

United States Army Corps of Engineers
Louisville District

Buckhorn Lake Draft Master Plan with Integrated Environmental Assessment

2023



Buckhorn Lake at the State Park Resort

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CHAPTER 1 - INTRODUCTION

1.1 PROJECT AUTHORIZATION

Congress authorized the Buckhorn Lake Project (the Project) for flood protection of the Kentucky River as part of the general comprehensive flood control plan for the Ohio River basin adopted by the Flood Control Act of 1938, Public Law No. 75-761, 52 Stat. 1215. As a general authority applicable to all USACE reservoir projects, Section 4 of the Flood Control Act of 1944, Public Law No. 78-534, 58 Stat. 887 (codified as amended at 16 U.S.C. § 460d) authorized the Chief of Engineers to construct, maintain, and operate public parks and recreational facilities at USACE water resources development projects that are generally open for public use. USACE may manage the levels of its reservoirs and time water releases, to a reasonable degree, to benefit recreational uses.

The Louisville District of U.S. Army Corps of Engineers (USACE) designed and built the Project and continues to operate the Project to reduce flood damage downstream of the dam, to conserve fish and wildlife resources, and to provide recreational opportunities. Operation of the Project for purposes of promoting recreation and fish and wildlife enhancement is also authorized by the Federal Water Project Recreation Act, Public Law No. 89-72, 79 Stat. 213 (1965).

The Fish and Wildlife Coordination Act, Pub. L. No. 85-624, 72 Stat. 563 (1958) (codified as amended at 16 U.S.C. § 662 (c), et seq.) authorizes the conservation of fish and wildlife as a purpose of USACE reservoirs. It provides that Federal agencies authorized to construct or operate water-control projects are authorized to modify or add to the structures and operations of such projects, and to acquire lands, in order to accommodate the means and measures for such conservation of wildlife resources as an integral part of such projects.

The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. § 1531, et seq.), with the declared policy of Congress that “Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species,” provides additional authority to operate USACE projects to protect threatened or endangered fish, wildlife and plants. The Act declared it to be the policy of Congress “that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes” of the Endangered Species Act of 1973 and that Federal agencies “cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species.”

1.2 PROJECT PURPOSE AND DESCRIPTION

Buckhorn Lake is situated in the mountainous area of Southeastern Kentucky in Perry and Leslie Counties on the Middle Fork Kentucky River. The Project is located approximately 24 driving miles west of the City of Hazard, Kentucky.

The Project damsite is located on the Middle Fork Kentucky River, 43.3 miles above its mouth, and about 28 driving miles northwest of the City of Hazard, Kentucky. The summer pool extends 21 miles from the

damsite to the vicinity of the community of Confluence, Kentucky. At flood control level, the pool extends 34 miles.

Buckhorn Lake serves as a unit in the comprehensive plan for flood control in the Ohio River Basin. Primarily, it provides for the reduction in flood stages at all points downstream of the dam, and to a lesser extent the Ohio and Mississippi Rivers. The USACE is responsible for operation and maintenance of the Project, and protection of the Project's natural and cultural resources. The USACE, Louisville District designed, built, and operates Buckhorn Lake and the associated Dam. The Project damsite, operations and areas, and pool area up to the designated flood pool elevation are owned by the United States Government.

The USACE conducts an active natural resource management program to preserve natural areas and to provide suitable habitat for native fish and wildlife, as authorized by the Fish and Wildlife Coordination Act of 1958 and the Endangered Species Act of 1973. Development of hydropower at the dam was not feasible at the time of design. Therefore, no hydropower facilities were included at the Project.

Low flow regulation for the purpose of water quality at the Project was first considered in Design Memorandum No. 2 in connection with studies for fish and wildlife. In November 1956, the United States Fish and Wildlife Service and the Kentucky Department of Fish and Wildlife Resources furnished a tentative proposal for summer storage. After detailed studies, the District Engineer submitted a plan for storage of a summer pool from 1 April to 30 November, while providing a minimum release of 50 cubic feet per second (cfs) at all times and maintaining a low flow objective of 150 cfs at Lock 14 on the Kentucky River. Design Memorandum No. 9, submitted in October 1958, presented this plan in conjunction with flood control regulation. Three zones were selected for optimum use of water stored in the seasonal pool (Zone A, Zone B, and Zone C). In periods of low inflows, when difficulty in filling or maintaining the seasonal pool is encountered, downstream flows are investigated to determine the feasibility of passing a lesser flow than prescribed in the zonal regulation procedure and in lieu of strict adherence to the minimum flow objective at Lock 14.

1.3 MASTER PLAN PURPOSE AND SCOPE

The Buckhorn Lake Master Plan (Master Plan) is the strategic land use management document that guides the comprehensive management, development, and use for recreation, natural resources, and cultural resources that is efficient and cost-effective throughout the life of the Project for the next 25 years. It is a vital tool for responsible stewardship and sustainability of the Project's resources for the benefit of present and future generations. This Master 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 dynamic and flexible based on changing conditions.

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 Civil Works projects operated and maintained by USACE. This revision of the Buckhorn Lake Master Plan is intended to bring the Master Plan up to date to reflect current local and regional ecological, socio-demographic, and outdoor recreation trends that are affecting the Project, as well as those anticipated to occur within the planning period of 2022 to 2047.

Because the most recent Master Plan for Buckhorn Lake was written in 1971, it provides an inadequate basis with which to guide the operation of Buckhorn Lake and to evaluate contemporary proposals. There have been changes in demand for recreation and population growth which dictate the need for an update to the Master Plan. A reappraisal for the resource, facilities, and operational characteristics is determined through this plan and indicates the magnitude and diversity of public use and expected future trends.

The Master Plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). The Master Plan also does not address details of design, management and administration, or implementation. These are specifically addressed in the Buckhorn Lake OMP. In addition, the Master Plan does not address the specifics of regional water quality or shoreline management with respect to private actions conducted by adjoining landowners such as vegetation modification. The operation and maintenance of primary project operations facilities, including but not limited to the dam, spillway, and gate-controlled outlet, are also not included in this Master Plan.

1.4 GENERAL WATERSHED DESCRIPTION

The drainage area of the Kentucky River Basin is 6,966 square miles of which Buckhorn Lake controls 5.9 percent. The entire Middle Fork Kentucky River Basin drains an area of 559 square miles and is bounded by the South Fork of the Kentucky River basin on the west, the North Fork of the Kentucky River basin on the north and east, and parts of Cumberland River basin on the south. In appearance, the basin is shaped like a spatula measuring about 22 miles wide at the base and about 51 miles in length. The basin's upper limits are located in the foothills of the Appalachian Mountain chain consisting of rugged areas with numerous deeply dissected valleys and narrow flood plains. Hilltop elevations in these areas range up to 2,800 feet above mean sea level (msl), while the thalweg elevation at the damsite is about 715 feet above msl. The middle and lower reaches of the basin generally change from the mountainous terrain to a hilly region. Stream gradients in the upper reaches of the basin average about 650 feet per mile and diminish to an average of about 2 feet per mile in the lower reaches of the basin at the dam. Tributary streams of the Middle Fork Kentucky River are deeply entrenched with steep slopes from the hilltops to stream bed. Natural lakes do not exist in the region.

The Project is operated for flood control when inflows and river stages indicate the necessity for a reduction in stream-flows. Should heavy rains occur, surface water runoff is stored in the lake until the swollen streams and rivers below the dam have receded and can handle the release of the stored water without damage to lives or property. Additionally, the 1,230-acre lake creates a favorable environment for diverse water recreational activities.

The Project consists of approximately 4,952 acres of land, including 1,230 acres of water surface at seasonal (summer) pool, which extends upstream from the dam approximately 21 river miles and creates a shoreline of approximately 121 miles. Normal operations call for a seasonal pool at 782 feet NAVD88 from 01 May to 20 October. During the fall and winter months, the lake is kept at a relatively low elevation of 757 NGVD29 (National Geodetic Vertical Datum of 1929), referred to as winter pool. The winter pool covers approximately 419 acres and extends upstream from the dam approximately 4 miles. At flood control pool level, elevation 840 NGVD29, the lake's surface area is 3,611 acres and extends upstream approximately 34 river miles from the dam. See Table 1 for a summary of pertinent project data.

Table 1. Summary of General Lake Project Specifications

Physical Data		
Dam Type	Random rock fill with impervious core	
Maximum Height	162 feet	
Length	1,020 feet	
Top Elevation	877 NGVD29	
Spillway Type	Gated	
Spillway Crest Elevation	840 NGVD29	
Spillway Base Width	156 feet	
Outlet Works	14-foot semi-elliptical conduit	
Conduit Inlet Invert Elevation	724 NGVD29	
Bypass Inlet Invert Elevation	744.5 NGVD29	
Hydrology		
Drainage Area	408 sq. mi.	
Basin Average Rainfall from PMP	24.8 inches	
Probable Maximum Flood (PMF) Peak Inflow	278,000 cfs	
Max. PMF Pool Elevation	871.8 NGVD29	
Maximum 6-Hour Inflow	39,100 cfs, May 7, 1984	
Maximum Period-of-Record Release	3,900 cfs, May 15, 1984	
Maximum Period-of-Record Pool Elevation	839.3 NGVD29, March 18, 1964	
Average Discharge from Damsite	580 cfs	
Operating Levels		
Pool	Elevation	Storage
	(feet NAVD88)	(acre-ft)
Top of Dam	877	338,380
Top of Flood Control Pool (spillway crest elevation)	840	162,570
Seasonal Pool (01 May 20 Oct)	782	26,720
Water Quality and Water Supply Pool	N/A	
Minimum Pool	757	6,660
Upstream projects, River Mile, and Drainage Area	N/A	

1.5 LISTING OF PRIOR DESIGN MEMORANDUMS

The preliminary Master Plan for Buckhorn Lake was completed as Design Memorandum No. 17 in November 1971. This report serves to revise the 1971 Master Plan by updating land use classifications and ensuring compliance with applicable statutes, regulations, and policies. It does not negate projects proposed in the 1971 Master Plan. Because a master plan is a high-level planning document, detailed projects to be proposed under this revised Master Plan will be addressed in the OMP. See Table 2 for a complete listing of issued design memoranda pertaining to Buckhorn Lake as discussed in the 1971 Master Plan included in Appendix E.

Table 2. Previous Design Memoranda for Buckhorn Lake.

Previously Issued Design Memoranda	
Design Memorandum No.	Title
1	General Design, May 1956
2	Reservoir Outlet, June 1956
3	Real Estate, June 1956
4	Concrete Aggregates, August 1956
5	Dam and Spillway, June 1957
6	Real Estate, December 1957
7	Preliminary Master Plan, February 1958
7B	Master Plan, September 1961
8	Real Estate, April 1960
9	Low Flow Regulation, October 1958
10	State and County Roads, October 1958
11	Reservoir Clearing, November 1958
12	Relocation Electric Power and Telephone Lines, November 1958
13	Relocation Foot Bridges, June 1959
14	School Relocation, June 1959
15	Relocation Otter Creek, August 1959
16	Relocation County Bridge at Dry Hill, January 1960
17	Public Use Plan, November 1971
18	Real Estate, August 1973 Sedimentation Survey, Feb 1969 Reservoir Regulation Plan, March 1969 Supplemental Recreation Facilities Report, March 1971

1.6 PREVIOUS MASTER PLAN RECOMMENDATIONS

The 1971 Master Plan for Buckhorn Lake made several recommendations for the Project, some that have actualized and some that have not actualized due to budget, shifting goals of land management, etc.

The 1971 Master Plan's primary recommendation was to adequately meet existing and future recreational demands at the Project while preserving the wilderness aesthetic of the mountainous area. Specifically, it recommended that the Commonwealth of Kentucky continue developing their camping facilities at Eagle's Landing (formerly referred to as Gays Creek) and continue developing their lodging facilities at Buckhorn State Park, which included acquiring additional land across from the lodge. Buckhorn State Park no longer operates the Eagle's Landing Project Site Area (PSA), it is now leased to the Perry County Fiscal Court. Rather than expand the damsite area, it recommended that quality improvements be made to that area.

1.7 PERTINENT PROJECT INFORMATION

USACE holds title to approximately 4,952 acres of land in fee and 907 acres of flowage easements that make up Buckhorn Lake. Most project lands and waters, excluding specific use recreation lands, are under a license agreement with the Commonwealth of Kentucky for management and development of fish and wildlife resources.

The area under the direct control of USACE is managed for a variety of purposes. USACE operation lands include the flood control structures consisting of the dam, spillway and tailwater area.

The dam is constructed of random rock fill shells with a centrally located impervious core. The 30-foot-wide crest is at elevation 877 NGVD29, a height of 162 feet above the original streambed. Symmetrical side slopes are 1 vertical to 2.5 horizontal. The foundation was stripped to bedrock. The impervious core has a top width of 20 feet and side slopes of 3 vertical to 1 horizontal. A 5-foot filler was constructed against the core and specifications required a transition zone approximately 10 feet wide between the filler and random rock shell. The dam is approximately 1,020 feet long. The impervious core was placed in 6-inch lifts and compacted at optimum moisture content. The random rock was dumped in 4-foot lifts. Permanent upstream and downstream cofferdams were incorporated in the embankment. Refer to Table 1 for pertinent project data.

The outlet works are located near the base of the right abutment slope and includes a conduit, control tower, service bridge, retaining walls and stilling basin. The approach channel is about 250 feet in length extending from the right bank of river to the entrance of intake. The bottom of the channel is level at elevation 725 NGVD29 except for the 20 feet immediately upstream from the intake which falls from elevation 725 NGVD29 to elevation 724 NGVD29. The upstream half of the approach channel is excavated in sand and clay, and the downstream half of the bottom channel is in sandstone with shale interbeds; there is an overburden of sand and clay throughout the areas below the dam. The rock cut varies from zero depth on the riverside of the channel to about 30 feet and sides have a slope of 4 vertical to 1 horizontal in rock and 1 vertical to 2 horizontal in all other materials. The control tower is a rectangular, reinforced-concrete structure housing the service and emergency gates, the slots for

emergency closure, and other mechanical and electrical equipment. The tower is equipped with three sets of tandem, hydraulically-operated, 5.5 x 11-foot vertical-lift, sluice gates (invert elevation 724-feet NGVD29) and two 24-inch low-flow bypasses discharging to a 14-foot semi-elliptical concrete conduit and leading to the stilling basin. The outlet-work structures are all founded in rock. A service bridge extends from the outlet control tower to a roadway on the dam.

CHAPTER 2 - ENVIRONMENTAL SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 DESCRIPTION OF RESERVOIR, POOL, AND LAKE OPERATION



Buckhorn Lake dam

Buckhorn Lake is a reservoir in Perry and Leslie Counties in southeastern Kentucky. The Lake is situated in an area of deep valleys with precipitous slopes surrounded by high ridges. Elevation ranges from 3,200 feet msl to 620 feet msl at the riverbed in Beattyville, Kentucky. The Middle Fork Kentucky River streambed gradient is about 5.4 feet per mile in a 40-mile reach above the damsite and about 2.2 feet per mile downstream from the damsite to the River's mouth. The Lake varies from 419 acres (3.06 km²) in the winter to 1230 acres (3.16 km²) in the summer.

Construction of the outlet works began in October 1956 and was completed in June 1958. Construction of the dam and spillway began in July 1958 and was completed in August 1960. All construction and relocation of residents were completed by Fall 1961. The reservoir was placed in complete and unrestricted operation on 22 December 1961.

2.2 HYDROLOGY

The contributing drainage area upstream of the dam is approximately 73 square miles (Figure 1). The Middle Fork Kentucky River and 13 main tributaries feed the Project site, including Leatherwood Creek, Elkhorn Creek, Hell for Certain Creek, Bull Creek, Rockhouse Creek, Trace Branch, Beech Fork, Greasy

Creek, Cutshin Creek, Raccoon Creek, Polls Creek, Wooton Creek, and MacIntosh Creek. The Middle Fork Kentucky River headwaters begin approximately 30 air-miles to the south of the damsite in Bell County, just southeast of Beverly, Kentucky. While peak streamflow could be experienced during any month, peak streamflow generally occurs in March and April. Minimum streamflow typically occur in late summer. Snowfall is rare and does not significantly influence streamflow.

General groundwater data is available for the region; however, precise groundwater data for the Project is not available. In general, the aquifers present in the region's valley bottoms will produce enough water for a domestic supply at depths of less than 100 feet. Wells more than 200 feet deep in valley bottoms may yield enough water for small municipal or industrial water supplies. Fewer than half of the wells drilled into the region's uplands will produce enough water for a dependable domestic supply. Groundwater in the region is moderately to extremely hard and may contain salt and noticeable amounts of iron. A few springs in the region supply enough water for domestic use and produce less than 5-gallons of water per minute (Kentucky Geological Survey, 2022).

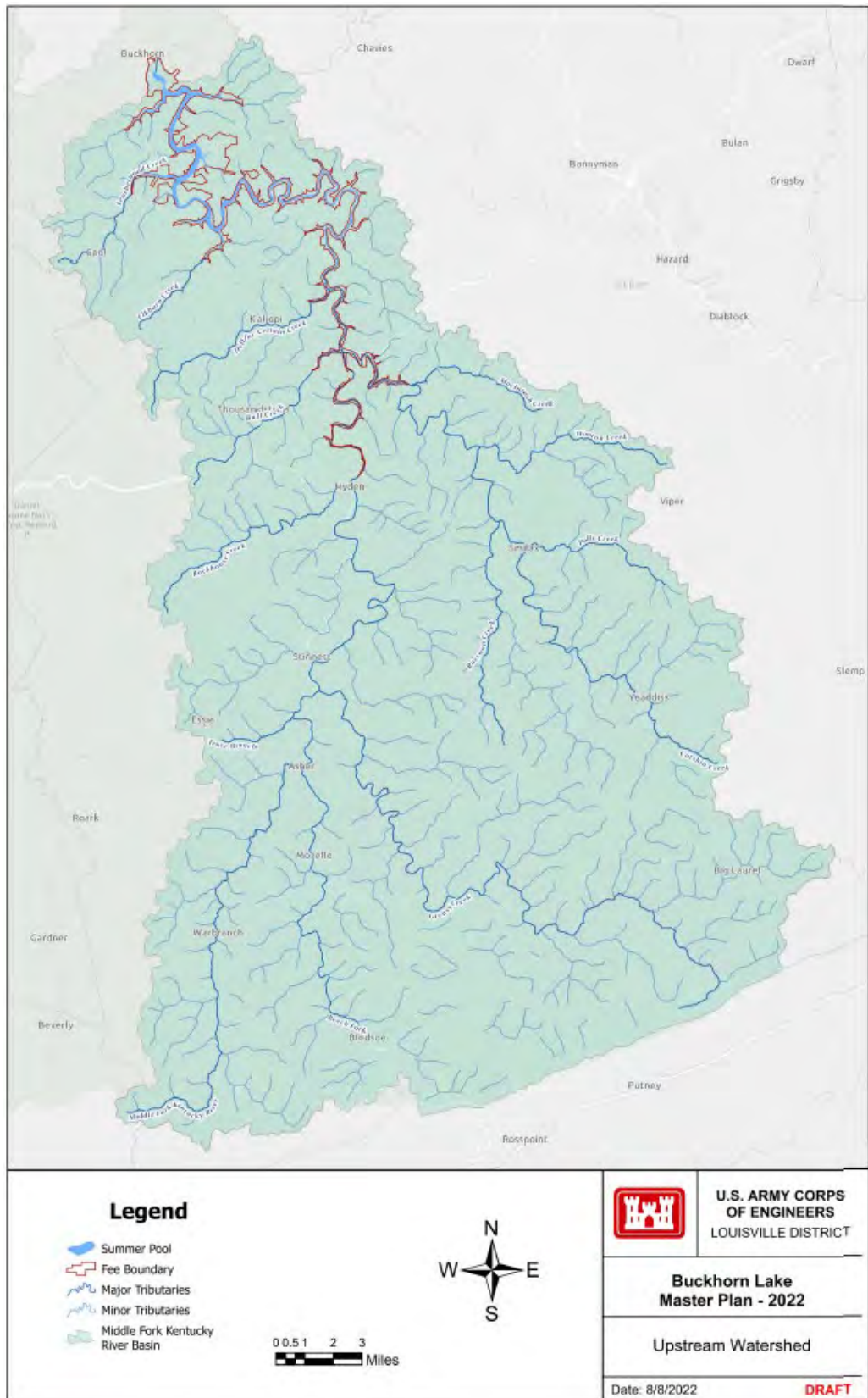


Figure 1. Buckhorn Lake Project watershed.

2.3 SEDIMENTATION AND SHORELINE EROSION

Sedimentation at the Project is caused by erosion of soils from the steep landscape surrounding the Middle Fork Kentucky River Basin. The accumulation of sediment in the Lake causes waterflow to slow and upstream particulate influxes to fall out of the water column. Sediment accumulation reduces the Lake's surface, which reduces the recreational use availability and prevents larger vessels (e.g., house boats) from using the marina during winter pool levels (Personal communication, Dewayne Shouse, Project Manager). Additionally, as sediments accumulate to levels higher than the winter pool



Sedimentation as seen from the Buckhorn Lake State Park.

level, flood storage capacity is reduced. However, the extent of flood storage capacity is currently unknown. Additional information regarding sedimentation at Buckhorn Lake is discussed in Section 6.1.

Currently, shoreline erosion at the Project does not cause concern. Thus, no protection or special management is required.



Additional sedimentation as seen from the Buckhorn Lake State Park.

2.4 WATER QUALITY

The water quality management authority of USACE is founded on the Federal Water Pollution Control Act Amendments (FWPCA) of 1961, Public Law No. 87-88, 75 Stat. 204, as amended. Additionally, the USACE must comply with applicable provisions of the Clean Water Act of 1977 and the Water Quality Act of 1987. Further, Executive Order 12088, Federal Compliance with Pollution Control Standards (1978), requires Federal facilities to comply with applicable pollution control standards in the same manner as any non-Federal entity. ER 1110-2-8154 stipulates that it is USACE policy to develop and implement a holistic, environmentally sound water quality management strategy for all projects. Furthermore, USACE's goal is to responsibly manage our projects to maximize environmental compliance. The FWPCA also requires the USACE to comply with certain State regulations and standards for the protection of water quality.

USACE performs water quality monitoring at the Lake in coordination with the Commonwealth of Kentucky. Data collected via the USACE Water Quality Team is assessed annually. Water quality in the Dam's tailwater is also assessed by analyzing data for exceedances of water quality standards and criteria. If any exceedances of established water quality criteria occur, the USACE Water Quality Team reports the exceedances to the Kentucky Division of Water. Additionally, Project personnel monitor temperature and dissolved oxygen (DO) levels from spring to fall during Lake stratification. USACE utilizes temperature and DO profiles to modify dam operations and meet optimal water quality conditions in the tailwater as much as possible. In addition to water quality monitoring, the USACE Water Quality Team coordinates monitoring and responses to harmful algal blooms (HABs) with the Kentucky Division of Water.

According to the most recent Buckhorn Lake Water Quality Report produced by the USACE, Buckhorn Lake has Total Phosphorus amounts that are higher than the US Environmental Protection Agency (EPA) recommended nutrient criteria. A high nutrient load can create some potential for HABs at the Lake. Trophic State Indices at four sites across the lake indicate that Buckhorn Lake ranges from oligotrophic to hypereutrophic. Because surface mines operate within the basin, water quality is threatened by increased turbidity and heavy metal concentrations.

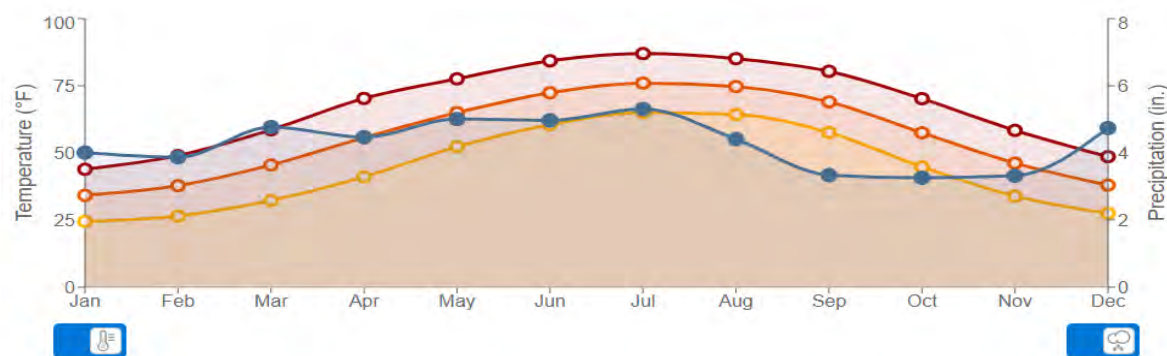
The Kentucky Division of Water's (KDOW) "Kentucky Water Health Portal" was queried for the health status of Buckhorn Lake and its tailwater. In 2020, the Lake was found to be impaired due to exceeding amounts of mercury within fish tissue and, as a result, only partially supports the designated use of fish consumption. The Lake fully supports warm water aquatic habitat and secondary contact recreation. The assessment summary from the KDOW can be found in Appendix D (Environmental Appendix).

2.5 PROJECT ACCESS

Accessibility to the Project is fair. However, access to the southwestern shoreline of the lake requires travel over narrow mountain roads. Highway 15 is an improved two-lane highway for East-West traffic from the Mountain Parkway at Campton. The Hal Rogers Parkway from London to Hazard, Kentucky provides North-South traffic service to the lake. State Roads 28, 30, and 257 are also narrow roads and do not facilitate high speed traffic. Interstate highways are not present within the five county Project area.

2.6 CLIMATE

Climate for the area is humid and subtropical, with high precipitation distributed equally throughout much of the year and a mild dry season in autumn. The frost-free growing season varies considerably by elevation and latitude, ranging from 195 days to 160 and possibly shorter (Wiken 1986; Omernik 1987, 1995). Figure 2 provides climate data from a weather station at Buckhorn Lake (USC00151080). Average temperatures range from 34.2°F in January to 76°F in July, with an annual average of 56.0°F. Monthly maximum temperatures range from 43.9°F in January to 87.0°F in July, and monthly minimum temperatures range from 24.5°F in January to 65.0°F in July. Average precipitation ranges from 5.31 inches in July to 3.26 inches in October with a total annual average of 51.48 inches (National Oceanic and Atmospheric Administration 2022).



Month	• MAX TEMP (°F)	• MIN TEMP (°F)	• AVG TEMP (°F)	• PRECIP (IN)
Jan	43.9	24.5	34.2	4.01
Feb	49.0	26.5	37.8	3.87
Mar	58.6	32.3	45.5	4.77
Apr	70.3	41.1	55.7	4.47
May	77.6	52.3	65.0	5.01
Jun	84.3	60.5	72.4	4.97
Jul	87.0	65.0	76.0	5.31
Aug	85.1	64.3	74.7	4.41
Sep	80.4	57.6	69.0	3.34
Oct	70.2	44.8	57.5	3.26
Nov	58.4	33.9	46.2	3.32
Dec	48.6	27.5	38.0	4.74

Figure 2. Monthly climate averages (1991-2020) at Buckhorn Lake, Kentucky (USC00151080).

Historically, storms that have the potential to cause serious flooding in the Middle Fork Kentucky River basin occur from late winter to spring, as a result of quasi-stationary fronts oriented from west-southwest to east-northeast. Heavy rainfall events of this type significantly affect flooding during the

winter and early spring months due to freezing conditions that work to increase runoff rates. The most significant Middle Fork Kentucky River floods occurred prior to the construction of the Buckhorn Lake Project in January 1937, April 1948, and March 1964 (USACE 1982). The top five peak pool levels that have occurred at the Buckhorn Lake Project since construction are summarized in Table 3.

Table 3. Top five peak pool levels for the Buckhorn Lake Project since construction.

Month	Year	Pool Elevation (msl)
March	1963	839.4
February	2019	831.9
May	1984	829.9
April	1998	825.7
March	1975	824.4

In 2017, the USACE Huntington District in collaboration with the Ohio River Basin Alliance, the USACE Institute for Water Resources, the USACE Great Lakes and Ohio River Division, and other Federal agencies, non-government organizations, and research and academic institutions completed the Ohio River Basin Climate Change Pilot Report. The Pilot Report investigated the potential impacts to Ohio River Basin (ORB) infrastructure associated with climate change, including Federal facilities operated for reduction of flood damages, navigation, local protection, water supply, and hydroelectric power production, as well as the potential impacts on terrestrial and aquatic ecosystems that are influenced by operation of these infrastructure components (Drum et al. 2017). The primary purpose of the study was to identify those components of the ORB infrastructure and ecosystem resources that may be at risk from future changes in precipitation and temperature, and to formulate mitigation and adaptation strategies that could reduce those effects. Concerns for project sustainability and reliability, and the capability to fulfill project purposes can be measured against the climate conditions forecasted in this Pilot Report.

The primary concern for water management agencies is the threat of extreme weather episodes becoming more prevalent, longer, and more potent. The potential for climate and weather elements including temperature, precipitation, winds, humidity, and evaporation to become less predictable and more susceptible to extreme changes suggests a need for review studies of the existing operating schemes for water management and whether the current infrastructure design can accommodate potential future operational changes.

In general, the modeling data suggest that the more rapid changes in temperature, precipitation, and streamflow resulting from changes in regional climate may not begin within the ORB until 2040. However, modeling results also suggest a gradual increase in annual mean temperatures between 2011 and 2040 amounting to one-half degree per decade, with greater temperature increases between 2041 and 2099 of one full degree per decade. The results of the Pilot Report further suggests that the Buckhorn Lake region is not expected to experience marked hydrologic regime changes that would impact the operation of the Project until 2071 (Drum et al. 2017).

The Pilot Report addresses the formulation of potential adaptation themes or strategies that could decrease the impacts associated with changes in precipitation, streamflow discharge, and temperatures across the ORB. Although not prescriptive in nature, these strategies suggest potential paths forward that can be integrated into near-term and long-term infrastructure planning, structure rehabilitation, water policy analysis, and operational changes and can be useful as a management tool for lake projects

throughout the ORB, including Buckhorn Lake. It is the policy of USACE to integrate climate change adaptation planning and actions into our Agency's missions, operations, programs, and projects. As part of this policy, USACE will consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations. The successful implementation of this policy will help enhance the resilience of the water-resource infrastructure that USACE manages and reduce its potential vulnerabilities to effects of future climate change.

2.7 AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called "criteria" pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air, but that forms in the atmosphere when three atoms of oxygen (O₃) are combined by a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC, which are precursors to ozone formation. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

Perry County is in attainment for all criteria air pollutants (USEPA, 2022).

2.8 TOPOGRAPHY, GEOLOGY, AND SOILS

The Project site resides in the Eastern Kentucky Coalfield region. The area is characterized by deep, steep sided, narrow, V-shaped valleys, with pockets of clayey colluvium from old landslides, usually found on the concave side of the valley wall. The sharp crested divides vary from elevation 1,450 to 1,950 feet msl. The valley bottom is at approximately 950 feet msl (USACE, 1971).

Core drillings completed by the USACE during Project design encountered rock formations from the Pottsville series. The cores were composed of recurring strata of hard, fine-grained sandstone, carbonaceous to silty to sandy shale, shaley sandstone, and coal seams of variable thickness (USACE, 1971).

The five most predominant soil types in the Project area are summarized in Table 4. They make up 71.8% of the total area of the Project, with open water making up an additional 24.6% (NRCS 2022). Chapter 2 of the USACE Engineering Manual (EM) 1110-1-400 recommends avoiding development on slopes greater than 15 percent unless no other acceptable alternative is available. Most land within the Buckhorn Lake Project area is unsuitable for development due to topography. Accordingly, soil associations have been divided into two development suitability categories:

1. Suitable for development
2. Unsuitable for development

Table 4. Predominant soil associations of the Buckhorn Lake Project.

Soil Association	Proportion of Project (%)	Typical Slope (%)	Suitability Class and Soil Description
Shelocta-Highsprint-Gilpin complex	29.3	20 - 70	<i>Unsuitable</i> . Thin stony soils derived from sandstone and shale. Occurs at the foot-slope of mountains. Not prime farmland.
Shelocta-Cutshin-Gilpin Complex	23.0	20 - 75	<i>Unsuitable</i> . Thin stony soils derived from sandstone and shale. Occurs on mountain slopes. Not prime farmland.
Matewan-Marrowbone-			
Udorthents-Urban land-Rock outcrop complex			<i>Suitable</i> (depending on slope). Mine spoil or earthy fill derived from interbedded sedimentary rock. Not prime farmland.

Source: NRCS 2022

2.9 FISH AND WILDLIFE RESOURCES

In terms of aquatic habitat of the Middle Fork Kentucky River, a total of 91 fish species from multiple families have been inventoried within the 339 square-mile watershed including lampreys, gars, herrings and shads, mooneyes, trout, pikes, carps and minnows, suckers, bullhead catfishes, killifishes and livebearers, silversides, temperate basses, perch, and darters (Branson and Batch 1984). The Lake supports largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), black crappie (*Pomoxis nigromaculatus*), white crappie (*Pomoxis annularis*), green eared sunfish (*Lepomis cyanellus*), and walleye (*Sander vitreus*). The Buckhorn Lake tailwater is stocked with rainbow trout (USDA 2014). The Kentucky Department of Fish and Wildlife Resources (KDFWR) manages special fishing regulations and stocking of the Lake.

The surrounding lands support coyote (*Canis latrans*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), wild turkey (*Meleagris gallopavo*), white-tailed deer (*Odocoileus virginianus*), and more. Elk (*Cervus canadensis*) and black bear (*Ursus americanus*) are known to occur in the area but are not commonly found at the Project site. Most project lands are open to hunting, which is managed by the KDFWR.

2.10 ECOLOGICAL SETTING, HABITATS, AND WETLANDS

The Buckhorn Lake Project area is within the Cumberland Plateau Physiographic Section, which is a southern subsection of the Appalachian Plateau Physiographic Province. This region sports a diverse set of habitats that are adapted to the hills and sandstone cliffs of the area. At least six specific habitat

communities occur at the Lake Project and are described in detail below. To fully understand all of the habitat communities within the Project area, intense vegetation community surveys need to be completed. In addition to these specific habitat communities, the National Land Cover Database (NLCD), which provides nationwide data on land cover, shows that the majority of the Buckhorn Lake Project area is covered by deciduous forest (Figure 3).

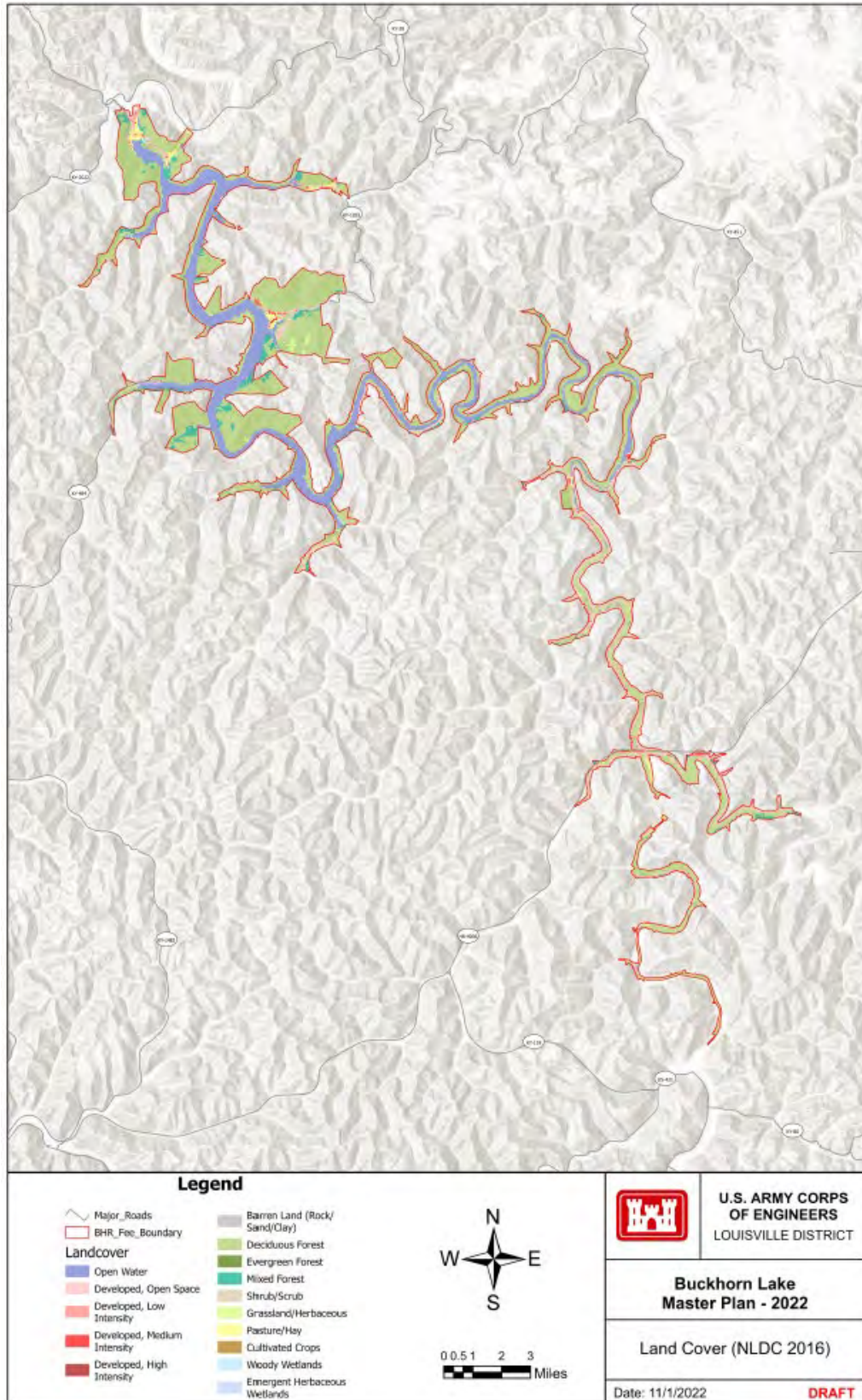


Figure 3. Buckhorn Lake Project land cover.

2.10.1.1 Forested Habitat Types

Forested land cover classifications, as defined by the NLCD system, include mixed, evergreen, and deciduous forest habitat types. These land cover types are broad categories that can be further refined into known forest community associations that result from local geological and climate character. The specific forest types at the Buckhorn Lake Project change depending on aspect, slope, soil acidity, and soil moisture levels. The mesic forest types are described by Jones (2005) as Mixed Deciduous Forests and Mixed Oak Forests. The xeric forest types are described as Xeric Oak Forests and Pine Forests by Jones (2005). This area was also classically described by Braun (1950) as being within the Mixed Mesophytic Forest region.

The forests can generally be characterized by a species-rich tree canopy dominated by a mixture of deciduous and evergreen species. Specific forest types, as described in NatureServe's National Vegetation Classification (2022), include Cumberland Dry Oak Forest and Woodland, South-Central Interior Mesophytic Forest, South-Central Interior Small Stream and Riparian Forest, and Southern Appalachian Low-Elevation Pine Forest. These forest communities are described in detail below.

Cumberland Dry Oak Forest and Woodland

This forest type makes up much of the upland forest habitat in the region. It is a dry hardwood forest habitat growing over acidic soils. Researchers describe the forest type as mixed oak and xeric oak woods (Jones 2005). This system occurs mostly on the middle-to-upper slopes of ridges. It can also be found on the ridge tops that are less exposed and have a soil substrate. As you move to more exposed and drier sites, this system gradually transitions into Southern Appalachian Low-Elevation Pine Forest. However, it is also common for this system to suddenly transition into thin bands of Cumberland Sandstone Glade and Barrens, when ridges and slopes with soil abruptly end at cliff edges that have little to no soil. As you move to more mesic sites, this system gradually transitions into South-Central Interior Mesophytic Forests. This typically happens as you move downslope towards valley bottoms.

This forest is dominated by a mixture of oaks and hickories, particularly mockernut hickory (*Carya tomentosa*) and chestnut oak (*Quercus montana*), usually with a mixture of other upland oaks and hickories. Other canopy dominants include red maple (*Acer rubrum*) and black gum (*Nyssa sylvatica*). Pitch pine (*Pinus rigida*) and Virginia pine (*P. virginiana*) are typical additions in drier sites. The understory is dominated by early recruits of the canopy species as well as eastern redbud (*Cercis canadensis*), flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), and sassafras (*Sassafras albidum*). The shrub layer is typically made up of a combination of mountain laurel (*Kalmia latifolia*), common dewberry (*Rubus flagellaris*), common greenbrier (*Smilax rotundifolia*), blue ridge blueberry (*Vaccinium pallidum*), and deerberry (*V. stamineum*). The herbaceous layer is sparse but typically includes spotted wintergreen (*Chimaphila maculate*), poverty oat grass (*Danthonia spicata*), and Christmas fern (*Polystichum acrostichoides*).

South-Central Interior Mesophytic Forest

This forest type can be found on mid and lower slopes, where there is deeper soil and less exposure, as well as, in the valley bottoms of ephemeral streams. Researchers describe the system as mixed deciduous forest. (Jones 2005) And the system is consistent with a mixed mesophytic forest. (Braun 1950; NatureServe 2022). This community gradually transitions into a South-Central Interior Small

Stream and Riparian system as you move closer to major streams, and gradually transitions into an Allegheny-Cumberland Dry Oak Forest and Woodland system as you move further upslope where the soil is thinner and there is more exposure.

The canopy is generally dense and can be dominated by different species depending on the specific forest association present. Common dominants include sugar maple (*Acer saccharum*), yellow buckeye (*Aesculus flava*), sweet birch (*Betula lenta*), American beech (*Fagus grandifolia*), American ash (*Fraxinus americana*), tulip tree (*Liriodendron tulipifera*), red oak (*Quercus rubra*), American basswood (*Tilia americana* var. *heterophylla*), and eastern hemlock (*Tsuga canadensis*). Common species of the understory include pawpaw (*Asimina triloba*), eastern redbud (*Cercis canadensis*), alternate-leaf dogwood (*Cornus alternifolia*), spicebush (*Lindera benzoin*), bigleaf magnolia (*Magnolia macrophylla*), umbrella magnolia (*M. tripetala*), great laurel (*Rhododendron maximum*), American elderberry (*Sambucus canadensis*), and American bladdernut (*Staphylea trifolia*). The herbaceous layer of this system is often extremely rich with some of the most conspicuous species being American bugbane (*Actaea podocarpa*), sharp-lobed hepatica (*Anemone acutiloba*), slender toothwort (*Cardamine angustata*), two-leaved toothwort (*C. diphylla*), false solomon's seal (*Maianthemum racemosum*), wild blue phlox (*Phlox divaricata*), red trillium (*Trillium erectum*), great white trillium (*T. grandiflorum*), large-flower valerian (*Valeriana pauciflora*), sweet white violet (*Viola blanda*), and long-spurred violet (*V. rostrata*).

South-Central Interior Small Stream and Riparian Forest

This forest type is found in the small floodplains around major streams in the region. This is a common ecosystem and transitions into South-Central Interior Mesophytic Forest as you move away from the stream.

The canopy of this system is dense and often dominated by boxelder maple (*Acer negundo*), red maple, yellow buckeye, river birch (*Betula nigra*), and sycamore (*Platanus occidentalis*). Common species of the shrub layer include smooth alder (*Alnus serrulate*), eastern redbud, silky dogwood (*Cornus amomum*), leatherwood (*Dirca palustris*), smooth hydrangea (*Hydrangea arborescens*), and southern black haw (*Viburnum rufidulum*). The herbaceous layer is rich with the most common species being giant cane (*Arundinaria gigantea*), false nettle (*Boehmeria cylindrica*), seersucker sedge (*Carex plantaginea*), drooping sedge (*C. prasina*), spotted touch-me-not (*Impatiens capensis*), clearweed (*Pilea pumila*), American lopseed (*Phryma leptostachya*), woodland bluegrass (*Poa sylvestris*), and smooth yellow violet (*Viola eriocarpa*).

Southern Appalachian Low-Elevation Pine Forest

Pine Forests can be found along more exposed ridgetops where the soil is thinner. (Jones 2005) This system is relatively common in the region although larger tracts of this system are infrequent. As you move towards rock outcrops and cliff edges this system gradually transitions into a Cumberland Sandstone Glade and Barren system, and as you move towards less exposed slopes with more developed soils, this system transitions into an Allegheny-Cumberland Dry Oak Forest and Woodland system.

The canopy in this system can be open or closed with dominant species being a combination of shortleaf pine (*Pinus echinata*), pitch pine, and Virginia pine, with other canopy trees being sourwood, southern red oak (*Quercus coccinea*), and chestnut oak. The shrub layer is generally sparse, although it becomes

more prominent as you begin to transition into a Cumberland Sandstone Glade and Barrens system. Common shrubs include American witch-hazel (*Hamamelis virginiana*), stunted eastern red cedar (*Juniperus virginiana*), highbush blueberry (*Vaccinium corymbosum*), blue ridge blueberry, and deerberry. The herbaceous layer is also sparse, with common species being Pipsissewa (*Chimaphila maculata*), trailing arbutus (*Epigaea repens*), and rattlesnake plantain (*Goodyera pubescens*).

2.10.1.2 Open Habitat Types

Open habitats are characterized by the lack of a well-developed canopy or subcanopy. In the Project area, open habitats are generally maintained as treeless by anthropogenic disturbances (i.e., mowing or agricultural practices). These areas are not included in the National Vegetation Classification. (NatureServe's 2022) Open habitats are described in detail below.

Lawns/Rights-of-Way/Old Fields

These habitats are typically maintained open or are transitioning from grasslands to early successional scrub/shrub/forest communities. In general, early successional habitats of the Project area are characterized by the following plant species: southern blackberry (*Rubus allegheniensis*), black raspberry (*Rubus occidentalis*), switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), and little bluestem (*Schizachyrium scoparium*). However, generally a high proportion of ruderal native and exotic species is present at these sites including smooth crabgrass (*Digitaria ischaemum*), tall fescue (*Lolium arundinaceum*), Japanese honeysuckle (*Lonicera japonica*), reed canary grass (*Phalaris arundinacea*), dwarf plantain (*Plantago virginica*), red clover (*Trifolium pratense*), and white clover (*T. repens*).

2.10.1.3 Wetland Habitats

Several wetlands occur within the Buckhorn Lake Project area including the lake itself, a portion of the tailwater area, and a number of small emergent and forested wetlands that occur around the edges of the Lake and are frequently flooded due to the Lake operation. Of note, no systematic survey of existing wetlands has been performed at the Project. Typical wetland flora may include various sedges (*Carex* spp.), cattails (*Typha* spp.), spikerush (*Eleocharis palustris*), smartweeds (*Polygonum* spp.), knotweed (*Reynoutria japonica*), pickerelweed (*Pontedaria cordata*), pondweed (*Potamogeton* sp.), and scouring rush (*Equisetum hyemale*). Trees such as willow (*Salix* sp.), sycamore, maples (*Acer* spp.), ash (*Fraxinus* spp.), and oak (*Quercus* spp.) may also be found in wetlands at the Project. Wetlands provide habitat for many animals including red-winged blackbirds (*Agelaius phoeniceus*), muskrats (*Ondatra zibethicus*), mink (*Neovison vison*), beavers (*Castor canadensis*), reptiles and amphibians, as well as, a range of waterfowl. Figure 4 shows existing wetlands within the Project boundary, which includes United States Fish and Wildlife Service (USFWS) National Wetland Inventory data.

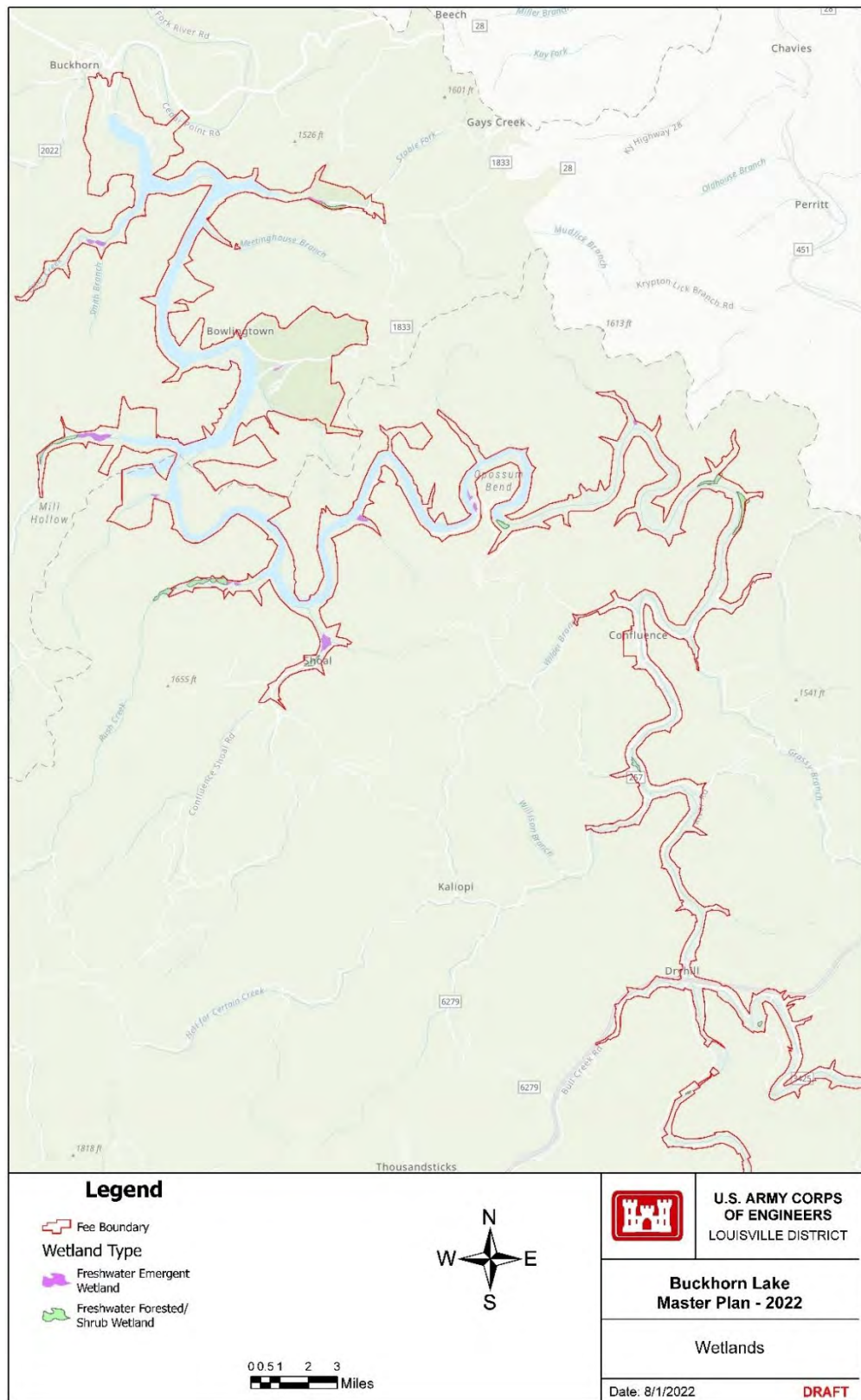


Figure 4. Wetlands present at the Buckhorn Lake Project as reported by the National Wetlands Inventory.

2.11 THREATENED & ENDANGERED SPECIES

Lists of Federally threatened or endangered species are maintained by the USFWS, and lists of species that are of conservation concern within the State are maintained by the Office of Kentucky Nature Preserves. Under the Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. § 1531, et seq.), Federally endangered species are generally defined as any species in danger of extinction throughout all or a significant portion of its range. A Federally threatened species is any species likely to become endangered in the foreseeable future. The Endangered Species Act defines critical habitat of the above species as a geographic area that contains the physical or biological features that are essential to the conservation of a particular species and that may need special management or protection. Listed species are included for all areas that may be potentially affected by Project operations including the Lake, tailwater, and fee owned lands surrounding the Lake.

State listings follow a ranking system that is slightly different than the Federal ranking system and maintained by NatureServe, Inc., a non-profit that provides wildlife conservation-related data. Species receive conservation status scores between one and five, with critically imperiled, imperiled, and vulnerable species receiving ranks of one, two, and three respectively (Table 5).

Table 5. Kentucky state ranking system for species of conservation concern.

State Rank	Definition
S1	<i>Critically Imperiled</i> — At very high risk of extirpation in the state due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
S2	<i>Imperiled</i> — At high risk of extirpation in the state due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3	<i>Vulnerable</i> — At moderate risk of extirpation in the state due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4	<i>Apparently Secure</i> — At a fairly low risk of extirpation in the state due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5	<i>Secure</i> — At very low or no risk of extirpation in the state due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

An official threatened and endangered species list from the USFWS dated 19 September 2022 for the Project area was obtained through the Information for Planning and Consultation (IPaC) portal. Additionally, a conservation concern species list tracked by the Office of Kentucky Nature Preserves was obtained through the Kentucky Biological Assessment Tool (KBAT) on 15 April 2021. The tool determined that six Federally listed species and 15 State listed species are potentially present within the Project area (Table 6). Additionally, critical habitat for the Kentucky Arrow Darter is found on Project lands in Squabble Creek and Hell for Certain Creek. Specific information regarding habitat requirements, life history, and taxonomy can be found at the USFWS endangered species webpage (<https://www.fws.gov/endangered/>) for Federally listed species, as well as at the NatureServe Explorer webpage (<https://explorer.natureserve.org/Search>) for both state and federally listed species.

Table 6. State and Federally listed species potentially present at the Buckhorn Lake Project.

Taxa	Common Name	Scientific Name	State Listing	Federal Listing
Mammal	Gray Bat	<i>Myotis grisescens</i>	S1	E
Mammal	Indiana Bat	<i>Myotis sodalis</i>	S1	E
Mammal	Northern long-eared bat	<i>Myotis septentrionalis</i>	S1	T
Mammal	Rafinesque's Big-eared Bat	<i>Corynorhinus rafinesquii</i>	S3	
Mammal	Little Brown Bat	<i>Myotis lucifugus</i>	S2	
Mammal	Tricolored Bat	<i>Perimyotis subflacus</i>	S2	
Mammal	Allegheny Woodrat	<i>Neotoma magister</i>	S3	
Fish	Kentucky Arrow Darter	<i>Etheostoma spilotum</i>	S2	T
Fish	American Brook Lamprey	<i>Lethenteron appendix</i>	S2	
Fish	Northern Madtom	<i>Noturus stigmosus</i>	S2	
Mussels	Snuffbox Mussel	<i>Epioblasma triquetra</i>	S1	E
Mussels	Northern Spectaclecase	<i>Leaunio lienosus aquilonius</i>	S2	
Mussels	Salamander mussel	<i>Simpsonaias ambigua</i>	S2	
Insect	Monarch Butterfly	<i>Danaus plexippus</i>		C
Plant	Smooth Veiny Peavine	<i>Lathyrus venosus</i>	S2	
Plant	Appalachian Rosinweed	<i>Silphium wasiotense</i>	S3	

E = Endangered; T = Threatened; C = Candidate

Bald eagles (*Haliaeetus leucocephalus*) have an expansive range throughout the continental U.S. and have a history of nesting within the vicinity of the Buckhorn Lake Project. At the time of this writing, no nesting sites on USACE owned lands have been identified. While this species was formally removed from the Federal list of endangered and threatened species in 2007, these birds are protected under the Migratory Bird Treaty Act of 1918, Pub. L. No. 65-186, 40 Stat. 755 (codified as amended at 16 U.S.C. § 703, et seq.) (MBTA) and the Bald and Golden Eagle Protection Act, Pub. L. No. 86-70, 54 Stat. 250 (codified as amended at 16 U.S.C. §§ 668-668c. Osprey (*Pandion haliaetus*) have been known to nest on or near the Project and are protected under the MBTA.

2.12 INVASIVE SPECIES

Invasive plant species that have been documented at the Project include autumn olive (*Elaeagnus umbellata*), bush honeysuckle (*Lonicera* spp.), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), and garlic mustard (*Alliaria petiolata*). Each of these plants have the potential to negatively impact other vegetation and/or animals at the Project. Bush and Japanese honeysuckle and autumn olive out-compete and displace native plants, alter natural habitats by decreasing light availability, and deplete soil moisture and nutrients. Multiflora rose forms dense thickets, excluding most native shrubs and herbs from establishing. Garlic mustard displaces many native spring wildflowers and contains chemicals that may be toxic to some native insect species when consumed.

The emerald ash borer (*Agrilus planipennis*) is a destructive wood-boring beetle, which causes damage to ash trees (*Fraxinus* spp.). Emerald ash borer (EAB) infestations have the potential to negatively impact the forest communities of the Project area. Native to Asia and the Russian Far East, the EAB was

unknown in North America until its discovery in southeast Michigan in 2002. Today, EAB infestations have been detected in 35 states, including the Commonwealth of Kentucky. The EAB has been documented in both Leslie and Perry Counties. Invasive species like EAB have the potential to negatively impact natural areas of the Buckhorn Lake Project and can result in significant impacts to ecosystem function. For example, the creation of canopy gaps caused by the loss of host trees can alter soil moisture, increase incidental light that strikes the forest floor, and change the temperature profiles. Infestations can also alter forest stand composition and age structure, understory plant diversity, and may facilitate growth of invasive plants. These impacts to forested habitats have the potential to impact the fauna that use these areas (e.g., birds and mammals). For example, some neotropical bird species that require larger tracts of mature, interior forests may be negatively impacted by forest fragmentation and other species that occupy edge habitat may be favored. Loss of trees in riparian areas can adversely impact cold-loving aquatic fish and invertebrate species by increasing solar exposure to streams and increasing water temperature. Because EAB infestations occur in Leslie and Perry Counties, EAB infestations could occur at the Project but have not been documented. However, trees have not been treated to prevent EAB infestations.

2.13 UTILITIES

An electric transmission line runs northwest to southeast intersecting the Project in several locations (Figure 5). The Kentucky Power Company owns the electric transmission line, which is associated with outgrant number DA15-029CIVENG-62-1185 and held in perpetuity. Other easement outgrants are issued to various entities for the construction, operation, and maintenance of water, sewer, electric, telephone, and cable lines in the Project area. See Table 19 for more information.

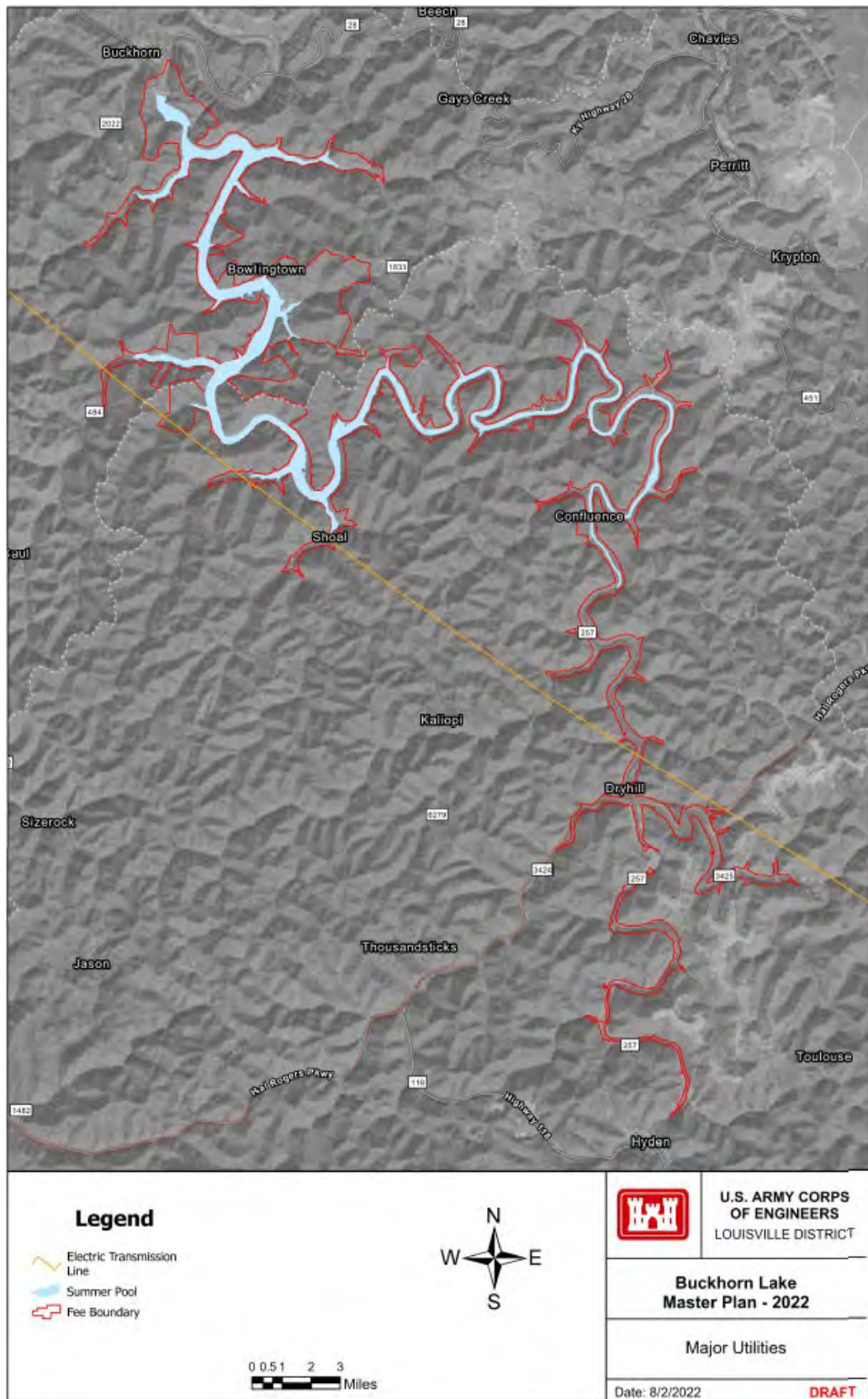


Figure 5. Major utilities present at the Buckhorn Lake Project.

2.14 CULTURAL RESOURCES

The Commonwealth of Kentucky's geographic distribution of cultural resources has been divided into seven management areas according to landform divisions and major drainage systems. Six of these management areas were subdivided into sections specific to prehistoric cultural developments in different areas of the State (Pollack, 2008). Table 7 identifies these divisions and subdivisions relative to the counties in which they reside.

Table 7. Cultural Resource Management Areas and Sections

Management Area	Section	Counties (Figure 1.4)
1) Purchase	A) Mississippi River	Carlisle, Fulton, Graves, Hickman
	B) Ohio River I	Ballard, Livingston, McCracken
	C) Lower Tennessee/ Cumberland	Calloway, Lyon, Marshall, Trigg
2) Green River	D) Ohio River II	Breckinridge, Crittenden, Daviess, Hancock, Henderson, Union
	E) Western Coalfield	Butler, Hopkins, McLean, Muhlenberg, Ohio, Webster
	F) Pennyroyal	Allen, Caldwell, Christian, Logan, Simpson, Todd, Warren
	G) Upper Green River	Adair, Barren, Casey, Edmonson, Grayson, Green, Hart, Metcalfe, Taylor
3) Salt River	H) Salt River	Anderson, Boyle, Bullitt, Hardin, Jefferson, Lantae, Marion, Meade, Mercer, Nelson, Oldham, Shelby, Spencer, Washington
4) Upper Cumberland	I) Lake Cumberland	Clinton, Cumberland, McCreary, Monroe, Pulaski, Russell, Wayne
	J) Southeastern Mountains	Bell, Harlan, Knox, Laurel, Whitley
5) Bluegrass	K) Central Bluegrass	Bourbon, Clark, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Montgomery, Scott, Woodford
	L) Northern Bluegrass	Boone, Campbell, Carroll, Gallatin, Grant, Henry, Kenton, Owen, Pendleton, Trimble
	M) Eastern Bluegrass	Bath, Bracken, Fleming, Lewis, Mason, Nicholas, Robertson
6) Upper Kentucky/ Licking	N) Gorge	Estill, Lee, Magoffin, Menifee, Morgan, Powell, Rowan, Wolfe
	O) Interior Mountains	Breathitt, Clay, Jackson, Knott, Leslie, Letcher, Owsley, Perry, Rockcastle
7) Big Sandy	P) Lower Big Sandy	Boyd, Carter, Elliott, Greenup, Johnson, Lawrence, Martin
	Q) Upper Big Sandy	Floyd, Pike

Note: Reprinted from Pollack (2008). *The Archaeology of Kentucky: An update*. Volume One: State Historic Preservation Comprehensive Plan Report No. 3.

The Buckhorn Lake Project falls within Management Area 6: The Upper Kentucky/Licking Management Area, Interior Mountains Section (Pollack 2008). This management area lies almost entirely within the Cumberland Plateaus of southeastern Kentucky, which is a maturely dissected plateau with narrow upland ridges and steep-sided valleys and are often lined with sandstone cliffs. Within this management area, rock shelter sites (n=1,577) account for over 40 percent of the sites while open habitations without mounds account for less than 30 percent. Historic farms account for only 19 percent of identified sites, and only 63 mound sites have been recorded.

The Buckhorn Lake Project area has a spatiotemporal occupation of Native Americans spanning around 9,500 BC with the Paleoindians into the early 19th century with the Shawnee Indians; and to a lesser extent with the Delaware, Mingo, Miami, and Wyandotte Tribes. The Cherokee and Iroquois Confederacies were primarily located in parts of eastern Kentucky. The Cherokee claimed Kentucky as part of their traditional hunting grounds, and the Iroquois raided across Kentucky and into Illinois.

Even though Euro-American contact with Native Americans occurred in this region sometime before 1750 when Europeans were exploring the region, Euro-American settlements didn't start dominating the region until Native American's were forcefully displaced in the late 18th century to early 19th century (Pollack 2008). Prehistoric culture history is typically divided into a sequence of periods and sub-periods. The change from one sub-period into another is frequently marked by a shift in the morphology and typology of hafted bifaces (*e.g.*, stone knives and points) or, in later periods, pottery. These changes in material culture often correlate with major climatic shifts in the past because new environments require new adaptations. Against this backdrop of periodic shifts, several trends seem to have persisted over time. These trends include: a rise in population and population density; greater site permanence and complexity; and an increase in localization and settling into specific landscapes. As such, the cultural history of the Buckhorn Lake Project region has been divided into the following periods: Paleoindian (9,500 to 8,000 BC) with three subperiods; Archaic (8000 to 1000 BC) with three subperiods; Woodland (1000 BC to AD 1000) with three subperiods; Fort Ancient (AD 1000 to 1750); and Historic Period (approximately AD 1750 to present).

A Cultural Resource Management Plan (CRMP) has been developed for Buckhorn Lake Project area. The CRMP documents the cultural periods described above in detail and discusses the known sites within the USACE property owned in fee at the Buckhorn Lake Project. The CRMP ensures practical integration of cultural resource management with master planning activities and considers the responsibilities under all applicable laws and regulations for best management practices related to cultural resources. Details specific to the CRMP have been omitted from the Master Plan to protect the integrity of the cultural assets located within the Buckhorn Lake Project area. The CRMP assists with planning and/or any development that may infringe or endanger areas of cultural significance within the Buckhorn Lake Project area.

2.14.1 Long-term Cultural Resource Objectives

As funding allows, actions stemming from the Cultural Resources Management Plan (CRMP) shall be developed and incorporated into the Operational Management Plan in accordance with EP 1130-2-540. The CRMP provides a comprehensive program to direct the historic preservation activities and objectives at the Buckhorn Lake Project. A full inventory of cultural resources at the Buckhorn Lake Project has not been completed. In consultation with the Kentucky State Historic Preservation Officer (SHPO), all currently known sites must be evaluated to determine their eligibility for the National Register of Historic Places (NRHP). In accordance with Section 106 of the original National Historic Preservation Act of 1966 (NHPA), Public Law No. 89-665, 80 Stat. 915 (now codified as amended at 54 U.S.C. §§ 306108), any proposed project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of the USACE, such as those described in this Master Plan or as may be proposed in the future by others for right-of-way easements, will require coordination with the SHPO and

federally recognized Tribes to locate and evaluate potential impacts to historic and prehistoric resources. Resources determined eligible for the NRHP must be protected from proposed project impacts, or the impacts must be mitigated. All future cultural resource investigations at the Buckhorn Lake Project area must be coordinated with the SHPO and federally recognized Tribes to ensure compliance with the NHPA, Public Law No. 89-665, 80 Stat. 915 (codified as amended at 54 U.S.C. §§ 300101, et seq), the Archaeological Resources Protection Act of 1979, Pub. L. No. 96-95, 93 Stat. 721 (codified as amended at 16 U.S.C. §§ 470aa-470mm), and the Native American Graves Protection and Repatriation Act, Pub. L. No. 101-601, 104 Stat. 3048 (codified as amended at 25 U.S.C. § 3001, et seq.).

2.14.2 Implications of Historic Resource Development

Prior to the implementation of any ground disturbing activity or federal undertaking, proposed actions shall comply with Section 106 of the original NHPA (now codified at 54 U.S.C. 306108). A federal undertaking, as defined by 36 CFR § 800.16(y), is “...any project, activity, or program funded in whole or part under the direct or indirect jurisdiction of a Federal Agency, including those carried out by or on behalf of a Federal Agency; those carried out with Federal Assistance; and those requiring a Federal permit, license, or approval.” Section 106 compliance shall be conducted by USACE in accordance with the Cultural Resource Management Plan (CRMP) executed on 14 February 2022.

2.15 INTERPRETATION / VISUAL QUALITIES

Being within the Appalachian Plateau, the area boasts a beautifully rugged terrain that is characterized by steep hills, natural cliffs, and narrow valleys. Panoramic views of the hills, Lake, and tailwater can be seen from the Project dam. The habitats of the area offer opportunities for wildlife viewing including that of deer, turkey, various songbirds and waterfowl, bald eagle, and osprey.

2.16 DEMOGRAPHICS

While Kentucky’s population is steadily growing, growth is slower than the rest of the United States. According to the 2020 U.S. Census, since 2010 the population in Kentucky increased by 3% to 4,505,836 compared to the United States which grew by 6.3% (Kentucky State Data Center, 2016). Demographic data specific to the Project is outlined below.

2.16.1 Zone of Influence

Within this Master Plan, the primary zone of influence refers to counties within 30 minutes of travel from the Project, and the secondary zone of influence refers to counties within 30-60 minutes of travel from the Project. The Buckhorn Lake Project zone of influence includes the 16 counties listed in Table 8, below.

Figure 6 further breaks down the zones of influence into three drive-times: less than 30 minutes (color coded in green), 30-45 minutes (color coded in yellow), and 45 to 60 minutes (color coded in red). The

green areas correspond to the primary zone of influence and the red and yellow areas correspond to the secondary zone of influence.

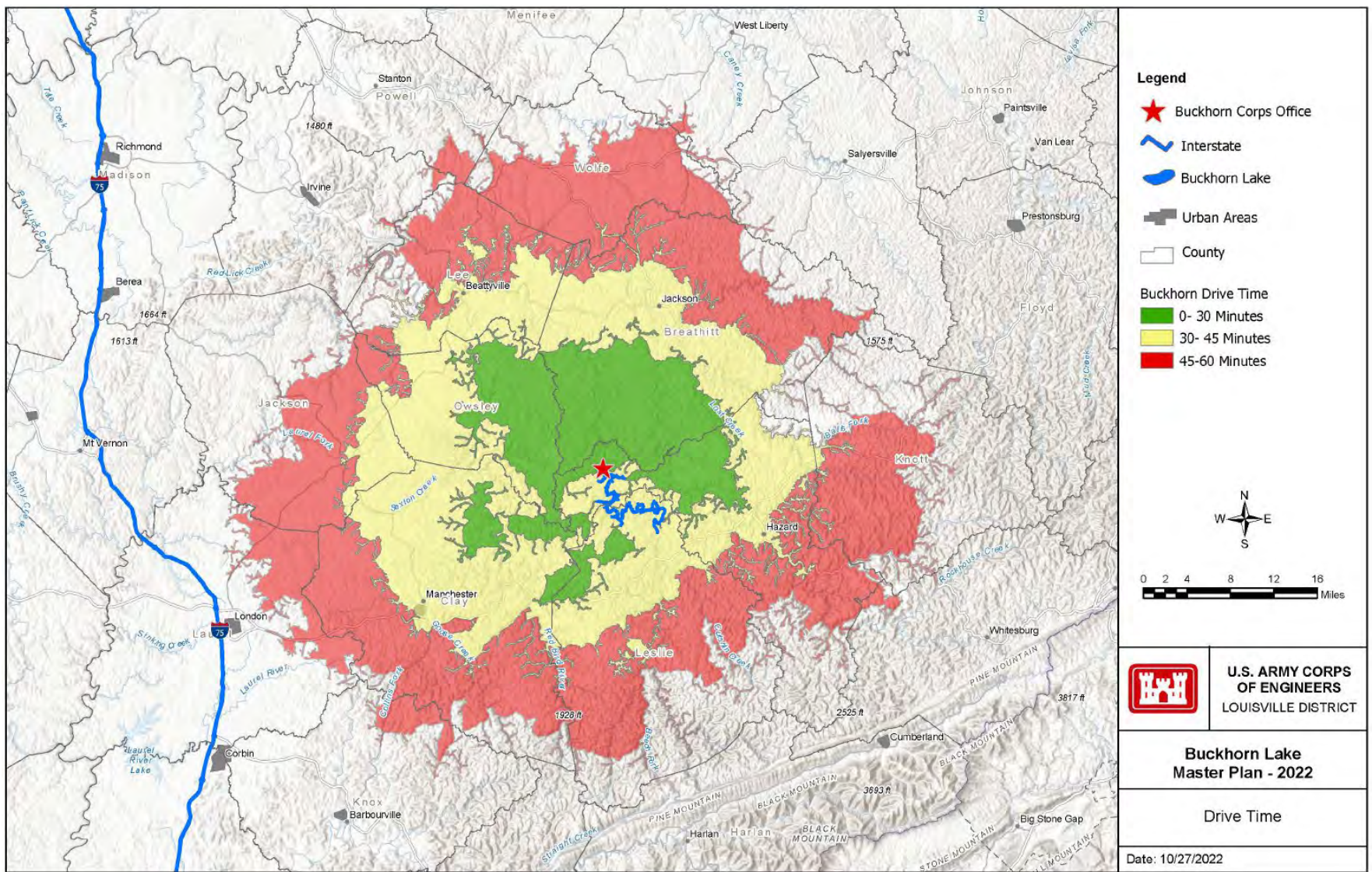


Figure 6. Buckhorn Lake zones of influence based on drive times.

2.16.2 Local Population

Table 8 contains the projected population growth for counties within the Project's zone of influence from 2010 through 2040 (zones of influence were previously discussed in Section 2.12.1). Except for Laurel County, which is projected to increase by 9%, every county within the zone of influence is expected to decrease in population between 2010-2040, with Lee, Leslie, Breathitt and Letcher Counties decreasing the most (-38%, -33%, -32%, and -28%, respectively).

Table 8. Projected population growth for counties within the zone of influence of Buckhorn Lake.

POPULATION								
County	Census 2010	Estimate 2015	Projections					% Change 2010-2040
			2020	2025	2030	2035	2040	
Breathitt	13,878	13,484	12,817	12,078	11,244	10,352	9,493	-32%
Clay	21,730	21,013	20,177	19,168	18,038	16,862	15,755	-27%
Estill	14,672	14,375	14,059	13,654	13,188	12,655	12,076	-18%
Jackson	13,494	13,352	13,119	12,742	12,271	11,695	11,091	-18%
Knott	16,346	15,693	14,841	13,957	12,997	12,015	11,060	-32%
Knox	31,883	31,730	31,443	30,975	30,310	29,514	28,633	-10%
Laurel	58,849	60,094	61,519	62,592	63,429	63,882	64,045	9%
Lee	7,887	6,752	6,433	6,102	5,727	5,318	4,898	-38%
Leslie	11,310	10,711	10,144	9,505	8,831	8,158	7,537	-33%
Letcher	24,519	23,123	22,207	21,147	19,970	18,736	17,545	-28%
Magoffin	13,333	12,808	12,497	12,094	11,611	11,029	10,391	-22%
Morgan	13,923	13,275	12,824	12,324	11,762	11,155	10,536	-24%
Owsley	4,755	4,461	4,300	4,125	3,919	3,685	3,463	-27%
Perry	28,712	27,565	26,777	25,771	24,621	23,382	22,189	-23%
Powell	12,613	12,269	11,753	11,192	10,584	9,966	9,332	-26%
Wolfe	7,355	7,259	7,282	7,208	7,074	6,902	6,696	-9%

Source: Kentucky State Data Center, 2016

Between 2015 and 2040, the population of Kentucky is expected to increase by 10.4% from 4,425,092 in 2015 to 4,886,381 in 2040 (Kentucky State Data Center, 2022). Consistent with population trends across the United States, since 2010 the counties in Kentucky that experienced growth tended to be in or around urban areas (Department for Local Government Federal Grants Division, 2019). The area within 70 driving miles of the Buckhorn Lake Project area lacks larger metropolitan centers like the cities of Louisville, Frankfort, and Lexington which would help to increase visitation at the Lake. The smaller metropolitan center of London, Kentucky (population 7,993 at the 2020 U.S. Census) has the potential to increase visitation. London is located approximately 69 driving miles to the west-southwest in Laurel County, where the population is expected to increase by 9% (Kentucky State Data Center, 2022). Hazard, Kentucky (population 5,263 at the 2020 U.S. Census), is the closest metropolitan center to the Lake at

approximately 25 driving miles to the southeast; however, it is located in Perry County where the population is expected to decrease by -23% (Kentucky State Data Center, 2022). Salyersville, Kentucky (population 1,883 at the 2020 U.S. Census) is approximately 65 driving miles to the northeast in Magoffin County, where the population is projected to decrease by -22% (Kentucky State Data Center, 2022).

The U.S. Census Bureau estimated Kentucky's 2020 population to be about 51% female and 49% male with a median age of 39 years. Currently, the age group of 65 years or older accounts for about 17% of the total population of Kentucky (U.S. Census Bureau, 2020). Between 2000 and 2010, the African American population increased from 293,639 to 333,075 (13.4%), the Asian population increased from 29,368 to 48,338 (64.6%) and the Hispanic population increased from 59,939 to 132,836 (121.6%) (Kentucky State Data Center, 2022). Between 2015 and 2040, the white population in Kentucky is projected to decrease by 0.25%, while the black, non-Hispanic, and Hispanic populations are projected to increase by 20.2%, 114.3%, and 150.7%, respectively in Kentucky (Kentucky State Data Center, 2022).

According to the 2020 U.S. Census, between 2010-2019, the four most populous counties in the Buckhorn Lake Project zone of influence (Laurel, Knox, Perry and Letcher) experienced the most noticeable increase in their Asian population, with the exception of Laurel County where the Asian population decreased. All four counties experienced growth in Hispanic population, and all but Laurel County experienced a decrease in their white population. All but Perry County experienced a decrease in their African American population (Table 9). In general, these numbers are consistent with the general decreasing population trends in the Buckhorn Lake Project zone of influence as shown in the projections from Table 8, above.

Table 9. Race in the five most populous counties in the primary zone of influence.

County	Race	2010	2019	% change 2010-2019
Laurel	White	56,565	58,536	3%
	African American	490	444	-9%
	Hispanic	714	940	32%
	Asian	281	237	-16%
Knox	White	30,852	30,238	-2%
	African American	727	255	-65%
	Hispanic	175	379	117%
	Asian	0	118	11,800%
Perry	White	27,759	25,529	-8%
	African American	410	495	21%
	Hispanic	200	278	39%
	Asian	51	237	365%
Letcher	White	24,138	21,812	-10%
	African American	132	83	-37%
	Hispanic	117	179	53%
	Asian	13	59	354%

Source: U.S. Census

According to the 2019 American Community Survey, 13.4% of the total U.S. population is below poverty level (U.S. Census Bureau, 2022). In comparison, all 16 of the counties in the Buckhorn Lake Project zone

of influence have a higher percentage of the population below the U.S. poverty level. The counties with the highest percentage of the population below the poverty level are Leslie (38%), Clay (36.6%), and Lee (34.6%). The counties with the lowest percentage of the population below the poverty level are Powell (21.4%), Morgan (22.7%), and Laurel (23.2%) (U.S. Census Bureau, 2022).

2.16.3 Environmental Justice

The U.S. Environmental Protection Agency's (EPA) EJScreen tool was used to obtain the most current American Community Survey (ACS) data to evaluate the demographics and environmental justice variables for all areas within 50 miles of the Buckhorn Lake Dam (Table 10).

Table 10. Environmental justice variables for all areas within a 50-mile radius of the Buckhorn Lake dam.

Variable	2015 2019 ACS Estimate	Project Percentages	Statewide Percentages
People of Color	21,145	4.6%	16.4%
Low Income Households	72,514	39.6%	16.3%
Population Age 25+ with Less Than High School	76,740	16.5%	13.7%
Population Under Age 5	27,679	6.0%	6.1%
Population Over Age 65	78,689	17.0%	16.8%

Source: American Community Survey. Total population = 463,976. Total number of households = 182,919.

2.16.4 Economic Impact of Recreation Related Spending

The USACE recognizes the importance that Buckhorn Lake and activities on USACE lands and waters have on the local economy. Besides the economic savings through flood risk management and development advantages through water supply, businesses can see investment opportunities, and people are drawn to the natural areas surrounding USACE lakes, as is evidenced by the growing number of residents adjacent to USACE properties. Nationally, the USACE lakes attract about 350 million recreation visits per year, with direct economic benefits on local economies within a 30-mile radius. Table 11 outlines the estimated economic benefits of Buckhorn Lake and surrounding communities from Fiscal Years (FY) 2016 and 2019.

Table 11. Economic benefits of Buckhorn Lake, FY 2016 and 2019.

Economic Benefits	
Economic Data in FY 16	Economic Data in FY 19
· \$7,310,051 in visitor spending within 30 miles of Buckhorn Lake.	· \$7,741,996 in visitor spending within 30 miles of Buckhorn Lake.
· \$4,077,558 in sales within 30 miles of Buckhorn Lake.	· \$3,820,740 in sales within 30 miles of Buckhorn Lake.
· 66 jobs within 30 miles of Buckhorn Lake.	· 71 jobs within 30 miles of Buckhorn Lake.

<ul style="list-style-type: none"> · \$1,550,421 in labor income within 30 miles of Buckhorn Lake. · \$2,031,421 in value added within 30 miles of Buckhorn Lake. · \$2,135,750 in National Economic Development Benefits. 	<ul style="list-style-type: none"> · \$1,466,114 in labor income within 30 miles of Buckhorn Lake. · \$1,995,090 in value added within 30 miles of Buckhorn Lake. · \$1,886,974 in National Economic Development Benefits.
With multiplier effects, visitor trip spending resulted in: <ul style="list-style-type: none"> · \$5,838,119 in total sales. · 81 jobs. · \$2,081,451 in labor income. · \$2,937,857 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes). 	With multiplier effects, visitor trip spending resulted in: <ul style="list-style-type: none"> · \$5,468,345 in total sales. · 84 jobs. · \$1,963,367 in labor income. · \$2,840,819 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes).
Benefits in Perspective	
<p>The money spent by visitors at Buckhorn Lake on trip expenses adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around Buckhorn Lake.</p>	

Source: Value to the Nation Fast Facts (<https://www.iwr.usace.army.mil/Missions/Value-to-the-Nation/Fast-Facts/Recreation-Fast-Facts/>)

At Buckhorn Lake, the average camping revenue between Fiscal Year (FY) 2018-2020 was \$58,090 and the average day use revenue was \$1,183 according to the National Recreation Program Rec-Assessment (2022).

2.17 RECREATION FACILITIES, ACTIVITIES AND NEEDS

Buckhorn Lake is the primary location for water-related recreation in the area, providing the public with a location for boating, sailing, canoeing/kayaking, paddle boarding, and swimming. Project visitors may pursue a wide variety of interests at the Project including camping, hunting, fishing, picnicking, hiking, bird watching, horseback riding, and bicycling. Table 12 lists activities available to visitors, with location and capacity, when applicable.

Table 12. Recreational activities on Buckhorn Lake.

Activity	Location	Description	Managing Agency
Boating	Buckhorn Lake Dam	Courtesy dock, 2-lane boat launch ramp	USACE
	Buckhorn Lake State Park	Courtesy dock, full-service marina, 2-lane boat launch ramp	State
	Leatherwood	Courtesy dock, 2-lane boat launch ramp	USACE
	Confluence	2-lane boat launch ramp	USACE
	Trace Branch	2-lane boat launch ramp	

Activity	Location	Description	Managing Agency
Camping	Buckhorn Lake Dam	Class C campground with 5 primitive campsites	USACE
	Tailwater	Class A campground with 27 electric campsites, 23 primitive campsites and 2 group camp areas	USACE
	Eagle's Landing	56 campsites	State
	Trace Branch	Class A campground with 28 campsites	USACE
Fishing	Buckhorn Lake Dam	1 fishing pier and 1 courtesy dock	USACE
	Trace Branch	1 courtesy dock and 1 courtesy fishing dock	USACE
	Tailwater	1 fishing pier	USACE
	Leatherwood	1 fishing pier and 1 courtesy dock	USACE
	Confluence	1 fishing pier and 1 courtesy dock	USACE
Picnic Areas	Buckhorn Lake Dam	3 group picnic areas and 21 picnic sites	USACE
	Buckhorn Lake State Park	10 group picnic areas, 2 shelters and 75 picnic sites	State
	Trace Branch	1 shelter and 42 picnic sites	USACE
	Tailwater	5 group picnic areas, 4 shelters and 59 picnic sites	USACE
	Leatherwood	1 group picnic area, 1 shelter and 10 picnic sites	USACE
	Confluence	4 group picnic areas, 1 shelter and 4 picnic sites	USACE
	Eagle's Landing	2 group picnic areas, 1 shelter and 2 picnic sites	State
Hiking	Buckhorn Lake Dam	Stillhouse Branch Nature Trail – 2 miles	USACE
	Tailwater	Stillhouse Branch Nature Trail – 2 miles	USACE
	Buckhorn Lake State Park	Leatherwood Trail - .5-mile looped trail, Moonshine Hollow Trail – 1-mile self-guided interpretive trail	State

Source: Corps Lakes Gateway; Corps Lakes Gateway: Kentucky - Buckhorn Lake (dren.mil)

Periodically, USACE estimates visitation at the Project by activity. Table 13 presents the relative visitation counts by activity and changes in available facilities between FY 2016 and 2019. USACE estimates visitation at the Project to be over 200,000 visitors in 2016 and 2019.

In Table 13, “campers” refer to visitors staying at USACE-managed campgrounds, and “overnight visitors” refer to visitors staying at campgrounds not managed by USACE.

Table 13. Visitation counts and social benefits from Buckhorn Lake, FY 2016 and 2019.

Social Benefits	
Facilities in FY2016	Facilities in FY2019
<ul style="list-style-type: none"> • 7 Recreation areas • 217 picnic sites • 113 camping sites • 7 playgrounds • 2 swimming areas • 9 trails • 9 trail miles • 1 fishing dock • 7 boat ramps • 107 marina slips 	<ul style="list-style-type: none"> • 7 Recreation areas • 213 picnic sites • 68 camping sites • 8 playgrounds • 1 swimming area • 5 trails • 8 trail miles • 4 fishing docks and piers • 6 boat ramps • 107 marina slips
Visits (person-trips) in FY 2016	Visits (person-trips) in FY 2019
<ul style="list-style-type: none"> • 210,017 in total • 24,536 picnickers • 1,899 campers • 14,430 swimmers • 1,831 water skiers • 60,496 boaters • 106,448 sightseers • 50,188 anglers • 621 hunters • 7,675 others 	<ul style="list-style-type: none"> • 208,798 in total • 36,767 picnickers • 40,098 campers/overnight visitors • 57,904 swimmers • 20,872 walkers/hikers/joggers • 63,909 boaters • 40,025 sightseers • 37,360 anglers • 6,385 special event attendees • 8,331 others
Public outreach in FY 2016	Public outreach in FY 2019
<ul style="list-style-type: none"> • 18,956 public outreach contacts 	<ul style="list-style-type: none"> • 10,280 public outreach contacts
Benefits in Perspective	
Recreation experiences increase motivation to learn more about the environment; understanding and awareness of environmental issues; and sensitivity to the environment.	

Source: Value to the Nation Fast Facts (<https://www.iwr.usace.army.mil/Missions/Value-to-the-Nation/Fast-Facts/Recreation-Fast-Facts/>)

2.17.1 Visitation Profile

Information from the following tables is derived from the USACE Visitation Estimating and Reporting System (VERS) data source, while the numbers on Table 13, above, are from Value to the Nation Fast Facts. The discrepancy between the VERS data and the Value to the Nation Fast Facts data is due to the use of different data-gathering techniques.

National and regional variables affect the way people spend their leisure time. For that reason, Buckhorn Lake visitation can fluctuate from year to year. Table 14 provides historic visitation data dating from FY 2014 to FY 2021.

Table 14. Buckhorn Lake Project visitation data 2014-2021

Fiscal Year	Project Visitation
2014	143,273
2015	148,284
2016	225,171
2017	215,151
2018	279,960
2019	208,798
2020	197,295
2021	170,240

Source: VERS Visitation Estimating and Reporting System

Visitation also varies by overnight visits versus day-use visits to Buckhorn Lake. Figure 7, below, presents average historic day use and overnight visits from FY 2015 to FY 2021.

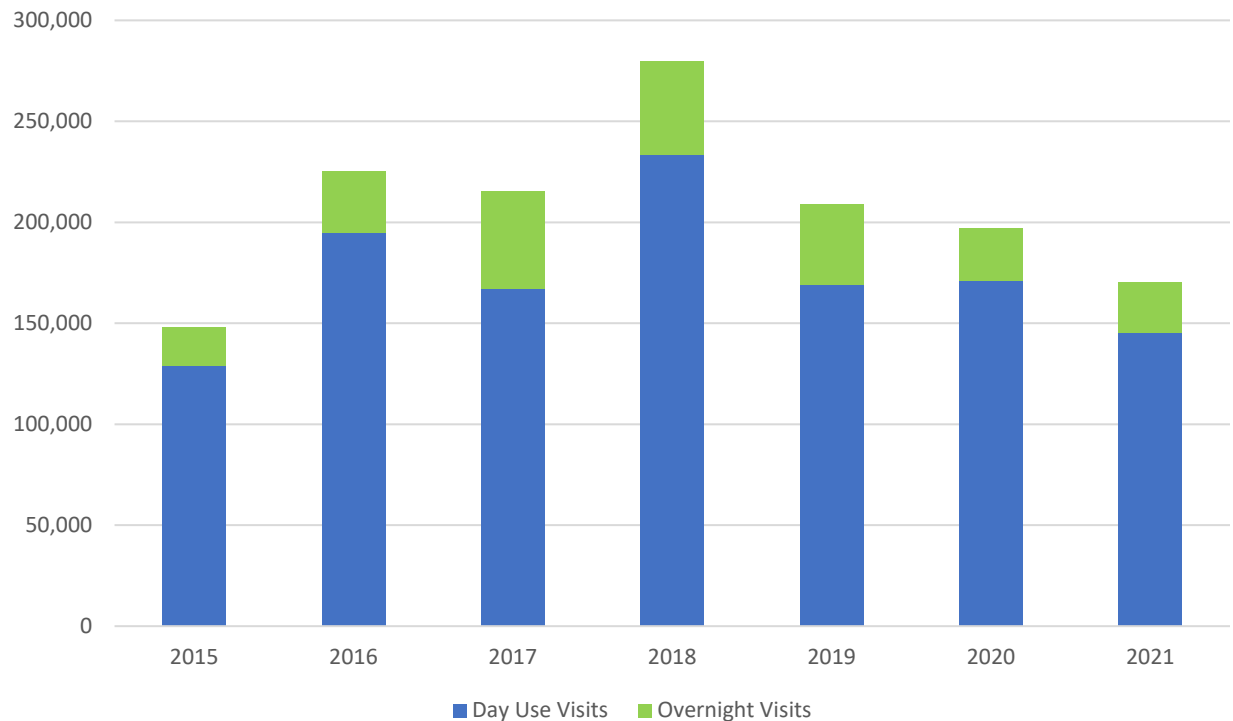


Figure 7. Buckhorn Lake visitation FY 2015-2021.

Visitation also varies from Lake Project to Lake Project within the Louisville District. Figure 8 compares the average overnight and day use visits of the Lake Projects in the Louisville District from FY 2015 to FY 2021. Out of the 17 Lake Projects in the Louisville District, Buckhorn Lake ranked seventeenth in total visitation, thirteenth in overnight visits, and seventeenth in day-use visits.

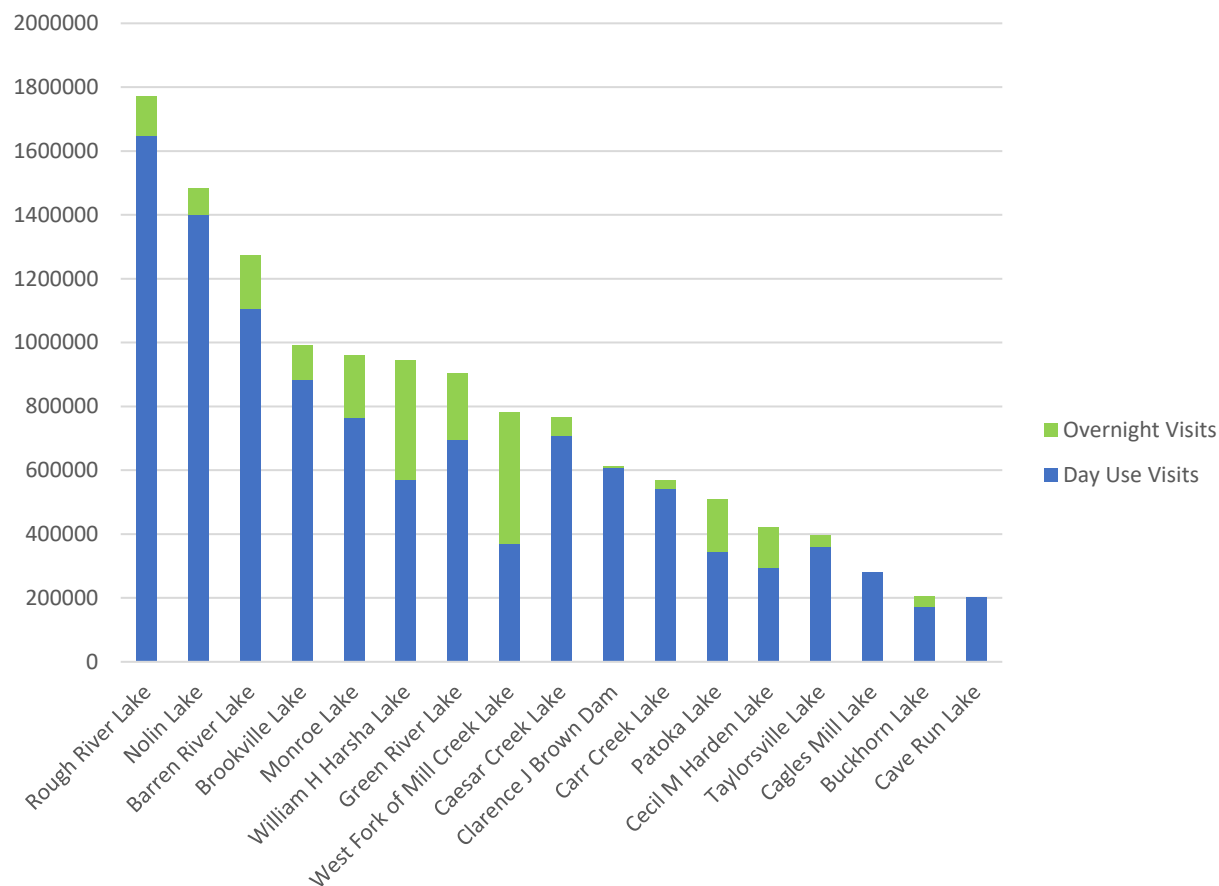


Figure 8. Average overnight and day use visits in Louisville District Lakes FY 2015-2021.

Visitation also varies in the Upper Kentucky River Area, which includes Buckhorn Lake, Carr Creek Lake, Taylorsville Lake, and Cave Run Lake. Figure 9 compares the average overnight and day-use visits of the Lake Projects in the Upper Kentucky River Area from FY 2014 to FY 2021. Of the four area Lake Projects, Buckhorn Lake received the fewest day-use visits and the second most overnight visits.

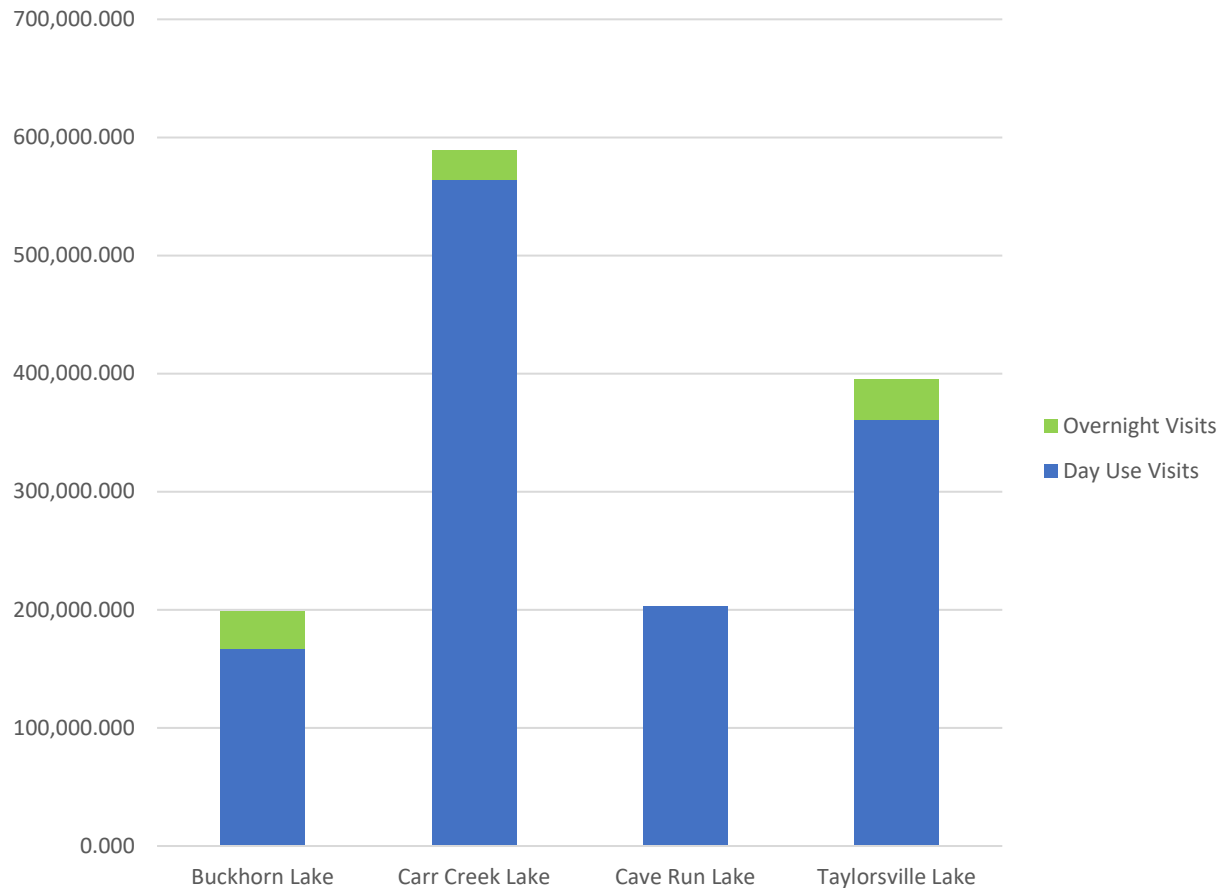


Figure 9. Upper Kentucky River area average visitation FY 2014-2021.

2.17.2 Recreation Areas and Facilities

Recreation areas at Buckhorn Lake have been developed to provide both overnight and day-use opportunities. Of the seven recreation areas at the Project, five are operated by the USACE, and the remaining two are leased to state government entities. The recreation areas feature one leased marina, four fishing piers and five courtesy docks, four campgrounds, a total of 213 picnic sites, and one swim beach. These areas include the infrastructure necessary to provide safe drinking water, garbage removal, and other services to provide a quality recreation experience while also protecting the environment.

A description of current land use classifications, the recreation areas at Buckhorn Lake, and recreational development proposed by this plan are presented in Section 5. Table 15 lists facilities and activities by recreation area at the Buckhorn Lake Project.

Table 15. Facilities and activities by recreation area at Buckhorn Lake.

Recreation Area	Camping	Lodging	Showers	Boat Ramps	Marina	Fishing Facilities	Picnic	Playground	Swimming Area	Trails	Operating Agency
Buckhorn Lake Dam											USACE
Tailwater											USACE
Leatherwood											USACE
Trace Branch											USACE
Confluence											USACE
Buckhorn Lake State Park											State
Eagle's Landing											County

Source: Corps Lakes Gateway

2.17.3 Recreation Analysis: Trends

Recreation trends vary from state to state and region to region. Kentucky's 2019 Statewide Comprehensive Outdoor Recreation Plan (SCORP) was developed to assist recreation providers and state funding offices in strategically work towards delivering recreational opportunities and facilities that Kentuckians want and that create outdoor recreational experiences that provide personal, social, health, and economic benefits (Department for Local Government Federal Grants Division, 2019). The planning horizon for this SCORP is 2020 through 2025. The 2020 - 2025 Kentucky SCORP presents a summary and analysis of the state's outdoor recreation resources with ten strategic goals:

- Expand and improve the quantity and variety of outdoor recreation opportunities, with an emphasis on areas and population segments where opportunities are lacking the most.
- Develop and promote the recreational opportunities that are associated with tourism.
- Implement an integrated strategy of trail development utilizing the funding resources and selection criteria of the Recreational Trails Program Fund, Land and Water Conservation Fund, Transportation Enhancement Funds, and other funding sources.
- Raise the public's awareness of Statewide Outdoor Recreation Goals and encourage the use of Kentucky's outdoor recreational resources, facilities, and programs while promoting the social and health benefits of their use.
- Preserve the Kentucky's natural, environmental, historical, and cultural assets.
- Establish and maintain public participation in the planning, development, and management of outdoor recreational facilities and programs.
- Increase and promote coordination and definition of roles among the various federal, state, regional, local, and private agencies that are responsible for the planning, programming, and implementation of recreational facilities and opportunities.
- Make the most efficient use of existing recreation facilities and resources.
- Fully exploit all existing funding resources for recreation and seek to develop other funding possibilities.

- Promote the use of SCORP as a planning tool and the progressive implantation of its identified objectives.

A public participation survey was completed in 2019 in support of the development of the 2019 Kentucky SCORP. Most respondents indicated that they had visited a beach, lake, or river (89.3%); walked for pleasure, exercised, or leisurely enjoyed the outdoors (84.2%); or visited parks or historical sites (80.1%). Roughly two out of every three respondents indicated that they viewed scenery (67.5%), attended an outdoor fair or festival (62.7%), or went swimming or hiked on trails (56.0%). Other notable activities that respondents listed included driving for pleasure (49.5%) and fishing in freshwater from the bank or from a pier (47.8%). Figure 10 lists the top 16 recreational activities in order from the most popular to least popular and the percentage of respondents who participated in each activity.

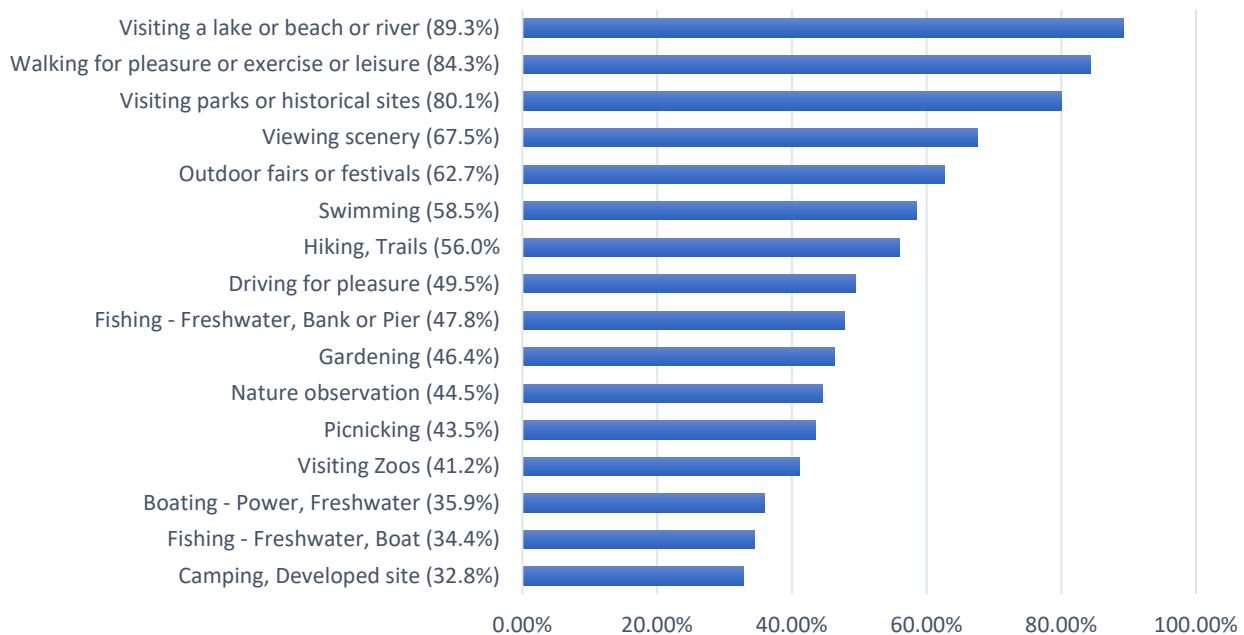


Figure 10. Top 16 recreation activities participated in by SCORP survey respondents.

This survey asked participants to identify the types of facilities they had visited over the past year. Most respondents indicated that they attended local (87.5%) and state (81.4%) parks. Nearly half of the participants (47.3%) responded that they had attended a national park or national forest. Approximately one-third of the participants (33.6%) had attended a mixed-public or private club such as the YMCA or Boys and Girls Club. From the survey, respondents provided activities that they or another family member in their household had participated in over the last five years.

2.17.4 Recreational Analysis: Needs

The most recent comment card survey at Buckhorn Lake was conducted during the 2022 summer season. The results were overwhelmingly positive with a satisfaction rate of 4.99 out of 5.0 overall. The comment card surveys had been suspended after the 2014 season but were reinstated during the 2022 season. Some examples of comments received from visitors indicated a desire for updates and improvements to the buildings, infrastructure, facilities, roads, and campgrounds around the Project. Additionally, visitor comments indicated a desire for improved Wi-Fi and cellphone service at

recreational areas. In response, the comments have been incorporated into the revised Master Plan in Chapter 8 to help guide future management of the Buckhorn Lake Project.

The Kentucky SCORP supports the need for more hiking, biking, and water-based outdoor activities. USACE relies on partnerships for recreational amenities, and as time, partnerships, and budgets allow, will integrate more facilities to accommodate the public. These activities are balanced with the primary missions of the Project, namely flood risk management, and the inherent mission of environmental stewardship.

2.17.5 Recreational Carrying Capacity

Carrying capacity determines the number of users that can be accommodated in a given area without suffering a loss in the quality of the recreational experience or the natural environment (USDA, 2009). In the context of recreational analysis specifically, carrying capacity measures the maximum number of visitors who can obtain given types of recreational experiences at a given facility within the constraints of the facility's capability.

USACE strives to ensure that visitors have a high quality and safe recreational experience without irreparably damaging any natural resources. USACE does this by providing uses and activities that do not cause public safety issues, unacceptable social conditions, or resource degradation. The consequences of not considering carrying capacity can include negative experiences like overcrowding, a social condition that can lead to both unacceptable recreational experiences by the visitor, as well as, damaged or destroyed facilities and resources. Considerations must be given to the development constraints of the site, including the conditions and characteristics, both natural and manmade, to help guide appropriate facility developments.

Currently, USACE staff uses historic visitation data combined with visitor use patterns to monitor land-based recreational areas for overcrowding and capacity use. When visitation trends show patterns of overcrowding or facilities show signs of degradation, then a more formal review or study may be completed to determine the actual impact and a recommended solution.

Many of the existing recreation facilities often reach capacity on summer weekends, although few occurrences of negative overcrowding or facility degradation have been observed to necessitate the need for a formal land use capacity study. Management decisions have been made to provide additional recreational facilities to relieve high occupancy use facilities. Providing facilities that cater to a variety of tastes and different members of the family encourages visitors to enjoy the Lake. Presently, USACE manages recreational areas using historic visitation data combined with best professional judgment to address recreational areas that are overcrowded, overused, underused, or well balanced.

An example of a potential carrying capacity study at Buckhorn Lake, could be a boat recreation study at the Lake which would help establish a baseline for boating use that could be used in conjunction with a potential sedimentation survey to determine if sedimentation at the Lake is reducing boat usage over time. Other examples of future carrying capacity considerations, could be evaluating the need for more parking in popular recreational areas or evaluating the wildlife in the Project area and determining if management of public hunting on USACE lands should include restrictions by species or by area.

USACE will continue 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.

2.18 RELATED RECREATIONAL, HISTORICAL, AND CULTURAL AREAS

In addition to Buckhorn Lake, recreationists have several other water-based recreational facilities available within 100 driving miles of the Project. Table 16 lists the other USACE-managed projects within 100 driving miles of Buckhorn Lake and other parks and recreational areas within 50 driving miles of the Lake.

Table 16. Recreational Areas surrounding Buckhorn Lake.

Other Authorized USACE Projects				
Area	Driving Miles from Buckhorn Lake	Activities	Total Area in Acres	Water Area in Acres
Grayson Lake	100	Camping, boating, fishing, picnicking, swimming, hiking	15,421	1,510
Laurel River Lake	96	Fishing, picnicking, swimming	581	95
Cave Run Lake	94	Camping, boating, fishing, picnicking, hiking	337	55
Martins Fork Lake	88	Boating, fishing, picnicking swimming, hiking	1,132	340
Paintsville Lake	82	Camping, boating, fishing, picnicking, hiking	12,017	1,139
Dewey Lake	37	Camping, boating, fishing, picnicking, hiking	11,066	1,100
Carr Creek Lake	37	Camping, boating, fishing, picnicking, swimming, hiking	3,161	710
Other Recreational Areas in the Vicinity				
Panbowl Lake	31	Boating, fishing	75	-
Perry County Park	22	Boating, picnicking	-	-
Bert T. Combs Lake	40	Boating (non-motorized), fishing, picnicking	-	34
Beulah Lake	49	Boating, fishing	71	-

2.19 REAL ESTATE AND ACQUISITION POLICY

The Buckhorn Lake Project was authorized by the Flood Control Act of 1938 and the development of flood control reservoir areas for recreational purposes was authorized by Section 4 of the Flood Control Act of 1944, as amended. Real estate acquisitions for the Buckhorn Lake Project were authorized in Real Estate Design Memorandums Nos. 3, 6, and 8, dated July 1956, December 1957, and April 1960, respectively.

Fee Lands

The current fee acreage totals 4,952.27 acres in Leslie and Perry Counties in Kentucky (Figure 11 and Table 17). An elevation contour of 819 mean sea level (msl) was the guide elevation for fee simple acquisitions.

Table 17. Fee acreage at Buckhorn Lake.

County	Fee Acreage
Leslie County, KY	2,698.58
Perry County, KY	2,253.69
TOTAL	4,952.27

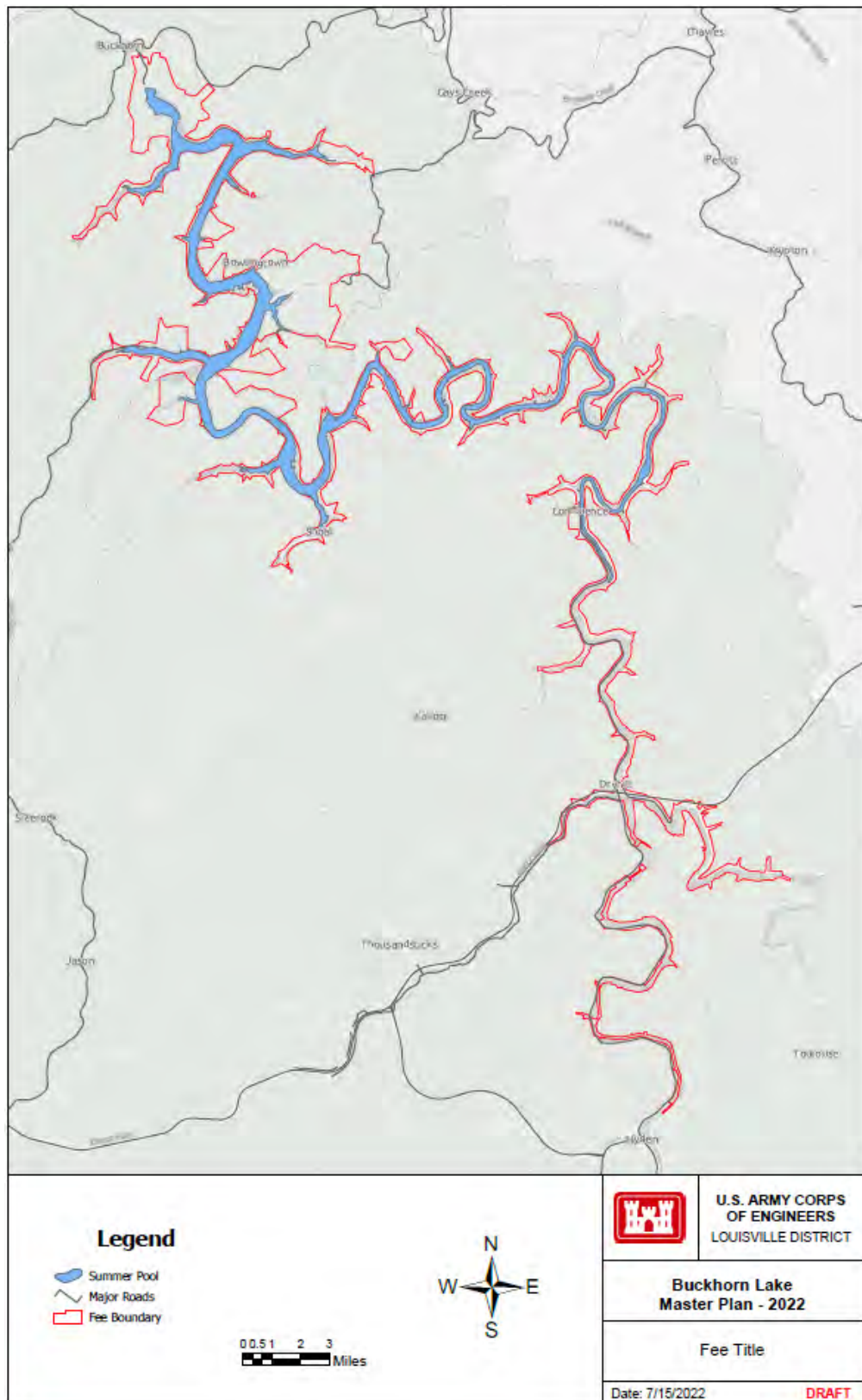


Figure 11. Fee title lands of the Buckhorn Lake Project.

2.19.1 Easement Lands

Flowage Easements

Perpetual easements were also acquired to support Project requirements. Currently, 906.51 acres of perpetual flowage easements occur at the Buckhorn Lake Project in Leslie and Perry Counties in Kentucky (Table 18, Figure 12). An elevation contour of 845 msl was the guide elevation for flowage easement acquisition. These easements grant rights to the Government to occasionally overflow, flood, and submerge the lands during flood risk management operations; to clear and remove any brush, debris, and natural obstructions which may be detrimental to the Project; and to prevent human habitation.

Table 18. Easement acreage at Buckhorn Lake.

County	Flowage Easement Acreage
Leslie County, KY	703.85
Perry County, KY	202.66
TOTAL	906.51

Road Easements

Road easements purchased by USACE can grant rights to the Government to construct, operate, repair, maintain, alter, and replace roads to access USACE-managed lands. Currently, no road easements have been purchased for the Buckhorn Lake Project.

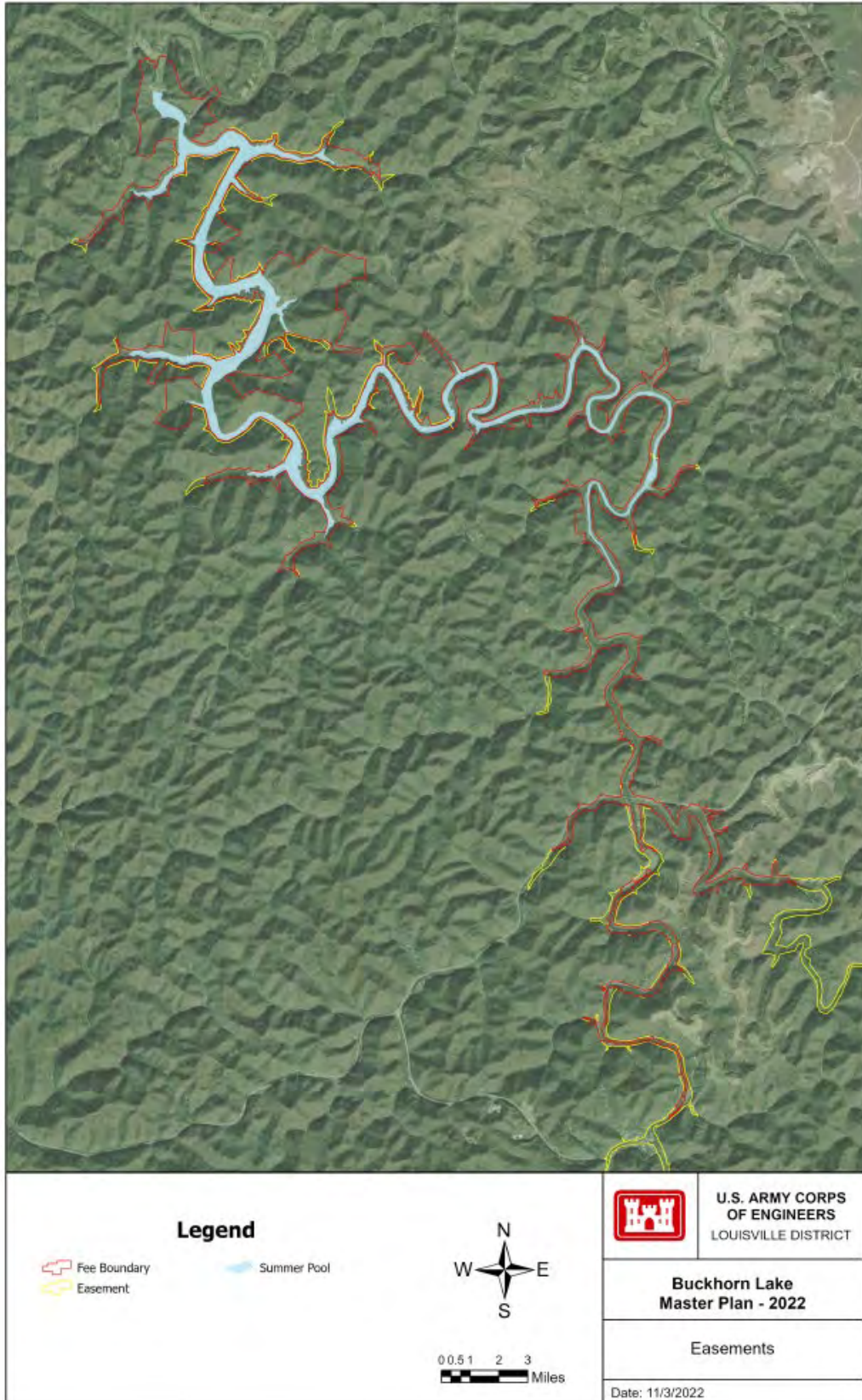


Figure 12. Easement lands at the Buckhorn Lake Project.

2.19.2 Mineral Interests

Subsurface rights to include coal, oil, gas, and other minerals were acquired on fee tracts and subordinated on flowage easement tracts. 1,848.56 acres of subsurface mineral interests were acquired at the Buckhorn Lake Project.

Approximately 23 tracts that total 265 acres were acquired subject to existing third party subsurface mineral interests. Due to title defects, these mineral interests could not be acquired or subordinated without pursuing condemnation actions. In a letter dated 14 January 1964, the Chief of the USACE Acquisition Division made the administrative determination not to proceed with condemnation on these 23 tracts as the value of the mineral interests was negligible and failing to acquire them would not pose a risk to Project construction, operation, and maintenance. Therefore, approximately 265 acres of Project lands are subject to outstanding third-party mineral interests of negligible value.

2.19.3 Housing Agreements

The Department of the Army initiated a phase-out of all Government provided housing at Civil Works projects on 30 September 1981 with the goal of eliminating all such housing by 30 September 1996. (USACE, 1981). The Louisville District requested a waiver to this policy for the Buckhorn Lake Project given the limited housing available for USACE staff near the Project. The waiver was approved, so USACE maintains two houses for USACE employees at Buckhorn Lake.

USACE entered into two housing agreements with two USACE employees that reside at the Project under agreements DACW27-1-22-396 and DACW27-1-22-397. Each house is a one-story, single family, brick veneer home that is approximately 1,300 square feet.

2.19.4 Disposals

A total of 20.67 acres have been disposed of at the Buckhorn Lake Project since 1964. Disposal details are below.

- 0.46 acres road easement conveyed to the Commonwealth of Kentucky by quitclaim deed dated 17 June 1964, (Tract No. H-848E-2). This disposal was in accordance with Relocation Agreement DA-15-029-CIVENG-59-86, dated 4 March 1959.
- 7.8 acres fee conveyed to Brown Langdon and Lola Langdon by quitclaim deed dated 4 September 1968 (Tract No. C-344). The Government reserved a perpetual flowage easement over land lying below 845 feet msl and the right to maintain mosquito control over the conveyed land. The Government also reserved the right to clear and remove brush, debris, and natural obstructions which may be detrimental to the project.
- 12.41 acres fee conveyed to Mansel D. Roland by quitclaim deed dated 27 June 1990 (Tract Nos. F-627 and F-671).

2.19.5 Outgrants

Outgrants allow the use of Federally-owned land by state and local agencies, as well as, private corporations and individuals. Outgrants specify what types of activities are allowed on Federal lands and provide that all Federal regulations are still applicable.

Current Leases

The USACE leases 87.20 acres in Perry County, Kentucky under Lease No. DACW27-1-10-021 to the Perry County Fiscal Court for public park and recreational purposes. The term of the lease is twenty-five (25) years beginning 15 October 2009 and ending 14 October 2034. The site is called Eagle's Landing and includes a boat ramp as well as the Eagle's Landing Campground.

The USACE leases 623 acres in Leslie and Perry Counties, Kentucky under Lease No. DACW27-1-12-285 to the Commonwealth of Kentucky, Department of Parks for public park and recreational purposes. The term of the lease is fifty (50) years beginning 29 June 2012 and ending 28 June 2062. The site is operated as the Buckhorn Lake State Resort Park.

The Commonwealth of Kentucky subleases the following to a third party:

Donald Ryan Miller, d/b/a Bowlington Marina, subleases the Buckhorn Lake Marina Facility from the Commonwealth of Kentucky for the purposes of operating and maintaining said facility. The sublessee maintains and operates the marina facility. The term of the sublease is ten (10) years beginning 27 April 2018 with two, five-year (5) options for renewal, thereafter.

The USACE leases 2 acres in Leslie County, Kentucky to the Leslie County Fiscal Court under Lease No. DACW27-1-13-475 for public park and recreational purposes. The term of the lease is twenty-five (25) years beginning 23 September 2013 and ending 22 September 2038. The site is known as the Sizemore Community Park.

The USACE leases 33.74 acres at two sites in Leslie County, Kentucky to the Leslie County Fiscal Court under Lease No. DACW27-1-21-899 for public park and recreational purposes. The term of the lease is twenty-five (25) years beginning 1 April 2021 and ending 31 March 2046. The lessee operates two boat launching ramps under this lease that include the Confluence Boat Ramp and the Trace Branch Boat Ramp.

Easements

Numerous easement outgrants are issued to various entities for the construction, operation, and maintenance of water, sewer, electric, telephone, and cable lines. Other easements grant various entities the right to construct, operate, and maintain roads and bridges. A complete list of easements at the Project is found in Table 19.

Table 19. List of easements at Buckhorn Lake.

Outgrant Number	Grantee	Purpose	Term
DA15-029-CIVENG-62-732	Leslie County Fiscal Court	Road	perpetuity
DA15-029CIVENG-62-1185	Kentucky Power Company	Electric transmission lines	perpetuity
DA15-029-CIVENG-65-207	Commonwealth of Kentucky	Road	perpetuity
DA15-029-CIVENG-65-622	Leslie County Fiscal Court	Road	perpetuity
DACW27-2-67-2190	Leslie County Fiscal Court	Road	perpetuity
DACW27-2-69-008	City of Hyden, Kentucky	Sewer lines and pumping stations	perpetuity
DACW27-2-69-179	Leslie County Fiscal Court	Road and bridge	perpetuity
DACW27-2-70-179	Commonwealth of Kentucky	Road	perpetuity
DACW27-2-72-025	Leslie County Fiscal Court	Road	perpetuity
DACW27-2-75-104	Kentucky Power Company	Electric power facility	3/21/1975 - 3/20/2025
DACW27-2-78-064	Leslie County Fiscal Court	Road and low water bridge	perpetuity
DACW27-2-80-090	Kentucky Power Company	Electric power facility	7/7/1980 - 7/6/2030
DACW27-2-82-014	Kentucky Power Company	Electric power facility	10/30/1981 - 10/29/2031
DACW27-2-82-037	Leslie County Fiscal Court	Road	perpetuity
DACW27-2-84-069	Columbia Natural Resources (formerly Wiser Oil Company)	Gas pipeline	3/21/1984 - 3/20/2034
DACW27-2-86-079	Leslie County Fiscal Court	Road and bridge	perpetuity
DACW27-2-96-011	City of Hazard, KY	Water line, maintenance road	11/15/1995 - 11/14/2045
DACW27-2-97-054	Kentucky Power Company	Electric line	9/30/1997 - 9/29/2047
DACW27-2-97-061	TDS Telecom	Underground and overhead telephone cables	1/1/1998 - 12/31/2023
DACW27-2-02-029	Hyden-Leslie County Water District	Waterline	6/1/2002 - 5/31/2052
DACW27-2-03-025	Amberly and Bridget Fleming	Access drive	perpetuity

DACW27-2-03-029	Delano Huff	Access drive	perpetuity
DACW27-2-03-030	George D. Roberts	Access drive	perpetuity
DACW27-2-03-031	Forrest Farley	Access drive	perpetuity
DACW27-2-03-033	Begley Lumber Company, Inc.	Access drive	perpetuity
DACW27-2-03-034	Charlotte Hall	Access drive	perpetuity
DACW27-2-03-035	Kenneth Bowling	Access drive	perpetuity
DACW27-2-03-044	Claude Baker, Robert Baker, and Elizabeth C. Deaton	Access drive	perpetuity
DACW27-2-04-202	Monica and William Gibson	Access drive	perpetuity
W912QRC0401106	Darrell and Jeanie Gayhart	Access road	perpetuity
DACW27-2-07-163	Perry County Fiscal Court	Road	perpetuity
DACW27-2-07-188	Kentucky Power Company	Electric power line and appurtenances	2/1/2007 - 1/31/2057
DACW27-2-10-292	Buckhorn Water Company	Waterline	5/1/2010 - 4/30/2035
DACW27-2-11-304	Perry County Fiscal Court	Road	3/24/2011 - 3/23/2036
DACW27-2-14-220	Kentucky Power Company	Electric power facility	perpetuity
DACW27-2-16-251	Vinland Energy Gathering, LLC	Natural gas pipelines	perpetuity
DACW27-2-16-408	Kentucky Power Company	Electric transmission lines	perpetuity
DACW27-2-19-059	Vinland Energy, LLC	Natural gas pipeline	10/24/2018 - 10/23/2048
DACW27-2-19-167	Kentucky Power Company	Electric power line and appurtenances	7/14/2019 - 7/13/2069
DACW27-2-20-073	Thacker-Grigsby Communications, Inc.	Communication lines, access road	12/1/2019 - 11/30/2069
DACW27-2-21-420	Roscoe and Cathy Eversole	Access road	perpetuity

Licenses

License outgrants are issued to various entities to perform a specified act on Government-owned fee property without acquiring an estate. The license authorizes a specific act that would otherwise be considered a trespass.

In addition to the licenses listed in Table 20, the USACE licenses 3,500 acres of land and water to the Commonwealth of Kentucky under License No. DACW27-3-20-003 for fish and wildlife activities. The term of the license is twenty-five (25) years beginning 1 July 2020 and ending 30 June 2045. The Commonwealth has entered into five tenant agreements with local residents to use a total of 16.1 acres of the licensed land for gardening purposes.

Table 20. List of licenses at Buckhorn Lake.

Outgrant Number	Grantee	Purpose	Term
DACW27-3-95-318	Kenneth Bowling	Path and steps	8/21/2000 - 8/20/2025
DACW27-3-98-279	Allen Muncy	Install riprap	5/5/1988 - 8/29/2038
DACW27-3-08-263	Leslie County Fiscal Court	Suspension bridge and improved path	6/1/2014 - 5/31/2024
DACW27-3-09-332	Boyd Asher, Jr.	Garden plot	5/1/2014 - 4/30/2024
DACW27-3-13-212	Keith and Charlene Miller	Improved path	3/7/2013 - 3/6/2023
DACW27-3-13-290	Perry County Fiscal Court	Multi-use equestrian / non-motorized trail	5/16/2013 - 5/15/2038
DACW27-3-21-013	Leslie County Fiscal Court	Suspension bridge and improved path	1/1/2021 - 12/31/2026
DACW27-3-22-312	Billy Don and Sherry Farmer	Cart path	4/7/2022 - 4/6/2027

Consents to Easement Structures

Table 21 lists all consents to structures located on Government-owned easements in accordance with the terms of the easements.

Table 21. List of consent to easements at Buckhorn Lake.

Outgrant Number	Grantee	Purpose	Term
DACW27-3-68-2150	Hyden-Leslie County Water District	Low water dam and appurtenances	perpetuity
DACW27-2-69-048	Hyden-Leslie County Water District	Waterline	perpetuity
DACW27-9-77-1103	Leslie County Fiscal Court	Road	perpetuity
DACW27-9-77-1104	Leslie County Fiscal Court	Landfill and recreation center	perpetuity
DACW27-9-79-1109	Ralph E. Howard	Place fill material	perpetuity
DACW27-9-80-1113	Hayes Lewis	Place fill material	perpetuity
DACW27-3-81-165	Luella H. Maggard	Storage building	perpetuity
DACW27-3-81-166	Leslie County Fiscal Court	Playground	perpetuity
DACW27-3-81-193	Eddie J. Moore	Pillars to support shopping center	perpetuity

DACW27-9-81-1111	Wade Morgan	Place fill material, construct store and parking facility	perpetuity
DACW27-3-83-013	Miller Rice	Fill material	perpetuity
DACW27-3-83-140	Steve Bingham Mining	Access road	perpetuity
DACW27-3-83-157	Leslie County Board of Education	Excavate and fill	perpetuity
DACW27-3-83-184	C. Allen Muncy	Pond	perpetuity
DACW27-3-85-002	Frontier Coal Company	Bridge	perpetuity
DACW27-3-85-026	Commonwealth of Kentucky, Transportation Cabinet	Road	perpetuity
DACW27-3-85-082	Lester Bowling	Barn	perpetuity
DACW27-3-86-077	Hayes Lewis	Place fill material	perpetuity
DACW27-3-86-092	A. B. Holliday	Garage	perpetuity
DACW27-3-86-161	Roy Gilbert	Softball field, backstop, fence, and basketball court	perpetuity
DACW27-3-87-076	A. B. Holliday	Fill material	perpetuity
DACW27-3-87-187	City of Hyden, Kentucky	Wastewater storage lagoon and sewer line	perpetuity
DACW27-3-88-031	Lewis Health Care Facility, Inc.	Place fill material, flumes	perpetuity
DACW27-3-88-290	Wilma Wooton	Inground swimming pool and fence	perpetuity
DACW27-3-89-051	Robert M. Muncy	Waterline	perpetuity
DACW27-9-89-093	City of Hyden, Kentucky	City park	perpetuity
DACW27-9-90-200	Robert Napier	Place fill material	perpetuity
DACW27-9-93-062	City of Hyden, Kentucky	Basketball court	perpetuity
DACW27-9-93-065	Victory Mountain Grace Brethren Chapel	Septic line	perpetuity
DACW27-9-94-056	City of Hyden, Kentucky	Place fill material	perpetuity
DACW27-9-95-082	Harold Kemper	Place fill material	perpetuity
DACW27-9-96-012	City of Hazard, Kentucky	Water line and maintenance road	perpetuity
DACW27-9-96-048	Ted Browning	Pond	perpetuity
DACW27-9-96-075	Bill Spicer	Access road	perpetuity
DACW27-9-96-083	Hayes Lewis	Place fill material	perpetuity
DACW27-9-96-093	Veronica Gilbert	Removal of underbrush and shrubs	perpetuity
DACW27-9-97-003	Betty Coots	Access road	perpetuity
DACW27-9-97-030	Hayes Lewis	Place fill material	perpetuity
DACW27-9-97-049	Johnny Baker	Place fill material	perpetuity

DACW27-9-98-007	City of Hyden, Kentucky	Sanitary sewer system extension	perpetuity
DACW27-9-98-033	Kiesha Couch	Place fill material	perpetuity
DACW27-9-99-003	Lonnie Hendrix	Place fill material	perpetuity
DACW27-9-99-011	Doug Turner Logging	Logging access road	perpetuity
DACW27-9-01-049	City of Hyden, Kentucky	Parking structure and road	perpetuity
DACW27-9-02-030	Hyden-Leslie County Water District	Waterlines	perpetuity
DACW27-9-03-053	Celeste M. Joseph	Place fill material	perpetuity
DACW27-9-05-448	Hayes Lewis	Place fill material	perpetuity
DACW27-9-06-323	Confluence Baptist Church	Gravel driveway and parking area	perpetuity
DACW27-9-07-199	City of Hyden, Kentucky	Skateboard park	perpetuity
DACW27-9-08-216	Lonnie Fee	Stone barrier to mitigate soil erosion	perpetuity
DACW27-9-15-147	Lisa D. Morgan	Erosion control wall	perpetuity

2.20 PERTINENT PUBLIC LAWS

Revision of the Buckhorn Lake Master Plan will achieve compliance with all applicable environmental laws and regulations, described below, upon coordination of this Master Plan and Environmental Assessment (EA) with appropriate agencies, organizations, and individuals for their review and comments. Implementation of any potential future projects in accordance with the revised Master Plan (including future modifications to existing infrastructure or new features) will undergo separate environmental review and would not commence until the proposed actions achieve compliance with the applicable environmental laws and regulations. Listed below are several key public laws that are most frequently referenced in planning and operations documents. Refer to Appendix C for a more comprehensive listing:

- a. National Historic Preservation Act of 1966, Pub. L. No. 89-665, 80 Stat. 915 (codified as amended at 54 U.S.C. §§ 300100-300708), states a policy of preserving, restoring and maintaining cultural resources and requires that federal agencies take into account the effect any undertaking may have on sites that may be eligible for inclusion on the National Register of Historic Places.
- b. Archaeological and Historic Preservation Act of 1974, Pub. L. No. 93-291, 88 Stat. 174, which amended the Reservoir Salvage Act of 1960, Pub. L. No. 86-532, 74 Stat. 220 (codified as amended at 54 U.S.C § 312501, et seq.), provides for the preservation of historical and archaeological data that might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal construction projects.
- c. Archeological Resources Protection Act of 1979 Pub. L. No. 96-95, 93 Stat. 721 (codified as amended at 16 U.S.C. §§ 470aa-470mm), protects archaeological resources and sites that are on public and Indian lands and fosters increased cooperation and exchange of information between governmental authorities, the professional community, and private individuals.

- d. American Indian Religious Freedom Act, Pub. L. No. 95-341, 92 Stat. 469 (codified as amended at 42 U.S.C. § 1996), requires consultation with affected tribes, groups or individuals regarding appropriate action for project effects upon sacred sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rights important to the practice of Native American religion.
- e. Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, 48 FR 44716 (September 29, 1983) are intended to provide technical advice about archeological and historic preservation activities and methods. These standards and guidelines are not regulatory and do not set or interpret agency policy.
- f. Native American Graves Protection and Repatriation Act, Pub. L. No. 101-601, 104 Stat. 3048 (codified as amended at 25 U.S.C. § 3001, et seq.) requires Federal agencies and museums to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collection. The Act requires repatriation, on request, to the culturally affiliated tribes and establishes a grant program within the Department of the Interior to assist tribes in repatriation and to assist museums in preparing the inventories and collections summaries.
- g. Curation of Federally-Owned and Administered Archeological Collections, (36 CFR Part 79) governs the Federal Archeology Program that establishes definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records, recovered under the authority of the Antiquities Act of 1906 (codified as amended at 54 U.S.C. §§ 320301-320303), the Reservoir Salvage Act of 1960, a section of the National Historic Preservation Act of 1966 or the Archaeological Resources Protection Act of 1979.
- h. The Religious Freedom Restoration Act of 1993, Publ. L. No. 103-141, 107 Stat. 1488 (codified as amended at 42 U.S.C. §§ 2000bb-2000bb-4), guarantees application of the compelling interest test in all cases where free exercise of religion is substantially burdened provides a claim or defense to persons whose religious exercise is substantially burdened by government. The compelling interest test, as set forth in prior Federal court rulings is a workable test for striking sensible balances between religious liberty and competing prior governmental interests.
- i. Executive Order 13007, Indian Sacred Sites, dated 24 May 1996 (61 FR 26771) orders Executive branch agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate the agency shall maintain the confidentiality of sacred sites.
- j. Section 208 of the Water Resources Development Act of 2000, Pub. L. No. 106-541, 114 Stat. 2572, authorizes the Department of the Army to rebury Native American human remains that were discovered on Civil Works project lands and have been rightfully claimed by a tribe on those lands.
- k. Executive Order 13287, Preserve America, dated 4 March 2003 states it is the policy of the Federal Government to provide leadership in preserving America's heritage by actively

advancing the protection, enhancement, and contemporary use of historic properties owned by the Federal Government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.

- l. Section 4 of the Flood Control Act of 1944, Pub. L. No. 78-534, 58 Stat. 887 (codified as amended at 16 U.S.C. § 460d), 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.
- m. The Fish and Wildlife Coordination Act of 1958, Pub. L. No. 85-624, 72 Stat. 563 (codified as amended at 16 U.S.C. § 662 (c), et seq.), 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.
- n. Public Law 86-717, 74 Stat. 817, an act promoting forest conservation, provides for the protection of forest and other vegetative cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers.
- a. The Federal Water Project Recreation Act, Public Law No. 89-72, 79 Stat. 213 (1965), reaffirms the traditional policy of USACE to encourage non-Federal participation in the administration of recreation and fish and wildlife enhancement opportunities at USACE projects and sets standards for cost sharing of financial responsibility for separable costs of a project allocated to recreation and fish and wildlife enhancement for projects completed after 1965.
- b. The National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. § 4321, et seq.) (NEPA), sets forth the national policy “to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain 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 authorizes and directs 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 set forth in NEPA. Section 102 requires consideration of environmental impacts associated with Federal actions. Section 101 requires the Federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony and to:
 - Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
 - Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
 - Attain the widest range of beneficial uses of the environment without degradation risk to health or safety or other undesirable and unintended consequences.
 - Preserve important historic, cultural, and natural aspects of our national heritage and maintain wherever possible an environment which supports diversity and variety of individual choice.

- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

CHAPTER 3 - RESOURCE OBJECTIVES

3.1 MASTER PLAN VISION

USACE's vision for the on-going management of the land, water, and recreational resources of Buckhorn Lake is to protect and improve the assets that currently draw users to the Lake, conserve the Lake's natural and cultural resources, and create more sustainable practices throughout the lake operations.

This chapter sets forth goals and objectives necessary to achieve USACE's vision for the future of Buckhorn Lake. In the context of this Master Plan, "goals" express the overall desired end state of the Master Plan; whereas, resource "objectives" are specific task-oriented actions necessary to achieve the overall Master Plan goals. The Master Plan resource objectives will be used as the basis for a future update of the OMP, which is the strategic implementation plan for the Master Plan.

3.1.1 Resource Goals

The following statements, as set forth in Chapter 3 of EP 1130-2-550, express the goals for the Buckhorn Lake Master Plan:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and suitabilities, 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 (EOPs) as follows:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all USACE activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the USACE, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic, and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

3.1.2 Resource Objectives

Resource objectives are 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 Louisville District, Buckhorn Lake Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, USACE EOPs, and applicable national performance measures. They are consistent with authorized Project purposes, Federal laws and directives, regional needs, resource capabilities, and consider public input. Recreational and natural resource carrying capacities were also accounted for during development of the objectives found in this Master Plan. Regional and State planning documents, including 2019 Kentucky SCORP, were also considered when developing objectives.

The objectives in this Master Plan provide Project benefits, meet public needs, and foster environmental sustainability for Buckhorn Lake to the greatest extent possible. They include recreation objectives, natural resource management objectives, cultural resource management objectives, general management objectives, and education and outreach objectives, which are listed in Table 22, Table 23, Table 24, Table 25, and Table 26, respectively.

Table 22. Recreation objectives for the Buckhorn Lake master plan update.

Recreation Objectives	Goals				
	A	B	C	D	E
Improve recreational facilities to enhance visitor experiences and accommodate new recreational user groups at the lake project. Identify areas within high recreational zones that can be improved to better utilize the resource while also serving the public.	X		X	X	X
Create new recreational opportunities through sustainable practices; constructing new or additional recreational infrastructure to support the changing needs of community.	X		X	X	X
Improve universal access to recreational facilities.	X		X	X	X
Monitor water quality in accordance with Kentucky Division of Water guidelines for harmful algae blooms (HAB) and E. coli warnings to best protect public safety.	X	X			X
Maintain and improve hunting and fishing opportunities through prescribed burning, food plots, field rotations, invasive species removal, wetland restoration, fish stocking and habitat improvement, public access, and habitat management.	X	X		X	X
Maintain and improve trail systems across the lake project for hikers, backpackers, horseback riders, cyclists, and runners. Utilize signage to create a cohesive and easy to interpret trail system. Continue to cooperate and partner with local volunteer groups such as Girl Scouts, Boy Scouts, Pathfinders, JROTC, FFA.	X	X		X	X

Maintain and improve campground infrastructure to best serve the public and compliment the natural resources at the project. Improve existing structures to incorporate cost saving measures such as improved heating, lighting, waste removal and water usage.	X	X		X	X
Continue to partner with local recreational groups and consider new partnerships as they become available to continue to enhance recreational opportunities at the Project.	X	X	X	X	X
Evaluate and monitor outdoor recreation trends to identify needs for new or improved recreation facilities and increased public access on USACE-managed public lands and water.	X		X		
Improve and modernize day-use and campground facilities through addition and repair of amenities, including, but not limited to road improvements, sewer hook ups, increased electrical service, concrete or asphalt recreational vehicle pads, picnic sites, wireless internet access, amphitheaters, restrooms, trails, pavilions, and improved park entrances.	X		X		
Optimize resources, labor, funds, volunteer services, and partnerships for management, protection and restoration of recreational facilities, trails and parks.		X			X
Identify current public use levels and impacts from potential overuse and crowding and seek ways to mitigate negative effects.	X		X		
Formulate a long-term plan for the renovation of aging facilities and infrastructure.	X				
Identify and differentiate accessibility at winter and summer pool and develop plans to improve access and recreational availability.	X		X	X	

Table 23. Natural resource management objectives for the Buckhorn Lake masterplan update.

Natural Resource Management Objectives	Goals				
	A	B	C	D	E
Manage and improve specific habitat areas for key species groups such as deer, turkey, elk and Bald Eagles through farming and forestry practices as well as managing access during key times of the year.	X	X			X
Continue to work with Kentucky Fish & Wildlife to manage and monitor specific wildlife programs such as the Buckhorn Lake WMA and garden plot management program. Continue to work with various partnering state and federal agencies to monitor pest species such as the Gypsy Moth.	X	X		X	X
Continue to manage and improve forest and grasslands by controlling invasive plant species such as kudzu, honeysuckle, and autumn olive.	X	X			X
Continue to work with the Kentucky Department of Fish & Wildlife Resources to manage a sustainable and ecologically sound fish population at the lake. Create or improve habitat for feeding and spawning areas and monitor potential invasive species migration.	X	X	X		X

In all construction or restoration projects, continue to comply fully with NEPA laws and reporting requirements to ensure the continued health and preservation of project lands.	X	X		X	X
Ensure project lands are managed with preservation and conservation of natural habitat, natural aesthetics, and recreational open space values as primary objectives.	X	X	X	X	X
Actively manage and conserve special status species by implementing ecosystem management principles such as native species restoration.	X	X	X	X	X
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.	X	X		X	X
Manage activities on Project lands and water to avoid negative effects to public water supply, ensuring public health and safety.	X	X			X

Table 24. Cultural resource management objectives for the Buckhorn Lake masterplan update.

Cultural Resource Management Objectives	Goals				
	A	B	C	D	E
Protect and manage culturally and historically significant sites through sustainable management practices.	X	X			X
Ensure that all new construction and excavation is done in accordance with applicable laws (Section 106 of the National Historic Preservation Act, the Archaeologist Resources Protection Act, and the Native American Graves Protection and Repatriation Act).		X		X	X
Actively maintain compliance with P.L. 101-601, Native American Graves Protection and Repatriation Act (16 November) 1990) that requires Federal Agencies to return Native American human remains and items of cultural patrimony to their respective peoples.		X		X	X

Table 25. General management objectives for the Buckhorn Lake masterplan update.

General Management Objectives	Goals				
	A	B	C	D	E
Continue to work with and support local partner groups who work towards promoting recreational opportunities and the preservation of the natural resources within the Project boundaries. Continue to be involved in regional recreational or environmental initiatives that support the USACE missions and have the potential to affect the project. Create partnership agreements such as an MOU with groups to create stronger ties to projects.	X	X	X	X	X
Develop a successful volunteer program that supports the community and the project. Create volunteer partnerships with local groups and utilize national programs to best serve the Project's needs while providing unique service opportunities to others.	X		X	X	X

Create a plan to manage the Project's aging infrastructure through the implementation of more sustainable practices and materials. Design and implement management plans to monitor areas for age and use degradation to best manage the Project's assets.	X		X	X	
Improve project security through increased patrols, partnerships with local law enforcement and the expansion of the security camera system at the Project.	X	X		X	X
Identify, evaluate, and provide to the extent possible increased opportunities for education and outreach.	X	X	X	X	X
Continue to promote volunteer events and opportunities to preserve the unique scenic beauty and aesthetics of the lake.	X			X	X

Table 26. Education and outreach objectives for the Buckhorn Lake masterplan update.

Education and Outreach Objectives	Goals				
	A	B	C	D	E
Continue to seek new opportunities to engage the public in educational programming through direct and non-direct means including wayside interpretative displays, informational bulletin boards, billboards, interpretative talks and guided programming.	X		X	X	X
Collaborate within the local community through schools, libraries, community centers, festivals, and large sporting events to help promote natural resources, recreational opportunities, and water safety.	X		X	X	X
Maintain and improve the educational displays at the Operations Office for public use and education. Highlighting recreational opportunities, local history, area natural resources, water safety and the USACE flood control mission through the use of interpretation. Utilize the facility for day-to-day guests seeking general park information as well as educational programming.	X		X	X	
Continue to seek ways to serve visitors, update facility and reach new visitors with public outreach and social media presence.	X	X	X	X	X
Increase public awareness of campground budgets, special use permits or other authorizations required for special activities, organized special events, and commercial activities on public lands and waters of the lake.	X	X	X	X	X

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

The purpose of this Master Plan is to guide the comprehensive management and development of recreation, natural, and cultural resources at the Project and define USACE responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop lands, waters, and resources. An important aspect in managing these goals is properly defining the appropriate use for lands and water surface consistent with their congressionally authorized purpose.

4.1 LAND ALLOCATION

All lands at USACE water resource development projects are allocated by USACE into one of four categories listed below. In accordance with Engineer Pamphlet (EP) 1130-2-550, land allocations identify the authorized purposes for which USACE lands were acquired. There are four possible categories of allocation identified in USACE regulations including Operations, Recreation, Fish and Wildlife, and Mitigation. The lands at Buckhorn Lake were allocated to Operations, Recreation, and Fish and Wildlife. Figure 13 was included in the 1971 Master Plan and roughly shows the lands that were obtained for operations, recreation (public use area), and fish and wildlife (lands licensed to the Kentucky Department of Fish and Wildlife Resources). The following section describes all four types of allocations:

- **Operations.** (i.e., flood control, hydropower, etc.) Lands acquired for the congressionally authorized purpose of constructing and operating the project. Most project lands are included in this allocation.
- **Recreation.** Lands acquired specifically for the congressionally authorized purpose of recreation. These are referred to as separable recreation lands. Recreation lands in this allocation can only be given a land classification of "Recreation."
- **Fish and Wildlife.** Lands acquired specifically for the congressionally authorized purpose of fish and wildlife management. These are referred to as separable fish and wildlife lands. Lands under this allocation can only be given a land classification of "Wildlife Management."
- **Mitigation.** Lands acquired or designated specifically for the congressionally authorized purpose of offsetting losses associated with development of the project. These are referred to as separable mitigation lands. Lands under this allocation can only be given a land classification of "Mitigation." No lands at Buckhorn Lake are allocated to Mitigation.

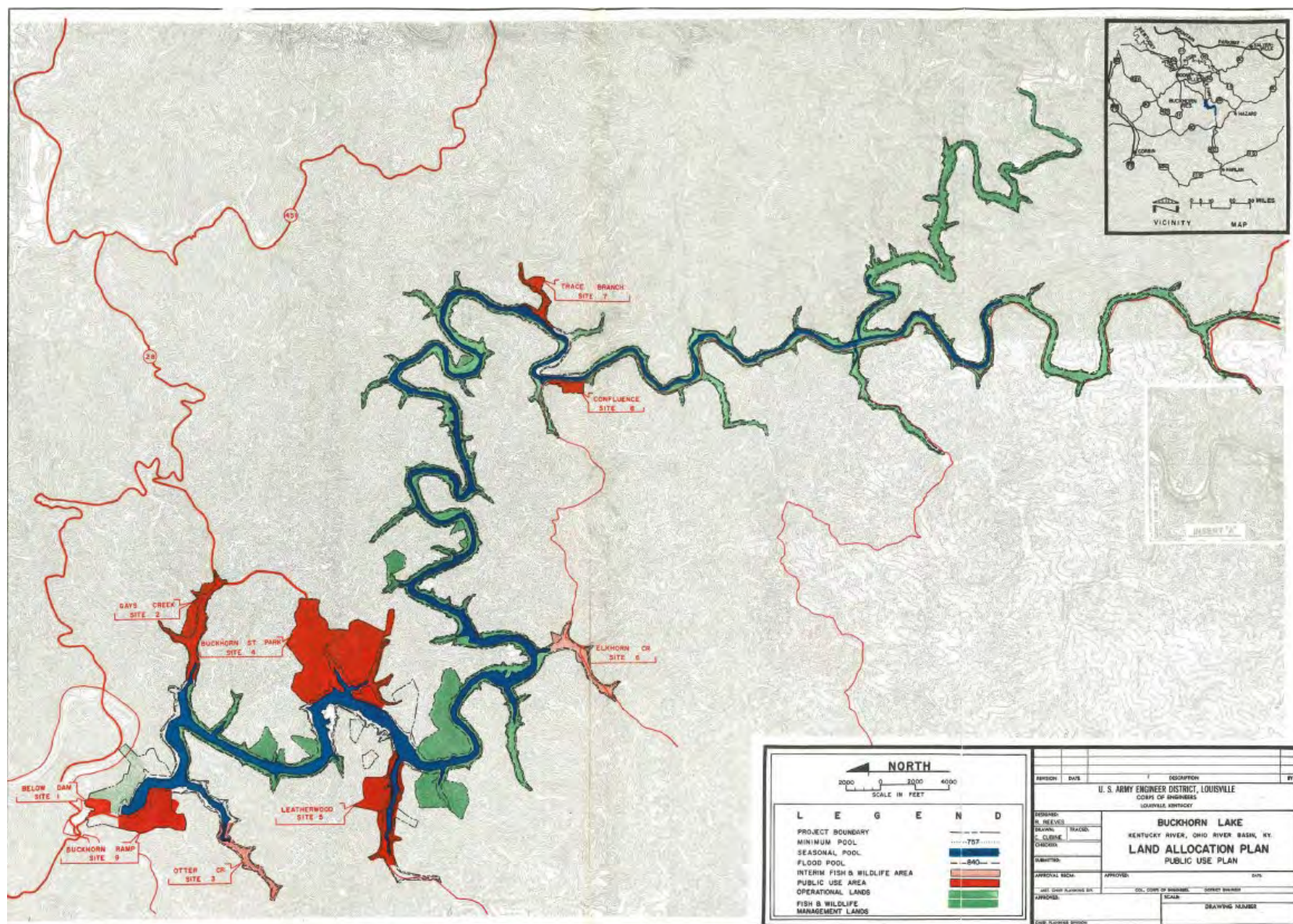


Figure 13. 1971 land allocations of the Buckhorn Lake Project.

4.2 LAND CLASSIFICATION

The objective of classifying projects lands and waters is to identify the primary use for which project lands are managed. Land and water 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. Project lands are zoned for development and resource management consistent with authorized Project purposes, NEPA, and other Federal laws.

Under prior USACE policy, the term “land allocation” was used in master plans to describe how lands were to be managed. Under EP 1130-2-550, Change 05 (2013), the term “land allocation” now refers to the congressionally authorized purpose for which the project lands were acquired, and the term “land classification” is now used in USACE master plans to indicate the primary use for which project lands are managed. Appendix B and Figure 13, above, show the former land allocations map from the 1971 Master Plan that current guidance has rendered obsolete. This Master Plan realigns land allocation and classification to meet current standards and uses “land classifications” to demonstrate the primary use for which project lands are managed. Figure 14, below, shows current land classifications at the Buckhorn Lake Project.

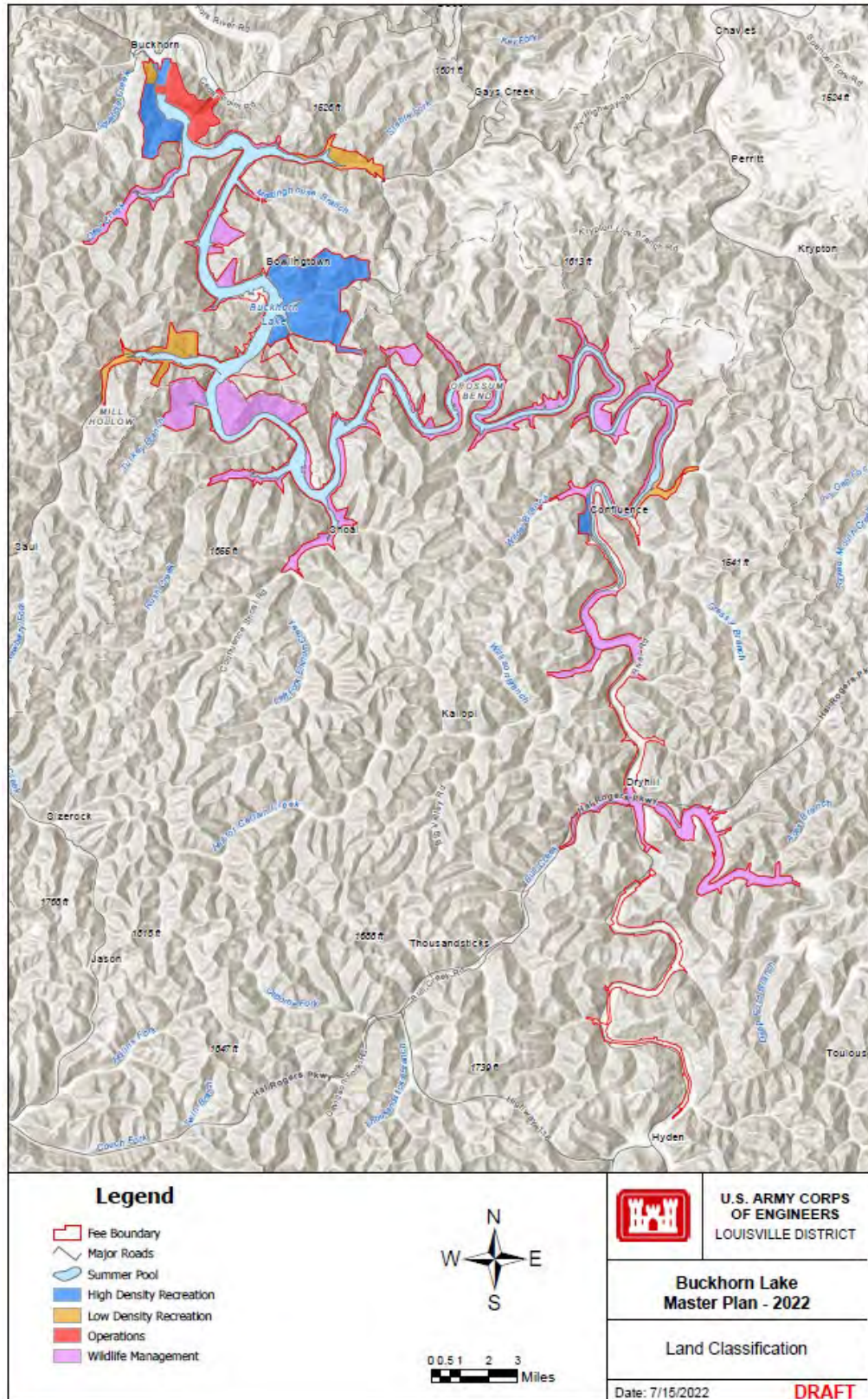


Figure 14. 2022 land classifications for the Buckhorn Lake Project.

Current USACE guidance further defines land classifications to provide for development and resource management consistent with authorized purposes and other Federal laws. Currently, six categories of classification are identified in USACE regulations:

1. Project Operations
2. High-Density Recreation
3. Mitigation
4. Environmentally Sensitive Areas
5. Multiple Resource Managed Lands
6. Water Surface

The classification process refines the land allocations to fully utilize project lands and considers public desires, legislative authority, regional and project specific resource requirements, and suitability. Land classification indicates the primary use for which project lands are managed. No major changes to the type of land management activities have been pursued at the Project; however, the system for classification has been realigned to meet current standards.

The land classifications, as defined below, represent the future of land use at the Buckhorn Lake Project. The planning team, in conjunction with project staff and stakeholders, identified the appropriate classifications for land surrounding the project based on resources, demand projections, demand trends, and capacity needs. These classifications, which are based on existing land use and zoning, should be considered future land use areas for the next 20 to 30 years. Thus, the lands were classified to retain current land use and represent ideal future land uses throughout the project.

Additionally, the land and water classification acreages were derived using geographic information system (GIS) technology that was not available for the 1971 Master Plan. These totals do not reflect the official land acquisition records. Because there have been land disposals (sales), which were described in Section 2.19.4, acreages represented as land classification and the resulting acreage totals will differ from official land acquisition and allocation (Figure 14).

A map delineating Project lands and waters into each of the categories is provided in Figure 14. Table 27 juxtaposes the land classifications acreages in this Master Plan with the 1971 Master Plan land allocations acreages.

Table 27. Land classifications in 2022 masterplan and 1971 masterplan.

CLASSIFICATION	2022 Master Plan Acres	1971 Master Plan Acres
LAND		
Project Operations	165.6	165.6
Public Use Access*	-	1,046.3
High-Density Recreation	752.5	-
Mitigation	0	0
Environmentally Sensitive Areas (ESAs)	28.2	-
Multiple Resource Management Lands: Low-Density Recreation	287.6	-
Multiple Resource Management Lands: Wildlife Management	2,374.0	-
Multiple Resource Management Lands: Vegetative Management	0	-
Multiple Resource Management Lands: Future/Inactive Recreation	0	-
Fish and Wildlife*	-	2,396.0
WATER		
Designated No-Wake**	91.86	-
Restricted**	6.21	-
Open Recreation** (does not include Designated No-Ski)	563.27	-
Designated No-Ski	541.96	-
Fish and Wildlife Sanctuary**	0	-

*Classifications are now obsolete based on ER 1130-2-550 and EP 1130-2-550

**Water zoning was established in the 1971 Master Plan, but acreages were not calculated

Please note, the water zone acreages in the table above were developed using summer pool elevation, which was derived from digitizing elevation lines on US Geographic Survey (USGS) topographic maps, which can have slight inaccuracies. Therefore, the pool acres as presented in Table 1 in Section 1.4 should be considered estimations and may not reflect the acres presented in the table above.

4.3 CURRENT LAND AND WATER CLASSIFICATIONS

4.3.1 Project Operations

This classification includes lands required for the dam and associated structures, administrative offices, maintenance compounds, and other areas that are used to operate and maintain Buckhorn Lake. Where compatible with operational requirements, Project Operations' lands may be used for wildlife habitat management and recreational use. Regardless of any limited recreation use (for example, public fishing access within the tailwater still basin) allowed on these lands, the primary classification of Project Operations will take precedence over these uses.

There are approximately 165.6 acres with this land classification at Buckhorn Lake.

4.3.2 High-Density Recreation

These lands are designated for intensive levels of recreational use to accommodate and support the recreational needs and desires of visitors. They include lands on which existing or planned major recreational facilities are located and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use. In general, any uses of these lands that interfere with public enjoyment of recreation opportunities are prohibited. Low-density recreation and wildlife management activities compatible with intensive recreation use are acceptable, especially on an interim basis. No agricultural uses are permitted on those lands except on an interim basis for maintenance of scenic or open space values. Permits, licenses, and easements are not issued for non-compatible manmade intrusions such as pipelines; overhead transmission lines; and non-Project roads, except as warranted by the public interest and where no viable alternative area or route is available.

There are approximately 752.5 acres with this land classification at Buckhorn Lake.

4.3.3 Mitigation

This classification is used only for lands allocated for mitigation for the purpose of offsetting losses associated with the development of the Project.

There are no lands at the Buckhorn Lake Project with this land classification.

4.3.4 Environmentally Sensitive Areas

Environmentally Sensitive Areas are areas where scientific, ecological, cultural, and aesthetic features have been identified. At Buckhorn Lake, several distinct areas have been classified as Environmentally Sensitive Areas (ESAs) for the protection of sensitive wetland areas. Development of public use on lands within this classification is normally prohibited to ensure that these sensitive areas are not adversely impacted. Agricultural uses are not permitted on lands with this classification. Each of these areas are discussed in Section 5.5 of this Master Plan and illustrated on the maps in Appendix B.

There are approximately 28.2 acres with this land classification at Buckhorn Lake.

4.3.5 Multiple Resource Management Lands

This classification is divided into four sub-classifications identified as: Low-Density Recreation, Wildlife Management, Vegetative Management, and Future or Inactive Recreation Areas. A primary sub classification that reflects the dominant use of the land must be designated, understanding that other compatible uses may also occur on these lands (i.e., a trail through an area designated as Wildlife Management). Typically, Multiple Resource Management Lands support only passive, non-intrusive uses with very limited facilities or infrastructure.

There are approximately 2,661.6 acres classified as Multiple Resource Management Lands at Buckhorn Lake.

- **Low-Density Recreation** (287.6 acres). These lands are designated for dispersed and/or low-impact recreation use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as walking, fishing, hunting, or nature study. Site-specific, low-impact activities such as primitive camping and picnicking are allowed. Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings. Manmade intrusions, including power lines, non-Project roads, and water and sewer pipelines, may be permitted under conditions that minimize adverse effects on the natural environment. Vegetation management, including agricultural activities that do not greatly alter the natural character of the environment, are permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Hunting and fishing are allowed pursuant to tribal or state fish and wildlife management regulations where these activities are not in conflict with the safety of visitors and Project personnel.
- **Wildlife Management** (2,374.0 acres). This land classification applies to those lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels, most of which are located within the flood pool of the lake. Passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation are compatible with this classification unless restrictions are necessary to protect sensitive species or to promote public safety.
- **Vegetative Management** (0 acres) 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.
- **Future or Inactive Recreation Areas** (0 acres). 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.

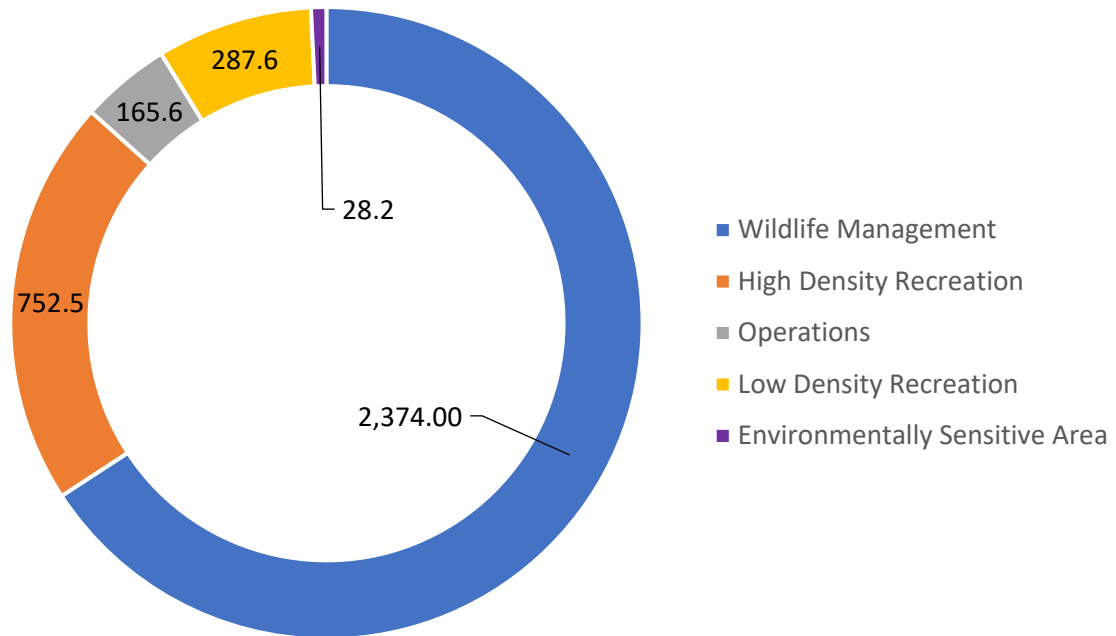


Figure 15. Land classifications for the Buckhorn Lake Project.

4.3.6 Water Surface

The 1971 Master Plan included a water use management plan to minimize conflicts between water skiing, boating, fishing, swimming, and waterfowl refuge. USACE regulations specify four possible sub-categories of water surface classification: Restricted, Designated No-Wake, Restricted, Open Recreation, and Fish and Wildlife Sanctuary. 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 Water Surface Classification map can be found in Appendix B of this Plan, and acreages of classifications are found in Table 28. The four sub-categories of water surface classification are derived from a total summer pool area of 1,213 acres*:

- **Designated No-Wake** (91.86 acres*). Water areas are designated for operation at no-wake speed to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.
- **Restricted** (6.21 acres*) Restricted water surface includes those areas where recreational boating is prohibited or restricted for Project operations, safety, and security purposes. This also includes public beaches.
- **Open Recreation** (563.27 acres [does not include Designated No-Ski]*). Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses most of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at boat ramps and marinas, that navigational hazards may be present at any time and at any location in these

areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy.

- **Designated No-Ski** (541.96 acres). Water areas that are treated as a subset of Open Recreation, but where water skiing is prohibited for public safety. At Buckhorn Lake, 541.96 acres of the total 1,105.23 acres of Open Recreation water surface is Designated No-Ski.
- **Fish and Wildlife Sanctuary** (0 acres). This Water Surface zoning designation applies to areas that have annual or seasonal restrictions to protect fish and wildlife species during periods of migrations, resting, feeding, nesting, and/or spawning. There are no Fish and Wildlife water surface classifications at Buckhorn Lake.

***Note** – The discrepancy between the total of the four sub-categories of water surface classifications and the total summer pool area is due to the use of different data-gathering techniques.

Table 28. Water surface classification at Buckhorn Lake.

Water Surface Classification	Acres
Designated No-Wake	91.86
Restricted	6.21
Open Recreation	563.27 (does not include Designated No-Ski)
Designated No-Ski	541.96
Fish and Wildlife Sanctuary	0



Figure 16. Water zoning at Buckhorn Lake.

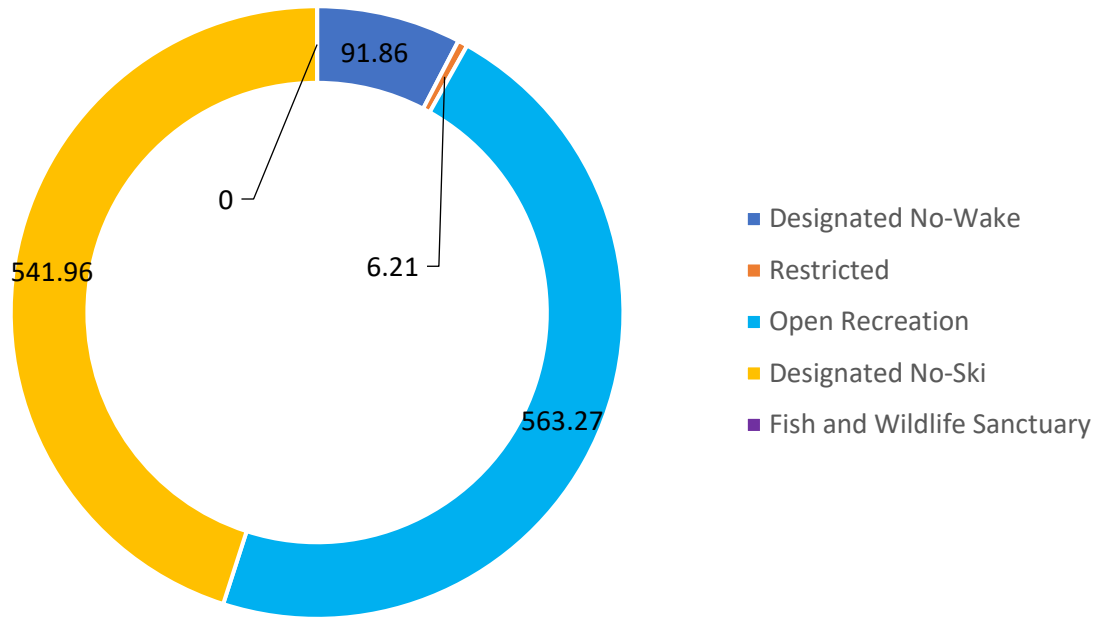


Figure 17. Water surface distribution for Buckhorn Lake.

4.3.7 Project Easement Lands

Perpetual easements were acquired to support Project requirements. Currently, 906.51 acres of flowage easements occur at Buckhorn Lake across two counties. Currently, no road easements occur at the Buckhorn Lake Project. Additional information regarding easements at the Buckhorn Lake Project can be found in Section 2.19.1 and in Tables 18 and 19.

CHAPTER 5 - RESOURCE PLAN

The resource plan describes, in broad terms, how Project lands will be managed according to the established land classifications. Each classification is discussed in terms of anticipated public use and resource stewardship needs.

5.1 MANAGEMENT BY CLASSIFICATION

This chapter describes how Project lands will be managed using the Master Plan as guidance. The classifications that exist at Buckhorn Lake are Project Operations, High-Density Recreation, Environmentally Sensitive Areas, Future Recreation, and Multiple Resource Management Lands, which consist of Low-Density Recreation, Wildlife Management and Vegetative Management. The Water Surface is divided into four classifications: Designated No-Wake, Restricted, Open Recreation, Designated No-Ski (a subset of Open Recreation), and Fish and Wildlife Sanctuary. Seven distinct project site areas are identified at the Buckhorn Lake Project (Table 29). The Resource Plan describes how the project site areas under these various classifications will be managed in broad terms.

Table 29. Land classifications of recreation areas.

Project Site Area	Land Class	Acres	Total Developed Recreation Acreage	Total Acres
Damsite	Operations High-Density Recreation Wildlife Management ESA	143.36 148.84 90.48 0.22	292.2	382.9
Tailwater	Operations High-Density Recreation Low-Density Recreation	22.21 23.6 19.82	65.63	65.63
Leatherwood	Low-Density Recreation ESA	137.4 7.36	137.4	144.76
Trace Branch	Low-Density Recreation Wildlife Management	39.81 0.84	39.81	40.65
Confluence	High-Density Recreation Wildlife Management	29.37 18.75	29.37	48.12
Buckhorn Lake State Resort Park	High-Density Recreation	547.86	547.86	547.86
Eagles Landing	Low-Density Recreation Wildlife Management	87.4 13.74	87.4	101.14

Further details for managing these lands will be included in the Operational Management Plan (OMP) for the Project, as revised. Management tasks described in the OMP will support the resource objectives, land classifications, and resource plan set forth in this Master Plan. While the following sections address broad plans for the land classifications listed above, at all Project lands the USACE will strive to meet universal Project goals, which include taking proactive measures to enhance universal access to lands and facilities, improving safety for visitors, and identifying and eliminating

encroachments and trespassing. In addition, USACE will seek to identify important “unofficial” recreational activities and sites such as undeveloped shoreline fishing areas, swimming areas outside of developed beaches, or other preferred areas used by recreationists into the future. As development occurs in the future, USACE will seek to protect these areas and may require mitigation for development actions that would negatively impact these sites. As these sites are identified, they will be included in future updates to the Master Plan and may also be included in the OMP.

5.2 PROJECT OPERATIONS



Buckhorn Lake Dam

This category includes those lands required for operation of the dam, spillway, and outlet works at the Project (Figure 18). The Buckhorn Lake Project contains 165.6 acres of land with this classification. The management plan for these areas is to continue providing physical security necessary to insure continued operations of the dam and related facilities. Public access to these areas is often restricted.



Figure 18. Operations land at the Buckhorn Lake Project.

5.3 HIGH-DENSITY RECREATION

The Buckhorn Lake Project has 752.5 acres classified as High-Density Recreation. Lands developed for intensive recreational activities for the visiting public include campgrounds, day-use areas, marinas, resorts, and commercial concessions. Facilities on lands classified as High-Density Recreation should be able to accommodate the recreational needs of visitors in concentrated numbers, while also offering ample open space for other recreational activities.

In general, any uses of these lands that interfere with public enjoyment of recreation opportunities are prohibited. Emphasis will be placed on improvements that align with the resource objectives from Chapter 3 such as managing the Project's infrastructure through the implementation of more sustainable practices and materials and maintaining and improving facilities across the lake project.

The seven Project Site Areas (PSAs) at Buckhorn Lake are detailed below. Future recommendations are contingent upon budget constraints and future recreational needs and trends. Figure 19 shows the locations of the PSAs at the Project. The PSAs within the High-Density Recreation classification area are grouped into the following categories, based on management responsibility and types of recreational facilities available at each:

- USACE-Managed Facilities (Damsite, Tailwater, Leatherwood, Trace Branch, Confluence)
- Outgranted Multipurpose Areas managed by the Kentucky Department of Parks (State Park, Eagle's Landing)



Figure 19. Project Site Areas (PSAs) at the Buckhorn Lake Project.

USACE-MANAGED FACILITIES

USACE provides maintenance within these campgrounds and associated multipurpose areas and assures they are being managed in accordance with the resource objectives identified in Chapter 3. Multipurpose areas provide visitors with a variety of recreational opportunities such as camping, swimming, picnicking, and access to playgrounds. The goal is to provide visitors with recreational experiences while maintaining the functionality of operations and environmental stewardship. Individual USACE-managed multipurpose areas are described below.



Tailwater recreation area campground.



Cedar Point boat-in primitive campground.



Primitive camp sites at the Tailwater Recreation Area Campground.

Buckhorn Lake Damsite

The Damsite recreation area consists of 382.9 acres of which 143.36 acres are classified as operations; 148.84 acres are developed for high-density recreation; 90.48 acres are classified as wildlife management; and 0.22 acres are classified as Environmentally Sensitive Areas (ESA) . Featured within the Damsite is the Cedar Point Boat-in Class C Campground, which offers 10 primitive campsites (Figure 20). Visitors can enjoy the boat ramp, horseshoe pit, playground, and campground, which can only be accessed via boat.

Buckhorn Lake Tailwater

The Tailwater recreation area consists of 65.63 acres of which 22.2 acres are classified as operations; 19.82 acres are developed as low-density recreation; and 23.6 acres are developed as high-density recreation. The Tailwater features a Class A campground (Figure 20) offering 28 electric and water campsites, a basketball court, restrooms, a shower house, picnic shelters, a fishing pier and a volleyball court. Also located within the Tailwater area is a Class C campground offering 8-10 primitive campsites (Figure 20).

Near a Class A campground on the bank of the Middle Fork Kentucky River is the Champion River Birch, a tree now declining in health, but was submitted by the Division of Forestry and nationally recognized as the National Champion River Birch (the largest River Birch in the country) by the American Forests National Register of Big Trees on May 22, 2012. The Stillhouse Branch off the Spillway provides visitors with a two-mile Nature Trail and is a registered Kentucky Natural Area by the Kentucky State Nature Preserves Commission.



Champion River Birch tree

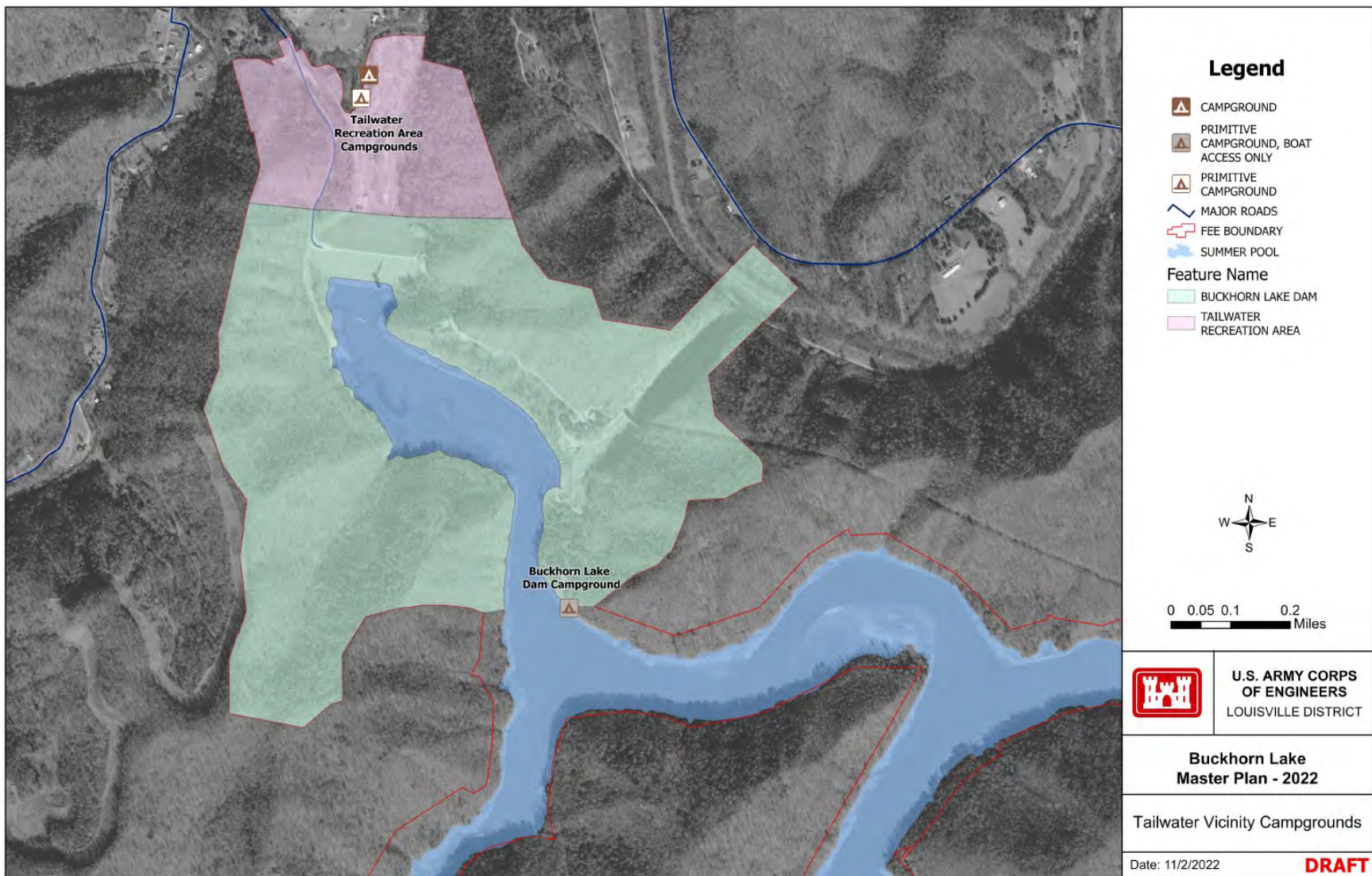


Figure 20. Map of campgrounds in the tailwater vicinity.

Damsite and Tailwater recreation areas Future Recommendations at the Buckhorn Lake Project:

- Upgrade campsites to include replacing gravel with concrete slabs,
- Run new water lines,
- Replace the existing tollhouse,
- Install Wi-Fi and improve internet access,
- Construct a pedestrian walkway / bridge over the Middle Fork of the Kentucky River to the fishermen's trail, and
- Replace one or two picnic shelters that are in disrepair.

Leatherwood

The Leatherwood recreation area consists of 144.76 acres of which 137.4 acres are developed for low-density recreation; and 7.36 acres are classified as ESAs. The area features a boat ramp, picnic shelter with 10 picnic sites, a restroom, a courtesy dock, and a fishing pier.

Leatherwood Recreation Area Future Recommendations at the Buckhorn Lake Project:

- Install a sidewalk for fishing dock access that complies with the Americans with Disabilities Act accessibility standards,
- Install a prefabricated toilet,
- Construct a campground in the open space near the entrance where a horseshoe pit is currently located,
- Seek resources to construct a bridge from Leatherwood to the Kentucky State Resort Park area to encourage vehicle circulation and recreational continuity and improve safety and vehicle access issues, and
- Continue improving fish habitat through the use of artificial and recycled structures.



Leatherwood picnic shelter.



Trace Branch

The Trace Branch recreation area consists of 40.65 acres of which 39.81 acres are developed for low-density recreation; and 0.84 acres are classified as wildlife management. The Trace Branch Recreation Area features a Class A campground offering 28 campsites, a shower house, a picnic shelter with 42 picnic sites, a courtesy dock and a 2-lane boat-launch ramp, a playground, and basketball court. Trace Branch is the area of primary concern for sedimentation issues at the Project, and lake staff remove mud from the area around three times per year.

Trace Branch Campground.

Trace Branch Recreation Area Future Recommendations at the Buckhorn Lake Project:

- Use a pour-in-place rubber mat with a drain to alleviate the need to replace mulch around the playground.
- Replace pavement damaged by removal equipment.

Confluence

The Confluence recreation area consists of 48.12 acres of which 29.37 acres are developed as high-density recreation and 18.75 acres are classified as wildlife management. Visitors can enjoy the boat ramp, a playground, a restroom, a picnic shelter and four picnic sites.

Confluence Recreation Area Future Recommendations at the Buckhorn Lake Project:

- Improve parking lot by resurfacing and restriping,
- Upgrade or replace drinking water fountain, and
- Construct retaining wall to address runoff issues behind the picnic shelter.



Confluence Recreation Area

OUTGRANTED MULTIPURPOSE AREAS

Several areas at Buckhorn Lake are within the High-Density Recreation classification that are leased to the Kentucky Department of Parks (additional detail provided in Section 2.19.5). USACE does not provide any maintenance within any of these locations, but USACE staff can provide support to the managing agency at times. USACE is also required to review requests and ensure compliance with applicable laws and regulations for proposed activities within these leased areas. The goal is to work with USACE partners to assure recreation areas are being managed in accordance with resource objectives identified in Chapter 3.

In addition to working with partners to achieve resource objectives, USACE insures multipurpose areas are being managed in accordance with the terms of the partner's lease or license. The goal is to provide visitors with recreational experiences while maintaining the functionality of operations and environmental stewardship. Individual multipurpose areas are described below.

Buckhorn Lake State Resort Park

The State Park recreation area consists of 547.86 acres, all of which are developed for high-density recreation. This area is leased to the Kentucky Department of Parks. The State Park features a 36-room lodge, 2- and 3-bedroom cottages, a

restaurant, gift shop, picnic

shelters, mini golf, a marina with a 2-lane boat launch ramp, a swimming beach with a beach house, hiking trails, and conference rooms.



Buckhorn Lake State Resort Park Lodge.

Buckhorn Lake State Park Recreation Area Future Recommendations at the Buckhorn Lake Project:

- Update the bathroom, a playground, and the tennis courts.



Eagles Landing Entrance

Eagle's Landing

The Eagle's Landing recreation area consists of 101.14 acres of which 87.4 acres are developed for low-density recreation; and 18.75 acres are classified as wildlife management. This area is leased to the Kentucky Department of Parks. Eagle's Landing features a campground with 46 campsites, a basketball court, a boat ramp with courtesy dock, a picnic shelter with 2 picnic sites, a playground, restrooms, and a shower house. Currently, a second boat ramp at Eagles Landing cannot be accessed due to the accumulation of silt and sediment during winter pool. And during summer pool, the boat ramp is submerged.

Eagle's Landing Recreation Area Future Recommendations at the Buckhorn Lake Project:

- Install Wi-Fi,
- Rebuild the washed-out bridge over Gays Creek, near the primitive campground,
- Find solutions to prevent or respond to the shower house flooding with backwater about once a year,
- Build a trail from Eagles Landing to Cedar Point, which will require easements,
- Expand the playground, and
- Construct a gate shack in the open area near the entrance.

5.4 MITIGATION

Mitigation lands are acquired or designed specifically to minimize adverse effects to USACE lakes. Currently, no lands with this classification are at the Buckhorn Lake Project.

5.5 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Areas (ESAs) are areas where scientific, ecological, cultural, or aesthetic features have been identified (Figure 21). Designation of these lands is not limited to lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act, or other applicable state statutes. But, these areas must also be managed to ensure they are not adversely impacted. Typically, no development, limited development, or no public use practices are utilized 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 parcel or a larger, land classification area.

Defining sensitive areas as part of the master plan process assists with the protection of valuable resources. Many factors contribute to identifying sensitive areas. The sites are mapped and managed by the USACE. Data includes the locations of threatened and endangered species and cultural site locations that are not available to the public. Many species with the greatest conservation need are found on USACE lands and are identified in various conservation plans.



Figure 21. Environmentally sensitive areas at the Buckhorn Lake Project.

The degree of sensitivity varies by location and contributing factors. An area may be available to construct a properly designed hiking trail or actively managed with forest practices like timber stand improvement without negatively impacting the site's sensitivity. Other sites can be very sensitive to human disturbance and need appropriate protection from development. Examples of this degree of sensitivity would involve eagle nests, osprey nests, and heron rookeries. Human activities threaten these animals, especially during active breeding seasons. Buffering of sensitive locations is necessary to protect resources. The buffer size is linked to the ecology of the location. On occasion, multiple sensitive areas may exist within proximity to one another. These areas are often combined into one larger sensitive area. Fragmentation threatens sensitive species, and large block habitats have been identified as sensitive. Many wildlife species that are identified as having significant conservation need are often associated with large contiguous habitats.

The following occurrences on the landscape can contribute to areas being classified as sensitive. Oftentimes, multiple contributors to sensitivity exist in one area.

- Known cultural resources,
- Remnant prairies,
- Wetlands,
- Migratory bird nesting trees,
- Shoreline erosion,
- Aesthetic quality or aesthetic/scenic views,
- Unique wildlife value such as biodiversity or listed species, and
- Corridors between habitats that protect connectivity.

Currently, 28.2 acres at the Buckhorn Lake Project are under the ESA classification. Wetlands are included as ESAs; however, not all wetlands identified by the National Wetlands Inventory are classified as ESA's because they do not constitute significant fish or wildlife habitat due to their small size, limited function, and existing development. It is important to note that a comprehensive wetland inventory has not been completed at the Project, and the exact extent of wetland habitat is unknown. Any future project that could impact wetland habitat would be individually evaluated under NEPA when sufficient plans became available for review.

Areas designated as sensitive can change over time, and continued monitoring through programs like the Multiple Species Inventory and Monitoring program (MSIM) provide valuable information to keep identified sensitive areas current. Using Geographic Information System (GIS) databases that are maintained with separated layers, the dynamic nature of sensitivity can be managed with an up-to-date program. Some areas may be highly sensitive to change, while other areas need prescribed management to remain viable. Management practices may include invasive species control, prescribed fire, or native vegetative plantings. The goal of ESA management is to protect and preserve known areas that contribute to the diversity and health of the Middle Fork Kentucky River Basin Watershed. The program should be beneficial to plants, animals, and people that enjoy the resource.

5.6 MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands are assigned a sub-classification based on the predominant use of the area. However, other compatible uses may occur on these lands without impacting the predominant use. Multiple Resource Management Lands may be assigned to one of four possible sub-classifications: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. No licenses, permits, or easements will be issued for non-compatible manmade intrusion, such as underground or exposed pipelines, cables, overhead transmission lines, or non-Project roads. Management of these lands will focus on maintaining the existing facilities and resources in accordance with the resource objectives outlined in Chapter 3 above.

Approximately 2,661.6 acres at Buckhorn Lake Project are classified as Multiple Resource Management, which is further sub-classified into Low-Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation areas.

5.6.1 Low-Density Recreation

Low-density refers to lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, hiking, wildlife viewing, etc.). Natural conditions preclude intensive public use development because extensive alteration of natural systems would be required. Difficult access also is a factor indicating low-density use as most appropriate for these lands. Buckhorn Lake has 287.6 acres under this classification.

This classification may be appropriate when a conflict exists between public use and wildlife habitat. Private or long-term exclusive group use of these lands will not be permitted. Management practices leading to habitat improvements for the benefit of wildlife are encouraged. No licenses, permits, or easements will be issued for such non-compatible manmade intrusion, such as underground or exposed pipelines, cables, overhead transmission lines, or non-Project roads. Exceptions to this restriction may be made where necessary to serve a demonstrated public need only in those instances where no reasonable alternative is available. Hunting and agricultural uses are permitted on this land pursuant to tribal or state fish and wildlife management regulations where these activities are not in conflict with the safety of visitors and project personnel.

5.6.2 Wildlife Management

These are lands designated for the stewardship of fish and wildlife resources. The broad objective of fish and wildlife management is to conserve, maintain, and improve the fish and wildlife habitat to produce the greatest dividend for the benefit of the general public. Implementation of a fish and wildlife management plan is the first step toward achieving the goals of the Fish and Wildlife Coordination Act. The responsibility for managing fish and wildlife is executed primarily through enforcement of laws and regulations and establishing seasons and bag limits for game species. Future management plans for wildlife areas include continued cooperation with partners including Kentucky Department of Fish and Wildlife, county soil conservation offices, and University of Kentucky extension service to manage and improve fish and wildlife management areas under this land sub-classification.

The Wildlife Management Area (WMA) at Buckhorn Lake consists of 2,374.0 acres (Figure 22). The WMA runs along much of the Buckhorn Lake shoreline and is characterized by hilly, steep terrain.

The WMA is managed by the USACE, which conducts wildlife management activities in these areas such as maintenance and upgrading of existing facilities, improving wildlife habitat, and providing recreational opportunities. The management plans for these areas would include common wildlife management practices, such as planting of food plots, maintaining public access, and implementing a nesting box program. Non-game species are also managed by USACE.

Priority in all lands under this classification will be provided to special status species including those federally and state listed, those identified as species of concern, and those afforded special protections in other federal regulations such as the Bald and Golden Eagle Act and the Migratory Bird Act.

Techniques such as prescribed burning, fish structures, and planting native grasses and forbs beneficial to pollinators are utilized as wildlife management practices at the Project. Such lands are available to the public for sightseeing, nature study, hiking, hunting and other activities that enhance environmental awareness and promote environmental stewardship.



Figure 22. Wildlife management areas at the Buckhorn Lake Project.

5.6.3 Vegetative Management

These lands are designated for stewardship of forest, prairie, and other native vegetative cover. USACE objectives concerning vegetation and forest management are to apply wise resource management principles that provide for habitat diversity and demonstrate good stewardship in the management of these resources. The management of woodlands is focused on the establishment and maintenance of the natural diversity of native plant species. Management of forest resources focuses on the establishment and maintenance of riparian zones and connection of fragmented woodlots. Efforts will be made to identify, restore and expand wetland and prairie habitat. These activities should continue with identification for opportunities to expand these habitat types. Additionally, invasive plant species such as autumn olive (*Elaeagnus umbellata*), bush honeysuckle (*Lonicera* spp.), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), and garlic mustard (*Alliaria petiolata*) should be controlled.

Currently, no lands with this classification are at the Buckhorn Lake Project.

5.6.4 Future / Inactive Recreation Areas

These areas have site characteristics compatible either with future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources.

Currently, no lands with this classification are at the Buckhorn Lake Project.

5.7 WATER SURFACE

There are four water surface categories and one sub-category at Buckhorn Lake: Designated No-Wake, Restricted, Open Recreation, Designated No-Ski (a subset of Open Recreation), and Fish and Wildlife Sanctuary. Water surface is also discussed in Section 4.3.6.

As part of managing the water surface areas at the Project, USACE will maintain and approve no wake zones, boating and swimming beach areas, and restricted zones on the water through buoy lines and enforcement.

Water quality will be monitored in accordance with public safety guidelines, and partnerships will continue to be pursued to develop harmful algae bloom models and to find solutions to decrease nutrient overload in the system. USACE will seek to maintain and, if possible, improve water quality and fisheries habitat structure to support a productive sport fishery and maintain healthy populations of native fish species. USACE will evaluate all plans and proposals to ensure that planned or permitted activities are not contributing to the sedimentation issue and ensure that BMPs are followed to prevent excessive erosion. In the future, sustainable reservoir sediment management plans should be developed to address long-term sedimentation issues.

- **Designated No-Wake** (91.86 acres). Water areas are designated for operation at no-wake speed to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.
- **Restricted** (6.21 acres) Restricted water surface includes those areas where recreational boating is prohibited or restricted for Project operations, safety, and security purposes. This also includes public beaches.
- **Open Recreation** (563.27 acres). Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses most of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at boat ramps and marinas, that navigational hazards may be present at any time and at any location in these areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy.
 - **Designated No-Ski** (541.96 acres). Water areas that are treated as a subset of Open Recreation, but where water skiing is prohibited for public safety. At Buckhorn Lake, 700 acres of the 1,701 Open Recreation water surface is Designated No-Ski.
- **Fish and Wildlife Sanctuary** (0 acres). This Water Surface zoning designation applies to areas that have annual or seasonal restrictions to protect fish and wildlife species during periods of migrations, resting, feeding, nesting, and/or spawning. There are no Fish and Wildlife water surface areas at Buckhorn Lake.

5.8 SUSTAINABILITY

Sustainability is a multi-pronged aspect of responsible stewardship of USACE lands. The outcome of sustainability initiatives is to have a program that can adapt to fiscal challenges, safeguards the environment, and continues to provide high quality recreational opportunities for the public. As the nation's largest provider of outdoor recreation, managing 12 million acres of lands and waters across the country, USACE is committed to implementing sustainable initiatives that link people to water.

The recreational mission of USACE is to manage and conserve natural resources, while providing quality public outdoor recreation opportunities to serve the needs of present and future generations. This mission is the foundation of the Chapter 3 Resource Objectives and all the USACE goals for Buckhorn Lake resources and management. The USACE 2011 Recreational Strategic Plan identifies several goals and objectives designed to build a more robust environmental and recreational program on USACE managed lands. Many of the goals center specifically on promoting environmental sustainability in all aspects of recreation resources management. This includes integrating environmental operating principles and other environmental regulations and initiatives into day-to-day decision making and long-range planning. The resource objectives combined with land classifications in the revised Master Plan for Buckhorn Lake were developed with the intention of long-term resource management of the lake's resources for years to come.

Other objectives include using Leadership in Energy and Environmental Design (LEED) certified personnel and projects in facility design and maintenance, adopting Sustainable Sites Initiative criteria

where applicable on land-based recreation areas, and updating project Master Plans to include environmental sustainability elements. For instance, the resource objectives in Chapter 3 refer to utilizing sustainable practices when managing the Project's aging infrastructure, when creating new educational opportunities, when working with KDFWR to manage the fish population, and when protecting and managing culturally and historically significant sites.

Meeting the public's needs and continuing to provide a full range of outdoor recreation opportunities will require collaboration. In support of that, USACE will maintain and enhance existing relationships while seeking new and innovative types of relationships with federal, state, and local agencies, volunteers, non-government organizations, cooperators and others to provide certain recreation services and opportunities to the public. Besides pursuing and maintaining partnerships, it is important to continue to identify, analyze, and evaluate authorities and policies such as fee collection and retention and increased partnership capabilities. Areas identified for changes to meet the goals and objectives of this Strategy include authorities for fee collection and retention without budgetary offset and policies that pertain to funding schedules for partnership projects.

The USACE Operations Division Natural Resources Management Program (NRM) Strategic Plan establishes a strategic vision with goals and objectives for development of a comprehensive program for USACE. The focus is on the direction for national efforts and activities that are aimed to support the field of natural resources management in the NRM mission with an emphasis on the role of land and water use management and public access controls. The sustainability program within the Strategic Plan seeks to make USACE facilities more energy, water, and fuel efficient, while reducing our footprint on the land by expanding recycling, composting, and renewable energy programs. The integration of sustainability into the USACE mission and organizational culture is essential in achieving federal sustainability goals. More information on the NRM Strategic Plan can be found at this website:
<https://corpslakes.erdc.dren.mil/employees/nrmstrategicplan/index.cfm>

Through creativity, innovation, strong partnerships, and environmentally sustainable stewardship, quality recreational opportunities will continue to be available to the public. This will be done while simultaneously protecting the water, environment, and cultural resources for current and future generations.

CHAPTER 6 - SPECIAL CONSIDERATIONS

Below are special considerations that make the Buckhorn Lake Project a unique project. Land use and management decisions should consider these important items.

6.1 CARRYING CAPACITY

Future development should be based upon foreseeable community growth. Understanding foreseeable growth will require a Carrying Capacity Study to help juxtapose community needs with recreational capacity of the Buckhorn Lake Project. Carrying Capacity is discussed further in Section 2.17.5.

6.2 SEDIMENTATION

As sediments accumulate to elevations above pool level, flood storage capacity is reduced; however, the extent of reduction is currently unknown. A sediment survey at Buckhorn Lake would establish a baseline height and volume for the sediment that is currently in the lake, so staff can better understand its effect on storage and track long-term changes.

An area of primary concern for sedimentation is the Trace Branch recreation area. Lake staff remove mud from the area several times per year. This causes wear and tear on the playground and picnic sites, and several of the area's features are slowly being covered. For instance, the bar-b-ques and bear poles are now closer to the ground compared to when they were installed. The photo to the right shows a stairway with the bottom portion covered in sediment that has accrued over the years.



Sedimentation at Trace Branch

The second boat ramp at Eagle's Landing cannot be accessed due to the accumulation of silt and sediment during winter pool. And during summer pool, the boat ramp is submerged.

Sedimentation reduces the lake surface availability for recreational use and is causing larger vessels to no longer be able to utilize the marina during winter pool levels.

Additional information regarding the sedimentation issue at Buckhorn Lake is described in further detail in Section 2.3.

6.3 WATER QUALITY

Water quality supports the goals of improving recreation at Buckhorn Lake by ensuring a safe environment for visitors. Water quality monitoring at the Lake is performed by the USACE in coordination with the Commonwealth of Kentucky. In addition to water quality monitoring, the USACE Water Quality Team coordinates monitoring and response to harmful algal blooms (HABs) with the Kentucky Division of Water.

Due to the rapid and extreme fluctuations in water surface elevation at Buckhorn Lake, the Project has not experienced severe water quality issues.

Additional details regarding water quality at Buckhorn Lake are provided in Section 2.4.

6.4 FLOODING CONCERNS AND SAFETY

Flooding frequently occurs at the Buckhorn Lake Project and often restricts or completely impedes access to residential areas. Specifically, the residential area near the Confluence is frequently cut off from local roads, creating issues with emergency management efforts and residents' ability to access amenities. Confluence residents are frequently trapped at home by floodwaters for extensive periods of time; depending on the water level residents may not be able to access roads for two-four weeks. Flooding near the Confluence has occurred since the Lake was impounded and does not affect the Project's ability to fulfill its congressionally authorized purpose, so options to alleviate the issue for residents are limited. Increased vehicle navigation, as described in Section 6.5, below, would help increase efficiency of emergency management efforts.

6.5 VEHICLE NAVIGATION

Due to the geography of the area and narrow, winding roads that circumnavigate the Project, vehicular navigation around Buckhorn Lake is challenging. This restricts visitation to the lake and creates safety concerns in cases of flooding or other emergencies when vehicle access or support is needed.

Lake Project staff intend to seek funding resources for a bridge from the Leatherwood PSA (Section 5.3) to the Kentucky State Resort Park in order to encourage vehicle circulation and recreational continuity, as well as, improve safety and vehicle access issues.

6.6 NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY

The Buckhorn Lake Dam is eligible for listing on the National Register of Historic Places (NRHP) under Criterion A for its historic associations with flood control and recreation in Eastern Kentucky. It is significant at the state level under flood control for its role in flood management in Eastern Kentucky along the Middle Fork Kentucky River. The dam is also significant under recreation as the impoundment created by Buckhorn Dam introduced new recreational facilities to the region and strengthened the local economy through the development of tourism-related industries. The Buckhorn Lake Dam was one of 68 reservoir projects in the Ohio River basin authorized by the Flood Control Act of 1938. It was one

of four dams designed to address flooding in Eastern Kentucky and was the first dam of its kind constructed along any of the three forks of the Kentucky River.

Because of its eligibility for the NRHP, special considerations would be required in the event of a proposed change to Buckhorn Lake Dam, especially if that change would be considered an adverse effect to its eligibility. Proposed changes would need to be assessed to determine if the effect of the change would affect Buckhorn Lake Dam's integrity as related to its ability to convey its historical significance in coordination with federal law. Any change that is determined to not be an adverse effect would be coordinated with the Kentucky State Historic Preservation Officer, Native American Tribes, and any other interested party before the change could be made. If, however, the change would negatively impact Buckhorn Lake Dam's historic integrity, the USACE would be required to minimize or mitigate the effects. Mitigation is generally required when historical significance may be lost due to change, and the mitigation would attempt to preserve this significance by other means and through consultation with interested parties.

CHAPTER 7 - ENVIRONMENTAL EFFECTS

NEPA requires Federal agencies to assess the potential environmental effects of Federal actions which include the adoption of formal plans, such as master plans, and consider reasonable alternatives to these proposed actions. The intent of this revised Master Plan is to develop land classifications, resource objectives, and a resource plan that will guide the sustainable future development of resources within the Project.

NEPA and the Council on Environmental Quality's NEPA Implementing Regulations require that an EA identify the likely environmental effects of a proposed project and that the agency determine whether those impacts may be significant. Effects (or impacts) are changes to the human environment that are reasonably foreseeable and include direct effect, indirect effects, and/or cumulative effects, as defined by 40 C.F.R. § 1508.1(g). Effects may include ecological, aesthetic, historic, cultural, economic, social, or health effects, whether direct, indirect, or cumulative, and can be either beneficial or adverse.

In considering whether the effects of the proposed action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action. (40 C.F.R. § 1501.3(b)). The term "affected environment" refers to the areas to be affected or created by the alternatives under consideration and includes reasonably foreseeable environmental trends and planned actions in the area, if applicable (40 C.F.R. § 1502.15). Additionally, areas to be affected by connected actions, including actions that cannot or will not proceed unless other actions are taken previously or simultaneously, are included in the affected environment (40 C.F.R. § 1501.9(e)). The term "degree" is not defined in the regulations, but generally refers to the magnitude of change that would result from the alternatives evaluated herein.

All potentially relevant resource areas were initially considered for analysis in this EA. Some resource topics are not discussed, or the discussion is limited in scope, due to the lack of anticipated effect from the alternatives on the resource. This includes Hazardous Toxic and Radioactive Wastes and noise, as these substances are not discussed by the revised Master Plan and would not be impacted by master planning activities.

This section presents the adverse and beneficial environmental effects of the Proposed Action and the No Action Alternative. The Proposed Action includes the adoption of the revised Master Plan. Changes resulting from the revised Master Plan include creating resource objectives (Chapter 3), updating land and water classifications (Chapter 4), development of a resource plan (Chapter 5), and suggestions for addressing special considerations at the Lake (Chapter 6). The effects of any land disturbing actions, including planned or future construction activities, implemented to achieve the goals and objectives outlined in the revised Master Plan, are outside the scope of this EA. The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Future actions could possibly generate short term and minor adverse impacts to human environment. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All future actions taken by USACE, recommended in the revised Master Plan or otherwise, would require separate environmental review and NEPA compliance, as appropriate. The No Action Alternative would entail continuing to manage the Buckhorn Lake Project under the original master plan without updated resource objectives, land and water classifications, or a resource plan.

The section is organized by resource topic, with the effects of alternatives discussed under each resource topic. Impacts are quantified whenever possible. Qualitative descriptions of impacts are explained by accompanying text where used. Qualitative definitions/descriptions of impacts as used in this section of the EA include:

Degree:

- No Effect, or 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, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable; and
- Significant – effects on a resource would be obvious and would have substantial consequences. The resource would be severely impaired so that it is no longer functional in the project area. Mitigation measures to offset the adverse effects would be extensive, and success of the mitigation measures would not be guaranteed.

Duration:

- Short term – temporary effects caused by the construction and/or implementation of a selected alternative; and
- Long term – effects caused by an alternative that remain after the action has been completed and/or after it is in full and complete operation.

7.1 RESERVOIR, POOL, AND LAKE OPERATION

7.1.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, and current Operational Management Plan, no effects to the reservoir, pool, or lake operation are anticipated.

7.1.2 Proposed Action

Implementation of the ongoing project management under the revised Master Plan would result in no changes to the Project reservoir or lake operations. Operations are controlled by the Project's Operational Management Plan; the revised Master Plan does not change lake operations. As such, there

would be no effect on reservoir, pool, and lake operations from the implementation of the Proposed Action.

7.2 CLIMATE

7.2.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, no effects to climate are anticipated.

7.2.2 Proposed Action

The revised Master Plan is a planning level document and would not alter day to day operations. Any future projects requiring construction or disturbance of air, land, or water, including those outlined in the Resource Plan, would still require separate environmental analysis and appropriate NEPA review. Thus, administrative changes resulting from the adoption of the revised Master Plan including updated land classifications, resource objectives formulation, and the creation of a resource plan would have no effect on greenhouse gas emissions or the climate at the Project.

7.3 AIR QUALITY

7.3.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Buckhorn Lake Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of Buckhorn Lake Project continuing as outlined in the 1971 Master Plan, no effects to air quality are anticipated.

7.3.2 Proposed Action

The revised master plan is a planning level document and would not alter day to day operations. Any future projects requiring construction or disturbance of air, land, or water, including those outlined in the Resource Plan, would still require separate environmental analysis and appropriate NEPA review. Thus, administrative changes resulting from the adoption of the revised master plan including updated land classifications, resource objectives formulation, and the creation of a resource plan would have no effect on air quality.

7.4 TOPOGRAPHY, GEOLOGY, AND SOILS

7.4.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, no effects to the topography, geology, or soils are anticipated. In addition, actions under the 1971 Master Plan would still be addressed under appropriate NEPA and environmental compliance reviews.

7.4.2 Proposed Action

The revised master plan is a planning level document and would not alter day to day operations. Any future projects requiring construction or disturbance of air, land, or water, including those outlined in the Resource Plan, would still require separate environmental analysis and appropriate NEPA review. Thus, administrative changes resulting from the adoption of the revised master plan including updated land classifications, resource objectives formulation, and the creation of a resource plan would have no effect to topography, geology, or soils.

7.5 SURFACE WATER HYDROLOGY AND GROUNDWATER

7.5.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, there would be no effect to surface water hydrology or groundwater. In addition, actions under the 1971 Master Plan would still be addressed under appropriate NEPA and environmental compliance reviews.

7.5.2 Proposed Action

The revised master plan is a planning level document and would not alter day to day operations. Any future projects requiring construction or disturbance of air, land, or water, including those outlined in the Resource Plan, would still require separate environmental analysis and appropriate NEPA review. Thus, administrative changes resulting from the adoption of the revised master plan including updated land classifications, resource objectives formulation, and the creation of a resource plan would have no effect on surface water hydrology or groundwater.

7.6 WATER QUALITY

7.6.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, no effect to water quality is anticipated.

7.6.2 Proposed Action

No new development or activities that may negatively impact water quality of the Project or its tributaries are proposed in the revised Master Plan. No short-term effects to water quality are anticipated from the implementation of this alternative. The revised Master Plan includes recommendations to improve the health of the watershed and its water quality. Water quality monitoring would continue with goals of improving water quality and reducing the risk of HABs to ensure the health of the aquatic system and reduce public health concerns. Project staff would continue coordination, reporting, and data collection for the USACE Water Quality Team and the KDOW. For these reasons, implementation of the revised Master Plan would have beneficial effects to water quality in the long-term.

7.7 HABITATS

7.7.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, no effect to existing habitats would be anticipated.

7.7.2 Proposed Action

The revised Master Plan includes numerous environmental objectives that would have a long-term beneficial effect to the existing habitats of the Project. Management of the Project under the revised Master Plan would be expected to improve the quality of the existing habitats and create additional habitat on Project lands in the long-term.

7.8 THREATENED AND ENDANGERED SPECIES

7.8.1 No Action

Under the No Action Alternative, there would be no effect to listed species or critical habitat, as the USACE would continue to perform future actions with the goal of maintaining and improving environmental and recreational resources at the Project, and any actions would undergo appropriate NEPA review. However, without a revised Master Plan actions would be carried out without the aid of a comprehensive planning document that improves long-term decision making and has a beneficial effect to listed species.

7.8.2 Proposed Action

The revised Master Plan includes environmental objectives, including updated land classifications and updated resource objectives, that would have a long-term beneficial effect to listed species that potentially occur on the Project.

Future development actions recommended or contemplated in the revised Master Plan will be assessed individually to determine potential impacts to listed species, in compliance with the Endangered Species Act and NEPA, as appropriate. To protect roosting bats, future development under the proposed action will be subject to the required seasonal restrictions on timber clearing in which tree harvests over three inches in diameter at breast height are restricted from April 1 through September 30.

7.9 INVASIVE SPECIES

7.9.1 No action

The No Action Alternative would have no effect to invasive species. This alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan. Any actions taken would have an appropriate NEPA review that would consider invasive species.

7.9.2 Proposed Action

The revised Master Plan includes updated resource objectives that involve monitoring and removing invasive species from the Project. This would allow for a better understanding of invasive species at the Project and reduce their impact on habitats. Thus, the revised Master Plan would have a beneficial impact on the threat of invasive species.

7.10 DEMOGRAPHICS AND ENVIRONMENTAL JUSTICE

7.10.1 No Action

The No Action Alternative would have no effect to demographics or environmental justice. This alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan. Any actions taken would have an appropriate NEPA review that would consider demographics and environmental justice.

7.10.2 Proposed Action

Changes in population and associated stresses on the municipal resources and services have occurred while the USACE has managed the Project. Implementing the revised Master Plan would be expected to have no effect on the demographic trends of the surrounding communities. The Proposed Action would not result in any appreciable effects to the local or regional socioeconomic environment. Changes to land use classifications would have no impact on socioeconomics or to minority or low-income communities. Construction of future projects consistent with the revised Master Plan would be expected to have minor beneficial effects associated with temporary employment of construction

personnel and transportation of goods and materials to the construction sites. There would be no disproportionate adverse effects to minority or low-income communities since the Proposed Action would be located within Federal lands and projects would benefit all local residents by enhancing recreational opportunities.

7.11 RECREATION AND VISITATION

7.11.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, no effect to recreation or visitation is anticipated.

7.11.2 Proposed Action

The revised Master Plan updates the recreational objectives for the Project, which are listed in Table 22. As such, the Proposed Action would have a beneficial effect on recreation by planning for improved facilities and opportunities. The USACE would continue 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. For these reasons, no adverse effect to recreation or visitation at the Project would be anticipated from implementation of the Proposed Action.

7.12 CULTURAL RESOURCES

7.12.1 No Action

Under the No Action Alternative, a revised Master Plan would not be approved for the Project in the foreseeable future and there would be no comprehensive planning for the Project. USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project without the aid of a comprehensive planning document. Potential future actions could possibly generate negative effects to cultural resources. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the No Action Alternative, would require appropriate environmental review as well as NEPA and National Historic Preservation Act (NHPA) compliance. As such, the effects to cultural resources caused by potential future actions would be assessed when they are in the planning process of implementation.

7.12.2 Proposed Action

This alternative would result in an updated land classification for the Project (see Figure 15) and management of the Project under the revised Master Plan. This alternative would designate any identified future historic properties as environmentally sensitive areas. Thus, protecting future historic

properties from development and incompatible uses. As a result, the proposed action would have a beneficial effect on cultural resources.

Within the revised Master Plan, potential future actions are recommended to meet goals outlined for the Project. Potential future actions could possibly generate adverse effects to cultural resources through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the revised Master Plan or otherwise, would require separate environmental review and NEPA compliance, as appropriate. Prior to implementation of any ground disturbing activity, field surveys to identify cultural resources and Section 106 consultation under the NHPA with the Kentucky State Historic Preservation Office (KY-SHPO) and Federally recognized Tribes will be conducted by USACE. Federal and State laws require Federal agencies to minimize or mitigate adverse effects to historic properties (36 C.F.R. §§ 800.5, 800.13). Should unanticipated historic or prehistoric cultural resources be discovered during ground disturbing activities, work must cease immediately and USACE will contact the KY-SHPO and Federally recognized Tribes.

7.13 AESTHETICS/VISUAL QUALITIES

7.13.1 No Action

The No Action Plan would have no effect on aesthetics, as the Project would continue to be managed under the existing 1971 Master Plan. Any actions taken would have appropriate NEPA analysis, which would consider impacts to aesthetics.

7.13.2 Proposed Action

Comprehensive planning under the revised Master Plan has the potential to facilitate improved construction planning, which can minimize potential adverse effects to the aesthetic character of the project. Revised land use classifications and resource management have the potential to improve the aesthetic experience of project visitors in the long-term by conserving, increasing, or improving the natural resources already present. Therefore, the revised Master Plan would have long-term beneficial effects to aesthetics.

7.14 CUMULATIVE EFFECTS

A master plan is intended to guide the USACE toward achieving its goal of managing, conserving, and enhancing natural resources, while providing quality opportunities for outdoor recreation to the public. The revised Master Plan is consistent with authorized project purposes and relevant legislation and regulations and was developed in response to regional and local needs, resource capabilities and suitability, and expressed public interests. As previously discussed, the Proposed Action is anticipated to have no effect or beneficial effects on the resources considered. Thus, there would be no cumulative adverse effects of the Proposed Action on these resources when added to the impacts of other past, present, and reasonably foreseeable future actions in the region.

7.15 SUMMARY OF ENVIRONMENTAL EFFECTS

The revised Master Plan provides guidelines and direction for future Project development and use. The revised Master Plan is based on authorized Project purposes, USACE policies and regulations on the operation of USACE projects, responses to regional and local needs, resource capabilities and suitable uses, and expressed public interests consistent with authorized Project purposes and pertinent legislation. Careful planning, sound engineering, appropriate coordination with resource agencies, and effective execution have developed the recreational resources at the Project while protecting and enhancing the important environmental resources; these practices would be expected to continue. Within the revised Master Plan, future actions are recommended to meet goals outlined for the Project. Future actions have the potential to cause adverse effects to all environmental resources analyzed. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All future actions taken by USACE, recommended in the revised Master Plan or otherwise, would require separate environmental review and NEPA compliance, as appropriate. As such, adoption of the revised Master Plan would not have significant adverse effects. Table 30 provides a summary of anticipated effects from implementation of the revised Master Plan to the resources evaluated in this EA.

Table 30. Summary of environmental effects from the Proposed Action.

Resource Evaluated	Effect
Reservoir, Pool, and Lake Operation	No effect
Climate	No effect
Air Quality	No effect
Topography, Geology, and Soils	No effect
Surface Water Hydrology and Groundwater	No effect
Water Quality	Beneficial effect
Habitats	Beneficial effect
Threatened and Endangered Species	No effect
Invasive Species	Beneficial effect
Demographics and Environmental Justice	No effect
Recreation and Visitation	Beneficial effect
Cultural Resources	Beneficial effect
Aesthetics and Visual Qualities	No effect

7.16 COMPLIANCE WITH ENVIRONMENTAL LAWS

An update of the Buckhorn Lake Master Plan and the subsequent adoption of revised land classifications and resource objectives would not commence until the proposed actions achieve environmental compliance with the applicable laws and regulations, as described below.

Bald and Golden Eagle Protection Act of 1940, as amended, 16 U.S.C. §§ 668, et seq. *In compliance.* The Bald Eagle Protection Act imposes requirements on USACE projects concerning bald eagles. Approval and implementation of the revised Master Plan would not adversely affect bald eagles or their habitat.

Clean Air Act, as amended, 42 U.S.C. § 7401, et seq. *In compliance.* The purpose of the Clean Air Act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for States to attain or maintain. The revised Master Plan does not include major development of new facilities or other construction activities that could impact air quality from increased emissions. Negligible and temporary emissions would be expected to occur during continued maintenance activities of facilities at the Project. However, these emissions would be short term, small-scale, and air quality would not be affected to any measurable degree. Actions taken by the USACE within Leslie and Perry Counties that may impact air quality are subject to compliance with the General Conformity rule, which ensures that those actions do not interfere with the State's plans to attain and maintain national standards for air quality.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. § 1251, et seq. *In compliance.* The objective of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. § 1251). The USACE regulates discharges of dredged or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. Section 404 requires authorization to place dredged or fill material into waters of the United States. If a Section 404 authorization is required, a Section 401 water quality certification from the state in which the discharge originates is also needed. Implementation of the revised Master Plan would not be expected to result in the placement of dredged or fill material into water bodies or wetlands. Any future actions at the Project which would result in a discharge into or the placement of dredged or fill material into waters of the United States would be undertaken in compliance with Sections 401, 402, and 404 of the Clean Water Act, as appropriate.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, et seq. (CERCLA). *Not applicable.* CERCLA governs (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment that presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 C.F.R. Part 373 requires notification of CERCLA hazardous substances in a land transfer. The implementation of the revised Master Plan would not involve real estate transactions, and no release or threatened release of hazardous substances into the environment at the Project is known.

Endangered Species Act, as amended. 16 U.S.C. § 1531, et seq. *In compliance.* Section 7 of the Endangered Species Act (16 U.S.C. § 1536) states that all Federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior (Secretary), ensure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical. This Environmental Assessment represents the assessment and findings regarding the proposed revised Master Plan and serves as the Biological Assessment (BA) with a determination of no effect to the listed species in Table 6.

Environmental Justice (E.O. 12898). *In compliance.* The Executive Order governing environmental justice directs that every federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. Implementation of the revised Master Plan would not disproportionately affect minority or low-income populations.

Fish and Wildlife Coordination Act, as amended, 16 U.S.C. § 661, et seq (FWCA). *Not applicable.* The FWCA requires Federal agencies, including the USACE, to coordinate activities that impact water resource with the USFWS, so that adverse effects on fish and wildlife would be minimized when water bodies are proposed for modification. No modifications to water bodies are proposed in association with the revised Master Plan. Thus, the FWCA is not applicable to this revised Master Plan revision.

Migratory Bird Treaty Act of 1918, as amended, 16 U.S.C. § 703, et seq. (MBTA). *In compliance.* The MBTA is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs agencies to take certain actions to implement the act. No effects are anticipated.

National Historic Preservation Act, as amended, 54 U.S.C. §§ 300100-300708, et seq (NHPA). *In progress.* The NHPA requires that Federal agencies having direct or indirect jurisdiction over a proposed federal or federally assisted undertaking take into account the effect of the undertaking on any district, site, building, structure, or object that is included in, or eligible for inclusion in, the NRHP. USACE has made the determination in accordance with 36 CFR § 800.3 (a)(1) of the NHPA that adoption of the revised Master Plan is not a type of activity with the potential to adversely impact cultural resources or historic properties. USACE coordinated the proposed action with the KY-SHPO on October 6, 2020. The KY-SHPO responded on November 12, 2020, that they look forward to consulting with USACE on the revised Master Plan. USACE is awaiting the KY-SHPO's concurrence on its determination that the Master Plan will not have an adverse effect to historic properties. USACE also coordinated with the Cherokee Nation, the Eastern Band of Cherokee Indians, the United Keetoowah Band of Indians in Oklahoma, the Shawnee Tribe of Oklahoma, the Absentee Shawnee Tribe of Indians, and the Eastern Shawnee Tribe of Oklahoma on October 6, 2020. The Cherokee Nation responded in a letter dated November 2, 2020, that the proposed action will not adversely affect any sacred properties and/or properties of cultural significance to the Cherokee Nation. All correspondence will be included in Appendix D.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. § 4321, et seq. *In progress.* This proposed Environmental Assessment and Finding of No Significant Impact (FONSI) has been prepared in accordance with the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR §§ 1500-1508). An Environmental Impact Statement (EIS) is not necessary. Signing of the FONSI will conclude compliance with the NEPA.

Noise Control Act of 1972, 42 U.S.C. § 4901, et seq. *In compliance.* The Noise Control Act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise emissions to within compliance levels. Noise emission levels at the Project site may increase above current levels temporarily if construction of improvements or features identified in the revised Master Plan are undertaken. Appropriate measures would be taken during those activities to keep the noise level within the compliance.

Section 10 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 403. *In compliance.* Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The actions identified in the revised Master Plan would not involve the construction of structures within the Buckhorn Lake Project.

Tackling the Climate Crisis at Home and Abroad (E.O. 14008). *In compliance.* Executive Order 14008 directs Federal agencies to develop a climate action plan and implement it into the agency's programs. The USACE developed its own climate action plan in 2020, which details the USACE's commitment to integrate the best available observed and forward-looking climate information into its missions, programs, and management functions, as allowed within relevant authorities. Climate considerations must continue to be an integral element of USACE enterprise-wide resource allocation and operational decision-making processes.

Floodplain Management (E.O. 11988). *In compliance.* Section 1 of the Executive Order on floodplain management requires each agency to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. The actions identified in the revised Master Plan would not affect the flood holding capacity or flood surface profiles of the Project.

Protection of Wetlands (E.O. 11990). *In compliance.* The Executive Order on protection of wetlands directs that Federal agencies shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. Each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The proposed action classifies the land use of all known wetlands as environmentally sensitive areas, which prohibits construction or agriculture and therefore gives added protection to the wetlands on the project. The actions identified in the revised Master Plan revision would not involve construction in, or adverse effects to, wetlands.

CHAPTER 8 - PUBLIC AND AGENCY COORDINATION

8.1 PUBLIC AND AGENCY COORDINATION OVERVIEW

Public involvement is important to the overall success of the master planning effort. Stakeholder and public meetings were held in Spring 2022 with the intent of providing the public, stakeholders, and other public agencies opportunities to participate in scoping for the Master Plan revision (Appendix A).

8.2 ENVIRONMENTAL JUSTICE AND PUBLIC OUTREACH

The master planning effort incorporated a proactive approach to environmental justice during the public and agency coordination process by providing a variety of methods supporting stakeholder and public interaction. In addition to the stakeholder and public meetings, a website, news releases, and social media postings were also developed to promote public involvement. This allowed for greater opportunity to provide comments and input and fostered a more collaborative environment in which to create a vision for the future of Buckhorn Lake.

Virtual meetings addressed concerns with gatherings during COVID-19 and allowed those without access to transportation to participate. In future planning efforts when COVID-19 restrictions are not in place, USACE could improve this effort by conducting meetings that are both virtual and in-person to better accommodate those without access to computers or phones.

Additionally, USACE presence at an informational booth or tent at conferences, festivals and other local events could facilitate discussions and provide in-person opportunities for the public to provide comments in a more casual environment as opposed to a formally organized meeting. Events where the local population would already be in attendance will facilitate access to a broader range of perspectives and feedback.

8.3 INITIAL STAKEHOLDER AND PUBLIC MEETINGS

The USACE policy guidance in ER 1130-2-550 and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the Master Plan revision process, including public involvement associated with the NEPA process. Public involvement is especially important at the Buckhorn Lake Project to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in the region.

On May 18, 2022, USACE employees hosted two public meetings, one for the stakeholders and one for the public, to allow opportunities to review and comment on the Master Plan process. The stakeholder meeting invitation was extended to various entities with financial and/or recreational development ties to the Lake. The public meeting invitation was extended to the general public and open to all interested persons. The USACE Public Affairs Office (PAO) prepared a press release that was advertised in the local newspaper, the Appalachian News Express, and on USACE websites and social media. Due to COVID-19 concerns, the meetings were held virtually. Staff provided the participants with information on the structure of the public meeting and comment forms, and the Lake Project Manager provided a history of Buckhorn Lake and current conditions. Large scale maps and visual graphics were included in the presentations.

USACE employees were available to answer questions and receive comments during and after the meetings. Interested persons had the opportunity to comment about the Project using a variety of methods:

- Submitting comments to the Lake Project office via mail;
- Filling out a survey;
- Giving verbal comment;
- Submitting comments via an interactive online map; and
- Submitting comment using electronic mail.

There were no attendees at the stakeholder meeting and 9 attendees at the public meeting. The public comment period was open from May 18, 2022 – June 20, 2022. All comments received were considered, and some proposals were integrated into the Draft Master Plan, as appropriate. Table 31 provides a summary list of comments. If the comment was integrated into the Master Plan then the section where it was integrated was included. The full, uncondensed public comments are in Appendix A.

Table 31. Public comment (summary).

Public Comment	Master Plan Reference
Improve vehicle access to the lake.	Section 6.5 addresses vehicular navigation around the Project.
Additional opportunities for recreation such as RV parks, wilderness observation areas and campgrounds.	Master Plan Resource Objectives in Section 3.1.2 were modified to address comment through enhancing visitor experiences and accommodating new recreational user groups at the Project.
Take measures to improve or avoid flooding issues for nearby residents.	Section 6.4 addresses flooding concerns and safety at the Project.
Update the Master Plan.	The Master Plan is currently being updated.
Improve campground budget transparency.	Master Plan Resource Objectives in Section 3.1.2 addresses the need to improve budget transparency within the Project campgrounds.
Improve outreach efforts with the community, including social media and volunteer opportunities.	Master Plan Resource Objectives in Section 3.1.2 addresses the need to improve outreach efforts.

From June through August of 2022, patrons of the Buckhorn Lake Project gave input through comment cards obtained at the recreational facilities and distributed by USACE lake staff. These comment cards solicited public input on existing facilities, employees, and environmental settings. The rankings used a scale of 1 to 5 to gauge visitor satisfaction, 1 being unsatisfied and 5 being the most satisfied, or highest ranking. USACE received between 65 - 67 responses for most categories, except for one receiving only 8 responses (Overall: Value received for any visitor fees paid). The Lake received a mean response of 4.99 or higher across all categories. Patrons also provided written comments on what improvements they would like to see at various sites around the Lake. Below is a summary of responses for potential improvements at all locations mentioned.

Trace Branch Campground recommendations

- Improve cell service
- Improve roads leading to the campground
- Improve and restripe parking lot

Confluence Recreation Area recommendations

- Reduce area flooding
- Improve cell service
- Clean up mud at facilities in the spring
- Improve roads leading to recreation area
- Improve parking lot by providing more parking spaces and restriping lot
- Add larger playground
- Clean restroom facilities
- Create more public events
- Make area more dog-friendly
- Add disc golf course
- Add places to eat

Damsite recommendations

- Drift removal
- Clean and resurface existing boat ramp
- Add larger boat ramp
- More parking spaces, including more ADA parking spaces
- Restripe parking lot
- Improve roads
- Add speed bumps to roads
- Add sewage hookups, A/C restrooms, better internet, and cable in the campground
- Facility improvements, add the following:
 - Spy glass/binocular stations
 - Bait shop
 - Disc golf course
 - Splash pad and pool
 - Petting zoo

Leatherwood Recreation Area recommendations

- Update the restroom

- Add running water to the recreation area

Tailwater Recreation Area recommendations

- No comments received since area was closed due to flooding

8.4 PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA AND FONSI

The draft final Master Plan with integrated Environmental Assessment was made available for public and agency review on TBD. The process of announcing the availability of the draft final Master Plan and the requirements for submitting comments was identical to the process described above for the initial scoping workshops held in May 2022. A list of agencies that were contacted during the public review period are in Table 32, below. Public and agency comments for the draft final Master Plan were accepted through TBD. At the end of the comment period a total of TBD written comments were received, TBD from the general public and TBD from an agency or organization. A summary of comments received and the USACE response to the comments is provided in Table 32, below. Copies of letters received from governmental entities are included Appendix X. Upon incorporation of public comment into the draft final Master Plan with integrated EA and FONSI, final versions will be prepared and signed by the District Engineer for implementation. The final versions will be posted on the Louisville District website.

Table 32. List of agency and Tribal contacts for public review of the draft 2022 Buckhorn Lake master plan.

Stakeholder Type	Stakeholder
Federal Agencies	U.S. Fish and Wildlife Service, Kentucky Field Office
State Agencies	Kentucky Department of Fish and Wildlife Resources Office of Kentucky Nature Preserves Kentucky Heritage Council Kentucky Division of water Kentucky Department for Natural Resources Kentucky Division for Air Quality Kentucky Division of Waste Management Kentucky Transportation Cabinet
Non-Governmental Organizations (NGO's)	The Nature Conservancy of Kentucky The Sierra Club, Kentucky Chapter Kentucky Environmental Foundation Kentucky Heartwood Kentucky Waterways Alliance Kentucky Resources Council River Fields
	Cherokee Nation Eastern Shawnee

The Kentucky State Historic Preservation Office (SHPO) will respond in a letter whether their office agrees or disagrees with the designation of cultural sites as environmentally sensitive areas (ESA) and whether the proposed action would have a beneficial effect on cultural resources. If the SHPO provides concurrence, the locations classified as ESAs remain the same in the final Master Plan as presented in the [MP Date] draft.

INSERT COMMENT SUMMARY TABLE AFTER PUBLIC REVIEW

CHAPTER 9 - SUMMARY OF RECOMMENDATIONS

This Master Plan conceptually establishes and guides the orderly development, administration, maintenance, preservation, enhancement, and management of all natural, cultural, and recreational resources at Buckhorn Lake. The Master Plan is a land use management document and does not address water management operations, associated prime facilities (dam, spillway, etc.), or shoreline management as those operations are outlined in separate documents. This Master Plan is stewardship-driven and seeks to balance recreational development and use with protection and conservation of natural and cultural resources.

The following are focal points within this document that will assist USACE management in facing contemporary challenges well into the future.

9.1 LAND CLASSIFICATIONS

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to the new land classification standards. During the public involvement process, USACE sought public input into whether, besides the simple change in nomenclature, a shift in land classification was desired (for example, should lands with a recreation classification be reclassified to a wildlife classification or vice versa). Chapter 8 of the Plan describes the public input process.

The land classifications presented in the Master Plan were formulated based on these public comments and the USACE Buckhorn Lake Project staff, Operations Division staff, and the Master Plan Project Delivery Team, who have first-hand experiences, professional training, and implement best management practices.

A summary of acreage changes from prior land classifications to the current classifications is provided in Table 33, below. All changes reflect historic and projected public use utilizing guidance from ER 1130-2-550 and EP 1130-2-550.

Table 33. 2022 master plan acreages compared to 1971 master plan acreages.

CLASSIFICATION	2022 Master Plan Acres	1971 Master Plan Acres
LAND		
Project Operations	165.6	165.6
Public Use Access*	-	1,046.3
High-Density Recreation	752.5	-
Mitigation	0	0
Environmentally Sensitive Areas (ESAs)	28.2	-
Multiple Resource Management Lands: Low-Density Recreation	287.6	-
Multiple Resource Management Lands: Wildlife Management	2,374.0	-
Multiple Resource Management Lands: Vegetative Management	0	-

Multiple Resource Management Lands: Future/Inactive Recreation	0	-
Fish and Wildlife*	-	2,396.0
WATER		
Designated No-Wake**	91.86	-
Restricted**	6.21	-
Open Recreation** (does not include Designated No-Ski)	563.27	-
Designated No-Ski	541.96	-
Fish and Wildlife Sanctuary**	0	-

*Classifications are now obsolete based on ER 1130-2-550 and EP 1130-2-550.

**Water zoning was established in the 1972 Master Plan, but acreages were not calculated.

9.2 IMPROVED RECREATION

While Buckhorn Lake provides comprehensive recreational opportunities throughout the Project, there are still some areas for improvement that will increase the overall recreational experience for users. New and improved recreational facilities and improved public access plus protection of facilities from flooding, sediment, and erosion were present as themes mentioned by stakeholders and/or the public.

Modernization of existing recreational facilities could greatly improve current conditions at the Buckhorn Lake Project. Modernization could include upgrades to boat docks and fishing piers, renovating restroom facilities, adding additional restrooms, additional parking, and expanding or improving the campgrounds and trail system to provide a better experience. Additionally, improvements to vehicular navigation around the Project would improve access for recreational visitors and improve safety and emergency response efforts.

Specific recommendations for individual Project Site Areas are provided in more detail in Chapter 5. These recommendations reflect the Chapter 3 Resource Objectives discussed in Section 3.1.2. And Chapter 6 discusses Project access and flooding concerns.

CHAPTER 10 - BIBLIOGRAPHY

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Buckhorn Lake
Master Plan 2022
Appendix A
Public Comments

Comment Category	Comment Type	Recreation Type	Name	Zip Code	Email Address	Comment
Recreation	New Idea/ Opportunity	Campground		41749		This would be a great location for an additional RV park. It is a lot easier to get to than Trance Branch as the road is a STATE maintained road (not county).
				41749		This would be a great location for a wilderness observation area/camp ground. The county could develop the two roads that converge on the area to allow different ways to access.
Recreation	New Idea/ Opportunity	OTHER		41749		This would be a great location for a bridge to connect Leslie County to Buckhorn (and vice versa). It would be much quicker and fewer mountains for the people to come from the Hal Rogers Parkway to get to and from Buckhorn.
Recreation	New Idea/ Opportunity	OTHER		41749		An exit ramp here would make getting to the lake very easy. No mountains, state maintained two lane road, and would help the local economy.
Recreation	New Idea/ Opportunity	OTHER				

Comment Category	Comment Type	Recreation Type	Name	Zip Code	Email Address	Comment
SafetyEmergency	Opportunity	NA		41749		Construct a new road from the Confluence boat dock into Wilder Branch that is higher up and does not get blocked by all the floods. Up by the old store around the ridge to the church parking area.



16

3 Comments 44 Shares



Like



Comment



Share

All comments ▼



Comment as Buckhorn Lake - U.S. Army Corps of Engineers, Louisville ...



Master plan needs remastered for sure Bring back Buckhorn Lake State Resort !!!!



Like Reply Hide 6w



Like Reply Hide 6w



I called about this. They said they are supposed to do periodic reviews and hadn't done on since the 70's.

Like Reply Hide 6w

7

Write a comment...

Comment Card Surveys

Summary of Recreation Area Survey June - August 2022 BUCKHORN LAKE

Comment Options

- [Menu](#)
- [Print Friendly Version](#)

Comment Cards

- BUCKHORN LAKE
LOUISVILLE
GREAT LAKES AND
OHIO RIVER DIV

Comment Menu

- [Start New Card](#)
- [Edit Card Data](#)
- [Edit Comments](#)
- [Summary Table](#)

Customer Satisfaction Item	No. of Visitor Responses	Response Distribution (Percent)						Mean Response (1-5 Scale)
		Very Good (5)	Good (4)	Average (3)	Poor (2)	Very Poor (1)	Total	
Facilities:								
Suitability of park facilities for my recreational equipment and activities	67	97%	3%	0%	0%	0%	100%	5.0
Restroom cleanliness and availability of conveniences	67	100%	0%	0%	0%	0%	100%	5.0
Appearance of park grounds	65	98%	2%	0%	0%	0%	100%	5.0
Adequacy of signs providing directions and information	67	99%	1%	0%	0%	0%	100%	5.0
Parking space availability during my visit	66	98%	2%	0%	0%	0%	100%	5.0
Condition of roads and parking areas in the park	67	97%	1%	0%	1%	0%	100%	4.9
Employees:								
Availability of park rangers and staff	67	99%	1%	0%	0%	0%	100%	5.0
Helpfulness of park rangers and staff	67	99%	1%	0%	0%	0%	100%	5.0
Environmental Setting:								
Attractiveness of surrounding scenery and landscape	67	99%	1%	0%	0%	0%	100%	5.0
Quality of land and water resources for my activities	66	97%	3%	0%	0%	0%	100%	5.0
Overall:								
Waiting times needed to access park	67	99%	1%	0%	0%	0%	100%	5.0

facilities and services								
Feeling of safety and security in the park	67	99%	1%	0%	0%	0%	100%	5.0
Value received for any visitor fees paid	8	100%	0%	0%	0%	0%	100%	5.0
Overall satisfaction with my visit to this area	67	99%	1%	0%	0%	0%	100%	5.0

What do you like most about this area:

- o N/A *TRACE BRANCH CAMPGROUND*
- o the scenic views *TRACE BRANCH CAMPGROUND*
- o great fishing *TRACE BRANCH CAMPGROUND*
- o how clean the campground was *TRACE BRANCH CAMPGROUND*
- o The lake is close by. *TRACE BRANCH CAMPGROUND*
- o n/a *TRACE BRANCH CAMPGROUND*
- o fishing *TRACE BRANCH CAMPGROUND*
- o peaceful *TRACE BRANCH CAMPGROUND*
- o serene, quiet, and beautiful *TRACE BRANCH CAMPGROUND*
- o the lake is close by. *TRACE BRANCH CAMPGROUND*
- o very nice lake *CONFLUENCE RECREATION AREA*
- o lots of trees *CONFLUENCE RECREATION AREA*
- o peaceful and quiet *CONFLUENCE RECREATION AREA*
- o plentiful wildlife *CONFLUENCE RECREATION AREA*
- o Area closed due to flooding *CONFLUENCE RECREATION AREA*
- o Area closed due to flooding *CONFLUENCE RECREATION AREA*
- o great for family gatherings *CONFLUENCE RECREATION AREA*
- o quiet *CONFLUENCE RECREATION AREA*
- o the fishing *CONFLUENCE RECREATION AREA*
- o great place to fish *CONFLUENCE RECREATION AREA*
- o scenic *CONFLUENCE RECREATION AREA*
- o great place for lunch *CONFLUENCE RECREATION AREA*
- o great place o take the kids *CONFLUENCE RECREATION AREA*
- o Area closed due to flooding *CONFLUENCE RECREATION AREA*
- o the natural beauty *CONFLUENCE RECREATION AREA*
- o great family vacation *LEATHERWOOD RECREATION AREA*
- o Area closed due to flooding *LEATHERWOOD RECREATION AREA*
- o the views *LEATHERWOOD RECREATION AREA*
- o playground *DAM SITE*
- o clean, friendly park staff *DAM SITE*
- o playground and shelters *DAM SITE*
- o good fishing *DAM SITE*

- sewer at site, more child activities, concrete pads, accessible TV cable *DAM SITE*
- scenery *DAM SITE*
- great fishing *DAM SITE*
- great fishing *DAM SITE*
- Area closed due to flooding *DAM SITE*
- Area closed due to flooding *DAM SITE*
- Area closed due to flooding *DAM SITE*
- Area closed due to flooding *DAM SITE*
- fishing *DAM SITE*
- great place for lunch *DAM SITE*
- fishing *DAM SITE*
- the views *DAM SITE*
- family environment, and friendly staff *DAM SITE*
- lovely people *DAM SITE*
- clean campground, peaceful and relaxing *DAM SITE*
- quiet and peaceful *DAM SITE*
- good fishing *DAM SITE*
- local store owners *DAM SITE*
- best fishing around *DAM SITE*
- nature *DAM SITE*
- great hiking trail *DAM SITE*
- the fishing *DAM SITE*
- Area closed due to flooding *TAILWATER RECREATION AREA*
- Area closed due to flooding *TAILWATER RECREATION AREA*

What improvements would you like to see in this area:

FAC - Boat Ramps/Courtesy Docks/Piers

- keep the boat ramp clean *DAM SITE*
- bigger boat ramp *DAM SITE*
- better boat ramp *DAM SITE*
- drift clean up and larger boat ramp with more parking *DAM SITE*

FAC - Buildings Restrooms/Shower Houses

- needs updated restroom *LEATHERWOOD RECREATION AREA*
- running water in recreation area *LEATHERWOOD RECREATION AREA*
- sewage hook up, air conditioned restrooms, better internet and cable *DAM SITE*

FAC - Other Facilities

- more dog friendly *CONFLUENCE RECREATION AREA*
- disc golf course *CONFLUENCE RECREATION AREA*
- bigger playground *CONFLUENCE RECREATION AREA*
- splash pad, pool *DAM SITE*
- disc golf course *DAM SITE*
- petting zoo *DAM SITE*

FAC - Roads & Parking

- roads leading to the campground *TRACE BRANCH CAMPGROUND*
- better striped parking lot *TRACE BRANCH CAMPGROUND*
- parking lot needs stripped *CONFLUENCE RECREATION AREA*
- needs a better parking lot *CONFLUENCE RECREATION AREA*
- parking lot needs better painted lines *CONFLUENCE RECREATION AREA*
- more parking spaces *CONFLUENCE RECREATION AREA*
- better roads to park area *CONFLUENCE RECREATION AREA*
- more parking spots *DAM SITE*
- could repave the boat ramp *DAM SITE*
- speed bumps *DAM SITE*
- parking lot need repainted *DAM SITE*
- more handicap parking spaces *DAM SITE*
- better roads *DAM SITE*
- more parking spots *DAM SITE*

OTH - Miscellaneous Comments

- better cell signal *TRACE BRANCH CAMPGROUND*
- better cell service *TRACE BRANCH CAMPGROUND*
- better cell service *TRACE BRANCH CAMPGROUND*
- better cell signal *TRACE BRANCH CAMPGROUND*
- less flooding *CONFLUENCE RECREATION AREA*
- no places to eat *CONFLUENCE RECREATION AREA*
- more cell service *CONFLUENCE RECREATION AREA*
- flooding *CONFLUENCE RECREATION AREA*
- more public events *CONFLUENCE RECREATION AREA*
- spy/glass or binocular stations *DAM SITE*
- more bait shops *DAM SITE*

OTH - No Comment or Suggestion Offered

- N/A *TRACE BRANCH CAMPGROUND*

- n/a *TRACE BRANCH CAMPGROUND*
- N/A *TRACE BRANCH CAMPGROUND*
- Area closed due to flooding *CONFLUENCE RECREATION AREA*
- Area closed due to flooding *CONFLUENCE RECREATION AREA*
- Area closed due to flooding *CONFLUENCE RECREATION AREA*
- Area closed due to flooding *LEATHERWOOD RECREATION AREA*
- Area closed due to flooding *DAM SITE*
- Area closed due to flooding *DAM SITE*
- Area closed due to flooding *DAM SITE*
- area closed due to flooding *DAM SITE*
- Area closed due to flooding *TAILWATER RECREATION AREA*
- Area closed due to flooding *TAILWATER RECREATION AREA*

SVC - Facility Cleaning

- cleaner bathrooms *CONFLUENCE RECREATION AREA*
- clean up mud in the spring *CONFLUENCE RECREATION AREA*
- drift removal *DAM SITE*
- drift in lake *DAM SITE*

Webdate: March 2006

Technical Problems

Comment Card Surveys

Recreation Area Comment Card - BUCKHORN LAKE

Comment Options

- [Menu](#)

Comment Cards

- BUCKHORN LAKE
LOUISVILLE
GREAT LAKES AND
OHIO RIVER DIV

Comment Menu

- [Start New Card](#)
- [Edit Card Data](#)
- [Edit Comments](#)
- [Summary Table](#)

			Like Most	Improvements	
Date		Rec Area		Cat	Comment
06/06/22	Edit	TRACE BRANCH CAMPGROUND	fishing	OTH - Miscellaneous Comments	better cell service
06/06/22	Edit	TRACE BRANCH CAMPGROUND	serene, quiet, and beautiful	FAC - Roads & Parking	roads leading to the campground
06/06/22	Edit	TRACE BRANCH CAMPGROUND	peaceful	OTH - No Comment or Suggestion Offered	N/A
06/06/22	Edit	TRACE BRANCH CAMPGROUND	n/a	OTH - No Comment or Suggestion Offered	n/a
06/18/22	Edit	TRACE BRANCH CAMPGROUND	how clean the campground was	OTH - Miscellaneous Comments	better cell signal
06/18/22	Edit	TRACE BRANCH CAMPGROUND	the scenic views	OTH - No Comment or Suggestion Offered	
06/18/22	Edit	TRACE BRANCH CAMPGROUND	the lake is close by.	OTH - Miscellaneous Comments	better cell signal
06/18/22	Edit	TRACE BRANCH CAMPGROUND	N/A	OTH - No Comment or Suggestion Offered	N/A
06/18/22	Edit	TRACE BRANCH CAMPGROUND	The lake is close by.	OTH - Miscellaneous Comments	better cell service
06/18/22	Edit	TRACE BRANCH CAMPGROUND	great fishing	FAC - Roads & Parking	better striped parking lot
06/20/22	Edit	CONFLUENCE RECREATION AREA	quiet	OTH - No Comment or Suggestion Offered	
06/20/22	Edit	CONFLUENCE RECREATION AREA	peaceful and quiet	OTH - No Comment or Suggestion Offered	
07/02/22	Edit	DAM SITE	sewer at site, more child activies,	OTH - No Comment or	

			concrete pads, accessible TV cable	Suggestion Offered	
07/02/22	Edit	DAM SITE	playground	FAC - Roads & Parking	speed bumps
07/02/22	Edit	DAM SITE	family environment, and friendly staff	OTH - No Comment or Suggestion Offered	
07/02/22	Edit	DAM SITE	good fishing	FAC - Boat Ramps/Courtesy Docks/Piers	bigger boat ramp
07/02/22	Edit	DAM SITE	playground and shelters	FAC - Roads & Parking	more parking spots
07/02/22	Edit	DAM SITE	clean, friendly park staff	FAC - Other Facilities	splash pad, pool
07/02/22	Edit	DAM SITE	great fishing	FAC - Boat Ramps/Courtesy Docks/Piers	keep the boat ramp clean
07/02/22	Edit	DAM SITE	scenery	OTH - No Comment or Suggestion Offered	
07/02/22	Edit	DAM SITE	great hiking trail	SVC - Facility Cleaning	drift in lake
07/03/22	Edit	LEATHERWOOD RECREATION AREA	the views	FAC - Buildings Restrooms/Shower Houses	needs updated restroom
07/03/22	Edit	LEATHERWOOD RECREATION AREA		FAC - Buildings Restrooms/Shower Houses	running water in recreation area
07/03/22	Edit	LEATHERWOOD RECREATION AREA	great family vacation	OTH - No Comment or Suggestion Offered	
07/04/22	Edit	CONFLUENCE RECREATION AREA		OTH - Miscellaneous Comments	more cell service
07/04/22	Edit	CONFLUENCE RECREATION AREA		SVC - Facility Cleaning	clean up mud in the spring
07/04/22	Edit	CONFLUENCE RECREATION AREA		SVC - Facility Cleaning	cleaner bathrooms
07/04/22	Edit	CONFLUENCE RECREATION AREA	the natural beauty	FAC - Other Facilities	disc golf course
07/04/22	Edit	CONFLUENCE	very nice lake	FAC - Roads & Parking	parking lot needs stripped

		RECREATION AREA			
07/04/22	Edit	CONFLUENCE RECREATION AREA	lots of trees	FAC - Other Facilities	more dog friendly
07/04/22	Edit	CONFLUENCE RECREATION AREA	plentiful wildlife	OTH - Miscellaneous Comments	no places to eat
07/04/22	Edit	DAM SITE		FAC - Roads & Parking	more handicap parking spaces
07/04/22	Edit	CONFLUENCE RECREATION AREA		FAC - Roads & Parking	needs a better parking lot
07/04/22	Edit	DAM SITE	clean campground, peaceful and relaxing	FAC - Buildings Restrooms/Shower Houses	sewage hook up, air conditioned restrooms, better internet and cable
07/04/22	Edit	DAM SITE	fishing	FAC - Other Facilities	disc golf course
07/04/22	Edit	DAM SITE	the fishing	OTH - No Comment or Suggestion Offered	
07/04/22	Edit	DAM SITE	lovely people	FAC - Roads & Parking	better roads
07/04/22	Edit	DAM SITE	quiet and peaceful	OTH - No Comment or Suggestion Offered	
07/04/22	Edit	DAM SITE	local store owners	OTH - No Comment or Suggestion Offered	
07/04/22	Edit	DAM SITE	nature	FAC - Other Facilities	petting zoo
07/04/22	Edit	DAM SITE	best fishing around	FAC - Roads & Parking	could repave the boat ramp
07/04/22	Edit	DAM SITE	good fishing	OTH - Miscellaneous Comments	more bait shops
07/06/22	Edit	DAM SITE	fishing	FAC - Boat Ramps/Courtesy Docks/Piers	better boat ramp
07/06/22	Edit	DAM SITE	great fishing	FAC - Boat Ramps/Courtesy Docks/Piers	drift clean up and larger boat ramp with more parking
07/06/22	Edit	DAM SITE	the views	OTH - Miscellaneous Comments	spy/glass or binocular stations
07/06/22	Edit	DAM SITE		FAC - Roads & Parking	parking lot need repainted

07/06/22	Edit	DAM SITE		SVC - Facility Cleaning	drift removal
07/06/22	Edit	DAM SITE	great place for lunch	FAC - Roads & Parking	more parking spots
07/09/22	Edit	CONFLUENCE RECREATION AREA	great place to fish	FAC - Roads & Parking	parking lot needs better painted lines
07/09/22	Edit	CONFLUENCE RECREATION AREA		FAC - Roads & Parking	better roads to park area
07/09/22	Edit	CONFLUENCE RECREATION AREA	scenic	OTH - No Comment or Suggestion Offered	
07/09/22	Edit	CONFLUENCE RECREATION AREA	great for family gatherings	FAC - Other Facilities	bigger playground
07/09/22	Edit	CONFLUENCE RECREATION AREA	the fishing	OTH - Miscellaneous Comments	flooding
07/09/22	Edit	CONFLUENCE RECREATION AREA		OTH - Miscellaneous Comments	less flooding
07/24/22	Edit	CONFLUENCE RECREATION AREA	great place for lunch	FAC - Roads & Parking	more parking spaces
07/24/22	Edit	CONFLUENCE RECREATION AREA	great place o take the kids	OTH - Miscellaneous Comments	more public events
07/29/22	Edit	TAILWATER RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
07/30/22	Edit	TAILWATER RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
07/30/22	Edit	CONFLUENCE RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
07/30/22	Edit	DAM SITE	Area closed due to flooding	OTH - No Comment or Suggestion Offered	area closed due to flooding
07/30/22	Edit	CONFLUENCE RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding

08/07/22	Edit	DAM SITE	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
08/13/22	Edit	DAM SITE	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
08/13/22	Edit	DAM SITE	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
08/23/22	Edit	LEATHERWOOD RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding
08/25/22	Edit	CONFLUENCE RECREATION AREA	Area closed due to flooding	OTH - No Comment or Suggestion Offered	Area closed due to flooding

Webdate: March 2006
Technical Problems

BUCKHORN LAKE MASTER PLAN REVISION

Lacey Gabbard, AICP
Jennifer Stromberg
Planners

Glenn Myrick
Project Manager

Dewayne Shouse
Lake Project Manager

U.S. Army Corps of Engineers
Louisville District
May 18, 2022



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AGENDA

- Introductions
- Project Background
- What is a Master Plan
- Stakeholder/Public Participation
- Open Forum – Suggestions/Q&A



MEETING OBJECTIVES

- Inform the public and stakeholders that a master plan revision has started
- Describe the master plan revision process
- Learn what needs, ideas, and concerns stakeholders have about the master plan revision
- Collect your questions and ask for your participation in providing any pertinent information. This information could include:
 - Management Plans
 - Natural and Cultural Resource Data
 - Visitation and Recreation Data
 - Any previous studies completed
- NEPA Scoping Process
 - Opportunity for Public/agency comments and questions on the potential impacts of proposed federal actions
 - Includes comments from other federal, state, and local governments, and Tribal Nations
- Encourage Participation



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ABOUT BUCKHORN LAKE

Buckhorn Lake is located in Leslie and Perry counties in eastern Kentucky. Construction of the operating tower and outlet works began in October 1956 and was completed in June 1958. The lake was impounded in December 1961.

Rock excavation forms the emergency spillway at Buckhorn Lake. Electrically operated gates release water through the structure when storage capacity is exceeded.



For more information, visit our website at:

<https://www.lrl.usace.army.mil/Missions/CivilWorks/Recreation/Lakes/Buckhorn-Lake/>

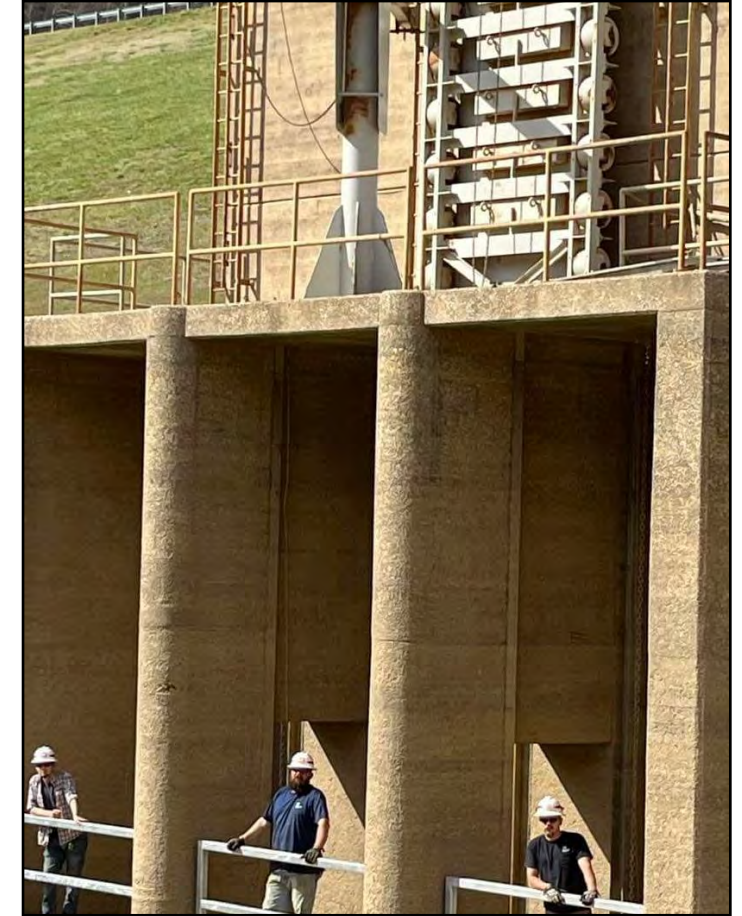
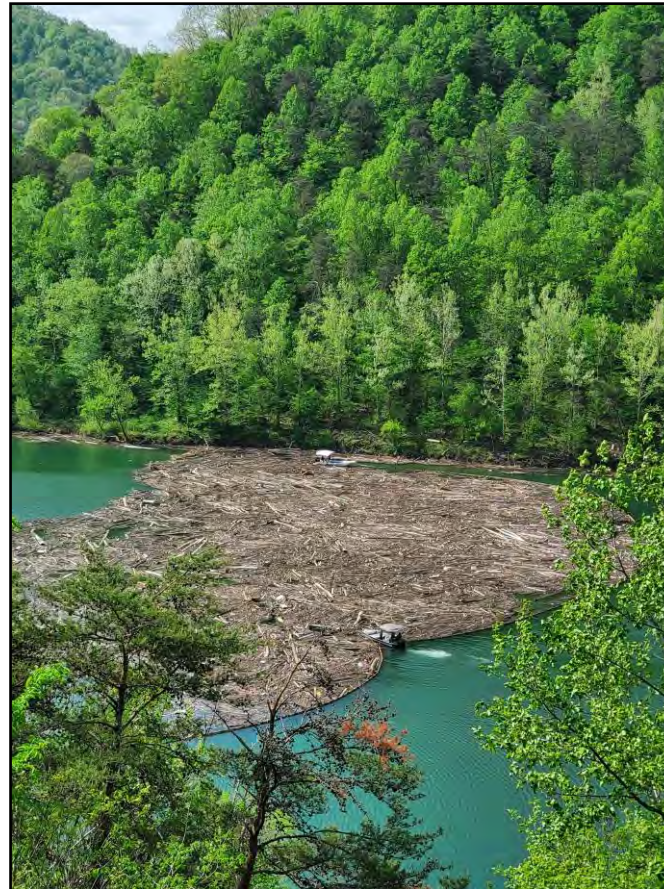


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BUCKHORN LAKE CURRENT CONDITIONS

- Record Visitation in 2020
- Increased demand on facilities
- Undersized Recreation Facilities
- Flat lined Recreation Budgets
- Water Quality
- Aging Infrastructure
- Cooperative Efforts
- Loss of partnerships
- Masterplan



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CURRENT STATE OF THE PROJECT

USACE Operated

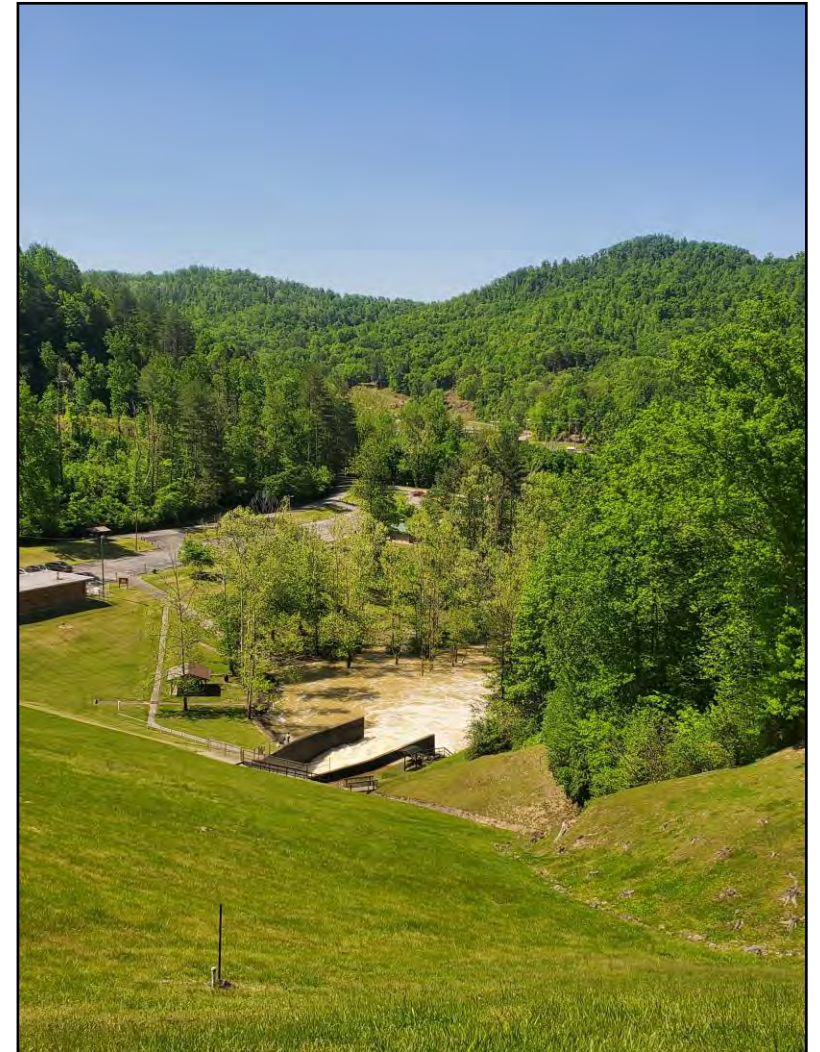
- 82 Campsites
- 4 Boat Ramps
- 2 Trails

Outgrants

- 1 Marina
- 30 Campsites
- Cabins
- 1 Resort
- 2 Boat Ramps
- 1 Trail
- 1 Beach

Environmental Concerns

- Water quality
- Sedimentation
- Aquatic habitat loss
- Impacts of Invasive Species
- Drift accumulation



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WHAT IS A MASTER PLAN?

The Master Plan is a strategic land use management document that guides the comprehensive management and development of all project recreational, natural and cultural resources throughout the life of the water resource development project.

- It presents broad, conceptual resource management objectives and land classifications on project lands that are broad and adaptive over time.
- Adheres to Federal laws to preserve, conserve, restore, maintain, manage, and develop project lands, waters, and associated resources, including the National Environmental Policy Act (NEPA) for environmental stewardship and outdoor recreation
- Reviewed every 5 years; General goal is an effective lifespan of 15- 25 years



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WHAT WILL THE MASTER PLAN REVISION INCLUDE?

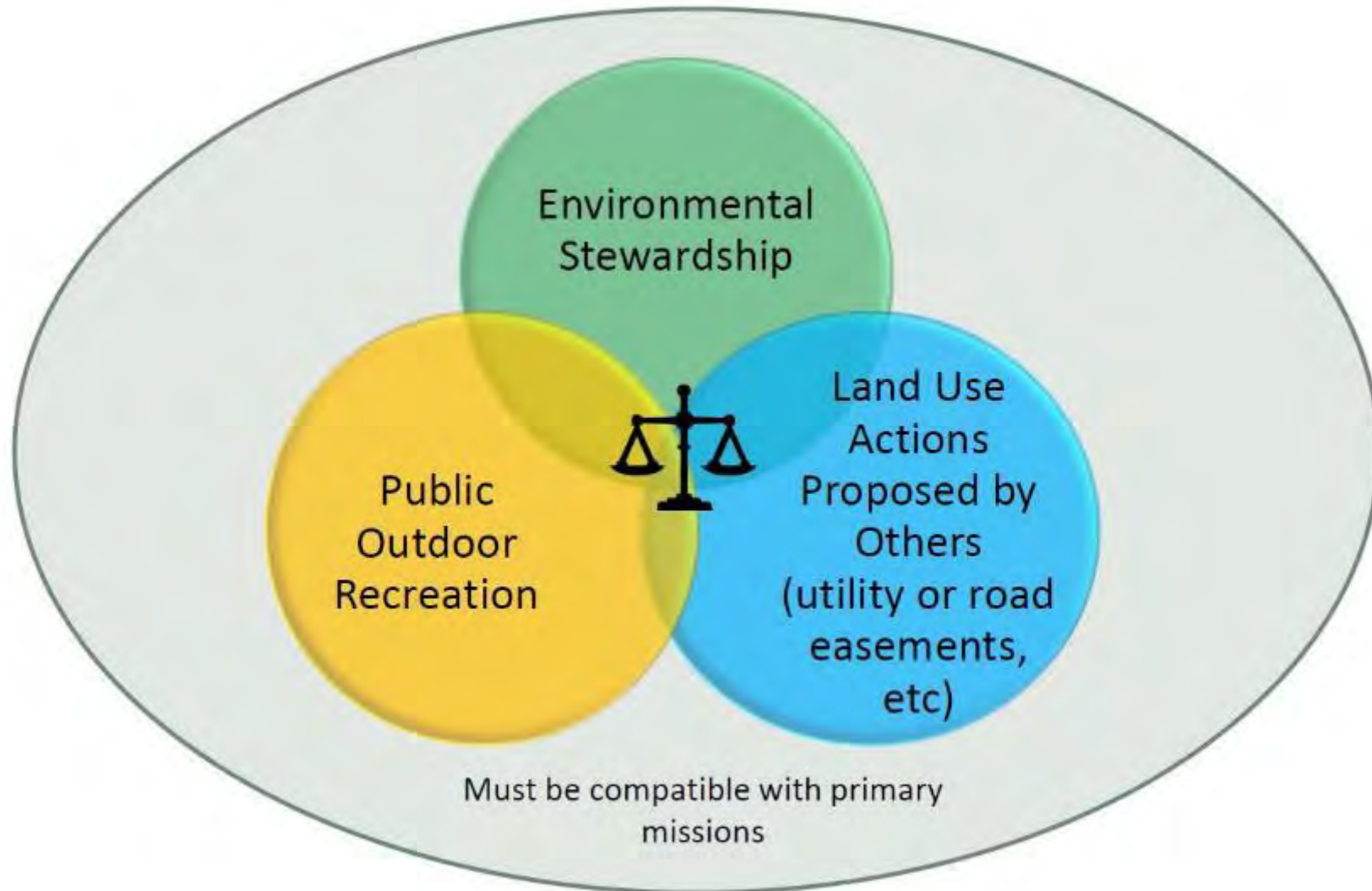
- Identify issues, needs, and opportunities
- Provide land classifications and resource management objectives
- Provide for protection of environmentally and culturally sensitive areas
- NEPA documentation will be integrated in the master plan revision
 - Ensure federal agencies give proper consideration to the environment prior to undertaking a federal action
 - Involve the Public (scoping) in the decision-making process
 - Document the process by which agencies make informed decisions



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GOALS OF A MASTER PLAN



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WHAT IS NOT PART OF A MASTER PLAN?

- 1) Focus on facility design details or details of daily project administration.
- 2) Address water level management and flood control as a separate manual is used to regulate water storage and discharge.
- 3) Plan or approve changes to the management of allowable private activities as set forth in ER 1130-2-406 (docks and vegetation modification).
- 4) Technical aspects of:
 - Water management for flood risk management
 - Regional water quality
 - Water supply
 - Shoreline management
 - Water level management
 - Hydropower
 - Navigation



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WHY ARE WE REVISING BUCKHORN LAKE'S MASTER PLAN NOW?

The current Master Plan was completed in 1972.

Because the master plan is 50 years old, the plan includes little information on cultural resources, invasive species, endangered species, wildlife habitat value, jurisdictional wetlands, and other environmental features that have become critically important following the passage of landmark legislation such as the Clean Water Act and Endangered Species Act.



Changes in social and recreational conditions have occurred since the master plan was approved. The revision will re-examine land classifications due to these substantial changes.

This update is stewardship driven and seeks to balance recreational development and use with the goal of conservation of natural and cultural resources.



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MASTER PLAN REVISION TEAM

Accomplished by a team of Corps employees --- with input from other agencies

- Project Manager
- Operations Project Manager
- Planner
- Biologist
- Archaeologist
- Lake Staff
 - Lake Manager
 - Rangers
 - Natural Resource Specialist
- Office Of Counsel
- GIS Team
- Real Estate Specialists
- Public Affairs Specialist



Stakeholders

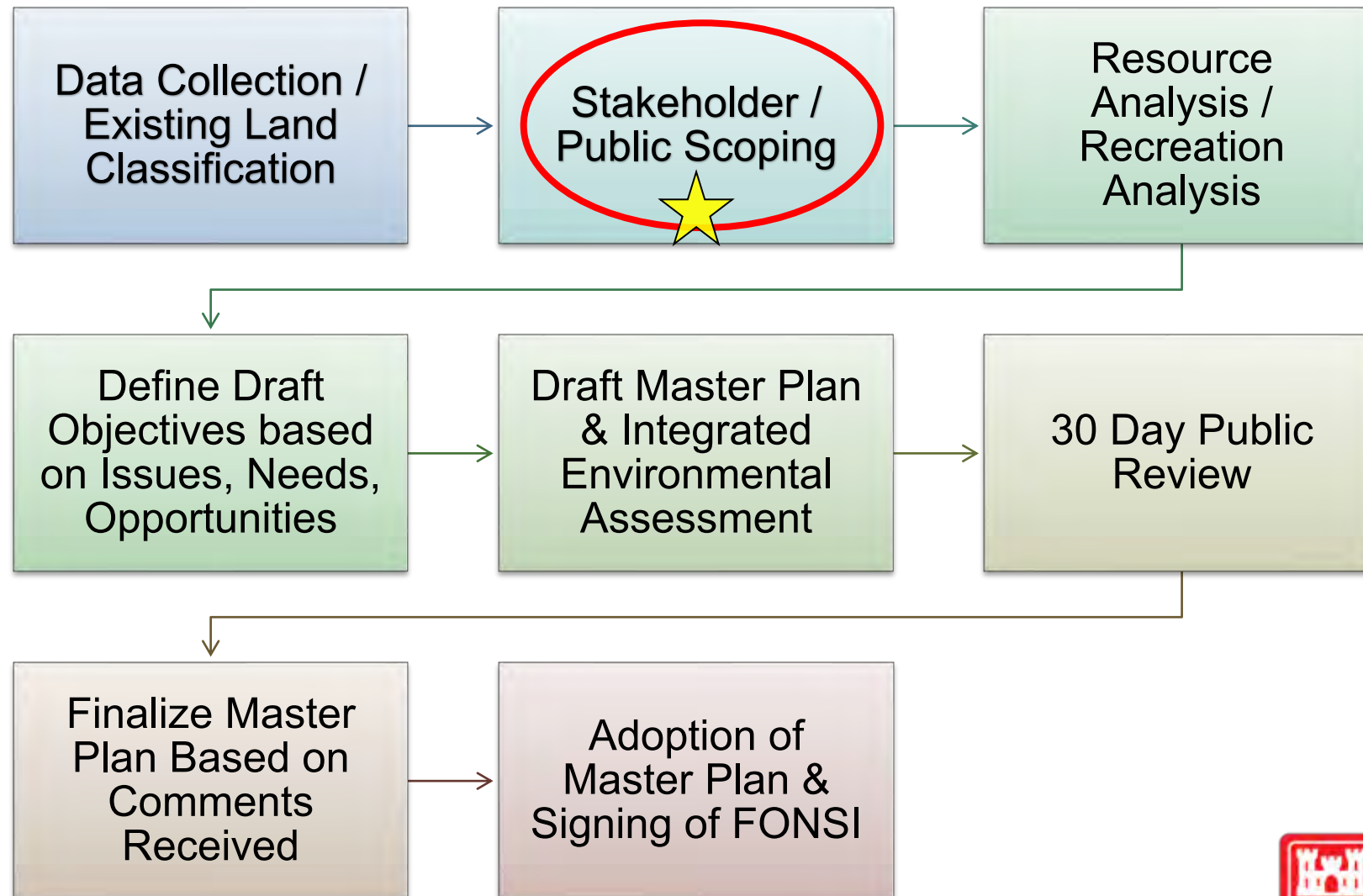
General Public



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MASTER PLANNING PROCESS



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RESOURCE ANALYSIS



- Fish and Wildlife Resources
- Vegetative Resources
- Threatened & Endangered Species
- Invasive Species
- Ecological Setting
- Wetlands

Example: Invasive Plant Species List

Common Name	Species
Autumn Olive	<i>Elaeagnus umbellata</i>
Canada thistle	<i>Cirsium arvense</i>
Common Reed	<i>Phragmites australis</i>
Emerald ash borer	<i>Agrilus planipennis</i>
Eurasian watermultifoil	<i>Myriophyllum spicatum</i>
Garlic mustard	<i>Alliaria petiolata</i>
Japanese chaff flower	<i>Achyranthus japonica</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Johnson grass	<i>Sorghum halepense</i>
Multiflora rose	<i>Rosa multiflora</i>
Oriental bittersweet	<i>Celastrus orbiculata</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
Zebra mussel	<i>Dreissena polymorpha</i>



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RESOURCE OBJECTIVES

- Clearly written statements that set forth measurable and attainable management activities that support the stated goals of the MP
- Must be consistent with authorized project purposes, Federal laws, directives, regional needs, resource capabilities, and expressed public interests
- They should also take recreational and natural resources carrying capacity into account as well as State Comprehensive Outdoor Recreation Plans (SCORP). These objectives must maximize project benefits, meet public needs, and foster environmental sustainability.



EP 1130-2-550



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RESOURCE GOALS AND OBJECTIVES

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.

Cultural Resources Objectives	Goals				
	A	B	C	D	E
Protect and manage Project natural and cultural resources through sustainable environmental stewardship programs.	o	o		o	o



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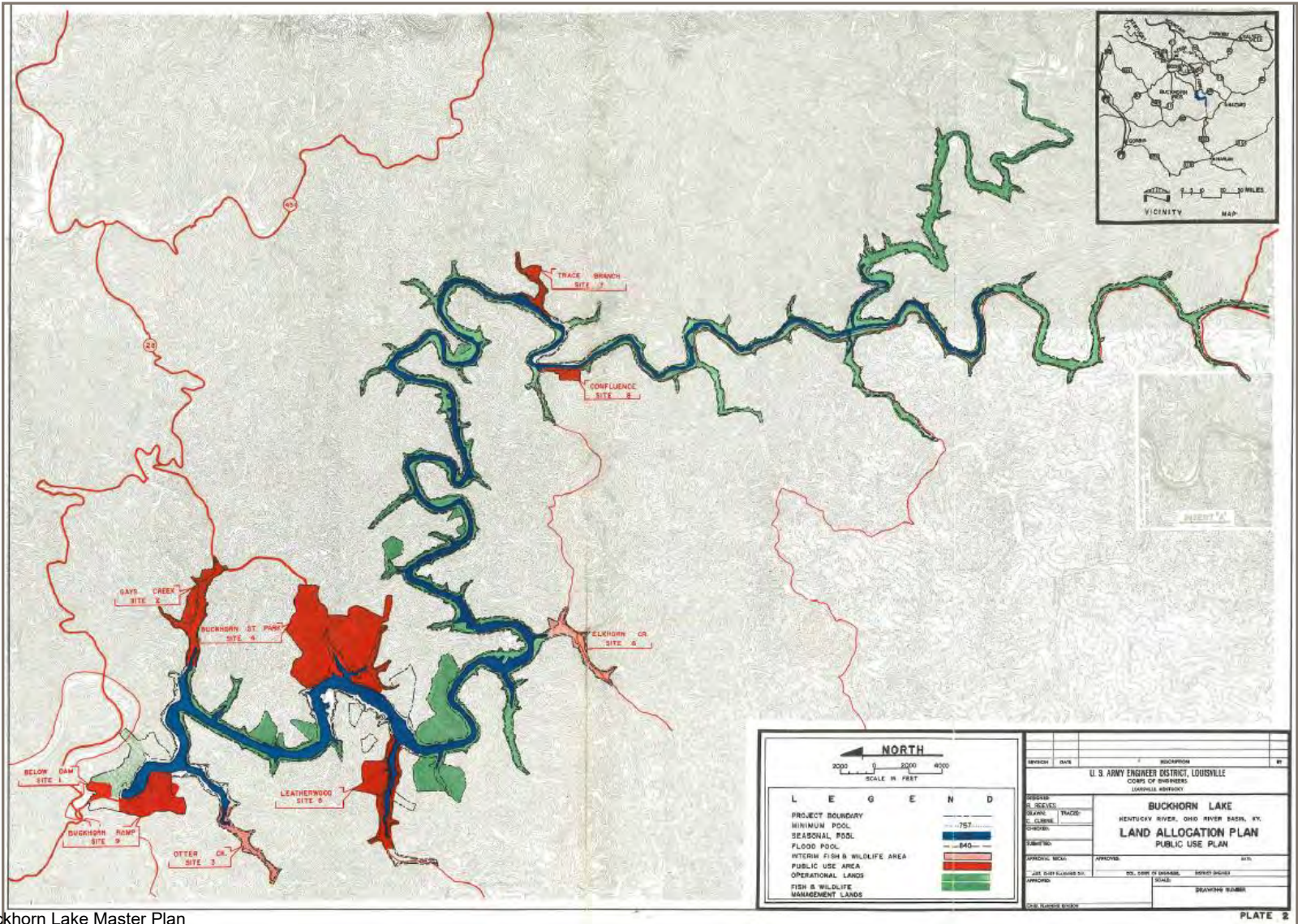
LAND ALLOCATION AND LAND CLASSIFICATION

Land Allocation – a subset of project land based on the purpose for which the land was acquired (in general, does not change throughout the life of the project)

Land Classification – a subset of project land based on how the land will be managed (in general, can be periodically changed through formal revision to reflect changing policy, public needs, or to meet mission requirements)



BUCKHORN 1972 LAND ALLOCATION MAP



- Public Use Area
- Interim Fish & Wildlife Area
- Fish & Wildlife Management
- Operations

Buckhorn Lake Master Plan
Appendix A



LAND CLASSIFICATIONS

- Project Operations
- High Density Recreation
- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Managed Lands
 - Low Density Recreation
 - Wildlife Management
 - Vegetative Management
 - Future/inactive Recreation
- Water Surface



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COMPLETING THE MASTER PLAN

- The master plan will take **18-24 months** to complete

Milestone	Schedule
Public Notification for Scoping	April 2022
Public Comment Period	18 May – 20 June 2022
Draft Master Plan/Integrated EA Complete/Notification	December 2022
Public Comment Period (30 days)	January 2023
Final Master Plan / Execution of Finding of No Significant Impact	June 2023

THERE ARE THREE WAYS TO SUBMIT COMMENTS:

1) Email: Buckhorn.masterplan@usace.army.mil

2) Mail to:

U.S. Army Corps of Engineers
Buckhorn Lake
204 Tailwater Camp Rd
Buckhorn, KY 41721




3) Interactive Lake Map: <https://qr.page/g/1MCkNdQYnNg>


<https://www.lrl.usace.army.mil/Missions/Civil-Works/Recreation/Lake-Master-Plan-Updates/Buckhorn-Lake-Master-Plan-Update/>




INTERACTIVE LAKE MAP




Buckhorn Lake - Public Comment Tool




4. Cultural/ Historical Resources Comment




1. Recreation Comment



2. Environmental Comment



3. Safety/ Emergency Management Comment



5. Other Comment



Interactive Lake Map: <https://qr.page/g/1MCKNdQYnNg>



QUESTIONS/COMMENTS?

Your Participation is
Important to Everyone!



<https://www.lrl.usace.army.mil/Missions/Civil-Works/Recreation/Lake-Master-Plan-Updates/Buckhorn-Lake-Master-Plan-Update/>

Buckhorn Lake Master Plan
Appendix A



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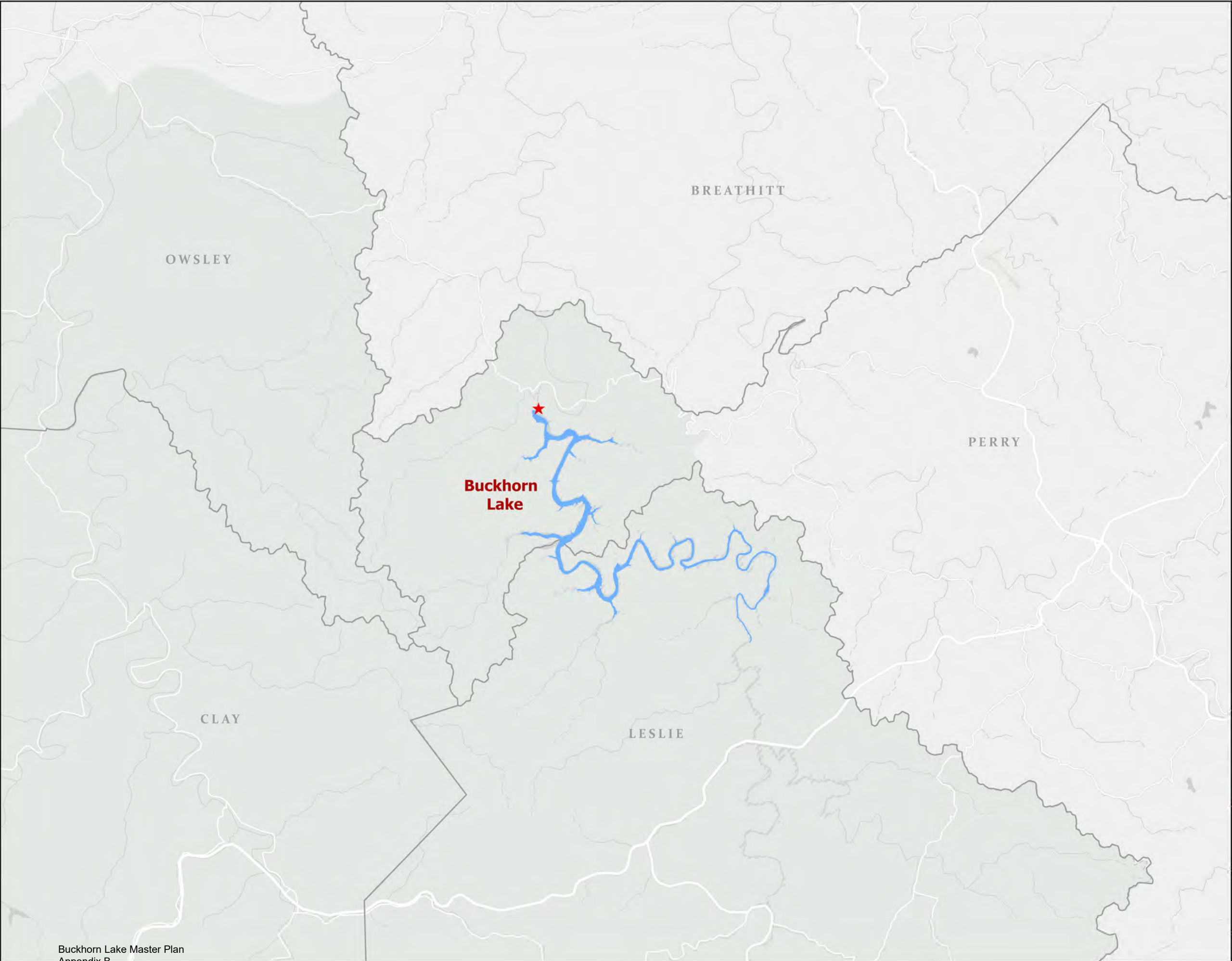
GOALS OF PUBLIC INVOLVEMENT

25

- Inform the public that a master plan revision has started
- Describe the master plan revision process
- To establish and maintain channels of communication with the public
- To identify public's interests and concerns
- To give consideration to public views throughout the process
- To provide information about process and decision making
- NEPA Scoping Process
 - Opportunity for public/agency comments and questions on the potential impacts of proposed federal actions
 - Includes comments from other federal, state, and local governments, and Tribal Nations

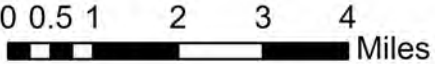


Buckhorn Lake
Master Plan 2022
Appendix B
Project Maps



Legend

- ★ Corps Office
- ◆ Cities
- Summer Pool



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Buckhorn Lake
Master Plan - 2022



Local Map

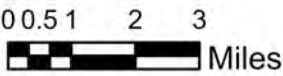
Date: 10/18/2022

DRAFT



Legend

-  Fee Boundary
-  Buckhorn Lake USACE Office



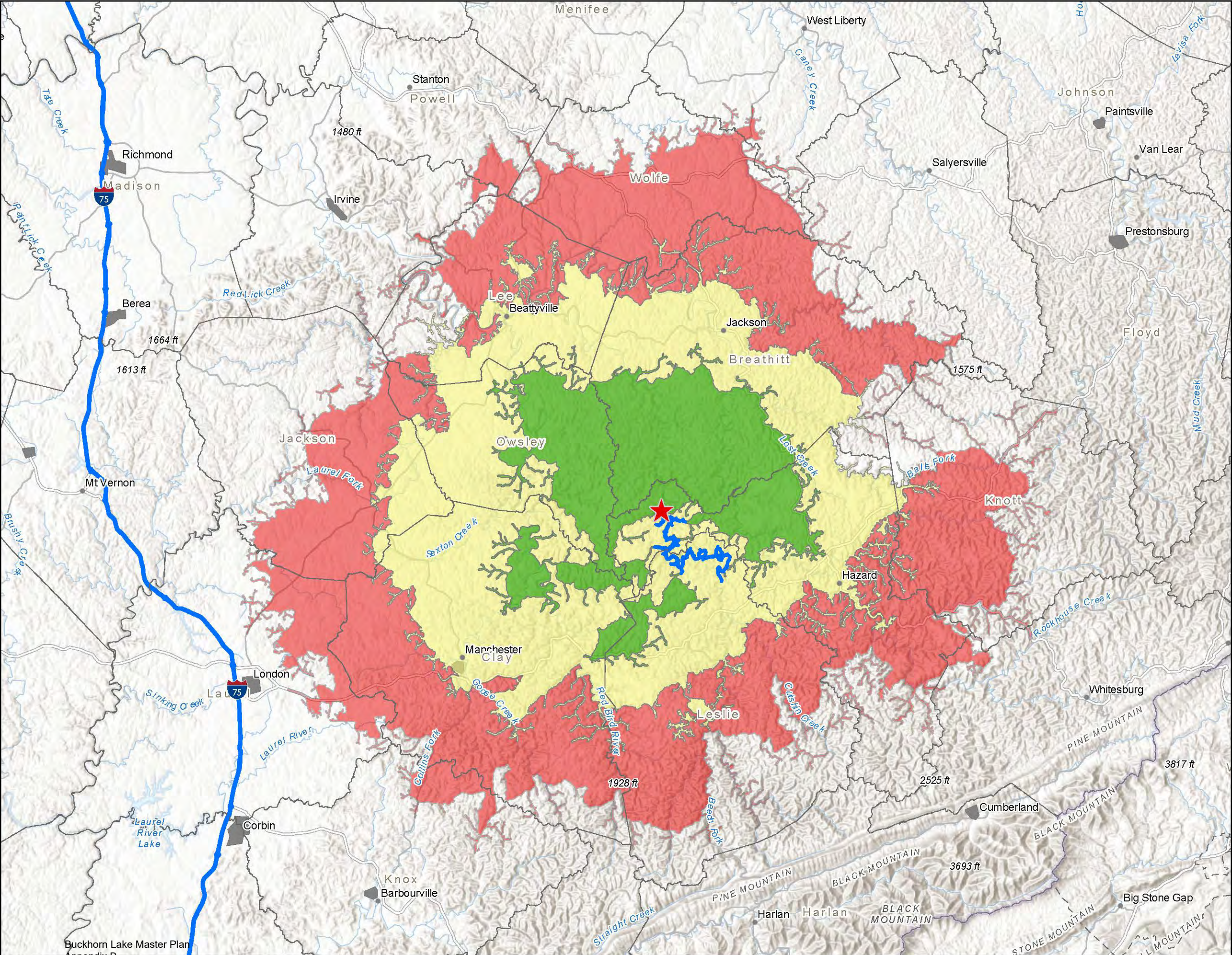
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Master Plan - 2022**

Land Classification

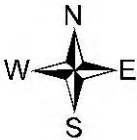
Date: 8/8/2022

DRAFT



- Legend**
- Buckhorn Corps Office
 - Interstate
 - Buckhorn Lake
 - Urban Areas
 - County

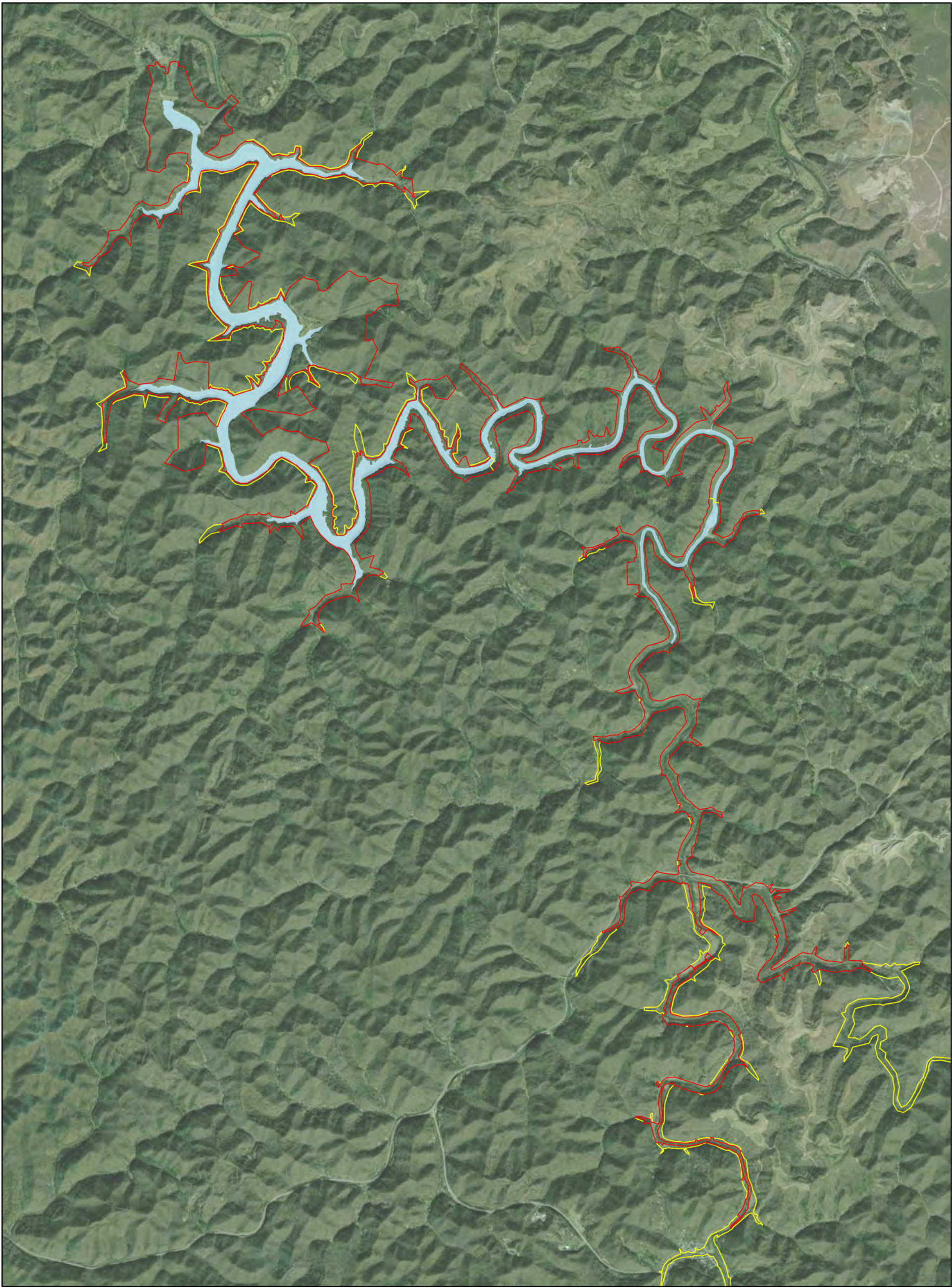
- Buckhorn Drive Time**
- 0- 30 Minutes
 - 30- 45 Minutes
 - 45-60 Minutes



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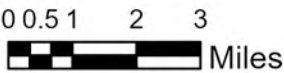
**Buckhorn Lake
Master Plan - 2022**

Drive Time



Legend

-  Fee Boundary
-  Summer Pool
-  Easement

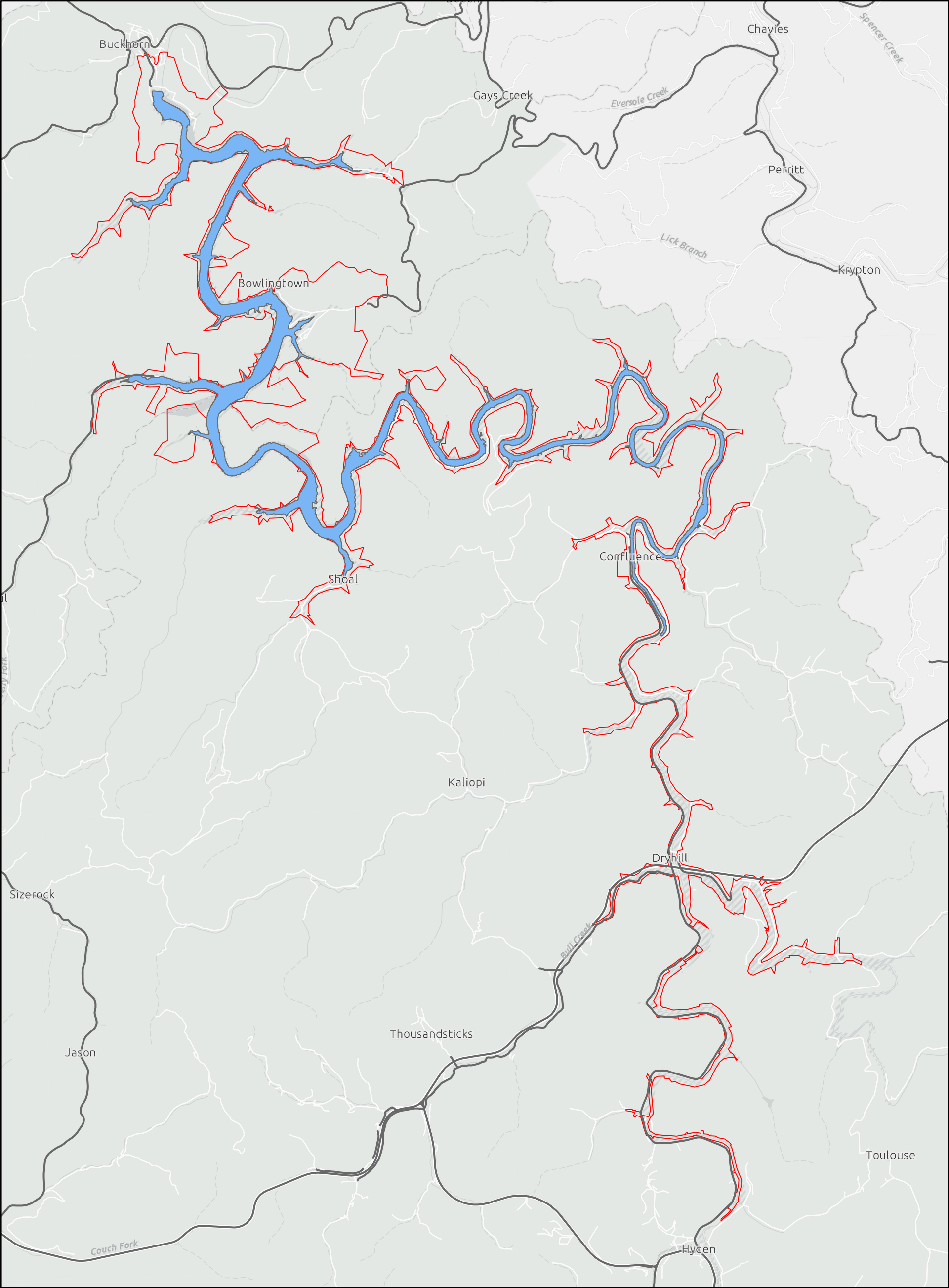


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**Buckhorn Lake
Master Plan - 2022**

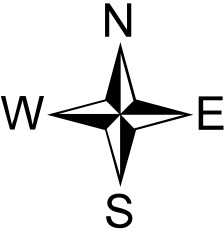
Easements

Date: 11/3/2022



Legend

-  Summer Pool
-  Major Roads
-  Fee Boundary



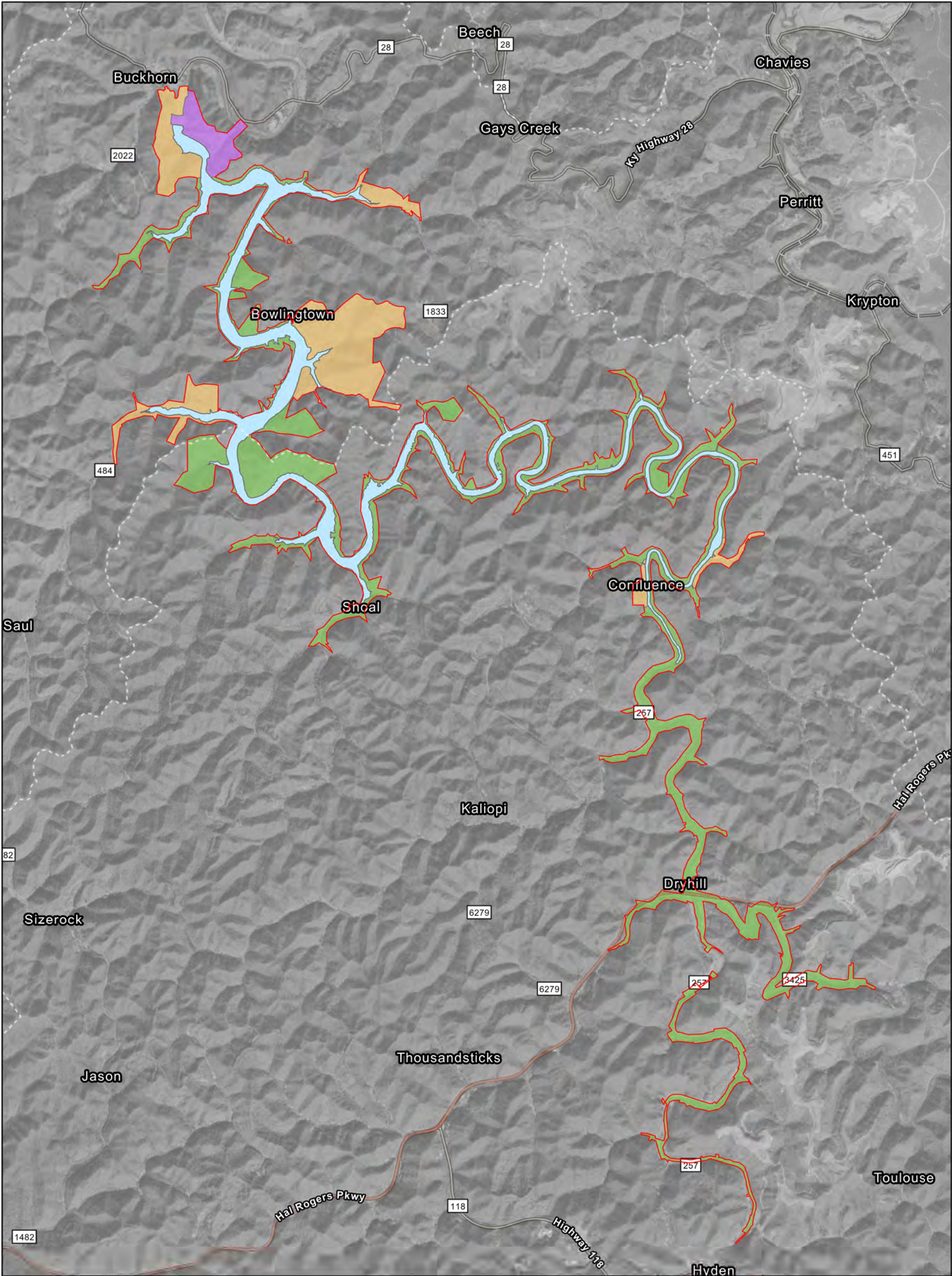
**U.S. ARMY CORPS
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**Buckhorn Lake
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Fee Title

Date: 7/15/2022




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Legend

-  Fee Boundary
-  Summer Pool

Land Allocation

-  Fish And Wildlife Management Area
-  Operations
-  Public Use Area



0 0.5 1 2 3
Miles



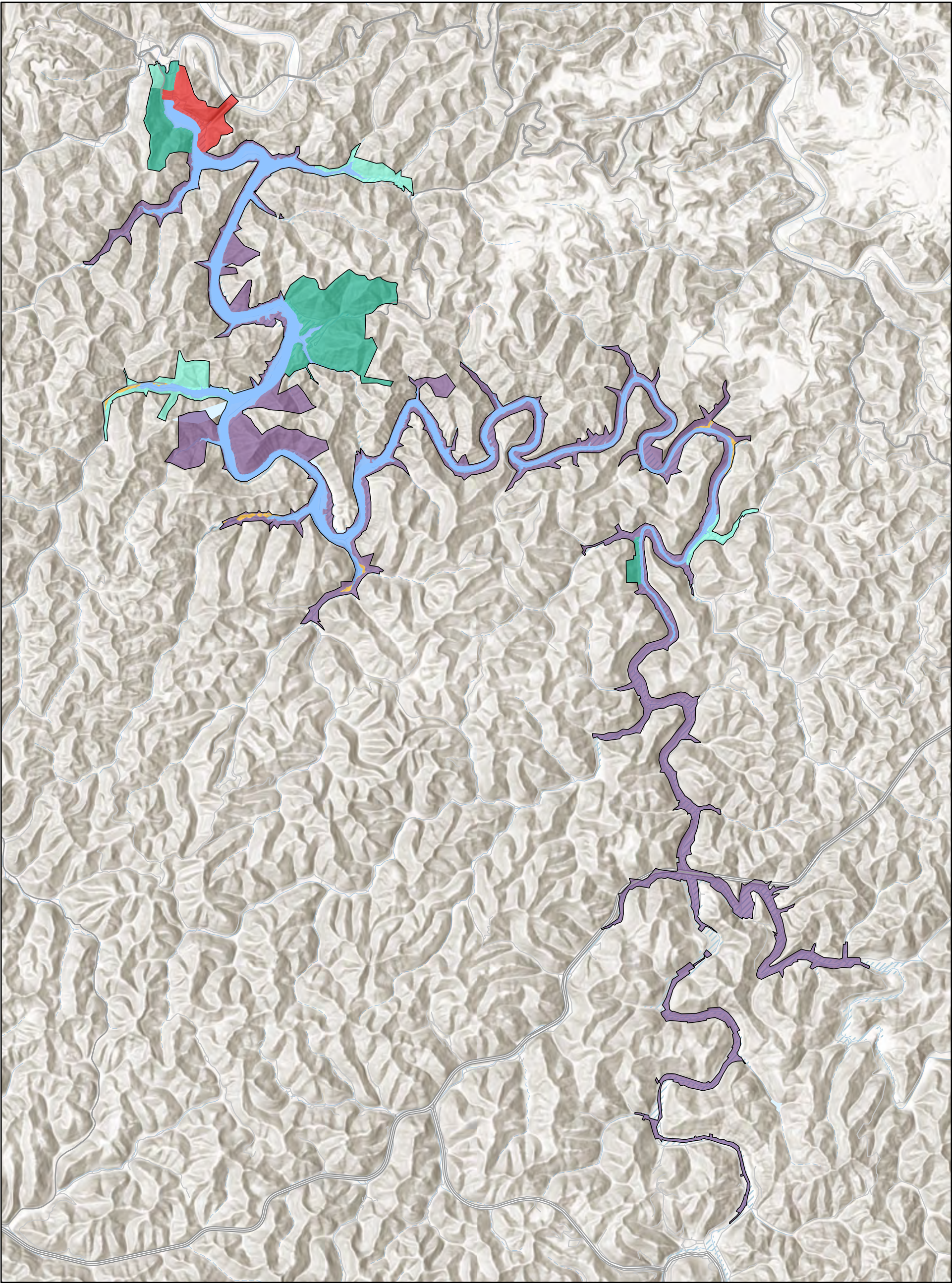
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Land Allocation






Date: 7/20/2022

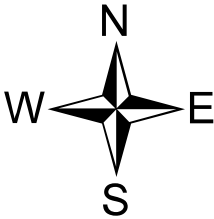
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Legend

-  Fee Boundary
-  Major Roads
-  Summer Pool

- Land Classification**
-  Operations
 -  High Density Recreation
 -  Low Density Recreation
 -  Wildlife Management
 -  Environmentally Sensitive Area



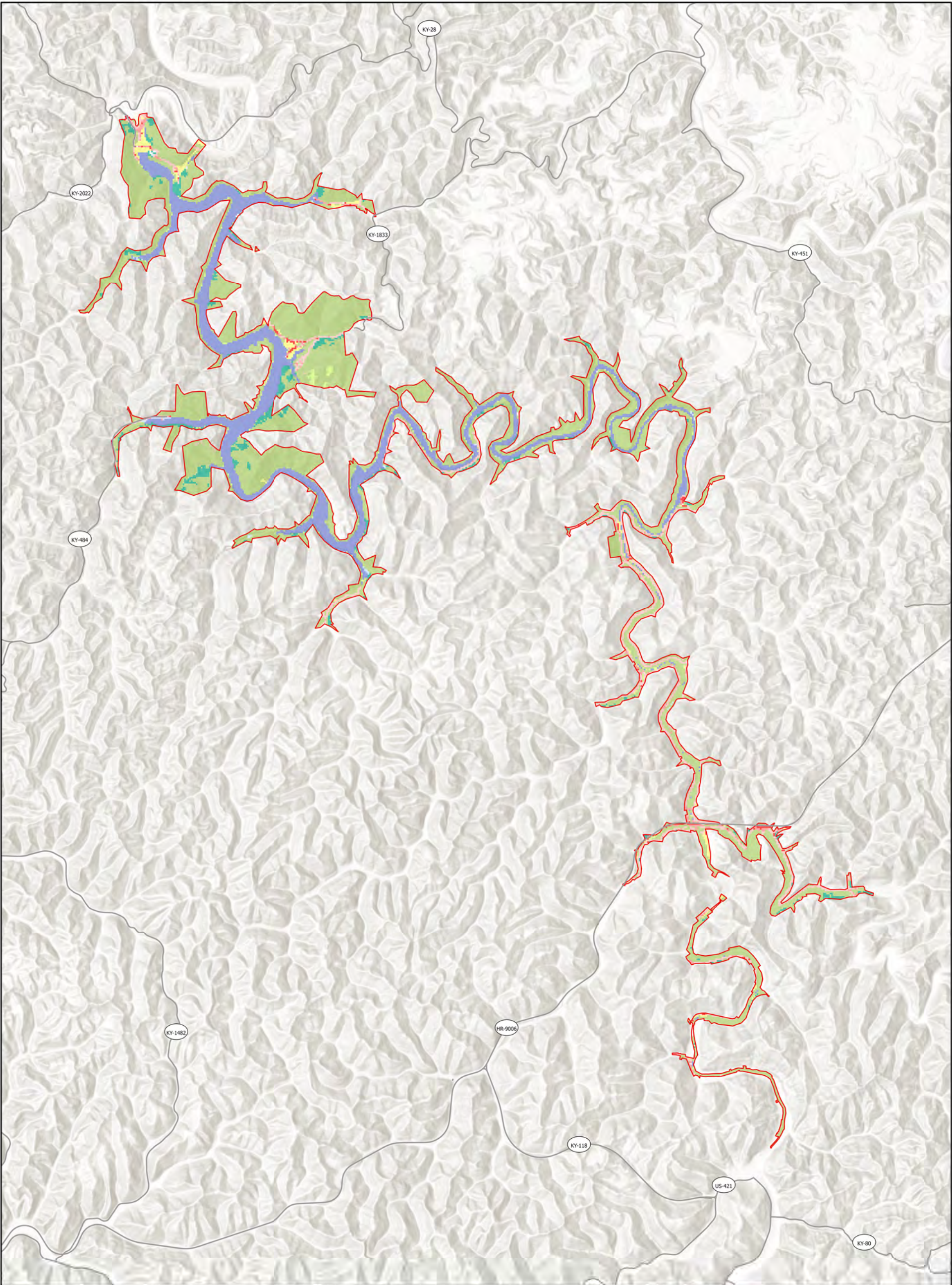
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**Buckhorn Lake
Master Plan - 2022**

Land Classification

Date: 10/28/2022

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Legend

- Major_Roads
- BHR_Fee_Boundary
- Landcover**
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands



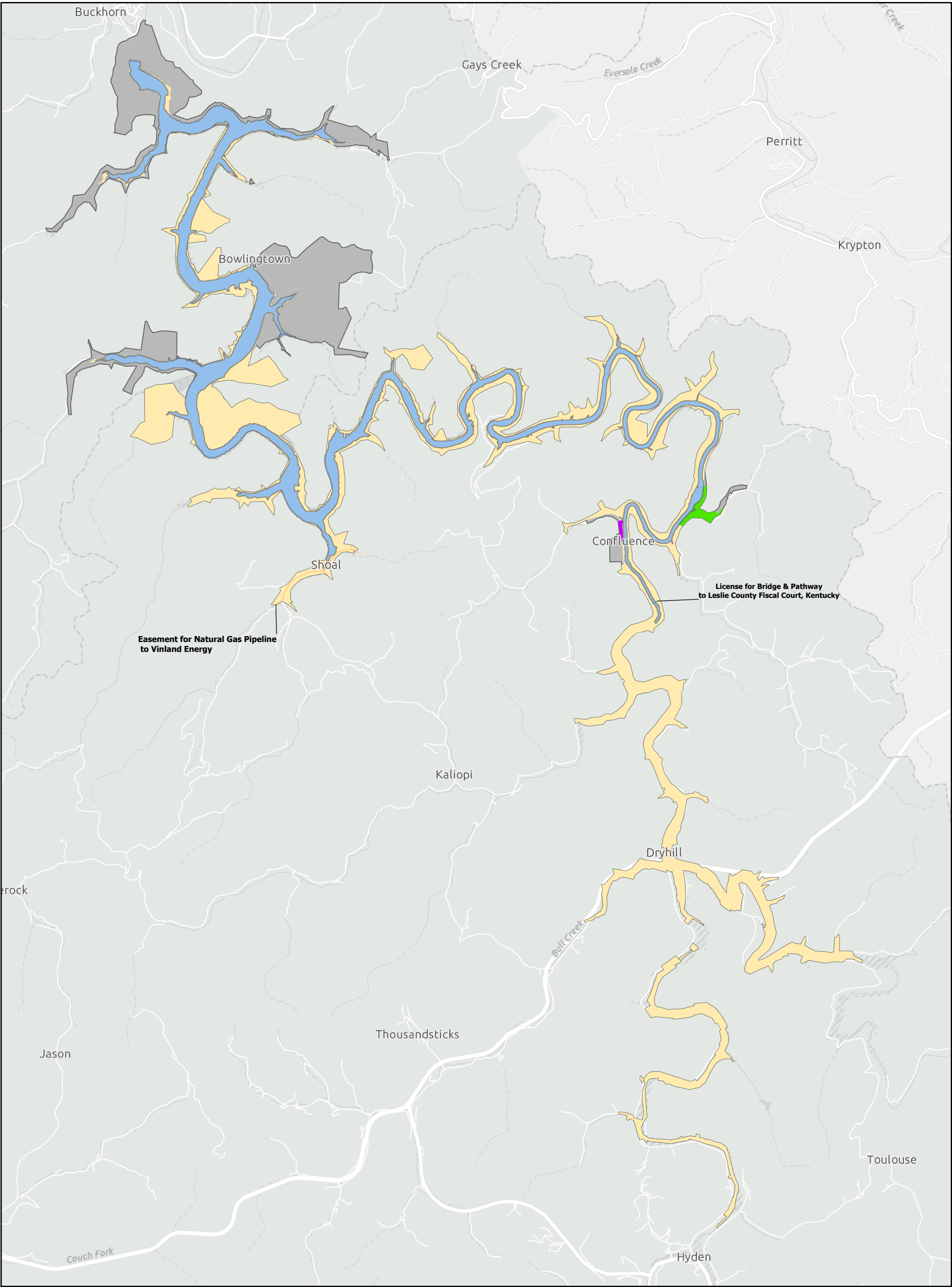
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Master Plan - 2022**








Land Cover (NLDC 2016)

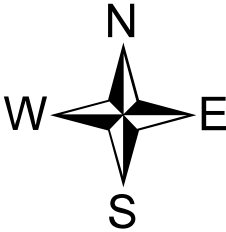
Date: 11/1/2022

DRAFT



Legend

-  Summer Pool
-  License to Commonwealth of Kentucky for Fish & Wildlife Activities
-  Lease to Leslie Co Fiscal Court for Trace Branch Boat Ramp and Water Treatment
-  Easement for Natural Gas Pipeline to Vinland Energy
-  Lease to Leslie Co Fiscal Court for Confluence Boat Ramp
-  Fee Boundary
-  License for Bridge and Pathway to Leslie County Fiscal Court, Kentucky



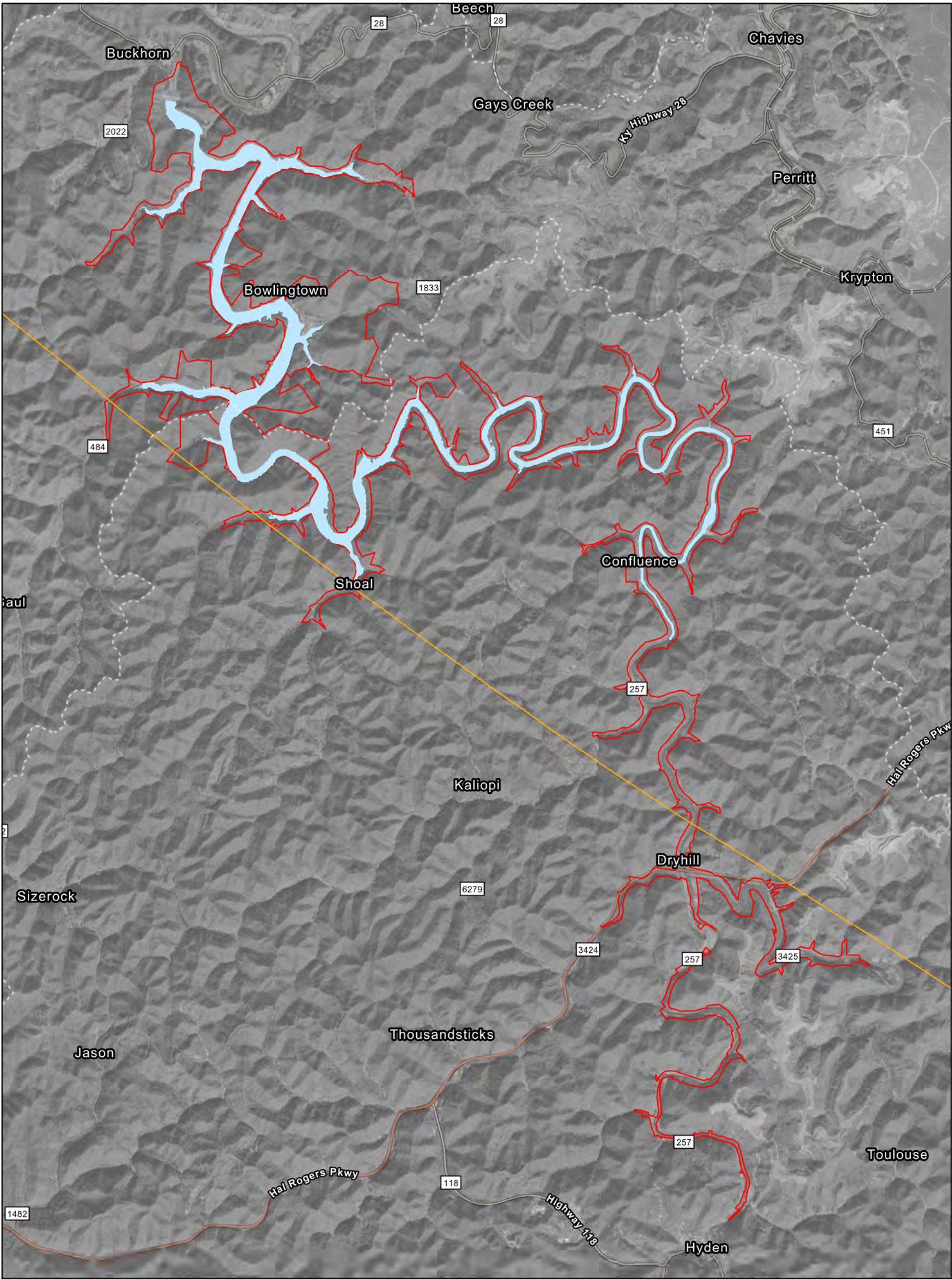
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Buckhorn Lake
Master Plan - 2022

Major Outgrants

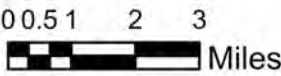
Date: 8/3/2022

DRAFT



Legend

-  Electric Transmission Line
-  Summer Pool
-  Fee Boundary



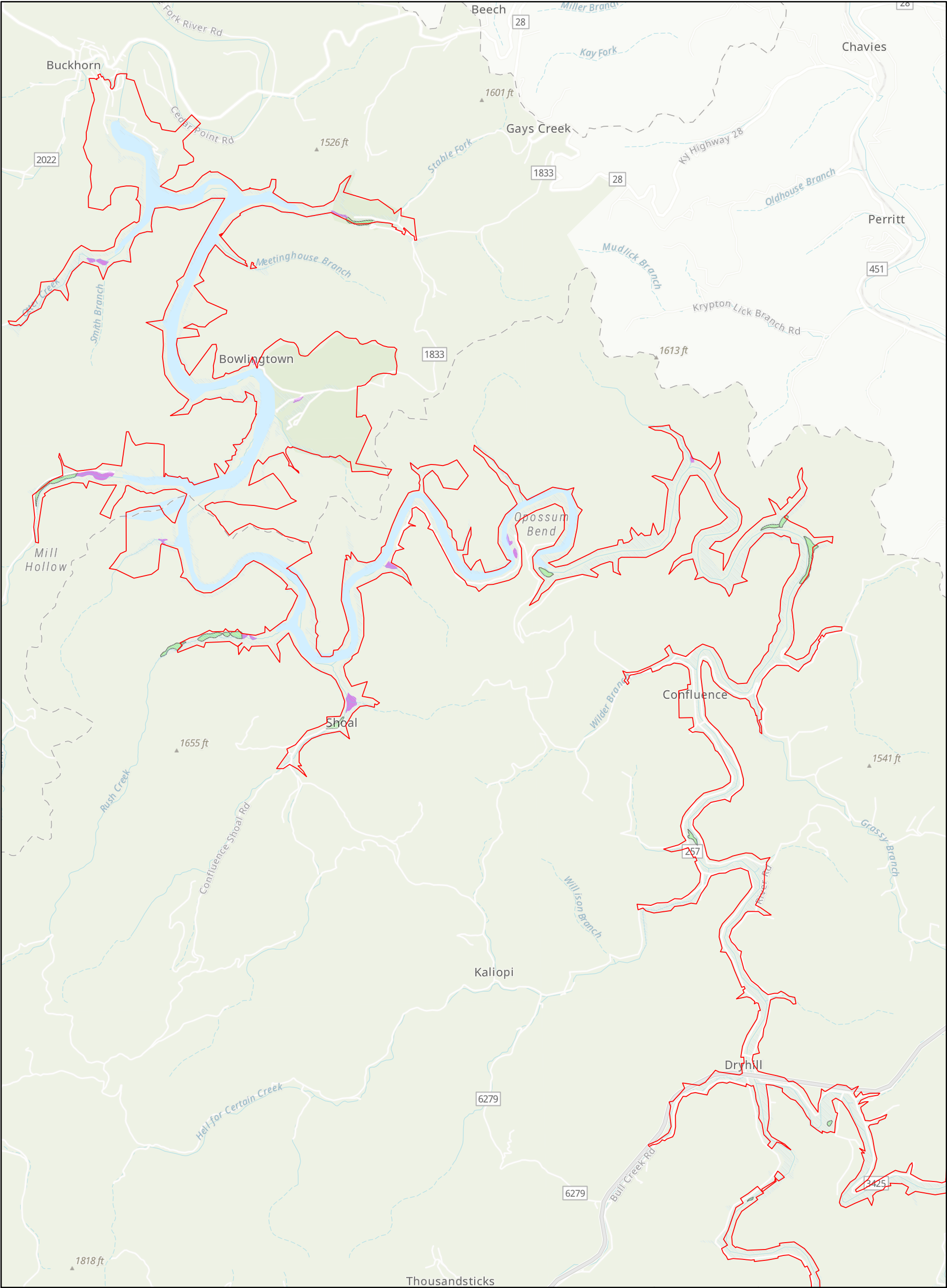
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Master Plan - 2022**




Major Utilities

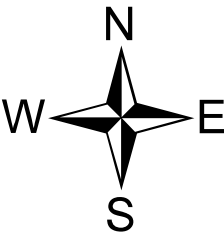
Date: 8/2/2022

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Legend

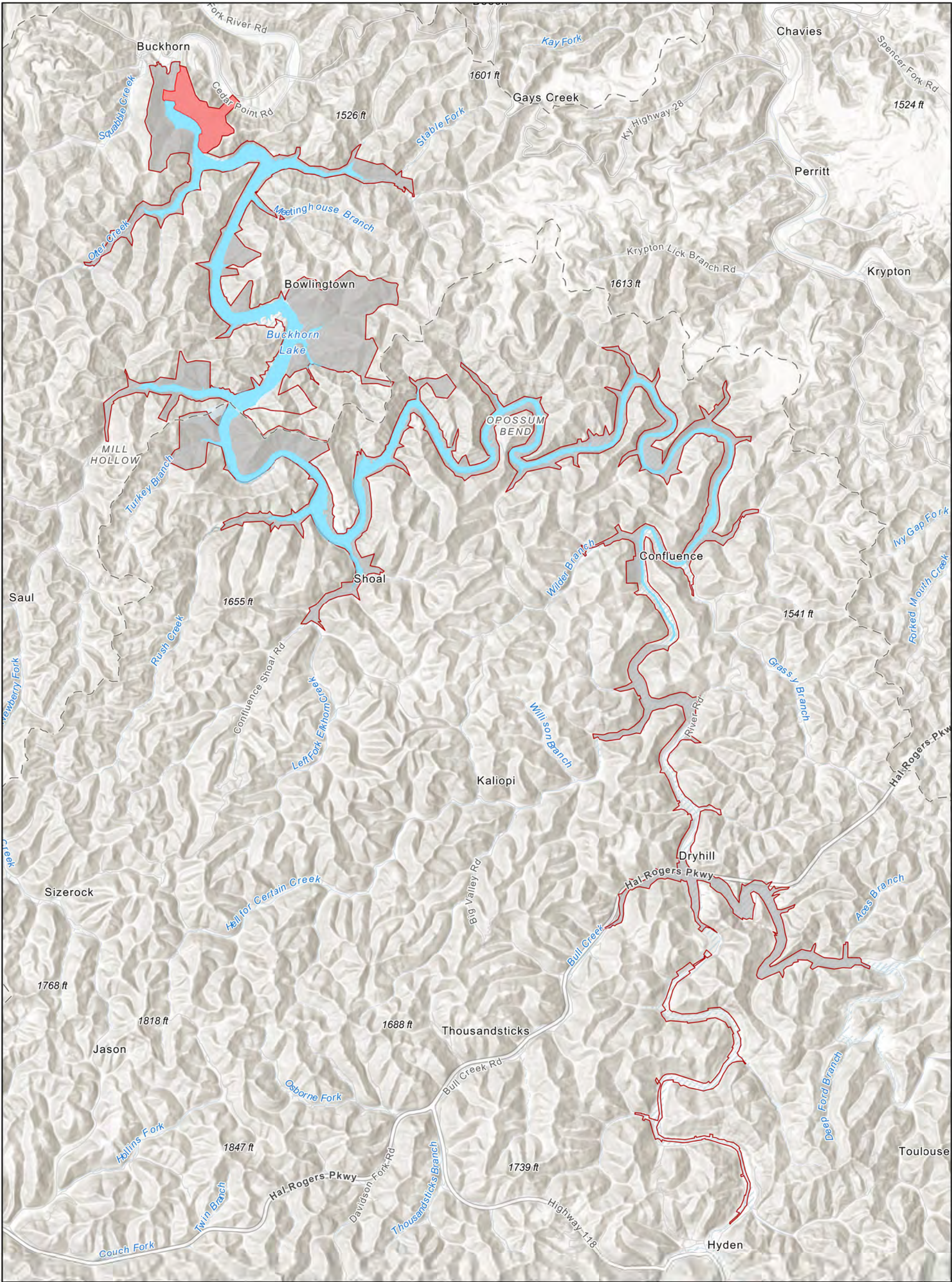
-  Fee Boundary
- Wetland Type**
-  Freshwater Emergent Wetland
-  Freshwater Forested/ Shrub Wetland






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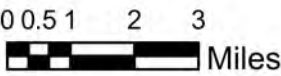
**Buckhorn Lake
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Wetlands



Legend

-  Summer Pool
-  Fee Boundary
-  Operations



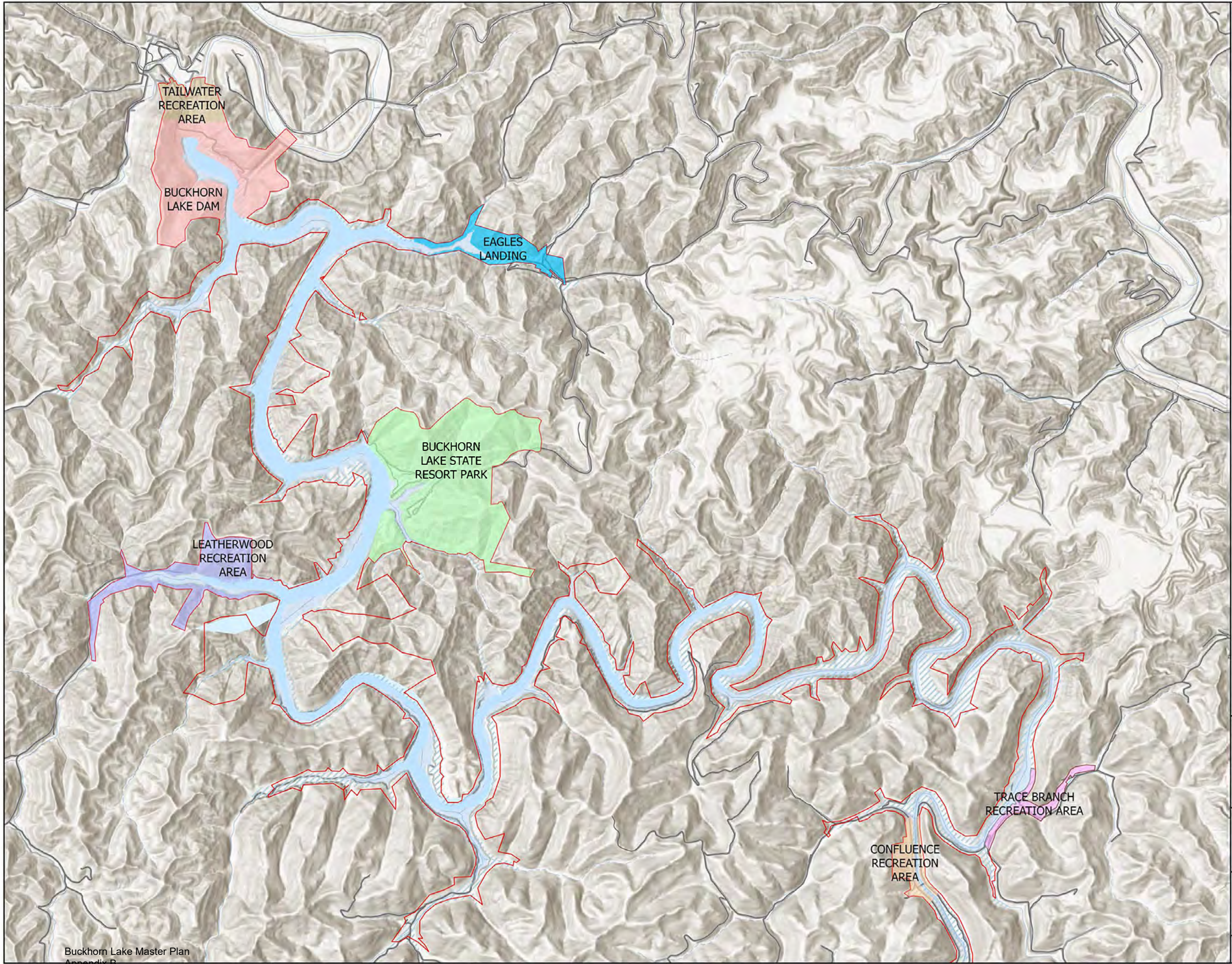
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**Buckhorn Lake
Master Plan - 2022**

Operations Overview

Date: 8/8/2022

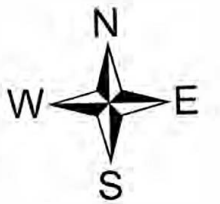
DRAFT



Legend

Feature Name

- BUCKHORN LAKE DAM
- BUCKHORN LAKE STATE RESORT PARK
- CONFLUENCE RECREATION AREA
- EAGLES LANDING
- LEATHERWOOD RECREATION AREA
- TAILWATER RECREATION AREA
- TRACE BRANCH RECREATION AREA
- Fee Boundary
- Summer Pool
- Major Roads



0 0.25 0.5 1 Miles



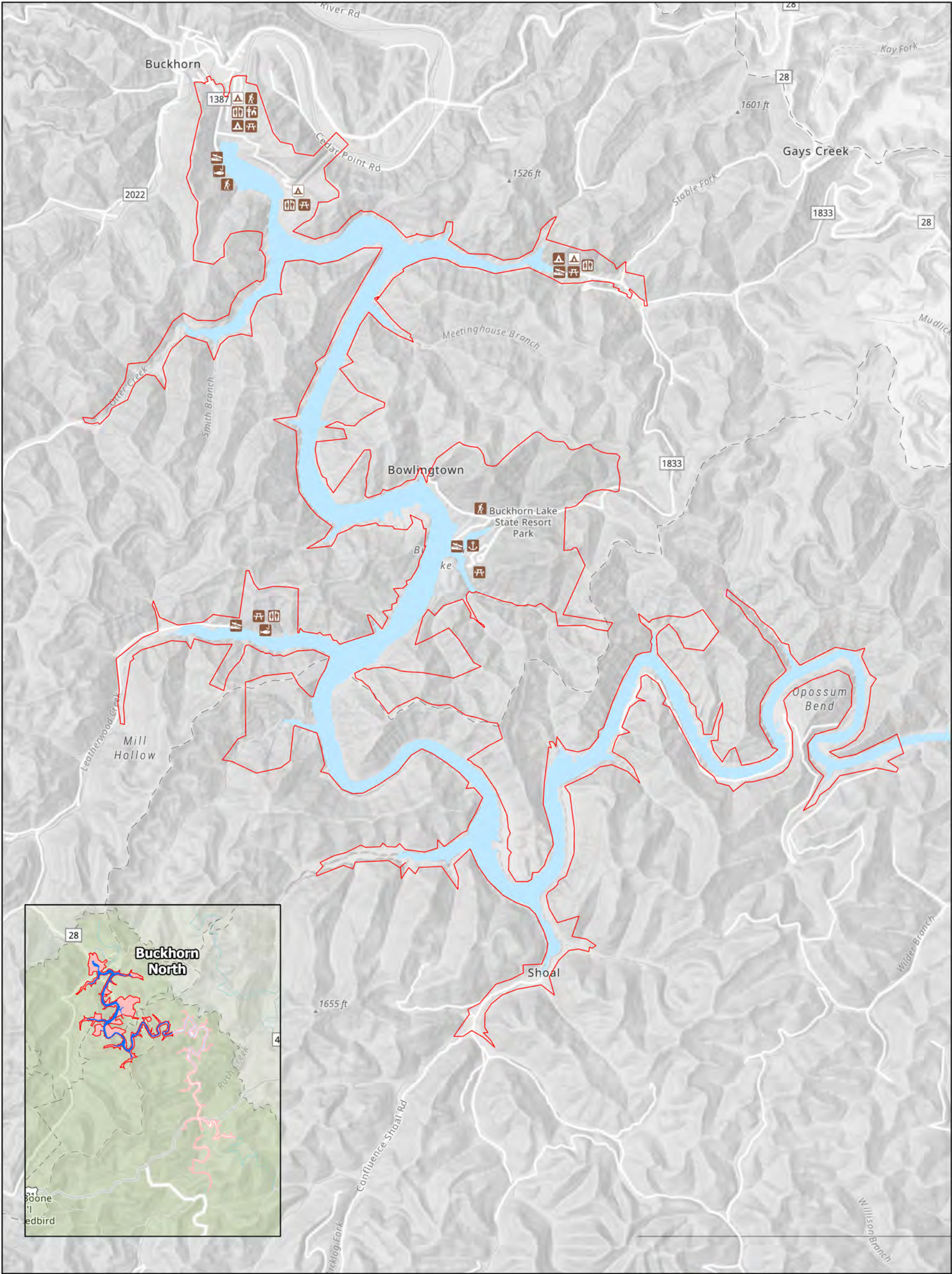
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Buckhorn Lake Master Plan - 2022

Buckhorn Lake PSAs

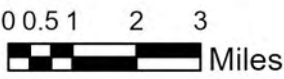
Date: 11/2/2022

14 **DRAFT**



Legend

- | | |
|----------------------|--------------|
| Gatehouse | Marina |
| Restroom or Shower | Trailhead |
| Boat Ramp | Picnic Area |
| Campground | Fee Boundary |
| Primitive Campground | Summer Pool |
| Fishing Pier | |



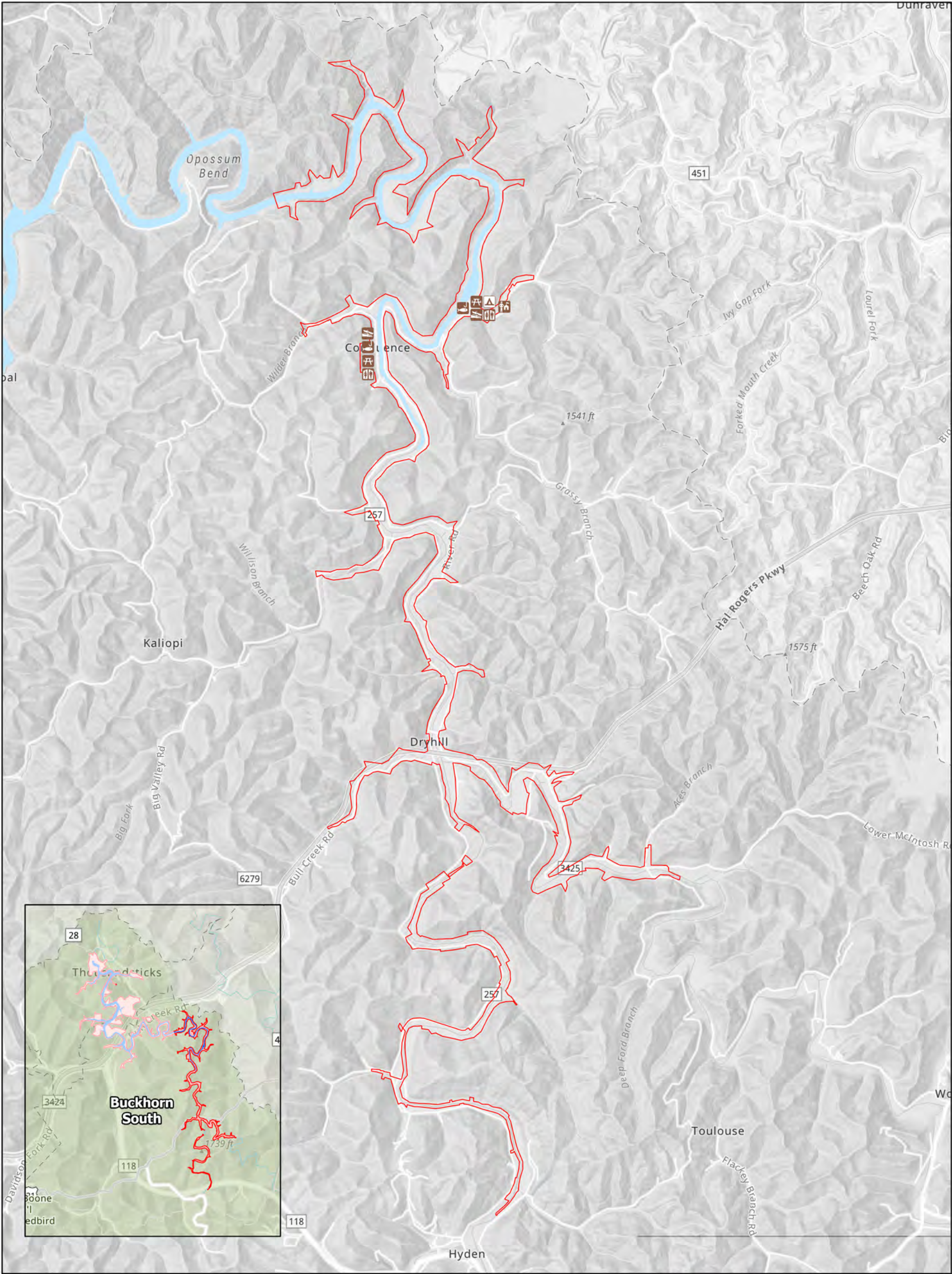
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Master Plan - 2022**

Recreation North

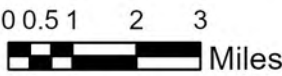
Date: 11/2/2022

DRAFT



Legend

- Restroom or Shower House
- Gatehouse
- Boat Ramp
- Campground
- Primitive Campground
- Fishing Pier
- Marina
- Trailhead
- Picnic Area
- Fee Boundary
- Summer Pool



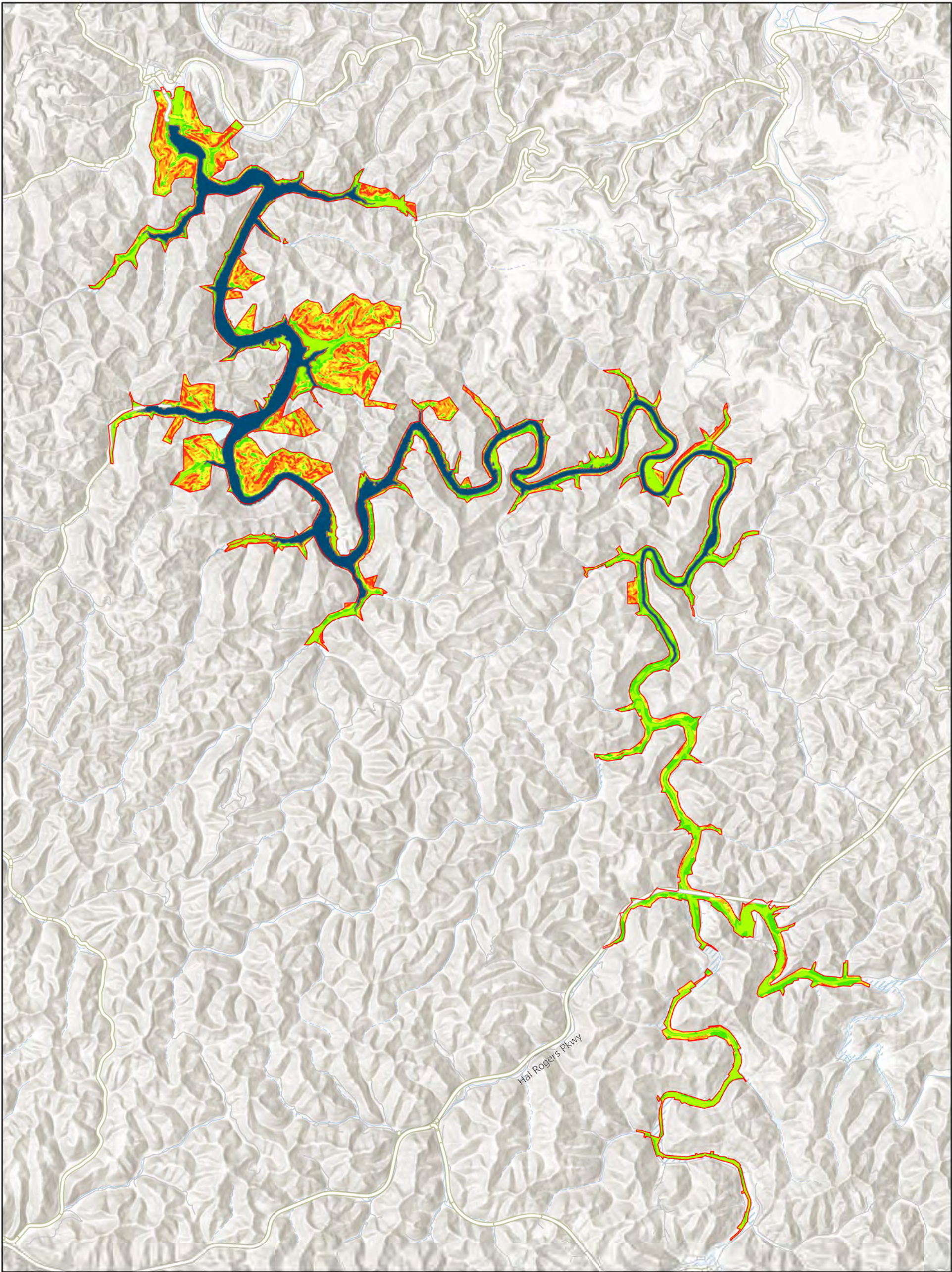
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Buckhorn Lake
Master Plan - 2022

Recreation South





Date: 11/3/2022

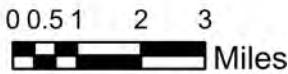
DRAFT



Legend

-  Fee Boundary
-  Summer Pool
-  Major Roads

- Percent Slope**
-  <15%
 -  15% - 30%
 -  30% - 45%
 -  45% - 60%
 -  >60%



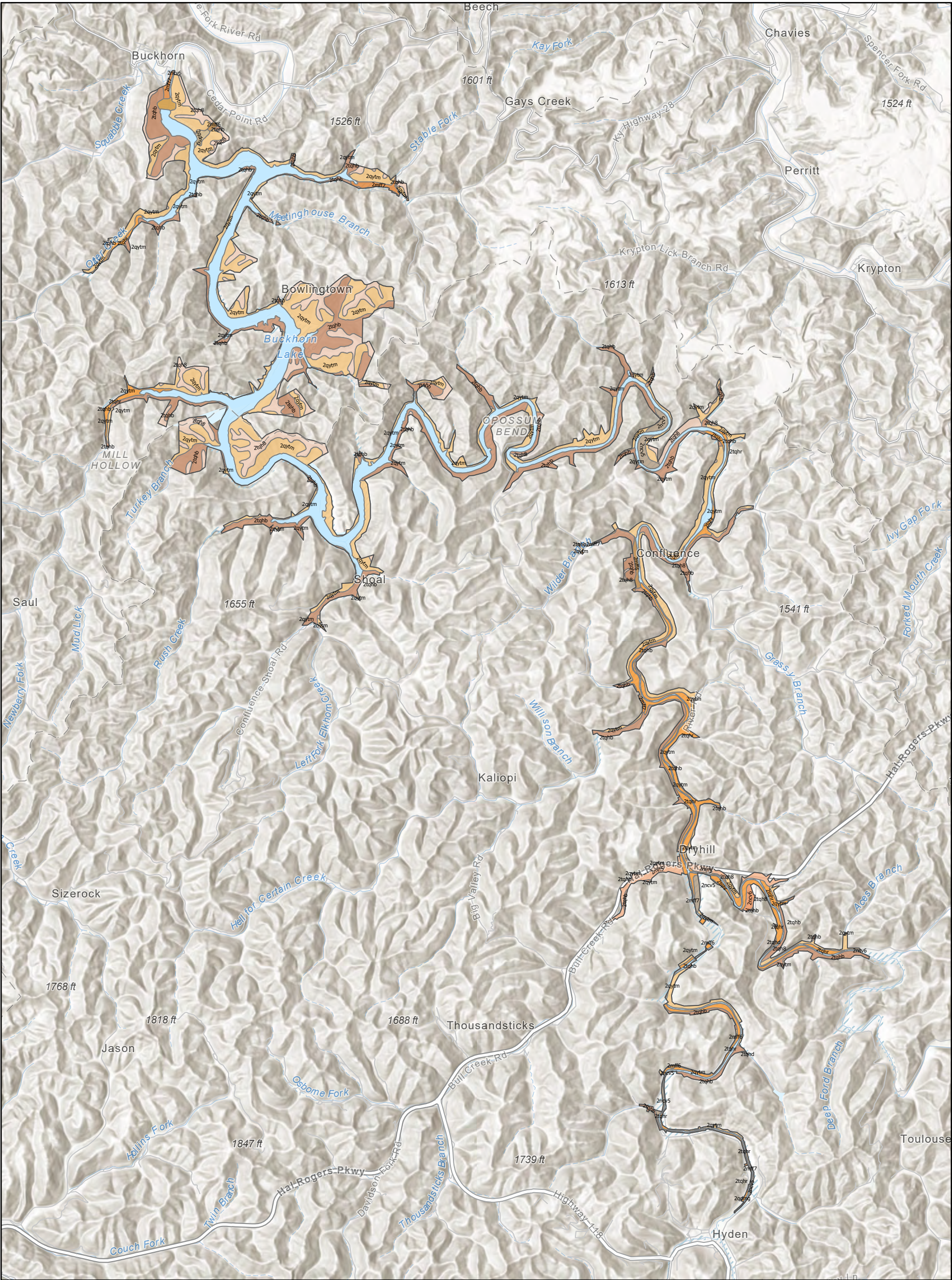
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**Buckhorn Lake
Master Plan - 2022**

Slope

Date: 8/9/2022

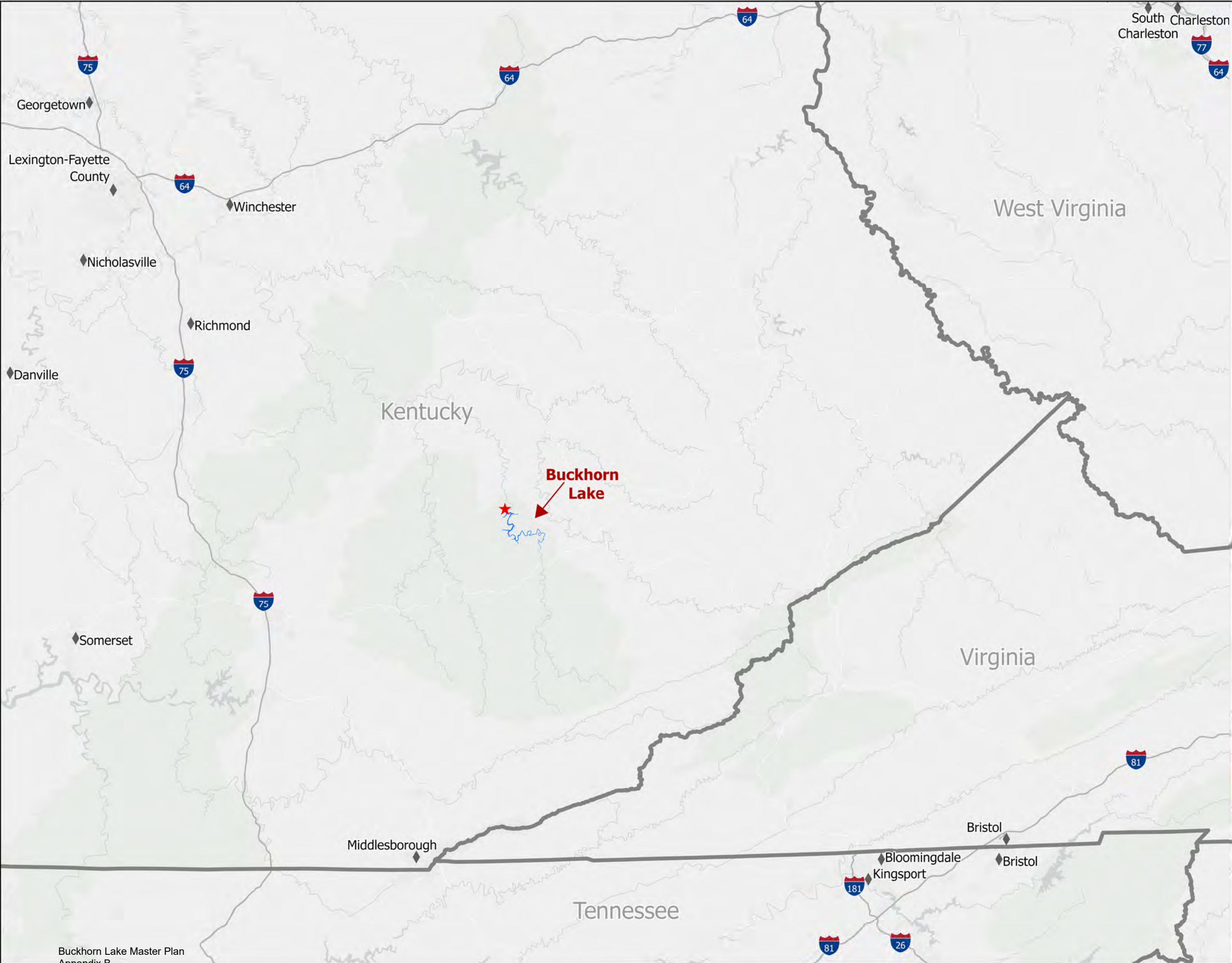
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<h3>Legend</h3> <div><div><div></div><div>Fee Boundary</div></div><div><div></div><div>Soil Symbol</div></div><div><div></div><div>DAM</div></div><div><div></div><div>DLF</div></div><div><div></div><div>FaF</div></div><div><div></div><div>SCF</div></div><div><div></div><div>SGF</div></div><div><div></div><div>W</div></div></div> <div><div></div><div>uComB</div></div> <div><div></div><div>uGrig</div></div> <div><div></div><div>uRgrB</div></div> <div><div></div><div>uUdoC</div></div> <div><div></div><div>uUdoD</div></div> <div><div></div><div>uUdrB</div></div> <div><div></div><div>uUduE</div></div>	
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00.5123

Miles



Legend

- ◆ Cities
- Interstate
- Summer Pool
- State



0 3 6 12 18 24 Miles



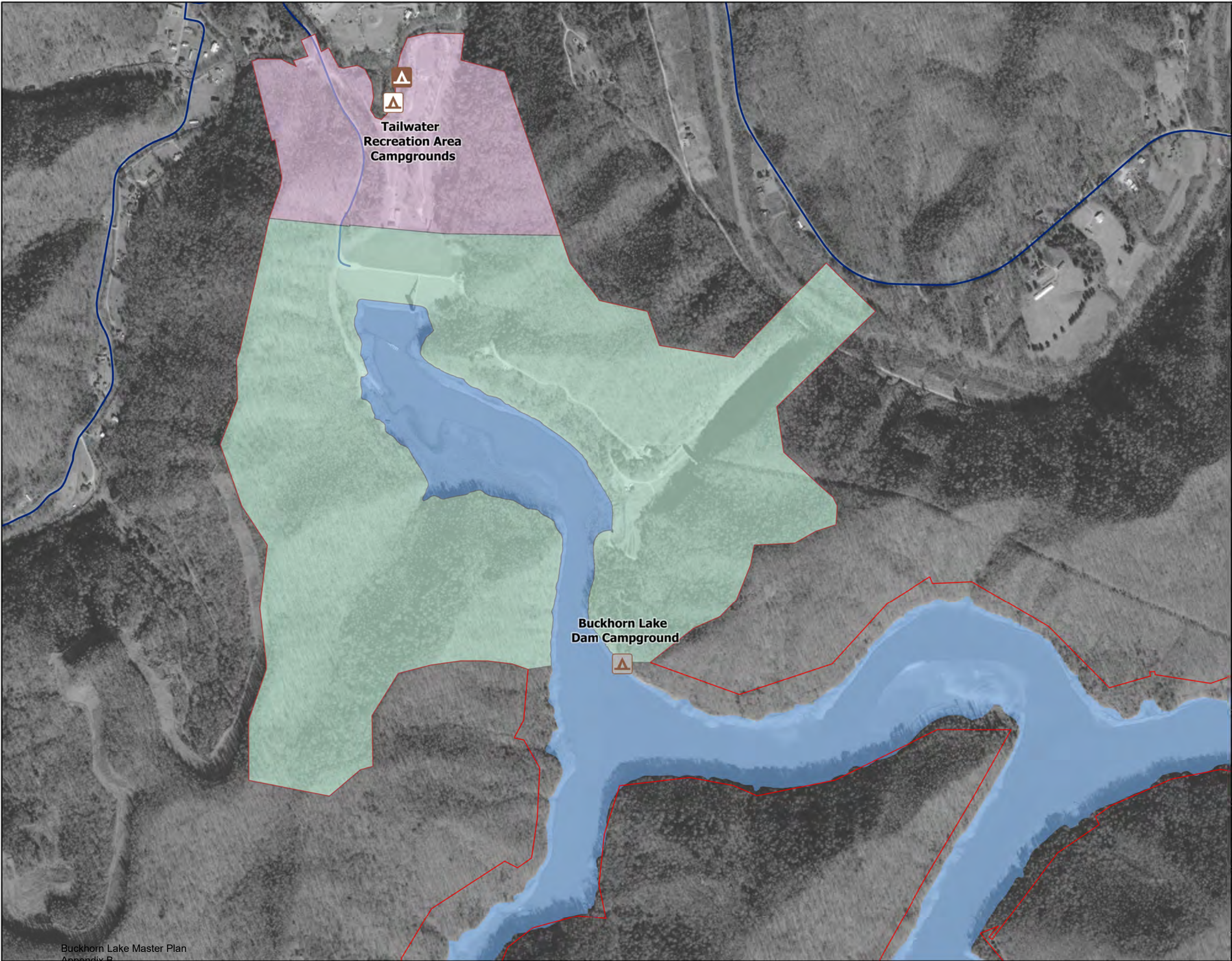
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Buckhorn Lake
Master Plan - 2022



State Map

Date: 10/18/2022



19 **DRAFT**



Legend

-  CAMPGROUND
-  PRIMITIVE CAMPGROUND, BOAT ACCESS ONLY
-  PRIMITIVE CAMPGROUND
-  MAJOR ROADS
-  FEE BOUNDARY
-  SUMMER POOL

Feature Name

-  BUCKHORN LAKE DAM
-  TAILWATER RECREATION AREA



0 0.05 0.1 0.2 Miles



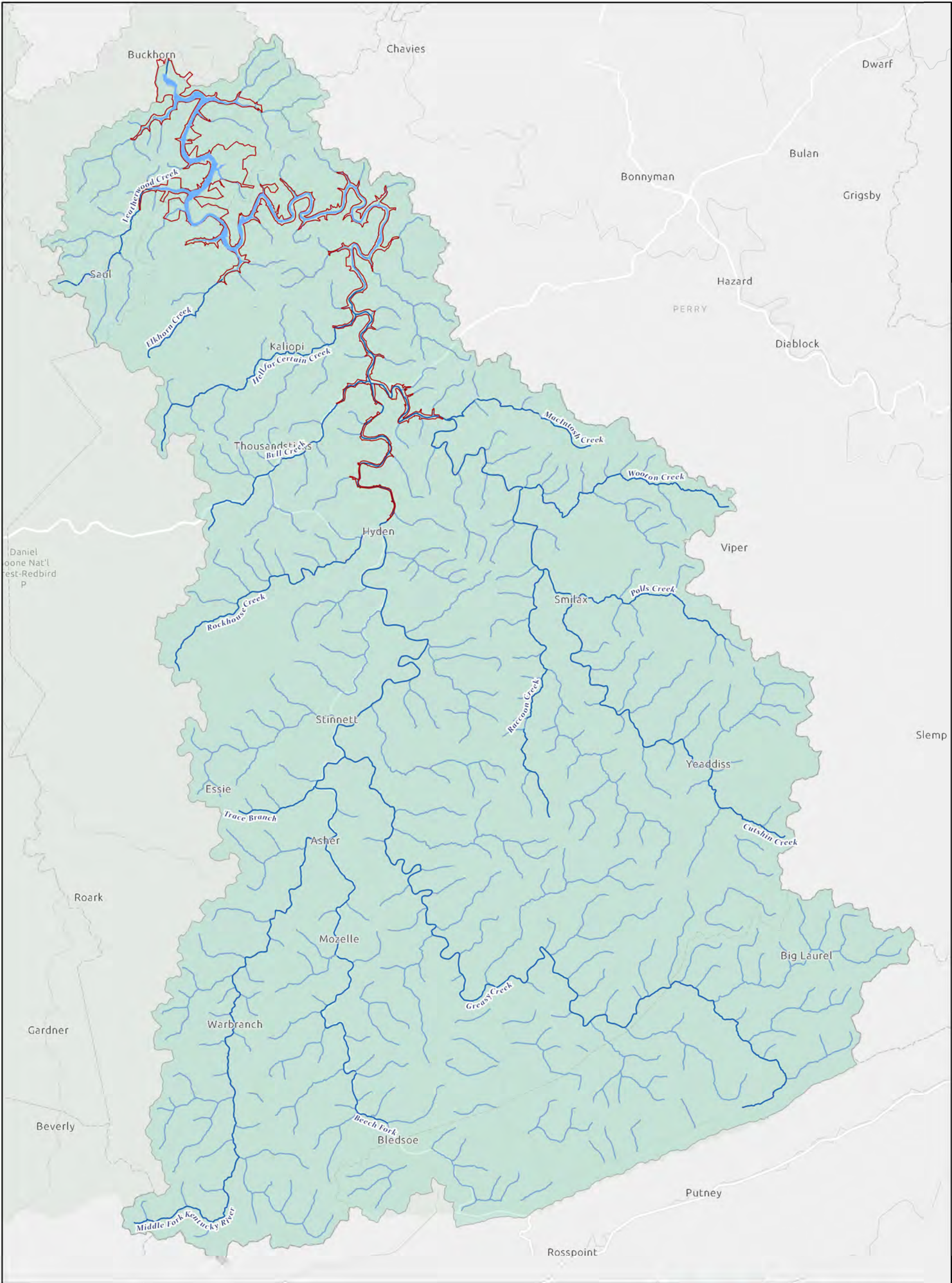
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**Buckhorn Lake
Master Plan - 2022**

Tailwater Vicinity Campgrounds

Date: 11/2/2022

DRAFT



Legend

-  Summer Pool
-  Fee Boundary
-  Major Tributaries
-  Minor Tributaries
-  Middle Fork Kentucky River Basin



0 0.5 1 2 3
Miles



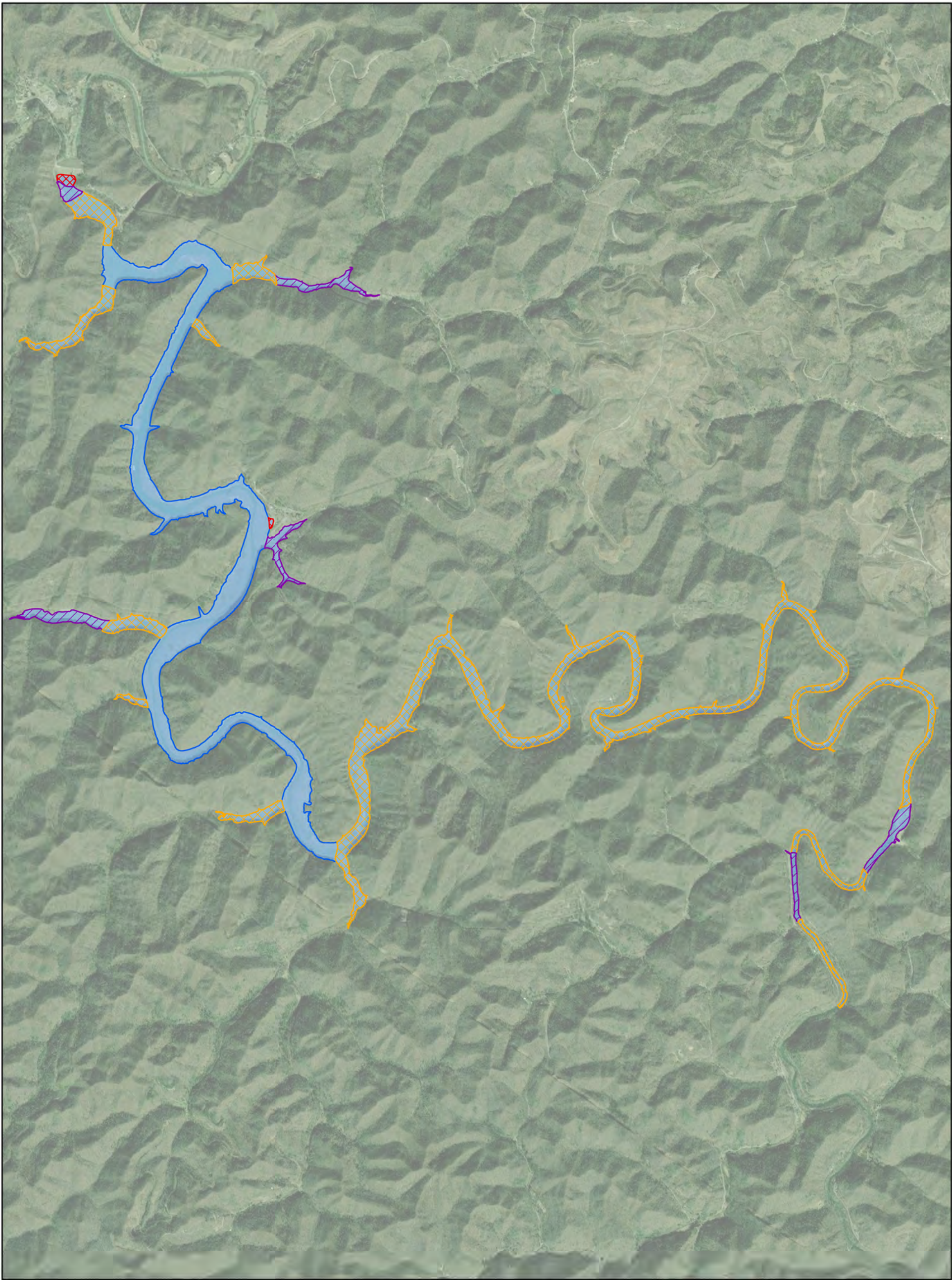
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LOUISVILLE DISTRICT

**Buckhorn Lake
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Upstream Watershed

Date: 8/8/2022

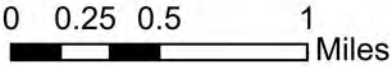
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Legend

Water Zoning

-  IDLE SPEED
-  NO RESTRICTIONS
-  NO SKIING
-  RESTRICTED ACCESS
-  Summer Pool



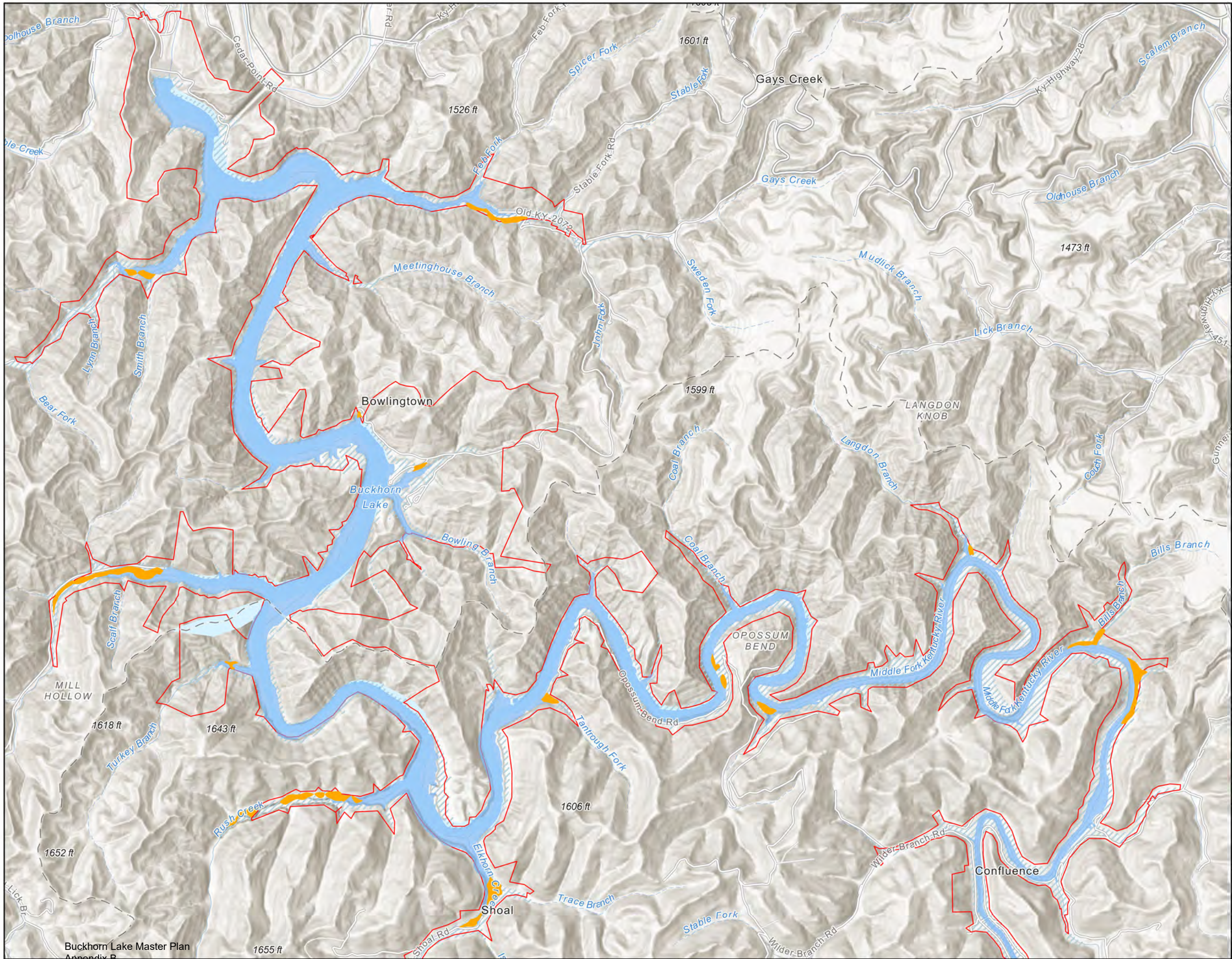
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**Buckhorn Lake
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Water Zoning

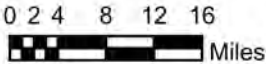
Date: 11/1/2022

DRAFT



Legend

-  Environmentally Sensitive Areas
-  Summer Pool
-  Fee Boundary



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**Buckhorn Lake
Master Plan - 2022**

Environmentally
Sensitive Areas

Date: 9/26/2022

28 **DRAFT**

Buckhorn Lake
Master Plan 2022
Appendix C
Compliance Table

ER 1130-2-540 Appendix A

Reference	Compliance	Comments
16 USC 460d, Flood Control Act of 1944; Title 10 USC 2667; and 16 USC 4601-13. Leases: non excess property.	In compliance	
16 USC 470, PL 89-665, 80 Stat. 915, National Historic Preservation Act of 1966, as amended.	In compliance	
16 USC 469, PL 93-291, 88 Stat. 174, Archaeological and Historical Preservation Act of 1973.	In compliance	
16 USC. 470aa - 470mm, PL 100-588; 102 Stat. 2983, Archaeological Resources Protection Act (ARPA) of 1979, as amended.	In compliance	
PL 46 (Chapter 105) S.1006 69 Stat 66. Authority to enter into reciprocal agreements; waiver of claims; reimbursement; ratification of prior agreements.	Not applicable	No reciprocal agreement with any fire organization maintaining fire protection facilities in the vicinity of the project exists.
PL 85-624, Fish and Wildlife Coordination Act, (72 Stat. 563, 16 U.S.C. 661).	In compliance	
PL 86-523, Reservoir Salvage Act of 1960, as amended.	In compliance	
PL 86-717, Forest Cover Act, (74 Stat. 817, 16 U.S.C. 580m et seq.), 6 September 1960.	In compliance	
PL 89-72, as amended, Federal Water Project Recreation Act of 1965.	In compliance	
PL 91-190, National Environmental Policy Act of 1969, as amended (42 USC 4231,et seq.), 1 January 1970.	In Progress	
PL 92-516, Federal Insecticide, Fungicide, and Rodenticide Act of 1972, (86 Stat. 973), as amended.	Not applicable	No insecticides, fungicide, and rodenticides are used on the project.
PL 93-205, Endangered Species Act of 1973, as amended (87 Stat 884, 16 USC 1531(b)),	In compliance	
PL 95-313. Cooperative Forestry Assistance Act of 1978 (92 Stat. 365, 16 U.S.C. 2101), as amended by PL 101-624, the Food, Agriculture, Conservation and Trade Act of 1990.	Not applicable	No cooperative forest stewardship agreement exists.
PL 95-341, American Indian Religious Freedom Act.	In compliance	
PL 98-63. Supplemental Appropriations Act of 1983, ref volunteers.	In compliance	
PL 99-662, Water Resources Development Act (WRDA) of 1986, Section 1134, ref: Private Use Facilities; Section 1135, ref: Project Modification for Improvement of the Environment.	In compliance	
PL 101-601, Native American Graves Protection and Repatriation Act (NAGPRA).	In compliance	

PL 101-640, Water Resources Development Act (WRDA) of 1990, Section 307(a).	In compliance	
PL 103-141, Religious Freedom Restoration Act of 1993.	In compliance	
33 CFR Part 328.3(b) U.S. Army Corps of Engineers 1987 Manual for Identifying and Delineating Jurisdictional Wetlands.	In compliance	
36 CFR Part 60. National Register of Historic Places.	In compliance	
36 CFR Part 79, Curation of Federally-Owned and Administered Archaeological Collections.	In compliance	
36 CFR Part 327, Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers.	In compliance	
36 CFR Part 800, Advisory Council on Historic Preservation, Protection of Historic Properties.	In compliance	
40 CFR Parts 150-189, reference to Pesticides.	Not applicable	No pesticides are in use.
40 CFR Parts 1500-1508. Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (42 U.S.C. 4331 et seq.)	In compliance	
41 CFR Part 101 - 47.103-12, Federal Property Management Regulations.	In compliance	
42 CFR 76.1 - 76.9, Performance Standards and Techniques of Measurement;" issued by the Department of Health and Human Services, to supplement Executive Order 11282.	Not applicable	42 CFR § 76.1 - 76.9 does not exist. Executive Order 11282 calls for agencies to ensure compliance with the Clean Air Act, as amended (42 U.S.C. § 7401, et seq.). The project is in compliance with the Clean Air Act statutes and applicable federal Clean Air Act regulations set forth in 40 CFR Parts 50-99.
EO 11990, Protection of Wetlands, 24 May 1977.	In compliance	
EO 12512, Utilization Surveys.	In compliance	
DOD 4150.7-M, Plan for Certification of Pesticide Applicators of Restricted-Use Pesticides, Armed Forces Pest Management Board, Defense Pest Management Analysis Center, Forest Glen Section, WRAMC, Washington, D.C. 20307-5001.	Not applicable	No pesticides are in use.
Technical Information Manuals (TIM)21, "Pesticide Disposal Guide for Pest Control Shops," Armed Forces Pest Management Board (AFPMB), Aberdeen Proving Ground, MD 21010-5422, Tel. (301) 671-3773. U.S. Army Environmental Hygiene Agency, Guide for Medical Surveillance of Pest Controllers.	Not applicable	No pesticides are in use.
ER 190-1-50, Law Enforcement Policy, U.S. Army Corps of Engineers.	In compliance	
ER 200-2-2, Procedures for Implementing the National Environmental Policy Act.	In compliance	

ER 200-2-3, Environmental Compliance Operations and Maintenance Policies.	In compliance	
ER 385-1-90. Respiratory Prevention Program.	Not applicable	No respiratory program exists.
ER 405-1-12, Real Estate Handbook.	In compliance	
ER 1105-2-100, Policy and Planning, Guidance for Conducting Civil Works Planning Studies.	In compliance	
ER 1130-2-500, Work Management Policies.	In compliance	
ER 1130-2-550, Recreation Operations and Maintenance Policies.	In compliance	
ER 1165-2-131, Water Resources Policies and Authorities: Local Cooperation Agreements for New Start Construction Projects.	Not applicable	The ER sets the procedures and responsibilities for obtaining and approving Local Cooperative Agreements for new construction starts.
EP 1130-2-540, Environmental Stewardship Procedures.	In compliance	
EM 385-1-1, Safety and Health Requirements Manual.	In compliance	
Multi-agency Memorandum of Understanding on Implementing the Endangered Species Act, dated 29 September 1994.	In compliance	
Forest Service Form FS-3400-2, "Forest Pest Management Project Proposal."	In compliance	
Policy Statement Regarding Treatment of Human Remains and Grave Goods, Advisory Council on Historic Preservation, 27 September 1988.	In compliance	
Memorandum of Agreement between the U.S. Department of Agriculture and the U.S. Department of Defense for the Conduct of Forest Insect and Disease Suppression on Lands Administered by the Department of Defense, 11 December 1990.	In compliance	
North American Waterfowl Management Plan, developed by the U.S. Fish and Wildlife Service and Canada in 1986.	In compliance	
Multi-Agency Memorandum of Understanding on Watchable Wildlife Program, dated Dec. 1990 (extended through Dec. 1998).	In compliance	

Buckhorn Lake
Master Plan 2022
Appendix D
Environmental

Draft Finding of No Significant Impact for the 2023 Buckhorn Lake Master Plan

Perry and Leslie Counties, Kentucky

The U.S. Army Corps of Engineers, Louisville District (USACE) has conducted an Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and Engineering Regulation (ER) 200-2-2, *Policy and Procedures for Implementing the NEPA*. As an integrated component of the 2023 Buckhorn Lake Master Plan, the draft EA evaluated alternatives and environmental impacts from revising and updating the 1971 Buckhorn Lake Master Plan in compliance with guidance in ER 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550, to include revised land classifications and updated resource objectives in the form of an updated Master Plan.

The draft EA evaluated alternatives to revise and update the 1971 Buckhorn Lake Master Plan and considered potential impacts to natural, cultural, and socioeconomic resources. The recommended plan is to adopt and implement the 2023 Buckhorn Lake Integrated Master Plan, which includes updates to land classifications and resource objectives of the Buckhorn Lake Project and brings the Resource Management Plan up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are affecting Buckhorn Lake.

In addition to the recommended plan, a “no action” plan was evaluated. The no action plan would entail the continued use of the 1971 Master Plan and would result in no change from current management direction or level of management intensity.

For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1.

Table 1: Summary of Potential Effects of the Recommended Plan.

Resource/Area of Concern	Insignificant Adverse Effects	Insignificant Effects as a Result of Mitigation	No or Negligible Effects	Beneficial Effect
Reservoir, Pool, and Lake Operation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Topography, Geology, and Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Surface Water Hydrology and Groundwater	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Habitats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened and Endangered Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Invasive Species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Demographics and Environmental Justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Recreation and Visitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aesthetics and Visual Qualities	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

All practical means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. The recommended plan does not include major development of new facilities or other construction activities that could negatively impact the environment. Best Management Practices (BMPs), as detailed in the EA, will be implemented during continued maintenance activities to minimize impacts.

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

A 30-day public review (including public, State, Tribal, local governments, and other relevant agencies) of the draft EA and Finding of No Significant Impact (FONSI) was completed on **[PENDING]**. All comments submitted during the public comment period will be addressed in the Final EA and FONSI.

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

Pursuant to Section 106 of the original National Historic Preservation Act of 1966, as amended, the USACE determined that the recommended plan has no potential to cause adverse effects on historic properties.

There is no discharge of dredged or fill material or any other discharge into waters of the U.S. associated with the recommended plan. Therefore, a Section 404(b)(1) evaluation and Section 401 water quality certification, pursuant to the Clean Water Act of 1972, are not applicable.

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 significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

Eric D. Crispino
Colonel, U.S. Army
District Commander

Assessment Unit Summary

- **Unit Name:** Buckhorn Lake
- **AU ID:** KY-2132
- **Description:** Dam to Upper Reservoir Boundaries
- **County:** Perry, Leslie
- **Overall Category:** 5
- **Assessment Date:** 10/29/2020



Warm Water Aquatic Habitat is full support, category 2

Basis for Listing: Designated use found to be fully supporting, basis for listing is not applicable.

Monitoring:

- **Data Types:** Physical/Chemical
- **Sample Date Range:** 09/03/2015 - 09/26/2016
- **Programs:** Ambient Lakes - USACE



Primary Contact Recreation is not assessed, category 3



Secondary Contact Recreation is full support, category 2

Basis for Listing: Designated use found to be fully supporting, basis for listing is not applicable.

Monitoring:

- **Data Types:** Observational
- **Sample Date Range:** 05/23/2013 - 08/07/2013
- **Programs:** Ambient Lakes Monitoring



Fish Consumption is non support, category 5

Basis For Listing: Concentrations did not meet the water quality standard.

Parameters:

- Mercury in Fish Tissue | category 5 | Impaired, TMDL Priority: Low

Suspected Sources: Source Unknown

Monitoring:

- **Data Types:** Other Public Health Indicators
- **Sample Date Range:** 10/12/2016 - 10/19/2016
- **Programs:** Fish Tissue - Rotation

This is not an official document. KDOW cannot ensure that this information is accurate, current, or complete. This document is for informational purposes, is subject to revision or correction at any time and cannot be relied upon for regulatory or other purposes. For questions or comments contact KDOW at water@ky.gov or 502-564-3410.



Domestic Water Supply is not assessed, category 3



Outstanding State Resource Water is not applicable

Data Locations - Physical/chemical, pathogen, tissue, and biological monitoring data are available on request by emailing EEC Open Records (EEC.KORA@ky.gov) and referencing the assessment unit name and ID; chemical monitoring data for regulated facilities (e.g. wastewater and drinking water) can be found in the EPA ECHO database (echo.epa.gov).

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Location: User-specified point center at 37.339969, -83.470754

Ring (buffer): 50-miles radius

Description:

Summary of ACS Estimates		2015 - 2019	
Population		463,976	
Population Density (per sq. mile)		60	
People of Color Population		21,145	
% People of Color Population		5%	
Households		182,919	
Housing Units		221,002	
Housing Units Built Before 1950		26,959	
Per Capita Income		19,465	
Land Area (sq. miles) (Source: SF1)		7,744.37	
% Land Area		99%	
Water Area (sq. miles) (Source: SF1)		53.45	
% Water Area		1%	
		2015 - 2019 ACS Estimates	Percent MOE (±)
Population by Race			
Total		463,976	100% 0
Population Reporting One Race		458,132	99% 1,606
White		446,479	96% 243
Black		7,155	2% 348
American Indian		1,257	0% 246
Asian		1,795	0% 206
Pacific Islander		304	0% 327
Some Other Race		1,142	0% 236
Population Reporting Two or More Races		5,843	1% 305
Total Hispanic Population		5,673	1% 188
Total Non-Hispanic Population		458,303	
White Alone		442,830	95% 188
Black Alone		6,968	2% 351
American Indian Alone		1,159	0% 239
Non-Hispanic Asian Alone		1,793	0% 206
Pacific Islander Alone		281	0% 327
Other Race Alone		224	0% 132
Two or More Races Alone		5,047	1% 285
Population by Sex			
Male		230,166	50% 208
Female		233,810	50% 208
Population by Age			
Age 0-4		27,679	6% 150
Age 0-17		101,619	22% 570
Age 18+		362,357	78% 1,271
Age 65+		78,689	17% 593

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.

N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2015 - 2019

EJSCREEN ACS Summary Report



Location: User-specified point center at 37.339969, -83.470754

Ring (buffer): 50-miles radius

Description:

	2015 - 2019 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	322,747	100%	288
Less than 9th Grade	35,435	11%	459
9th - 12th Grade, No Diploma	41,305	13%	527
High School Graduate	120,030	37%	758
Some College, No Degree	59,093	18%	854
Associate Degree	22,203	7%	457
Bachelor's Degree or more	44,681	14%	820
Population Age 5+ Years by Ability to Speak English			
Total	436,297	100%	127
Speak only English	429,320	98%	456
Non-English at Home ¹⁺²⁺³⁺⁴	6,977	2%	427
¹ Speak English "very well"	4,966	1%	368
² Speak English "well"	1,337	0%	189
³ Speak English "not well"	634	0%	159
⁴ Speak English "not at all"	40	0%	41
³⁺⁴ Speak English "less than well"	674	0%	160
²⁺³⁺⁴ Speak English "less than very well"	2,010	0%	246
Linguistically Isolated Households*			
Total	317	100%	123
Speak Spanish	141	44%	61
Speak Other Indo-European Languages	73	23%	54
Speak Asian-Pacific Island Languages	78	24%	52
Speak Other Languages	26	8%	88
Households by Household Income			
Household Income Base	182,919	100%	557
< \$15,000	44,691	24%	542
\$15,000 - \$25,000	27,823	15%	429
\$25,000 - \$50,000	46,603	25%	637
\$50,000 - \$75,000	28,012	15%	450
\$75,000 +	35,790	20%	598
Occupied Housing Units by Tenure			
Total	182,919	100%	557
Owner Occupied	128,609	70%	563
Renter Occupied	54,310	30%	552
Employed Population Age 16+ Years			
Total	374,077	100%	270
In Labor Force	169,482	45%	757
Civilian Unemployed in Labor Force	15,258	4%	377
Not In Labor Force	204,595	55%	786

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.

N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS)

*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report



Location: User-specified point center at 37.339969, -83.470754

Ring (buffer): 50-miles radius

Description:

	2015 - 2019 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	436,297	100%	127
English	429,320	98%	460
Spanish	3,764	1%	289
French	219	0%	120
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	785	0%	302
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	406	0%	150
Chinese	212	0%	174
Japanese	N/A	N/A	N/A
Korean	48	0%	27
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	52	0%	65
Other Asian	369	0%	127
Tagalog	552	0%	190
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	203	0%	160
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	209	0%	146
Total Non-English	6,977	2%	464

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.

N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2015 - 2019.

*Population by Language Spoken at Home is available at the census tract summary level and up.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024

In Reply Refer To:
Project Code: 2022-0086584
Project Name: Buckhorn Lake Master Plan

September 19, 2022

Subject: 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:

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.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 Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

Kentucky Ecological Services Field Office

J C Watts Federal Building, Room 265

330 West Broadway

Frankfort, KY 40601-8670

(502) 695-0468

Project Summary

Project Code: 2022-0086584

Project Name: Buckhorn Lake Master Plan

Project Type: Land Management Plans - NWR

Project Description: Update to the Master Plan for Buckhorn Lake

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.27488915,-83.4433143948346,14z>



Counties: Leslie and Perry counties, Kentucky

Endangered Species Act Species

There is a total of 6 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. Note that 3 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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.

-
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
<p>Gray Bat <i>Myotis grisescens</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> The project area includes potential gray bat habitat. <p>Species profile: https://ecos.fws.gov/ecp/species/6329</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/FTAHHRTHI5EN5PLOLTKDWQ6RYE/documents/generated/6422.pdf</p>	Endangered
<p>Indiana Bat <i>Myotis sodalis</i></p> <p>There is final critical habitat for this species. The location of the critical habitat is not available.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. <p>Species profile: https://ecos.fws.gov/ecp/species/5949</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/FTAHHRTHI5EN5PLOLTKDWQ6RYE/documents/generated/6422.pdf</p>	Endangered
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. <p>Species profile: https://ecos.fws.gov/ecp/species/9045</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/FTAHHRTHI5EN5PLOLTKDWQ6RYE/documents/generated/6422.pdf</p>	Threatened

Fishes

NAME	STATUS
<p>Kentucky Arrow Darter <i>Etheostoma spilotum</i></p> <p>There is final critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9063</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/FTAHHRTHI5EN5PLOLTKDWQ6RYE/documents/generated/5224.pdf</p>	Threatened

Clams

NAME	STATUS
<p>Snuffbox Mussel <i>Epioblasma triquetra</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4135</p>	Endangered

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Kentucky Arrow Darter <i>Etheostoma spilotum</i> https://ecos.fws.gov/ecp/species/9063#crithab	Final

IPaC User Contact Information

Agency: Army Corps of Engineers
Name: Steele McFadden
Address: 600 Martin Luther King Jr Pl
City: Louisville
State: KY
Zip: 40202
Email: steele.mcfadden@usace.army.mil
Phone: 2705778189