggregates, December 1963
- Design Memorandum No. 17, Reservoir Clearing, October 1964
- Design Memorandum No. 18, Relocations of United Telephone Company Facilities, May 1964
- Design Memorandum No. 19, Relocation of Reno Telephone Association, Inc. Facilities, October 1964
    - Supplement #1, September 1966
- Design Memorandum No. 20, Sedimentation & Degradation Ranges, January 1965

1.9 PERTINENT PROJECT INFORMATION

Pertinent information regarding operational pool elevations and existing reservoir storage capacity at Marion Reservoir is provided in Table 1-2. The table is based on a 2008 sedimentation survey.

Table 1-2 Marion Reservoir Pertinent Data

Feature	Elevation (feet NGVD)	Area (acres)	Capacity (Acre-feet)	Equivalent Runoff (inches) [1]
Top of Dam	1368.0	-	-	-
Maximum Pool	1362.8	11,264	187,006	17.53
Top of Surcharge	1360.0	10,010	157,210	14.74
Top of Gates and	1358.5	9,378	142,725	13.38

Feature	Elevation (feet NGVD)	Area (acres)	Capacity (Acre-feet)	Equivalent Runoff (inches) (1)
Flood Control Storage	1350.5 – 1358.5	-	62,057	5.82
Top of Conservation	1350.5	6,386	80,669	7.56
Conservation Storage	1320.0 – 1350.5	-	80,658 (2)	7.56
Top of Minimum Pool	1320.0	20	11	-
Crest of Spillway Weir	1318.5	-	-	-

(1) Drainage area is 200 square miles.
(2) Includes 36% water quality allocation and 64% water supply allocation. Yield is 8.1 mgd based on 44,730 acre-feet of storage after sedimentation.

Current acreages for the various land classifications at Marion Reservoir are shown in Table 1-3. These land classifications are standard throughout USACE and are set forth in EP 1130-2-550 dated 15 November 1996, as amended. Acreages have been revised from the previous Master Plan, as amended in 1981, to reflect current and projected land use and resource management objectives. These acreages were calculated using Geographic Information Systems (GIS).

Table 1-3 Acreage by Land Classification

Classification	Acres
Project Operations	111
High Density Recreation	582
Environmental Sensitive Areas	0
Multiple Resource Managed Lands:	
Low Density Recreation	354
Wildlife Management	4,641
Vegetative Management	0
Future/Inactive Recreation Areas	0
Water Surface:	
Restricted	43
Designated No-wake	44
Fish and Wildlife Sanctuary	193
Open Recreation	6,308
Total Acreage in Fee	**12,276**

Note: Acreages are approximate and are based on GIS data. Totals vary depending on changes in lake levels, sedimentation, and shoreline erosion.

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 Level I, and 52 Level II regions, while Level III ecoregions represent a subdivision of those into 104 unique regions and Level IV a finer sub-classification of those.

Marion Reservoir lies at the western edge of the Flint Hills ecoregion (Level IV). The Flint Hills area is characterized by tall grasslands and is the largest remaining intact tallgrass prairie in the Great Plains. 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 (NPS) is located in the Flint Hills Ecoregion approximately 30 miles east of Marion Reservoir.

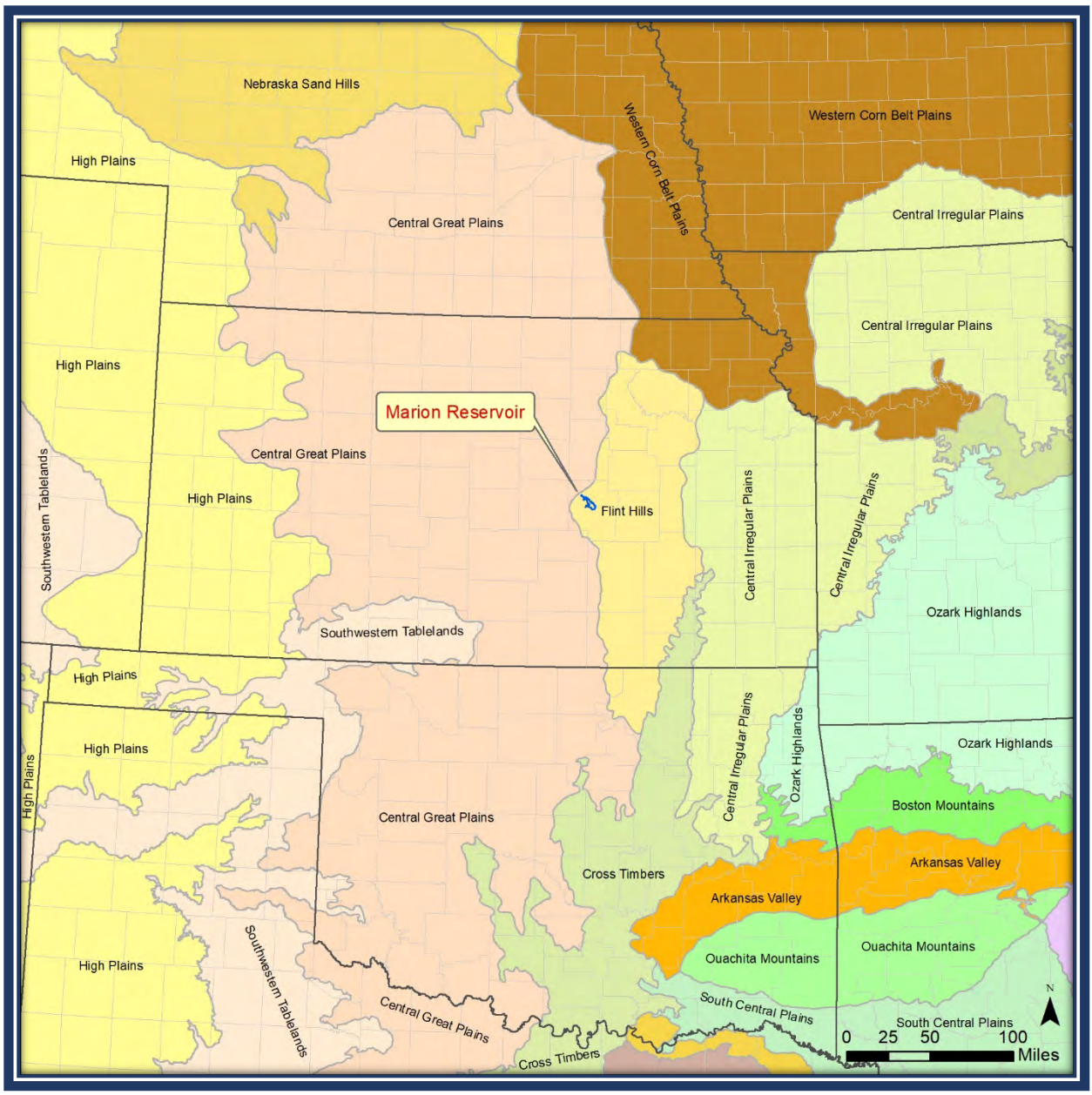

Figure 2-1 Ecoregions of Marion Reservoir (Source: EPA)

2.1.2 Climate

The climate of the Neosho River watershed is characterized by moderate winters and comparatively long summers with relatively high temperatures. Summer rains generally occur as thunderstorms with very intense rainfall of short duration and limited areal coverage. Winter rains are generally of low intensity but cover a large area and are of considerably longer duration. The Gulf of Mexico is the source of much of the precipitation that falls on the basin.

Most of the flood-producing storms over the watershed above Marion Reservoir are from 3 to 5 days in duration and occur in the spring and the fall months. The winter months produce little precipitation. Maximum rainfall occurs in May and June, with a noticeable decrease in the average rainfall in July and August and an increase again in September.

The largest rainfall event per the period of record was 10.23 inches of rain occurring from 9 July to 13 July 1951. Over the period of record, about 72.2 percent of the rainfall occurred during the months of April through September. The averages were computed from published precipitation rainfall recorded for the basin. These records do not necessarily record the center of intense storms. Antecedent precipitation, season of the year, and many other factors influence storm runoff so that floods have frequently followed periods of relatively small amounts of recorded rainfall. Conversely, some storms of greater amounts of recorded rainfall have caused only minor flooding.

Table 2-1 Temperature and Precipitation

Temperature Marion Reservoir - Period of Record (1887 - 1992)	
Mean annual	53.6°F
Maximum	110° F (1984)
Minimum	-26° F (1989)
Precipitation	
Average Annual (Period of Record 1938 - 1994)	30.0 inches
Maximum annual (record)	58.5 inches (1951)
Minimum annual (record)	15.4 inches (1978)
Percent of precipitation during growing season (April through September)	71.8%
Snowfall (Period of Record 1947 – 1992)	
Average Annual	20.8 inches
Maximum Monthly (record)	22.4 inches (Feb 1971)
Minimum Monthly (record)	0.0 inches (several)

Source: Marion Reservoir Water Control Manual

Month	Average rainfall (inches)	Percent average annual rainfall	Average runoff Marion Dam Site		Percent of average annual runoff
			(acre-feet)	(inches)	
January	0.68	2.23	2,300	0.22	3.61
February	0.92	3.01	3,200	0.30	5.02
March	1.97	6.45	6,400	0.60	10.03
April	2.71	8.87	7,500	0.70	11. 76
May	4.35	14.24	10,200	0.96	15.99
June	4.62	15.12	10,000	0.94	15.67
July	3.63	11.88	8,200	0.77	12.85
August	3.33	10.90	2,600	0.24	4.08
September	3.31	10.84	4,600	0.43	7.21
October	2.44	7.99	4,200	0.39	6.58
November	1.59	5.20	2,400	0.23	3.76
December	1.00	3.27	2,200	0.21	3.45
Total	30.55	100.00	63,800	5.98	100.00

Figure 2-2 Average Monthly and Annual Rainfall (Source: Marion Reservoir Water Control Manual)

2.1.3 Geology

Marion Reservoir is located in the Flint Hills region of Kansas. This region lies along the western boundary of the Prairie Plains physiographic province and represents the first step in the transition from the hilly Central Irregular Plains (level III ecoregion) to the flatter and higher terrain of the Central Great Plains (level III ecoregion) province of western Kansas. The geology of the Flint Hills region generally consists of Pennsylvanian, Permian and Cretaceous ages rocks, which are exposed at the surface. In general, the sequence of outcropping rock units becomes progressively younger from east to west across the region. Mantling large portions of these older rocks are wind-blown deposits (loess) and water-laid sediments forming the stream valley flood plains and terrace deposits adjacent to the main streams. The limestone beds in the Flint Hills contain large amounts of flint or chert. Where these beds mantle the uplands, erosion of the underlying soft shales has been retarded resulting in prominent hills and escarpments.

2.1.4 Topography

The Flint Hills region, including Marion County, Kansas is characterized by rolling hills and is composed of Permian shale and cherty limestone, and rocky soils. Extending nearly 200 miles from near the Nebraska border on the north into Oklahoma on the south, the Flint Hills reach their greatest width just south of the Kansas River. They owe their existence to the nodules of chert (flint) laid down with the limestones and shales in the shallow seas which covered this part of North America during the early Permian Period over 275 million years ago.

Figure 2-3 Marion Reservoir Topography (Source: ESRI)

Chert is a very hard mineral and was prized by the Native American tribes as an ideal material for making arrowheads, spear points and cutting tools. The presence of this hard, weather-resistant mineral in the underlying rock formations slowed the process of erosion, leaving this area higher than the surrounding countryside. It also prevented the ground from being broken out for agriculture, unlike the tallgrass prairies of Iowa and other locations further east. As a result, the Flint Hills region remains as the largest unplowed remnant of tallgrass prairie in the world.

Photo 2-1 Flint Hills Near Marion Reservoir (Source: Friesen Group)

2.1.5 Hydrology and Groundwater

The Grand (Neosho) River, known as the Neosho River above the mouth of Spring River (mile 131), is approximately 478 miles long and has its source in the Flint Hills region of east central Kansas. From its source, the stream flows in a southeasterly direction to the Kansas-Oklahoma State line near Commerce, Oklahoma. The watershed is roughly rectangular in shape, averaging about 18 miles wide and 60 miles long above John Redmond Dam, and 25 miles wide and 90 miles long between John Redmond Dam and the Kansas-Oklahoma State line. The Neosho River above the Kansas-Oklahoma State line is 314 miles long and drains an area of 6,220 square miles.

The Neosho River valley floor has a width of approximately one mile from the source to the vicinity of Emporia, Kansas (mile 398). At that point, the valley widens to about 4 miles, then decreases to about two miles at Burlington, Kansas (mile 339). From Burlington to the vicinity of the Kansas-Oklahoma State Line, the valley varies from one to four miles in width. The valley slope is approximately 7.2 feet per mile in the reach from the source to the mouth of the Cottonwood River and 2.3 feet per mile from the mouth of the Cottonwood River to the Kansas-Oklahoma State line.

The low water slope of the river averages about 1.3 feet per mile between the mouth of the Cottonwood River and the Kansas-Oklahoma State line.

The channel of the main stem is well defined and varies in width from 50 feet near its source, to about 200 feet at the Kansas-Oklahoma State line. The banks are generally stable, varying in height from 15 feet to 30 feet and usually support a growth of timber and brush along the low water line. The streambed is composed largely of gravel and boulders and is generally stable.

The Cottonwood River, the principal tributary in Kansas, rises in east central Kansas near Marion and flows in a general easterly direction from its source to its confluence with the Neosho River at mile 382.8. The watershed is about 70 miles long, averaging about 26 miles in width and draining an area of approximately 1,908 square miles which is 70% of the total drainage area above the confluence of the Cottonwood and Neosho Rivers.

The river flow of record occurred in June and July 1951 (pre-construction) with a peak discharge of 54,000 cfs and a volume of 78,950 acre-feet, which is equivalent to 7.40 inches of runoff from the drainage area above the dam site.

Per the closest USGS monitoring well of the required depth, the current depth to groundwater for Marion County is 48.55 feet.

2.1.6 Soils

A soil survey by the Natural Resource Conservation Service (NRCS) divides soils into eight possible general Soil Capability Classifications (Classes I through Class VIII) six of which occur 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 2-2. 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 Natural Resource Management Assessment Tool (NRM Assessment).

Table 2-2 Soil Classes

Soil Class	Acreage	Soil Class	Acreage
Class I	31	**Class V**	494
Class II	2,952	**Class VI**	89
Class III	2,224	**Class VII**	0
Class IV	191	**Class VIII**	58

A general description of the soils at Marion Reservoir 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 Marion Reservoir in order of prevalence are Class II and III, meaning they have moderate to severe limitations that restrict use, the choice of plants, and require moderate or special conservation practices. Detailed information on all soil types surrounding Marion Reservoir is available on websites maintained by the NRCS, U.S. Department of Agriculture.

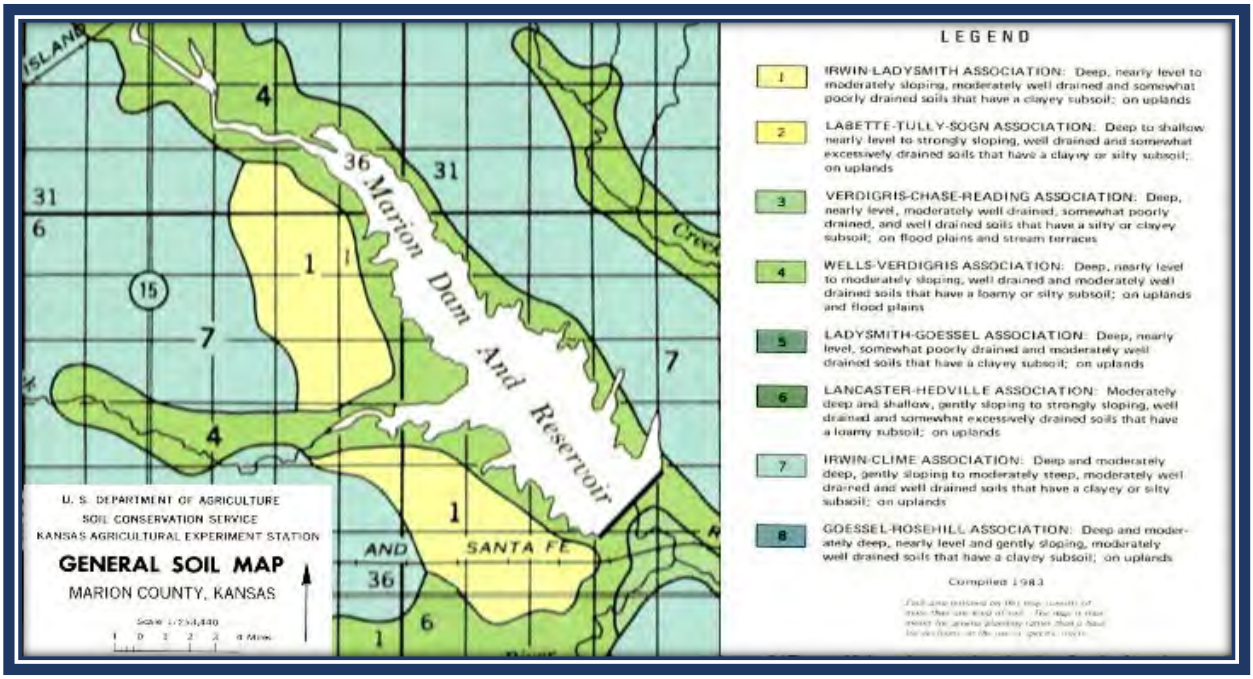

Figure 2-4 General Soils Map Marion Reservoir, Morris County, KS (Source: Natural Resource Conservation Service; formerly known as Soil Conservation Service)

2.2 ECOREGION AND NATURAL RESOURCE ANALYSIS

Natural resources present at Marion Reservoir 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 Kansas Wildlife Action Plan (WAP).

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 2-3, is recorded in the USACE national database referred to as Operations & Maintenance Business Information Link (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 2-3 Vegetation Classification and Condition 2018 Inventory

Division	Order	Class	Sub Class	Total Sub Class Acreage	Sustainable Areas	Transitioning Acres	Degraded Acres	Total Conditioned Acres
NON-VEGETATED (includes open water surface of the Reservoir and eroded shoreline)	Non-Vegetated	Non-Vegetated	Non-Vegetated	6,200	6,200	0	0	6,200
VEGETATED	Herb Dominated	Herbaceous Vegetation	Annual graminoid or forb vegetation	2,100	1,900	100	100	2,100

Division	Order	Class	Sub Class	Total Sub Class Acreage	Sustainable Areas	Transitioning Acres	Degraded Acres	Total Conditioned Acres
VEGETATED	Herb Dominated	Herbaceous Vegetation	Perennial graminoid vegetation (grasslands)	3,000	2,000	750	250	3.000
VEGETATED	Tree Dominated	Open Tree Canopy	Deciduous open tree canopy	949	600	280	69	949
Totals				**12,249**	**10,700**	**1,130**	**419**	**12,249**

Note: Classification information derived from the National Vegetation Classification System

As described in the WAP, the vegetation at Marion Reservoir is typical for the northwest portion of the Neosho River Ecological Focus Area (EFA). The Neosho River EFA follows the Neosho River as it flows in a general southeast direction from Morris County to Cherokee County before leaving Kansas.

This tallgrass prairie habitat is characterized by bands of rolling hills with abundant residual flint eroded from the bedrock that lies near the surface. The rocky uplands of this prairie are not conducive to cultivation, leaving this area still largely intact as native prairie well-suited for livestock production. The region is ecologically important because it is largest remaining expanse of tallgrass prairie in the country. Disturbance from grazing and fire play important roles in preserving the dominance of herbaceous species and floristic diversity of the prairie.

Riparian woodlands located in pockets around the reservoir include stands of elm-ash-cottonwood forest and oak-hickory forest. The predominant overstory vegetation includes post oak, blackjack oak, American elm, cottonwood, hickory and eastern red cedar. The predominant understory incudes native grasses, sumac, wild grape, sassafras and numerous shrubs.

The grasslands under the control of the USACE are primarily managed for habitat, and grazing is used as one tool to manage the grasslands. The majority of the native prairie consists of a mixture of tall and mid-grasses including, but are not limited to big and little bluestem, switchgrass, Indian grass, foxtail, tall dropseed and grama grasses. Johnsongrass is a common invasive species found in many native prairie areas.

Photo 2-2 Typical Vegetation at Marion Reservoir (Source: Eric Irwin)

2.2.2 Wetlands

In accordance with national USACE policy, wetlands at operational projects are inventoried using the protocol established by the U.S. Fish and Wildlife Service (USFWS) in their Classification of Wetlands and Deepwater Habitats of the United States. The majority of wetlands at Marion Reservoir are classified as Lake, Freshwater Forested/Shrub Wetland, and Freshwater Emergent with a few Freshwater Ponds up the smaller tributaries. (USFWS, 2020).

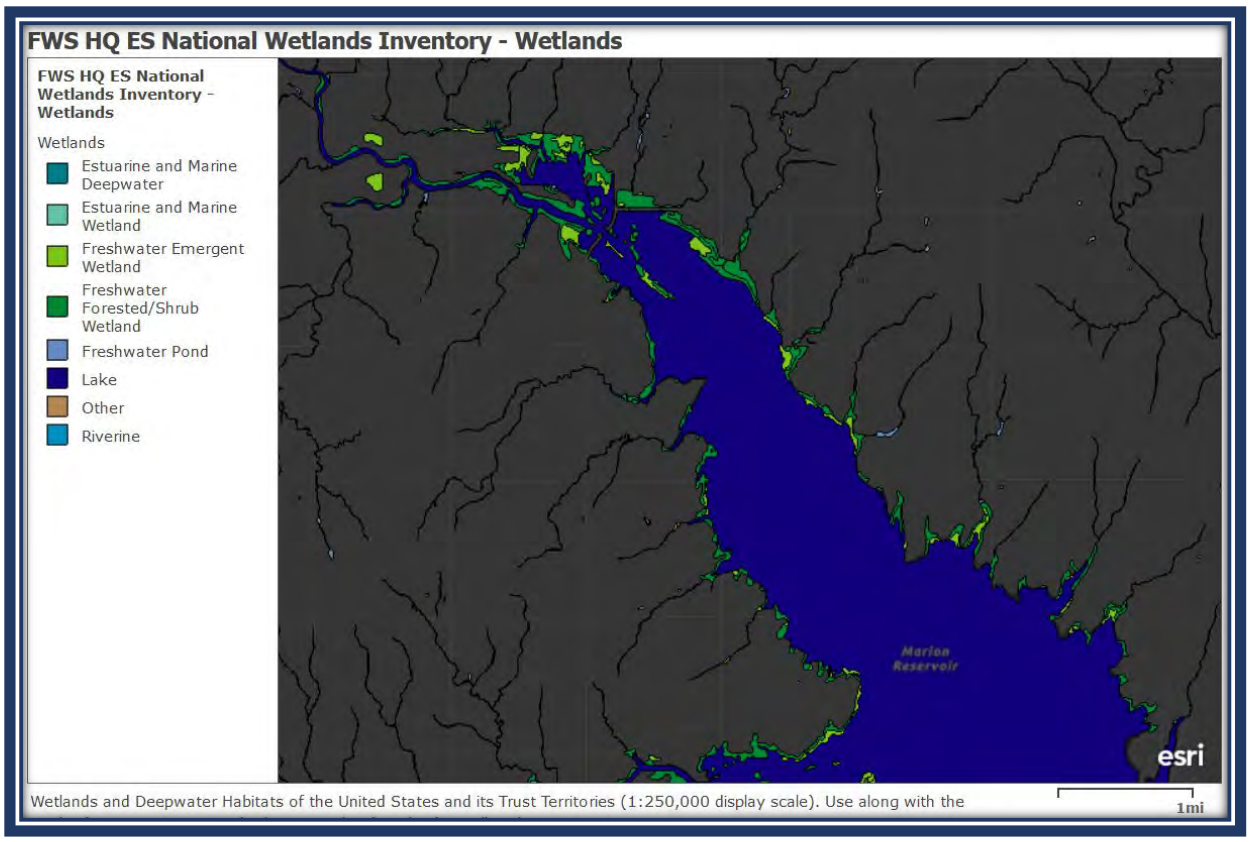

Figure 2-5 USFWS Wetland Inventory for Marion Reservoir - North (Source: USFWS)

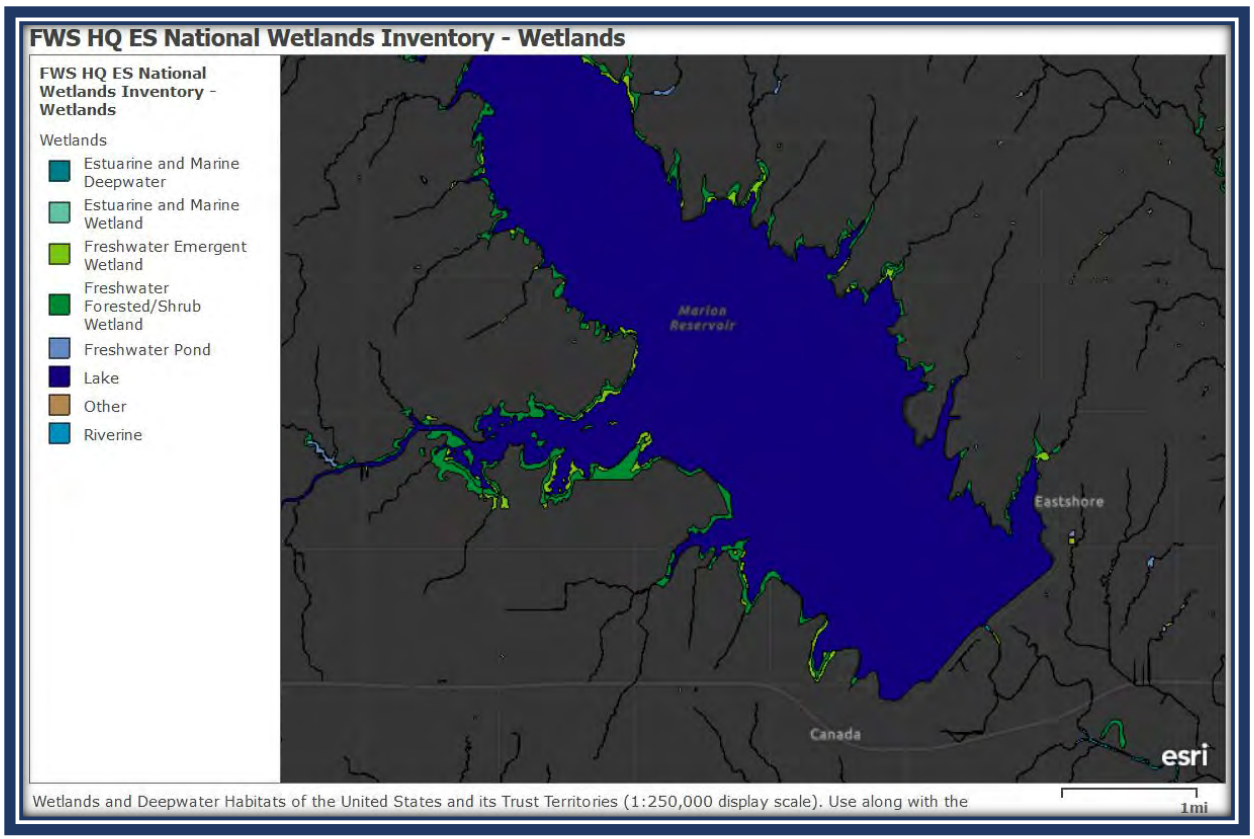

Figure 2-6 USFWS Wetland Inventory for Marion Reservoir - South (Source: ESRI)

Within these 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 Marion Reservoir are also subject to different hydrologic regimes, including seasonally flooded, semi-permanently flooded, and permanently flooded.

Table 2-4 lists the acreages of various types of wetlands present at Marion Reservoir. Data was retrieved from the FY2019 Project Wetland Classes reported in OMBIL. As noted, all USACE lands at Marion Reservoir has been inventoried.

Table 2-4 Wetland Classification 2019 Inventory

System	Sub-System	Class	Class Acres
Lacustrine	Littoral	Unconsolidated Shore	120
Palustrine	NO SUB-SYSTEM	Forested Wetland	40
Lacustrine	Littoral	Emergent Wetland	460
Lacustrine	Littoral	Rock Bottom	500
Lacustrine	Limnetic	Open Water/Unknown Bottom	5000
Riverine	Lower Perennial	Open Water/Unknown Bottom	80

Source: NRM

2.2.3 Fish and Wildlife Resources

Marion Reservoir provides habitat for an abundance of fish and wildlife species. The reservoir provides a quality fishery, as well as quality wildlife habitat on public land associated with the project. The following is a description of the fish and wildlife resources found at Marion Reservoir.

Fisheries Resources

Fishing is a popular activity at Marion Reservoir, offering more than 60 miles of public river access.

Marion Reservoir provides fishing opportunities for boaters and bank anglers. Common sport fish species present in Marion Reservoir include channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), white crappie (*Pomoxis* spp.), walleye (*Sander vitreus*), white bass (*Morone chrysops*), largemouth bass (*Micropterus salmoides*), and the hybrid palmetto wiper (white bass x striped bass [*Morone saxatilis*]). Specific information on fishing resources and regulations at Marion Reservoir can be found at the Kansas Wildlife Parks and Tourism's website[1].

[1] https://ksoutdoors.com/Fishing/Where-to-Fish-in-Kansas/Fishing-Locations-Public-Waters/South-Central-Region/Marion-Reservoir

Photo 2-3 Teens with a catfish at Marion Reservoir (Source: USACE)

Wildlife Resources

Marion Reservoir provides habitat for an abundance of wildlife species, including game and non-game species, migratory waterfowl, resident and migratory songbirds, wading birds, reptiles, amphibians, and insects. The area offers a mixture of geological features, riparian habitat, grasslands, and river habitat that support a wide variety of duck species, white-tailed deer (*Odocoileus virginianus*), turkey (*Melegaris gallopavo*), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), cottontail rabbits (*Sylvilagus*), pheasant (*Phasianus colchicus*), and squirrels (*Sciuridae*).

The Kansas Department of Wildlife, Parks, and Tourism (KDWPT) operates approximately 4,631 acres of the project lands located in the upper reaches of the reservoir for wildlife management and public hunting.

This acreage is managed to offer a wide variety of food, cover, and breeding and nesting habitat for migratory waterfowl and upland game species. Croplands are the major portion of the wildlife lands and are managed in accordance with proper conservation practices. Crop rotation is used as an aid in maintaining soil fertility and to provide more varieties for food, cover, and nesting habitat for wildlife. Grassland management procedures include delayed mowing for the protection of nesting wildlife and establishing small food plots within the grassland area to provide additional food for wildlife.

Portions of game management areas open to public hunting are fenced and are clearly marked with “Public Hunting” signs. Numerous gravel and dirt township and county roads provide access to the areas. All major roads entering game management areas are marked with large brown signs stating, “Game Management Area.”

The KDWPT urges all sportsmen to respect posted signs on the areas and requests them not to trespass on private adjoining property. In several instances, the area boundary line is near private dwellings. No hunting is permitted in developed recreational areas on the reservoir or in the vicinity of the dam and other project structures.

Principal game species include bobwhite quail, ducks, geese, mourning dove, cottontail rabbits, whitetail deer, pheasant, squirrel and turkey.

Photo 2-4 Turkey hunter at Marion Reservoir (Source: USACE)

USACE currently allows hunting at Marion Reservoir in specified areas and in accordance with specific restrictions on allowable game species and means and methods of hunting. USACE Tulsa District publishes a Public Hunting Map listing each USACE lake in the Tulsa District. This map is updated periodically to address any changes in State wildlife/hunting rules that may affect hunting at USACE lakes, as well as any changes in the management of USACE land at each lake. Hunters are advised to obtain a copy of the map and to visit with USACE lake staff when planning to hunt. The State of Kansas is responsible for administrating hunting regulations and issuing permits.

An approximately 800-acre Waterfowl Refuge that is managed by KDWPT to attract and hold waterfowl is located along French Creek. This area is closed to hunting all year and closed to all activities from October 1 to March 1.

2.2.4 Threatened and Endangered Species

Threatened species are those which are likely to become endangered within the foreseeable future. Endangered species are in danger of extinction throughout all or a significant portion of their range. USFWS also identifies 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. The USFWS Information for Planning and Conservation (IPaC) identified several species of fish and mammals listed by the USFWS as Threatened or Endangered that could potentially be found at Marion Reservoir. (See Appendix C for the IPaC report for Marion Reservoir).

Table 2-5 Federal Listed Threatened and Endangered Species for Marion Reservoir Area

Common Name	Scientific Name	Federal Status	State Status
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Not listed
Neosho Madtom	*Noturus placidus*	Threatened	Threatened
Topeka Shiner	*Notropis topeka*	Endangered	Threatened

Source: USFWS 2020

2.2.5 Invasive Species

Invasive species are any kind of non-native 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. Noxious native 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 2-6 lists invasive and exotic species that occur at Marion Reservoir as identified by USACE.

Table 2-6 Invasive Species

Common Name	Scientific Name	Prevalence
Zebra Mussel	*Dreissena polymorpha*	Major
Chinese Tallow	*Triadica senifera*	Major
Sericea	*Sericea lespedeza*	Minor
Canada Thistle	*Cirsium arvense*	Minor
Red Cedar	*Juniperus virginiana*	Moderate

Common Name	Scientific Name	Prevalence
Johnson Grass	*Sorgham halepense*	Minor
Musk Thistle	*Carduus nutans*	Minor

Source: USFWS 2020; NRM Assessment Tool 2020

2.2.6 Visual and Scenic Resources

The picturesque setting of Marion Reservoir is an open invitation to the visitor for picnicking, camping, hiking, and sightseeing.

Photo 2-5 Cottonwood Point at Marion Reservoir (Source: RuggedKansas.com)

For nature lovers, there are many native wildflowers, flowering shrubs and trees including ash, elm, cottonwood, hackberry, sycamore, willow, oak, red cedar, catalpa, Osage orange, redbud, and sumac. Also, there are many species of bird native to the project area for birdwatchers to enjoy.

For wildlife observers, there is the one-mile Willow Walk Nature Trail located at Cottonwood Point. Willow Walk Trail winds its way through Cottonwood Point Park. Along this trail, non-native grass pastures are giving way to native grasses. Waterfowl feed where buffalo once grazed. Former grassy hillsides are now a wooded corridor

beside the reservoir. Extreme seasons, violent weather, changing land use, and an evolving shoreline make the Willow Walk Trail an ever-changing experience.

2.2.7 Sedimentation and Shoreline Erosion

A relatively large amount of sedimentation occurs at Marion Reservoir because of the large amount of agriculture in the 200 square-mile drainage basin and the absence of any upstream reservoirs. The measurement of sediment deposited in the reservoir is accomplished by periodic soundings, summarized below, along established range lines. The cross-sections of these ranges have been determined and their ends marked by permanent monuments with known vertical and horizontal positions.

The original sediment survey for Marion Reservoir was completed in February 1968 and resurveys were completed in 1974, 1982, 1994, and 2008. During the period from 1968 to 2008, an estimated 4,278 acre-feet of sediment deposit has occurred.

In 2008, the Kansas Biological Survey (KBS) performed a bathymetric survey of Marion Reservoir in Marion County, Kansas. The survey was carried out using acoustic echo-sounding apparatus linked to a global positioning system. The bathymetric survey was georeferenced to both horizontal and vertical reference datums.

Six sediment cores were extracted from the reservoir to determine accumulated sediment thickness at locations distributed across the reservoir. Sediment samples were taken from the top six inches of each core and analyzed for particle size distributions. Additional sediment samples were taken in April 2009 and also analyzed for particle size distributions.

Shoreline problems result from flood inflows and high-water levels that erode new areas above the conservation pool level. The major concern is with the length of time flood waters are held and having the water level above conservation level at the time winds are most prevalent.

A general discussion of sedimentation can be found in Chapter 6. There are presently no regulating procedures for sediment.

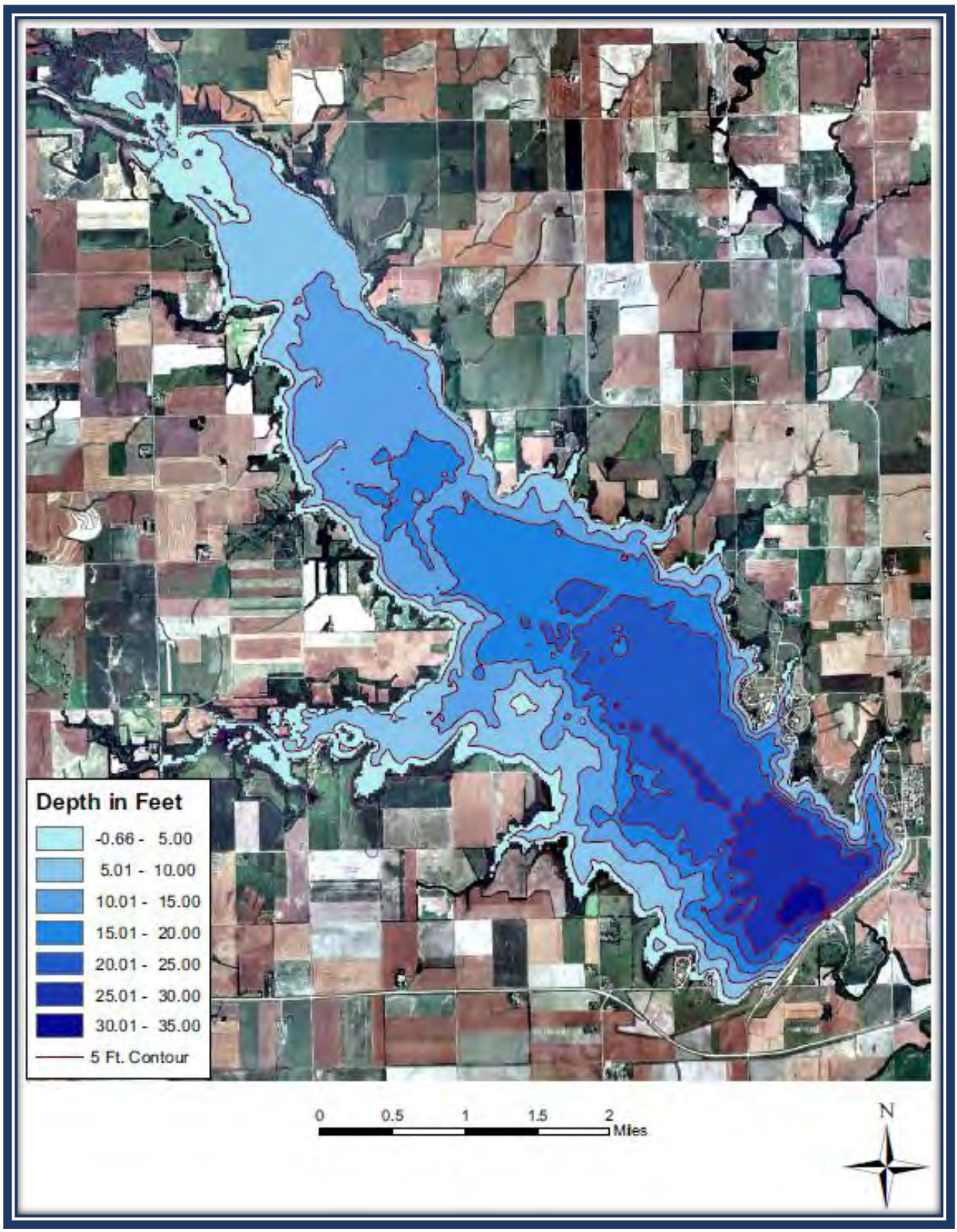

Figure 2-7 Water depth based on 2008 bathymetric survey with pool elevation of 1,349.53 feet

2.2.8 Water Quality

The State of Kansas has established Water Assurance Districts, authorized by the Kansas Office of Water Resources, to monitor flows and enforce the lawful withdrawal of water by contractual water customers on the Neosho and Verdigris Rivers. The Kansas Water Assurance Plan (KWAP) is a basin-wide approach to meeting the municipal, industrial, and environmental needs of communities associated with those basins outlined in the 1986 Memorandum of Understanding (MOU) between the Assistant Secretary of the Army (Civil Works) and the State of Kansas.

Per the 2017 Kansas Department of Health and Environment Water Quality report, aquatic life is impaired due to eutrophication (high nutrient loads) that can cause algal blooms and hypoxic (low oxygen) waters. Eutrophication sets off a chain reaction in the ecosystem, starting with an overabundance of algae and plants. The excess algae and plant matter eventually decompose, producing large amounts of carbon dioxide. These nutrients primarily result from surface water runoff from agricultural fields

The DRAFT 2020 Kansas Water Plan Update for the Neosho Basin states,

> *"A collaboration between the Regional Advisory Committee (RAC), local producers, local WRAPS groups, local conservation districts, regional public water suppliers (PWS), the KWO, the Kansas Department of Health and Environment (KDHE), and the Kansas Department of Agriculture-Division of Conservation (KDA-DOC) will secure funding and work to treat 80% of priority cropland with no-till practices, cover crops, buffer strips, soil health management principles, and other sedimentation and nutrient reduction farming practices by 2030 in the Cottonwood-Neosho Region above John Redmond Reservoir, Marion Reservoir, and Council Grove Reservoir. To provide education and share information concerning water and soil conservation and nutrient and sedimentation reduction, demonstration farms will be established in the region above these three reservoirs using this collaboration.*
>
> *"The KWO will review the sedimentation rate of these three reservoirs by conducting bathymetric surveys every five years to monitor the sedimentation rate and the progress and benefit of sedimentation reduction practices."*

2.2.9 Sustainability

National USACE missions associated with water resource development projects may include flood risk management, water conservation, navigation, recreation, fish and wildlife conservation, and hydroelectric power generation. Most of these missions serve to protect the built environment and natural resources of a region from the climate extremes of drought and floods. This helps to create a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Mitigation, while not a formal mission at most USACE lakes, may be implemented to achieve the fish and wildlife and recreation missions. Maintaining a healthy vegetative cover and including a native prairie or tree cover where ecologically appropriate on Federal lands within the constraints imposed by primary project purposes helps reduce stormwater runoff and

soil erosion, mitigates air pollution, and moderates temperatures. To this end, USACE has developed the following statements.

The USACE Sustainability Policy and Strategic Plan states that:

> *"The U.S. Army Corps of Engineers strives to protect, sustain, and improve the natural and man-made environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders. Sustainability is not only a natural part of the Corps' decision processes; it is part of the culture.*
>
> *Sustainability is an umbrella concept that encompasses energy, climate change and the environment to ensure today's actions do not negatively impact tomorrow. The Corps of Engineers is a steward for some of the Nation's most valuable natural resources and must ensure customers receive products and services that provide sustainable solutions that address short and long-term environmental, social, and economic considerations."*

The USACE mission for the Responses to Climate Change Program is:

> *"To develop, implement, and assess adjustments or changes in operations and decision environments to enhance resilience or reduce vulnerability of USACE projects, systems, and programs to observed or expected changes in climate."*

2.3 CULTURAL RESOURCES

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; burials and cemeteries; 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. These property types may be listed on the National Register of Historic Places (NRHP) if they meet the criteria specified by the NRHP, reflecting significance in architecture, history, archaeology, engineering, and culture. Cultural resources that are identified as eligible for listing in the NRHP are referred to as "historic properties," regardless of category. A Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Ceremonies, hunting practices, plant-gathering, and social practices which are part of a culture's traditional lifeways, are also cultural resources.

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism, establish the importance of cultural resources to our Nation's

heritage. With the passage of these laws, the historical intent of U.S. Congress has been to ensure that the Federal government protects cultural resources. 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

Formal archaeological surveys of the project area have been undertaken since 1962, resulting in the documentation of nine archaeological sites located wholly or in part on USACE fee lands associated with Marion Reservoir. All nine sites have prehistoric components, and one has both prehistoric and historic components. About half of the sites identified at Marion Reservoir do not have NRHP recommendations, and therefore their eligibility is unknown. None of the sites are listed on or determined eligible for the National Register of Historic Places.

The Kansas State Historical Society, under a cooperative agreement with the National Park Service, conducted surveys in anticipation of reservoir construction (Witty 1963). Survey of the area was carried out by Tom Witty and Wendell Frantz in 1962 and1963. Survey methods included interviews with local artifact collectors and residents of the area, and pedestrian survey of areas considered to have a high probability for archaeological sites in the river valley. Witty's work resulted in the location of only three prehistoric archaeological sites. One site was considered to have little significance. Two other sites were recommended for further testing (Witty 1963).

In 1979, USACE Tulsa District contracted Wichita State University to conduct archaeological survey of all USACE land not inundated by the conservation pool of the reservoir. Field work was conducted between October 1979 and February 1981. Three sites were recorded, though one was later determined to be a sandbar with artifacts out of context (Malone and Rohn 1981). Of the three sites previously recorded by Witty, two were inundated by the reservoir and the third was not relocated. Malone and Rohn (1981) contend that the site which could not be relocated has been covered by alluvial deposits and recommend that should the site be uncovered in the future by erosion, it should be evaluated for the NRHP. Some 726 acres were inaccessible and remain to be inventoried.

In 2004, Tulsa District contracted to survey Cottonwood Point Public Use Area in anticipation of campground improvements and expansion. A total of 270 acres was surveyed, and no sites were identified (Hokanson and Fariello 2006).

In the larger region there are hundreds of archaeological sites and historic standing structures on record with the Kansas State Historical Society (KSHS), including the

Marion Archaeological District located just over two miles southeast of the dam axis. Small surveys have been, and continue to be, conducted in and near Marion Reservoir for compliance with Section 106 of the NHPA. These surveys are generally conducted for road projects, third party easements (such as those for pipelines, waterlines, fiber optic and electrical lines), and management of wildlife areas, shoreline, public use areas, and campgrounds.

2.3.2 Cultural History Sequence

Six broad cultural divisions are applicable to a discussion of the culture history of the Marion Reservoir 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. Due to differential rates of change through time in different regions, the State of Kansas has subsumed three of the cultural divisions into the broader Ceramic Period. The Ceramic Period has been subsequently divided into Early, Middle, and Late. Due to the use of both systems of cultural divisions in the site records and literature, both systems are incorporated below.

- Paleoindian: 13,500 to 9000 BP
- Archaic: 9000 to 2000 BP
- Woodland (Early Ceramic): AD 1 to 1000
- Plains Village (Middle Ceramic): AD 1000 to 1500
- Protohistoric (Contact Period; Late Ceramic): AD 1500 to 1825
- Historic: AD 1825 to present

Paleoindian Period

While it is becoming increasingly evident that humans arrived in the Americas as early as 20,000 years ago, the Paleoindian Period is broadly accepted as spanning the end of the Pleistocene into the Early Holocene. The Clovis complex (11,500-11,000) is the earliest well substantiated archaeological period in the Central Plains. Paleoindian sites are usually identified by the presence of the remains of extinct Pleistocene megafauna and signature stone tools. The most visible tools are projectile points, and these are used to reference different archaeological complexes. Point types are unnotched lanceolate projectile points, fluted (Clovis and Folsom) and unfluted (Allen-Frederick, Agate Basin, Hell Gap, Meserve, Plainview, Cody, Dalton, Plano, and undesignated “Late Paleoindian”). Long characterized as specialized big game hunters, it has now been demonstrated that the archaeological complexes of the Paleoindian period represent diversified economies of small bands of hunters and gatherers, some more reliant on megafauna than others, and some hunting megafauna during specific seasons (Blackmar and Hofman 2006). 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 (Ballenger 2001; Blackmar and Hofman 2006; Meltzer 2009).

Dynamic landscape evolution throughout the Holocene has resulted in Paleoindian sites in the project area being deeply buried in alluvial stream deposits. Periods of cut and fill of sediments in the river and stream valleys has led to differential preservation of

surfaces from this time period, resulting in flushing out of sediments in some locations and time periods, and deposition of large amounts of sediments in other contexts and times (Mandel 2006). Additionally, the arrival of Euro-Americans in the region and subsequent land clearing led to vastly increased volumes of alluvial sedimentation on floodplains, mantling prehistoric surfaces with thick layers of recent alluvial deposits in stream valleys (Weston 1992). In the uplands, wind deposited sediments and tallgrass prairie obscure even shallow sites (Mandel 2006). Where erosion and agriculture are sufficient to reveal very old surfaces, Paleoindian points have been found on the surface. These points are most often collected, which results in loss of archaeological context. For these reasons, a limited number of Paleoindian sites have been recorded in the project area, though sites with both Paleoindian and Archaic deposits are better represented. The small number of sites from this period is much more a product of archaeological visibility than an actual representation of prehistoric populations and patterns of land use (Mandel 2006; Blackmar and Hofman 2006).

Archaic Period

During the Archaic period, an increase in seasonal variability of resources and increasing populations resulted in changing settlement and subsistence patterns (Hawley and Vehik 2012). 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 (Brogan 1981; Sabo and Early 1990). 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 (Adair and Estep 1991; Thies and Witty 1992). Projectile points from the Middle and Late Archaic are stylistically quite different (typically notched and stemmed) from those of the Paleoindian period. Archaic assemblages include a variety of large dart points, knives, drills, axes, gouges, 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 9,000 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 (in Pottawatomie county northeast of the project area) and small effigy heads from the William Young site (in adjacent Morris County) are the earliest ceramic figures currently identified in the United States, both from Archaic horizons (Witty 1982; Blackmar and Hofman 2006:64). Fiber tempered ceramics from the Nebo Hill phase in Northeast Kansas represent some of the earliest tempered pottery in the United States (Reid 1983).

Phases identified for the Archaic Period in the project region include Munkers Creek, Logan Creek, Chelsea, El Dorado, and Walnut. Depositional context of sites from the Archaic period is a result of variable climatic conditions and dynamic landscape evolution. Stratified Archaic deposits have been found in the Flint Hills 10 meters below the surface of broad terraces (Mandel 2006).

Woodland (Early Ceramic)

The Woodland Period in Kansas can be defined as one of technological innovation, with ceramics, the bow and arrow, gradual intensification of horticulture and concomitant social changes differentiating this time period from more residentially mobile hunting

and gathering populations of earlier times. This time is defined in the Eastern Woodlands as Early, Middle, and Late Woodland, all of which comprise the Early Ceramic Period in Kansas (Hoard and Banks 2006). Sites dated to the Early Woodland period are temporary camps with remains of shallow pits and ephemeral houses, and tools which indicate little change in lifeways from the Late Archaic. Like sites from the Late Archaic period, sites dating to the Early Woodland are expected to be deeply buried and rarely encountered (Mandel 2006). In contrast, some Middle and Late Woodland groups from this time constructed more substantial houses, including very large circular to oval grass or thatch covered houses with internal and external pits and hearths (Logan 2006, Marshall 1972, Reynolds 1984, Witty 1999). Extended time spent at habitation sites led to accumulation of large trash deposits. Archaeological assemblages from this period indicate people were living in semi-permanent villages and dispersed communities (Brogan 1981, Rowlison 1980), using settlement strategies such as seasonal mobility, targeted long distance resource procurement by portions of the community or household (such as hunting forays), and intensification of wild and domestic plants to meet their needs. Small game and aquatic resources remained essential in subsistence. Domestication of plants began during this period.

The appearance in the archaeological record of small corner notched projectile points indicates that the bow and arrow was in use. The presence of ceramic sherds indicates that ceramic use in the form of pottery for storage and cooking had become widespread. Projectile points from this period include, in addition to the small corner notched points, large contracting stem points and 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 (Logan 2006, Marshall 1972, Vehik and Hawley 2012, Witty 1999).

Woodland period sites in the Flint Hills have been attributed to various archaeological phases. Insufficient data (such as radiometric dates), over reliance on typological distinctions that may not be meaningful, and a lack of consideration of differential preservation have resulted in an abundance of named archaeological phases. Cross dating of sites using typology is complicated by the differential rate at which groups of this time period adopted new technologies and consequent changes in social organization. There is a need for critical reevaluation of data gathered to date, reexamination of curated collections, and implementation of carefully selected methodology for data collection going forward (Logan 2006).

Named Woodland phases include the Schultz, Cuesta, Kansas City Hopewell, Greenwood, Butler, Keith, Grasshopper Falls, Deer Creek, and Wakarusa.

Plains Village (Middle Ceramic)

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 (Vehik and Hawley 2012). Sites from this time are often identified in lowland terraces of waterways where gardening was viable (Roper 2002).

The Pomona variant is the archaeological culture associated with watersheds in central and eastern 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 (Brown 1985; Thies 1981, 1990; Vehik and Hawley 2012; Witty 1967, 1978). 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 (Adair 1988, 2006; Roper 2006). Due to the differential rate of people's acceptance of new technologies and changing ways of life, sites attributed to the Pomona variant may overlap temporally with sites attributed to the Woodland period.

The Smoky Hill phase is documented to the north and west of the project area in the Kansas River basin (Wedel 1959). The Smoky Hill phase is part of what is broadly known as the Central Plains Tradition, which extends across northern Kansas and into Nebraska, portions of Iowa, Missouri, and South Dakota. (Roper 2006; Vehik and Hawley 2012). These sites share similarities with the Pomona variant, but provide evidence of greater reliance on agriculture and more substantial housing in the form of rectangular earth lodges containing four interior support posts around a central hearth (Johnson 1973; Logan 1996; Roper 2006). No sites of the Smoky Hill phase have been documented in the Council Grove Lake area.

No sites in the Marion Reservoir area have been attributed to any specific Middle Ceramic phase. It is possible that there was sufficient cultural continuity that later sites such as those of the later Great Bend aspect obscure Middle Ceramic components. Components may also be attributed to the Woodland period, as differences are again those of technology and subsistence intensification. Plains Village sites are also frequented by artifact collectors, as they can be exposed on the surface by modern landscape modifications much more readily than deeply buried sites. Landscape evolution throughout the Holocene has resulted in most sites that are visible on the surface being those that date to the Middle Woodland or later.

The Protohistoric (Contact) Period (Late Ceramic)

The period from A.D. 1500-1825 is referred to as the Protohistoric (or Contact) Period (Late Ceramic). Villagers aggregated into large 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 are ancestral to the Wichita and Affiliated Tribes who today have their headquarters in Anadarko, Oklahoma. The nearby Marion Archaeological District was nominated to the NRHP due to a cluster of 26 Great Bend sites (Rohn 1975).

The Great Bend aspect is an archaeological complex which represents the coalescence of previously dispersed horticultural populations that has been dated as spanning from A.D. 1400 and 1700. It is comprised of three major groups in Kansas: the Lower Walnut focus sites of Cowley County, the Little River focus sites of Rice and McPherson counties, and those from the site group in and around the city of Marion, just over two miles from the Marion Reservoir dam (Blakeslee and Hawley 2006; Vehik 2006; Vehik and Hawley 2012). The Marion group is the least studied of the three Great Bend

complexes. The Great Bend aspect has been dated to between A.D. 1400 and 1700. These sites represent the coalescence of earlier dispersed horticultural populations.

People we refer to as Great Bend lived in large, circular grass houses, grew crops, and hunted bison and small game. Bison was a primary source of food and raw materials for tools, shelter, and clothing. Groups became more sedentary, congregating in villages with more permanent structures, large bell-shaped storage pits, and well-established agricultural fields (Hawley and Vehik 2012). Clusters of houses were placed linearly along the natural levees or bluff edges, with fields between the house clusters, as well as between the house clusters and the river (Roper 2002; Wedel 1959).

Several Great Bend aspect village sites of the Little River focus contain a type of low elongated mounds which are surrounded by shallow depressions. These features are referred to as Council Circles and are considered to be special use sites. No Council Circles have been identified in the Marion area (Hawley and Vehik 2012).

During this time, Spanish explorers, missionaries and traders began to come into contact with villages of the Great Bend aspect. Evidence is strong that the sites of the Little River focus represent the villages encountered by a Spanish expedition led by Francisco Vazquez de Coronado in 1541. The expedition was in search of gold they (erroneously) believed to be in the province of Quivira (Vehik 2006; Vehik and Hawley 2012; M. Wedel 1979; W. Wedel 1959). In 1601, Don Juan de Onate led an expedition to the area of present-day Cowley county, along the lower Walnut River, and the area just to the south along the Arkansas River. The Walnut River Focus is thought to represent what was called Etzanoa (Hawley and Haury 1994).

At both the Little River sites in Rice County and the Lower Walnut sites, 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 (Vehik 2002, 2006). However, few definitively pueblo related artifacts have not been reported from the Great Bend sites at Marion. One turquoise disk-shaped bead was found at site 14MN328 (Lees et al. 1989). European trade materials such as trade beads, metal objects, chain mail, etc. have not been found in great quantities at Marion Great Bend sites. Glass beads and rolled copper alloy tubes suggest European contact or down the line trade (Rohn and Emerson 1984).

Sites of the Marion focus have beginning dates that are later than the other Great Bend foci. Radiocarbon dates from Marion focus sites place the occupation of the area no earlier than the early- to mid-1600s. The Great Bend sites in and surrounding the city of Marion were nominated to the NRHP in 1975 (Rohn 1975) and were listed on the Register in 1976 as the Marion Archaeological District.

The absence of Great Bend sites at Marion Reservoir may well be due to the extremely limited time allowed to survey the reservoir area (7 days total), as well as the settlement patterns of the Great Bend. The methods used to look for sites in the reservoir footprint would not be sufficient to encounter sites buried by alluvium. A Great Bend site (14MN328, the Mem site) recorded on a natural floodplain levee, above the confluence of the Cottonwood River and Mud Creek, illustrates this well. The site was surveyed ahead of construction of a water diversion channel. A historic component and sparse

prehistoric component were identified on the surface during survey. When heavy equipment began deep trenching for levee inspection, a large bell-shaped pit was encountered, and work was stopped (Rohn and Emerson 1984).

Three different prehistoric living surfaces were observed in the trench, the deepest of which was 2 meters (6.5 feet) below the modern ground surface. A pit on the deepest living surface extended to a depth 328 cm (10.75 feet) below modern ground surface. Over a foot of waterlain sediments separated each cultural level from the next, and all were determined to be affiliated with the Great Bend. Another three large bell-shaped pits and a small basin pit or depression were identified in the middle cultural level, which began at 75 cm (2.5 feet) below modern ground surface. The uppermost living surface was exposed on the modern ground surface and had been disturbed by cultivation. Six strata, two meters thick, were deposited within, at most, 200 years. The implications for the identification of sites in the river valley by means of pedestrian survey are significant.

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 1719, the Great Bend aspect sites in central Kansas were abandoned, as the occupants migrated southward within the Arkansas River basin. By 1700, French traders were established in the region and had developed trading relationships with Wichita groups in the Arkansas Valley of northern Oklahoma, and with the Osage to the east (Hawley and Haury 1994). The Wichita and Affiliated Tribes were historically known as the Wichita Proper, Waco, Taovaya, Tawakoni, and Kichai (Vehik 2006). 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. In the late 1700s, the Wichita abandoned their homes in northern Oklahoma and traveled south into southeastern Oklahoma and Texas (Hawley and Haury 1994; Hawley and Vehik 2012).

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 (KSHS 2021c). 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. 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. Kansas was an important state for the Union, as transcontinental railroads were planned to cross through the area, and farmland was highly desirable. 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 (KSHS 2021b; KSHS 2021d).

The county of Marion was established by the Kansas Territorial Legislature in 1855. The county was named in honor of Francis Marion, a Revolutionary War hero referred to as Swamp Fox for his guerrilla tactics. In 1872, the current county boundary lines were established, encompassing 954 square miles. The county seat, Marion Center (Marion), was chosen by election in 1865, platted in 1866, and incorporated in 1875. The stone courthouse was constructed in 1867, for use of the county court, and as a school (KSHS 2021j).

The Santa Fe Trail crossed northern Marion County, near the project area. In 1825, President James Monroe authorized a formal survey of the important trade route between the frontier town of Westport Landing (Kansas City), Missouri, and Santa Fe in New Mexico Territory. The Santa Fe Trail was critical to the United States for reaching the West. It was the trail that had been used by the Spanish Entradas, running along the north bank of the great bend of the Arkansas River. The trail passed near the Little River focus locality, and north of Marion Reservoir near Durham. The Marion County segments of the Trail are listed on the NRHP. The Cottonwood Crossing near Durham was a well-known camping site along the trail, and a historical interpretive kiosk marks the site 1.5 miles west of Durham. Between 1821 and 1866, the Santa Fe Trail was a road of commerce, connecting the Missouri River and Santa Fe, New Mexico (KSHS 2021b; KSHS 2021d; Malone and Rohn 1981).

The importance of the Santa Fe Trail resulted in treaties being signed between the United States Government and tribes residing in the Marion vicinity. The first treaty was signed in 1825 with the Osage Nation at Council Grove, Kansas. The terms of the agreement guaranteed safe conduct and passage for people traveling through Osage Territory. Treaties were also signed in 1853 with tribes living to the west of Marion County- the Plains Apache, Comanche, and Kiowa. The treaties were violated and re-signed in 1865. The Cheyenne and Arapaho were included in the second version. The Santa Fe Trail was designated as a National Historic Trail by U.S. Congress, and the National Park Service administers the National Trail Program (Malone and Rohn 1981).

The Chisholm Trail of 1870 traversed the western side of the county from south to north. The Chisholm Trail was used to drive cattle from Texas to Abilene from 1867-1871, to the railroad bound for markets in the east (KSHS 2021b).

The Kaw Trail passed through Marion County from northeast to southwest. The trail extended westward from the Kanza Agency (the Kaw are also known as the Kanza or Kansa) southeast of Council Grove to the Cow Creek campsite in present Rice County. The trail ran parallel to the Santa Fe Trail in some portions and was said to have better grass and water. Twice a year the Kanzas left behind their lodges and those unable to travel and headed west to hunt bison on the plains. The trail crossed the Cottonwood River where the Marion Reservoir is today (Parks 2009).

Treaties were signed with the tribes to the north and east, as they began relinquishing their lands and relocating to Indian Territory (Oklahoma). The immediate project area was not inhabited by a specific tribe at this time, but Marion County was within the 1825 Osage treaty lands. In addition to the Osage, the Shawnee, Kanza, and Sauk and Fox considered the area to be hunting territory. The Shawnee relocated to Indian Territory in

1867, the Kanza in 1873, the Sauk and Fox in 1867, and the Osage in 1873 (Malone and Rohn 1981).

Historic site types and related resources expected in the project area include homesteads and ranches, farmsteads, trails, cemeteries, wells, cisterns, privies, rock walls, foundations or foundation piers, cellar depressions, chimneys (stone or brick), stairs, railroad lines, cattle trails, roads, schools, dumps, and water diversion features.

2.3.4 Long-term Cultural Resources Objectives

A Historic Properties Management Plan (HPMP) was developed in 1996 and needs to be updated. Such plans establish standard operating procedures pertaining to both USACE and external activities that might impact cultural resources. Completion of a full inventory of cultural resources at Marion Reservoir is a long-term objective that is needed for compliance with Section 110 of the NHPA. Currently, just under 95% of fee owned lands above the conservation pool of the reservoir have been inventoried. Ultimately, all currently known sites, as well as those found in future inventories should be evaluated to determine their eligibility for the NRHP. Sites of currently unknown NRHP eligibility and those found in the future to be eligible for the NRHP must be protected from impacts caused by USACE or those having leases or easements on Marion Reservoir fee lands. In order to ensure compliance with the NHPA, ARPA, and NAGPRA cultural resource activities will be coordinated with the State Historic Preservation Officer at the Kansas State Historical Society and federally recognized tribes within whose areas of interest, historical homelands, or ancestral territory the work will occur. ARPA permits are required and issued by the Tulsa District for all archaeological work conducted on USACE fee lands, to ensure qualified professional archaeologists perform the work according to established standards.

2.4 DEMOGRAPHIC AND ECONOMIC RESOURCES

The following information covers the current demographic and economic data for counties near Marion Reservoir, Kansas (Zone of Interest). This basic information gives a snapshot of the current population and looks at growth trends for the area.

2.4.1 Zone of Interest

Marion Reservoir is located in Marion County in east-central Kansas. The zone of interest for the socioeconomic analysis of Marion Reservoir is defined as Butler, Chase, Harvey, McPherson, Marion and Sedgwick Counties in Kansas. This includes the Wichita, Kansas Metropolitan Statistical Area.

The total population for the zone of interest in 2018 was estimated at 591,166, as shown in Table 2-7. Approximately 78% of the zone of interest's total population is within Sedgwick County and 10% is within Butler County. Harvey County makes up 5%, McPherson County 4%, Marion County 2%, and Chase County less than 1%. The zone of interest accounts for approximately 23% of the population for Kansas.

The zone of interest's population is projected to increase by about 143,000 people by 2070, an annual growth rate of 0.4%. Most of the growth is projected to occur in

Sedgwick County, which is projected to grow by 131,000 people in 2070, an annual growth rate of 0.4%, followed by Butler County with a growth of 18,000 persons, an annual growth rate of 0.5%. Harvey County is also projected to grow by almost 4,000 people, and average annual growth rate of 0.2%. The remaining counties are expected to decline in population by 2070, with McPherson County having the greatest loss of almost 5,000 persons followed closely by Marion County with a loss of 4,000 persons.

Table 2-7 2000 and 2018 Population Estimates and 2070 Projections

Geographic Area	2000	2018	2070
Kansas	2,688,418	2,908,776	3,751,900
Butler County	59,482	66,468	84,091
Chase County	3,030	2,645	1,492
Harvey County	32,869	34,555	38,079
McPherson County	29,554	28,630	24,091
Marion County	13,361	12,032	7,996
Sedgwick County	452,869	512,064	643,186
Zone of Interest	591,165	656,394	798,935

2000 Population Estimates: U.S. Bureau of the Census, 2000 Decennial Census
2018 Population Estimates: U.S. Bureau of the Census, American Community Survey, 5 Year Estimate
2070 Projections: Center for Economic Development and Business Research, Wichita State University

2.4.2 Population by Gender and Age

The distribution of the population by gender is shown in Table 2-8. For the zone of interest, the population is 49.6% male and 50.4% female, as compared to a 49.8% male and 50.2% female distribution for the state. The remaining counties are very similar to near 50%/50% distributions between male and female.

Table 2-8 Year Percent of Population Estimate by Sex

Geographic Area	**Male**	**Female**
Kansas	1,449,413	1,459,363
Butler County	33,539	32,929
Chase County	1,340	1,305
Harvey County	17,200	17,355
McPherson County	14,159	14,471

Geographic Area	Male	Female
Marion County	5,971	6,061
Sedgwick County	253,201	258,863
Zone of Interest	325,410	330,984

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Figure 2-8 shows the population by age group expressed as a percent of total population for Kansas, the zone of interest and Marion County, where Marion Reservoir is located. While the percentages are roughly similar for most of the age groups, it can be seen that there is a larger percentage of 25-34 year old in the zone of interest compared to Kansas and Morris County, with almost 14% of the zone of interest's population in this age group. The zone of interest also shows larger percentages in the Under 5, 5 to 9 and 10 to 14-year age groups, when compared to the state and Morris County. Marion County shows to have higher percentages of its population in older age groups than the other two geographic areas.

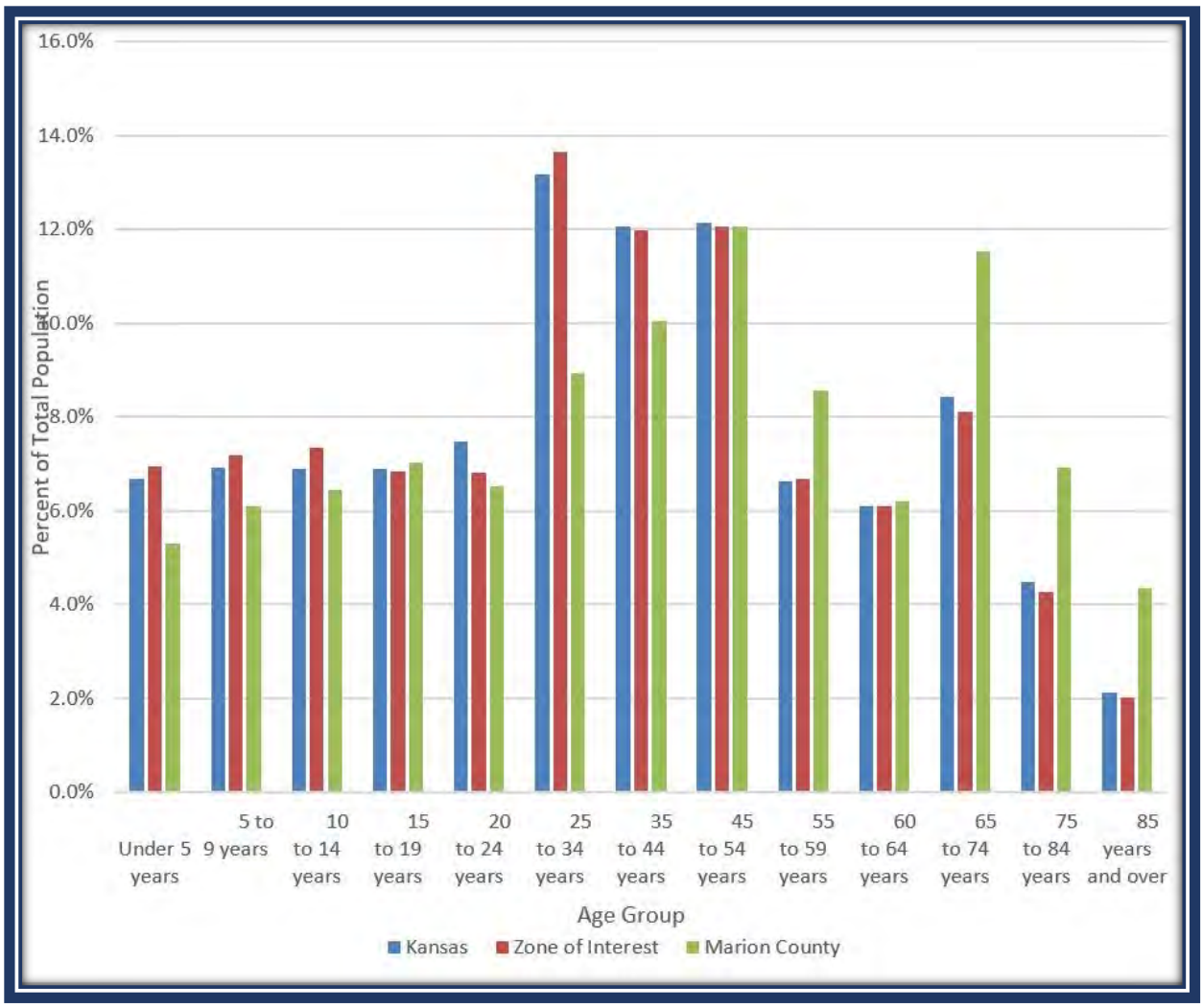

Figure 2-8 Percent of Population by Age Group, 2018 (U.S. Bureau of the Census, American Community Survey, 5 Year Estimate)

2.4.3 Population by Race and Hispanic Origin

The 2018 population by race and Hispanic origin is shown in Table 2-9. In the zone of interest, approximately 73% of the population is White, 13% are Hispanic or Latino, 7% Black, 4% Asian, and 3% two or more races, with each of the other races making up less than 1% each of the total population. The zone of interest is similar to the state's breakdown, except the area of interest has a slightly higher percentage of Blacks. For the state, 76% are White, 12% are Hispanic or Latino, 6% Black, 3% Asian, and 3% two or more races, 1% American Indian and Alaska Native, with each of the remaining races making up less than 1% each.

Table 2-9 2018 Population Estimate by Race/Hispanic Origin

Geographic Area	Total	White	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Hispanic or Latino	Some other race
Kansas	2,908,776	2,214,543	163,713	19,504	82,887	1,827	340,616	2,302
Butler County	66,468	59,255	1,481	497	750	31	3,142	10
Chase County	2,645	2,416	46	13	0	0	122	0
Harvey County	34,555	28,673	573	115	250	83	4,078	0
McPherson County	28,630	26,281	313	131	163	0	1,176	20
Marion County	12,032	11,172	59	11	28	0	430	0
Sedgwick County	512,064	349,985	44,285	3,459	22,005	169	73,527	473
Zone of Interest	656,394	477,782	46,757	4,226	23,196	283	82,475	503

2.4.4 Education

Table 2-10 shows the highest educational attainment for the 2018 population 25 years of age and older. In the zone of interest, 26% of the population had earned a high school diploma or equivalent, 25% had some college, but no degree, and 20% had earned a bachelor's degree. Approximately 11% held a graduate degree or higher and 9% had earned an associate degree. Only 6% of the population had attended school between the 9th and 12th grades but did not earn a diploma. About 4% of the population had less than a 9th grade education. The area of interest educational attainment is representative of the state overall. For Kansas, 26% had earned a high school diploma or equivalent, 23% had some college but no degree, and 21% has a bachelor's degree. About 12% had a graduate degree or higher, and 8% had an associate degree. Only 6% had 9 to 12 years of education but without degree, twice the percentage of the area of interest, and 4% had less than 9 years of education.

Table 2-10 2018 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older

Educational Attainment	Kansas	Butler County	Chase County	Harvey County	McPherson County	Marion County	Sedgwick County	Zone of Interest
Population 25 years and over	1,894,675	43,560	1,823	22,635	19,320	8,255	330,375	425,968
Less than 9th grade	69,212	855	54	765	974	301	12,969	15,918
9th to 12th grade, no diploma	106,507	2,395	131	1,283	707	453	22,388	27,357
High school graduate (includes equivalency)	492,819	11,557	503	5,958	5,272	2,549	86,432	112,271
Some college, no degree	442,045	11,515	613	5,717	4,801	2,222	79,676	104,544
Associate degree	161,016	4,594	128	1,885	1,966	662	26,868	36,103
Bachelor's degree	394,462	8,410	285	4,286	4,006	1,442	65,704	84,133
Graduate or professional degree	228,614	4,234	109	2,741	1,594	626	36,338	45,642

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

2.4.5 Employment

Figure 2-9 shows the 2018 employment by sector expressed as a percent of total employment for the area of interest and the number of employment by sector for Kansas The area of interest and the constituent counties is presented in Table 2-11. For the area of interest, 25% of the employment is in the educational, health care and social assistance services sector; followed by 17% in manufacturing; and 11% in retail trade. While a significant portion of total employment are in the services sector, this shows manufacturing is an important sector. About 9% are in arts, entertainment, recreation and accommodation services; 9% in professional, scientific and management; and 7% in construction. The remaining sectors represent 5% or less each of total employment.

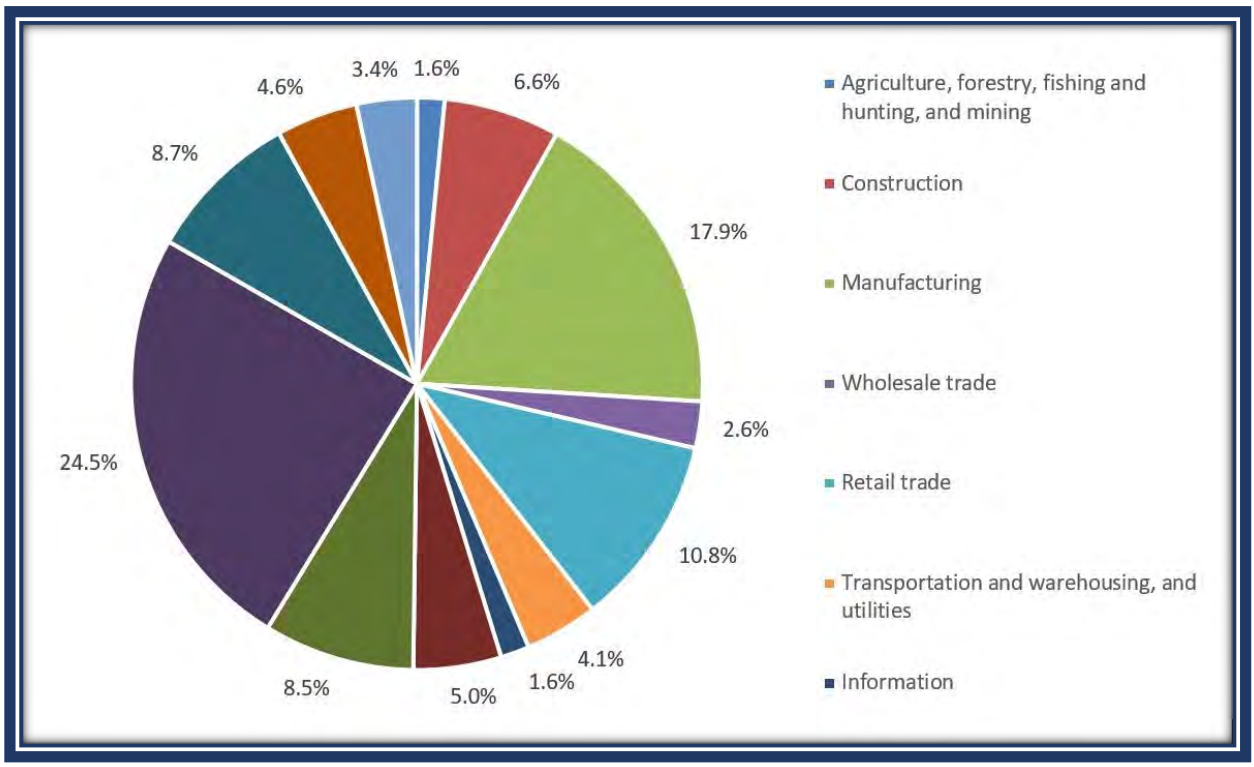

Figure 2-9 Percent Employment by Sector for Area of Interest (2018)

The civilian labor force for the area of interest makes up about 22% of the civilian labor force for the entire state, as shown in Table 2-12. The unemployment rate for the zone of interest was 4.9%, slightly higher than the state overall, which had an unemployment rate of 4.4%. The constituent counties ranged from 2.3% in McPherson County to 5.2% in Sedgwick County.

Table 2-11 Annual Average Employment by Sector

Employment Sector	Kansas	Butler County	Chase County	Harvey County	McPherson County	Marion County	Sedgwick County	Zone of Interest
Civilian employed population 16 years and over	1,428,660	31,098	1,116	16,922	14,932	5,632	246,997	316,697
Agriculture, forestry, fishing and hunting, and mining	46,532	847	77	423	859	440	2,309	4,955
Construction	90,820	2,416	94	1,022	813	392	16,050	20,787
Manufacturing	176,981	4,822	197	3,149	3,314	1,131	43,958	56,571
Wholesale trade	40,345	1,020	28	288	265	236	6,505	8,342
Retail trade	153,119	2,804	138	1,346	1,321	597	28,142	34,348
Transportation and warehousing, and utilities	69,792	1,673	52	755	624	238	9,781	13,123
Information	28,040	322	0	209	136	57	4,418	5,142
Finance and insurance, and real estate and rental and leasing	88,306	1,582	20	604	910	185	12,430	15,731
Professional, scientific, and management, and administrative and waste management services	136,580	2,271	45	1,056	629	132	22,904	27,037
Educational services, and health care and social assistance	352,931	8,446	279	5,418	4,033	1,420	58,086	77,682
Arts, entertainment, and recreation, and accommodation and food services	116,543	2,262	74	1,132	784	325	23,002	27,579
Other services, except public administration	64,254	1,232	46	841	851	295	11,341	14,606
Public administration	64,417	1,401	66	679	393	184	8,071	10,794

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Table 2-12 Civilian Labor Force, Employment and Unemployment (2018)

Category	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate
Kansas	1,493,698	1,428,660	65,038	4.4%
Butler County	32,476	31,098	1,378	4.2%
Chase County	1,168	1,116	52	4.5%
Harvey County	17,444	16,922	522	3.0%
McPherson County	15,290	14,932	358	2.3%
Marion County	5,891	5,632	259	4.4%
Sedgwick County	260,607	246,997	13,610	5.2%
Zone of Interest	332,876	316,697	16,179	4.9%

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

2.4.6 Households, Income and Poverty

Table 2-13 shows the number and size of households for Kansas and the zone of interest. The zone of interest has approximately 252,000 households, which makes up about 22% of the number of households statewide. About 78% of the households are in Sedgwick County (196,000) and almost 10% are in Butler County (25,000). The average household size for the area of interest is 2.55 persons, with the constituent counties ranging from 2.22 to 2.60. These are just slightly smaller than the state overall, with 2.52 persons per household, with the zone of interest just slightly more.

Table 2-13 Number of Households and Average Household Size (2018)

Geographic Area	Total Households	Average Household Size
Kansas	1,124,549	2.52
Butler County	24,473	2.60
Chase County	1,029	2.48
Harvey County	13,383	2.48
McPherson County	12,298	2.22
Marion County	4,789	2.35
Sedgwick County	195,779	2.58
Zone of Interest	251,751	2.55

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Median household income and per capita income are shown in Table 2-14. While the median household income for the zone of interest was not available, for the constituent counties, it ranged from $46,295 in Chase County to $63,272 in Butler County. By comparison, the state's median household income was $57,477. All of the constituent counties were below the state, with the exception of Butler and McPherson Counties, which had median household income greater than the state overall.

The per capita income for the zone of interest was approximately $28,610 and fell below the state's per capita income of $30,757. All of the constituent counties were below the state's per capita income, ranging from $25,105 in Chase County to $30,234 in McPherson County.

Table 2-14 Median and Per Capita Income (2018)

Geographic Area	Median Household Income	Per Capita Income
Kansas	$57,422	$30,757
Butler County	$63,272	$28,759
Chase County	$46,295	$25,105
Harvey County	$56,051	$27,305
McPherson County	$57,765	$30,234
Marion County	$51,262	$25,756
Sedgwick County	$54,974	$28,673
Zone of Interest	NA	$28,610

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Percentages of families and persons falling below the poverty level is shown in Table 2-15. The percent of all families for the zone of interest was not available, but for the constituent counties, it ranged from 5.3% in Marion County to 10.0% in Sedgwick County. Butler, Harvey, McPherson and Marion Counties were below the state's percentage, while Chase and Sedgwick were above.

Approximately 13% of all persons in the zone of interest have incomes below the poverty level, slightly higher than the states percentage of 12%. Butler, Harvey, McPherson, and Marion County had percentages lower than the state and the zone of interest overall. Sedgwick County had the highest, where 14% of all persons have incomes below the poverty level.

Table 2-15 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2018)

Geographic Area	All Families	All People
Kansas	8.20%	12.40%
Butler County	7.20%	10.50%
Chase County	9.00%	12.60%
Harvey County	7.80%	11.20%
McPherson County	6.40%	9.90%
Marion County	5.30%	9.30%
Sedgwick County	10.00%	14.00%
Zone of Interest	N/A	13.20%

Photo 2-6 Cottonwood Point Campground (Source: RoverPass.com)

2.5 RECREATION FACILITIES, ACTIVITIES, NEEDS AND TRENDS

Marion Reservoir has a variety of scenic and comfortable campgrounds to fit most needs and activities.

Access roads lead into four park areas on the reservoir and the spillway area below the dam. The park areas offer picnicking and camping sites, swim beaches, boat launching ramps, water hydrants, sanitary facilities, grills and/or fire-rings, and group shelters.

Camping and picnicking opportunities are numerous with 253 campsites located in four parks - Cottonwood Point, Hillsboro Cove, Marion Cove, and French Creek Cove. Campsites contain picnic tables, grills and/or fire-rings, utility tables, sun-shelters and gravel parking pads.

Facilities at the class "A" parks, Cottonwood Point and Hillsboro Cove, include electrical and water hookups, showers, RV dump stations, group camping areas, group picnic areas, playgrounds, and swim beaches. Cottonwood Point includes some full hookup sites which include 30-50 amp electrical service, individual water, and sewer hookups. Hillsboro Cove includes some sites with 30-amp electrical service and individual water hookups.

Holders of the national passes "Golden Age Passport" or "Golden Access Passport" or the newer America the Beautiful - National Parks and Federal Recreational Lands Pass Program's "Senior Pass" or "Access Pass" receive 50% discounts on camping fees at USACE managed areas. Many of the campsites in the Class A parks are available to be reserved in advance through Recreation.gov or 1-877-444-6777.

Fees for walk-in (without reservations) campers in the Class A parks are collected by gate attendants at the campground entrances.

USACE Day Use Pass

The USACE was given the authority by the U.S. Congress to collect day use fees as part of deficit reduction legislation in the Omnibus Budget Reconciliation Act of 1993. The funds generated from these fees are used by the U.S. Congress to help offset operation and maintenance costs of the USACE recreation program.

- The number of individuals in the private vehicle/bus/commercial vehicle does not apply.
- There are no day use fees for children under 16.
- Campers do not pay additional day use/facility fees at the same project, on any day for which the camping permit is valid.
- Day use fees are not collected currently at Marion Reservoir.

USACE Annual Day Use Pass

The USACE Annual Day Use Pass may be purchased which permit the vehicle and accompanying passengers to use all boat launching ramps and swimming beaches at all nation-wide USACE operated recreation areas without further charges.

- Passes must be visibly displayed on the rear-view mirror. Rangers will ticket if it is not visible.
- Replacements are not available.

The Annual Day Use Pass can be obtained at the USACE reservoir offices and many of the reservoir recreation areas.

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 reservoir originate. This zone is the area within approximately a 100-mile radius of Marion Reservoir, with the majority of visitation from within 70 miles.

2.5.2 Visitation Profile

Marion Reservoir visitors are a diverse group that includes campers, residents of the immediate area, hunters, fishermen, trail users, and day users who picnic, swim, boat, observe wildlife, and sightsee. The peak visitation months are April through September, with July typically being the highest visitation month. At Marion Reservoir, USACE maintains traffic counters at locations where the majority of visitation occurs. These locations generally include developed park areas, minor access points, marina concession sites, and sites leased to non-profit organizations.

Table 2-16 provides 5 years of annual visitation figures for the years 2015 thru 2019. Visitation numbers are impacted by several factors including counting methodology, flooding, drought, and other environmental factors. A change in the counting methodology that USACE employs was implemented during the years of 2014-2017 which resulted in too high or too low visitor counts until the new system was standardized.

Table 2-16 USACE Marion Reservoir Annual Visitation (2015-2019)

Year	Visitation
2019	238,183
2018	521,801
2017	884,394
2016	392,466
2015	227,322

Figure 2-10 illustrates the variation in visitation that may occur at USACE managed parks at Kansas Lakes within the Tulsa District. This variation is most likely due to weather and related biological factors, such as blue-green algae blooms. For Marion Reservoir, visitation showed a drop off from 2010-2012.

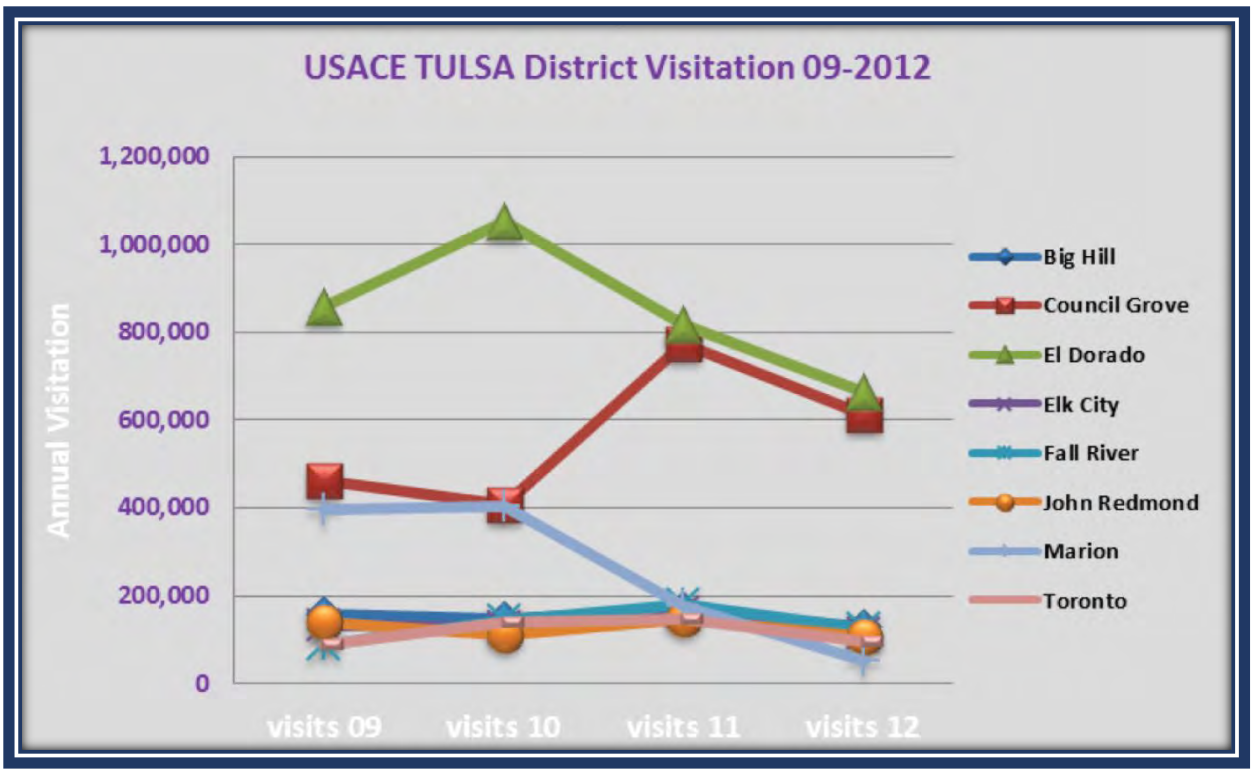

Figure 2-10 USACE Tulsa District Managed Reservoirs – Kansas 2009-2012 (Source: Kansas SCORP)

2.5.3 Recreation Areas and Facilities

Recreation areas and facilities are provided by federal and state agencies at Marion Reservoir. Table 2-17 lists the various parks with their associated services and managing agencies. Upon completion of Marion Reservoir, the USACE developed eight public-use areas at Marion Reservoir: Overlook, Spillway, Cottonwood Point, Hillsboro Cove, Marion Cove, French Creek Cove, Durham Cove and Broken Bridge. To better manage the natural resources, USACE leased Durham Cove and Broken Bridge to Kansas Department of Wildlife, Parks and Tourism (KDWPT) for inclusion in the state-managed wildlife area.

Currently, the USACE manages six public-use areas at Marion Reservoir: Spillway, French Creek Cove, Hillsboro Cove, Cottonwood Point, Overlook and Marion Cove. 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.

Due to the modernization of the National Vehicle Estimating and Reporting System (VERS), the method of estimating and reporting visitation has changed dramatically. A new VERS system was created and launched in Fiscal Year 2014. The USACE Districts with the help of ERDC/IWR are working together to make the necessary corrections to both USACE parks and leased areas to provide the most accurate visitation estimation possible.

Reservoir visitation figures tabulated through the new VERS System for fiscal years 2019 and 2018 were 238,183 and 521,801 respectively.

Table 2-17 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
LOCATION														
Project Office														
Overlook				*				*						
Spillway				*					*					
Cottonwood Point		*	*	*	*	*	*	*	*	*	*	*	*	*
French Creek Cove		*	*	*	*			*			*			*
Hillsboro Cove		*	*	*	*	*	*	*	*	*	*			*
Marion Cove		*	*	*				*						
Broken Bridge			*	*										
Durham Cove			*											
Operating Agency		U.S. Army Corps of Engineers												
		Kansas Department of Wildlife, Parks and Tourism												

Fishing and Hunting

Marion Reservoir 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, but it also extends into the winter where opportunities for ice fishing can develop. Species of sport fish include walleye, white bass, wiper, crappie, largemouth bass, channel and flathead catfish.

The Kansas Department of Wildlife, Parks and Tourism is operating approximately 4,631 acres of the project lands located in the upper reaches of the reservoir for wildlife management and public hunting. Principal game species include bobwhite quail, ducks, geese, mourning dove, cottontail rabbits, deer, pheasant, squirrel and turkey. Hunting and fishing are regulated by Kansas law.

Camping and Picnicking

Opportunities for outdoor family fun and recreation at the park areas surrounding Marion Reservoir include swimming, boating, water skiing, picnicking, and sightseeing. Facilities available at these areas include picnic and camping sites, boat ramps, sanitary facilities, etc. USACE parks require a fee for overnight camping.

Photo 2-7 Cottonwood Point Campground (Source: RoverPass.com)

Boating

Boaters will find boat ramps located around the reservoir at Cottonwood Point (2 ramps, 4 lanes), Hillsboro Cove (1 lane), Marion Cove (2 lanes), French Creek (1 lane), Durham Cove (1 lane “shallow” launch) and Broken Bridge (1 Lane “river” launch). Developed ramps provide lights and courtesy docks. There is currently no fee required to use any of these ramps.

Boating on the reservoir is in accordance to Kansas boating laws and USACE regulations.

Photo 2-8 Canoeing on Marion Reservoir (Source: USACE)

Sightseeing and Birdwatching

The area in which Marion Reservoir is located has long been prized for its rolling prairie and tree-dotted valleys, sheltered in places by limestone-capped ridges and outcrops. All of this intermingled with the historic agricultural practices of the plains. The picturesque setting of Marion Reservoir is an open invitation to the visitor for picnicking, camping, and sightseeing.

For nature lovers, there are many native trees, wildflowers, and flowering shrubs including ash, elm, cottonwood, hackberry, sycamore, willow, oak, red cedar, catalpa, Osage orange, redbud, and sumac. There are also many species of bird native to the project area for birdwatchers to enjoy including bald eagles, pelicans and numerous species of migratory birds and shorebirds that enjoy the reservoir at different times of the year.

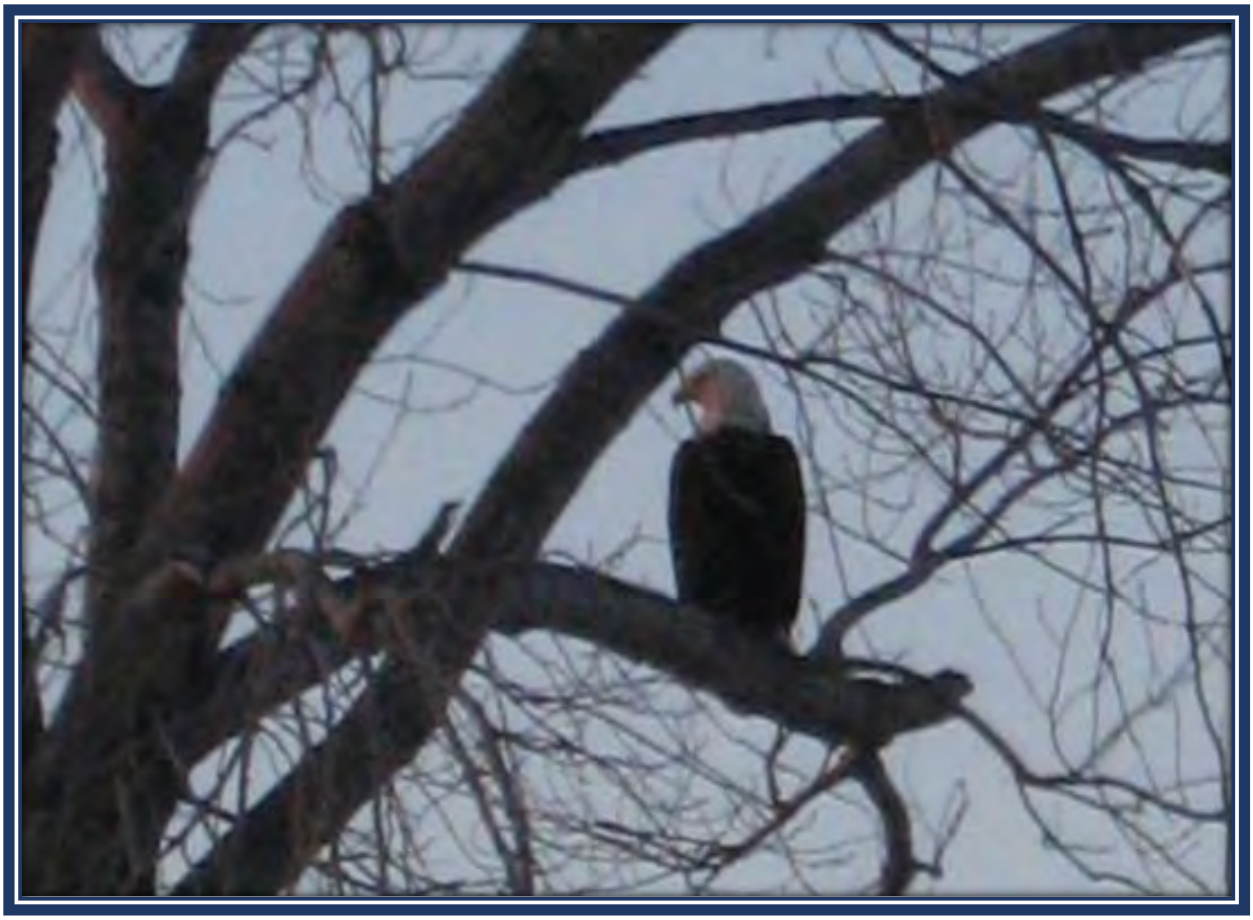

Photo 2-9 Bald Eagle at Marion Reservoir (Source: USACE)

Swimming

Marion Reservoir offers many areas to swim to escape the heat of summer when reservoir conditions are suitable. There are three designated swim beaches on the project, Cottonwood Point Park, Hillsboro Cove, and Marion Cove Beach. The reservoir has several small natural beaches that visitors can enjoy as well, but these natural beaches are not regulated with buoys and do not meet regulatory standards with regard to bottom quality or depth. Life Jacket Loaner boards are available at beaches and/or Gate Attendant buildings.

Trails

There are various scenic hiking and bicycling opportunities located around Marion Reservoir through the use of the county road systems or through random dispersed locations that offer the opportunity for exploration. However, there is only one developed trail which can be found in Cottonwood Point Campground.

- **Willow Walk Trail** - This 1-mile long trail or its ½ mile option, is located at Cottonwood Point and passes through areas of grass covered clearings and cottonwood groves. It may not be a long or difficult trail to use, but it does offer a welcome stroll to enjoy the natural setting.

2.5.4 Commercial Concession Leases

Concessionaires provide valuable services to the public at USACE reservoirs 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, demand at Marion Reservoir for such facilities is non-existent. The 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, KDWPT published the 2015 Kansas Statewide Comprehensive Outdoor Recreation Plan (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.
- 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.

Figure 2-11 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 at Marion Reservoir.

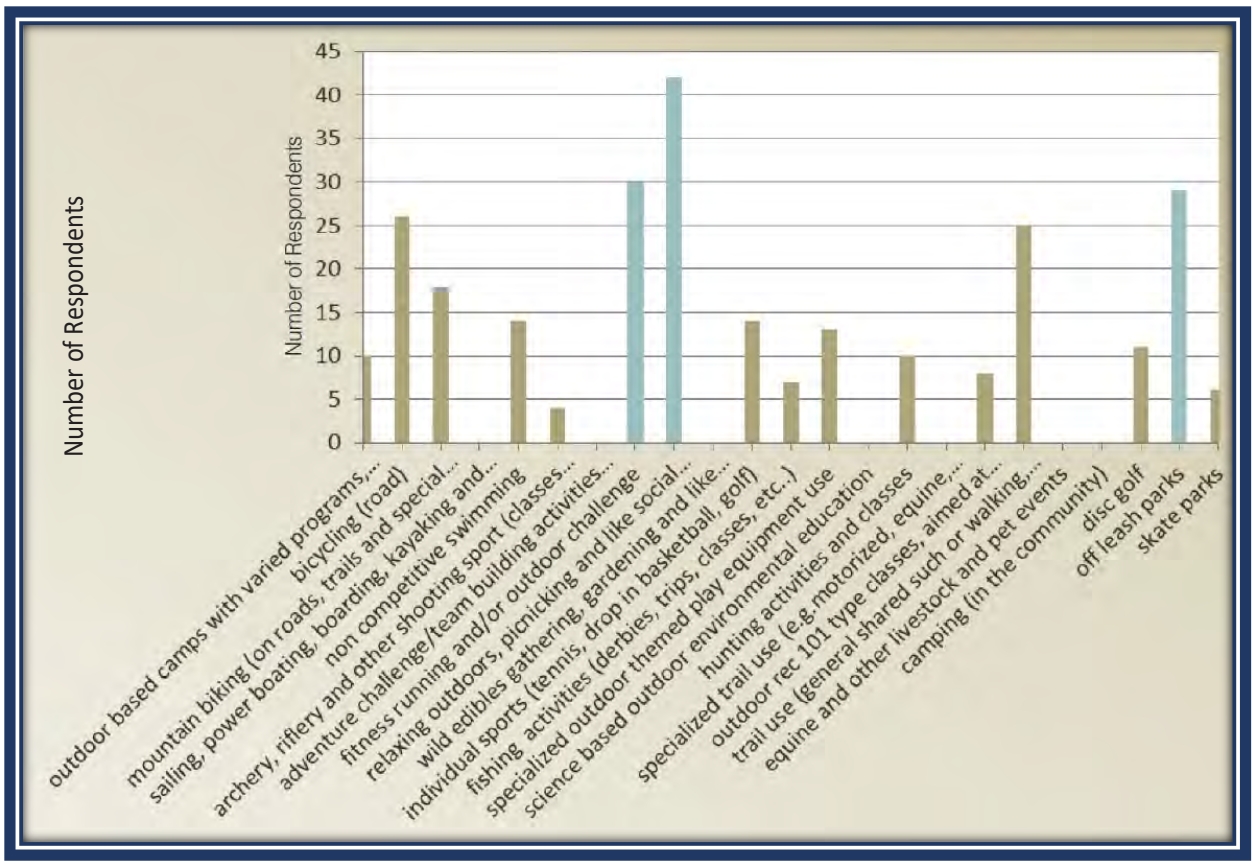

Figure 2-11 Most Popular Individual Outdoor Activities 2009-2012 – KS Public Supplier's Survey (Source: State of Kansas SCORP)

2.5.6 Recreation Analysis – Needs

The activities addressed above are supported by USACE at Marion Reservoir. Wildlife based recreation accounts for a substantial amount of Marion Reservoir's outdoor recreation demand, both by local 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 the USACE at Marion Reservoir indicated a high level of satisfaction amongst respondents to Marion Reservoir'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 reservoir could be improved, but overall respondents felt that Marion Reservoir 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 in years with increased precipitation within the region. Fitness and health enhancing outdoor experiences are popular in a variety of formats. Individual sports and activities in nature are increasing while traditional team sports (football, baseball, and soccer) are in decline. Nationally, 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 2-12 illustrates the areas and facilities identified as most needed in state and federal parks in Kansas.

Photo 2-10 Fishing from a boat at Marion Reservoir (Source: RuggedKansas.com)

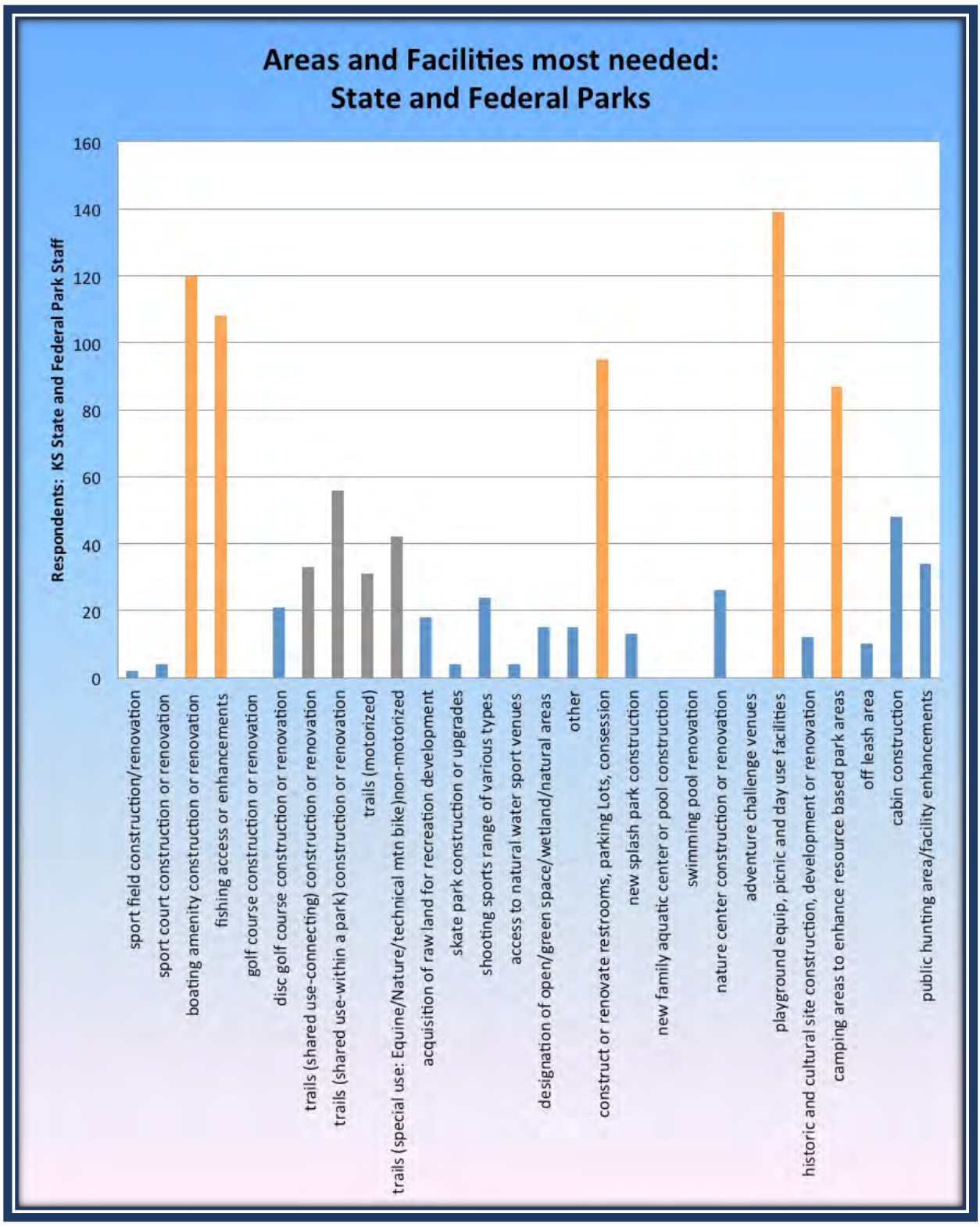

Figure 2-12 Recreational Areas and Facilities Most Needed: State and Federal Parks (Source: 2015 Kansas SCORP)

2.5.7 Summary Discussion – Needs and Trends

Given the outdoor recreation trends information from the SCORP, it is evident that future recreation development at Marion Reservoir 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. The 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 Marion Reservoir. 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 Reservoir'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 Marion Reservoir. Presently, the 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 Reservoirs, Marion Reservoir experiences low to moderate visitation. This trend is expected to continue based on regional population projections. However, the 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 Marion Reservoir encompasses 12,674 acres acquired in fee simple title by USACE. Above the area acquired in fee simple title, 387 acres were encumbered with a perpetual flowage easement. These are the official acres and differ from those in other parts of this Plan due to more precise 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, is not permitted on flowage easement lands. Construction of most structures and improvements on flowage easement lands will require formal written authorization from the USACE.

Prospective buyers of property adjacent to Marion Reservoir 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 identified on deeds or plats provided by the seller(s).

Individuals and entities 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 entities will be encouraged to pursue a sublease with an existing lessee where existing leases are present. In general, new leases that provide recreational amenities and services require market studies, environmental reviews, and competitive bidding before an award can be made. Questions regarding this topic should be directed to the USACE Reservoir office at 2105 Pawnee, Marion, KS 66816.

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 USACE 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 Reservoir 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 Marion Reservoir, 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 the USACE to another party. Outgrants at Marion Reservoir 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 22 recorded outgrants in effect on USACE lands and 387 acres of flowage easement at Marion Reservoir. These outgrants include the following:

- 15 Easements
- 1 Fish/Wildlife License
- 6 Consents

2.7 PERTINENT PUBLIC LAWS

The following Public Laws are applicable to Marion Reservoir. Additional information on Federal Statutes applicable to Marion Reservoir can be found in the Environmental Assessment for the Marion Reservoir 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 Marion Reservoir.
- 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 and other vegetative 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 U.S. 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 Reservoirs 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 845, 80th U.S. 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 Reservoirs 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.”

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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 Marion Reservoir. 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 Marion Reservoir. 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 Marion Reservoir 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 Marion Reservoir 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, Marion Reservoir 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 2015 WAP and the 2015 Kansas 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 Marion Reservoir to the greatest extent possible. Implementation of the objectives will require close coordination between KDWPT and USACE and are dependent upon available funds Table 3-1 through Table 3-5 list the objectives for Marion Reservoir.

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, and 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 Marion Reservoir 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, and 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 ensure 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 Marion Reservoir.					*

*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 Ecological Focus Areas described by KDWPT in the State Wildlife Action Plan (WAP).	*	*		*	*
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 Marion Reservoir 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 reservoir.	*	*	*	*	
Ensure that adverse impacts resulting from land use actions, including outgrants, are appropriately mitigated to restore the value of land to the nation.		*		*	*
Implement prescribed fire as a management tool to promote the vigor and health of Flint Hills forests, woodlands, and prairie.	*	*			*

Natural Resource Management Objectives	Goals				
Control 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 Reservoir office and around the Reservoir. Topics to include history, Reservoir operations (Flood Risk Management, and Water Supply), water safety, recreation, cultural resources, ecology, invasive species and USACE missions.	*	*	*	*	*
Work closely with 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.					*
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 per USACE Climate Preparedness and Resilience guidance.					*

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.

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 Marion Reservoir, 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, water quality, fish and wildlife conservation, and recreation. 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 Marion Reservoir 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 be classified in accordance with the primary use for which project lands are managed. There are five primary categories and four sub-categories of land 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

The land classifications for Marion Reservoir were established after considering 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 and related 1981 Master Plan supplement. 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 111 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 Marion Reservoir there are 582 acres classified as High-Density Recreation land. Refer to Table 42 for a listing of the current High-Density Recreation Areas and who operates them at Marion Reservoir. 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 Marion Reservoir; 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 no designated Environmentally Sensitive Areas at Marion Reservoir.

4.2.8 Multiple Resource Management Lands (MRML)

This classification is divided into four sub-classifications identified as the following: 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 5,007 acres of land under this classification at Marion Reservoir. The following is a 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 354 acres under this classification at Marion Reservoir.
- 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 Reservoir. 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 4,641 acres of land included in this classification at Marion Reservoir.
- 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 Marion Reservoir.
- 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 Marion Reservoir.

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 the following:

- 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 43 acres of water surface are classified as Restricted at Marion Reservoir. These areas are depicted on the land classification maps in Appendix A.
- Designated No-Wake. There are eight boat ramps where approximately 44 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 Reservoir 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 approximately 193 acres of Fish and Wildlife Sanctuary areas at Marion Reservoir.
- Open Recreation. This classification encompasses the majority of the reservoir water surface and is open to general recreation with boats being the primary means of transport. Boaters are advised through maps, 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 6,308 acres of water surface at Marion Reservoir are classified as Open Recreation.

A summary of land classifications at Marion Reservoir 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 and Water Surface Classification

Classification	Acres
Project Operations	111
High Density Recreation	582
Environmentally Sensitive Areas	0
Multiple Resource Managed Lands: Low Density Recreation	354
Multiple Resource Managed Lands: Wildlife Management	4,641
Multiple Resource Managed Lands: Vegetative Management	0
Future/Inactive Recreation	0
Water Surface: Restricted	43
Water Surface: Designated No-wake	44
Water Surface: Fish and Wildlife Sanctuary	193
Water Surface: Open Recreation	6,308

*** 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 Marion Reservoir, 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 387 acres of flowage easement lands at Marion Reservoir.

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 at Marion Reservoir include the following:

- Project Operations Goal A
- High Density Recreation Goal C
- Multiple Resource Management Lands for:
    - Low Density Recreation Goal C
    - Wildlife Management Goal B, E

A more descriptive and detailed plan for managing project lands can be found in the Marion Reservoir 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, reservoir office, maintenance facilities, and other areas solely for the operation of the project. There are 111 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

Marion Reservoir has 582 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 Marion Reservoir include six park areas that are managed by USACE, and two park areas managed by KDWPT under a lease agreement with USACE. The KDWPT is responsible for the operation and maintenance of their leased areas, and although the 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. Additional best management practices may include the following:

- 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

The following is a description of the parks operated by USACE and by KDWPT on USACE lands at Marion Reservoir, some of which are highly developed, while others have only basic facilities and limited development. Classifications for the various parks at Marion Reservoir 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 considering today's fiscal realities and is responsive to the changing needs of the American people. The following parks are under USACE direct management.

5.3.2 Day Use Parks

Spillway – The Spillway is comprised of two areas, Spillway Left and Spillway Right. Spillway Left encompasses 22 acres, and Spillway Right encompasses 28 acres with 6 acres and 7 acres respectively developed for recreation. Both areas are operated by USACE and serve as day use areas. The areas offer a great place to fish below the dam along the stilling basin and Cottonwood River. There are picnic sites available and trails to the water. Also, it's a great hunting area and viewing for migratory birds and whitetail deer. At the entrance to Spillway Left is a parking lot that enables fisherman closer access to the reservoir side. Near the entrance to Spillway Right is a dump station directly across from the Overlook. Both sides of the Spillway are accessible to vehicle traffic and provide restrooms. Fishing and other recreational use of the Project

Operations area between Spillway Left and Spillway Right is considered to be incidental to the operation of Marion Reservoir. This use could be suspended or stopped in order to carry out operational needs or as a physical security measure.

Overlook – The Overlook encompasses 11 acres with 4 acres developed for recreation. The Overlook is operated by the USACE and offers a scenic viewing place that overlooks the entire reservoir. Many migratory birds can be seen throughout the year, including bald eagles, and the lower basin is a desirable fishing spot for many anglers and wildlife. The area offers a great resting place and informational spot with bathrooms, informational kiosk, and picnic tables.

Photo 5-1 Dedication plaque at Overlook Park, Marion Reservoir (Source: USACE)

Class A Parks

Cottonwood Point – Cottonwood Point encompasses 376 acres with 172 acres developed for recreation. Operated by USACE, the park is a spacious and shady campground with numerous hiking and biking trails through the variety of road systems, that snake through the forest around the reservoir. Campers are likely to see white-tailed deer, raccoons, pelicans, and various other waterfowl. Anglers will find an abundance of channel catfish, walleye, white bass and wipers. The park has 165 campsites with electrical hookups, most have water and sewer hookups. The park also

offers 2 group camping areas and shelters. Restrooms and showers are available as well as group picnic sites, courtesy docks, multipurpose courts, a playground, swim beach, dump station, 2 boat ramps and a multipurpose trail.

Hillsboro Cove – Hillsboro Cove encompasses 166 acres with 40 acres developed for recreation. Operated by the USACE, the park is a spacious and shady campground and draws thousands of visitors annually to enjoy the pristine shoreline. The park offers 51 campsites with a combination of electric, water and sewer hookups as well as a group camping area with 10 campsites and a group shelter. Restrooms and showers are available. In addition, the park provides picnic sites and a fishing pier, courtesy dock, playground, and dump station.

Photo 5-2 Hillsboro Cove, Marion Reservoir (Source: NRRS)

Class C Parks

French Creek Cove – French Creek Cove encompasses 30 acres with 16 acres developed for recreation. The park is surrounded by the French Creek and KDWPT managed public hunting lands and Wildlife Refuge. The park is operated by the USACE and offers 20 campsites with only electric hookups. Potable water is available. Vault restrooms, picnic sites, and a boat ramp, courtesy dock, and playground are available.

Marion Cove – Marion Cove encompasses 60 acres with 20 acres developed for recreation. Operated by the USACE, the park offers camping, boating and swimming recreational opportunities. The primitive campground has 17 campsites mostly along the water's edge. Vault restrooms, picnic sites, and a swim beach, boat ramp, and courtesy dock are available.

5.3.3 KDWPT Park Leases

Broken Bridge – Broken Bridge encompasses 2 acres. Operated by KDWPT, the park is located on the upper end of reservoir and provides universally accessible fishing to the river. Vault and biological restrooms, 2 fishing piers, and a boat ramp are available.

Durham Cove – Durham Cove encompasses 48 acres with 6 acres developed for recreation. Operated by KDWPT, the park contains managed lands and riparian forests that offer opportunities for hunting and fishing. The primitive campground provides 5 campsites and a boat ramp.

5.3.4 Trails

There is only one trail on USACE lands which is managed by USACE. All trails are open year-round and offer a variety of activities and experiences.

- Willow Walk Nature Trail is a one-mile trail located at Cottonwood Point and is a special treat for wildlife observers. Along this trail, non-native grass pastures are giving way to returning native grasses. Waterfowl feed where buffalo once grazed. Former grassy hillsides are now a wooded corridor along the shoreline of the reservoir. Extreme seasons, violent weather, changing land use, and an evolving shoreline have combined to make the Willow Walk Trail an ever-changing trek.

5.4 ENVIRONMENTALLY SENSITIVE AREAS

ESAs 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 statues. 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 0 acres at Marion Reservoir under this classification.

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 5-3 Marion Reservoir (Source: USACE)

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 (described in section 2.6), 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 354 acres of MRML – Low Density Recreation at Marion Reservoir.

5.5.2 MRML - Wildlife Management

There are 4,641 acres of MRML – Wildlife Management at Marion Reservoir. Almost all these lands are under the management of KDWPT (4,631 acres) but a small number of acres are under USACE management (9 acres). These include lands along the tributaries that flow into the Reservoir. 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 2-5 Chapter 2.). Future management practices by the KDWPT and 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 Marion 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. Marion Wildlife Area is managed primarily for hunting, but most of the area is open year-round for activities such as hiking and bird watching. A 522-acre waterfowl refuge has been established which allows waterfowl to feed without disturbance. The refuge is closed to all activities from October 1st to March 1st and is always closed to hunting. Additional best management practices may include the following:

- Use of erosion control blankets that do not pose entrapment hazards to wildlife
- 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 Marion Reservoir 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 (see Table 2-5) 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 sustain populations of non-game species. Conservation and protection of habitat that is typical of the Flint 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
4) Meet the needs of resident species not included in the above priorities

Photo 5-4 Marion Refuge Area, Marion Reservoir (Source: USACE)

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 0 acres of Vegetative Management at Marion Reservoir.

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 0 acres of Future or Inactive Recreation at Marion Reservoir.

5.6 WATER SURFACE

Classifying 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 Reservoir 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 1350.5 NGVD there are 6,588 acres of surface water. Buoys are managed by USACE. These buoys help mark hazards, swim beaches, boats keep-out and no-wake areas. The following water surface classifications are designated at Marion Reservoir.

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 43 acres. The Restricted water surface at Marion Reservoir includes areas near the dam and the three 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 seven boat ramp areas at Marion Reservoir where no-wake restrictions are in place for public safety and protection of property. Designated No-Wake areas at Marion Reservoir include approximately 44 acres.

Future management of these areas rests with the USACE and partner agencies at Marion Reservoir. 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 193 acres of Fish and Wildlife Sanctuary water surface at Marion Reservoir. In addition to the water surface, the waterfowl refuge within the Marion Wildlife Area is on areas lying above the conservation pool and are therefore not included in the water surface classification.

5.6.4 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. Approximately 6,308 acres of Marion Reservoir water surface are 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 Reservoir is in accordance with USACE regulations and water safety laws of Kansas. The USACE always encourages all boaters and swimmers to wear their lifejackets 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, Section 327.4. Restricted areas for seaplanes at USACE managed Reservoirs 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 Reservoir-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 Marion Reservoir.

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 reservoirs for water storage. Typically, sedimentation is event-driven with most sediment loading occurring during major inflow events. The rate of storage loss varies by reservoir, 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 conservation, 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 that 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 related to the topic of sedimentation for Marion Reservoir can be found in Chapter 2.

6.2 WATERSHED RESTORATION AND PROTECTION STRATEGY (WRAPS)

The WRAPS is a framework that allows for increased stakeholder involvement in issues that impact their watershed. Administered by the Kansas Department of Health and Environment (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 Marion Reservoir WRAPS Nine Element plan is written to address impairments relating to eutrophication. Best management practices will be put in place specifically to address impacts from croplands and rangelands.

Specifically, impairments addressed in the Marion WRAPS are the impacts of eutrophication, phosphorous, sedimentation, and bacteria 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.

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

Marion Reservoir possesses two active zones or “pools” defined by elevation and established at the time the reservoir was designed by the USACE and authorized by U.S. Congress. The flood control pool at Marion Reservoir 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 Marion Reservoir exists between elevations 1350.51 and 1358.5 feet NGVD. Storage in the flood control pool is only used to minimize downstream flooding during periods of rainfall. The objective of operating the reservoir is to evacuate the pool as quickly as possible while minimizing downstream flood impacts. The bottom elevation of the flood control pool (1350.51 feet NGVD) defines the transition point between flood control and conservation pools at Marion Reservoir.

The conservation pool stores water to support authorized project purposes. Accordingly, the top of the Marion Reservoir conservation pool (sometimes referred to as “normal” pool elevation) is 1350.5 feet NGVD as authorized by U.S. Congress. Based on the most recent sediment survey (2008), Marion Reservoir contains approximately 80,669 acre-feet (a unit of volume equal to one acre of surface area and a depth of one foot) of storage at the top of the conservation pool. While the reservoir 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 reservoir is to maintain a reservoir level as close to the top of the conservation pool as possible.

Flood events at the reservoir over the decades often have a significant effect on both the infrastructure and the uses associated with Marion reservoir. Due to the relatively flat topography found at the reservoir, recreational features such as campgrounds can be affected and or inundated when reservoir levels increase just six inches above the conservation pool. Pool elevations between one and three feet above the conservation pool can create situations where numerous campsites, roads, and other areas are closed due to flooding.

Changing the elevation of the top of the conservation pool of a federal reservoir from that authorized by U.S. 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.

Replacement or relocation of recreation facilities and functions may be required. 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 Marion Reservoir. 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 Marion Reservoir 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 prohibited.

6.5 LAKE LEVEL MANAGEMENT PLANS

Fluctuations of normal reservoir levels are implemented during the fall and winter months annually in an effort to improve wildlife and fisheries while at the same time aid in the lessoning Blue Green Algae blooms and reducing the zebra mussel populations. By targeting a 2-foot drawdown in December as requested by KDWPT, the goal is to improve and/or support the following:

- **Fisheries** – Enhance walleye fishing by decreasing the likelihood that mature walleye fry will be pulled through the gates during floodwater releases and provide a clean substrate on which walleye spawn. The rock riprap on the face of the dam (where the walleye spawn) is normally covered with filamentous green algae. By exposing the rocks, the algae will die and be weathered away to provide a clean substrate.
- **Water Quality** – Lessen blue-green algae blooms by drying the bottom sediments where phosphorous is more tightly bound to the sediments. The phosphorous is less likely to become available in the water column where it enhances blue-green algae growth.
- **Operations & Maintenance** – (1) Lessen ice damage to park facilities by providing extra flood storage for heavy spring rainfall; (2) Lessen downstream bank erosion by releasing water at a reduced rate and at a time when the stream banks are dry; (3) Decrease erosion by enhancing opportunities for bank revetment (riprap) projects.
- **Zebra Mussels** – Control by eradicating species in waters shallower than two feet deep.

6.6 BLUE GREEN ALGAE AND HARMFUL ALGAL BLOOMS

Blue Green Algae (BGA) and subsequent harmful algal blooms (HABs) have been occurring at Marion Reservoir for years and its negative impact on the recreational opportunities and public uses is well known to the visitors of the reservoir. Blue-green algae are naturally present in most Kansas surface water resources but when certain conditions are present these organisms can reproduce rapidly. This dense growth of algae is called a bloom, sometimes leading to a HAB. HABs usually manifest in mid-June and extends through late August but have been recorded at Marion Reservoir to occur as late as November. HABs are typically triggered by several factors: temperature, sunlight, wind, and inflow; but the consistency of these occurrences is not entirely predictable. Wind can both concentrate and disburse the algal blooms, but due to the small size of the reservoir, blooms typically cover the entire surface to one degree or another, which significantly impacts visitation and recreational opportunities of the reservoir.

Harmful algal blooms are potentially toxic and may pose a direct threat to human and animal health. Recreational exposure to this toxin, cyanobacteria, can result in adverse human health effects such as hay fever-like symptoms, skin rashes, vomiting, diarrhea and respiratory distress. Freshwater blue-green algae under bloom conditions can produce potent toxins that cause specific and severe hepatic or neurological dysfunction. Although members of the public or USACE staff usually report the physical presence of blooms, KDHE is the agency responsible for issuing Watches, Warnings, and/or Closures when the cell count and/or toxin level is high. The USACE communicates these Watches, Warnings, and Closures by posting KDHE signs (available from their website) at launches, beaches, gate houses, bulletin boards and websites. In the worst cases KDHE issues closure and the USACE implements the requirements of closures as directed by KDHE.

Photo 6-1 Blue Green Algae at Marion Reservoir (Source: USACE)

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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 Marion Reservoir. 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 Marion Reservoir to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in the region. The following milestones provide a brief look at the overall process for revising the Marion Reservoir Master Plan.

The USACE began the revision process for the Marion Reservoir Master Plan in the Fall of 2019. The objectives for the master plan revision were to (1) revise land classifications and prepare resource objectives to reflect changes in USACE land management policies since 1977 and trends identified in the SCORP, and (2) revise 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

In the interest of public health and well-being due to the Covid-19 pandemic, the public input process was changed from a face-to-face public meeting to a virtual presentation detailing the specifics of the master plan revision and providing the public with the current land classification map and 1977 Master Plan and 1981 Update for review. The presentation, documents, and public input process remained open for 45 days. The public comment period began May 11, 2020 and ran through June 26, 2020.

The presentation included a description and definition of a master plan, descriptions of the new land use classification options, and instructions for commenting on the master plan. Presentation topics included:

- Public involvement process
- Project overview
- Overview of the National Environmental Policy Act (NEPA) process
- Master Plan and current land classifications
- Instructions for submitting comments

For Marion Reservoir, USACE received 18 comments from 4 individuals. While issues raised are important, most of the comments received do not pertain to land use issues of the master plan. Issues addressed in the comments included cultural resources,

camping, park maintenance, boat docks, flood damage, vegetative management, swim beaches, and project management. All the public comments received were noted and will be addressed as future funds and development are considered.

Marion Reservoir is a federally owned and managed public property, and it is USACE's goal to be a good neighbor, as well as steward for public interest. As such, USACE is bound to the equal enforcement of policies and fees for this publicly held national asset. Table 7-1 provides a summary of the comments received during the initial scoping comment period for the Master Plan, followed by the USACE response.

Table 7-1 Public Comments from May 11, 2020 through June 26, 2020

Comment	Response
COMMENTS FROM OSAGE NATION	
The Osage Nation Historic Preservation Office (ONHPO) has received notification of and associated documentation for the proposed revision of the Master Plans for the USACE Council Grove Lake in Morris County, Kansas; Elk City Lake in Montgomery County, Kansas; Marion Reservoir in Marion County, Kansas; and El Dorado Lake in Butler County, Kansas. These lakes are located within the Osage Nation's Ancestral Territory and in some cases are located in regions that are very sensitive to the Osage. Management of Federal lands must be conducted in accordance with Sections 106 and 110 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the Archaeological Resources Protection Act, and the American Indian Religious Freedom Act. Consultation with the Osage Nation is a critical component in the USACE's compliance with these laws. The Master Plans for USACE Projects, including the four presently under review, must specifically state that the USACE will comply with these laws. The ONHPO understands that compliance with Section 106 of the NHPA will be conducted on an individual basis. Due to the significance to the Osage Nation of the areas occupied by these projects, the Osage Nation requests a teleconference	Concur: The relationship with the Osage Nation is important to USACE. The Tulsa District will consult with the Osage Nation and other Tribal Nations, as appropriate, to identify to the furthest extent possible historic properties and historic sites and features of significance to these Nations. Similarly, Tulsa District will ensure compliance with Section 106 of the National Historic Preservation Act of 1966 for all actions approved for or conducted on government property in the future.

Comment	Response
meeting with USACE, Tulsa District Natural Resources and Recreation Branch and the Southwest Planning Division to discuss the Osage Nation's concerns with the projects in general and the development of the Master Plans. The ONHPO appreciates the opportunity to participate at this stage and looks forward to working with the USACE throughout the process and requests an approximate timeline for each phase. Please let me know if you have any questions. Thank you for consulting with the Osage Nation on this matter.	
COMMENTS FROM THE GENERAL PUBLIC	
I would like to see you go back to "first come, first served" way of reserving camp sites. Even when our kids were in school we stood a better chance at getting a good camp site than we do now. So many times, we have gone to the lake where prime campsites have set empty all weekend, just because they were reserved by someone who didn't show up. Other than that, I think Marion Reservoir is a great place to come with my family, and most of the facilities have just gotten better through the years.	Noted. USACE endeavors to work with the public to improve all aspects of recreation at these facilities with attention to equal access for everyone. USACE management of campsites at Marion Reservoir will continue with the combination of both the reservations on recreation.gov and the "first come/first serve" system, giving everyone the same opportunity for camping.
I wish you would consider is putting in a new boat dock at Marion Cove. The existing one is in sad shape and is not a good design.	Noted. A new dock was purchased in 2020 and is pending installation.
The project name was officially changed from Marion Lake to Marion reservoir by act of congress believe in the early 90's. This was done after public complaints about confusion with the Marion County Lake.	This is mentioned in Section 1.2 Project Authorization.
The reservoir overlook area (west end of dam) is a total disaster. This is basically the "front door" to the reservoir. This is the image that a first-time visitor sees when arriving at the lake. Bathrooms are no longer in operating order. Flower beds are not maintained. Areas requiring mulch have not seen mulch in at least 5 years. Shrubs are not	Noted. USACE strives to create a high-quality recreational experience for all users at Marion Reservoir. Needs are addressed as funding and personnel allow. The overlook maintenance is a component of contracted park maintenance.

Comment	Response
pruned. Landscaping stones have been hit by mowers and not put back in place. Display board is not maintained. Nuisance trees are growing up through the shrubs. A large number of mud dauber nests decorate the roof of the picnic table area.	
The reservoir is still not ready to open from the flooding that occurred last year. Note that many items that sustained "flood damage" could have been moved, with very little effort, out of harm's way. Totally amazing that the state of Kansas was impacted and had the desire and drive to re-open. If the country was not impacted by the COVID19 pandemic, Marion Reservoir was still not ready to open on April 15th and is still not ready.	Noted. USACE makes every effort to maintain parks and recreation opportunities at Marion Reservoir. Unfortunately, federal budgets, reservoir staffing and contract/contractor availability play a large part in all clean up and maintenance efforts. USACE has been able to open all but one campground in September of 2019.
Areas that were intended to be native grassland have a massive amount of trees in them. This includes red cedars, etc. Instead of dealing with the situation, the Corp watches the trees continue to grow and choke out the native grass. If the Corp had spent a day a year eliminating the trees when they were small, the situation would not be out of control today.	Noted. USACE is committed to preserving the natural habitat at Marion Reservoir, which includes control of invasive species. USACE will continue with existing noxious weed and invasive species control programs utilizing all available methods as appropriate as time, personnel, and funding permit.
Park trees are rarely trimmed resulting in damage to the trees and problems during mowing. On top of this, it does not look nice. What is wrong with having a beautiful reservoir that everyone is proud of?	Noted. USACE is committed to preserving the natural beauty and habitat at Marion Reservoir. Trees are pruned as necessary to maintain a safe environment for which the public can access. When necessary, pruning and trimming trees are an identified component of contracted park maintenance.
Hazard buoys on the lake are not located properly. Definitely a safety issue. The Corp has been made aware of the issue but continues to ignore the using community.	Noted. USACE is strongly committed to public safely. Marion Reservoir will continue to use and maintain buoys per policy/regulations and inspect monthly as they have in the past.
The Corp has a lot of equipment and a continual desire to purchase additional equipment. If the equipment was used, that would be ok, but most of the equipment is	Noted. USACE is committed to the responsible stewardship of lands, water, and public at all time. All equipment at Marion Reservoir,

Comment	Response
never used. The Corp owns multiple boats that never see the water.	whether general or specialized in nature is utilized wherever and whenever needed to ensure the Marion Reservoir missions are supported.
There is not one single pollinator plot at the reservoir. The Federal Government has pollinator plots as a high priority for the people participating in CRP programs, but the Corp is too lazy to participate.	Noted. USACE pollinator program is robust across the U.S. and is dependent upon federal funding. Marion Reservoir staff have identified areas to implement the program and are eagerly awaiting pending funding and implementation.
Areas requiring rock, gravel or sand are never maintained. On the flip side, a 10 to 20-year supply of material has been purchased and is available to resolve every issue multiple times. Instead of using the material, trees and grass are growing up through the piles.	Noted. Gravel and Rock stockpiles identified are required and retained onsite as part of the Marion Reservoir Emergency Action plan to address flooding emergencies and not for general recreation site maintenance. Maintenance on areas requiring these materials are addressed as funding, time and personnel are available.
Swim beaches are a joke. Swim barrier marker buoys are not put back out in the spring. Beaches need sand and parking lots need gravel.	Noted. USACE is committed to public safety at all times. Swimming Beaches on USACE property provide a safe area for the public and have many rules/criteria they must follow including buoys. Marion Reservoir will continue to use and maintain buoys per policy/regulations and inspect monthly as they have in the past.
Marion cove boat ramp is hideous. Note: This has been the only open boat ramp for large boats (Durham cove boat ramp - small boats, Broken Bridge boat ramp - river access). The ramp does not have a wind protection barrier, which is a huge safety issue. The "dock" is a disgrace. It is rarely set to the correct height (Corp responsibility is to push deeper or pull in shallower based on the elevation of the reservoir). Bumper rails are totally inadequate. They provide zero protection to boats that are moored. On top of that, the bumper rails fell off last year and were re-	Noted. USACE is committed to improving areas and maintaining a high-quality recreational experience. A new dock was purchased in 2020.

Comment	Response
installed with deck screws which have pulled through the bumper material. This has resulted in multiple boats being damaged. Supposedly the Corp has purchased a new dock for Marion Cove. If the Corp does not create a wind protection barrier, the new dock and ramp will provide marginal utility.	
Many people plan spring and summer activities at Marion Reservoir. Many own boats, campers, and trucks to pull the campers. In other words, it is a major part of their life. The most important thing they want from the Corp is a date when the campgrounds and boat ramps will be open. Nobody likes a rolling wave of date slides and reservation cancellations. The Corp did very little from October to April getting the campgrounds ready. The volunteers who live at the lake are awesome and work hard. As a matter of a fact, they purchase their own equipment so they can accomplish more work. But a group of retired volunteers should not be the backbone of the organization.	Noted. The Reservoir has a great volunteer program and the USACE could not complete work without volunteers who assist USACE staff throughout the year. Volunteers are not required to utilize their own equipment, but several of them choose to do so. All campgrounds except one were open by Labor Day of 2019 with the final campground scheduled for opening April 1, 2020.
The spillway bridge replacement project is also a classic example of how the Corp is incompetent. The project took twice or three times as long as it should have taken. On top of mismanaging the project, the bridge is shut down again for 4 months (probably longer) to inspect and repair the concrete pillars that the bridge sets on. The obvious questions are why wasn't it integrated into the bridge replacement schedule; and secondly, why did the shutdown occur during the busiest time of the year?	Noted. USACE is committed to public safety at all time. The Marion bridge replacement contract was finished ahead of schedule and is currently fit to its designed standards.
The Corp finally opened the reservoir for camping on June 1st_ After a year and a half of hiding behind "can't open because of flood damage", the campgrounds were PARTIALLY re-opened. All opinions relative to the campgrounds is what have they (Corp) been doing for the last year? People were welcomed to a pathetic/ terrible mow job and campsites that are in a marginally acceptable	Noted. While the USACE is strongly committed to public recreation, the USACE main mission is Flood Control and maintaining the structures. Budget is requested every year and in years of flooding additional money may be requested but not necessarily received in a timely fashion to make repairs. Lack of funding and loss of

Comment	Response
condition for use. The final straw relative to the "Grand Opening" is the cottonwood boat ramp is not open. Even worse is people are being told the boat ramp will not be open this year. Never in a million years did anyone expect to come back to such an unbelievably sad example of incompetence. The obvious question is: What happened to all the funds obligated to Tulsa District and flowed down to Marion Reservoir for flood clean up?	contracts necessary to park maintenance can and do have detrimental impacts. USACE makes every effort to ensure the balance between mission and operations and its stewardship obligations for the public.
A.) Tulsa District accepts the incompetence and mismanagement occurring at Marion Reservoir. Is this the way all Tulsa District ran reservoirs are managed? B.) Why is Marion County (who has a stake in the reservoir) allowing everything at Marion Reservoir to be sub-optimized? This is definitely an economic impact to the county. C.) Why is the state of Kansas not responsible for the camping, etc. at the reservoir? It is patently obvious that the Corp can't or won't do the job of managing the three major campgrounds. D.) Let's assume that the Corp is short of funding to manage Marion Reservoir. Is that reason to allow this great reservoir to slowly deteriorate? There is a ton of people who would love to donate their time to help out.	A) The Tulsa District Operation Project Managers and staff are committed to maintaining projects to the highest standard afforded by taxpayer money. Projects are maintained to the best of their abilities with the current staffing and budget. B) While economic growth is not one of USACE project missions, the USACE recognizes the impacts that natural and national events have on local economics when recreational opportunities are affected. C) USACE relies on many partnerships to provide high quality recreational opportunities to the public. USACE owns the land and therefore manages it. However, at some lake's/location's areas can be leased to the state to manage. If the state or other partners are interested in leasing this area USACE welcomes them and provides a process for them to do so. D) USACE is more than happy to have groups/volunteers sign up to help maintain the Reservoir and do so on a periodic or annual basis with local and regional groups and individuals. Individuals and groups can contact the main office to sign up to volunteer.

7.3 PUBLIC AND AGENCY REVIEW OF DRAFT MASTER PLAN, EA AND FONSI

This section will be completed following the draft release public meeting and 30-day comment period.

8 SUMMARY OF RECOMMENDATIONS

8.1 SUMMARY OVERVIEW

The preparation of this Master Plan for Marion Reservoir 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 Marion Reservoir. 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 Marion Reservoir as described in Table 8-2.

Table 8-1 Change in Land and Water Surface Classifications

Prior Land Classifications (1981)	Acres	New Land Classifications (2021)	Acres	Net Difference
Project Operations	60	Project Operations (PO)	111	51
Recreation – Intensive Use	1,620	High Density Recreation (HDR)	582	(1,050)
		Environmentally Sensitive Areas (ESA)	0	0

Prior Land Classifications (1981)	Acres	New Land Classifications (2021)	Acres	Net Difference
Recreation – Low Density	847	Multiple Resource Management – Low Density Recreation (LDR)	354	(481)
Wildlife Management	3,522	Multiple Resource Management – Wildlife Management (WM)	4,641	1,119
		Multiple Resource Management – Vegetation Management (VM)	0	0
		Future/Inactive Recreation Areas	0	0
TOTAL	**6,049**		**5,688**	**(361)**
Prior Water Surface Classifications (1981)	**Acres**	**New Water Surface Classifications (2021)**	**Acres**	**Net Difference**
Water Surface	6,200	Open Recreation	6,308	108
		Designated No-Wake	44	44
		Fish and Wildlife Sanctuary	193	193
		Restricted	43	43
TOTAL	**6,200**		**6,588**	**388**
TOTAL FEE	**12,249**		**12,276**	**27**

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

Table 8-2 lists the descriptions and justifications for the reclassification of USACE lands at Marion Reservoir. Some variation in total acreages occurred due to improved 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[1]

Land Classification	Description of Changes [2]	Justification
Project Operations (PO)	The net increase in PO lands from 60 to 111 acres was due to the following: • 5 acres HDR reclassified to PO. • 45 acres LDR reclassified to PO.	The increase in PO acreage was in part due to a previous LDR classification which failed to appropriately reflect the correct land classification near the dam. Additionally, the original 1981 Master Plan projected a recreation area near the stilling basin which was never developed and is more appropriately classified as PO under current and future operations. These reclassifications will have no effect on current or projected use.
High Density Recreation (HDR)	The net decrease in HDR lands from 1,620 acres to 582 acres was due to the following: • 89 acres LDR reclassified as HDR. • 25 acres WM reclassified as HDR. • 138 acres of HDR reclassified as LDR • 5 acres of HDR reclassified as PO • 17 acres of HDR reclassified as WM. ** Any remaining acres not accounted for in above totals are attributed to changes in*	The decrease in HDR acreage in part, is due to the acreage classification change adjacent to the Hillsboro Campground, which was previously classified as HDR for the purpose of expanding the campground. This area was reclassified to WM to reflect historic and current operations. These reclassifications will have no effect on current or projected use.

Land Classification	Description of Changes [2]	Justification
	measuring technology.	
Environmentally Sensitive Areas (ESA)	There are no ESA acres at Marion Reservoir.	
MRML – Low Density Recreation (LDR)	The net decrease in LDR lands from 847 acres to 354 acres was due to the following: • 138 aces HDR reclassified to LDR. • 45 acres LDR reclassified to PO. ** Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.*	The majority of the net decrease in LDR was due to the Cottonwood Point Campground. The previous classification of LDR does not reflect the current use as a Class A campground was developed and completed in 2017. These reclassifications will have no effect on current or projected use.
MRML – Wildlife Management (WM)	The net increase in WM lands from 3,522 acres to 4,641 acres was due to the following: • 17 acres HDR reclassified to WM ** Any remaining acres not accounted for in above totals are attributed to changes in*	An area near French Creek Campground, originally classified as HDR, was reclassified to WM to reflect current use. This reclassification will have no effect on current or projected use.

Land Classification	Description of Changes [2]	Justification
	measuring technology.	

[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 were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.
[2] Acreages are based on GIS measurements and may vary from Net Difference totals detailed in Table 8-1. Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.

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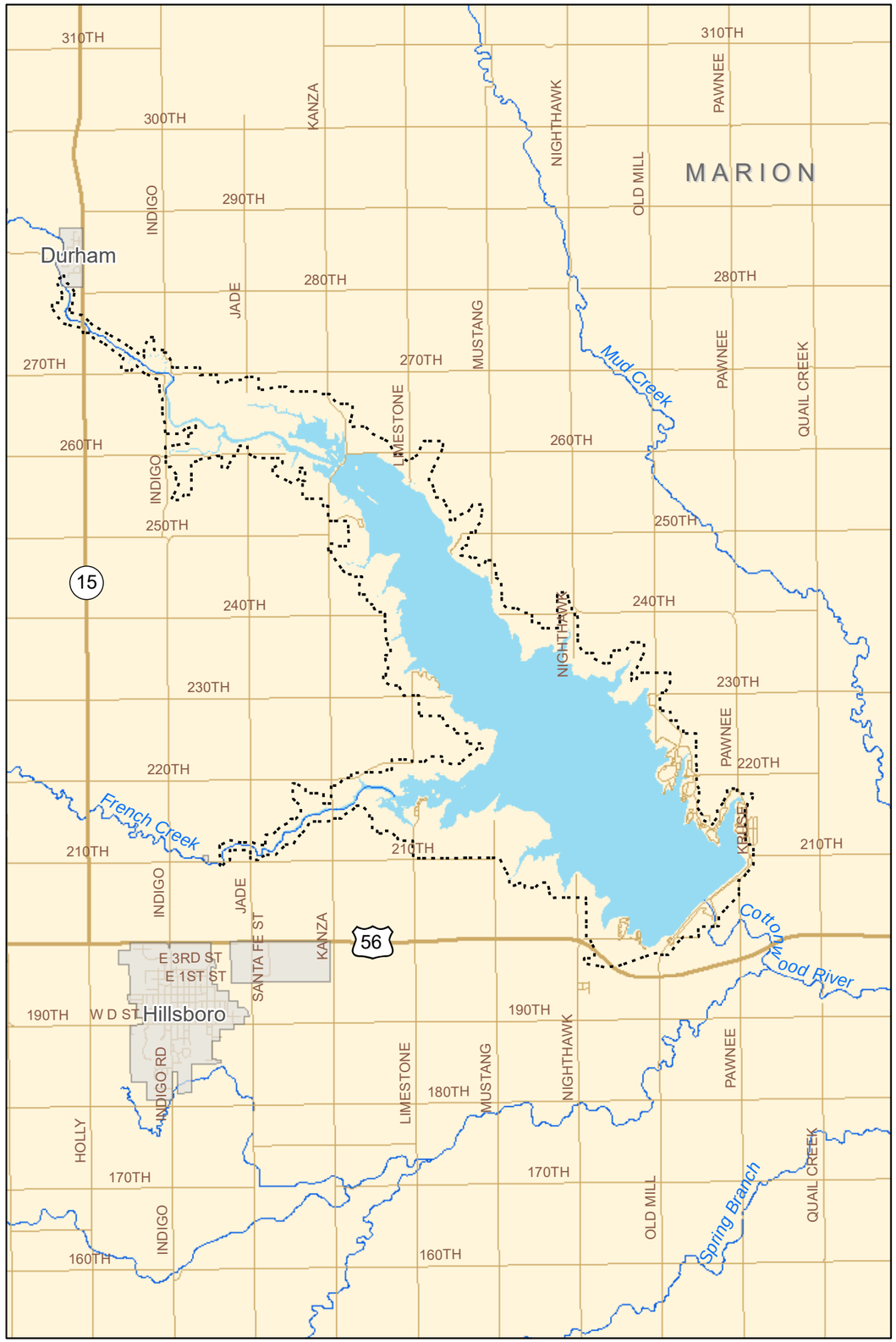
APPENDIX A - LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS



INDEX TO MASTER PLAN MAPS

GENERAL

MAP NO.	TITLE
ML20MP-OI-00	PROJECT LOCATION & INDEX TO MAPS
ML20MP-OM-01	LAND MANAGING ENTITIES
ML20MP-OP-01	SEA PLANE GUIDE
ML20MP-OW-01	WATER SURFACE CLASSIFICATIONS AND MARINAS

LAND CLASSIFICATION

MAP NO.	TITLE
ML20MP-LC-01	MASTER PLAN REVISION LAND CLASSIFICATION CHANGES
ML20MP-OC-00	LAND AND WATER CLASSIFICATIONS (00)
ML20MP-OC-01	LAND AND WATER CLASSIFICATIONS (01)
ML20MP-OC-02	LAND AND WATER CLASSIFICATIONS (02)
ML20MP-OC-03	LAND AND WATER CLASSIFICATIONS (03)
ML20MP-OC-04	LAND AND WATER CLASSIFICATIONS (04)

RECREATIONAL AREAS

MAP NO.	TITLE
ML20MP-OR-0A	MANAGED RECREATIONAL AREAS
ML20MP-OR-0B	PARK PLATE INDEX
ML20MP-OR-01	MARION COVE
ML20MP-OR-02	COTTONWOOD POINT
ML20MP-OR-03	DURHAM COVE
ML20MP-OR-04	FRENCH CREEK COVE
ML20MP-OR-05	HILLSBORO COVE
ML20MP-OR-06	SPILLWAY AREA

WATER SURFACE

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

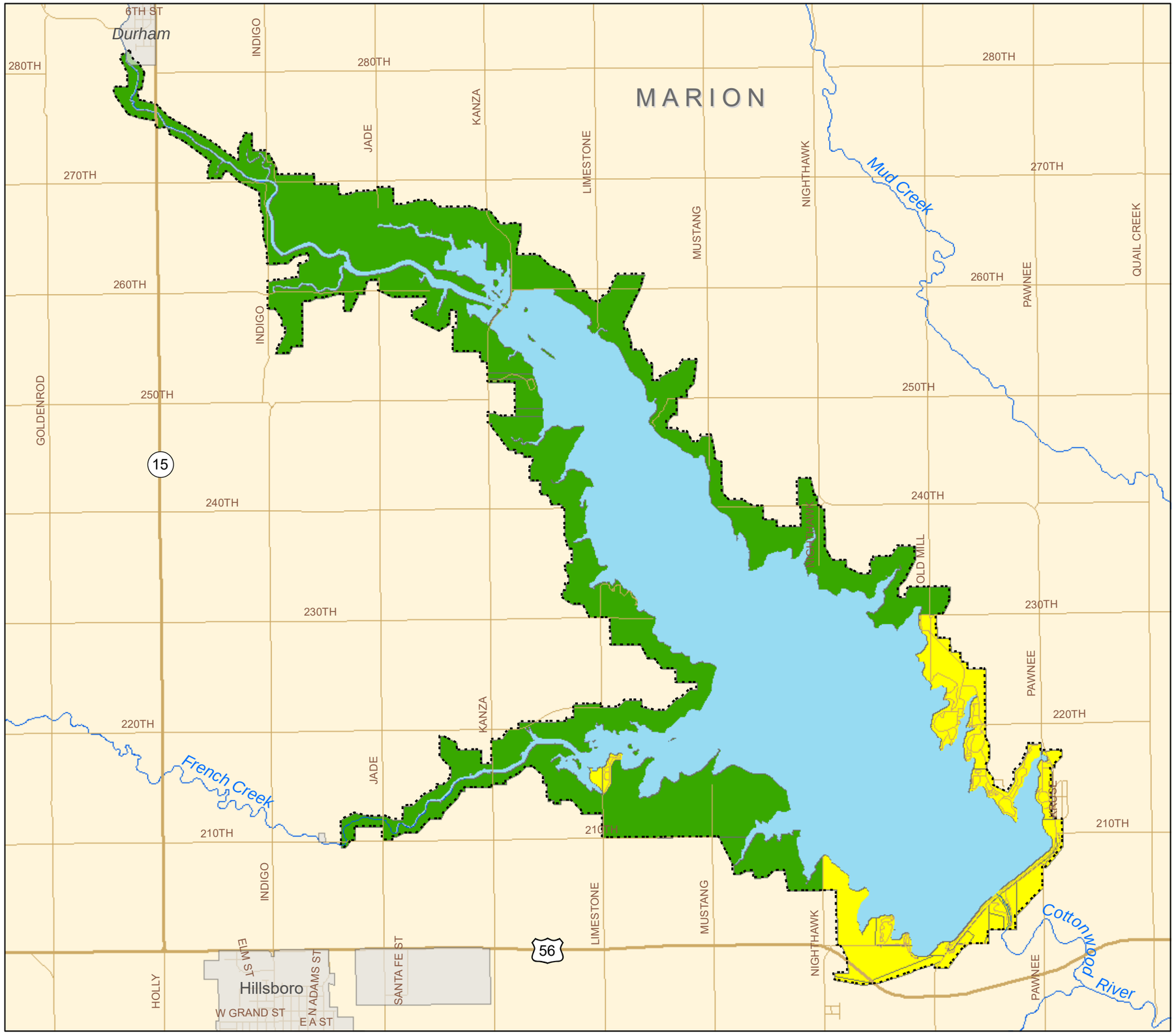
MARION RESERVOIR MASTER PLAN

PROJECT LOCATION AND INDEX MAP

N

0 0.75 1.5 3 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OI-00



KANSAS DEPARTMENT OF PARK, WILDLIFE AND TOURISM

U.S. ARMY CORPS OF ENGINEERS

WATER SURFACE

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

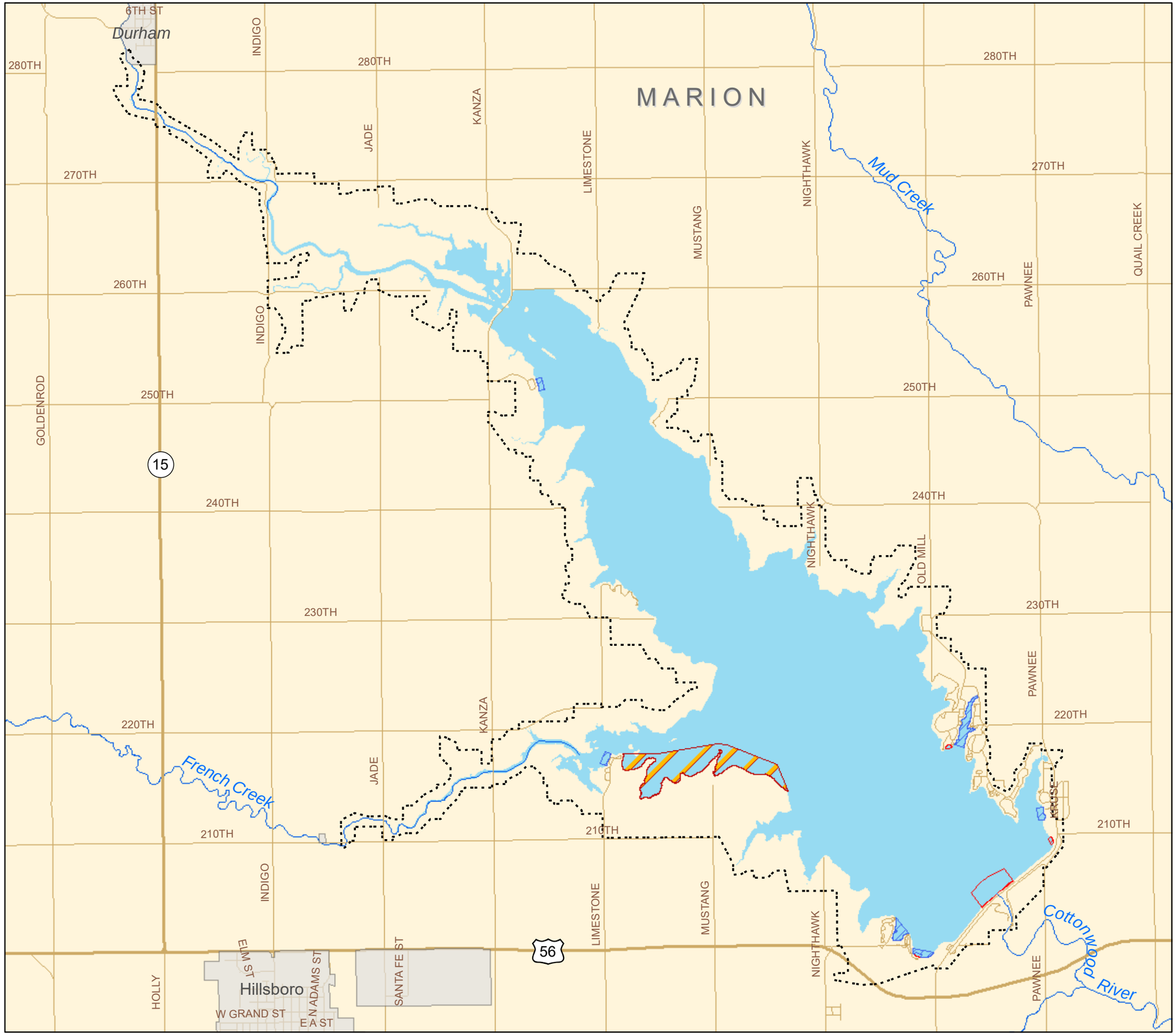
MARION RESERVOIR MASTER PLAN

LAND MANAGING ENTITIES

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OM-01



WATER SURFACE: DESIGNATED NO WAKE AREAS

WATER SURFACE: FISH AND WILDLIFE SANCTUARY

WATER SURFACE: RESTRICTED

WATER SURFACE: OPEN RECREATION

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

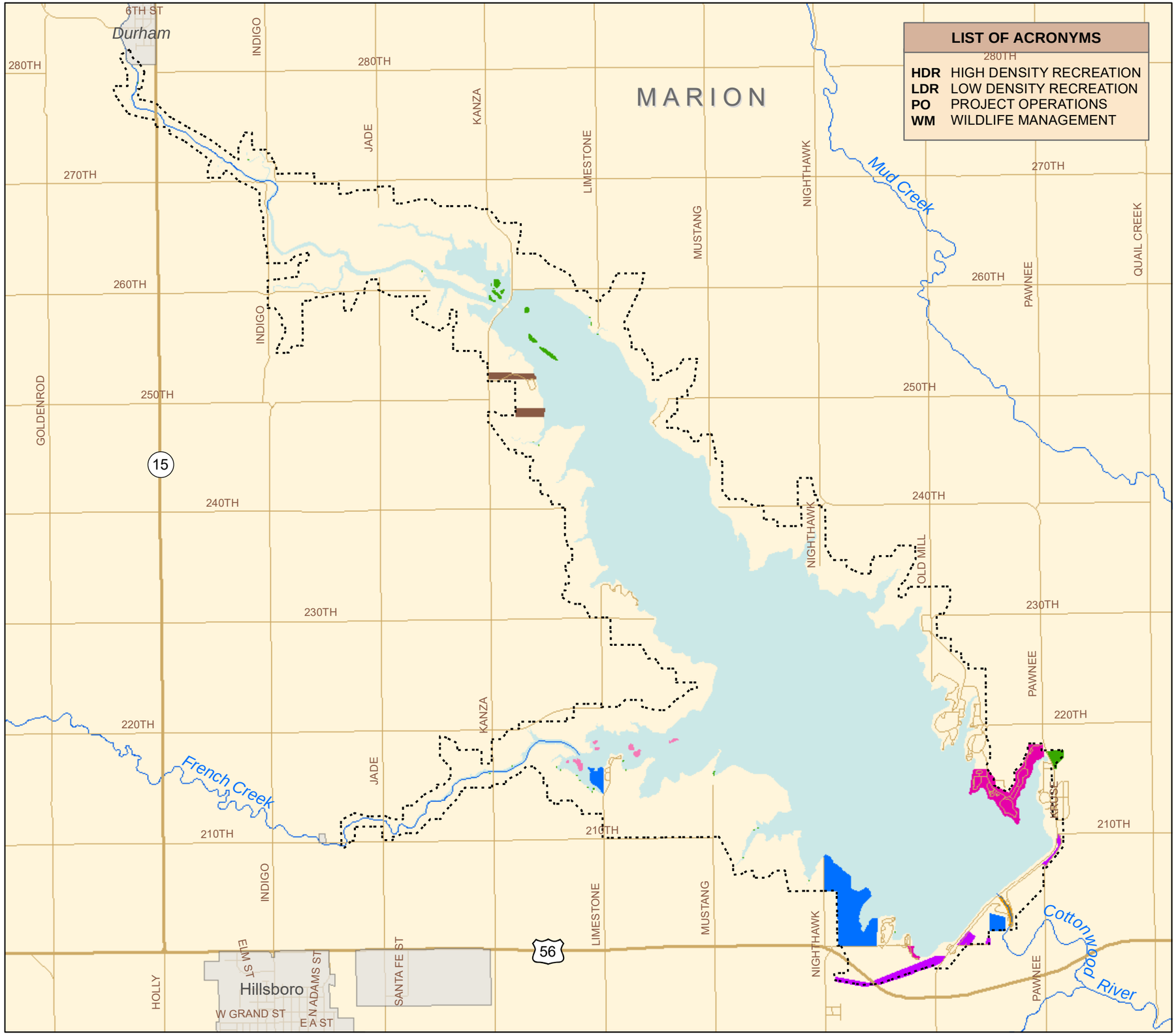
MARION RESERVOIR MASTER PLAN

WATER SURFACE CLASSIFICATIONS AND MARINAS

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OW-01



LIST OF ACRONYMS

HDR	HIGH DENSITY RECREATION
LDR	LOW DENSITY RECREATION
PO	PROJECT OPERATIONS
WM	WILDLIFE MANAGEMENT

LAND CLASSIFICATION CHANGES FROM 1977 MASTER PLAN TO 2021

- FROM HDR TO LDR
- FROM HDR TO PO
- FROM HDR TO WM
- FROM LDR TO HDR
- FROM LDR TO PO
- From PO to WM
- FROM WM TO HDR

USACE BASEMAP

- WATER SURFACE
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

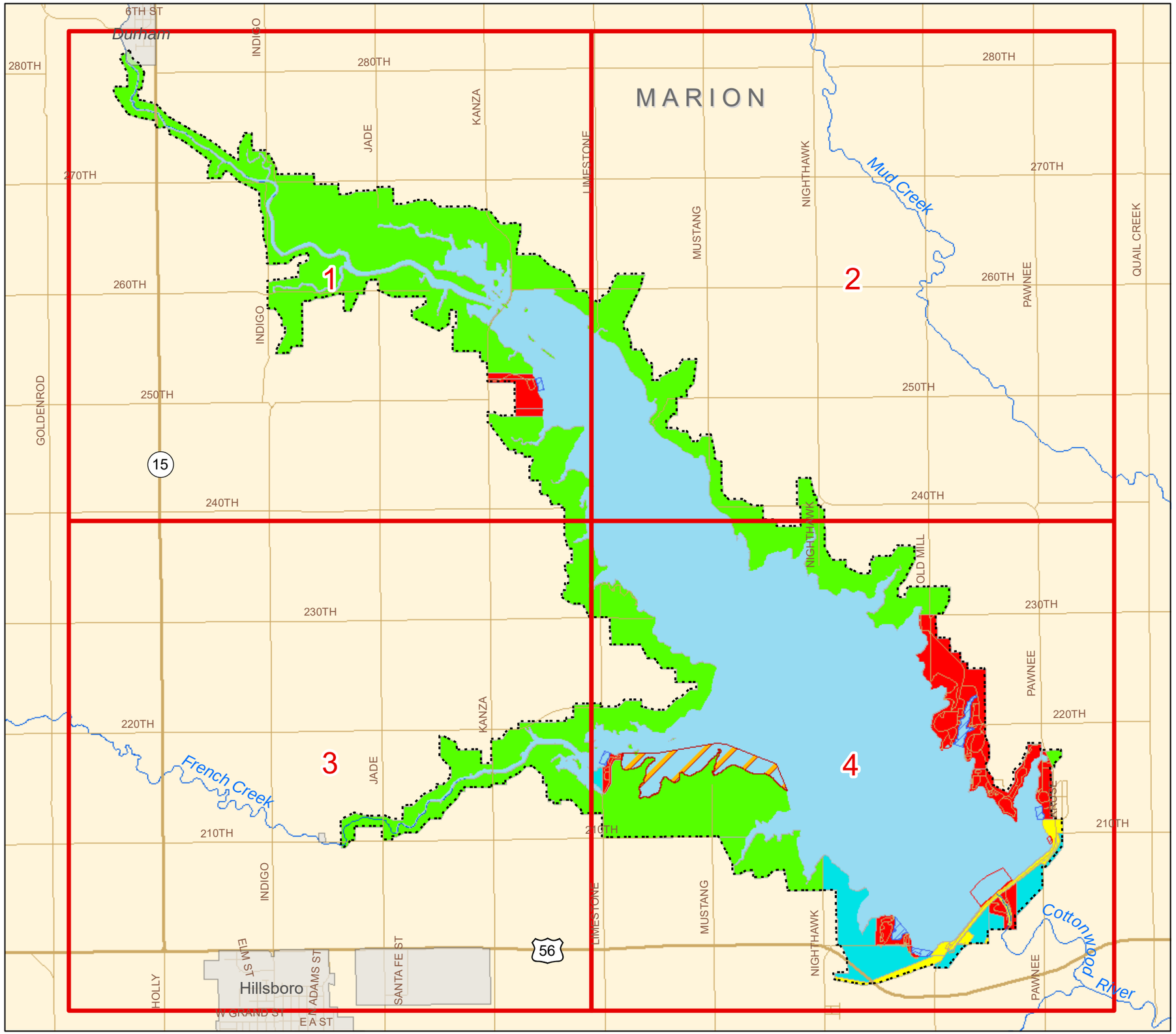
MARION RESERVOIR MASTER PLAN

MASTER PLAN REVISION LAND CLASSIFICATION CHANGES

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-LC-01



- INDEX GRID
- LOW DENSITY RECREATION
- HIGH DENSITY RECREATION
- PROJECT OPERATIONS
- WILDLIFE MANAGEMENT
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- WATER SURFACE: FISH AND WILDLIFE SANCTUARY
- WATER SURFACE: RESTRICTED
- WATER SURFACE: OPEN RECREATION
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

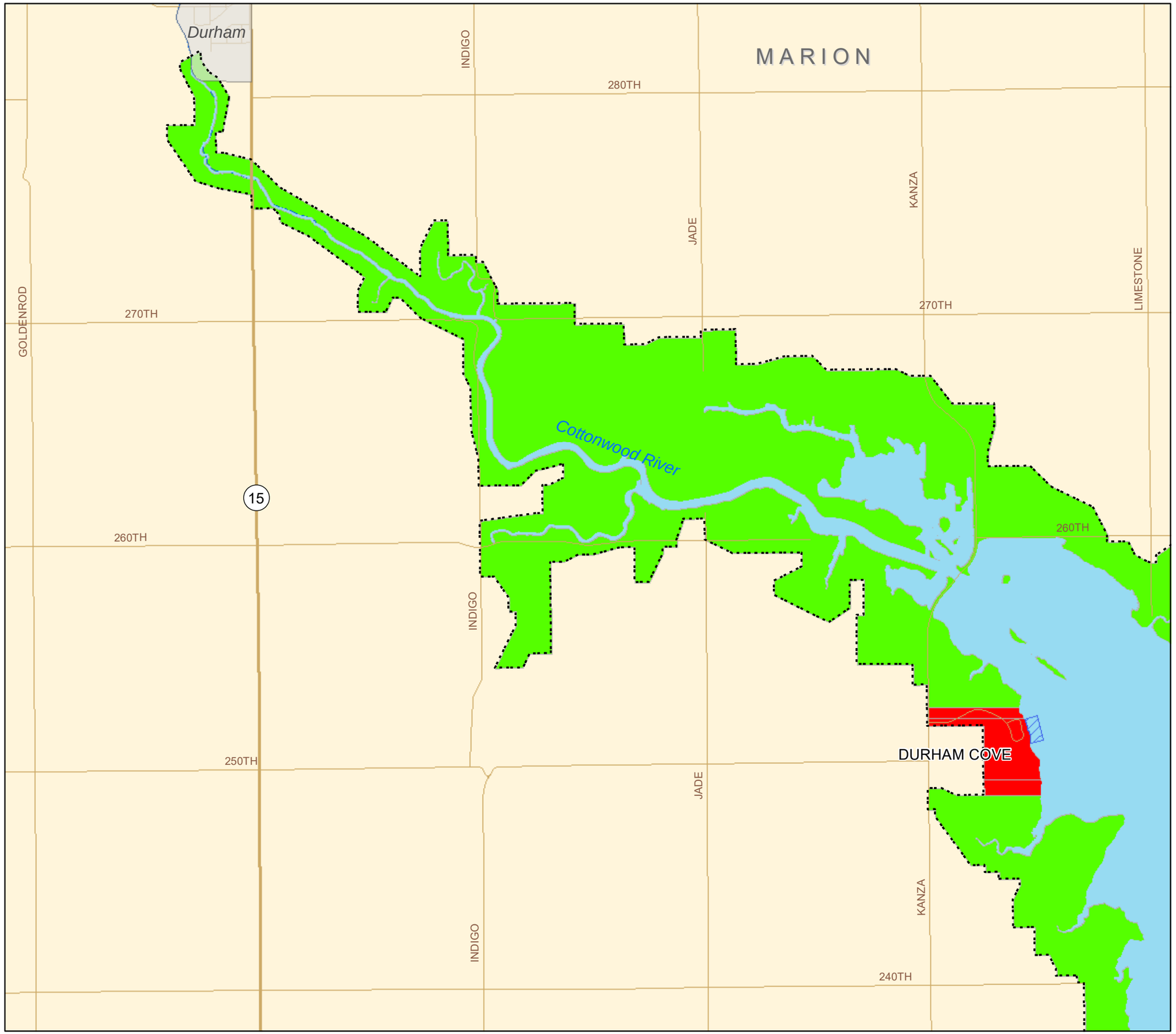
MARION RESERVOIR MASTER PLAN

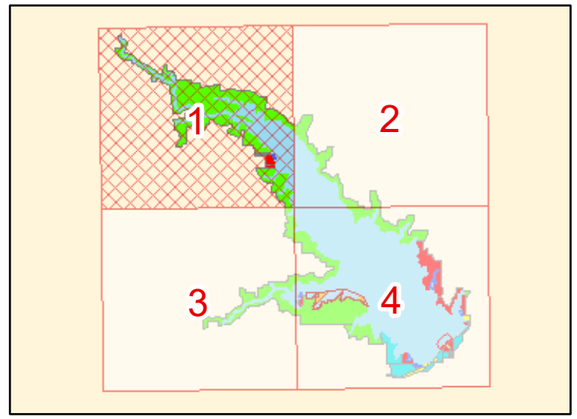
LAND AND WATER CLASSIFICATIONS (INDEX SHEET 00)

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OC-00





HIGH DENSITY RECREATION
WILDLIFE MANAGEMENT
WATER SURFACE: DESIGNATED NO WAKE AREAS
WATER SURFACE: OPEN RECREATION
FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

MARION RESERVOIR MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 01)

N

0 0.25 0.5 1 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OC-01

MARION

280TH

280TH

LIMESTONE

Mud Creek

OLD MILL

270TH

PAWNEE

QUAIL CREEK

260TH

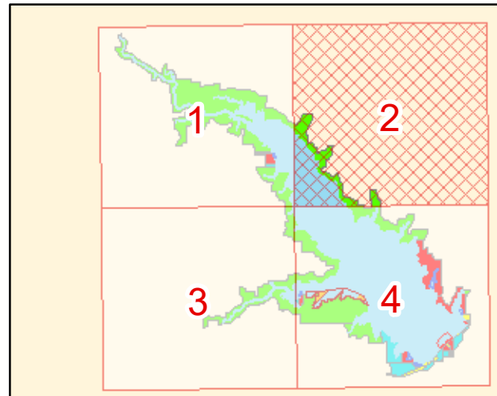
NIGHTHAWK

MUSTANG

250TH

240TH

PAWNEE



WILDLIFE MANAGEMENT

WATER SURFACE: OPEN RECREATION

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

MARION RESERVOIR MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 02)

N

0 0.25 0.5 1 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OC-02

MARION

230TH

15

INDIGO

220TH

KANZA

French Creek

210TH

LIMESTONE

GOLDENROD

HOLLY

ELM ST

N ASH ST

N ADAMS ST

W 3RD ST

E 3RD ST

E 2ND ST

N MAIN ST

Hillsboro

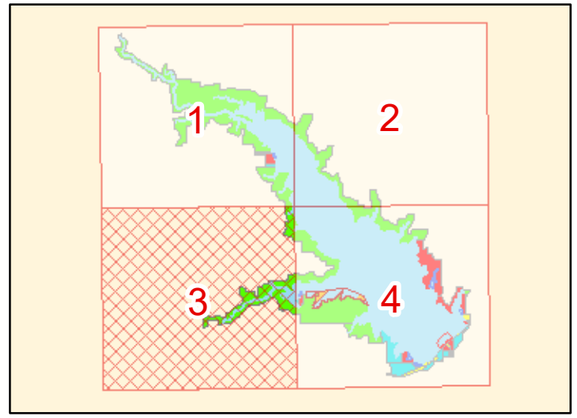
E 1ST ST

W 1ST ST

JADE

SANTA FE ST

56



LOW DENSITY RECREATION

HIGH DENSITY RECREATION

WILDLIFE MANAGEMENT

WATER SURFACE: DESIGNATED NO WAKE AREAS

WATER SURFACE: OPEN RECREATION

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

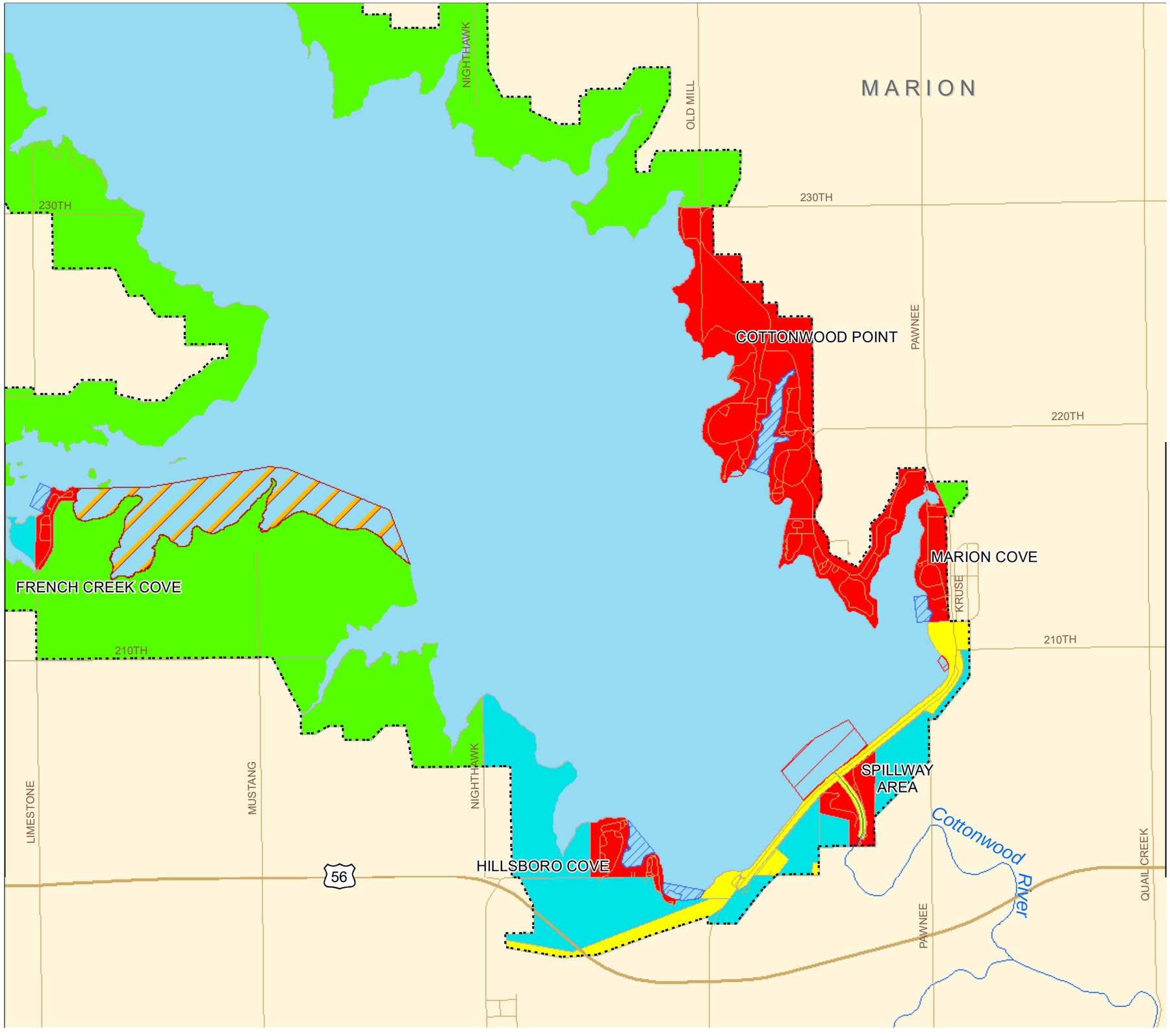
MARION RESERVOIR MASTER PLAN

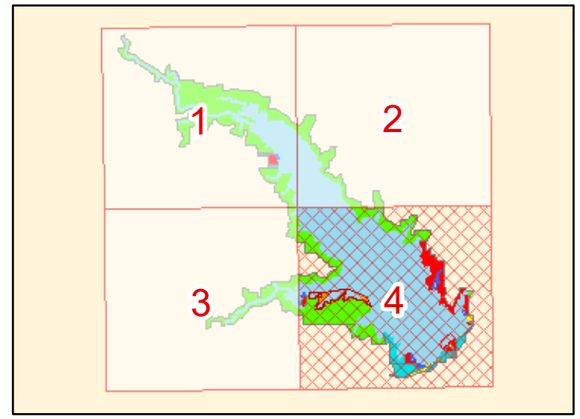
LAND AND WATER CLASSIFICATIONS (INDEX SHEET 03)

N

0 0.25 0.5 1 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OC-03





- LOW DENSITY RECREATION
- HIGH DENSITY RECREATION
- PROJECT OPERATIONS
- WILDLIFE MANAGEMENT
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- WATER SURFACE: FISH AND WILDLIFE SANCTUARY
- WATER SURFACE: RESTRICTED
- WATER SURFACE: OPEN RECREATION
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

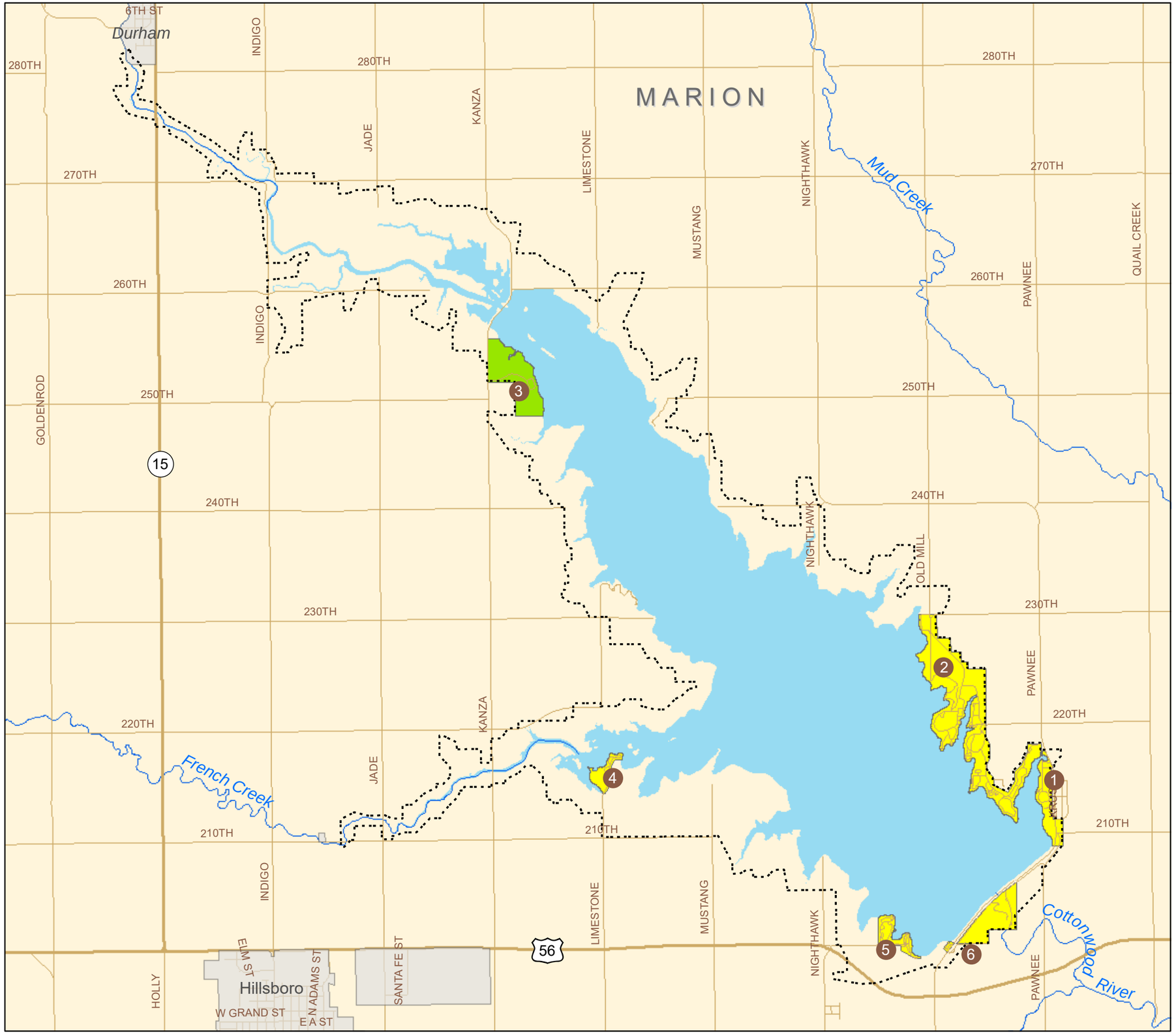
MARION RESERVOIR MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 04)

N

0 0.25 0.5 1 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OC-04



US ARMY CORPS OF ENGINEERS

KANSAS DEPARTMENT OF WILDLIFE, PARKS AND TOURISM

WATER SURFACE: OPEN RECREATION

FEE BOUNDARY

KEY TO PARKS

1. MARION COVE
2. COTTONWOOD POINT
3. DURHAM COVE
4. FRENCH CREEK COVE
5. HILLSBORO COVE
6. SPILLWAY AREA

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

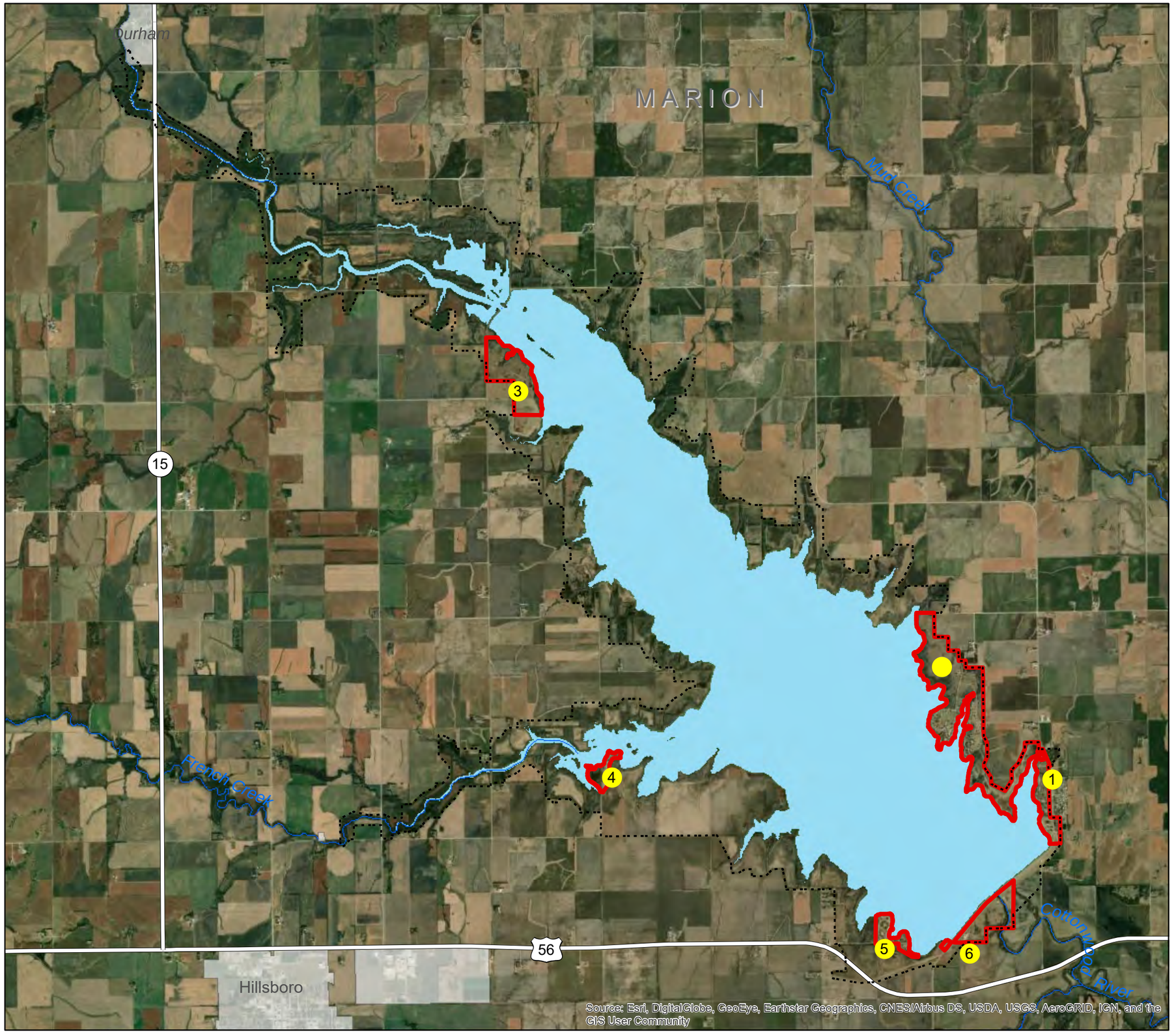
MARION RESERVOIR MASTER PLAN

MANAGED RECREATIONAL AREAS

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-0A



RECREATION AREAS		
ID #	NAME	SHEET #
1	MARION COVE	ML20MP-OR-01
2	COTTONWOOD POINT	ML20MP-OR-02
3	DURHAM COVE	ML20MP-OR-03
4	FRENCH CREEK COVE	ML20MP-OR-04
5	HILLSBORO COVE	ML20MP-OR-05
6	SPILLWAY AREA	ML20MP-OR-06

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

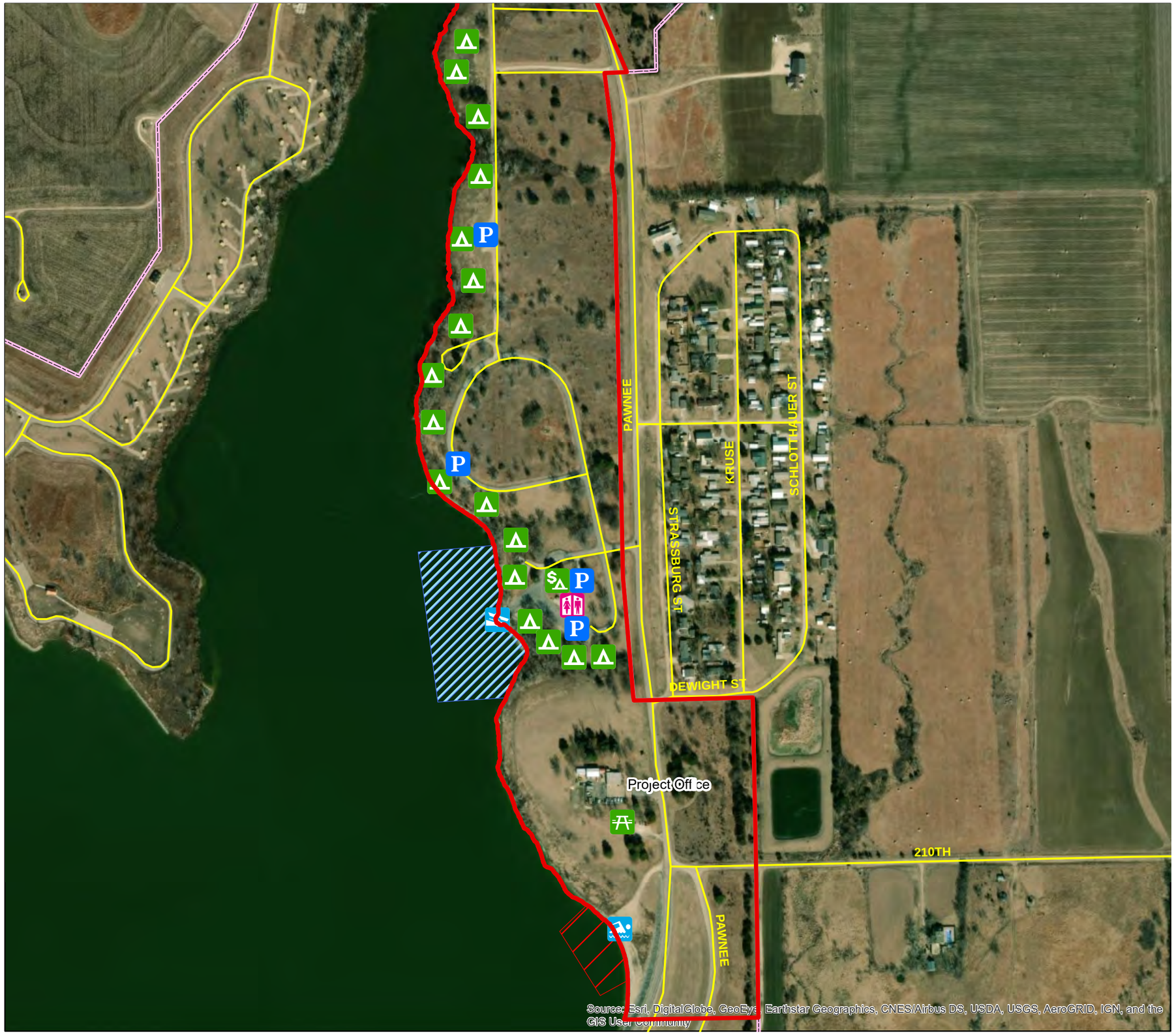
MARION RESERVOIR MASTER PLAN

PARK PLATE INDEX

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-0B



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

- BOAT RAMP
- CAMPSITE
- FEE STATION
- PARKING
- PICNIC SITE
- RESTROOM
- SWIM BEACH
- PARK LIMITS
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- WATER SURFACE: RESTRICTED
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

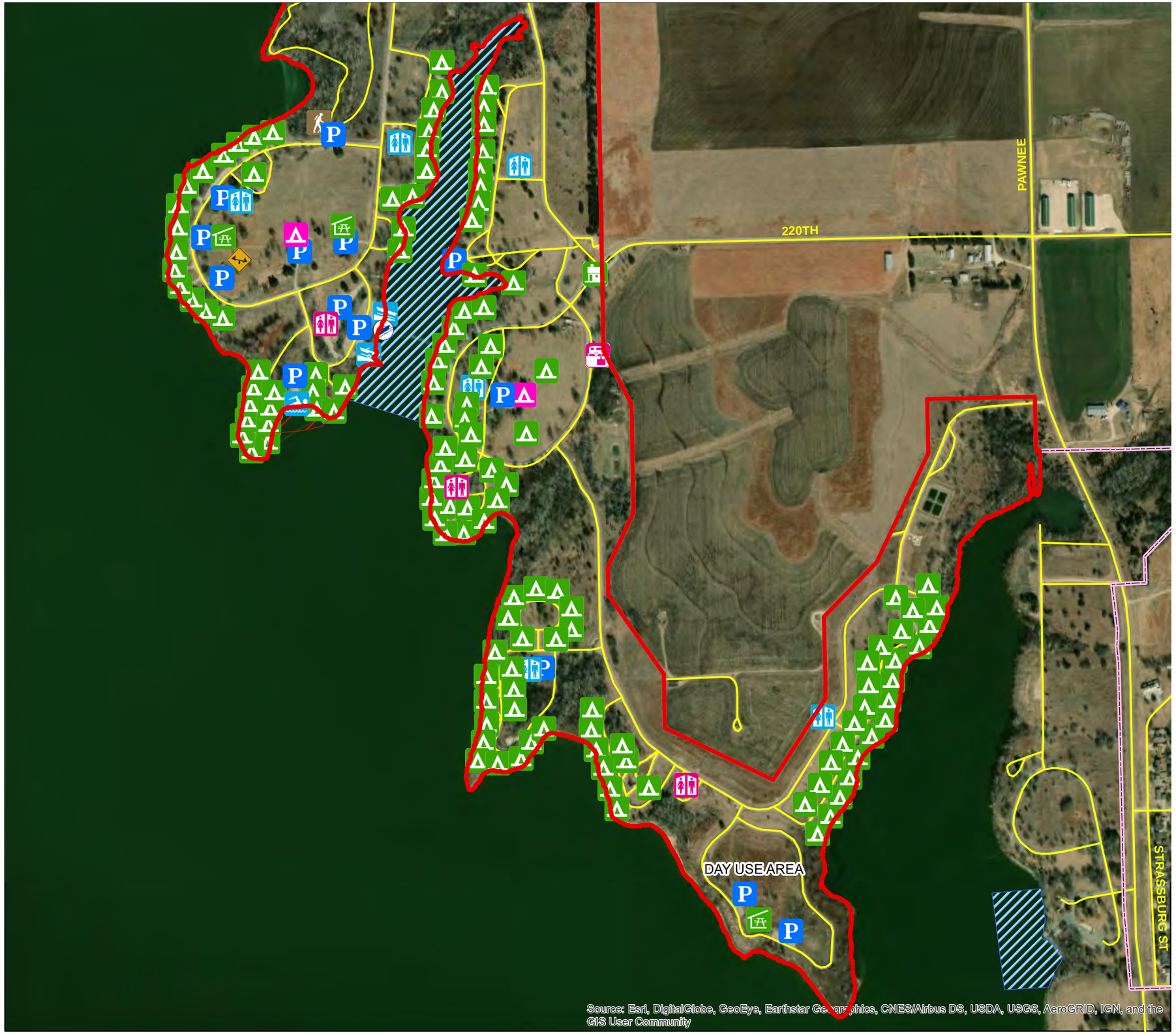
MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (MARION COVE)

N

0 150 300 600 900 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-01



ITEM	EXISTING
BOAT RAMP	2
COURTESY DOCK	1
GROUP CAMPSITES	2
CAMPSITES	164
ELECTRICAL HOOK-UP	158
GROUP PICNIC SHELTER	2
PICNIC SITES	
VAULT TOILET	
RESTROOMS	3
SHOWERS	6
DUMP STATION	1

- BOAT RAMP
- CAMPSITE
- COMFORT STATION
- COURTESY DOCK
- ENTRANCE GATE
- GROUP CAMP
- GROUP PICNIC SHELTER
- SANITARY DUMP STATION
- PLAYGROUND
- PARKING
- SHOWER HOUSE
- SWIM BEACH
- TRAILHEAD
- PARK LIMITS
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- WATER SURFACE: RESTRICTED
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

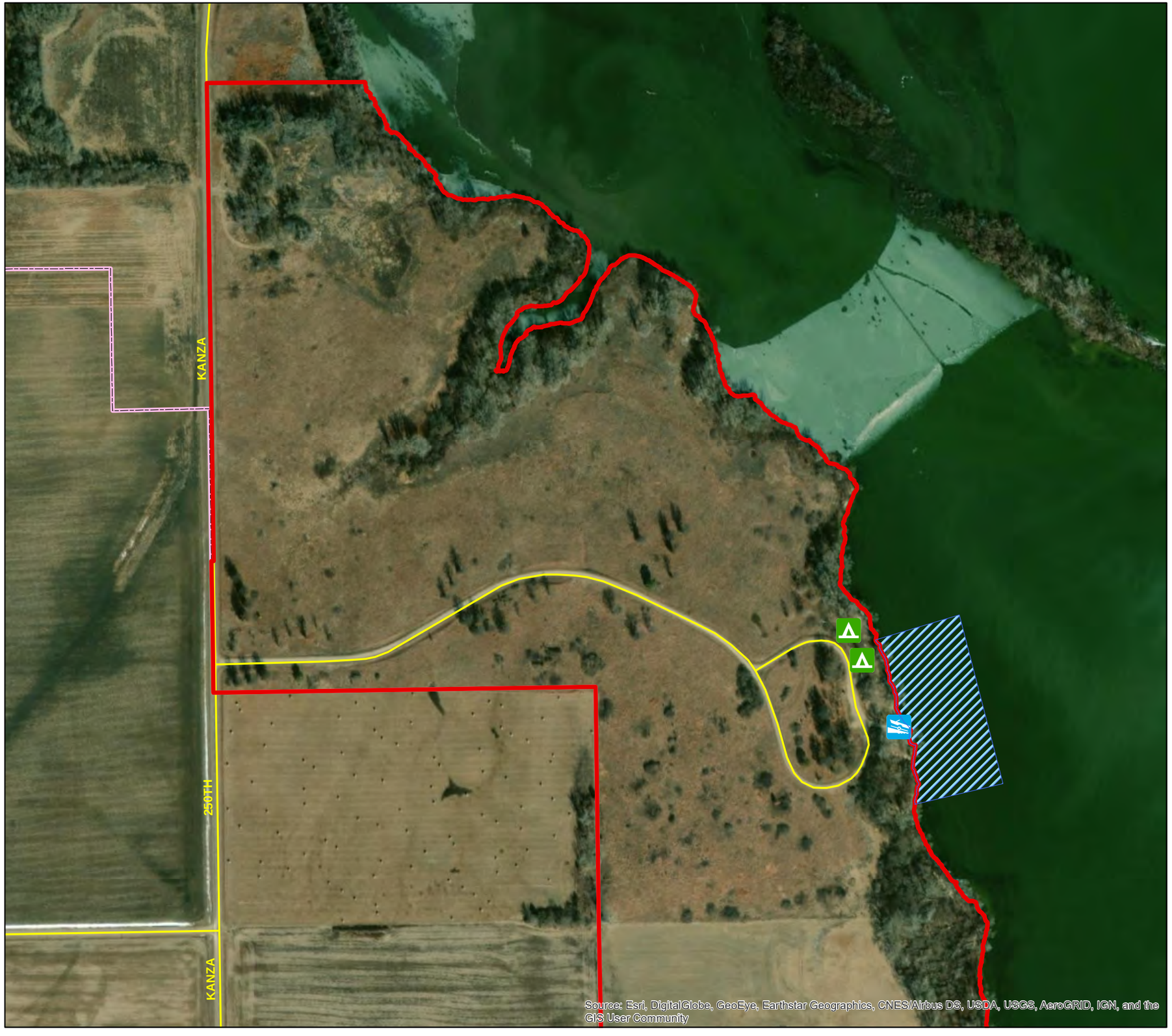
MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (COTTONWOOD POINT)

N

0 250 500 1,000 1,500 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-02



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

- BOAT RAMP
- CAMPSITE
- PARK LIMITS
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

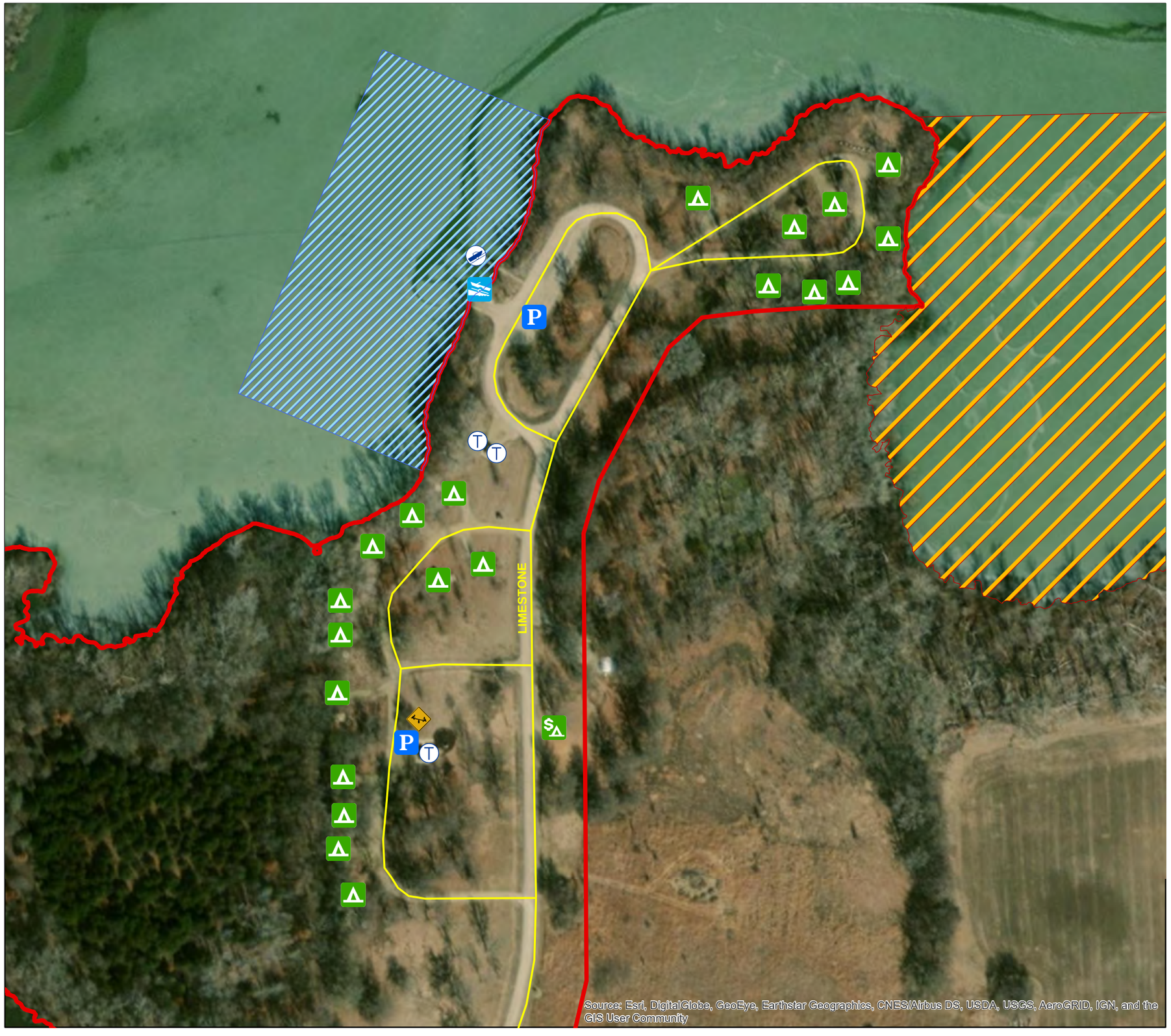
MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (DURHAM COVE)

N

0 150 300 600 900 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-03



ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	1
GROUP CAMPSITES	
CAMPSITES	20
ELECTRICAL HOOK-UP	20
GROUP PICNIC SHELTER	
PICNIC SITES	
VAULT TOILET	3
RESTROOMS	
SHOWERS	
DUMP STATION	

- BOAT RAMP
- CAMPSITE
- COURTESY DOCK
- PARKING
- PLAYGROUND
- SELF PAY STATION
- VAULT TOILET
- PARK LIMITS
- WATER SURFACE: DESIGNATED NO WAKE AREAS
- WATER SURFACE: FISH AND WILDLIFE SANCTUARY
- FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

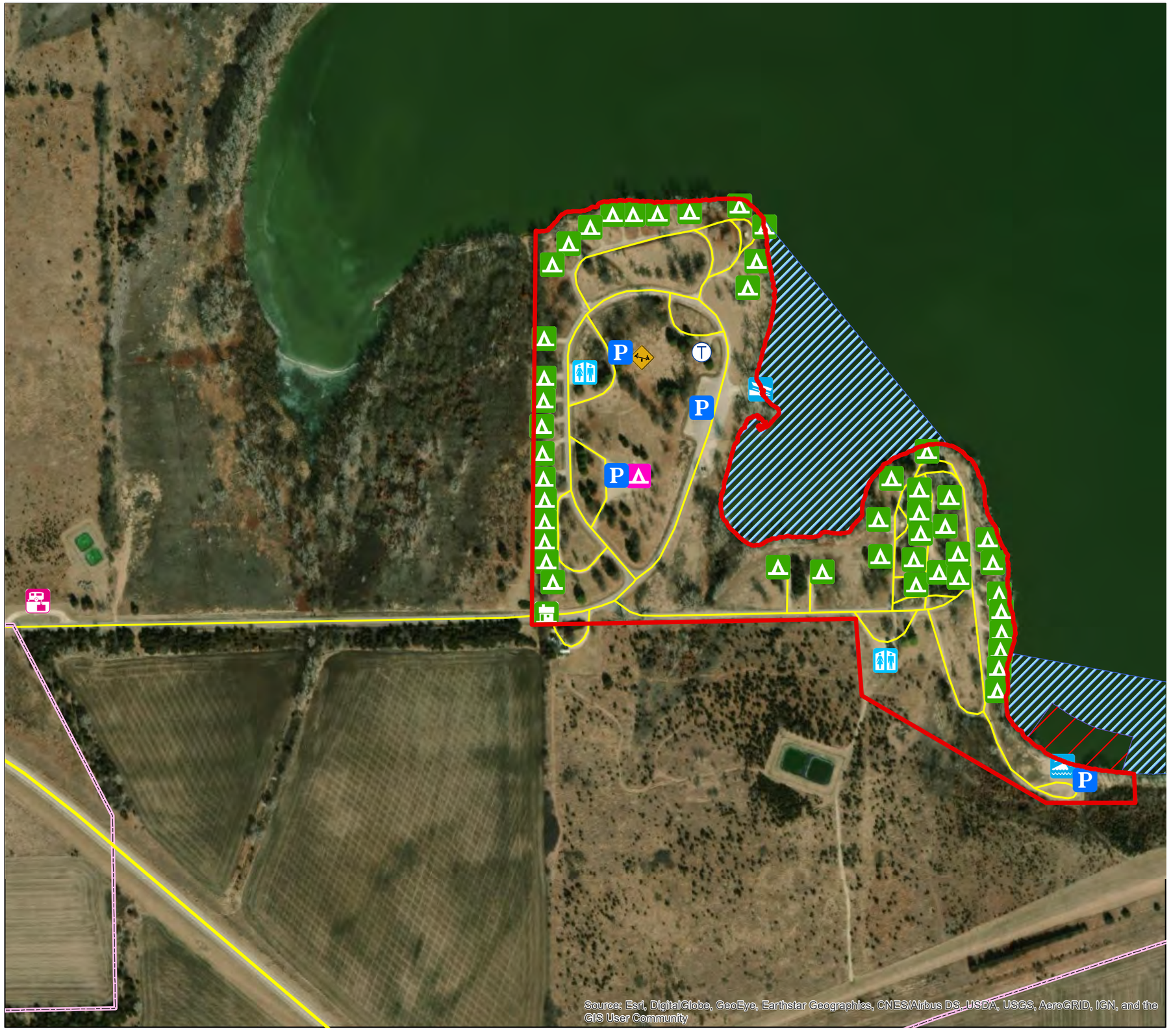
MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (FRENCH CREEK COVE)

N

0 100 200 400 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-04



ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	
GROUP CAMPSITES	1
CAMPSITES	44
ELECTRICAL HOOK-UP	44
GROUP PICNIC SHELTER	
PICNIC SITES	
VAULT TOILET	1
RESTROOMS	
SHOWERS	2
DUMP STATION	1

COMFORT STATION
SHOWER HOUSE
ENTRANCE GATE
BOAT RAMP
GROUP CAMP
CAMPSITE
PARKING
VAULT TOILET
PLAYGROUND
SANITARY DUMP STATION
SWIM BEACH
PARK LIMITS
WATER SURFACE: DESIGNATED NO WAKE AREAS
WATER SURFACE: RESTRICTED
FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (HILLSBORO COVE)

N
0 150 300 600 900 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-05

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

PARKING

RESTROOM

SPILLWAY

VAULT TOILET

PARK LIMITS

WATER SURFACE: RESTRICTED

FEE BOUNDARY

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

MARION RESERVOIR MASTER PLAN

RECREATIONAL AREAS (SPILLWAY AREA)

N

0 140 280 560 840 Feet

DATE:	MAP NO.
JANUARY 2021	ML20MP-OR-06

APPENDIX B - NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT FOR THE
2021 MARION RESERVOIR MASTER PLAN
COTTONWOOD RIVER BASIN
MARRION COUNTY, KANSAS

In accordance with the National Environmental Policy Act of 1969, as amended, and implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500 – 1507, including guidelines in 33 CFR Part 230, the Tulsa District and the Regional Planning and Environmental Center (RPEC) of the U.S. Army Corps of Engineers (USACE) have assessed the potential environmental impacts of the 2021 Marion Reservoir Master Plan (MP) revision.

Engineering Regulation (ER) 1130-2-550 Change 07, dated January 2013 and Engineering Pamphlet (EP) 1130-2-550 Change 05, dated 30 January 2013, require Master Plans for most USACE water resources development projects having a federally owned land base. The revision of the 1981 Supplement Number 1 Marion (Land Use) Reservoir Master Plan was conducted pursuant to this ER and EP, and is necessary to bring it up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are affecting the lake, as well as those anticipated to occur within the planning period of 2021 to 2046. The draft recommendation is contained in the 2021 Marion Reservoir Master Plan dated 09 April 2021.

This draft Environmental Assessment (EA) for the 2021 Marion Master Plan evaluated two alternatives that would revise the 1981 Supplement Number 1 Marion Reservoir Master Plan to meet current policy.

The revision of the Marion Reservoir Master Plan (hereafter Plan or Master Plan) is a framework built collaboratively to serve as a guide toward appropriate stewardship of USACE administered resources at Marion Reservoir over the next 25 years.

In addition to a “no action” plan, one alternative that fully met the project purpose was evaluated (recommended plan). Section 2.0 of the 2021 Marion Reservoir Master Plan EA discusses alternative formulation and selection. The recommended plan includes coordination with the public, updates to comply with the USACE regulations and guidance, and reflects changes in land management and land uses that have occurred since 1981. Land classifications were refined to meet authorized project purposes and current resource objectives that address a mix of natural resources and recreation management objectives that are compatible with regional goals, recognize outdoor recreation trends, and are responsive to public comments.

Table 1: Summary of Potential Effects of the Recommended Plan

Resource	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☐	☐	☒
Air quality	☐	☐	☒
Aquatic resources/wetlands	☐	☐	☒
Invasive species	☐	☐	☒
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Historic properties	☐	☐	☒
Other cultural resources	☒	☐	☐
Floodplains	☐	☐	☒
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☐	☐	☒
Land use	☐	☐	☒
Socioeconomics	☐	☐	☒
Environmental justice	☐	☐	☒
Soils	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. The recommended plan does not entail ground-disturbing activities. Future ground-disturbing activities on USACE property would be subject to all necessary environmental evaluations and compliance regulations.

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft Master Plan, Environmental Assessment, and FONSI will be completed on 09 May 2021. All comments submitted during the public review period were responded to in the Draft Master Plan and Environmental Assessment.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the Corps determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps determined that the recommended plan has no effect on historic properties.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse impacts on the quality of the human environment, therefore, preparation of an Environmental Impact Statement is not required.

Date

Scott Preston
Colonel, U.S. Army
District Commander

Environmental Assessment for the Marion Reservior 2021 Master Plan

Cottonwood River Basin
Marion County, Kansas

April 2021

US Army Corps of Engineers ®
Tulsa District

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ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the Master Plan of Marion Resrvoir. This 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 *ACRONYMS/ABBREVIATIONS*

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LIST OF FIGURES

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LIST OF TABLES

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ENVIRONMENTAL ASSESSMENT

2021 Marion Reservoir Master Plan Revision

MARION COUNTY, KANSAS

SECTION 1: INTRODUCTION

The United States Army Corps of Engineers (USACE) is proposing to adopt and implement the 2021 Marion Reservoir Master Plan as a revision of the 1981 Supplement Number 1 (Land Use) Master Plan hearafter called the 1981 Master Plan. The 2021 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 Marion Reservoir 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 Marion Reservoir for the benefit of present and future generations.

Adoption and implementation of the 2021 Master Plan (Proposed Action) would create potential impacts on the natural and human environments, and as such, this Environmental Assessment (EA) was prepared in accordance with National Environmental Policy Act of 1969, as amended, and implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500 – 1507, including guidelines in 33 CFR Part 230.

1.1 PROJECT LOCATION AND SETTING

Marion Reservoir is located in North Central Kansas approximately 3 miles northwest of the town of Marion, 46 miles North Northeast of Wichita. The dam is located at mile 126.7 on the Cottonwood River, a tributary of the Arkansas River. The reservoir area extends throughout portions of Marion County. The reservoir is formed by the Marion Dam, which was designated in 1960 for the purpose of flood control, water supply, water quality, and recreation.

Table 3 in the 2021 Master Plan outlines information regarding existing reservoir storage capacity at Marion Reservoir. Detailed descriptions are incorporated herein by reference (USACE, 2021).

Feature	Elevation (feet)	Area (acres)	Capacity (Acre-feet)	Equivalent Runoff (inches) (1)
Top of Dam	1368.0	-	-	-
Maximum Pool	1362.8	11,264	187,006	17.53
Top of Surcharge	1360.0	10,010	157,210	14.74
Top of Gates and Flood				
Control Pool	1358.5	9,378	142,725	13.38
Flood Control Storage	1350.5 – 1358.5	-	62,057	5.82
Top of Conservation Pool	1350.5	6,386	80,669	7.56
Conservation Storage	1320.0 – 1350.5	-	80,658 (2)	7.56
Top of Minimum Pool	1320.0	20	11	-

(1) Drainage area is 200 square miles.
(2) Includes 36% water quality allocation and 64% water supply allocation. Yield is 8.1 mgd based on 44,730 acre-feet of storage after sedimentation.

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 Marion Reservoir are in compliance with applicable environmental laws and regulations and to maintain quality lands for future public use. The 2021 Master Plan is intended to serve as a comprehensive land and recreation management plan with an effective life of approximately 25 years.

The need for the Proposed Action is to bring the 1981 Master Plan up to date and to reflect ecological, socio-political, and socio-demographic changes that are currently impacting Marion Reservoir, as well as those changes anticipated to occur through 2046. In particular, changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy, have all indicated the need to revise the plan. Additionally, increasing fragmentation of wildlife habitat, national policies related to climate change, growing demand for recreational access, and protection of natural resources are all factors affecting Marion Reservoir. In response to these continually evolving trends, the USACE determined that a full revision of the 1981 plan would be required.

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

- Changes in national policies or public law mandates
- Operations and maintenance budget allocations
- Recreation area closures
- Facility and infrastructure improvements
- Cooperative agreements with stakeholder agencies (such as the U.S. Fish and Wildlife Service [USFWS]) to operate and maintain public lands
- Evolving public concerns

As part of the master planning process, the project delivery team evaluated public comments and current land uses, determined any necessary changes to land classifications, and formulated proposed alternatives. As a result of public coordination and a public information meeting, alternatives were developed, and this EA was initiated.

1.3 SCOPE OF THE ACTION

This EA was prepared to evaluate existing conditions and potential impacts of proposed alternatives associated with the implementation of the 2021 Master Plan. The alternative considerations were formulated with special attention given to revised land classifications, new resource management objectives, and a conceptual resource plan for each land classification category. This EA was prepared pursuant to National Environmental Policy Act of 1969, as amended, and implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500 – 1507, including guidelines in 33 CFR Part 230

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SECTION 2: PROPOSED ACTION AND ALTERNATIVES

The project need is to revise the 1981 Master Plan so that it is compliant with current USACE regulations and guidance, incorporates public needs, and recognizes surrounding land use and recreational trends. As part of this process, which includes public outreach and comment, two 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 (PO), High Density Recreation (HDR), Mitigation, Environmentally Sensitive Areas (ESA), and Multiple Resource Managed Lands (MRML). The MRML classification is divided into four subcategories: Low Density Recreation (MRML-LDR), Wildlife Management (MRML-WM), Vegetative Management (MRML-VM), and Future/Inactive Recreation (MRML-IFR) 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 2021 Master Plan 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. The five project-wide management goals established for Marion Reservoir that were used in determining the Proposed Action, as well as the nationwide USACE Environmental Operating Principles, are discussed in detail “Chapter 3: Resource Goals and Objectives of the 2021 Master Plan”, and are incorporated herein by reference (USACE, 2021).

The goals for Marion Reservoir Master Plan 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 Chapter 3.3 of the 2021 Master Plan.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis for comparison to the anticipated effects of the other action alternatives, and its inclusion in this EA is required by NEPA and CEQ regulations (40 CFR § 1502.14(d)). Under the No Action Alternative, the USACE would not approve the adoption or implementation of the 2021 Master Plan. Instead the USACE would continue to manage Marion Reservoir’s natural resources as set forth in the 1981 Master Plan. The 1981 Master Plan would continue to provide the only source of comprehensive management guidelines and philosophy. However, the 1981 Master Plan is out of date and does not reflect the current ecological, socio-political, or socio-demographic conditions of Marion Reservoir. 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 2021 Master Plan would be reviewed, coordinated with the public, revised to comply with USACE regulations and guidance, and revised to reflect changes in the land management and land uses that have occurred over time or are desired in the near future. The keys to this alternative would be the revision of land classifications to USACE standards and the preparation of the resource objectives that would reflect current and projected needs and would be compatible with regional goals while sustaining Marion Reservoir's natural resources and providing recreational experiences for the next 25 years.

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 Marion Reservoir.
- 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 (MRML-LDR): Lands with minimal development or infrastructure that support passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.).
    - MRML Wildlife Management (MRML-WM): Lands designated for stewardship of fish and wildlife resources.
    - Future/Inactive Recreation (MRML-IFR): Lands that are set aside for future High Density Recreation development and use.
    - Vegetative Management (MRML-VM): Lands designated for stewardship of forest, prairie, and other native Vegetative cover.
- Water Surface: Allows for surface water zones.
    - Restricted: Water areas restricted for Marion Reservoir operations, safety, and security.
    - Designated No-Wake: Water areas to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and areas to protect public safety.
    - Open Recreation: Water areas available for year-round or seasonal water-based recreational use.
    - Fish and Wildlife Sanctuary: Water areas that have either annual or seasonal restrictions to protect fish and wildlife within a designated area.

Table 2.2.1 shows the proposed classifications and acres contained in each classification, Table 2.2.2 shows the water surface classifications, and Table 2.2.3 provides the justification for the proposed reclassification.

Table 2.2.1 Proposed Marion Reservoir Land Classifications

1981 Suppliment Number 1 Land Classifications	Acres	Proposed New Land Classifications		Acres
Project Operations	60	PO		111
Recreation Intensive Use	1,620	HDR		570
		ESA		0
Recreation- Low Density	847	MRML-LDR		366
Wildlife Management	3,522	MRML-WM		4,641
Total Fee	5,396	Total Fee		5,488
Flow Easment	387	Flow Easment		387

* Land classification acreages were derived using geographic information system technology and do not reflect the official land acquisition records.
* Source: USACE 2021

Table 2.2.2 Proposed Marion Reservoir Water Surface Classifications

Classification	Acres
Water Surface: Restricted	43
Water Surface: Designated No-Wake	44
Water Surface: Open Recreation	6,308
Water Surface: Fish and Wildlife Sanctuary	193

Source: USACE 2021

Table 2.2.3 Justification for the Proposed Reclassification

Land Classification	Description of Changes (2)	Justification
Project Operations	The net increase in Project Operations lands from 60 to 111 acres was due to the following: • 5 acres HDR reclassified to PO. • 45 acres LDR reclassified to PO.	The increase in PO acreage was in part due to a previous LDR classification which failed to appropriately reflect the correct land classification near the dam. Additionally, the original 1981 Master Plan projected a recreation area near the stilling basin which was never developed and is more appropriately classified as PO under current and future operations. These reclassifications will have no effect on current or projected use.

Land Classification	Description of Changes (2)	Justification
High Density Recreation	The net decrease in High Density Recreation lands from 1,620 acres to 582 acres was due to the following: • 89 acres LDR reclassified as HDR. • 25 acres WM reclassified as HDR. • 138 acres of HDR reclassified as LDR • 5 acres of HDR reclassified as PO • 17 acres of HDR reclassified as WM. ** Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.*	The decrease in HDR acreage in part, is due to the acreage classification change adjacent to the Hillsboro Campground, which was previously classified as HDR for the purpose of expanding the campground. This area was reclassified to WM to reflect historic and current operations. These reclassifications will have no effect on current or projected use.
Environmentally Sensitive Areas	There are no ESA acres at Marion Reservoir.	
MRML – Low Density Recreation	The net decrease in LDR lands from 847 acres to 354 acres was due to the following: • 138 aces HDR reclassified to LDR. • 45 acres LDR reclassified to PO.	The majority of the net decrease in LDR was due to the Cottonwood Point Campground. The previous classification of LDR does not reflect the current use as a Class A campground was developed and completed in 2017. These reclassifications will have no effect on current or projected use.

Land Classification	Description of Changes [2]	Justification
	** Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.*	
MRML – Wildlife Management	The net increase in WM lands from 3,522 acres to 4,641 acres was due to the following: • 17 acres HDR reclassified to WM ** Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.*	An area near French Creek Campground, originally classified as HDR, was reclassified to WM to reflect current use. This reclassification will have no effect on current or projected use.

[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 were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.
[2] Acreages are based on GIS measurements and may vary from Net Difference totals detailed in Table 8-1. Any remaining acres not accounted for in above totals are attributed to changes in measuring technology.

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.

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 these 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, or because that particular

resource is not located within the project area. For example, no body of water in the Marion Reservoir watershed is designated as a Federal Wild or Scenic River, so this resource will not be discussed.

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 one year), short-term (up to three years), long-term (three to ten10 years), or permanent effects, following implementation of the master plan revision.

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

Marion Reservoir Dam was constructed for the purpose flood control, water supply, water quality and recreation. Congressional authority for the construction of the Marion Reservior Dam, as a unit of the plan for improvement for the Arkansas River, is contained in Public Law 81-616a, approved May 17, 1950.

The USACE lands presently associated with Marion Reservoir are listed in the 1981 Master Plan as follows:

- 60 acres of Project Operations
- 1,620 acres of Recration Intensive Use
- 847 acres of Recreation Low-Density Use
- 3,522 acres of Wildlife Management
- 387 acres Flowage Easement

The USACE operates and manages numerous areas designated as High Density Recreation (HDR) including Cottonwood Point, Hillsboro Cove, Marion Cove, and French Creek Cove.

Section 5.3 of the 2021 Master Plan further describes recreation areas at Marion Reservoir.

3.1.1 Alternative 1: No Action Alternative

The No Action Alternative for Marion Reservoir is defined as the USACE taking no action, which means the operation and maintenance of USACE lands at Marion Reservoir would continue as outlined in the existing 1981 Master Plan. No new resource analysis, resources management objectives, or land-use classifications would occur. Although this alternative does not result in a Master Plan that meets current regulations and guidance, there would be no significant negative long-term impacts on land uses on Marion Reservoir lands.

3.1.2 Alternative 2: Proposed Action

The objectives for revising the Marion Reservoir 2021 Master Plan 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 campgrounds, 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 upgrading aging water and electrical infrastructure, improving energy efficiency and sustainability of facilities, and repairing or replacing outdated restrooms.

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 negative long-term adverse impacts on land uses on project lands. For example, 4,641 acres would be reclassified as Wildlife Management Area compared to the No Action Alternative which contains 3,522 acres (see Table 2.2.1). The wildlife management reclassifications would afford protection to and potentially benefit wildlife, wildlife habitats, sensitive species habitat, and cultural resources. The protection and appropriate management of these areas aligns with Resource Goals B, C, D, and E as described in Section 3.2 of the revised Master Plan, as well as numerous natural resource objectives listed in Table 24 of the revised Master Plan. The reduction of HDR by 1,038 acres and MRM-LDR by 490

acres occurs in areas of parks with little to no recreational development. No decrease in recreational opportunities are expected. Maintaining the HDR and MRML-LDR areas allows for continued outdoor recreation opportunities at Marion Reservoir. New resource goals A, C, and E and several recreational objectives are supported by these reclassifications as described in Section 3.3 and Table 3.1 of the revised Master Plan. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative. ESA classification would allow for appropriate active management and protection for these sites.

No changes in land use are expected with 2021 Master Plan as recreation and project maintenance areas and operation areas will largely remain the same. As such, no short or long-term, adverse impacts are expected to occur as a result of the 2021 Master Plan.

3.2 WATER RESOURCES

Surface Water

Marion Reservoir is located on the Cottonwood River. Its watershed drains approximately 200 square miles above the dam and is located in Marion County in East Central Kansas. The top of conservation pool capacity is 6,210 acre-ft., and covers the area of 1,350.5 acres. Fluctuation within the conservation pool depends upon the rate of withdrawals for water supply, as well as inflows and evaporation.

Hydrology and Groundwater

An additional benefit from Marion Reservoir is the utilization of water impounded to provide municipal and industrial water supplies to the cities of Marion, Hillsboro and Peabody. The Kansas Water Office is the state agency created by the legislature to administer the water supply features of the project.

The reservior has an uncontrolled concrete spillway in the middle of the lake. Intake structures are on the north east side of the stilling basin. The dam has two tainter gates and one low flow gate. Marion Reservoir is not impacted by groundwater.

Water Quality

The Kansas Department of Health and Environment sets and implements standards for surface water quality to improve and maintain the quality of water in the state based on various beneficial use categories for the water body. The 2020 Kansas Integrated Water Quality Assessment, pursuant to the Clean Water Act Sections 305(b) and 303(d), evaluates the quality of surface waters in Kansas and identifies those that do not meet uses and criteria defined in the Kansas Surface Water Quality Standards. Impaired waters are then identified, along with impairment descriptions, on the 303(d) list.

Marion Reservoir has identified the problem of siltation at station LM022001 and has been listed as a high priority among the impared water bodies in Kansas. The reservoir is shallow and due to this has high levels of inorganic turbidity and sediment in the water column. High levels of phosphorus and sediment entering into the reservoir are a known issue. Due to these water quality issues, Marion Reservir is a high priority in the Water Restoration and Protection Strategy Program.

For more information regarding water quality at Marion Reservoir, please refer to Sections 2.2.8 and 6.6 of the 2021 Master Plan.

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.

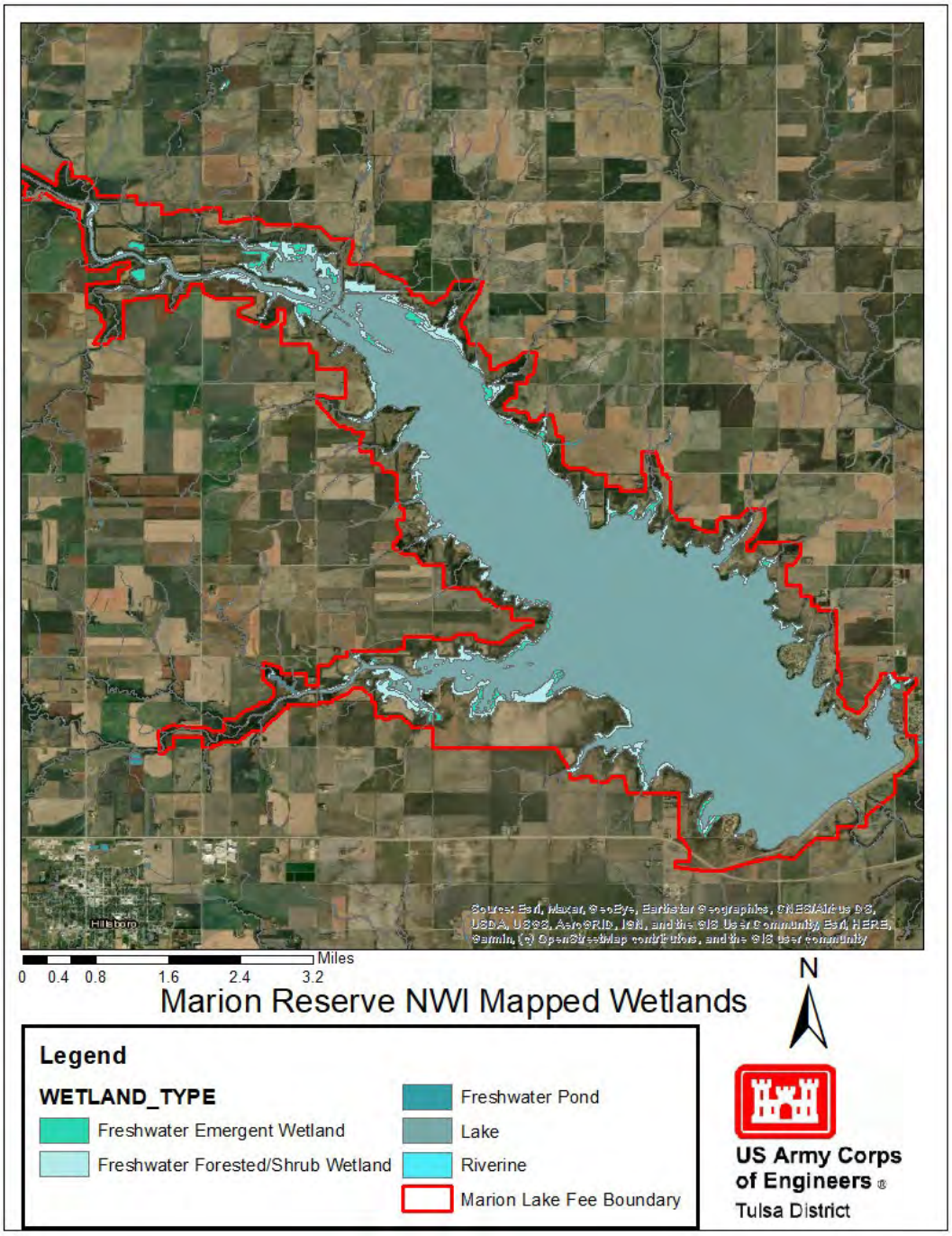
As a result of the topography of the region for Marion Reservoir, wetlands generally occur near the rivers and within areas with low topographic relief. Table 3.2.1 lists the acreages of various types of wetlands present at Marion Reservoir. Wetland classifications presented are derived from the USFWS Trust Resource List generated using the Information, Planning, and Conservation System decision support system (USFWS, 2020D).

Table 3.2.1 Wetland Resources

Wetland Types	Total Acres
Emergent Wetland	10
Pond	7.4
Forested Wetland	6.8
Lake	6,328
Riverine	47

Note: Acreages from the USFWS website do not match exactly with the USACE digitized acreages.

Figure 3.2.2. Map of Wetlands within USACE Marion Reservoir Federal Fee-Owned Property.



3.2.1 Alternative 1: No Action Alternative

There would be no negative significant permanent impacts on water resources as a result of implementing the No Action Alternative, since there would be no change to the existing Master Plan.

3.2.2 Alternative 2: Proposed Action

The reclassifications included in the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of water resources. Land reclassifications and new resource objectives proposed as part of the Proposed Action would have a potential for minor long-term beneficial impacts on water quality. For example, 4,461 acres would be classified as Wildlife Management compared to the No Action Alternative which allocates 3,522 acres to strictly wildlife managment (see Table 2.2.1). This directly supports resource goals B, D, and E and several natural resource management objectives including minimizing activities that disturb the aesthetic value and protect natural habitat, all of which are further described in Chapter 3 of the revised Master Plan. The net reduction of HDR lands from 1,620 acres to 582 acres will limit future intensive development, thus reducing the potential for erosion and sedimentation. Natural vegetation communities act as buffers to trap runoff, thus potentially reducing sedimentation. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative.

3.3 CLIMATE

Marion Reservoir lies in a moderately humid region of the United States where the temperature is generally mild. Summer temperatures are generally hot during the day and cool at night, while winter temperatures are generally mild to cold, including frequent freezing temperatures. Sub-zero temperatures are in short duration and not uncommon during the winter. While the mean annual temperature is about 53.6 degrees Fahrenheit (°F), the maximum recorded temperature was 110 °F in 1984, and the minimum recorded temperature was -26 °F in 1989. The growing season between killing frosts is normally from April to early-October. For more detailed information see Section 2.1.2 of the 2021 Master Plan.

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 impacts on climate as a result of implementing the No Action Alternative.

3.3.2 Alternative 2: Proposed Action

Revision of the Marion Reservoir Master Plan would have no impact on the climate of the study area. There would be no impacts on climate as a result of implementing the Proposed Action Alternative.

3.4 CLIMATE CHANGE AND GREEN HOUSE GAS (GHG)

CEQ drafted guidelines for determining meaningful GHG decision-making analyses. The CEQ guidance states that if a project would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide (CO_2)-equivalent (CO_2e) GHG emissions per year, the project should be considered in a qualitative and quantitative manner in NEPA reporting (CEQ, 2015). CEQ proposes this

as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ, 2015).

EPA records show that there are zero GHG contributors within Marion County, Kansas. The general operations and recreation facilities associated with Marion Reservoir does not approach the proposed reportable limits. Marion Reservoir Project Office does have management plans in place such as vegetation management plans, natural resources management plans, and public education and outreach programs, to protect regional natural resources. In addition, the Marion Reservoir Project Office will continue monitoring programs as required to meet applicable laws and policies.

Two Executive Orders (EOs), EO 13693 and EO 13653, 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. The USACE has prepared an Adaptation Plan in response to the EOs and the CAP. 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 broad national climate change mitigation goals including, but not limited to, climate change resilience and carbon sequestration, as set forth in EO 13783, 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 impacts on climate change or contributions to GHG emissions and climate change as a result of implementing the No Action Alternative.

3.4.2 Alternative 2: Proposed Action

Under the Proposed Action, current Marion Reservoir project management plans and monitoring programs would not be changed. There would be no impacts on climate change or contributions to GHG emissions as a result of implementing the 2021 Master Plan. In the event that GHG emission issues become significant enough to impact the current operations at Marion Reservoir, the 2021 Master Plan and all associated documents would be reviewed and revised as necessary.

3.5 AIR QUALITY

The overall air quality condition for Marion Reservoir is generally of good quality. At this time there are no air quality concerns in Marion County.

In conducting routine operations and maintenance activities at Marion Reservoir, the USACE will comply with all Federal, state, and local laws governing air quality and will implement best management practices to protect air quality.

3.5.1 Alternative 1: No Action Alternative

There would be no impacts on air quality as a result of implementing the No Action Alternative, since there would be no change to the existing 1981 Master Plan.

3.5.2 Alternative 2: Proposed Action

Existing operation and management of Marion Reservoir is compliant with the Clean Air Act and would not change with implementation of the 2021 Master Plan. Land reclassifications and new resource objectives proposed as part of the Proposed Action would have a potential for negligible long-term beneficial impacts on air quality. The new resources goals, primarily B and C, along with several recreational and natural resource management objectives regarding sustainability and the conservation of natural areas are supported by the proposed land classifications and are further described in Chapter 3 of the revised Master Plan. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative.

3.6 TOPOGRAPHY, GEOLOGY, AND SOILS

Topography and Geology

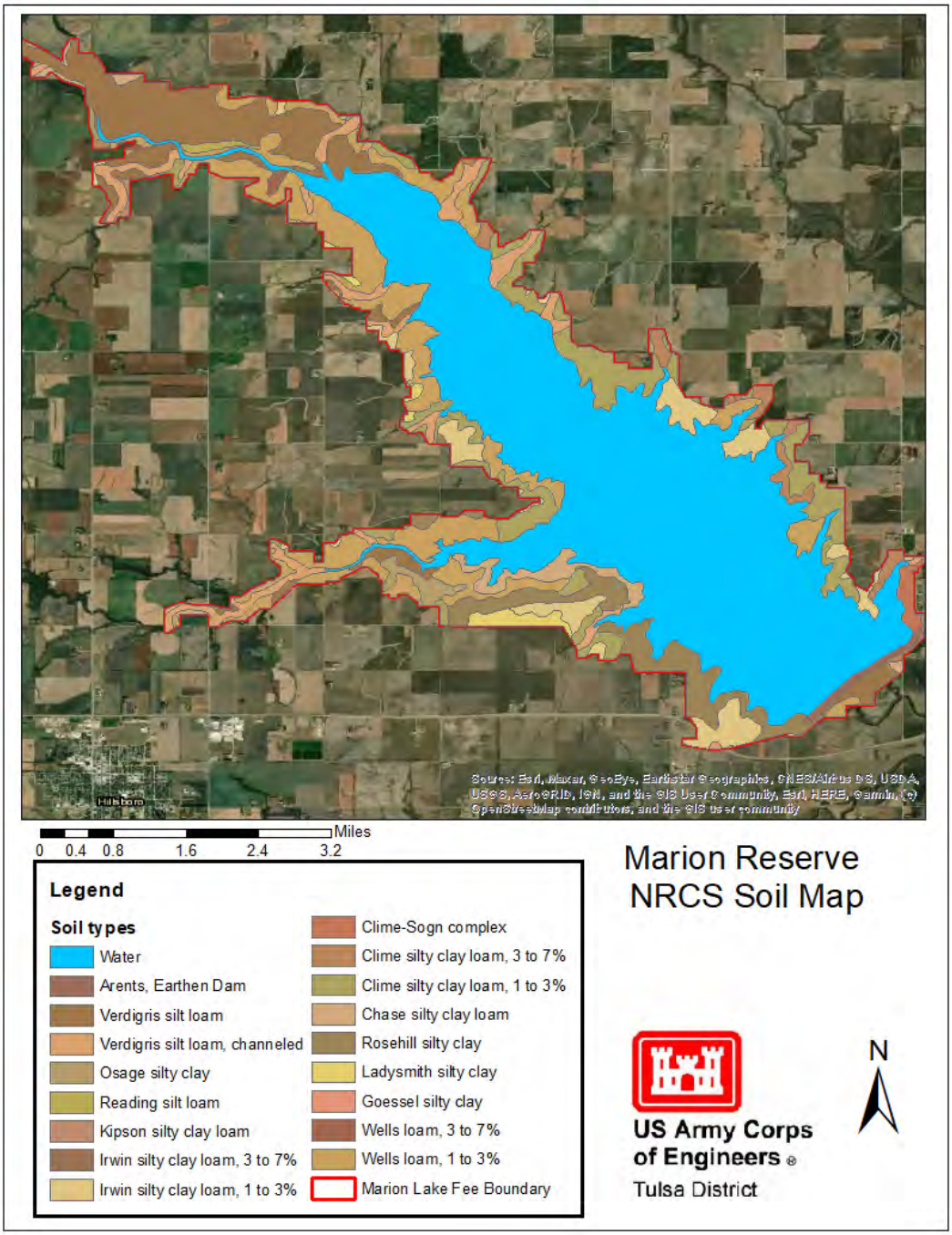
Though Marion Reservoir Dam touches the Cross Timbers ecoregion on its southern border, the topography in which the reservoir lies is characteristic of the Flint Hills. This includes rolling plains, deeply incised valleys, limestone outcrops, and vegetative-covered shale intervals between the limestones.

The Marion Reservoir 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

The Marion Reservoir area has a high percentage of soils that are clime silty clay loam, Irwin silty clay loam, and well loam soils. For a visual representation of where these soils can be found please see the below Figure 3.6 and for a more detailed discussion see Section 2.1.5 in the 2021 Master Plan.

Figure 3.6 Map of Soils within USACE Marion Reservoir Federal Fee-Owned Property.



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 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 2021 Master Plan. Total acreage for HDR was reduced from 1,620 acres to 582 acres. This net reduction is based on the realization that the amount of acreage originally planned for intensive recreation use per the 1981Master Plan significantly exceeded the amount necessary to meet public needs and and therefore were not being fully utilized. Areas currently developed as park would continue to operate as parks and no change would occur. However, some of the lands designated as Recreation – Intensive Use would be reclassified to various other land use classifications to better reflect historic use patterns and current land management efforts. As such, no additional intensive use facilities would be constructed outside of existing intensive use areas, limiting future impacts to soils and Prime Farmlands.

Land reclassifications and new resource objectives proposed as part of the Proposed Action would have a potential long-term beneficial impact on soil conservation and Prime Farmlands at Marion Reservoir. The reduction of Recreation Areas will limit future intensive development, thus reducing the potential impacts of soil erosion and development of Prime Farmland. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative. As described in Chapter 3 of the revised Master Plan, resource goals B, C, D, and E and several natural resource management objectives, particularly those that concern addressing unauthorized uses of public land and evaluating erosion control and addressing sedimentation issues, are supported by the proposed land classifications. Therefore, under the Proposed Action, there would be no long-term, major adverse impacts on topography, geology, soils or Prime Farmland as a result of implementing the 2021 Master Plan.

3.7 NATURAL RESOURCES

Operational civil works projects administered by USACE are required, with few exceptions, to prepare an inventory of natural resources. The basic inventory required is referred to within USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes the following: vegetation in accordance with the National Vegetation Classification System through the sub-class level; assessment of the potential presence of special status species including but not limited to federal and state listed endangered and threatened species, migratory species, and birds of conservation concern listed by the USFWS; land (soils) capability classes in accordance with Natural Resources Conservation Service (NRCS) soil surveys; and wetlands in accordance with the USFWS Classification of Wetlands and Deepwater Habitats of the United States, which are previously discussed in Section 3.2.

In the fall of 2020, USACE biologist, rangers, and reservoir managers conducted habitat assessments at Marion Reservoir to inform land classifications. Methodology, habitat quality, and vegetation species encountered at Marion Reservoir is available in Appendix D of the Master Plan.

The Wildlife Habitat Appraisal Procedures (WHAP) data collected was used to identify unique and/or high quality habitats for targeted conservation through the designation of appropriate land classes such as ESA, MRLM-WM, or MRLM-VM.

These land classes allow for the continued conservation and management of natural, high quality habitat.

The WHAP consists of rapid assessment and inventory of habitat quality to describe the habitat quality. Measures include items such as species diversity, presence of a browse line, and soil quality. The information collected from such efforts provides data for consideration in land classifications and future management.

Fisheries and Wildlife Resources

Marion Reservoir provides habitat for an abundance of fish and wildlife species. The reservoir provides a quality fishery, as well as quality wildlife habitat on public land associated with the project. Marion Reservoir provides fishing opportunities for boater and for the bank angler. Common sport fish species present in Marion Reservior include channel catfish (*Ictalurus punctatus*), crappie (*Pomoxis*), flathead catfish (*Pylodictis olivaris*), white bass (*Morone chrysops*), walleye (*Sander vitreus*), and largemouth bass (*Micropterus salmoides*).

Terrestrial Wildlife Resources

Marion Reservoir provides habitat for an abundance of wildlife species, including game and non-game species, migratory waterfowl, resident and migratory songbirds, wading birds, reptiles, amphibians, and insects. The area offers a mixture of geological features, riparian habitat, grasslands, and river habitat which support a wide variety of waterfowl species, white-tailed deer (*Odocoileus virginianus*), turkey (*Melegaris gallopavo*), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), cottontail rabbits (*Sylvilagus*), pheasant (*Phasianus colchicus*), and squirrels (*Sciuridae*).

The USACE currently allows hunting at Marion Reservoir in specified areas and in accordance with specific restrictions on allowable game species and means and methods of hunting. USACE Tulsa District publishes a Public Hunting Guide listing each USACE lake in the Tulsa District. This guide is updated to address any changes in State wildlife/hunting rules that may affect hunting at USACE lakes, as well as any changes in the management of USACE land at each lake. Hunters are advised to obtain a copy of the guide and to visit with USACE lake staff when planning to hunt.

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 major long-term 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 proposed net increase of MMRL-WM by 1,119 acres would cause major long-term beneficial impacts to natural resources within these areas. The reclassification of MRML-WM was deemed necessary because these areas are and have been managed for recreation and vegetation management purposes. This proposed changes would then protect natural resources from various types of adverse impacts such as habitat fragmentation. Furthermore, the utility corridors were designated to avoid and minimize impacts on current natural resources by future actions by selecting corridors with lesser quality habitats and that would avoid continued fragmentation of habitats.

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 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.

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. 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 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.

The USFWS's Information for Planning and Consultation (IPaC) database (2020D) lists the threatened and endangered species and trust resources that may occur within the Marion Reservoir Federal Fee Boundary (see USFWS Species List and the IPAC Report in Appendix C of the 2020 MP). Based on the IPaC report, there are three federally listed species found within Marion Reservoir. A list of these species is presented in Table 2.3. The species identified as Threatened, or Endangered Species by Kansas Department of Wildlife, Parks, and Tourism (KDWPT) 2020A that are not federally listed are included in Appendix C of the 2021 Master Plan as well as a list of Species In Need of Conservation (SINC) for the Morris County and Species of Greatest Conservation Need (SGCN) for the Flinthills Ecoregion (Rohweder, 2015). No Critical Habitat has been designated within or near Marion Reservoir.

Table 2.3. Federally Listed Threatened & Endangered Species with Potential to Occur at Marion Reservoir

Common Name	Scientific Name	Federal Status	State Status
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Not listed
Neosho Madtom	*Noturus placidus*	Threatened	Threatened
Topeka Shiner	*Notropis topeka*	Endangered	Threatened

USFWS lists the northern long-eared bat threatened wherever it is found (USFWS, 2020B). It was federally listed in 2015 following studies that revealed a decline in populations from the spread of white nose syndrome. USFWS service lists Marion County as a location where northern long-eared bats occur (USFWS, 2020B). Most northern long-eared bats seasonally migrate between winter hibernacula and summer maternity or bachelor colonies. Roosting may take place in tree bark, tree cavities, caves, mines, and barns. Northern long-eared bats forage along forested hillsides and ridges near roosting and hibernating caves. They emerge at dusk and feed on various insect species such as moths, flies, leafhoppers, caddisflies, and beetles from vegetation and water surfaces. Few large patches of forest occur in the study and no known caves exist in the area. With limited habitat, they are not expected to occur in the study area.

USFWS lists the Neosho madtom as threatened wherever it is found (USFWS, 2020A). It was federally listed in 1990 following studies that revealed a decline in populations from habitat destruction. USFWS service lists Marion County as a location where Neosho madtom occur. It is a fish that primarily feeds on larval insects

(NatureServe, 2020A). The species can be found in large rivers that are characterized by clear waters with riffles and limestone gravel (KDWPT, 2020B). The specific rivers that the species is known to occur in are the Cottonwood, Neosho, and Spring Rivers. Because of the waters within the USACE fee owned boundary are not clear and the overall rarity of the species, they are not expected to occur in the study area.

USFWS lists Topeka Shiner as endangered whenever it is found (USFWS, 2020C). It was federally listed in 1998 following studies that revealed a decline in populations from habitat destruction. USFWS service lists Marion County as a location where Topeka Shiner occur. It is a fish that primarily feeds on aquatic invertebrates. The species can found waters of high quality near the head of streams with clean gravel or substrate (KDWPT, 2020C). Even though there are documented occurences of the species within creeks in Marion County, it is not expected to occur within Marion Reservoir federally fee owned boundary because there are not any headwaters to streams that occur within it with clear water.

3.8.2 Alternative 1: No Action Alternative

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

3.8.3 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 2021 Master Plan include 1,119 additional acres MRML-WM.

The MRML-WM areas are managed to maintain and improve habitat for fish and wildlife resources. Even though they are not afforded as much protection as areas classed as ESA, they still provide valuable habitats for threatened, endangered, and rare/unique communities.

The reclassification of these lands was supported by recommendations from the USFWS. The reclassification will have no effect on current or projected public use. While the occurrence of special status species are limited at Marion Reservoir, minor to moderate, long-term beneficial impacts on endangered, threatened and rare/unique communities would occur as a result of implementing the reclassifications outlined in the 2021 Master Plan. Habitat in MRLM-WM classified lands would provide valuable resting, stopover, and/or foraging grounds for special status species.

Based on the above information describing habitat benefits for state and federal listed species, it is the USACE determination that implementation of the 2021 Master Plan will have No Effect on any federally threatened or endangered species. Any future

activities that could potentially result in impacts on federally listed species will be coordinated with USFWS, consistent with requirements found in Section 7 of the Endangered Species Act.

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.

Both USACE and KDWPT monitor and enforce aquatic nuisance species regulations in an effort to prevent the expansion/colonization of invasive species at Marion Reservoir. Section 2.2.5 of the 2021 Master Plan further describe invasive species at Marion Reservoir.

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 Marion Reservoir would continue to be managed according to the existing invasive species management practices. There would be no long-term major 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 Marion Reservoir Master Plan are compatible with the reservoir's invasive species management practices. The addition of 1,119 acres classified as Wildlife Managment may provide long-term benefits as these areas may receive additional invasive species management. The objectives developed under the proposed action as explained in detail in Chapter 3 of the revised Master Plan will result in minor, long-term beneficial impacts by reducing and preventing the spread of invasive species. In summary, these objectives are: monitoring for invasive species presence; addressing unauthorized uses of public lands which may spread invasive species; and evaluating erosion control as eroding lands provide colonization opportunities for invasive plant species. All of these would include a public outreach and education emphasis.

3.10 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

<u>Cultural History Sequence</u>

Six broad cultural divisions are applicable to a discussion of the culture history of the Marion Reservoir region: Paleoindian, Archaic, Woodland, Plains Village, Protohistoric, and Historic. These general adaptation types are adopted in this Environmental Assesment to characterize prehistoric cultural traditions, within the following regional chronology. Due to differential rates of change through time in different regions, the State of Kansas has subsumed three of the cultural divisions into

the broader Ceramic Period. The Ceramic Period has been subsequently divided into Early, Middle, and Late. Due to the use of both systems of cultural divisions in the site records and literature, both systems are incorporated below.

Paleoindian: 13,500 to 8000 BP

Archaic: 8000 to 2000 BP

Woodland (Early Ceramic): AD 1 to 1000

Plains Village (Middle Ceramic): AD 1000 to 1500

Protohistoric (Contact Period; Late Ceramic): AD 1500 to 1825

Historic: AD 1825 to present

For more detailed information please see Section 2.3.2 of the Revised Master Plan.

Cultural Resources Management at Marion Reservoir

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; burials and cemeteries; 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 Completion of a full inventory of cultural resources at Marion Reservoir is a long-term objective that is needed for compliance with Section 110 of the National Historic Preservation Act (NHPA).

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism, 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. 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.

A Historic Properties Management Plan (HPMP) was developed in 1996, and needs to be updated. Such plans establish standard operating procedures pertaining to both USACE and external activities that might impact cultural resources. Completion of a full inventory of cultural resources at Marion Reservoir is a long-term objective that is needed for compliance with Section 110 of the NHPA. Currently, just under 95% of fee owned lands above the conservation pool of the reservoir have been inventoried. Ultimately, all currently known sites, as well as those found in future inventories should be evaluated to determine their eligibility for the NRHP. Sites of currently unknown NRHP eligibility and those found in the future to be eligible for the NRHP must be protected from impacts caused by USACE or those having leases or easements on Marion Reservoir fee lands. In order to ensure compliance with the NHPA, ARPA, and NAGPRA cultural resource activities will be coordinated with the State Historic Preservation Officer at the Kansas State Historical Society and federally recognized tribes within whose areas of interest, historical homelands, or ancestral territory the work will occur. ARPA permits are required and issued by the Tulsa District for all archaeological work conducted on USACE fee lands, to ensure qualified professional archaeologists perform the work according to established standards.

3.10.1 Alternative 1: No Action Alternative

There would be no major adverse impacts on cultural resources as a result of implementing the No Action Alternative, as there would be no changes to the existing 1981Master Plan. However, maintaining existing land classifications would not recognize the presence or importance of cultural resources, which could lead to long-term negative moderate or major impacts as a result of implementing the No Action Alternative.

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 Marion Reservoir, the required reclassifications, resource management objectives, and resource plan would not change current cultural resource management plans or alter areas where these resources exist. The Proposed Action would potentially result in long-term and moderate beneficial impacts with the reclassification of additional 1,119 acres to wildlife managment as those lands afford more protection against development and ground disturbing activities. In addition, the proposed 2021 Master Plan does not entail ground disturbance activities. Therefore, no significant adverse impacts on cultural, historical, and archaeological resources would occur as a result of implementing revisions to Marion Reservoir Master Plan. Any future ground-disturbing activities would take into account Section 106 of the NHPA and other applicable cultural resource statutes to insure that cultural resources are protected. Also, several cultural resources management objectives were developed to promote the protection of Marion Reservoir cultural resources and are described in Chapter 3 of the revised Master Plan.

3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The zone of interest for this socioeconomic analysis includes Marion, Sedwick, McPherson, Harvey, Chase and Butler counties. This Central Kansas-county region,

where the most impacts would be expected, has been utilized as the basis in summarizing the population characteristics of Marion Reservoir. The population, education level, employment rates, income, and household characteristics of the area are discussed in detail in Section 2.4 of the 2021 Master Plan and are incorporated herein by reference (USACE, 2021).

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed federal actions do not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that "each federal agency shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 U.S.C. Section 4321, et seq."

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, 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. The U.S. Census American Community Survey provides the most recent estimates available for race, ethnicity, and poverty. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, or Other (Section 2.4.3 of the 2021 Master Plan). Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level, which was $24,588 for a family of four in 2017 with two children under 18 (US Census Bureau, 2021). 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.

Protection of Children

EO 13045 requires each federal agency "to identify and assess environmental health risks and safety risks that may disproportionately affect children" and "ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas. Please refer to Figure 15 in Section 2.4.2 of the 2021 Master Plan for a graphical representation for the percentage of total population that are children in the study area.

3.11.1 Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no changes to the existing Master Plan, with the USACE continuing to manage Marion Reservoir natural resources as set forth in the 1981 Master Plan. There would be no major adverse long-term impacts on socioeconomic resources. Beneficial socioeconomic impacts existing as a result of the implementation of the 1981 Master Plan would continue, as visitors would continue to come to the reservoir 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

Marion Reservoir is beneficial to the local economy through indirect job creation and local spending by visitors, and also offers a variety of recreation opportunities and uses innovative maintenance and planning programs to minimize usage fees. The 582 acres of HDR and 354 acres of MRML-LDR will continue to provide recreation opportunities. The 4,641 acres of Wildlife Managment land will also allow minimally invasive recreation activities such as wildlife viewing and hiking.

Since recreational opportunities remain abundant, and the revised Master Plan recognizes and reinforces projected recreational trends there would be negligible, long-term beneficial impacts on area economic stability and environmental justice populations resulting from the revision of the 1981 Supplement 1 Master Plan.

3.12 RECREATION

The majority of visitors to Marion Reservoir come from a 100-mile radius of the reservoir. These visitors are a diverse group of people with a wide variety of interests. Examples of visitors include campers who utilize the federally and state operated campgrounds around the reservoir; adjacent residents; hunters and anglers who utilize public hunting areas and participate in recreational fishing as well as tournaments; and day users who picnic, hike, bird watch, bicycle, and ride horses. Recreational facilities, activities, and needs are discussed in detail in Section 2.5 of the 2021 Master Plan.

3.12.1 Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no major adverse long-term impacts on recreational resources, as there would be no changes to the existing Master Plan.

3.12.2 Alternative 2: Proposed Action

The primary objective for revising the Marion Reservoir 1981 Master Plan is to capture current land use and management that has evolved to meet day-to-day operational needs. Under the Proposed Action, the required revisions to the Marion Reservoir Master Plan would be compatible with current recreation management plans

and recognizes regional and national outdoor recreation trends. The reclassification changes required for the Proposed Action were developed to enhance regional goals associated with good stewardship of land and water resources that would allow for continued recreational use and development of project lands. The 582 acres of HDR and 354 acres of MRML-LDR will continue to provide recreation opportunities. While 1000 acres of HDR was moved to LDR and WM, these changes occurred in areas outside of developed recreation areas. Low impact recreation activies such as hiking and hunting can continue in the new classification. The 4,641 acres of wildlife management land will also allow minimally invasive recreation activities such as wildlife viewing and hiking. Since recreational opportunities remain abundant, and the revised Master Plan recognizes and reinforces projected recreational trends there would be negligible, long-term beneficial impacts on recreation resulting from the revision of the Master Plan from the Proposed Action.

3.13 AESTHETIC RESOURCES

Marion Reservoir sits along the western edge of the Flint Hills Region, one of the last vestiges of Tall Grass Prairie in North America. Lying in close proximity to several major metropolitian areas, Marion Reservoir proper and surrounding federal lands offers public, open space value and scenic vistas without having to travel far from home. The relatively flat shoreline provides visitors with an unobstructed view of mixed native grasslands, riparian hardwood forests, and croplands managed for wildlife.

Marion Reservoir is well known for providing excellent fishing, but is also popular for the many hunting, hiking, camping, and wildlife viewing opportunities available. The Willow Walk Nature Trail is available for visitors to view grasslands as they transform from grass pastures to native grasslands where buffalo once roamed.

3.13.1 Alternative 1: No Action Alternative

There would be no major adverse impacts on visual resources as a result of implementing the No Action Alternative, as there would be no changes to the existing 1981Master Plan.

3.13.2 Alternative 2: Proposed Action

Marion Reservoir currently plays a pivotal role in availability of parks and open space in Marion County. Even though HDR lands would be reduced by 1,038 acres and MRML-LDR reduced by 493 acres with implementation of the 2021 Master Plan, these land reclassifications reflect changes in land management and land uses that have occurred since 1981 at Marion Reservoir. The conversion of these lands would have no effect on current or projected public use or visual aesthetics.

Furthermore, the net increase of MRML-WM by 1,119 acres would protect lands that are aesthetically pleasing at Marion Reservoir and limit future development. Natural Resources Management Objectives for the reservoir will continue to minimize activities which will disturb the scenic beauty and aesthetics of the reservoir.

Therefore, the Proposed Action would result in minor, long-term beneficial impacts to the aesthetic resources of Marion Reservoir.

3.14 HAZARDOUS MATERIALS AND SOLID WASTE

This section describes existing condition with the Project area with regard to potential environmental contamination and the sources of releases to the environment. Contaminants could enter the reservoir environment via air or water pathways. The highways and roads, railroads, and oil and gas pipelines in the vicinity could also provide sources of contaminants to the project area.

3.14.1 Alternative 1: No Action Alternative

There would be no major adverse long-term impacts on hazardous, toxic, radioactive, or solid wastes as a result of implementing the No Action Alternative, as there would be no changes to the existing Master Plan.

3.14.2 Alternative 2: Proposed Action

The land reclassifications required to revise the Master Plan would be compatible with Marion Reservoir hazardous and toxic waste and solid waste management practices. Therefore, no major, adverse, long-term impacts due to hazardous, toxic, radioactive, or solid wastes would occur as a result of implementing the 2021 Master Plan.

3.15 HEALTH AND SAFETY

As mentioned earlier in this document, Marion Reservoir authorized purposes include flood control, water supply, water quality and recreation. Compatible uses incorporated in project operation management plans include programs that establish recreation management practices to protect the public, such as water safety education, safe boating and swimming regulations, safe hunting regulations, and speed limit and pedestrian signs for park roads. The staff of Marion Reservoir are in place to enforce these policies, rules, and regulations during normal park hours.

3.15.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the 2021 Master Plan would not be revised. No major, adverse, long-term impacts on human health or safety would be anticipated.

3.15.2 Alternative 2: Proposed Action

Under the Proposed Action, the required revisions to the Marion Reservoir 1981 Master Plan would be compatible with project safety management plans. 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 Marion Reservoir area would continue to be enforced to ensure public safety. Therefore, there would be no major, adverse, long-term impacts on public health and safety as a result of implementing the Proposed Action.

3.16 SUMMARY OF CONSEQUENCES AND BENEFITS

Table 3.16 provides a tabular summary of the consequences and benefits for the No Action and Proposed Action alternatives for each of the 15 assessed resource categories.

Table 3.16. Summary of Consequences and Benefits

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Land Use	No effect on private lands. Minor to moderate benefit from placing emphasis on protection of wildlife and environmental values on USACE land and maintaining current level of developed recreation facilities.	Fails to recognize recreation trends and regional natural resource priorities.	Recognizes recreation trends and regional natural resource priorities identified by the state, and public comment.	Land classification changes and new resource objectives fully recognize passive use recreation trends and regional environmental values.
Water Resources Including Groundwater, Wetlands, and Water Quality	Minor change with benefits 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 national climate change mitigation goal. Leadership in Energy and Environmental Design (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	Negligible change to help reduce air emissions.	No effect.	Promotes activities and goals that will help to reduce emissions.	Reduces HDR and MRML-LDR acres, which in turn reduces the motor vehicle exhaust that is produced. New resource objectives also help to reduce emissions.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Topography, Geology and Soils	Beneficial 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.
Natural Resources	Major 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 an additional 1,119 acres of wildlife management land.
Threatened & Endangered Species	Moderate benefits from land reclassifications and utility corridors for recognizing both federal and state-listed species.	Fails to recognize current federal and state-listed species.	Fully recognizes federal and state-listed species.	The master plan 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, Historical and Archaeological Resources	Minor change to recognize current status of cultural resource.	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 and specific resource objectives were included for protection of cultural resources.
Socioeconomics and Environmental Justice	No change.	No effect.	No effect.	No added benefit.
Recreation	Negligible 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.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Aesthetic Resources	Minor benefits through land reclassification, utility corridors, and resource objectives.	Fails to minimize activities that disturb the scenic beauty and aesthetics of the reservoir.	Promotes activities that limit disturbance to the scenic beauty and aesthetics of the reservoir.	Specific management objectives to minimize activities that disturb the scenic beauty and aesthetics of the reservoir.
Hazardous Materials and Solid Waste	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.

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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.

Congressional authority for the construction of the Marion Dam and Reservoir, as a unit of the plan for improvement for the Arkansas River, is contained in Public Law 81-516a, approved May 17, 1950. Construction of Marion Reservoir Dam was completed in October 1967. Marion Reservoir encompasses 6,588 acres of surface water.

4.2 Current and Reasonably Foreseeable Projects Within and Near the Zone Of Interest

Future management of the 387 acres of Flowage Easement Lands at Marion Reservoir 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.

Regional and county mobility plans call for general roadway improvements of some existing roadways within the surrounding vicinity of USACE lands. No local road expansion or construction projects planned or anticipated to take place within the zone of interest during the planning horizon of the 2021 Master Plan.

Private mineral owners are anticipated to continue exploration and production activities within their respective mineral deposits that underlie the majority of USACE

lands. The rate at which exploration and production activity may occur is unpredictable as it is governed by numerous factors such as the value of the deposits in relation to national and international markets. Through the use of mineral subordination rights acquired by USACE on private minerals, basic resource protection measures can be required when mineral exploration and production activities are proposed, to the extent that private mineral owners cannot be denied reasonable access to their minerals. Federal ownership of minerals underlying USACE lands is very limited, but such minerals could be proposed for lease to private entities, provided USACE determines that the leasing would not interfere with operation of the project for its intended purposes, there is no threat to public health and safety, and natural resources are not harmed. If leasing of federal minerals would occur in the future, BLM would execute the lease and seek public input prior to the lease. It is anticipated that USACE would require BLM to stipulate “No Surface Occupancy” of federal land as a condition of the lease. Coordination with BLM during Plan preparation indicated there are currently no active or proposed leases of federally-owned minerals underlying USACE lands.

The Resource Plan in Chapter 5 of the 2021 Master Plan does not list any specific actions that may occur in the future.

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. Moderate growth and development are expected to continue in the vicinity of Marion Reservoir 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. 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 enhance regional goals associated with good stewardship of land and water resources that would allow for continued use and development of project lands. Therefore, cumulative impacts on land use within the area surrounding Marion Reservoir, when combined with past and proposed actions in the region, are anticipated to be minimal.

4.3.2 Water Resources

Marion Reservoir was developed for flood control, water supply, water quality and recreation. 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. The reclassifications required for the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of water resources.

Other activities surrounding Marion Reservoir, such as the addition of future utility lines in corridors, which would require boring beneath streams in most cases to avoid impacts, have been identified as having the potential to contribute directly to the cumulative impacts on water quality; however, water quality monitoring will continue to be used to assess any changes in these conditions. The cumulative impacts on water quality from the Proposed Action at Marion Reservoir are anticipated to be negligible when combined with past and proposed actions in the area.

4.3.3 Climate

The implementation of the revised land use classifications in the 2021 Master Plan, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on the climate.

4.3.4 Climate Change and GHG

Under the Proposed Action, current Marion Reservoir 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 Marion Reservoir, the 2021 Master Plan and all associated documents would be reviewed and revised as necessary. Therefore, implementation of the 2021 Master Plan, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on climate change and GHG emissions.

4.3.5 Air Quality

For the area surrounding Marion Reservoir, activities that could add to air emissions are likely few and minor in nature. Vehicle traffic along park and area roadways and routine daily activities in nearby communities contribute to current and future emission sources. Minor improvements to the communities in the Marion Reservoir area, such as construction of new business buildings, could also contribute to minor future emissions. Implementation of the 2021 Master Plan will not contribute to major cumulative impacts in the region.

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. Cumulative adverse impacts on topography, geology, and soils within the area surrounding Marion Reservoir, when

combined with past and proposed actions in the region, are anticipated to be negligible on the long-term basis.

Land use around Marion Reservoir has not changed in the past several years. The cumulative impacts on Prime Farmland from the Proposed Action at Marion Reservoir are anticipated to be negligible when combined with past and proposed actions in the area.

4.3.7 Natural Resources

The significance threshold for natural resources would include a substantial reduction in ecological processes, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Past, present, and future projects are not anticipated to impact the viability of any plant species or community, rare or sensitive habitats, or wildlife. The establishment of MRML-WM areas, as well as resource objectives that favor protection and restoration of valuable natural resources, will have beneficial cumulative impacts. No identified projects would threaten the viability of natural resources. Therefore, there would be long-term beneficial impacts to natural resources resulting from the revision of the 2021 Marion Reservoir Master Plan, when combined with past and proposed actions in the area.

4.3.8 Threatened and Endangered Species

The Proposed Action and No Action Alternative would not adversely impact threatened, endangered and special status species within the area, as they will be coordinated with the appropriate resource agencies. Should federally listed species change in the future (e.g., delisting of the Least Tern or other species or listing of new species), associated requirements will be reflected in revised land management practices in coordination with the USFWS. The USACE would continue cooperative management plans with the USFWS and the state to preserve, enhance, and protect critical wildlife habitat resources.

The land reclassifications explained in detail in Section 3.8.3 will allow for further protection of state listed threatened, endangered, and unique species. The reclassifications will also allow future land management practices that would maintain and enhance habitats for these species. Therefore, there would be minor long-term beneficial impacts on threatened and endangered species resulting from the revision of the Marion Reservoir 1981 Master Plan when combined with past and proposed actions in the area.

4.3.9 Invasive Species

Invasive species control has and will continue to be conducted on various areas across the project lands. Implementing Best Management Practices (BMP) will help reduce the introduction and distribution of invasive species, ensuring that proposed actions in the region will not contribute to the overall cumulative impacts related to invasive species. The land reclassifications required to revise the 1981 Master Plan are

compatible with Marion Reservoir invasive species management practices. Therefore, there would be minor long-term beneficial impacts on reducing and preventing invasive species within the area surrounding Marion Reservoir.

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) or decrease numbers of people recreating at Marion Reservoir as a result of implementing the revised land classifications. The creation of jobs, increase of visitor spending, and relative decrease of usage fees, results in a positive impact to the local economy. 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 Marion Reservoir area, are anticipated to have negligible long-term beneficial impacts.

4.3.12 Recreation

Marion Reservoir is beneficial to the local visitors and also offers a variety of free recreation opportunities. Some of the popular recreation activities at Marion Reservoir are, on a national basis, either static or declining in participation. For example, developed camping activity, power boating, hunting, and fishing have experienced small to moderate declines in recent years. In contrast to these declines, significant increases in hiking, walking, sightseeing, wildlife viewing and canoeing/kayaking have occurred in recent years. Even though the amount of acreage available for HDR and MRML-LDR would decrease with implementation of the 2021 Master Plan, these land reclassifications reflect changes in land management and land uses that have occurred since 1981 at Marion Reservoir. The lands that remain in the HDR classification include undeveloped acreage that could be used for future outdoor recreation development, and all MRML lands are available for passive recreation uses characteristic of MRML-LDR lands. The conversion of these lands would have no adverse effect on current or projected public use. Therefore, the effects of the Proposed Action, when combined with other existing and proposed projects in the region, would result in negligible long-term beneficial impacts on the area recreation.

4.3.13 Aesthetic Resources

Marion Reservoir proper and surrounding federal lands offer public, open space values and scenic vistas that are unique in the region. Natural Resources Management Objectives for the reservoir will continue to minimize activities which disturb the scenic beauty and aesthetics of the reservoir. Therefore, the Proposed Action would result in minor long-term beneficial impacts to the aesthetic resources of Marion Reservoir.

4.3.14 Hazardous Materials and Solid Waste

No hazardous material or solid waste concerns would be expected with implementation of the 2021 Master Plan; therefore, when combined with other ongoing and proposed projects in Marion Reservoir, there would be no major long-term adverse impacts on hazardous materials and solid waste.

4.3.15 Health and Safety

No health or safety risks would be created by the Proposed Action. The effects of implementing the 2021 Master Plan, when combined with other ongoing and proposed projects in the Marion Reservoir area, would result in no major long-term adverse impacts on health and safety for the area.

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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 National Environmental Policy Act of 1969, as amended, and implementing regulations in 40 Code of Federal Regulations (CFR) Parts 1500 – 1507, including guidelines in 33 CFR Part 230. The revision of the 2021 Master Plan is 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 2021 Master Plan revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. Information provided by USFWS and the state on fish and wildlife resources has been utilized in the development of the 2021 Master Plan.

Endangered Species Act of 1973, as amended

Current lists of threatened and endangered species were compiled for the revision of the 2021 Master Plan. There would be no adverse long-term impacts on threatened or endangered species resulting from the revision of the 2021 Master Plan. However, minor long-term beneficial impacts, such as habitat protection, could occur as a result of the revision of the 2021 Master Plan.

Executive Order 13186 (Migratory Bird Habitat Protection)

Sections 3a and 3e of EO 13186 directs 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 2021 Master Plan 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 2021 Master Plan 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 would be coordinated to avoid impacts on migratory and nesting birds.

Clean Water Act (CWA) of 1977

The Proposed Action is in compliance with all state and federal CWA regulations and requirements and water quality is regularly monitored by the USACE and CEQ. A state water quality certification pursuant to Section 401 of the CWA is not required for the 2021 Master Plan revision. However, any future utilities occupying the proposed utility corridors would be required to comply with all Clean Water Act requirements. There will be no change in 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 surveys prior to any earthmoving or other potentially impacting activities. The proposed 2021 Master Plan entails no ground disturbing activities, as such, no known or previously undiscovered historic properties would be impacted.

Clean Air Act of 1977

The US EPA 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 the 2021 Master Plan revision. The proposed 2021 Master Plan entails no ground disturbing activities, as such, no emissions would result from implementation of the 2021 Master Plan.

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. Prime Farmland is present within and adjacent to Marion Reservoir. The 2021 Master Plan would not impact Prime Farmland present on Marion Reservoir.

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 2021 Master Plan complies with EO 11990.

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.

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 Marion Reservoir project lands.

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 2021 Master Plan 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 of reclassification of land would not be considered an irreversible commitment because subsequent Master Plan 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 federally protected species or their habitat is anticipated from implementing revisions to the Marion Reservoir 2021 Master Plan.

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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 2021 Master Plan revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. The USACE began its public involvement process with a public information presentation posted to the website to provide an avenue for public and agency stakeholders to ask questions and provide comments. This was done in response to the COVID-19 Pandemic and social distancing guidelines. The public information presentation was available starting on May 11, 2020 and the comment period reamined open until June 26, 2020. This presentation introduced the public to the 1981 Master Plan and began the public comment period. A second public information presentation will be posted to the website on 09 April 2021. This information presentation will introduce the public to the Draft 2021 Master Plan and EA and will begin a 30-day public review period of the Draft 2021 Master Plan and EA. The USACE, Tulsa District, placed advertisements on the USACE webpage, social media, and print publications prior to these meetings. The EA was coordinated with agencies having legislative and administrative responsibilities for environmental protection. Please refer to Section 7 of the 2021 Master Plan for a summary of comments received during the public comment period.

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SECTION 8: REFERENCES

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SECTION 9: ACRONYMS/ABBREVIATIONS

%	Percent
°	Degrees
ARPA	Archeaological Resources Protection Act
BMP	Best Management Practice
BLM	Beaurou of Land Managment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO2e	CO2-equivalent
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineer Pamphlet
ER	Engineer Regulation
ESA	Environmentally Sensitive Area
F	Fahrenheit
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GHG	Greenhouse Gas
HDR	High Density Recreation
IFR	Inactive/Future Recreation
IPaC	Information, Planning, and Consultation System
KDWPT	Kansas Department of Wildlife Parks and Tourisum
LEED	Leadership in Energy & Environmental Design
MRML-IFR	Future/Inactive Recreation
MRML	Multiple Resource Management Lands
MRML-LDR	Low Density Recreation
MRML-WM	Wildlife Management
MRML-VM	Vegetative Management
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO	Nitrogen Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	Ozone
OEQ	Office of Environmental Quality
PO	Project Operations
ROD	Record of Decision

RPEC	Regional Planning and Environmental Center
SINC	Site of Interest for Nature Concervation
SGCN	Species of Greatest Conservation Need
SO_2	Sulfur Dioxide
U.S.	United States
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WHAP	Whildlife Habitat Apprasal Protical
WM	Wildlife Management
VM	Vegetative Management

SECTION 10: LIST OF PREPARERS

David Hilburn – Biologist, Regional Planning and Environmental Center, 6 years of USACE experience

Shelby Scego – Biologist, Regional Planning and Environmental Center, 3 years of USACE experience.

APPENDIX C - FEDERAL AND STATE THREATENED AND ENDANGERED SPECIES LISTS

TRUST RESOURCES REPORT – USFWS

STATE OF KANSAS - MARION COUNTY THREATENED AND ENDANGERED SPECIES LIST

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Marion

LOCATION

Marion County, Kansas

DESCRIPTION

The Marion Master Plan (Marion County, Kansas) is the long-term strategic land use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources within the federal fee boundary. Under the guidance of ER-1130-2-550 Change 7, the Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations. The Plan works in tandem with the Operational Management Plan (OMP), which is the implementation tool for the resource objectives and development needs identified in the Master

Plan. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. Efforts are under way to revise the current Lake Master Plan. The Master Plan revision will update land classifications, plan for the modernization of existing parks, and inform the management of wildlife and other resource lands within USACE managed property at Marion Reservoir for the next 25 years.

Local office

Kansas Ecological Services Field Office

(785) 539-3474
(785) 539-8567

2609 Anderson Avenue
Manhattan, KS 66502-2801

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Neosho Madtom Noturus placidus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2577	Threatened
Topeka Shiner Notropis topeka (=tristis) There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4122	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Harris's Sparrow Zonotrichia querula This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Hudsonian Godwit Limosa haemastica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

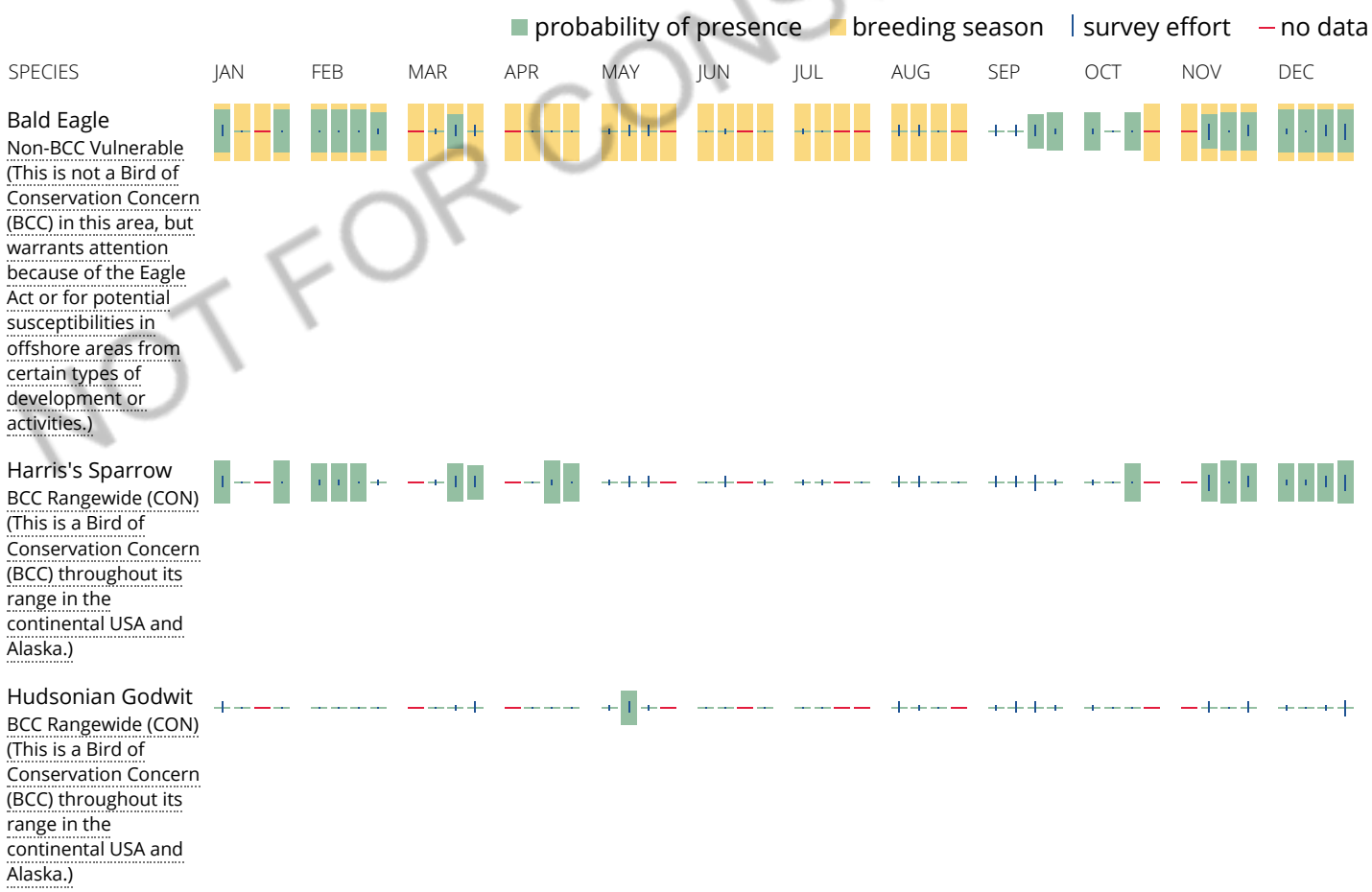
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

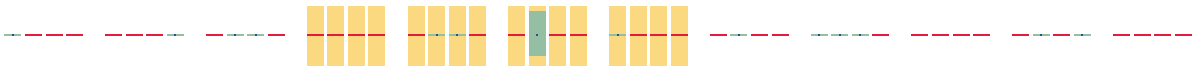
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

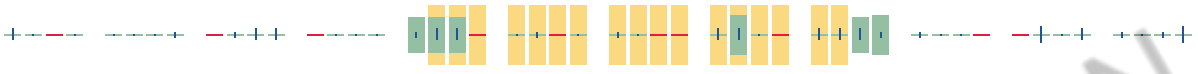


Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

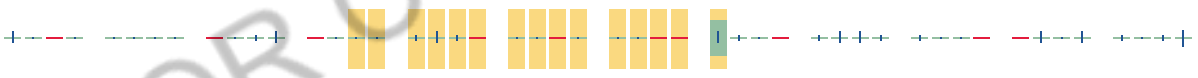


Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects,

and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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:
Consultation Code: 06E21000-2021-SLI-0131
Event Code: 06E21000-2021-E-01308
Project Name: Marion

March 08, 2021

Subject: Updated list of threatened and endangered species that may occur in your proposed project location 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:

https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.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.*)(https://www.fws.gov/birds/management/managed-species/eagle-management.php), and wind projects affecting these species may require development of an eagle conservation plan (https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf). Additionally, wind energy projects should follow the wind energy guidelines (https://www.fws.gov/ecological-services/energy-development/wind.html) 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: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance.php

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
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

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

Project Summary

Consultation Code: 06E21000-2021-SLI-0131
Event Code: 06E21000-2021-E-01308
Project Name: Marion
Project Type: LAND - MANAGEMENT PLANS
Project Description: The Marion Master Plan (Marion County, Kansas) is the long-term strategic land use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources within the federal fee boundary. Under the guidance of ER-1130-2-550 Change 7, the Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations. The Plan works in tandem with the Operational Management Plan (OMP), which is the implementation tool for the resource objectives and development needs identified in the Master Plan. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. Efforts are under way to revise the current Lake Master Plan. The Master Plan revision will update land classifications, plan for the modernization of existing parks, and inform the management of wildlife and other resource lands within USACE managed property at Marion Reservoir for the next 25 years.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.41953331474712,-97.1399539945175,14z

Counties: Marion County, Kansas

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Neosho Madtom *Noturus placidus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2577	Threatened
Topeka Shiner *Notropis topeka (=tristis)* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4122	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Harris's Sparrow *Zonotrichia querula* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

NAME	BREEDING SEASON
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

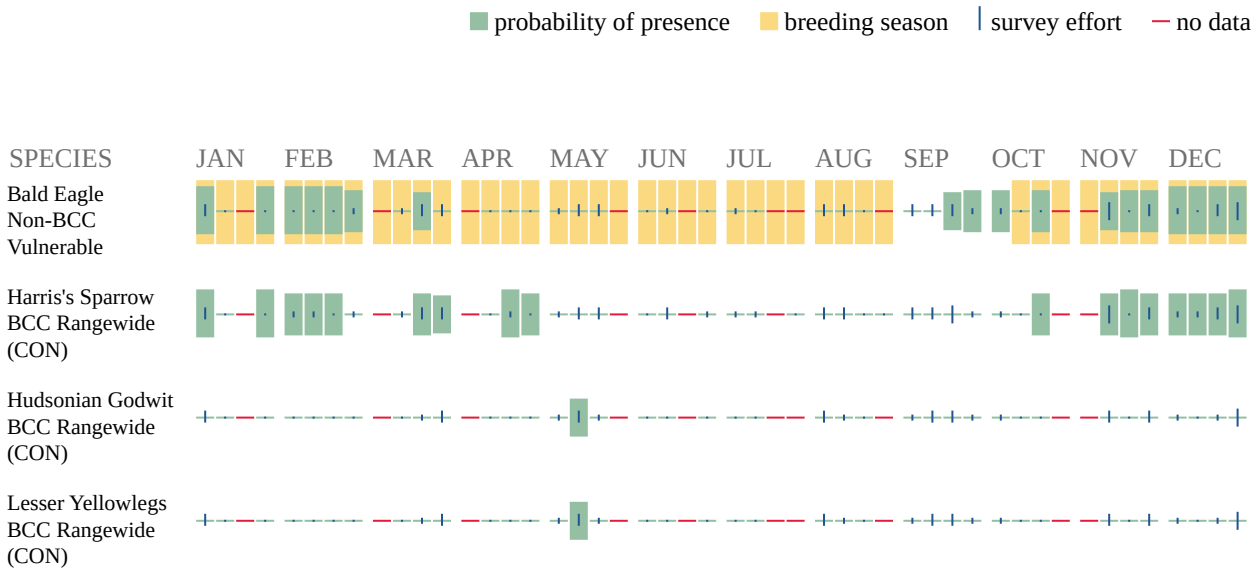
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

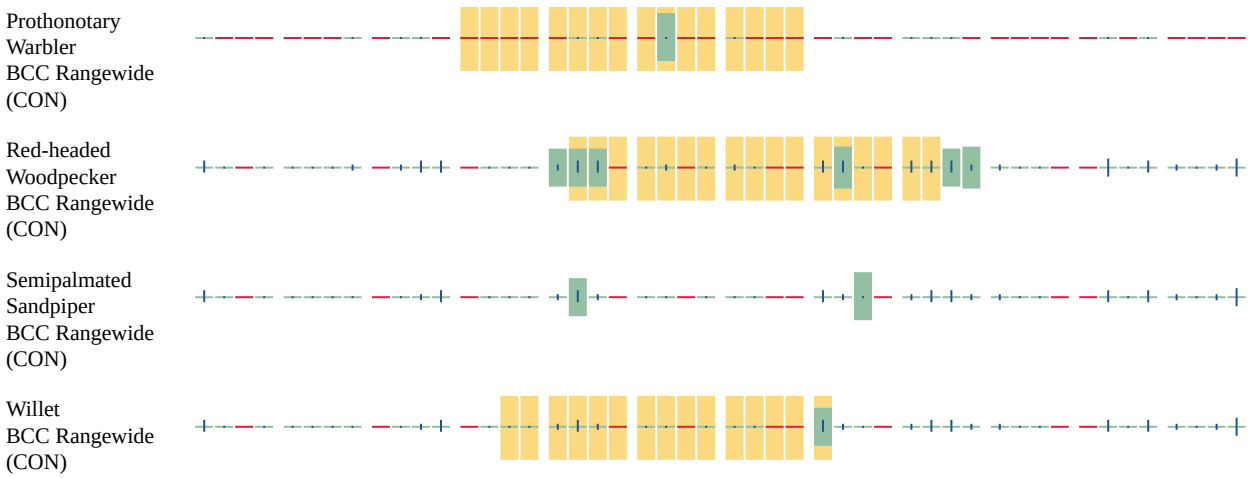
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as

warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

LAKE

- L1UBHh
- L2USAh

FRESHWATER POND

- PABFh
- PABFx
- PABGh

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1Ah
- PEM1C
- PEM1Ch
- PEM1Cx
- PEM1Fh

FRESHWATER FORESTED/SHRUB WETLAND

- PFOA
- PFOAh
- PFOAx
- PFOCh
- PSSA
- PSSAh
- PSSCh

RIVERINE

- R2UBF
- R2UBG
- R4SBC

- R5UBH

APPENDIX D - WILDLIFE HABITAT APRAISAL PROCEDURE (WHAP)

WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP) SUMMARY REPORT MARION RESERVOIR LAKE MASTER PLAN

MARION COUNTY, KANSAS

JANUARY 2021

PHOTOGRAPH

US Army Corps of Engineers ®
Tulsa District

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INTRODUCTION

Habitat assessments were conducted at Marion Reservoir on September 2nd – 3rd, 2020 using Texas Parks and Wildlife Department's (TPWD) Wildlife Habitat Appraisal Procedure ([WHAP] TPWD 1995). WHAP survey point locations were based on points believed or known to have various habitat types and features based on aerial imagery from existing Geographical Information Systems (GIS) data as well as from local knowledge of the area. A total of 36 WHAP points were surveyed, all within U.S. Army Corps of Engineers (USACE) fee boundary (Figures 1).

The purpose of this report is to describe wildlife habitat quality within the USACE Marion Reservoir fee-owned property in Marion County, Kansas. This report is being prepared by the USACE Regional Planning and Environmental Center to provide habitat quality information and inform land classifications as part of the Marion Reservoir Master Plan revision process.

STUDY AREA

Located in the Neosho Basin of the Arkansas River Watershed, Marion Reservoir is located on the Cottonwood River, at river mile 126.7 in Marion County, Kansas (Figure 2). This portion of the basin is characterized by flat-floored stream and river valleys with margins of rolling uplands. Trees are generally found only along the tributary stream channels and bordering the main river channel. The valleys are devoted to tillable crops with petroleum production and cattle grazing prevalent in the uplands. The drainage area above the lake is approximately 200 square miles.

USACE fee-owned property at Marion Reservoir encompasses approximately 12,276 acres, including 5,890 acres of land that sits above the conservation pool elevation of 1,350.5' mean sea level.

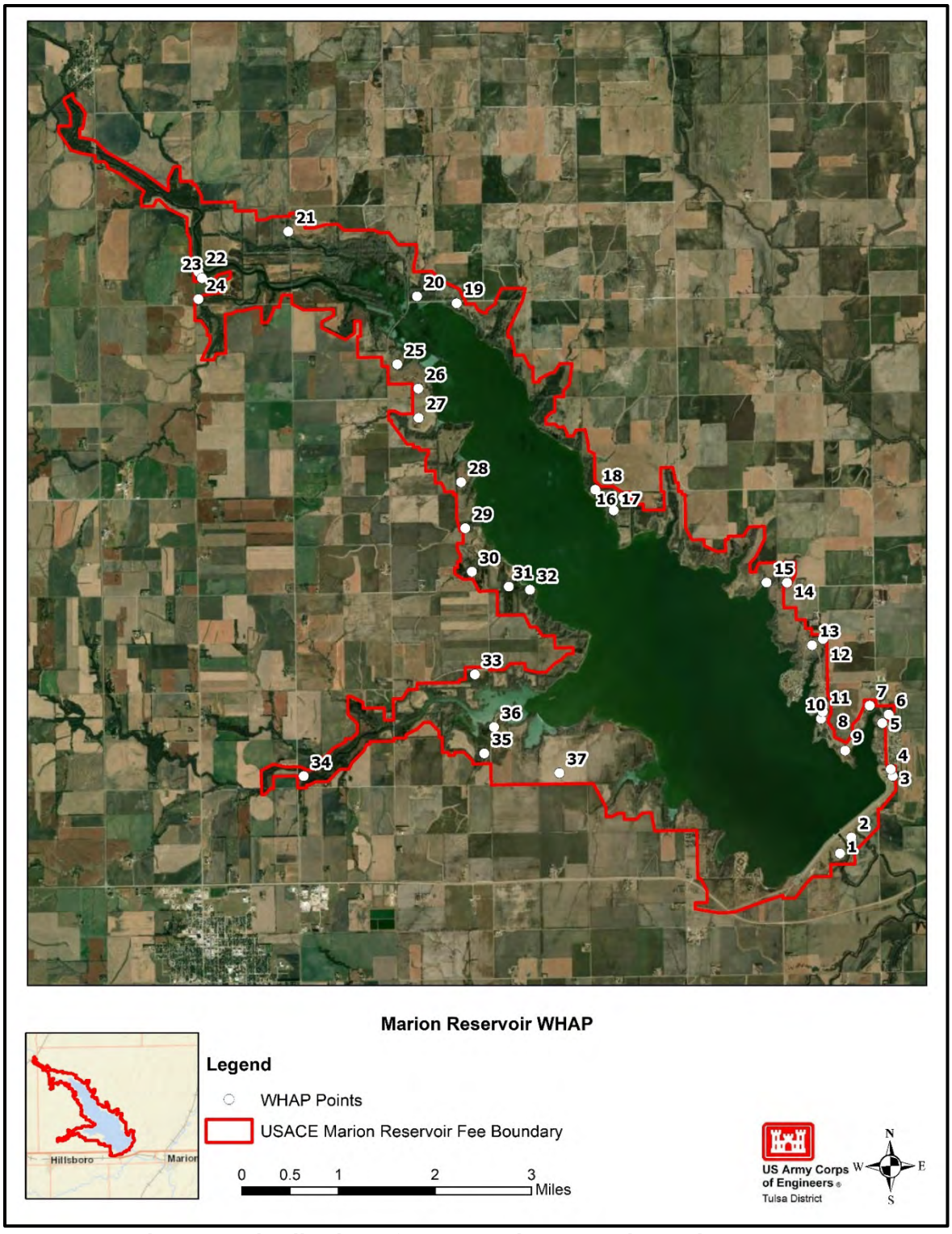


Figure 1: Distribution of WHAP Points – Marion Lake, Kansas

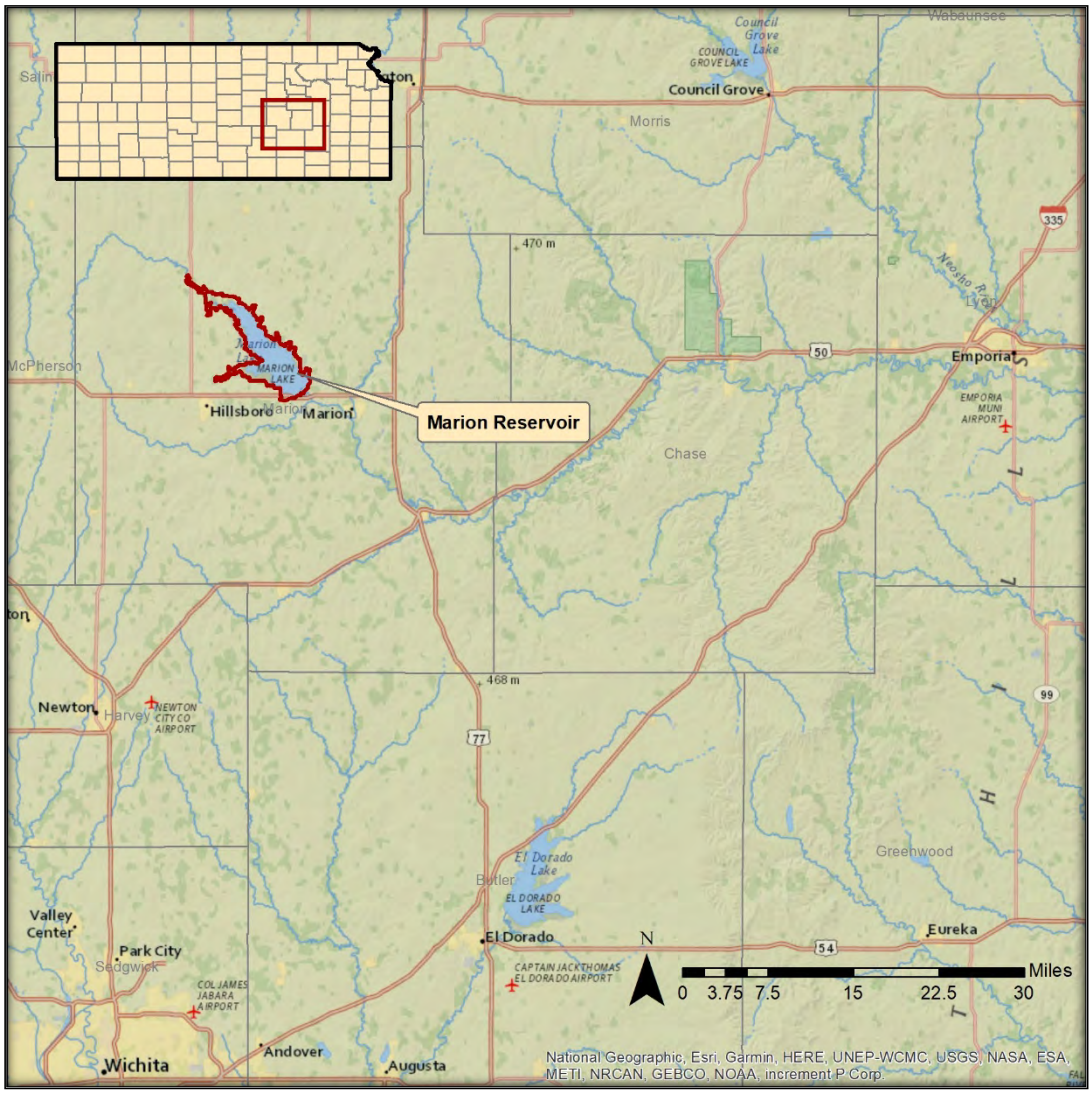


Figure 2: Marion Reservoir Vicinity Map

METHODOLOGY

An interagency team of biologists, foresters, and USACE park rangers conducted a habitat evaluation of selected areas at Council Grove Lake. TPWD's WHAP protocol was used to analyze and describe existing habitats.

The WHAP requires evaluating representative sites of each cover type present within an area of interest. For this project, a search area of 0.1 acre (circle with radius of 37.2 feet) was used at each WHAP site to compile a list of plant species occurring at each site and to complete the Biological Components Field Evaluation Form (TPWD 1995). Field data collected on the form at each WHAP site included the following components:

1. Site Potential

2. Temporal Development of Existing Successional Stage
3. Uniqueness and Relative Abundance
4. Vegetation Species Diversity
5. Vertical Vegetation Stratification
6. Additional Structural Diversity
7. Condition of Existing Vegetation

Points were assigned for all components present at each site. A habitat quality score, where values range from 0.0 (low quality) to 1.0 (high quality), was then calculated for each site by adding together all points and multiplying by 0.01. Habitat quality was then determined for all sites within the same habitat type. Photographs were taken at each site (cardinal directions) and are included as Attachment B.

The TPWD developed the WHAP to allow a qualitative, holistic evaluation of wildlife habitat for tracts of land statewide without imposing significant time requirements in regard to field work and compilation of data (TPWD 1995). The WHAP was not designed to evaluate habitat quality in relation to specific wildlife species.

The WHAP is based on the following assumptions:

1. Vegetation structure including species composition and physiognomy is sufficient to define the habitat suitability for wildlife.
2. A positive relationship exists between vegetation diversity and wildlife species diversity.
3. Vegetation composition and primary productivity directly influence population densities of wildlife species.

As designed, the WHAP is intended to be used for the following applications:

1. Evaluating impacts upon wildlife populations from specific development project alternatives.
2. Establishing baseline data prior to anticipated or proposed changes in habitat conditions for specific areas.
3. Comparing tracts of land that are candidates for land acquisition or mitigation.
4. Evaluating general habitat quality and wildlife management potential for tracts of land over large geographical areas, including wildlife planning units.

The WHAP protocol can be used to assess a wide range of habitats; however, it was originally developed to assess and develop mitigation requirements for loss of bottomland hardwoods and other aquatic habitats. Scores can skew higher for these habitats based on how the scoring is allotted to each WHAP habitat component. Upland forest and grassland habitat types cannot reach a score indicative of high-quality habitat although they may exhibit high quality features. Subsequently, high quality upland habitat may not be identified or can be overlooked.

Grasslands, in particular, fall into this category. Consider the Site Potential component with a maximum score of 0.25 points; it allocates more points based on higher hydrologic connectivity. In order to receive the highest score for this component, the area must exhibit at least one of the following: at least periodically support predominately

hydrophytic vegetation, is predominately undrained hydric soil and supports or is capable of supporting hydrophytic vegetation, and/or is saturated with water or covered by shallow water during 1-2 months during the growing season of each year. In a grassland setting, when conditions become conducive to hydrophytic plant growth, a successional shift from a grassland to herbaceous wetlands, swamps, or riparian forest is likely to occur. Therefore, grasslands would almost always be limited to a maximum score of 0.12 points (uplands with thick surface layer).

Similarly, grasslands would be limited to a maximum of 0.12 points for the Temporal Development of Existing Successional Stage component, whereas other forested habitats could receive the full 0.25 points.

These two components alone regularly exclude grassland habitat from receiving 0.25 points on the WHAP scale. In order to identify the maximum score each habitat type can receive, USACE environmental staff scored each criterion given ideal conditions for riparian/bottomland hardwood forest (BHF), upland forest (includes all non-riparian/BHF forests), grassland, swamp, and marsh habitats. The maximum values scores, shown in Table 1, were then used to normalize scores for habitats that are prevented from reaching the maximum WHAP score primarily due to arbitrary low scores in the two WHAP components described above. Normalizing habitat scores will identify high quality habitat that would otherwise not be detected.

Table 1. Cover Types and Maximum Total Scores

Cover Type	Component Number								Maximum Total Score
	1	2	3	4	5	6	7	7B	
Riparian/ BHF	25	20	20	15	5	5	5	5	1.00
Upland Forest	12	20	20	15	5	5	5	5	0.87
Grassland	12	12	20	0	4	1	5	5	0.59
Cropland	25	5	10	15	NA	NA	10	NA	0.65

Riparian/BHF habitats can achieve the maximum score, therefore, no normalization of scores were made for that habitat type. Upland forests and grasslands, however, can only reach within 0.13 and 0.41 points of the maximum WHAP score, even in ideal conditions.

To evaluate all habitat types on an even scoring basis, upland forest and grassland scores were normalized by dividing their original scores by the maximum possible score for their respective habitat types. For example, if a grassland site received an initial score of 0.42, it would be divided by the maximum total points a grassland site can receive, 0.59. The normalized total score used for further analysis for the grassland site would be 0.75.

This adjustment allows habitat type scores to be analyzed and compared to their corresponding habitat type maximum total score. Rather than, for instance, a grassland being evaluated on a bottomland hardwood scoring scale.

All WHAP scores analyzed and discussed from here forward reflect the normalized total scores. As mentioned above riparian/BHF habitat was not normalized because it already can achieve the maximum score. Grassland scores were normalized by dividing initial scores by 0.59, while all upland forest scores were normalized by dividing the initial score by 0.87.

HABITAT

Marion Reservoir 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 sloping to the water's edge.

The Flint Hills ecoregion 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 often erodes 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 30 miles east of Marion Reservoir.

Woodlands are concentrated around lakes, rivers, and streams, and dominated by oaks (*Quercus spp.*) and hickories [(*Carya spp*.) Rohweder et al. 2001]. The dominant grass species in this ecoregion are big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), and Indian grass (*Sorghastrum nutans*). Wildflowers like violets (*Viola spp*.), coneflowers (*Echinacea spp*), evening primroses (*Oenothera spp*), lobelias (*Lobelia spp*), beardtongues (*Penstemon spp*.), and sunflowers (*Heliantheae spp*.) can be found throughout the region.

Table 2 displays all habitats surveyed and the number of points surveyed within each respective habitat type.

Table 2. Survey Points per Habitat Type

Habitat Type	Points Surveyed
Croplands	1
Riparian/BHF	12
Upland Forest	4
Grassland	19
Total Points Surveyed	36

RESULTS AND DISCUSSION

The total habitat score for each point surveyed is a representation of multiple habitat attributes including vegetative diversity and structure, site soil potential, successional stage, and uniqueness of that habitat across the landscape. Data analysis highlights are discussed below, while detailed data for each point surveyed can be found in Attachment A of this report.

Riparian/Bottomland Hardwood Forests [BHF (12 sites)] and grassland (19 sites) were the most abundant habitat types surveyed. Riparian/BHF scores ranged from 0.46 to 0.79 while grassland scores ranged from 0.22 to 1.00. The lower scores, especially for drier upland habitats, may be partly due to long-term flooding that has occurred at Marion Reservoir in recent years, thus leading to reduced plant diversity. Flooding at lower elevations in the flood pool during the growing season (spring thru fall) would result in the mortality of the typically upland species of herbaceous plant growth. This likely affected survey metrics within these inundated areas. Frequent high-water levels are a routine occurrence at typical USACE lakes having a primary mission of flood risk reduction.

The average, maximum, and minimum total scores observed for each habitat type surveyed are shown in Table 3.

Table 3. Average, Minimum, and Maximum Scores per Habitat Type

Habitat Type	Average Total Score	Maximum Total Score	Minimum Total Score
Riparian/BHF	0.62	0.79	0.46
Upland Forest	0.56	0.64	0.39
Grassland	0.57	1.00	0.22
Cropland	0.08	0.08	0.08

Figure 3 – 5 show the range of total scores for all points surveyed (N=36) as well as the one additional point that was skipped due to inaccessibility. Overall, riparian/BLH forest, grassland, and upland forest habitats exhibited the highest average total score (0.56 - 0.62). With such a close margin between the three habitat types, they are essentially equal in value, which is evidence of how the normalizing of scores helps the sites to be evaluated on an equal basis.

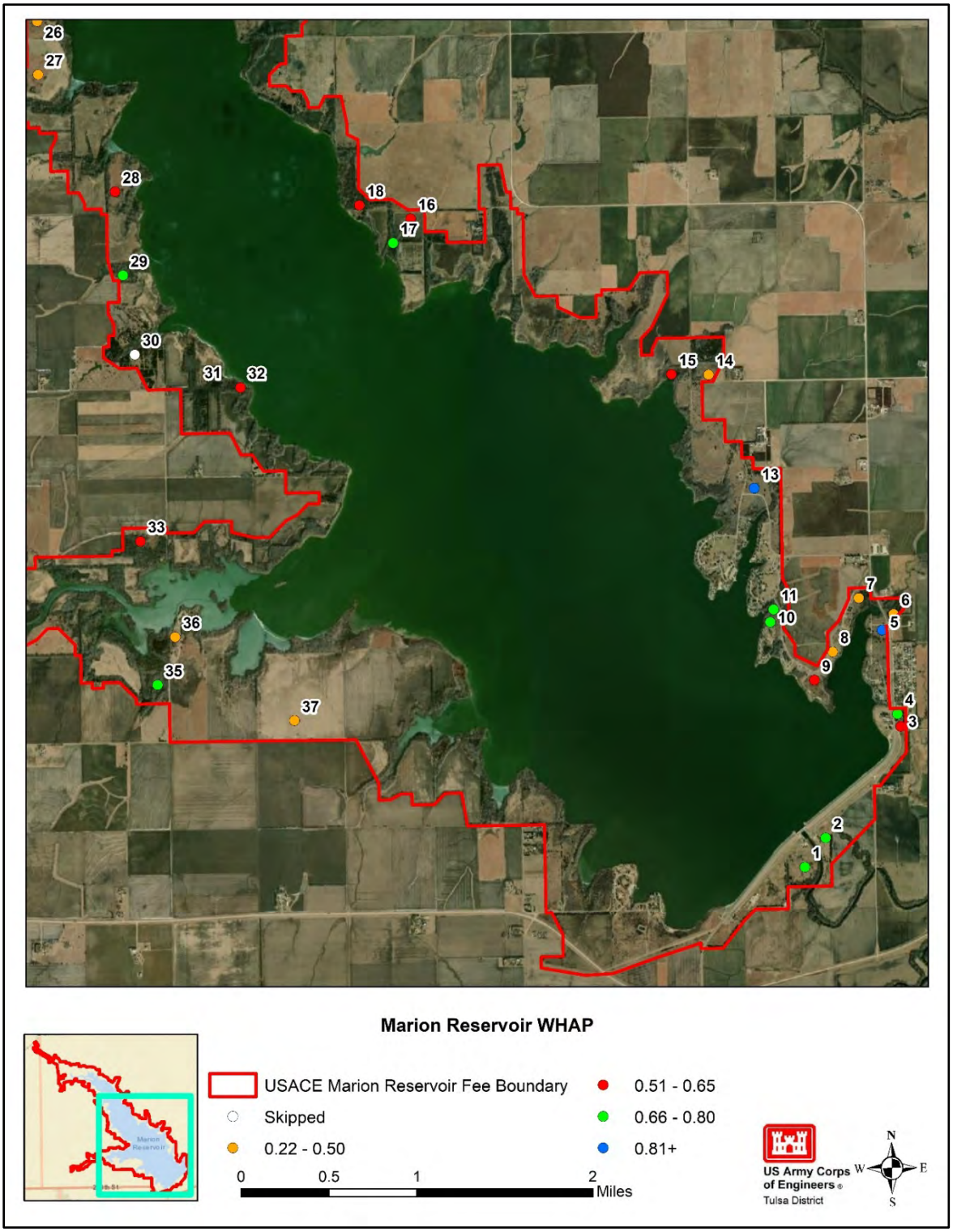


Figure 3: Total Score Range for All Points Surveyed on the Eastern Boundary of Marion Reservoir

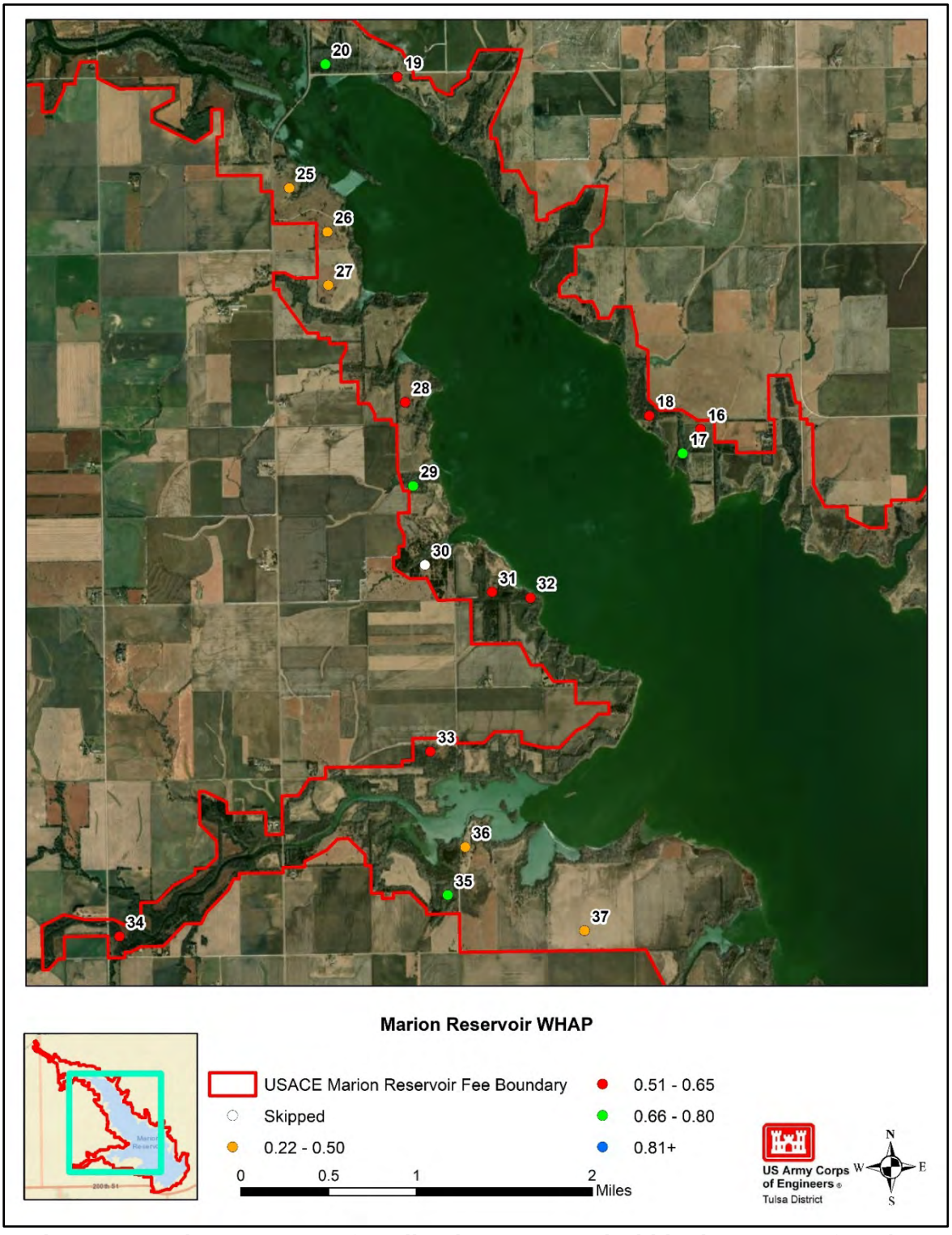


Figure 4. Total Score Range for All Points Surveyed within the Center of Marion Reservoir

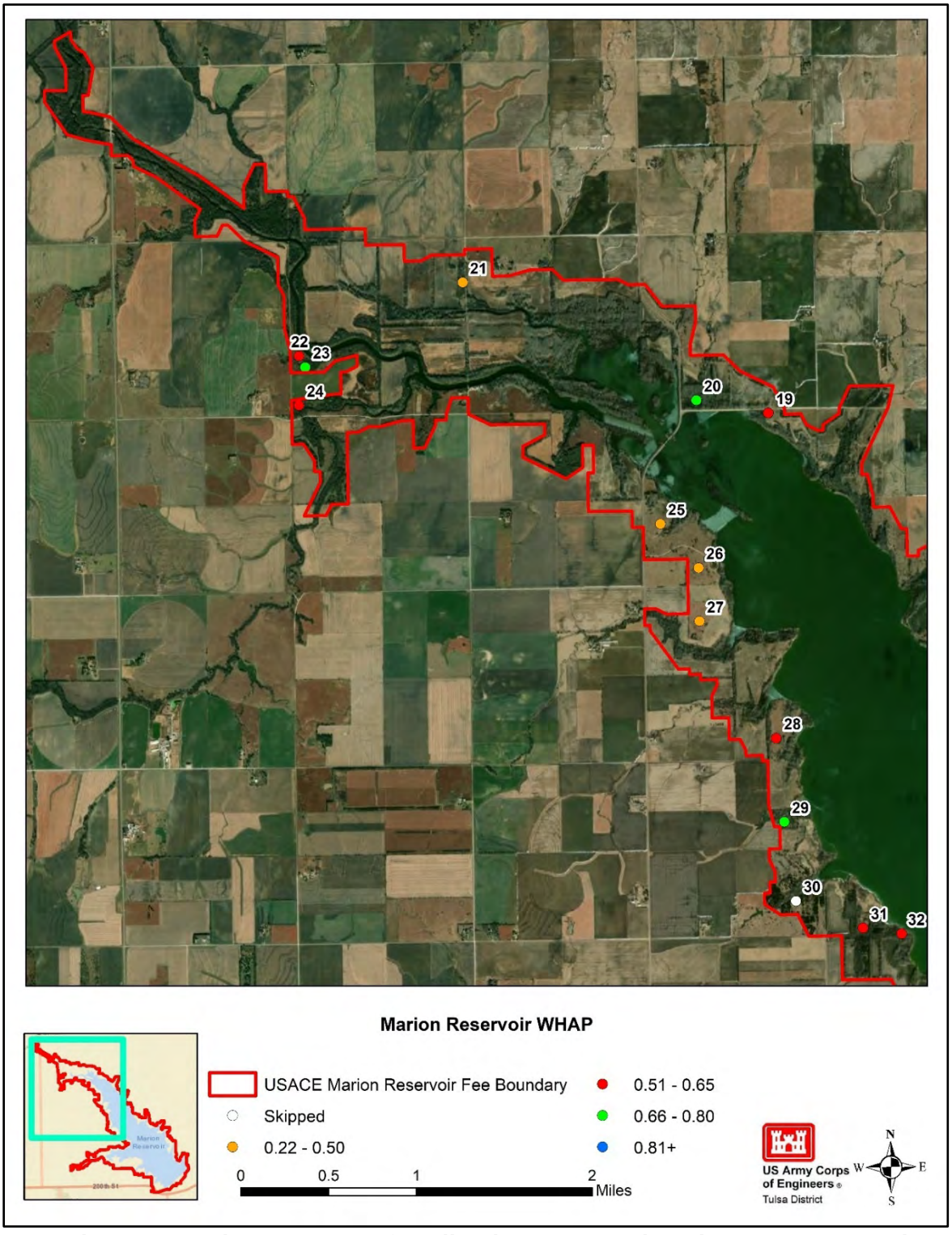


Figure 5. Total Score Range for All Points Surveyed on the Western Boundary of Marion Reservoir

Three sites received a score of 0.80 or above, indicating higher quality habitat in comparison to other sites sampled. All three are grassland sites and received maximum scores for site potential (Figure 6).

Figure 6: All Sites with Total Scores over 0.80

Beyond vegetative diversity, the three major metrics within the WHAP scoring criteria that allocate points are for site potential, successional stage, and uniqueness and relative abundance. Table 4 shows these metrics' average score per habitat type.

Table 4. Average Site Potential, Successional Stage, and Uniqueness and Relative Abundance Scores per Habitat Type

Habitat Type	Average Site Potential	Average Successional Stage	Average Uniqueness and Relative Abundance
Riparian/BHF	19.42	10.00	8.75
Upland Forest	14.00	5.25	8.75
Grassland	9.74	3.42	7.11
Cropland	1.00	1.00	0

The site potential criterion allocates more points based on soil substrate characteristics and hydrologic connectivity that can support hydrophytic habitats, such as marshes, swamps, and bottomland hardwood forests. These sites are often considered to be higher quality and more diverse habitat. Since site potential focuses on soil characteristics, lowland sites with recent vegetation damage (e.g. fire, flood, insect damage, etc.) may receive higher scores than surrounding upland sites. Areas scoring high in site potential but low in other metrics can be targeted for management efforts, as vegetation community response should be favorable, thus increasing habitat value. WHAP sites with maximum site potential are shown in Figure 6.

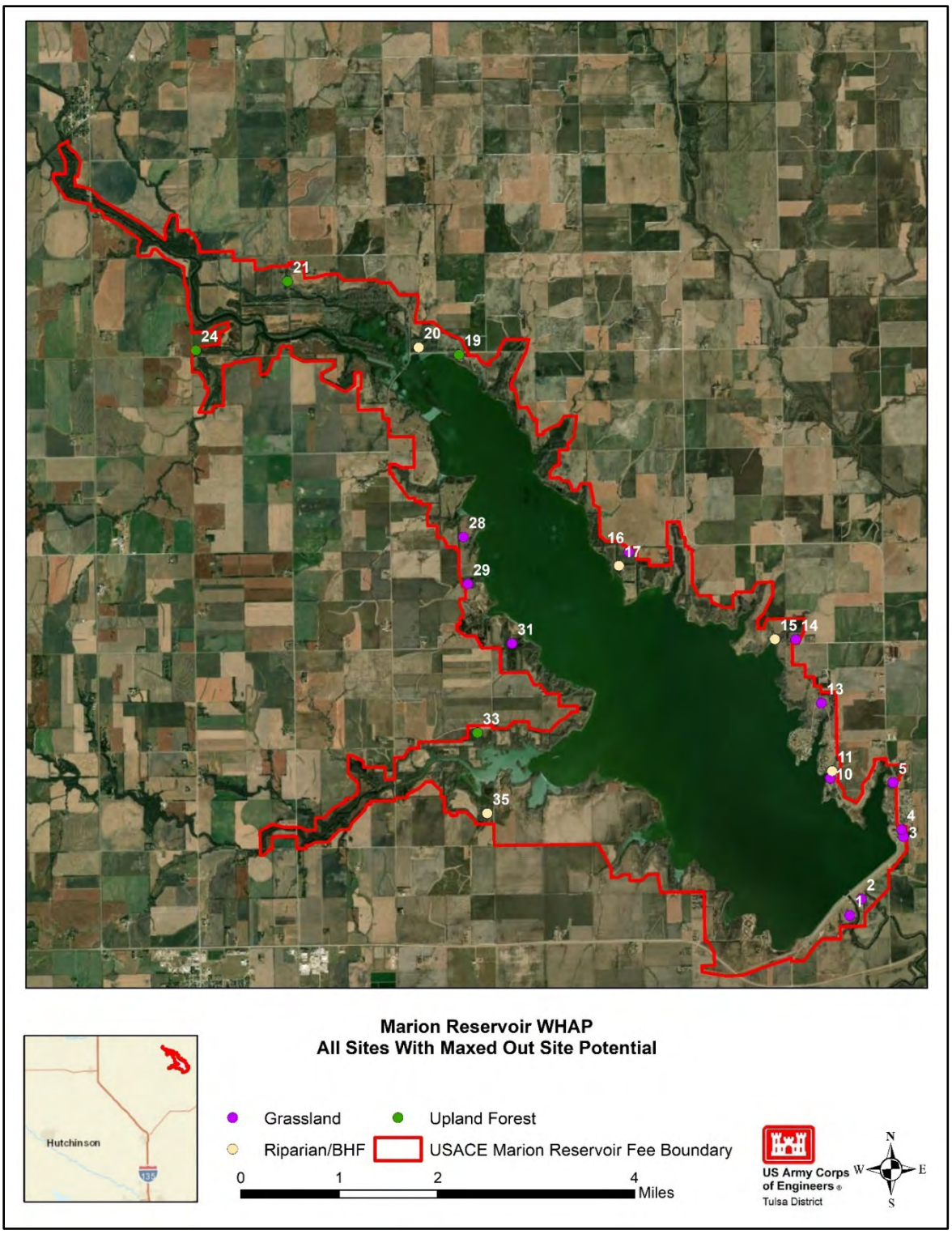


Figure 6. All Sites with Maximum Site Potential Scores

Successional stage refers to the age of the vegetative community. Older, mature forests and climax prairies score higher than younger pole stands or disturbed grasslands because they provide more diverse forage, cover, and niche habitats. The successional

stage of different habitat types is expected to increase as they age, except in areas that may not have the soil types to support hydrophytic vegetation or are flooded frequently enough to limit upland forest or grassland growth and development.

Uniqueness and relative abundance take into consideration the rarity of a habitat or vegetative community and its abundance in the region. Current and past agricultural practices have significantly influenced the region's remaining habitat composition. Few large, contiguous patches of habitat remain around Marion Reservoir, thus those remaining tracts representing historic vegetation are important to conserve and protect.

In addition to receiving a maximum score for site potential, WHAP site #5 was the only site receiving maximum scores for successional stage and uniqueness and relative abundance.

RECOMMENDATIONS

Even with unplanned disturbances, there are several areas with valuable wildlife habitat remaining on USACE fee-owned property at Marion Reservoir. Habitat management efforts by the USACE and the Kansas Department of Wildlife, Parks, and Tourism has proven effective in maintaining quality wildlife habitat around the lake.

When comparing overall high WHAP scores (Figures 3, 4, and 5) to Maximum Site Potential scores (Figure 6), no one area of the lake was identified, but rather several individual points in various habitat types scattered around the lake (points 14, 15, 16, 19, 21, 24, 28, 31, and 33). These sites are close to or have reached their habitat potential. Most, if not all these areas likely require no management actions to reach their potential, but rather protection from disturbances.

Likewise, sites with low WHAP scores that also have low site potential have likely reached their habitat potential; however minimal it might be. Management actions to improve these sites will likely achieve minimal results.

Conversely, areas with relatively low total WHAP scores between 0.66 – 0.80, but high Site Potential scores have the greatest potential for improvement. Management actions targeting native species diversity through habitat manipulation (e.g. prescribed fire, invasive species control, etc.) will likely result in more diverse, higher quality wildlife habitat. WHAP sites 1, 2, 3, 10, 11, 17, 20, 23, 29, and 35 meet this criterion.

Based on the results of the WHAP survey efforts, areas to consider for Wildlife Management or Environmentally Sensitive Areas land classifications include those areas with highest maximum scores. The planning team for the Marion Reservoir Master Plan revision will consider WHAP scores when making land classification decisions.

REFERENCES

Rohweder, M.R. December 2015. Kansas Wildlife Action Plan. Ecological Services Section, Kansas Department of Wildlife, Parks and Tourism in cooperation with the Kansas Biological Survey. 176 pp.

Texas Parks and Wildlife Department (TPWD). 1995. Wildlife Habitat Appraisal Procedure (WHAP). Last revised January 12, 1995. Retrieved from https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_w7000_0145.pdf

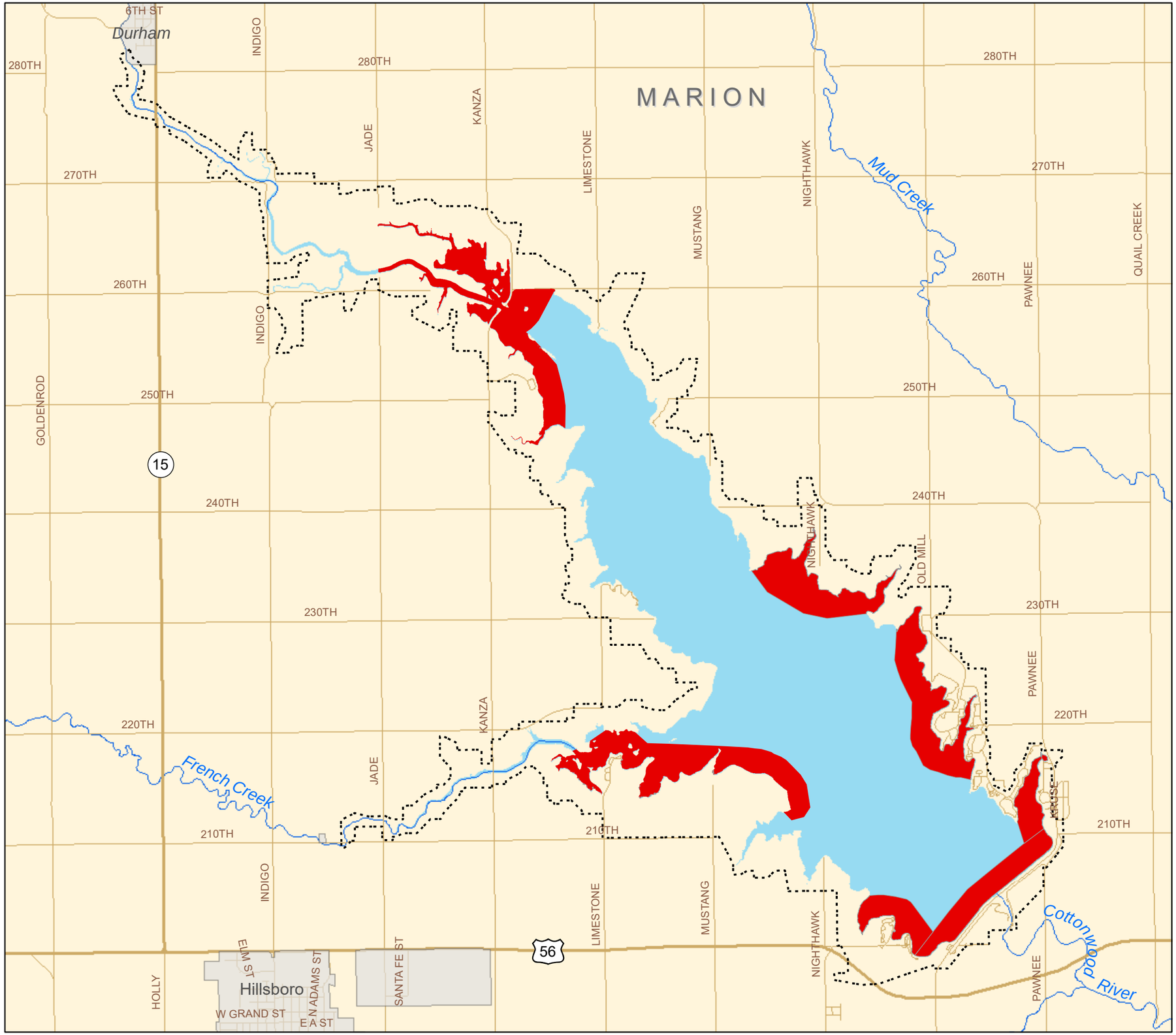
ATTACHMENT A: Marion Reservoir WHAP Results Summary

Point Number	Habitat Type	Final Score	Berry Drupe	Legume/Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes
1	Grassland	0.73	NA	Honey locust	NA	NA	Siberian Elm	Eastern red cedar	NA	Osage orange	Indian grass, golden rod, hairy sunflower, sweet clover, tall thistle, silver	NA
2	Grassland	0.71	Poison ivy,	illinois bundle flower	NA	NA	Siberian Elm	NA	NA	NA	tall thistle, Baldwins iron weed, brome, johnson grass, prickly lettuce,	NA
3	Grassland	0.61	NA	NA	NA	NA	NA	Eastern red cedar	NA	NA	western ragweed, side oats gramma, field brome, spider milkweed, Indian grass,	NA
4	Grassland	0.68	flowering dogwood, sumac	NA	NA	NA	NA	Eastern red cedar	NA	NA	tall thistle, Baldwins iron weed, Indian grass, brome, Carolina horse nettle,	NA
5	Grassland	1.00	NA	NA	NA	NA	NA	Eastern red cedar	NA	NA	snow on the mountain, big bluestem, Indian grass, side oats gramms, western	NA
6	Riparian/BHF	0.48	coral berry, poison ivy,	NA	NA	NA	siberian elm, slippery	Eastern red cedar	NA	prickly pear	honey suckle, field brome, side oats gramma, tall thistle, baldwin's ironweed,	NA
7	Riparian/BHF	0.46	poison ivy, red mulbery,	honey locust	NA	NA	siberian elm	Eastern red cedar	NA	Osage orange	field brome, tall thistle, Indian grass, common milkweed, western	NA
8	Grassland	0.22	NA	NA	burr oak	NA	NA	NA	NA	NA	Bermuda grass, crab grass, dandelion, yellow foxtail, ragweed, careless	planted oak in park
9	Grassland	0.61	NA	NA	NA	NA	NA	NA	NA	NA	Hoary verbina, side oats gramma, little bluestem, Maximillion sunflower,	NA
10	Grassland	0.80	coral berry	honey locust	NA	black walnut	NA	NA	NA	NA	switchgrass, big bluestem, common sunflower, lead plant, Maximillion sunflower,	NA
11	Riparian/BHF	0.73	riverbank grape, coral	redbud	NA	NA	green ash, america	NA	NA	cottonwood, Osage orange	devil's beggars tick, barnyard, grass, smartweed, horsetail,	NA
12	Riparian/BHF	0.47	mulberry, european bird	honey locust	NA	NA	siberian elm	eastern red cedar	NA	Osage orange	field brome, giant ragweed, sunflower, Baldwins ironweed, tall thistle, snow	NA
13	Grassland	0.85	poison ivy	NA	NA	NA	siberian elm	eastern red cedar	NA	NA	Canada golden rod, big bluestem, Indian grass, prairie 3 awn, Baldwins	NA
14	Grassland	0.34	NA	NA	NA	NA	NA	NA	NA	NA	horsetail, yellow foxtail, annual sunflower, field bindweed, lambs quarter	NA

Point Number	Habitat Type	Final Score	Berry Drupe	Legume/Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes
15	Riparian/BHF	0.64	NA	NA	NA	NA	NA	NA	NA	willow, cottonwood	phragmites, smartweed, barnyard grass, ludwigia, straw colored flat sedge,	NA
16	Grassland	0.51	NA	NA	NA	NA	NA	NA	NA	NA	annual sunflower, horsetail, Canada golden rod, hibiscus, yellow foxtail,	NA
17	Riparian/BHF	0.66	poison ivy, flowering dogwood	NA	NA	NA	green ash	NA	NA	cottonwood, willow, buttonbush	field bindweed, smartweed, straw colored flat sedge, white star, aster sp., false	NA
18	Riparian/BHF	0.57	flowering dogwood, poison ivy	NA	NA	walnut	siberian elm, america	NA	NA	cottonwood, Osage orange,	beggarstick, horse nettle, horsetail, moonseed, false nettle, pokeweed	NA
19	Upland Forest	0.60	flowering dogwood	NA	NA	NA	green ash	eastern red cedar	NA	buttonbush, cottonwood	gypsy wort, common ragweed, Maximillion sunflower, horsetail, Devils	NA
20	Riparian/BHF	0.68	NA	NA	NA	NA	silver maple	NA	NA	cottonwood, willow, buttonbush	white star, false daisy, beggarstick, barnyard grass, smartweed, giant	NA
21	Upland Forest	0.39	NA	NA	NA	NA	siberian elm	NA	NA	NA	giant ragweed, horsetail, american germander, pokeweed, tallthistle, snow	NA
22	Grassland	0.56	roughleaf dogwood, roughleaf	Honey locust	NA	NA	elm, Siberian elm	NA	NA	NA	poison oak, bloody geranium, thoroughwort, hoary vervain, golden rod,	Disclimax prairie
23	Riparian/BHF	0.79	poison ivy, flowering dogwood,	NA	NA	NA	elm, ash,	NA	NA	cottonwood, willow	giant ragweed, velvet leaf thistle, snakeroot, common ragweed, yellow foxtail, tick	NA
24	Upland Forest	0.64	coral berry, hackberry,	Honey locust	NA	black walnut	Siberian elm?	NA	NA	Osage orange	Virginia rye, unknown grass, beggars lice, carex spec., thistle, Devils	NA
25	Grassland	0.34	coral berry, flowering	NA	NA	NA	siberian elm	NA	NA	NA	silver bluestem, goldenrod, dog rose, carex, lespidiza, thorough wort, horse nettle,	NA
26	Grassland	0.37	dogwood, poison ivy	NA	NA	NA	siberian elm	NA	NA	NA	Indian grass, leadplant, little bluestem, maximilians sunflower, big bluestem,	NA
27	Grassland	0.31	NA	NA	NA	NA	NA	NA	NA	NA	Maximillian sunflower, western ragweed, leadplant, ashy sunflower, brome,	NA
28	grassland	0.56	coral berry	NA	NA	NA	NA	NA	NA	NA	Indian grass, big bluestem, leadplant, little bluestem, maximillians sunflower,	NA
29	grassland	0.78	sumac, dogwood, poison ivy,	NA	NA	NA	siberian elm	eastern red cedar	NA	oasage orange	big bluestem, foxtail, little bluestem, Maximillions sunflower, hairy crabgrass,	NA
30	skipped	0.00	skipped	skipped	skipped	skipped	skipped	skipped	skipped	skipped	skipped	skipped

Point Number	Habitat Type	Final Score	Berry Drupe	Legume/Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes
31	Grassland	0.58	smooth sumac,	NA	NA	NA	NA	NA	NA	NA	Scirbners panicum, Virginia rye, brome, white sage, panical trefoil, wingstem,	Disclimax prairie
32	Riparian/BHF	0.61	mulberry, poison ivy, hackberry,	Kentucky coffee, honey locust	NA	NA	NA	NA	NA	Osage orange	common thistle, ragweed, thoroughwort, smartweed, snakeroot, skunk cabbage,	NA
33	Upland Forest	0.60	poison ivy, dogwood, fragrent	honey locust	NA	black walnut	NA	eastern redcedar	NA	Osage orange,	snakeroot, sedge grass, giant ragweed, panical trefoil, giant ragweed,	NA
34	Riparian/BHF	0.63	coral berry, hackberry,	NA	NA	black walnut	American Elm	NA	NA	NA	Virginia rye, flat sedge, garlic mustard, stinging nettle, unknown	NA
35	Riparian/BHF	0.73	poison ivy, white mulberry,	NA	NA	NA	ash	NA	NA	Osage orange, willow,	Canadian horseweed, pink smartweed, giant ragweed, duckweed, green ragweed,	NA
36	Grassland	0.37	white mulberry	Kentucky coffee, Eastern redbud	red oak	NA	NA	NA	NA	NA	wood sorrell, plaintain, Bermuda grass, white clover, dandelion, spade	mowed grass
37	Cropland	0.08	NA	NA	NA	NA	NA	NA	NA	corn	Maximilians sunflower, thistle	cornfield, took no photos

APPENDIX E - SEAPLANE MAP



RESTRICTED
WATER SURFACE
FEE BOUNDARY

TAKE OFF AND LANDING PROHIBITED WITHIN 1000' OF DAM STRUCTURE, BRIDGES, AND RECREATION AREAS

OPERATIONS OF A SEA PLANE AT CORPS PROJECTS IS AT THE RISK OF THE PLANE'S OWNER, OPERATOR, AND / OR PASSENGERS

U.S. ARMY CORPS OF ENGINEERS TULSA DISTRICT

MARION RESERVOIR — COTTONWOOD RIVER, KANSAS

MARION RESERVOIR MASTER PLAN

SEA PLANE GUIDE

N

0 0.5 1 2 Miles

DATE:	MAP NO.
JANUARY 2021	ML20MP-OP-01

APPENDIX F - ACRONYMS

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
KBS	Kansas Biological Survey

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 Reservoir 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
SCORP	State Comprehensive Outdoor Recreation Plan
SHPO	State Historical Preservation Office
SINC	Species in Need of Conservation
SMP	Shoreline Management Plan
WAP	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
VM	Vegetative Management
WM	Wildlife Management
WRAPS	Water Restoration and Protection Strategy
WRDA	Water Resources Development Act