



Yatesville Lake Project Master Plan

Draft Programmatic Environmental Assessment

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prepared for:



**US Army Corps
of Engineers** ®
Huntington District

Huntington, West Virginia 25701

prepared by:

URS

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Appendices

- Appendix A Yatesville Lake Project Master Plan (2011)
- Appendix B Distribution List for the Draft Programmatic Environmental Assessment

Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
AMSL	above mean sea level
BMP	best management practice
CFR	Code of Federal Regulations
dB	decibel
DNL	Day-Night Average Sound Level
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Commission
FY	fiscal year
HPMP	Historic Properties Management Plan
KPDES	Kentucky Pollutant Discharge Elimination System
KSNPC	Kentucky State Nature Preserves Commission
KYDFWR	Kentucky Department of Fish and Wildlife Resources
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
PEA	Programmatic Environmental Assessment
PL	Public Law
Project	Yatesville Lake Project
RV	recreational vehicle
spp.	<i>species pluralis</i> (multiple species)
SR	State Route
State Park	Yatesville Lake State Park
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

1.0 INTRODUCTION

The 1975 Yatesville Lake Project Master Plan (USACE, 1975) was updated in 2011. The U.S. Army Corps of Engineers (USACE) proposes to implement the measures that are recommended in the updated Master Plan (USACE, 2011), which would achieve five resource use objectives. The implementation of these measures is being evaluated as the Proposed Action in this document.

This Programmatic Environmental Assessment (PEA) is being prepared in part to fulfill the requirements of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321–4327). The PEA identifies and assesses the potential impacts associated with the Proposed Action. As required under NEPA, the draft PEA also contains an assessment of the No Action Alternative in which the Proposed Action would not be implemented. The PEA is being prepared in coordination with Federal and State agencies and will support USACE decision-making regarding implementation of the measures recommended in the updated Master Plan.

1.1 Scope of the Programmatic Environmental Assessment

NEPA documents are allowed to cover broad actions, such as agency programs and related or similar actions under the Council on Environmental Quality's (CEQ's) NEPA implementing regulations (40 CFR § 1502.4). These NEPA documents are referred to as "Programmatic," are often broad in scope, and may be followed by supplemental NEPA documentation that incorporates the Programmatic documents by reference. The supplemental NEPA documentation would address specific actions.

Because the designs, specifications, footprints, and implementation schedules of the Proposed Action have not been finalized, this draft PEA contains a general evaluation of potential environmental impacts. Supplemental NEPA documents, which may include Categorical Exclusions, may be required for implementation of specific measures or actions within this. The USACE would determine the appropriate level of NEPA documentation and if incorporation of this PEA by reference into the supplemental NEPA documentation is appropriate for each individual action/measure.

1.2 Yatesville Lake Project Background

The USACE owns approximately 20,000 acres in Lawrence County, Kentucky, which includes the Yatesville Lake dam, Yatesville Lake, and adjacent lands (Figure 1-1). Project lands are classified as operational/administrative areas, recreational lands, environmentally sensitive areas,

and multiple resource management lands. Table 1-1 lists the acreage of the Federal recreational areas and outgrants along with the managing agency and major facilities and activities.

Table 1-1: Federal Areas and Outgrant Recreation Areas

Name of Area	Acreage	Managing Agency	Major Facilities/Activities
Dam Site Area	391	USACE	Information Center, picnicking, hiking trails
Rich Creek Launch Ramp	4	USACE	Boat ramp, parking area, courtesy dock
Barker Run Marina	131	Kentucky Department of Parks	Marina, boat ramp, picnic shelters, courtesy dock, fishing jetty, playground, Mary Ingles Trail System
Yatesville Lake State Park	1,521	Kentucky Department of Parks	Camping, picnicking, 18-hole golf course, multi-use trails, playground, boat ramp
Lawrence County Recreation Area	971	Lawrence County	Cabins, camping, music pavilion, nature center, beach
Boy Scout Camp Cherokee	434	Tri-State Council, Boy Scouts of America	Cabin, shelter, hiking trails
Wildlife Management Area	15,947	KYDFWR	Hunting, fishing, wildlife conservation, multi-use trails, boat ramp

KYDFWR = Kentucky Department of Fish and Wildlife Resources
 USACE = U.S. Army Corps of Engineers

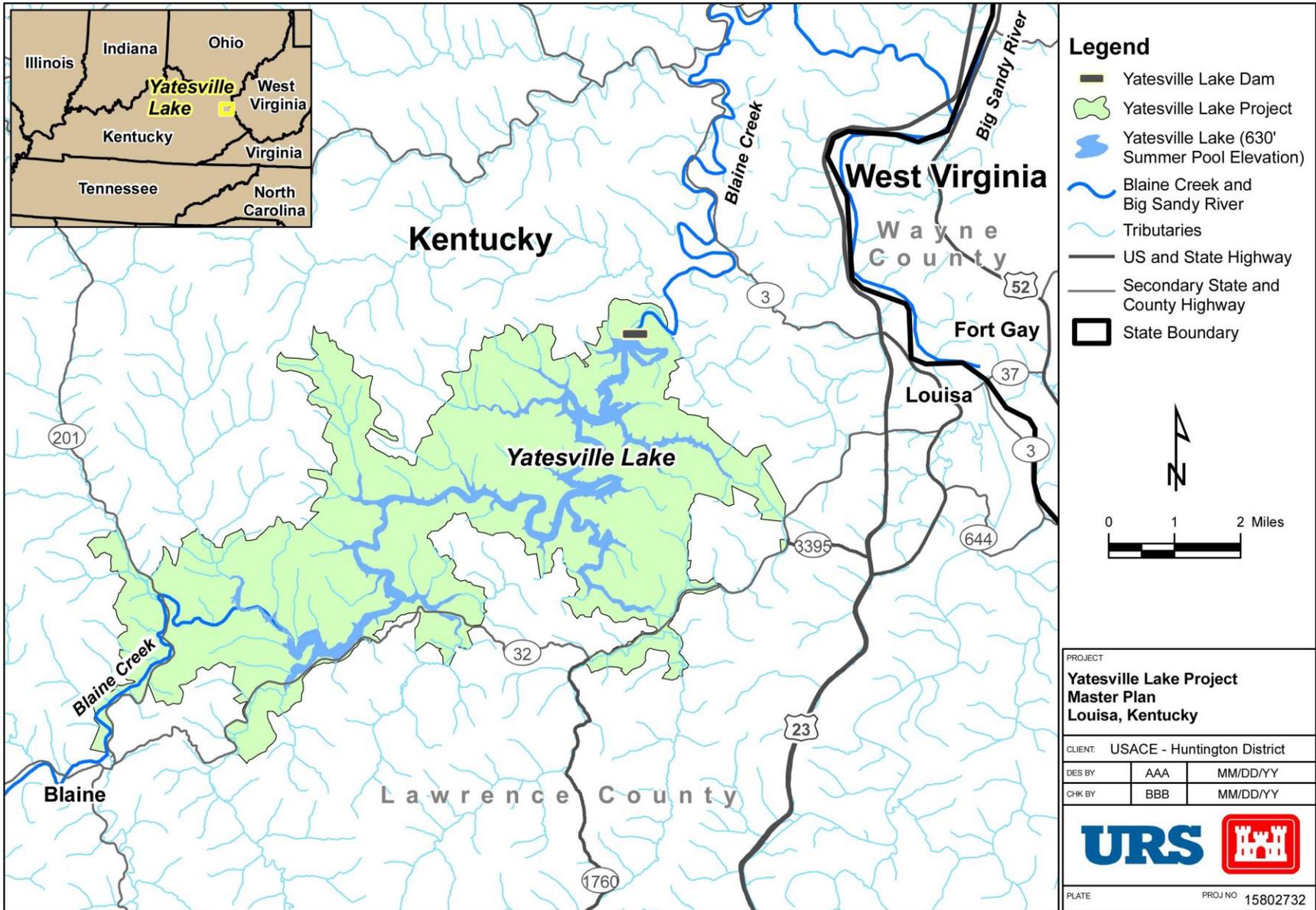


Figure 1-1: Yatesville Lake Location Map

1.3 Yatesville Lake Project Authority

The Yatesville Lake Project was authorized by the Flood Control Act of 1965 (Public Law 89-298). The dam was constructed between 1986 and 1989. The USACE regulates 803 square miles of drainage area. The authorized purposes of the Yatesville Lake Project are flood risk management, recreation, water quality control, and fish and wildlife management (USACE, 1994).

1.4 Purpose and Need

The purpose of the PEA is to evaluate the impacts of the measures proposed in the 2011 Yatesville Lake Master Plan Update (USACE, 2011) (Master Plan Update). Master Plans are updated periodically to maintain focus on three primary components: regional and ecosystem needs, resource capabilities and sustainability, and expressed public interests and desires. An updated Master Plan is essential in fostering efficient and cost-effective projects for natural resources, cultural management, and recreational programs by ensuring that current environmental mandates and considerations are incorporated (USACE, 1996). The Master Plan Update also includes recommendations for accommodating increased or new demands that may affect project resources.

The Master Plan Update addresses the resources in the Project area, which include but are not limited to, fish and wildlife; vegetation; cultural; aesthetic; interpretive; recreational; mineral; commercial; and outgrant lands, easements, and water. Through the implementation of an updated Master Plan, Project managers can provide responsible and timely protection, conservation, and enhancement of Project resources. The PEA is needed to assist USACE in their decision-making process regarding implementation of the Master Plan Update measures and to comply with NEPA.

2.0 NO ACTION AND PROPOSED ACTION ALTERNATIVES

This section provides a description of the two alternatives considered in this PEA—the No Action Alternative and the Proposed Action.

2.1 No Action Alternative

Under the No Action Alternative, the measures described in the Master Plan Update would not be implemented. Operation and management of the Project would continue as described in the 1975 Master Plan. Existing facility maintenance, wildlife and vegetation enhancement, trail development, erosion control, flood risk management, and management of recreational areas and activities would continue. New facilities and/or activities not identified in the 1975 Master Plan could be constructed or implemented on a case-by-case basis.

2.2 Proposed Action

Under the Proposed Action, the measures and actions described in the Master Plan Update would be implemented fully. The measures are divided into three categories: (1) modifying resource management based on updated resource status and guidance, (2) facility development based on resource capability, regional demand, and public desires, and (3) designating utility corridors.

Implementation of the Master Plan Update would allow an update of the Yatesville Lake Project lands and waters that reflects environmental stewardship and conservation while meeting current and future public, social, and economic demands.

The Proposed Action consists of the measures and actions that are listed in Table 2-1. The Proposed Action would address the projected demands that are identified in the Master Plan Update. More information about the elements of Proposed Action is provided in Sections 7.0 and 8.0 of the Yatesville Lake Project Master Plan, which is provided as Appendix A of this document.

Utility Corridors

Major utility corridors such as cross-country utilities or pipelines that would cross Project lands may be considered. Because the Project area is longer from the east to the west than from the north to the south, new utility corridors aligned north-south to minimize the amount of Project lands the corridors go through. However, utility corridor alignments would be determined based on impacts to environmentally sensitive areas, recreation uses, and land use such as mining.

Table 2-1: Yatesville Lake Project Master Plan Proposed Action Elements

Proposed Action	Description
Increase signage; may include updating visitor displays and installing instructional/informational and interpretive signage	<ul style="list-style-type: none"> • Dam Site Information Center and proposed interpretive trail • Grassland plots at Dam Site Area • Barker Run Marina boat ramp area • Yatesville Lake State Park boat ramp area
Construct trails	<ul style="list-style-type: none"> • Extension of the existing trail south of the Visitor Center to the top of the dam • A 1-mile trail connecting Lawrence County Beach with Barker Run Marina
Construct recreational facilities	<ul style="list-style-type: none"> • Restrooms and picnic shelters at Tailwater Area • Relocation of two picnic shelters and playground and construction of associated parking and restroom facilities near fishing jetty at Barker Run Marina • 20 RV-accessible campsites in the State Park to include picnic table, fire ring, electricity, and a bathhouse • Volleyball and/or basketball courts in Yatesville Lake State Park • 4 tent campsites to include picnic table, fire ring, and electricity near the existing campground at Lawrence County Park • 1 picnic shelter and additional restroom facility at the shoreline near the existing picnic shelters at Lawrence County Park • 2 picnic shelters and picnic tables at Lawrence County Beach • Bathhouse at Boy Scout Camp Cherokee to be connected to new potable water system
Expand or improve parking	<ul style="list-style-type: none"> • Tailwater Area • Near relocated picnic shelters near fishing jetty at Barker Run Marina • South of existing parking area at Barker Run Marina • Trailheads within the Wildlife Management Area • Lawrence County Beach
Open operations boat ramp to public use for small boats (e.g., canoe, kayak, small john boat)	<ul style="list-style-type: none"> • Tailwater Area

Table 2-1: Yatesville Lake Project Master Plan Proposed Action Elements

Proposed Action	Description
Increase capacity of marina	<ul style="list-style-type: none"> • Add 50 boat slips at Barker Run Marina
Evaluate designation of idle-only zones and no-wake zone enforcement policies	<ul style="list-style-type: none"> • Barker Run Marina
Construct a courtesy dock or mooring posts	<ul style="list-style-type: none"> • 8-foot x 40-foot dock at Barker Run Marina next to boat ramp and extension of existing courtesy dock at the boat ramp to 8 foot x 40 feet • 8-foot x 24-foot dock near relocated Barker Run Marina picnic area • Mooring posts to secure boats at Lawrence County Beach
Construct cabins	<ul style="list-style-type: none"> • 10 cabins in Yatesville Lake State Park • 3 cabins near the existing campground in the Lawrence County Park
Provide permanent water supply for irrigation of the golf course via a pipeline from the lake	<ul style="list-style-type: none"> • Eagle Ridge Golf Course (State Park)
Identify and delineate location, size, and extent of ecosystems; enhance management to conserve and protect wildlife and habitat	<ul style="list-style-type: none"> • Wildlife Management Area
Improve roads	<ul style="list-style-type: none"> • Approach road to Lawrence County Beach • Improve access between cabin area and lake at Boy Scout Camp Cherokee
Install source of potable water (connect to municipal water or construct a well)	<ul style="list-style-type: none"> • Boy Scout Camp Cherokee
Utility Corridors	<ul style="list-style-type: none"> • Utilities or pipelines crossing the Project

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3.0 ENVIRONMENTAL SETTING

This section describes the current (baseline) condition of the environment that could be affected by the No Action the Proposed Action Alternatives.

3.1 Physical Environment

This section contains a description of the topography, geology, and soils in the Project area.

3.1.1 Topography

The topography of the Project area is hilly and mountainous and characterized by deep V-shaped valleys that have been eroded through the thick, flat-lying or gently folded sedimentary rocks. Flat areas are uncommon except along the valley bottoms. Elevations in the Project area range from approximately 520 feet to 1,300 feet National Geodetic Vertical Datum (NGVD) (McGrain and Currens, 1978). Approximately 75 percent of the Project area consists of steep slopes in excess of 15 percent. Figure 3-1 shows the topography in the Project area and how the topography relates to suitability of the Project area for development.

3.1.2 Geology

The Project area is located in the Eastern Coalfields Physiographic Region of the Cumberland Plateau. The geology of the Project area is characterized by Lower to Upper Pennsylvanian-aged rock that is approximately 305 to 320 million years old. Three primary geologic units occur within the Project area: (1) alluvium, which is found along valley bottoms and consists of stream deposits of sediments (gravels, sands, silts, clay) up to approximately 30 feet thick, (2) the Conemaugh Formation, which is generally found along mountain tops and upper side slopes and consists of alternating layers of shale, siltstone, sandstone, limestone, coal, and underclay, and (3) the Breathitt Formation, which is typically the first unit encountered moving upwards from the valley floor, and is composed of alternating layers of siltstone, sandstone, shale, coal, underclay, flint clay and limestone (Kentucky Geological Survey, 2010).

The geology of the Project area has resulted in the formation of steep slopes, rock outcrops, and cliffs that provide scenic views. Although shales underlying sandstone cliffs can erode to form rock overhangs and possibly caves, no caves have been identified in the Project area.

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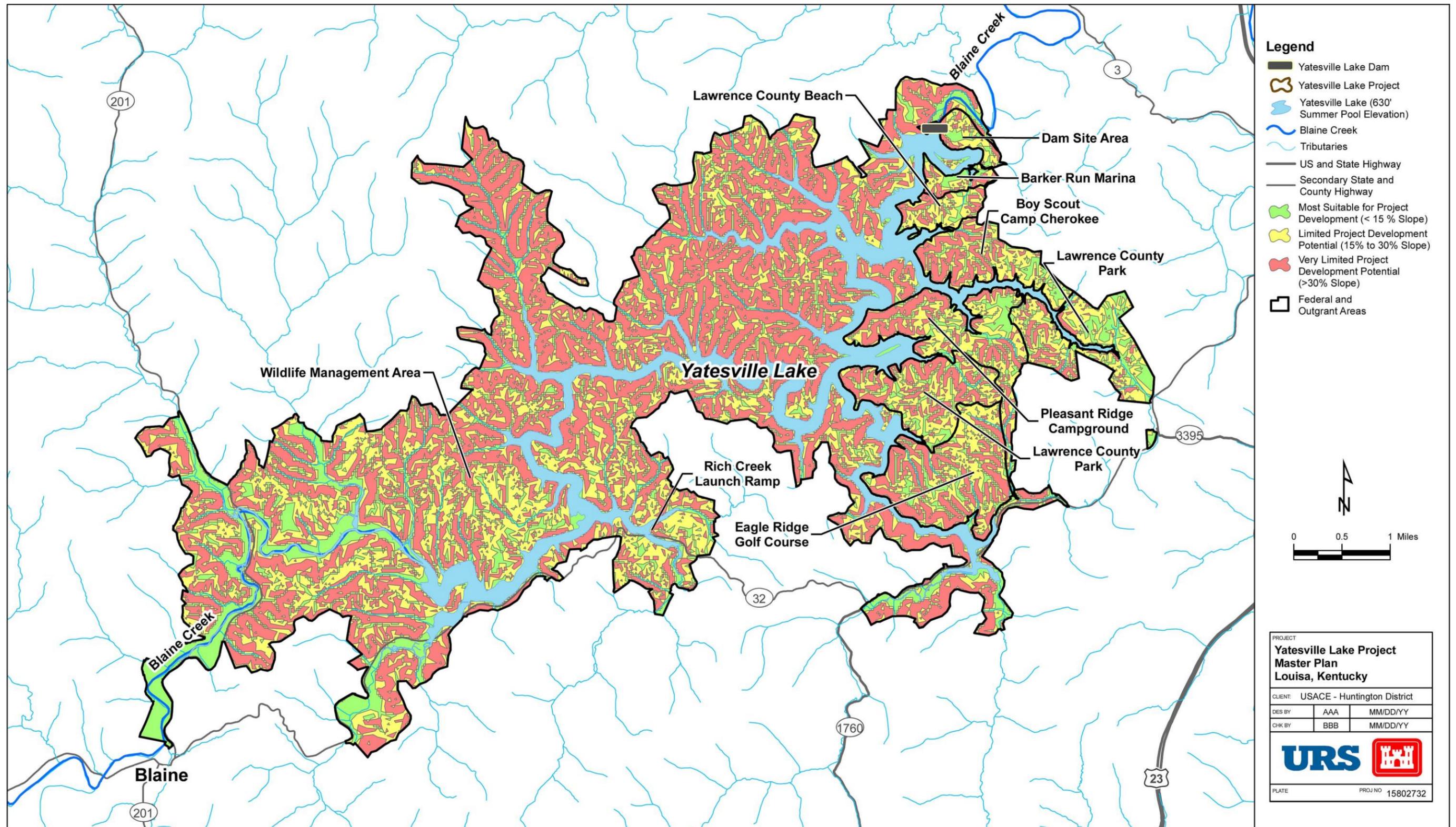


Figure 3-1: Topography Suitability for Project Development

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3.1.3 Soils

The soil types that occur in the Project area are primarily the result of variability in the geologic parent material and positions on the landscape. Soils in the Project area were formed primarily from weathered sandstone, siltstone, shale, or from sediments deposited by running water. The soils on steep mountainside slopes are typically characterized by rock fragments throughout the soil.

The various soil types are grouped based on associations across the landscape. According to the *2005 Soil Survey of Lawrence and Martin Counties, Kentucky* (USDA, 2005), 21 groups (called soil map units and shown on Figure 3-2) occur together at the Project, 13 of which occupy less than 1 percent of the area. Because of the limited presence of the 13 soil map units, they are excluded from further discussion. The remaining eight soil map units are listed in Table 3-1 and shown on Figure 3-2 and are divided into the following three groups based on their suitability and limitations for recreational development: (1) most suitable for development, (2) limited development potential, and (3) least suitable for development.

The Farmland Protection Policy Act of 1981 (7 U.S.C. §§ 4201–4209) designates soils that are suitable to farming as prime or unique farmlands and is intended to minimize irreversible conversion of farmland to nonagricultural uses. Although prime farmland occurs within the Project area, it covers less than 0.5 percent of the area. The prime farmland soils generally occur within valley bottoms along streams and are not currently planted or managed for forage or wildlife habitat by USACE or the KDFWR.

Table 3-1: Soils Covering Greater than 1 Percent of the Project Area in Order of Predominance

Soil Map Unit Symbol	Soil Type	Typical Slope	Suitability Based on Slope and Soil Type
ShF	Shelocta-Hazleton-Feds creek complex, stony	30–60%	Least Suitable for Project Development. Unsuitable (too steep) for lawn or landscaping; for trails or golf fairways; for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.
UpD	Upshur-Rarden complex	12–25%	Limited Project Development Potential. Very limited for lawn or landscaping; for trails or golf fairways; for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.

Table 3-1: Soils Covering Greater than 1 Percent of the Project Area in Order of Predominance

Soil Map Unit Symbol	Soil Type	Typical Slope	Suitability Based on Slope and Soil Type
BID	Blairton-Cruze-Marrowbone complex	12–25%	Limited Project Development Potential. Very limited for lawn or landscaping; for trails or golf fairways; for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.
MaF	Marrowbone-Blairton-Dekalb complex, rocky	25–60%	Least Suitable for Project Development. Unsuitable (too steep) for lawn or landscaping; for trails or golf fairways; for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.
UpF	Upshur-Rarden complex, rocky	25–60%	Least Suitable for Project Development. Unsuitable (too steep) for lawn or landscaping for trails or golf fairways; for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.
SeE	Shelocta silt loam	12–30%	Limited Project Development Potential. Very limited for lawn or landscaping; for trails or golf fairways; for camping, picnicking, or playground areas; for small commercial buildings; or for septic tank absorption field. Poorly suited for roads because of the severe potential for erosion.
SgC	Shelocta-Grigsby-Orrville complex	2–15%	Most Suitable for Project Development. Somewhat limited for lawn or landscaping or for trails or golf fairways. Very limited for camping, picnicking, or playground areas; for small buildings, or for septic tank absorption field. Moderately suited for roads because of the moderate potential for erosion.
BIC	Blariton-Cruze	6–12%	Most Suitable for Project Development. Somewhat limited for lawn or landscaping or for trails or golf fairways. Very limited for camping, picnicking, or playground areas; for small buildings; or for septic tank absorption field. Moderately suited for roads because of the moderate potential for erosion.

Source: NRCS (2005)

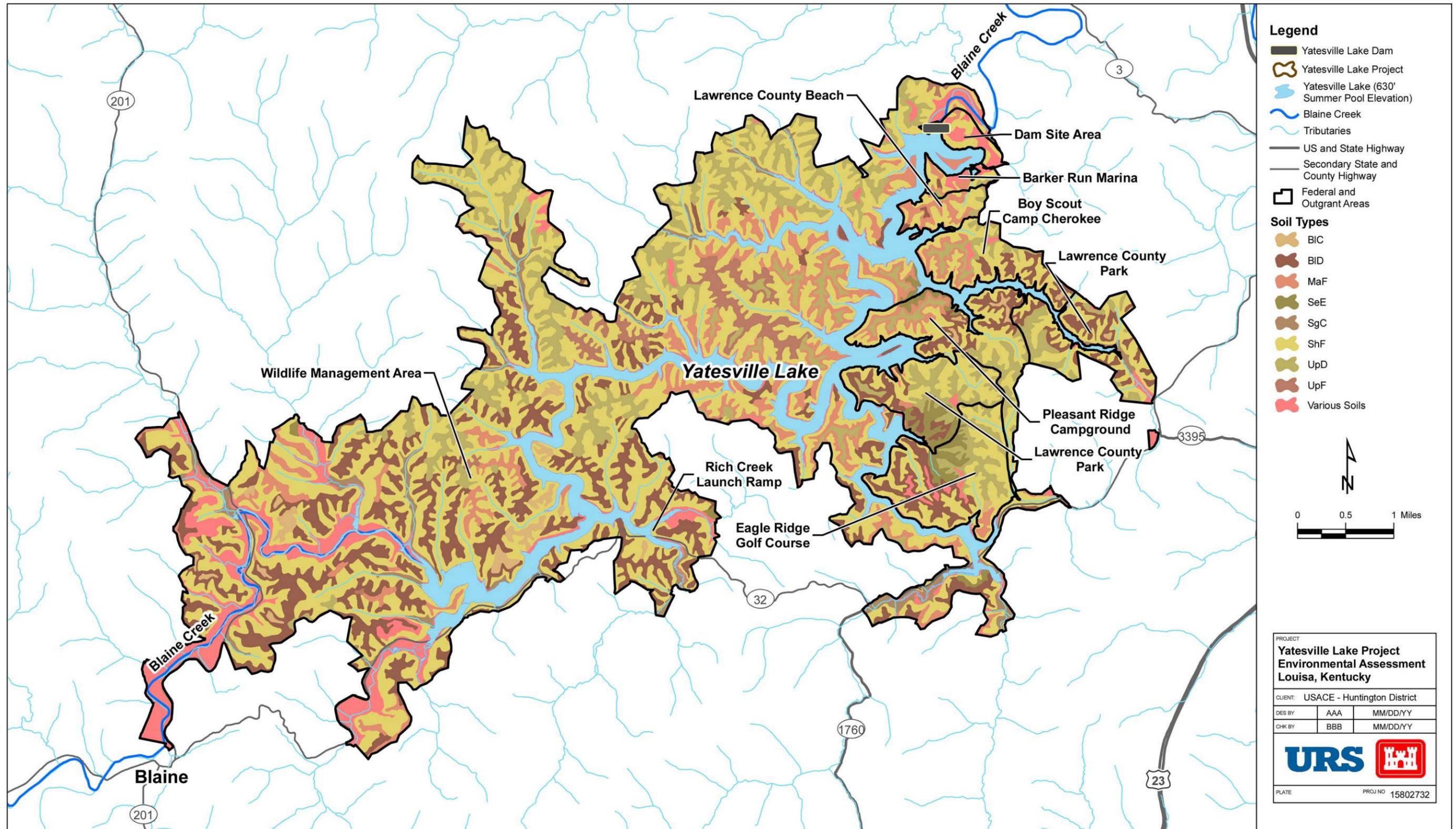


Figure 3-2: Yatesville Lake Project Soils Map

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3.1.4 Water Resources

This section contains a discussion of surface water and groundwater in the Project area.

3.1.4.1 Surface Water

Surface water in the Project area includes rivers and streams, Yatesville Lake, and the tailwater.

Rivers and Streams

The 20,000-acre Project area is in Lawrence County on Blaine Creek, a tributary to the Big Sandy River. The Big Sandy River begins at the confluence of the Tug Fork River and Levisa Fork River and flows north for about 29 miles before emptying into the Ohio River. The Project area is approximately 18 miles upstream from the confluence of Blaine Creek with the Big Sandy River (USACE, 2004).

A network of stream tributaries carries surface water to Blaine Creek from the 208-square-mile Blaine Creek watershed upstream of the Yatesville Lake dam (USACE, 2004). This network of tributaries covers approximately 550 stream miles. Figure 3-3 shows the watershed boundary and Figure 3-4 shows the surface waters and tributaries within the Project area.

Water quality of the lake is generally in good condition. However, upstream land use activities such as coal mining, logging, agriculture, and land development have caused soil erosion and the transport of sediment into surface waters. Sediment is considered a pollutant and diminishes the clarity of streams within the Big Sandy River watershed. According to the *2008 Integrated Report to Congress on the Condition of Water Resources in Kentucky* (Kentucky Division of Water, 2008), the water quality of the four streams in the Project area—Blaine Creek, Left Fork Little Blaine Creek, Rockhouse Fork, and Wolfpen Branch—is considered impaired under Section 303(d) of the Clean Water Act of 1977 (CWA) (33 U.S.C. § 1313) because of eutrophication, which is the process by which water becomes enriched with dissolved nutrients that stimulates the growth of algae and other aquatic plants. An impaired water body has chronic or recurring monitored violations of State water quality regulations and is a priority for water quality enhancement.

The Commonwealth of Kentucky regulates and preserves its most pristine rivers through the Wild Rivers Program. The program was established by the Kentucky Wild Rivers Act of 1972 and is administered by the Kentucky Division of Water. None of the streams or rivers designated as wild and scenic under this program or designated under the National Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.) are located within the Project area boundaries.

The CWA (33 U.S.C. §§ 1251 et seq.) established the basic framework for regulating discharges of pollutants into the waters of the United States. The CWA National Pollutant Discharge Elimination System (NPDES) (33 U.S.C. § 1342) requires permits for stormwater discharges associated with construction activities. The Kentucky Division of Water is authorized to carry out NPDES permitting under the Kentucky Pollutant Discharge Elimination System (KPDES). Construction projects that disturb more than 1 acre of land require coverage under the KPDES General Permit for Stormwater Discharges Associated with Construction Activities. Coverage under this permit requires development of construction site erosion control and storm water management plans.

Yatesville Lake

Yatesville Lake is approximately 20 miles long. During the summer pool (April through November), the lake has a surface area of 2,247 acres, an elevation of 630 feet NGVD, and a width of 500 to 900 feet in the main portion of the lake. The summer pool is typically the highest water level during the year. The average depth of the lake is about 17 feet with a maximum depth of approximately 60 feet (USACE, 1975). The lake is long and relatively narrow with many coves developed at junctions with tributaries; these features result in a shoreline that is more than 100 miles long during the summer. The shoreline generally consists of steep, rocky slopes that are well vegetated above the summer pool elevation. Approximately 1,350 acres of the lake are designated for unrestricted boat usage and approximately 900 acres are restricted to idle speed.

The USACE regularly samples the water of Yatesville Lake at different depths for temperature, dissolved oxygen, acidity (or pH), and conductivity. KDFWR uses these data to assess the quality of the water for fish habitat. The lake is stratified during the summer with warm, oxygenated water on the surface and cold water with low or depleted oxygen levels at the bottom

Tailwater

The tailwater is immediately downstream of the dam where the outflow from the lake is discharged. Water is released from the lake through an intake structure and passes through a tunnel to emerge as outflow. This system allows withdrawal from various water depths and offers choices over a considerable range of outflow rates and water parameters, including temperature. In April, May, and November, the KDFWR stocks the tailwater with rainbow and brown trout, providing increased recreational fishing opportunities within the Project area.

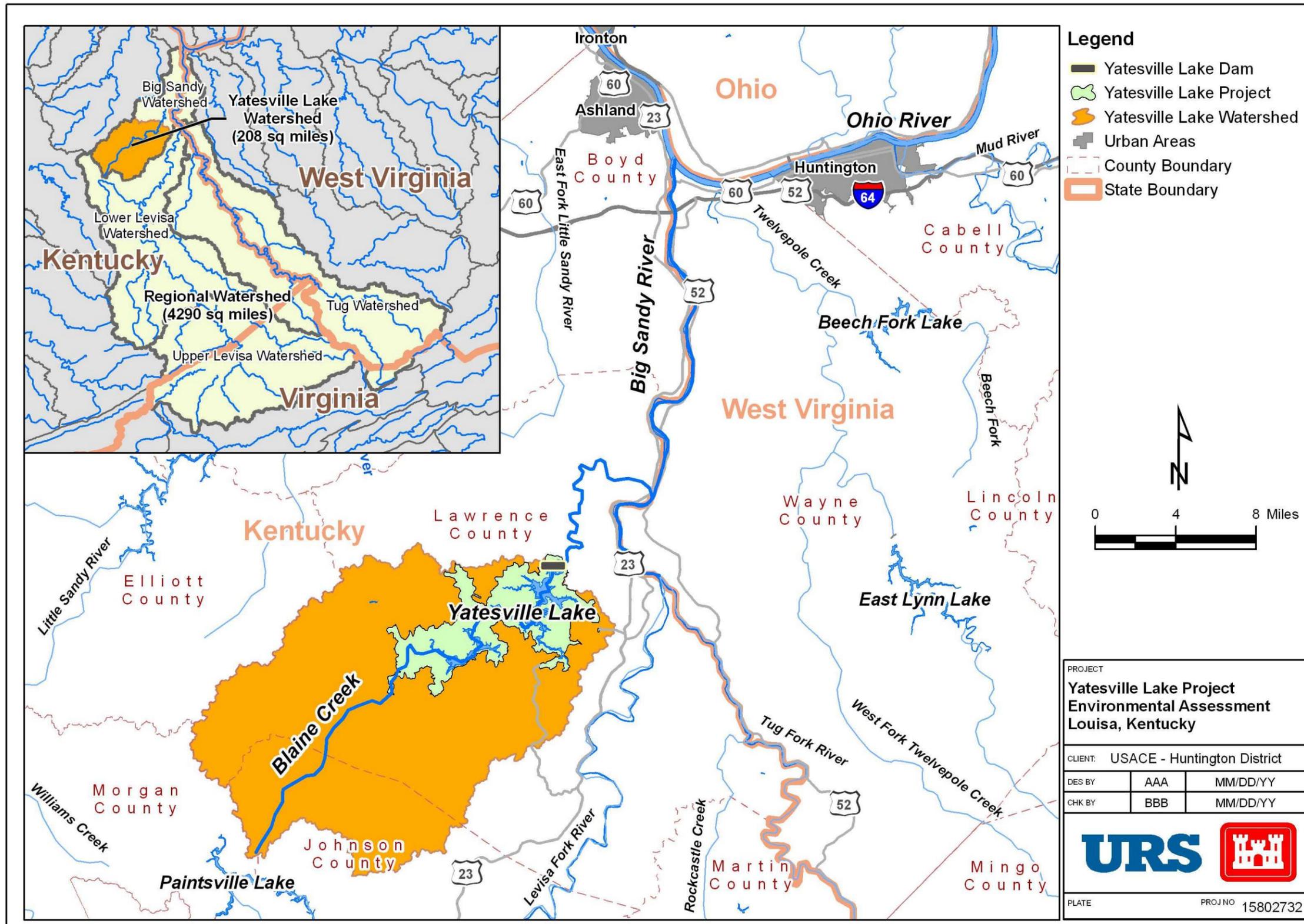


Figure 3-3: Yatesville Lake Project Watershed

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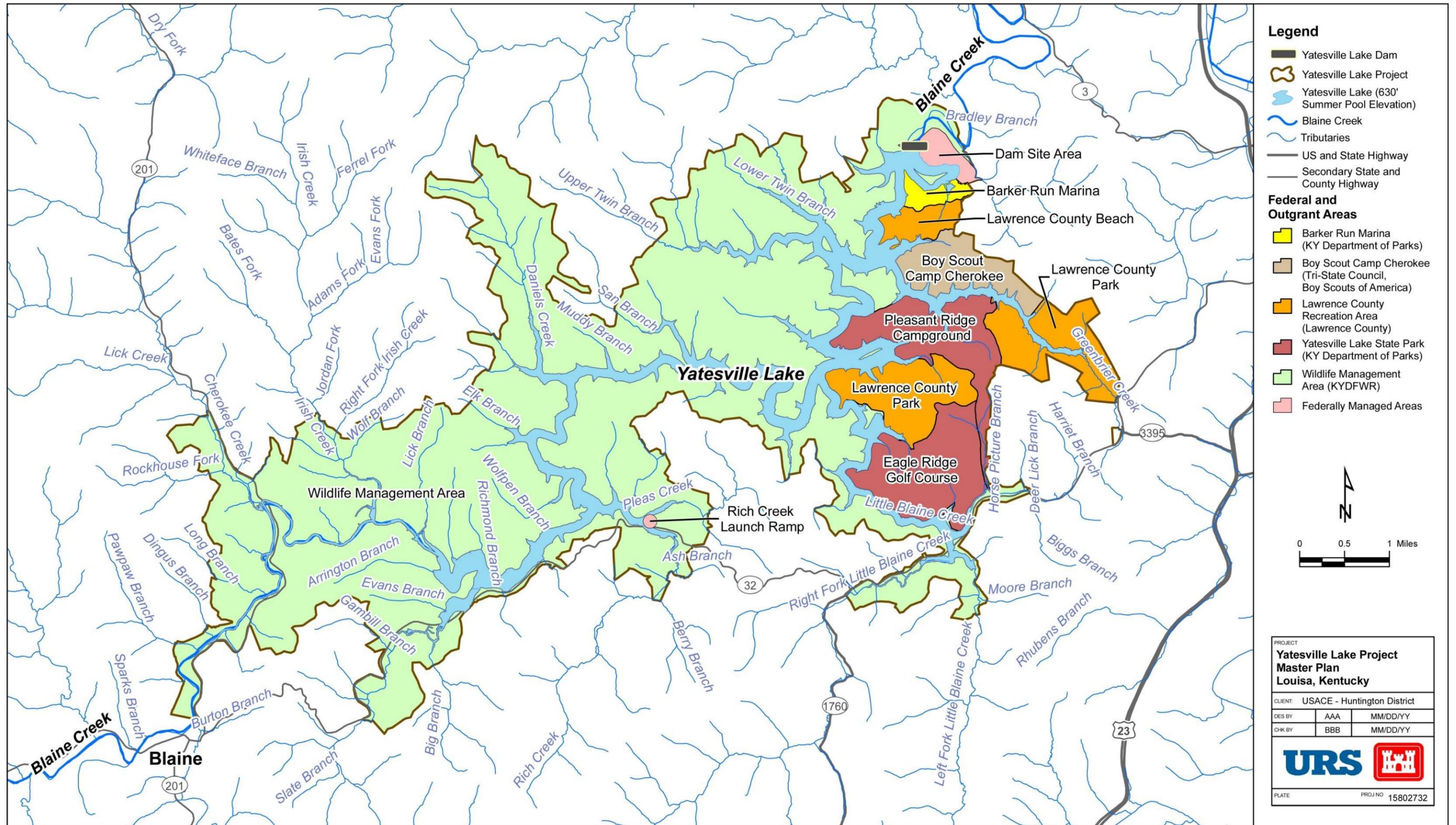


Figure 3-4: Surface Waters within the Project Area

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3.1.4.2 Groundwater

Four aquifers in the Project area contain groundwater (Alluvium, Lower Breathitt, Middle Breathitt, and Grundy Formations). Multiple groundwater wells have been installed in the Project area (Figure 3-5). The Project area also has 39 wells (Kentucky Geological Survey, 2010), but the current condition of the wells (active or abandoned) is unknown. No natural springs have been identified in the Project area.

In Lawrence County, the groundwater contains noticeable amounts of iron (Fe) and is considered moderately to extremely hard. Other naturally occurring constituents that may be present in objectionable amounts are sulfate (SO_4), sodium chloride (NaCl), and manganese (Mn) (Kentucky Geological Survey, 2011a). Salty water commonly occurs at depths of 300 feet or more below the ground surface but may be encountered at more shallow levels. No groundwater contamination has been identified in the Project area. Groundwater is not used to supply potable water within the Project area; potable water is provided from the City of Louisa municipal water system.

Groundwater is a vital, natural resource that is susceptible to contamination from a variety of activities. Contaminated groundwater can be difficult to remediate. The Kentucky Department for Environmental Protection assesses how easily and quickly a contaminant can move into and within a groundwater system (Ray et al., 1994) on a scale from 1 (low) to 5 (high). The groundwater system in the Project area is rated at 3 (moderate).

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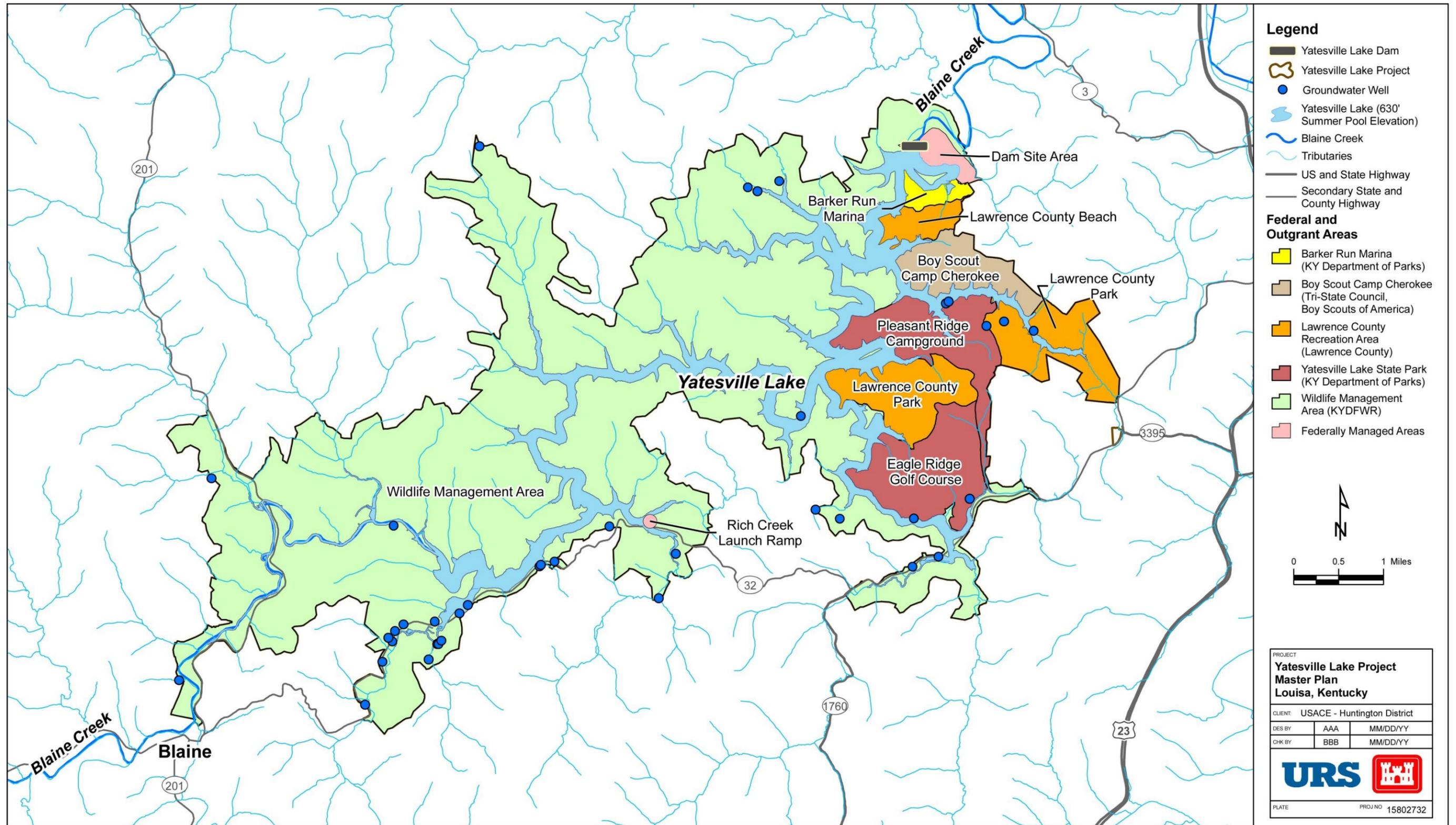


Figure 3-5: Groundwater Well Locations in the Project Area

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3.1.5 Floodplains

One of the primary authorized purposes of the Project is flood risk management. The Project area around the lake is designed to store floodwaters to reduce flood risk downstream. Consequently, inundation by flooding is largely artificially controlled. Figure 3-6 shows inundation areas between the summer pool elevation of 630 feet NGVD and the maximum flood control pool elevation 645 feet NGVD. Flooding of the land above the recreational summer pool elevation does occur, but the majority of flooding instances occur during the winter and spring months. Based on Figure 3-6, the majority of the recreation areas are subject to inundation.

3.1.6 Air Quality

The U.S. Environmental Protection Agency (EPA) has set national air quality standards for six principal pollutants (also referred to as “criteria” pollutants): carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂) (EPA, 2010). Ambient air quality in the Yatesville Lake area is in attainment for all criteria pollutants (Kentucky Division of Air Quality, 2010).

3.1.7 Climate

The Project area has a temperate climate and experiences the four seasons with average temperatures ranging from approximately 34 degrees Fahrenheit in January to 75 degrees Fahrenheit in July. Since 1972, the region has received an average rainfall of between 2.7 and 4.5 inches per month, with an annual average of approximately 42 inches (NOAA, 2006). There are striking variations in the severity of summer and winter from year to year.

3.1.8 Noise

EPA’s Noise Control Act of 1972 (42 U.S.C. §§ 4901–4918), as amended by the Quiet Communities Act of 1978, states that the policy of the United States is to promote an environment for all Americans that is free from noise that jeopardizes health or welfare.

Noise is generally defined as loud or undesirable sound. Sound is most commonly measured in decibels (dB), with the Day-Night Average Sound Level (DNL) used as an average measure of sound in dB. The DNL descriptor is accepted by Federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses. EPA guidelines, and those of many other Federal agencies, state that outdoor sound levels in excess of 55 dB DNL are “normally unacceptable” for “outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time ...,” which would include the Project area

(EPA, 1974). Although temporary/transient noises occur in the Project area (e.g., from vehicles or boats), no notable sources of noise pollution are known to be present.

3.2 Biological Environment

The biological environment includes vegetation, wetlands, terrestrial wildlife, and aquatic life. Threatened and endangered species in the Project area are also discussed in this section.

3.2.1 Vegetation

The majority of the land cover at the Project is forested (approximately 78 percent), broken by limited scattered open areas and grasslands (Figure 3-7) (USGS National Land Cover Database, 2001). Table 3-2 lists the land cover types in the Project area and the percentage of the area they cover.

Table 3-2: Land Cover Types in the Project Area

Land Cover	Percent of Project Area
Allegheny-Cumberland Dry Oak Forest and Pine Woodlands	64
Open water	10
South-Central Interior Mesophytic Forest	9.5
Developed open space	4
Appalachian Hemlock-Hardwood Forest	4
Successional Grassland/Herbaceous (Other)	2.1
High, Medium and Low Intensity Developed Land	1.7
Pasture/Hay	1.6
Row Crop	0.2
South-Central Interior Small Stream and Riparian	1.3
Southern Appalachian Low Mountain Pine Forest	0.9
Successional Shrub/Scrub (Other and Utility Swath)	0.3

Source: Homer et al., 2004

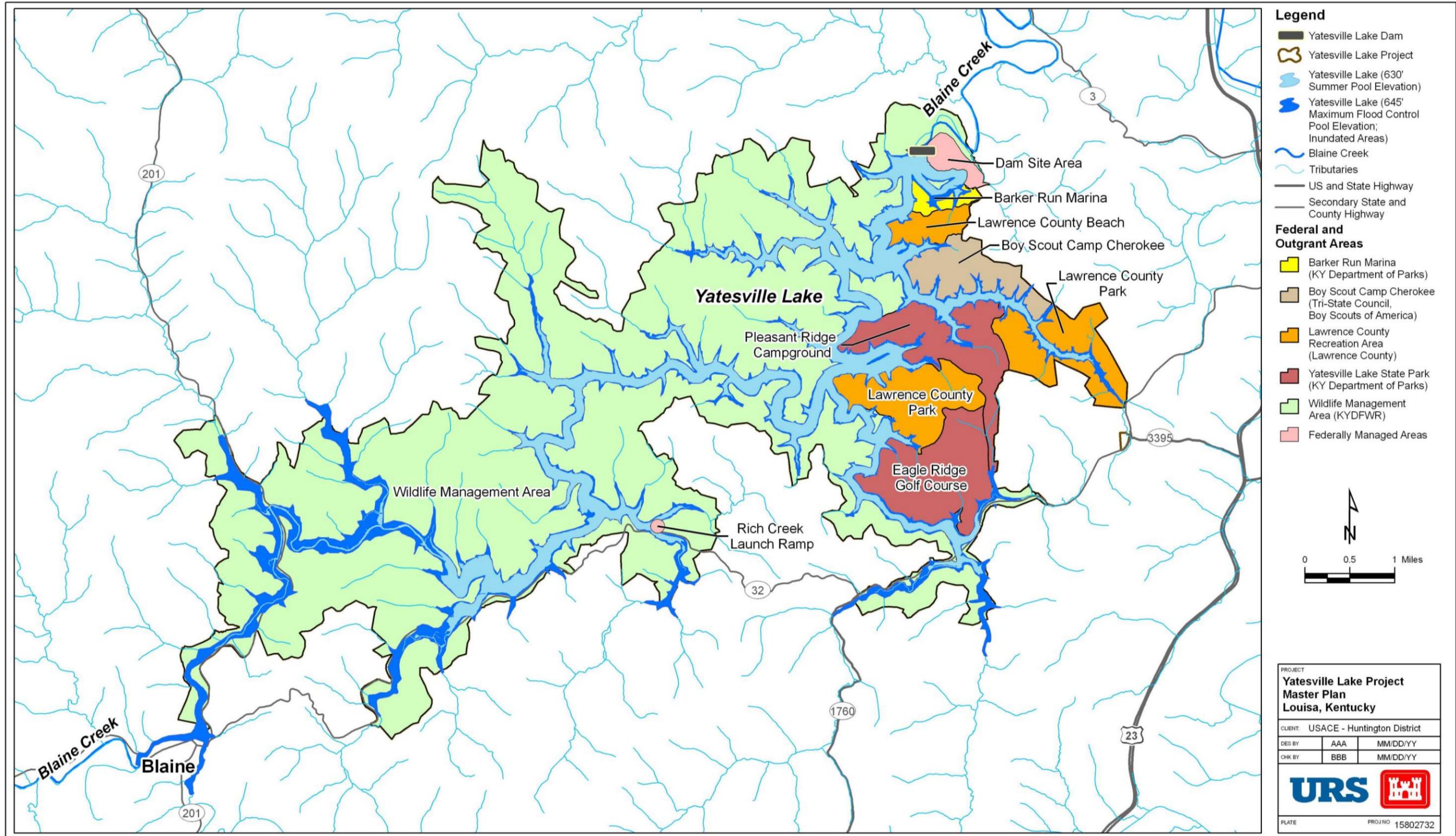


Figure 3-6: Inundation Areas of Summer Pool and Maximum Flood Control Elevations

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The primary tree species in the Project area are oaks (*Quercus* spp.), maples (*Acer* spp.), and hickorys (*Carya* spp.), with small stands of pine (*Pinus* spp.). Other less dominant species include American beech (*Fagus grandifolia*), yellow poplar (*Liriodendron tulipifera*), yellow birch (*Betula alleghaniensis*), American basswood (*Tilia americana*), cucumber tree (*Magnolia acuminata*), black walnut (*Juglans nigra*), Eastern hemlock (*Tsuga canadensis*), black cherry (*Prunus serotina*), and sweet birch (*Betula lenta*) (NatureServe, 2007).

The three primary forest communities are as follows:

- **Allegheny-Cumberland Dry Oak Forests and Pine Woodlands** are typically dominated by white oak (*Quercus alba*), southern red oak (*Quercus falcata*), chestnut oak (*Quercus prinus*), and scarlet oak (*Quercus coccinea*), with lesser amounts of red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), and mockernut hickory (*Carya alba*). Small stands of shortleaf pine (*Pinus echinata*) or Virginia pine (*Pinus virginiana*) may occur, particularly adjacent to escarpments or following fire. In the absence of fire, eastern white pine (*Pinus strobus*) may be prominent, occurring in a variety of situations, including on nutrient-poor or acidic soils (NatureServe, 2007).
- **South-Central Interior Mesophytic Forests** are highly diverse and predominantly deciduous. They occur on deep and enriched soils enhanced by the presence of limestone or related base-rich geology, in non-mountainous settings, and usually in somewhat protected landscape positions such as coves or lower slopes. Dominant species include sugar maple (*Acer saccharum*), American beech, yellow poplar (*Liriodendron tulipifera*), American basswood, red oak (*Quercus rubra*), cucumber tree, and black walnut (*Juglans nigra*). Eastern hemlock may be present in some stands. Trees may grow to be large in undisturbed areas. Many examples of this type of forest are bisected by small streams (NatureServe, 2007).
- **Appalachian Hemlock-Hardwood Forests** are characterized by northern hardwoods such as sugar maple, yellow birch, and American beech, either forming a deciduous canopy or mixed with eastern hemlock or eastern white pine. Other common and sometimes dominant trees include oaks (mostly red oak), yellow poplar, black cherry, and sweet birch (NatureServe, 2007).

Although the stands of Eastern hemlocks within the Project area are currently healthy, Eastern hemlocks are in decline regionally and special care is given to prevent adverse impacts on the 24.7 acres (less than 0.2 percent of the Project's land area) of existing stands (Eastern hemlocks are not listed separately in Table 3-2).

In the WMA, forested wetlands are found in the bottomlands and lowlands, along with rushes, sedges, and other common wetland vegetation species. Herbaceous and scrub-shrub vegetation are found along Blaine, Muddy, and Hood Creeks (USACE, 2006). However, these areas

represent a small percentage of the total vegetation cover and are incorporated within the other land type categories listed in Table 3-2.

Vegetation Management

There is currently no plan for harvesting timber in the Project area; KDFWR does limited cutting of overstocked areas to remove undesirable tree species in favor of native hardwoods, such as oak and hickory trees. From 2003 to 2004, KDFWR planted 20 acres of mixed, native bottomland hardwood seedlings, including pin oak (*Quercus palustris*), swamp white oak (*Quercus bicolor*), and black walnut near the confluence of Blaine and Irish Creeks within the WMA. Native alder seedlings (*Alnus serrulata*) were planted on 1.5 acres in the Brushy Creek and SR 201 areas in 2010. KDFWR endorses the practice of implementing these native alder plantings to provide a critical cover component for enhancing woodcock habitat. KDFWR has existing plans for the direct seeding of 12 acres of native alder in bottoms along Brushy Creek in 2011 (Richard Mauro, wildlife biologist, Northeast Region Public Lands, written communication, 14 December 2010). Brushy Creek joins Blaine Creek at the southwestern end of the lake.

As shown on Figure 3-7, the Project area has some areas of grassland. Some of the grasslands are composed of native warm season grasses such as prairie cordgrass (*Spartina pectinata*), eastern gamagrass (*Tripsacum dactyloides*), switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), and side-oats grama (*Bouteloua curtipendula*) (KDFWR, 2008). In scattered locations, the KDFWR may seed open areas with native grass seed to augment or supplement the naturally occurring vegetation and benefit small mammals, deer, turkeys, and birds by providing nesting areas, bedding areas for deer, and habitat for insects. Other vegetation management activities in grasslands include limited prescribed burning and cutting for maintenance of meadow habitats that are valuable habitat for birds and other wildlife to encourage a more desirable mix of wildlife-friendly vegetation and reduce the natural fuel layer in the ecosystem.

An invasive species is a species that is foreign to a particular region and out-competes native species for the same resources. Prominent invasive species in the Project area are bush honeysuckle (*Lonicera* spp.), kudzu (*Pueraria lobata*), hydrilla (*Hydrilla verticillata*), and Tree-of-Heaven (*Ailanthus altissima*). Invasive species are monitored and managed at the Project to ensure that they do not affect native ecology; management activities include chemical applications and physical removal.

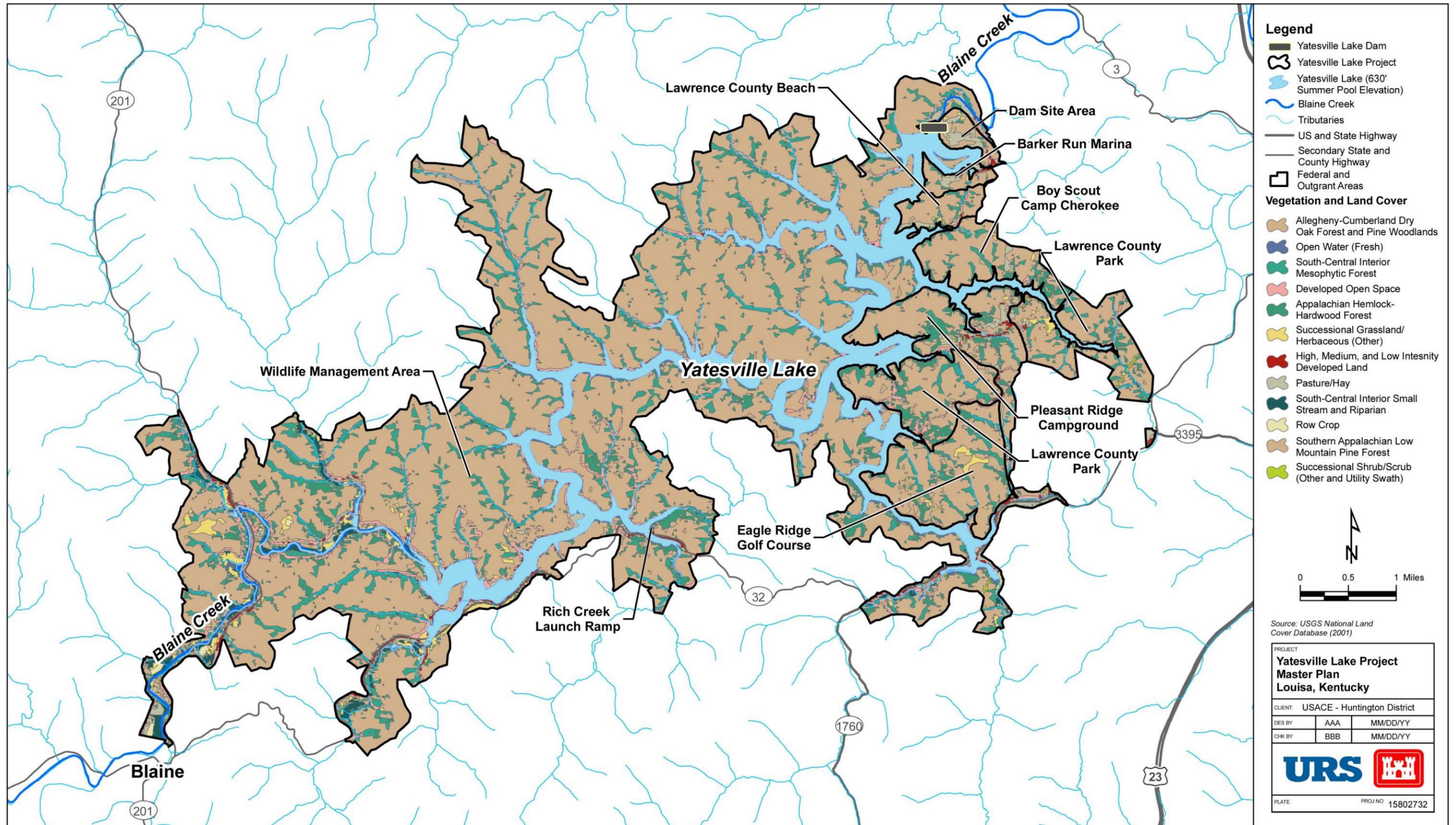


Figure 3-7: Vegetation and Land Cover in the Project Area

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3.2.2 Wetlands

The USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, pursuant to Section 404 of the CWA (33 U.S.C. § 1344). Additionally, Executive Order (EO) 11990 (Protection of Wetlands) requires Federal agencies to avoid, to the extent possible, adverse impacts to wetlands. Wetlands provide a number of benefits to the environment, including water quality improvement, floodwater storage, fish and wildlife habitat, aesthetics, and biological productivity.

According to the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, 194 acres of wetlands existed within the Project area prior to impoundment. The NWI maps are a generalized series of maps that give approximate locations of wetland areas based on previous surveys; no other mapping of the entire Project area has been conducted since the NWI maps were released. The mapped wetlands in the Project area tend to occur mainly in relation to streams and were scattered, consisting of relatively small areas averaging less than 3 acres (USFWS, 2010). Approximately 100 acres of wetlands were submerged when the lake was impounded. An estimated 94 acres of wetlands still exist within the Project area, primarily along smaller tributaries and on the western side of the Project where Blaine Creek is narrow and has more gentle adjacent slopes. Figure 3-8 shows the NWI-mapped wetlands in the Project area prior to impoundment.

In the early 1990s, three areas of wetlands totaling 21 acres were constructed within the WMA near the confluence of Cherokee and Blaine Creeks (see Figure 3-8) by KDFWR in cooperation with Ducks Unlimited, the USACE, the Natural Resource Conservation Service, and the Kentucky Power Company (Richard Mauro, wildlife biologist, Northeast Region Public Lands, written communication, 14 December 2010). This type of project, often referred to as a “Green Tree Reservoir,” is created to artificially supply wildlife with desirable habitat where habitat has been identified as being deficient. Constructed and natural wetlands provide the same benefit and functionality and are both critical to storage capacity, water quality, filtration of surface water, and wildlife habitat.

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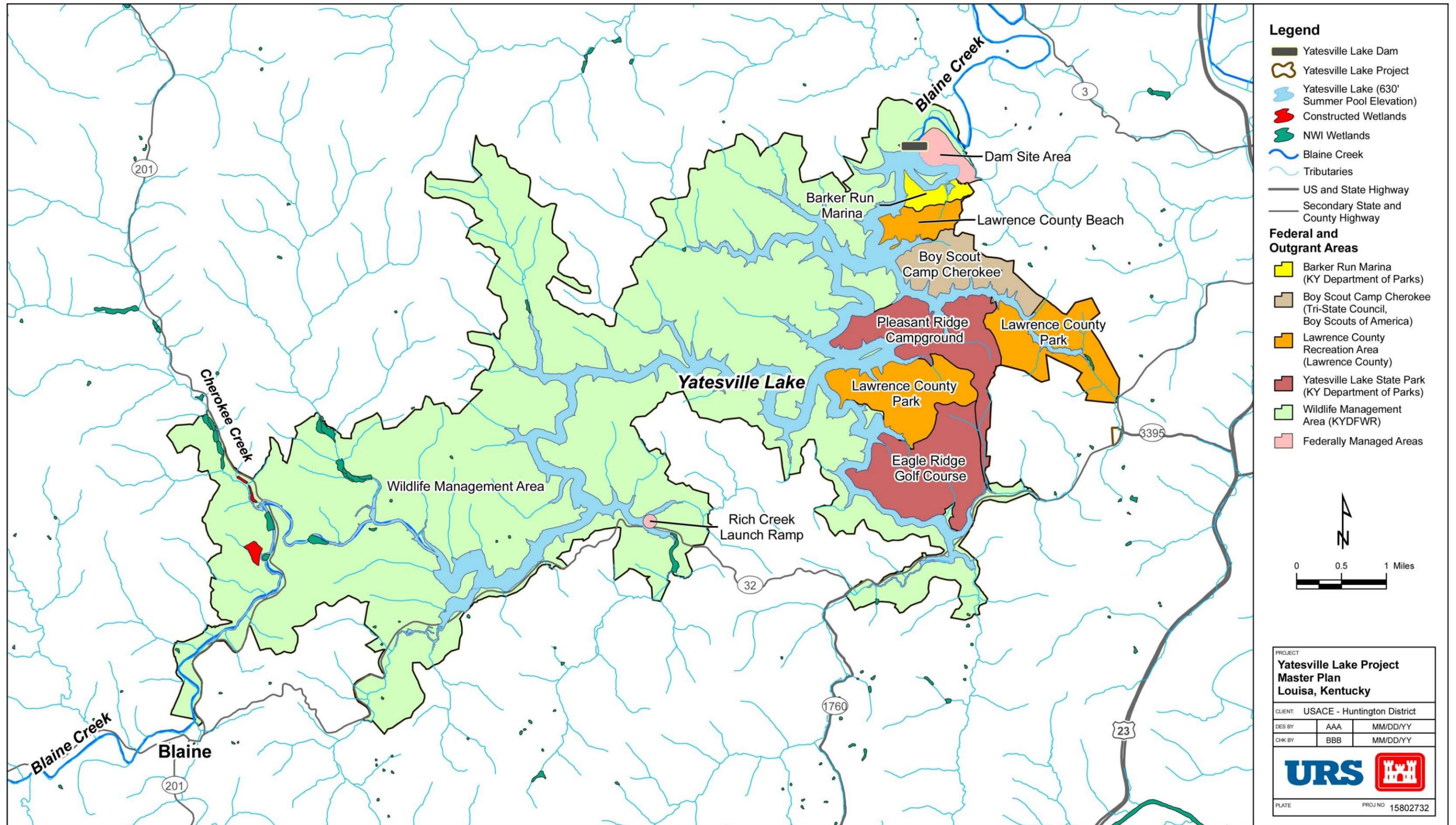


Figure 3-8: Wetlands

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3.2.3 Terrestrial Wildlife

According to the KDFWR, the Project area supports more than 25 amphibian species, 20 reptile species, 150 bird species, and 50 mammal species. The scientific and common names of some of the species commonly found in the Project area are listed in Table 3-3.

Table 3-3: Some of the Common Species in the Yatesville Lake Project Area

Taxonomic Group	Scientific Name	Common Name
Amphibians	<i>Ambystoma opacum</i>	marbled salamander
	<i>Ambystoma maculatum</i>	spotted salamander
	<i>Notophthalmus viridescens</i>	eastern newt
	<i>Pseudacris crucifer crucifer</i>	northern spring peeper
	<i>Rana catesbeiana</i>	bullfrog
	<i>Rana clamitans melanota</i>	green frog
Birds	<i>Vireo</i> spp.	vireo
	<i>Zenaida macroura</i>	mourning Dove
	<i>Meleagris gallopavo</i>	wild turkey
	<i>Corvus brachyrhynchos</i>	American crow
	<i>Baeolophus bicolor</i>	tufted titmouse
	<i>Sitta carolinensis</i>	white-breasted nuthatch
	<i>Hylocichla mustelina</i>	wood thrush
	<i>Seiurus aurocapilla</i>	ovenbird
	<i>Piranga olivacea</i>	scarlet tanager
	<i>Dendroica</i> spp.	warbler
	<i>Coccyzus americanus</i>	yellow-billed cuckoo
	<i>Dryocopus pileatus</i>	pileated woodpecker
	<i>Strix varia</i>	barred owl
Mammals	<i>Canis latrans</i>	coyote
	<i>Castor canadensis</i>	American beaver
	<i>Lontra canadensis</i>	northern river otter
	<i>Lynx rufus</i>	bobcat
	<i>Odocoileus virginianus</i>	white-tailed deer
	<i>Procyon lotor</i>	raccoon

Taxonomic Group	Scientific Name	Common Name
	<i>Sciuridae</i>	squirrel
	<i>Plecotus auritus</i>	long-eared bat
Reptiles	<i>Agkistrodon contortrix</i>	copperhead
	<i>Chelydra serpentina serpentina</i>	common snapping turtle
	<i>Coluber constrictor</i>	racer
	<i>Opheodrys aestivus</i>	rough green snake

Sources: KDFWR (2010b) and USACE (2001)

Migratory waterfowl can generally be found at the western end of the WMA. Species using the Project for at least part of the year include Mallard (*Anas platyrhynchos*), Wood Duck (*Aix sponsa*), American Black Duck (*Anas rubripes*), Bufflehead (*Bucephala albeola*), Green-winged Teal (*Anas crecca*), Green Heron (*Butorides virescens*), Blue Heron (*Ardea herodias*), and Belted Kingfisher (*Megaceryle alcyon*) (Watchable Wildlife, 2005). KDFWR has established a wildlife refuge at the western end of the WMA along SR 201 and Cherokee Creek to provide a sanctuary for waterfowl and other avian species.

Although none of the main North American flyways cross the Project area, many neotropical migrants can be found in eastern Kentucky. Neotropical birds breed in North America and spend the non-breeding season in Mexico, the Caribbean, and Central and South America. The annual migration of neotropical migrants brings species such as cerulean warblers, Indigo Buntings (*Passerina cyanea*), Scarlet Tanagers (*Piranga olivacea*), Baltimore Orioles (*Icterus galbula*), and Wood Thrushes (*Hylocichla mustelina*) into Kentucky to nest and breed while others pass through on their way to and from their breeding habitat north of Kentucky. During the non-breeding season, the neotropical species return south (KSNPC, 2007).

Wildlife Management

As shown on Figure 3-4, the WMA, which is managed by KDFWR, occupies a large portion of the Project area (15,900 of the 20,000 acres of the Project area). In the 1970s and early 1980s, the KDFWR implemented wildlife restoration within the WMA when white-tailed deer (*Odocoileus virginianus*) and wild turkey (*Meleagris gallopavo*) were relocated from other areas of Kentucky and other states. KDFWR conducts regular surveys to measure wildlife populations and collects reports from hunters regarding numbers and types of animals harvested to estimate the numbers of game species. The restoration efforts have yielded healthy, self-supporting

populations of these two popular game species (Richard Mauro, wildlife biologist, Northeast Region Public Lands, written communication, 14 December 2010).

The KDFWR maintains a dove management area near the intersection of SR 201 and Cherokee Irish Creek Road at the western end of the Project downstream from the wildlife refuge. This management area was established to focus on management techniques that are specific to the habitat needs of mourning doves (*Zenaida macroura* [Linnaeus]). This area and the techniques that are used tend to attract doves, which encourages more hunting.

The KDFWR has implemented various habitat development measures in the WMA. In 2005, 20 small wildlife waterholes measuring less than 0.1 acre were constructed at scattered locations on forested ridges in the WMA to provide habitat for a variety of upland species of frogs and salamanders and a standing water source for birds and mammals (Richard Mauro, wildlife biologist, Northeast Region Public Lands, written communication, 14 December 2010).

3.2.4 Aquatic Life

Yatesville Lake sustains a diverse composition of aquatic species. Some of the fish species found in the lake are listed in Table 3-4. The tailwater below the dam is stocked annually by KDFWR with rainbow and brown trout in April, May, and November (KDFWR, 2010).

Additionally, there are semi-aquatic species such as amphibians that spend half of their life cycle in aquatic ecosystems and half in terrestrial ecosystems. The Project area supports 25 species of amphibians, including the marbled salamander, spotted salamander, eastern newt, northern spring peeper, bullfrog, and the green frog. These animals are good indicators of the health and stability of an aquatic ecosystem.

**Table 3-4: Representative Fish Species
in Yatesville Lake**

Scientific Name	Common Name
largemouth bass	<i>Micropterus salmoides</i>
smallmouth bass	<i>Micropterus dolomieu</i>
spotted bass	<i>Micropterus punctulatus</i>
black crappie	<i>Promoxis nigro-maculatus</i>
white crappie	<i>Promoxis annularis</i>
channel catfish	<i>Ictalurus punctatus</i>
flathead catfish	<i>Pylodictis olivaris</i>
blue catfish	<i>Ictalurus furcatus</i>
bluegill	<i>Lepomis macrochirus</i>
green sunfish	<i>Lepomis cyanellus</i>
longear sunfish	<i>Lepomis megalotis</i>
redbreast sunfish	<i>Lepomis auritus</i>
redecor sunfish	<i>Lepomis microlophus</i>
rock bass	<i>Ambloplites rupestris</i>
warmouth	<i>Lepomis gulosus</i>
white bass	<i>Morone chrysops</i>
yellow bass	<i>Morone mississippiensis</i>
yellow perch	<i>Perca flavescens</i>

Kentucky Fishing (2010)

The lake provides habitat for many species. In development of the lake, timber was left in many of the cove areas so it would be below the summer pool elevation in order to provide underwater habitat to benefit fisheries. Additionally, there are natural and developed submerged brush sites that provide habitat for spawning and cover. Artificial brush piles are developed by the KDFWR by securing suitable cover such as discarded Christmas trees to the lake bottom. The adjacent wetlands and shallow water areas provide additional spawning areas as well as hunting areas for predator birds and other wildlife. The natural physiology also provides for structure that is conducive to a healthy aquatic system. Existing structures like rocky bottoms, sandy bottoms, pooling areas, rock outcrops, and grassy areas provide diverse habitat for aquatic life.

3.2.5 Threatened and Endangered Species

Threatened, endangered, and species of special concern are defined in this PEA as sensitive and protected biological, resources including plant and animals, that are listed for protection by the USFWS or the Commonwealth of Kentucky. Under the Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531–1544), an endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species likely to become an endangered species in the foreseeable future.

Threatened and endangered species and species of special concern that may occur in Lawrence County, and therefore in the Project area, are listed in Table 3-5, along with their Federal and State status.

Table 3-5: Threatened and Endangered Species and Species of Special Concern in Lawrence County

Taxonomy	Common Name	Scientific Name	Federal Status	State Status
Vascular Plants	umbel-like sedge	<i>Carex tonsa</i> var. <i>rugosperma</i>	—	T
	small yellow lady's-slipper	<i>Cypripedium parviflorum</i>	—	T
	yellow troutlily	<i>Erythronium rostratum</i>	—	SC
	common silverbell	<i>Halesia tetraptera</i>	—	E
Freshwater Mussels	fanshell	<i>Cyprogenia stegaria</i>	E	E
	longsolid	<i>Fusconaia subrotunda</i>	—	SC
	little spectaclecase	<i>Villosa lienosa</i>	—	SC
Fishes	northern brook lamprey	<i>Ichthyomyzon fossor</i>	—	T
	trout-perch	<i>Percopsis omiscomaycus</i>	—	SC
Birds	bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted	T
	sharp-shinned hawk	<i>Accipiter striatus</i>	—	SC
Mammals	Indiana bat	<i>Myotis sodalis</i>	E	E
Insects	perlid stonefly	<i>Acroneuria kosztarabi</i>	—	SC

Source: KSNPC (2009b)

— = None

E = endangered

SC = special concern

T = threatened

3.2.5.1 Federally Listed Species

Two federally listed endangered species, fanshell mussel (*Cyprogenia stegaria*) and Indiana bat (*Myotis sodalist*), may occur in the Project area. No designated critical habitat under Section 7 of the ESA (16 U.S.C. § 1536) occurs within the Project area.

Fanshell Mussel

The fanshell mussel is found in medium to large streams and rivers with moderate to strong currents in coarse sand and gravel with depths ranging from shallow to deep (KSNPC, 2009). The fanshell mussel is round with numerous pustules, elevated growth lines, and broken green rays (NatureServe, 2009a). This species was historically considered endemic to the eastern highlands east of the Mississippi River. It was historically widely distributed in the Tennessee, Cumberland, and Ohio River systems but is currently very rare (NatureServe, 2009a). The species has been found in the Green River in Kentucky but has not been confirmed in the Project area.

Indiana Bat

The Indiana bat has a wide range in the eastern United States, with a distribution from eastern Oklahoma to New Hampshire and from southern New England to the Florida panhandle (USACE, 2006). Most of the population hibernates in relatively few caves, which makes the species exceptionally vulnerable to disturbance to local habitat (NatureServe, 2009b). Census data from 1995 to 1997 indicate an acute decline of about 60 percent since population surveys began in the 1960s; the most severe declines occurred in Kentucky and Missouri, where the decline totals are 430,000 individuals over the past few decades (NatureServe, 2009b).

Northern populations migrate south to Alabama, Tennessee, Kentucky, Indiana, Missouri, and West Virginia for the winter. The most important hibernating caves in Kentucky include the Bat, Hundred Dome, and Dixon caves (NatureServe, 2009b) but none of these caves are near Yatesville Lake. However, the habitat in the Project area is potentially suitable for the Indiana bat.

In response to Section 7 of the ESA coordination conducted in connection with a 2006 PEA by the Federal Energy Regulatory Commission (FERC) in similar habitats in the region, the USFWS recommended that tree clearing be restricted from April 1 to November 15 to avoid affecting summer roosting of Indiana bats (FERC, 2006). With implementation of this mitigation, the FERC determined that the project may affect but is not likely to adversely affect Indiana bats.

3.2.5.2 State-Listed Species

As of February 2009, 13 species in Lawrence County are State-listed as endangered, threatened or of special concern (KSNPC, 2009). The list consists of four vascular plant species, three freshwater mussel species, two fish species, two bird species, one mammal species, and one insect species.

Of the four vascular plant species, the umbel-like sedge (*Carex tonsa var. rugosperma*), yellow troutlily (*Erythronium rostratum*), and small yellow lady's-slipper (*Cypripedium parviflorum*) presently occur in the county. Common silverbell (*Halesia teiraptera*) has not been observed in the county for at least 20 years.

Of the three freshwater mussel species, the longsolid (*Fusconata subrotunda*) is listed as currently being present in Lawrence County while both little spectaclecase (*Villosa lienosa*) and fanshell are known to be extirpated from the county. The two fish species, northern brook lamprey (*Ichthyomyzon fossor*) and trout-perch (*Percopsis omiscomaycus*) are listed as being extirpated from the county.

The sharp-shinned hawk (*Accipiter striatus*) and bald eagle (*Haliaeetus leucocephalus*) are known to be currently present in the county. The bald eagle is the only State-listed threatened or endangered species to have been recorded and identified as occurring in the Project area. Although bald eagles are no longer a federally listed threatened species, they are protected under the Gold and Bald Eagle Protection Act of 1940 (16 U.S.C. §§ 668-668d) and the Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712). Bald eagles occur on Project lands where the conditions are suitable for finding food and nesting opportunities.

As noted previously, the Indiana bat is known to occur in the county. The one insect listed, perlid stonefly (*Acronuria kosztarabi*), is presently known to occur in the county.

The Kentucky State Nature Preserves Commission (KSNPC) has not identified any State Nature Preserves or State Natural Areas within the Yatesville Lake Project area (KSNPC, 2010b).

3.3 Socioeconomic Environment

The socioeconomic environment includes population and employment, environmental justice, transportation and traffic, recreation, cultural resources, and aesthetics.

3.3.1 Population and Employment

An area of influence comprising counties in Kentucky, West Virginia, and Ohio was identified as the area from which most visitors would be attracted to the Project. The area of influence was divided into primary, secondary, and tertiary subareas. The primary subarea of influence is within a 30-minute drive of the Project, the secondary subarea is between a 30- and 60-minute drive of the Project, and the tertiary subarea is between a 1- and 3-hour drive of the Project. The primary subarea includes portions of seven counties (six in Kentucky and one in West Virginia). The secondary area of influence includes portions of 14 counties (10 in Kentucky, 3 in West Virginia and 1 in Ohio). The tertiary subarea of influence includes a larger geographical region comprising portions of 40 counties in three states (25 in Kentucky, 9 in West Virginia, and 6 in Ohio).

3.3.1.1 Population

Demographic data (population and age) were compiled from U.S. Census Bureau data and regional and State data centers. The data were analyzed to determine the population in the subareas of influence and the projected change by 2020. Table 3-6 shows the population in the subareas of influence in 2007 and the population estimates in 2010 and 2020.

Table 3-6: Population in the Area of Influence

Subarea of Influence	2007 Population	2010 Population Estimate	2020 Projection	Projected Growth 2010–2020
Primary	22,109	22,354	23,415	4.7%
Secondary	266,964	265,827	268,708	1.1%
Tertiary	676,547	673,738	682,157	1.2%

Source: U.S. Census Bureau (2007)

Based on available population estimates, the rate of population growth in the primary subarea is expected to surpass rate of growth in the other subareas between 2010 and 2020. In age distribution, the percentage of persons below the age of 21 across all three subareas is expected to decrease from approximately 30 percent to 26 percent of the total population. The share of persons above the age of 65 is expected to increase within all three subareas from around 18 percent to 20 percent by 2020. The population of the three subareas of influence will have a higher percentage of senior citizens than the percentage of persons of all other ages.

The tertiary subarea of influence exhibited the highest median income compared to the two other subareas (U.S. Census Bureau, 2008). Wealthy counties in Ohio led to the higher median

incomes in the primary subarea. Median incomes were calculated by taking a weighted average of the median incomes of the counties in areas of influence. The median income of each county in the three subareas of influence was multiplied by the percentage of the region’s population that resides in each county to calculate a weighted median income for each county. The weighted median incomes were then summed to find the weighted median income. In 2008, the weighted median income in the primary subarea of influence was \$30,600 (Table 3-7), which was lower than the median household income of approximately \$41,000 in Kentucky. Most of the counties in the secondary subarea of influence are in Kentucky; in 2008, the median income in the secondary subarea of influence, \$34,241, was lower than the median household income of approximately \$41,000 in Kentucky. Counties in West Virginia and Ohio also exhibited lower household incomes compared to incomes reported within their respective states (\$37,989 in West Virginia and \$60,061 in Ohio). Kentucky and West Virginia counties in the tertiary subarea of influence reported lower median incomes than their respective states. Ohio counties in the tertiary subarea of influence had higher median household incomes than the counties in Kentucky and West Virginia but lower than the Ohio.

Table 3-7: Median Household Income in the Subareas of Influence

Subarea	Median Income (2008)
Primary	\$30,621
Secondary	\$34,241
Tertiary	\$36,344

Source: U.S. Census Bureau (2008)

Table 3-8 lists the estimated number of visits to the Project area from 2000 to 2010. A visit represents the entry of one person into a recreational area. As shown in Table 3-8, visitation during this period was highest in 2001 and 2002; however, the data during those years are high because of traffic associated with the construction of the golf course. A drop in visitation occurred from 2004 to 2006, which could be attributed to the high gas prices that affected driving habits nationwide. After an increase in 2007, the estimated number of visitors has fallen to levels more consistent with visitation estimates between 2004 and 2006. Approximately 243,000 visits were made during fiscal year (FY) 2010.

Visitation is expected to increase beyond 2010 based on population growth estimates. Based on the estimated increase in population and anticipated changes in the rate of participation in specific recreational activities, the activities undertaken by the visitors are anticipated to change.

Hunting and fishing visits are anticipated to decrease even when accounting for the projected population increase in the area of influence. The largest increases in visits are anticipated to be in the “Other” category (which includes hiking, horseback riding, and golf) and in sightseeing.

Table 3-8: Number of Visitors to the Yatesville Lake Project, Fiscal Years 2000–2010

Fiscal Year (10/1 to 9/30)	Number of Visitors
FY 2000	313,424
FY 2001	639,624
FY 2002	551,674
FY 2003	353,330
FY 2004	259,811
FY 2005	271,910
FY 2006	279,023
FY 2007	385,585
FY 2008	219,447
FY 2009	223,064
FY 2010	243,566

3.3.1.2 Employment

Yatesville Lake is located in the eastern portion of the State. An analysis of employment in the counties in the region identified key employment sectors and the anticipated change in employment opportunities. The small projected increase in population in the region over the next decade is consistent with the lack of anticipated significant new employment opportunities in the region.

The Center for Business and Economic Research at the University of Kentucky (Coomes and Kornstein, 2010) indicates that areas along the north-south interstate corridor in Kentucky will continue to experience growth, while areas in the eastern and western portions of the State will experience a decrease in employment opportunities. The government, including education and social services, is the primary employment sector in nearly 50 percent of the counties in the eastern portion of the state. Other key employers are retail, service, manufacturing, and healthcare.

The largest employment sectors in the West Virginia counties in the Project region are services and manufacturing, especially in Mason and Putnam Counties. Healthcare is a key sector of

employment in Wayne, Cabell, and Mason Counties. The Veterans Administration Hospital in Wayne County and the private healthcare facilities in Cabell and Kanawha Counties employ a sizeable percentage of the workforce. Employment with the Board of Education and County Commissions is reported to be high in both Wayne and Lincoln Counties.

For the Ohio counties in the Project region, services was reported to be the largest employment sector as of 2007. This sector includes trade, transportation and utilities, information, financial, professional and business, education, and health and hospitality services. Forecasts are that employment in this sector will increase slightly (Coomes and Kornstein, 2010).

3.3.2 Environmental Justice

Executive Order (EO) 12898, Federal Action to Address Environmental Justice in Minority Populations and Low Income Populations and the February 11, 1994, Presidential Memorandum providing guidance for this EO require Federal agencies to develop strategies for protecting minority and low-income populations from disproportionate and adverse effects of Federal programs and activities. The EO is “intended to promote non-discrimination in Federal programs substantially affecting human health and the environment.” An environmental justice evaluation is performed to evaluate the impact of a project on the population and to ascertain whether target populations would be affected more adversely than other residents.

The 2010 U.S census data was reviewed to determine the racial composition of the population in Lawrence County (U.S. Census Bureau, 2010). The county reported a total population of 15,860 persons in 2010 and minority persons accounted for 1.5 percent of the total population (239 persons) in the county. The U.S 2010 data regarding income and poverty is not available at the block group level. However based on 2009 estimates, the levels of poverty within Lawrence County is higher than those exhibited within the state. Based on the above statistics there is some probability of minority and low-income persons residing in areas surrounding the project.

3.3.3 Transportation and Traffic

U.S. Highway 23 runs north-south approximately 1 mile east of the Project area. The highway has a direct connection to Interstate I-64. SR 3395 provides egress to U.S. 23, which traverses the south end of the Project from east to west where it branches into SR 3215 and SR 1760. The Project is about 1.5 hours from Charleston, West Virginia, and 2.5 hours from Lexington, Kentucky. The closest commercial airport is the Tri-State Airport in Huntington, West Virginia, which is approximately 30 miles northeast of the Project area. Two Amtrak train stations are each approximately 27 miles to the north.

3.3.4 Recreation

The Project area has seven distinct recreational areas. Table 1-1 lists the recreational areas, the entities that manage them, and the approximate size of each area. Figure 3-9 shows the locations of the recreational areas.

3.3.4.1 Dam Site Area

The Dam Site Area is managed by the USACE and comprises the Yatesville Lake dam and the Tailwater Area. The Dam Site Area has recreational amenities, including a picnic shelter, several picnic sites, and a 1.5-mile Environmental Interpretative Trail. The Project Office and Information Center, located in this area, has interpretive exhibits about the Project. The Tailwater Area is also present in the Dam Site Area and is stocked regularly with rainbow and brown trout by the KYDFWR.

3.3.4.2 Rich Creek Launch Ramp

The Rich Creek Launch Ramp consists of a two-lane boat ramp, floating courtesy dock, and a gated access road to the WMA.

3.3.4.3 Barker Run Marina

The Barker Run Marina, which is operated by the Kentucky Department of Parks, consists of a 144-slip marina, a 4-lane boat ramp, fishing jetty, and other day-use facilities (e.g., picnic area, shelters, hiking trails). The marina has fuel facilities and a small general store. The marina is popular and in high demand. There is currently a waiting list for slip rentals, and the boat ramp area is often congested during peak times. The marina area also has other recreational opportunities and support facilities available for visitors. Fishing opportunities are provided through a fishing jetty, which has dusk-to-dawn lights, and a fishing lagoon near the entrance to the area, which is connected to the lake via a culvert. The Mary Ingles Trail System, which is both a Community Millennium Trail and a National Recreation Trail, originates at the Barker Run Marina and passes through Yatesville Lake State Park.

3.3.4.4 Yatesville Lake State Park

Managed as part of the Kentucky State Park system, Yatesville Lake State Park includes the Pleasant Ridge Campground and Eagle Ridge Golf Course.

Pleasant Ridge Campground has a total of 47 campsites offering three distinct camping experiences. The main campground has 27 recreational vehicle (RV) campsites that are equipped with electricity (20-, 30-, and 50-ampere service), a pad, water spigot, lantern hook, picnic table,

and a fire ring or grill. All of the pads are flat with a gravel surface with the exception of two campsites that have a concrete surface. There is a central dump site for sanitary disposal services. Each campsite has a parking pad that allows back-in entry. This portion of the campground is well used. Campsites are booked for most of the camping season, and the occupancy rate on weekends from May to October is approximately 95 percent.

The second camping area contains four tent campsites equipped with a flat gravel pad, picnic table, lantern hook, and fire ring or grill. Parking for the tent campsites is consolidated in a centralized lot.

The third camping area has 16 campsites and is accessible only by boat, hiking, or authorized vehicle.

The Pleasant Ridge Campground has other recreational opportunities and amenities as follows: two-lane boat ramp, courtesy loading dock, 35-space parking lot, playground adjacent to the central bathhouse, and approximately 2 miles of multi-use trails.

Eagle Ridge Golf Course is located adjacent to the campground. It is an 18-hole championship golf course completed in 2003. The golf course has a cart path system, equipment maintenance building, practice driving range and putting green. Membership is required to use this golf course, which is open year round (Kentucky State Parks, 2010).

3.3.4.5 Lawrence County Recreation Area

The Lawrence County Recreation Area comprises the Lawrence County Park and the Lawrence County Beach. Both areas are managed by Lawrence County. There are currently nine year-round cabins for rent. Most of the campsites are in two areas. The first area contains RV campsites that can accommodate RVs and tents, and the second area has 12 campsites for tents only. The RV sites have a gravel pad with 20-, 30- and 50-ampere electrical service, lantern hook, water spigot, picnic table, fire ring, and trash receptacle. The 12 tent campsites each have a gravel pad, lantern hook, fire ring, picnic table, and electrical outlet. All 12 tent campsites share a single water spigot and two portable chemical toilets. The Park also has a music pavilion and a 4-H Nature Center. The 4-H Nature Center is going to be relocated but the new location has not been determined.

The northeastern portion of Lawrence County Recreation Area has a beach with several ancillary facilities, including restrooms and playground equipment. This area has been closed since 2008.

3.3.4.6 Wildlife Management Area

The WMA, which is managed by the Kentucky Department of Fish and Wildlife Resources, covers approximately 15,000 acres. The WMA is open for hunting, hiking, and wildlife viewing. Small game, dove, furbearers, turkey, waterfowl, deer, and elk are commonly hunted and trapped (KDFWR, 2009). The single-lane Twin Branch boat ramp in the northern part of the WMA provides boat access to the lake.

3.3.5 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, (Public Law [P.L.] 89-665; 16 USC 470 *et seq.*) as amended, outlines Federal policy to protect historic properties and promote historic preservation in cooperation with States, Tribal Governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Office (SHPO) as the entity responsible for administering State-level programs. Section 106 of the NHPA and its implementing regulations (36 CFR 800) outlines the procedures for Federal agencies to follow to take into account the effect of their actions on historic properties. The Section 106 process applies to any Federal undertaking that has the potential to affect historic properties, defined in the NHPA as those properties that are listing in or eligible for listing in the NRHP. As defined by the Advisory Council on Historic Preservation, a historic property is defined as a prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). A historic property includes artifacts, records, and remains that are related to and located within NRHP properties.

A Historic Properties Management Plan (HPMP) was completed for the Project area in 2004. The HPMP contains a summary of the 134 archeological sites that were identified and recorded in the Project from 1970 to 2004. The HPMP also includes an evaluation of 236 standing structures and historic oil field sites and a description of the surveys. Most of the surveys were conducted for the USACE either as initial studies for the reservoir or to survey the shoreline and specific parcels. These surveys account for approximately 40 to 50 percent of the Project area. Archeological sites were primarily classified as prehistoric (110) dating from the Early Archaic (8000–6000 B.C.) through the Fort Ancient (1000–1750 A.D.) temporal periods. Only 18 of the sites had a historic Euro-American affiliation. The remaining 6 sites were not given a cultural affiliation.

In the HPMP, the Project area was divided into three zones based on inundation by the lake:

- Conservation pool: below 605 feet above mean sea level (AMSL); permanently inundated

- Littoral zone: 605 to 630 feet AMSL; affected by seasonal fluctuations between the winter and summer pools
- Upland zone: above 630 feet AMSL; includes all remaining land in the Project area

Twenty of the archeological sites are in the conservation pool, 30 are in the littoral zone, 76 are in the upland zone, and 8 are unspecified.

Twelve of the 134 recorded sites have been determined to be eligible or potentially eligible for the NRHP. The 12 sites are identified as 15La4/La5, 15La11, 15La14, 15La20, 15La35, 15La49, 15La67, 15La222, 15La223, 15La233, 15La252, and 15La253. One site is in the conservation pool, 5 are in the littoral zone, and 6 are in the upland zone. Of these 12 sites, 5 are prehistoric open air habitations without mounds, 1 is a mound, 1 is a rock shelter, 2 are multi-component prehistoric/historic sites, and 3 are historic farmsteads. In addition to the archeological sites, oil field site 3 was determined to be eligible for the NRHP. NRHP eligibility determinations were not made as part of a log structure inventory.

Further investigation is proposed for 75 sites to determine whether they meet NRHP eligibility criteria. The remaining 47 identified sites are considered ineligible for the NRHP, and no further work is required. Summaries, NRHP eligibility, and the zone location of each site are provided in Appendix B of the 2004 HPMP. Of the 223 inventoried structures, only 10 have been determined to have local significance, and none has been recommended for the NRHP.

In 2011, an additional systematic survey was completed in the Project area. The survey was conducted along the shoreline during summer pool, thereby limiting the possibility of identifying new sites to a portion of the littoral zone. During the survey, 18 sites were recorded. One of the sites (YAT-02-FS-08) is a re-identification of a previously recorded farmstead (15La254). The 17 newly recorded sites are mainly historic scatters or dumps. Two farmsteads, the remains of 2 bridges, and 3 prehistoric isolated finds were also recorded. Three of the recorded sites (YAT-02-FS07, YAT-03-FS03, and YAT-04-FS01) were determined to be potentially eligible for the NRHP, 2 (YAT-03-FS01, and YAT-03-FS03) were determined ineligible and therefore require no further work, and the remainder were unknown and require further investigation. Sites were not formally recorded on standard site forms and provided to the Kentucky Heritage Council.

3.3.6 Aesthetics

The topography of the Project area, which is characterized by hilly and mountainous terrain dissected by steep V-shaped valleys. This terrain, in combination with the lake and forested landscape, creates an overall scenic environment with opportunities for scenic vistas and

viewsheds. View distances range from relatively confined views to panoramic views that fade out of sight. The forests have a combination of older growth trees and understory trees (such as redbud and dogwood), creating a visually appealing environment. The vegetation of the Project offers changes in color, texture, and size that vary by topography, vegetation type, and season. River birch, willow, and sycamore trees flourish in lowlands adjacent to streams and the lake, providing an attractive contrast in color to the vegetation on adjacent slopes, ridges, and ravines such as post oak, Virginia pine, red oak, hemlock, and birch trees.

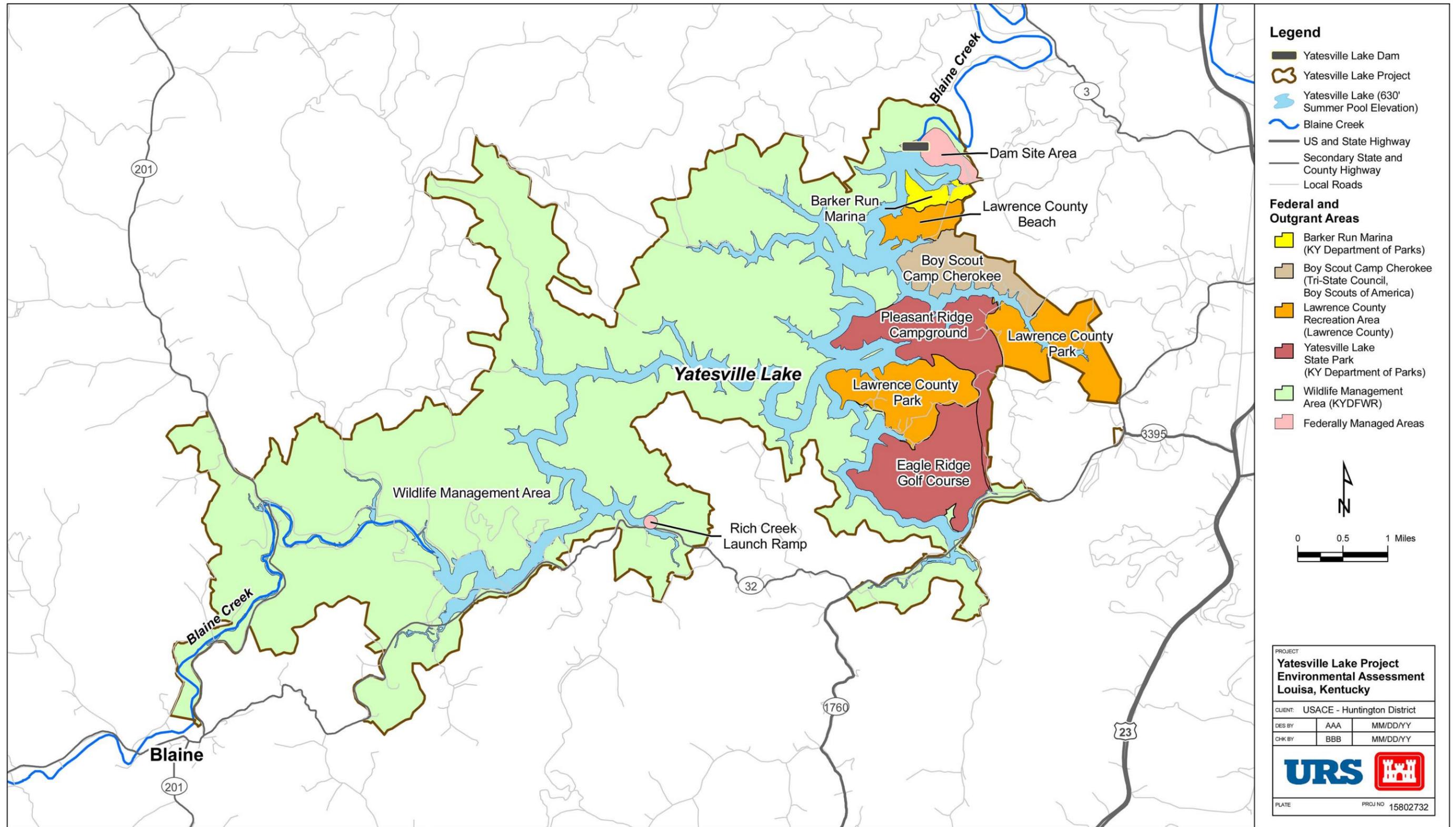


Figure 3-9: Recreational Areas in the Yatesville Lake Project

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3.4 Land Use

Land use within the Project area is primarily recreational or focused on wildlife management areas. Private use occurs at the Boy Scout Camp Cherokee. Although the Yatesville Project area is surrounded by rural land use such as forestry and agriculture, no agriculture occurs within the Project boundaries. No industrial sites occur within the site boundary. The nearest industrial sites to the Project site are more than 2 miles to the east and include Heritage Equipment, Inc., Brown Food Service, The Big Sandy News, East Fork Manufacturing Company, Coca-Cola Bottling Company, and Sign Designs (Kentucky Cabinet for Economic Development, 2008).

The Project area is located in the Appalachian Mountains and is part of a region that contains coal deposits and oil and gas reserves. Coal mining and oil and gas extraction in Lawrence County are ongoing activities that have occurred for many decades. The Yatesville Project area is in the Eastern Kentucky Coal Field (Kentucky Geological Survey, 2006), and according to the Kentucky Geological Survey (2011b), active mining operations are located to the northwest, south, and southwest of Yatesville Lake. Two active coal mining sites are just outside the Project area, and three active gas wells are within the Project boundaries (Figure 3-10). There are 74 abandoned oil/gas well sites within the Project boundaries. The two active coal mining sites are appropriately maintained and do not adversely affect recreational activities at the Project or any other authorized purposes.

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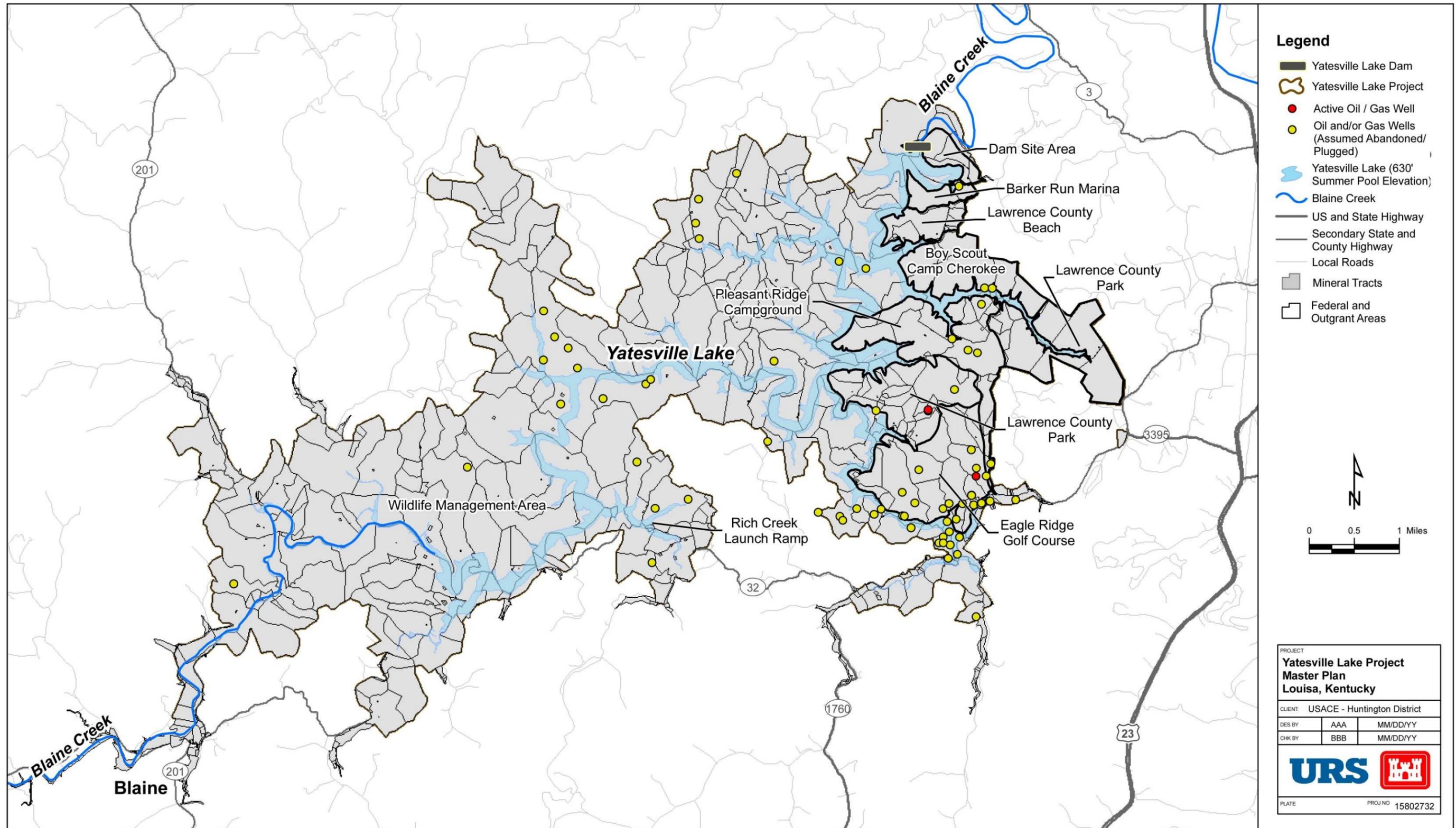


Figure 3-10: Project Lands with Outstanding Mineral Rights and Oil and/or Gas Well Locations

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4.0 ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

This section identifies and assesses the potential environmental impacts from the No Action and Proposed Action Alternatives.

4.1 Physical Environment

4.1.1 Topography, Geology, and Soils

4.1.1.1 No Action

Under the No Action Alternative, no new proposed facilities or measures recommended in the Master Plan Update would be implemented. With the anticipated increase in visitation, the USACE and other agencies responsible for outgrants would monitor areas that are susceptible to erosion from increased usage and people trying to access less congested areas (potentially resulting from the development of social trails, trampling of vegetation on the edges of existing campgrounds, or overuse of existing trails), therefore minimizing the potential for increased erosion. To minimize potential adverse impacts on soils, the USACE and other resource agencies responsible for outgrants would implement protective measures such as closing off eroded areas and using erosion controls as needed. No impacts on topography or geology would occur.

Best management practices (BMPs) to minimize erosion during construction of new facilities would be implemented. For construction that would disturb more than 1 acre, the agency responsible for the action would obtain coverage under the KPDES by applying for a General Permit for Stormwater Discharges Associated with Construction Activities from the Kentucky Division of Water and would develop construction site erosion control and stormwater management plans as required.

4.1.1.2 Proposed Action

Under the Proposed Action, no impacts on topography would occur. Geotechnical evaluations would be performed to determine the risk of construction in areas of geologic concern such as highly erodible or unstable slopes.

Soils in the Project area on steep sloping terrain are generally prone to severe erosion and therefore have limited development potential for roadways, trails, small buildings, camping, and picnicking. Maintaining steep slopes (i.e., greater than 15 percent slope) in a forested condition would minimize erosion potential. Areas with slopes of less than 15 percent have less potential for erosion than steeper areas and are more suitable for recreational use. The areas proposed for

the construction of facilities (e.g., cabins, picnic shelters, camping sites) would occur primarily on slopes of less than 15 percent and close to existing development.

Implementation of temporary erosion and sediment control BMPs during construction (e.g., mulching bare areas, installing silt fences) along with permanent BMPs post-construction (e.g., managing the flow of stormwater runoff from impervious areas such as buildings and parking lots, establishing permanent vegetation) would occur for all proposed activities that would disturb the ground surface. For construction that would disturb more than 1 acre, the agency responsible for the action would obtain coverage under the KPDES by applying for a General Permit for Stormwater Discharges Associated with Construction Activities from the Kentucky Division of Water and would develop construction site erosion control and stormwater management plans as required.

To more thoroughly evaluate impacts, the USACE would consider soil suitability, slope, and potential for geologic instability during site-specific project planning. Site-specific mitigation measures would be determined prior to construction and implemented as needed.

4.1.2 Water Resources

4.1.2.1 No Action

Under the No Action Alternative, the measures recommended in the Master Plan Update would not be implemented. With the anticipated increase in visitation, the USACE would monitor areas that are susceptible to erosion from increased usage and people trying to access new or less congested areas (potentially resulting in the development of social trails, trampling of vegetation on the edges of existing campgrounds, or overuse of existing trails), therefore minimizing the potential for increased sedimentation of the lake. The USACE would mitigate any adverse impacts by closing off eroded areas and implementing erosion and sediment controls as needed. Additionally, to minimize adverse impacts on water quality, the USACE would implement measures to account for any trash and debris left behind from increased visitor use of facilities by providing adequate trash receptacles and implementing temporary and permanent stormwater runoff BMPs in the construction of new facilities.

4.1.2.2 Proposed Action

Under the Proposed Action, an increase in impervious surface area would occur from new development such as parking areas, facilities, and new trails and would result in concentrated and increased stormwater runoff from these areas. BMPs to minimize the stormwater runoff from

impervious surfaces would be required, and runoff would be directed away from nearby surface waters, minimizing the risk of water pollution from spilled or water-transported materials.

Adverse short-term impacts on surface water quality could occur from sedimentation that is the result of ground disturbances during construction, especially in construction areas close to the shoreline or water bodies. With multiple areas being considered for new or updated facilities, there is increased potential for this additional nonpoint source pollution. Implementing erosion and sediment control BMPs during construction and implementing permanent stormwater runoff controls would minimize potential adverse impacts. For example, disturbed or bare areas remaining after construction would be vegetated to reduce the potential for erosion.

Adverse short- and long-term impacts on water quality may result in adverse impacts on other resources such as recreation (fishing and swimming), water treatment systems, aquatic biological resources and wildlife. Impacts on water quality may occur from trash/debris entering water bodies, from sewage, and from spills and leaks of contaminants from both land- and water-based vehicles. Stormwater runoff from additional impervious surfaces such as parking areas could carry additional pollutants into Yatesville Lake. Mitigation such as setting limits for boating carrying capacity, providing adequately sized parking areas designed to appropriately handle stormwater runoff, providing adequate trash and sewage facilities for the amount of use, and including stormwater runoff measures during the design of redeveloped or new facilities would minimize adverse impacts. These measures would potentially result in an increase in water quality compared to existing conditions.

Temporary and localized turbidity in the nearshore lake environment would increase during the construction of new boat slips at Barker Run Marina and courtesy docks and the placement of footings or a buried cable in the lake for a utility corridor. Turbidity impacts during construction would be related directly to the amount of silt and clay on the lake bottom. Impacts would be short-term and limited to the vicinity of the work, especially with implementation of mitigation measures to minimize turbidity. These measures may include installation methods using techniques that minimize disturbance to submerged vegetation, limiting the construction equipment to the banks of the shore to the extent practicable, using a sediment/silt curtain if warranted, and implementing spill prevention and control measures for vehicles operating in the water. Other mitigation measures may include limiting the types of wood preservatives that are used. Wood preservatives such as creosote, pentachlorophenols, and chromated-copper-arsenate treated materials may result in pollutants leaching into the water. The USACE would obtain a CWA Section 401 permit from the Kentucky Division of Water for construction in the nearshore environment. Because the USACE would not be the agency responsible for constructing the

utility corridor projects, CWA permits (Section 401 and Section 404) for utility corridor construction would be obtained by the utility corridor project owners and the projects overseen by FERC.

Although groundwater resources are not currently used at the Project, they are a potential source of water for enhancing or developing additional wetlands, for irrigating the golf course or other significant maintained landscape areas, or for providing potable water for development in remote areas. To protect water resources, existing unused wells (both groundwater and oil/gas wells) would be examined; if the unused wells have not been properly plugged and abandoned and are determined to be unusable for future recreational development, they would be abandoned in accordance with State regulations. Wells deemed potentially usable would be identified and secured. Because any new groundwater wells would be dispersed throughout the multi-thousand acre Project area, their effect on the local water table is expected to be negligible, but the amount of water proposed for withdrawal from new wells would be evaluated for impacts on the groundwater supply, and permits would be obtained from the Kentucky Division of Water if necessary. New potable water wells would be drilled and installed according to State and Federal regulations, effectively minimizing any risk of groundwater contamination.

4.1.3 Floodplains

4.1.3.1 No Action

Under the No Action Alternative, new construction could occur within areas subject to inundation from fluctuation in lake levels. Some areas in the floodplain may be used by visitors attempting to find adequate space for recreational activities such as camping and picnicking, resulting in a potential safety risk for people occupying undesignated areas next to streams for recreational activities. The USACE would follow existing guidance regarding development in a floodplain. USACE (2004), Sections 2.2.1 and 5.2.2, state that seasonal fluctuations in water levels shall be taken into consideration when designing and developing lake and riverside facilities to avoid the placement of facilities in hazardous or high maintenance areas, and that the 5-year flood frequency is a good general guideline when planning lakeside development.

4.1.3.2 Proposed Action

Because flat areas are conducive to development, existing facilities are primarily located in stream valleys and adjacent to the lake shoreline, and new facilities are typically proposed for the same areas. Additionally, many recreational activities require direct access to the lake. Therefore, most of the recommended measures in the Proposed Action would take place within areas

subject to inundation from fluctuation in lake levels. Because of topography constraints and the nature of water-based activities such as swimming and boating, no practicable alternative locations exist. The USACE would follow existing agency guidance described under the No Action Alternative regarding development within areas subject to inundation from fluctuation in lake levels.

The functionality of the floodplain would not be reduced by Project activities. The USACE would ensure that its actions complied with USACE's guidance on development in a floodplain (USACE, 2004), EO 11988 (Floodplain Management), and USACE's guidance on implementation of EO 11988 (USACE, 1984), and would implement BMPs such as secondary containment and/or elevation of hazardous materials above base flood elevations to the maximum extent possible. Additionally, USACE and the State would ensure the safety of visitors by monitoring flood levels at areas and facilities used by the public and taking actions such as closing facilities as necessary. The USACE would ensure that actions would be in compliance EO 11988.

4.1.4 Air Quality

4.1.4.1 No Action

Under the No Action Alternative, new construction could result in short-term impacts on air quality from fugitive dust and construction vehicle emissions. To reduce temporary impacts on air quality from fugitive dust, the construction areas would be watered down when necessary to minimize particulate matter and dust. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment, earthmoving machinery) could temporarily increase the levels of some of the criteria pollutants, including CO, NO₂, O₃, particulate matter 10 microns or greater in diameter, and non-criteria pollutants such as volatile organic compounds. To reduce the emission of criteria pollutants, running times of fuel-burning equipment would be minimized, and engines would be properly maintained. An increase in vehicles traveling in the Project area could cause limited, local air quality impacts, but impacts would be temporary and negligible compared to existing conditions.

Prescribed burning for wildlife management could result in short-term localized impacts on air quality. The size and timing of burning would be coordinated with local stakeholders and conducted in accordance with local, State, and Federal regulations. The public would be notified of prescribed burning well in advance of the burning, areas would be closed from public access, and signs would be posted to inform the public as needed.

4.1.4.2 Proposed Action

Impacts on air quality and mitigation measures to reduce potential impacts would be the same as described under the No Action Alternative. However, there would likely be more temporary construction-related emissions compared to the No Action Alternative because more construction is likely to occur under the Proposed Action.

4.1.5 Noise

4.1.5.1 No Action

Construction noise from capital improvements such as campground construction, vegetation management, and other development activities could have a moderate and temporary impact on visitors, employees, and wildlife. To reduce noise impacts, construction would occur during normal business hours, would not occur on Sundays or Federal holidays to the extent possible, and would be scheduled during the off season to the extent possible. Equipment and machinery on construction sites would meet all local, state, and Federal noise regulations.

Increased visitation at the Project would create additional noise above existing conditions. Seasonal noise from boats on the lake could have a negative impact on wildlife, day users, and lakeside campers. However, with the exception of boat ramps and marinas where boating noise is concentrated, boating-related noise is not expected to be loud or of long duration and would therefore have a minor impact on wildlife and visitors.

4.1.5.2 Proposed Action

Noise and mitigation measures to reduce potential noise impacts would be the same as described under the No Action Alternative except that temporary construction-related noise would be greater because more construction is likely under the Proposed Action.

4.2 Biological Environment

4.2.1 Vegetation

4.2.1.1 No Action

Under the No Action Alternative, the KYDFWR and the USACE would continue to monitor, manage, and protect grassland and forestland in the Project area. Activities would include limited cutting of overstocked areas, native seeding and planting, and monitoring and removal of invasive species. Littering and trampling of vegetation could occur from informal use areas and

social trails, especially with the anticipated increase in visitor usage. The USACE would monitor for impacts on vegetation and implement restrictions or restoration as needed.

4.2.1.2 Proposed Action

Under the Proposed Action, impacts on vegetation could occur as a result of the expansion of parking areas; road improvements; construction of new recreational facilities, trails, and cabins or clearing for utility corridors. Other impacts to vegetation could occur from foot traffic on social trails, informal use of picnic or camping areas, littering, or the collection of woody material for fuel. Park ranger supervision would help to mitigate these impacts.

Construction-related impacts, which would involve primarily removing vegetation prior to construction, would range from minimal impacts, such as clearing and leveling camping sites at a campground, to larger impacts related to the construction of parking areas and infrastructure. Many of the areas that would be affected by construction are adjacent to areas that have been developed or disturbed. Construction BMPs, such as revegetating disturbed areas and mitigating permanently lost vegetation by planting in other areas or restoring equivalent habitats, would be implemented as appropriate.

Some elements of the Proposed Action would result in long-term beneficial impacts on vegetation by consolidating activities to more central areas, allowing the recovery of discontinued areas, or reducing the number of social trails by constructing new trails. Hazardous trees in campgrounds, along roadways, and in day-use areas would be removed as appropriate and replaced with indigenous plant species as possible.

Because of the regional decline and unique ecology of eastern hemlocks, these trees and their habitat may be identified, preserved, and managed to ensure that the species remains in its current form. Proactive management of open areas, such as meadows and clearings, and more densely vegetated areas would be initiated to achieve the optimal balance for wildlife and recreational use. Finally, a more aggressive approach to managing invasive species would occur in order to encourage the viability of native species.

Bottomland hardwood habitats are becoming scarcer and consequently more valuable. Loss of this valuable habitat continues because of changes in land use and increases in development. Because bottomland hardwood habitats support a variety of plant and animal species that can adapt to both flood conditions and dry periods and also support wildlife that does not thrive in other environments (USACE, 2010), this habitat would be protected and any impacts mitigated to the extent practicable. Management of these areas would yield a high-quality habitat for

wildlife that would also be beneficial for many recreational activities, including hunting and wildlife viewing. Systematic harvesting of timber, which would result in long-term beneficial impacts on the ecosystem, would be considered in some areas to yield a more balanced forest in terms of desirable habitat to support target game and non-game species, as well as a diversity of wildlife and recreational use.

4.2.2 Wetlands

4.2.2.1 No Action

Under the No Action Alternative, the USACE and KDFWR would continue to preserve and enhance wetland resources within the Project area as outlined in EO 11990 and the 1975 Master Plan.

4.2.2.2 Proposed Action

Under the Proposed Action, updated wetland delineations in focused areas of the Project and regular monitoring of wetlands for changes in size and health would be considered. Wetlands would be designated as environmentally sensitive resources. Restrictions on the development of wetlands would be incorporated into any plans for construction or recreational activities.

Wetlands would be both a constraint and an opportunity in the development of recreational facilities and activities. Development opportunities for high-intensity recreational facilities and activities (e.g., cabins, campsites, picnic sites) would be limited or not allowed in wetlands. However, the wetlands would also provide recreational opportunities such as wildlife viewing, bird watching, and interpretive and educational activities. Wetlands would also support target game species and waterfowl, thereby supporting consumptive recreational uses.

The USACE would obtain all appropriate permits as required by Section 401 of the CWA for construction that would impact any waters of the US or Commonwealth of Kentucky. The USACE would require other agencies and developers to obtain CWA Section 404 permits prior to implementation of projects that would result in impacts on wetlands.

4.2.3 Terrestrial Wildlife

4.2.3.1 No Action

Under the No Action Alternative, impacts on wildlife resources would reflect the impacts of anticipated increased visitor use. Use of the shoreline and areas not designated for recreational purposes could result in increased habitat degradation, especially in more heavily used areas. The

KYDFWR and the USACE would continue to monitor and manage wildlife in the same manner as outlined in the 1975 Master Plan. Wildlife viewing, birding, and opportunities to hunt game in portions of the Project area would continue. Impacts on vegetation from construction (e.g. removal of vegetation) would be avoided or minimized to the extent possible.

4.2.3.2 Proposed Action

Under the Proposed Action, maximizing the diversity of habitats in the Project area, including grasslands, meadows, forest, wetlands, and open areas, to support a wide variety of wildlife species is a key objective of KDFWR and the USACE. Other key objectives are to identify and delineate the location, size and extent of ecosystems and enhance management to conserve and protect wildlife and habitat. Terrestrial wildlife resources that support both recreational activities (e.g., white-tailed deer, wild turkey, doves, waterfowl, various small game species) would be managed to allow hunting while maintaining population viability. The USACE and KDFWR would consider preserving particular areas of forest that attract neotropical migratory birds such as the cerulean warbler, which requires a dense and unbroken canopy, to provide habitat for declining species and also to attract birdwatchers. Wildlife management would also provide opportunities for stewardship, support for species that are in decline, and preservation of habitat in accordance with the USACE's *Environmental Stewardship and Maintenance Guidance and Procedures* (USACE, 1996).

Adverse impacts on wildlife could occur from construction- and human-related noise, loss of habitat, increased number of people in existing recreational areas, or new development in previously undisturbed areas. The increase in campsites and recreational facilities would increase visitation and potential visitor damage to wildlife habitat. However, user impacts would be mitigated by expanding and upgrading various day-use facilities and trails. Littering, trampling of vegetation, vandalism, and other problems associated with visitor use could occur. Park ranger supervision would help mitigate these impacts. Mitigation such as timing of construction to avoid sensitive periods to some populations (i.e., nesting season) and consideration of wildlife corridors and impacts on species prior to development would minimize impacts.

The potential increase in trash could attract additional wildlife including black bears, which could then become a nuisance and necessitate removal. Proper waste removal would reduce the potential for this to occur. However, because the majority of new disturbance would occur in areas that have been previously disturbed and have a relatively low habitat value compared to most of the undeveloped Project area, adverse impacts would be minimal.

4.2.4 Aquatic Life

4.2.4.1 No Action

Under the No Action Alternative, the KDFWR and the USACE would continue to monitor and manage aquatic resources in the same manner as described in the 1975 Master Plan and under current programs and management goals. The KDFWR would continue to annually stock the Tailwater Area below Yatesville Lake dam with brown trout and rainbow trout in April, May, and November (KDFWR, 2010) and would continue the practice of adding fish attractors such as discarded Christmas trees to the lake bottom to provide fish habitat.

Excess deposition of sediment as a result of stormwater runoff during land-based construction could adversely affect aquatic life, including the food chain, spawning and rearing habitat, in-stream cover, water temperature extremes, and other structural and functional components. Sedimentation from construction in areas adjacent to water bodies would be minimized by implementing erosion and sediment control measures, and any sedimentation increases would therefore be minor, short-term, and localized. Implementation of construction BMPs such as erosion and sediment controls and permanent stormwater runoff BMPs would minimize adverse impacts.

The effect of the No Action Alternative on fish populations would be a continuation of the existing conditions. Over time, visitation and demands on fish populations are expected to increase. To maintain the current quality and makeup of fish communities, current fishery management practices may need to be modified (e.g., stocking, catch limits).

4.2.4.2 Proposed Action

Construction in the water (e.g., new boat slips and restaurant at Barker Run Marina, new courtesy docks, moorings, a footing for the central utility corridor or burial of transmission lines) could result in short-term adverse impacts on the aquatic environment. Additionally, excess deposition of sediment as a result of stormwater runoff during land-based construction could severely affect aquatic life, including the food chain, spawning and rearing habitat, in-stream cover, water temperature extremes, and other structural and functional components. Sedimentation from construction in areas adjacent to water bodies would be minimized by implementing erosion and sediment control measures, and any sedimentation increases would therefore be minor, short-term, and localized.

As impervious surfaces increase, the amount of runoff increases and the quality of stormwater runoff may be reduced from sediment, oils, and other pollutants. Impacts would be concentrated

adjacent to the shoreline because this area has the largest number of visitors and most of the development. With designated land uses and development corridors, potential water quality impacts would be minimized. Implementation of construction BMPs such as erosion and sediment controls, and permanent stormwater runoff BMPs would minimize adverse impacts.

Growth in visitation could continue to increase fishing pressure, which could lead to increased harvests that would affect the population of some species. Increased recreational use could also result in indirect impacts from increased boating (noise disturbances and potential for spills and/or leaks of pollutants), trash or sewage entering water bodies, and stream bank or lakeside habitat destruction from overuse of some areas that could result in sedimentation of water or loss of riparian habitat. Protection or conservation of the riparian area around the lake would have positive impacts on aquatic resources by providing canopy cover, thereby reducing temperatures around the water's edge and providing a source of detritus, and by having tree roots that would maintain the banks. In addition, a wider riparian corridor with mature trees would filter runoff before reaching the lake.

4.2.5 Threatened and Endangered Species

4.2.5.1 No Action

The KYDWFR and the USACE would continue to implement USFWS avoidance measures to avoid potential adverse impacts on the federally listed Indiana bat as appropriate, including restricting some activities from April 1 to November 15 in areas of potential habitat. In addition, the current practice of restricting tree cutting from October 15 to March 31 in the WMA would be continued in order to protect State-listed species.

The USACE would continue following bald eagle habitat management practices from the *National Bald Eagle Management Guidelines* (USFWS, 2007) to minimize disturbances and comply with the Bald and Golden Eagle Protection Act. These guidelines include restricting new construction to 330 to 660 feet from a nest, depending on the type of structure and visibility from the nest. Timber operators (e.g., personnel who clear cut or remove overstory trees) would maintain a minimum of 330 feet from a nest at any time and 660 feet during breeding season. For the following activities, no buffer would be necessary around nests outside the breeding season and should be avoided within 330 feet of the nest during breeding season: (1) off-road vehicles, (2) motorized watercraft (including jet skis and personal watercraft), (3) non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting). Loud, intermittent noises

such as blasting would be avoided within 0.5 mile of active nests. The resource manager would be tasked with creating an inventory and monitoring all identified bald eagle nests.

4.2.5.2 Proposed Action

Surveys for federally listed species would be conducted if potential habitat for a federally listed species is identified during a pre-construction review of a Proposed Action area. Although no federally listed species or designated critical habitat in the Project area has been confirmed, the USACE would coordinate with the USFWS under Section 7 of the ESA prior to implementation of any element of the Proposed Action. The USACE would follow mitigation measures required by USFWS for federally protected species. The KYDWFR and the USACE would continue to implement practices to avoid potential adverse impacts on federally listed bats as appropriate, including tree clearing from April 1 to November 15 in areas of potential habitat for the Indiana bat. In addition, the current practice of restricting tree cutting from October 15 to March 31 in the WMA would be continued in order to protect State-listed species. The USACE would follow bald eagle habitat management practices as described under the No Action Alternative.

4.3 Socioeconomic Environment

4.3.1 Population and Employment

4.3.1.1 No Action

Existing programs, operation and maintenance activities that would continue under the No Action Alternative and construction could result in short-term beneficial impacts on the local economy by increasing employment opportunities for local construction workers and increasing the number of workers in the Yatesville Lake area during business hours. No impacts on population are anticipated.

4.3.1.2 Proposed Action

Short-term beneficial impacts from construction and long-term beneficial impacts from an anticipated increase in visitors to the Project would be the same as described under the No Action Alternative. No impacts on population are anticipated.

4.3.2 Environmental Justice

4.3.2.1 No Action

Existing programs and operation and maintenance activities that would continue under the No Action Alternative would be implemented within the boundaries of the project and at a distance from local population centers. As a result, any environmental justice populations that may reside around the project would not be directly impacted by these actions and no disproportionately high or adverse impacts on low-income or minority would occur under the No Action Alternative. Construction would provide greater employment opportunities for all local residents.

4.3.2.2 Proposed Action

As discussed in section 3.3.2, there is some probability of minority and low-income persons residing in areas surrounding the project. For purposes of this programmatic environmental assessment, generalizations about potential environmental justice populations using available data are acceptable, but more specific evaluations that will be required as part of any future supplementary project-specific NEPA documentation should be based on the more accurate data from the 2010 Census. At the time that specific actions are planned for implementation and it is determined that additional NEPA documentation will be needed for these actions, 2010 Census block group and block data should be available for use in determining whether minority and low income populations may be disproportionately impacted by the proposed actions.

The locations within the Project where Resource Plan recommendations would be implemented are generally far removed from populated areas. As a result, local residents would be unlikely to experience direct impacts from implementing these recommendations, whether disproportionate or otherwise. The direct and indirect impacts resulting from the proposed Resource Plan recommendations on local communities are not expected to be substantial, and it is unlikely that such impacts could likely be considered as disproportionate if environmental justice populations were determined to exist in any affected community. Final determination will be made when the impacts of individual recommendations planned for implementation are analyzed as part of any supplementary NEPA evaluations that may be required for these actions.

4.3.3 Transportation/Traffic

4.3.3.1 No Action

As visitor use increases, the ability of the existing facilities to handle the increase in traffic would decline. Some areas of the Project are already congested, especially during holidays. The USACE would consider additional parking areas to reduce adverse impacts on traffic congestion.

4.3.3.2 Proposed Action

Increased traffic from construction and worker vehicles during construction could result in minor temporary impacts on traffic and transportation, but in most areas, the impact would likely be negligible. The expansion of parking areas would have long-term beneficial impacts on vehicular traffic, and the addition of courtesy docks would have long-term beneficial impacts on boat traffic. The USACE would continue to consider additional parking areas to reduce potential impacts on traffic congestion as visitation increases.

4.3.4 Recreation

4.3.4.1 No Action

The provision of recreational facilities and services would continue under the No Action Alternative, but the 1975 Master Plan, which the resource manager and staff operate under, would not accurately reflect the current status of Project facilities. In addition, there would be limited new measures such as trail corridors and additional land use designations to better accommodate recreational needs while protecting natural resources.

4.3.4.2 Proposed Action

Needs related to recreational activities such as reduced congestion and better traffic flow at facilities would be better accommodated by implementing the Proposed Action. The Proposed Action is based on a review of the existing facilities, resource suitability, and discussions with stakeholders. There are many beneficial impacts on recreation from increasing the intimacy of the visitor's experience with nature through new interpretive trails, signage, and support facilities. These activities would combine with existing facilities and vegetative management to facilitate outdoor educational activities. Expanding the camping experience with modern facilities would also complement the existing campsites, and the expansion of parking would accommodate additional people. A potential utility corridor could disrupt recreational areas or facilities, but the USACE would avoid or minimize adverse impacts prior to consent of utility corridor construction.

Implementing the Proposed Action would require that proposals consider potential impacts on existing recreational facilities from construction and include avoidance and minimization measures and mitigation as necessary. Trails would be located to accommodate visitor experience and education while protecting and conserving the natural resources and limiting possible environmental impacts. In addition, hunting would be enhanced by inventory and management of wildlife habitats. Trail designs would accommodate various uses and avoid conflicts, such as with horseback riders and hikers.

4.3.5 Cultural Resources

4.3.5.1 No Action

Recreational activities and construction could be implemented individually under the No Action Alternative. The process for identifying sites prior to project implementation and the required consultations under Section 106 of the NHPA would be the same as under the Proposed Action.

4.3.5.2 Proposed Action

Cultural resources in the conservation pool were originally situated in open field environments that were subject to deforestation, plowing, and clearing for the reservoir. These cultural resources have been continuously inundated since 1992. The effect if the inundation of these resources is unknown, but if the sites were not eroded prior to the establishment of silt caps, the inundation may have preserved them.

Cultural resources in the littoral zone were also originally situated in open field environments that were subject to deforestation and plowing. These sites are difficult to relocate because of the silting that occurs when the sites are submerged during normal summer pool and exposed during winter pool. If large enough silt caps are formed, the sites may have been preserved, but the alternating wet-dry cycle of the littoral zone increases decay rates for organic materials in the sites. If these sites are exposed during the winter pool, there is potential for looting.

Cultural resources in the upland zone are susceptible to mechanical and biochemical processes and human activities that are not associated with inundation. The sites in the upland zone constitute most of the recorded sites and are commonly affected by erosion, development, agricultural practices, and looting.

Site distribution tendencies in the Project area are based on the distribution of recorded sites in the Project area. Distributions have an inherent bias since most of the studies have been confined to the modern shoreline and bluffs as opposed to the adjacent ridge tops and hillsides. Alluvial

landforms have a high potential to contain buried sites. The colluvial apron is also considered a potential location for deeply buried sites.

Proposed development actions should take into account previously identified sites and their treatment recommendations. Sites that are eligible or potentially eligible for the NRHP should be avoided or mitigated prior to any undertaking that has the potential to affect those sites.

Avoidance measures and/or mitigation would be coordinated by the USACE Huntington District archeologist (District archaeologist). Actions proposed for areas not previously surveyed would require coordination with the District archeologist to determine whether a cultural resource survey is required.

Once the USACE inventories real estate actions that have been cleared internally, these smaller projects need to be catalogued and mapped using Geographical Information Systems (GIS) to ensure that areas are not subject to repeated surveys. In the absence of mapping, coordination with the District archeologist would ensure that real estate actions are not subject to unnecessary resurveying. Cultural resource research, evaluation, and reporting must comply with all applicable Federal and State laws and regulations.

Priorities for cultural resources at the Project are as follows:

1. Surveys of the littoral and upland zones during winter pool, when the majority of the littoral zone is accessible
2. Stabilizing and evaluating recorded sites that have been previously listed as potentially eligible or needing further evaluation for their NRHP eligibility.
3. Completing archaeological site forms for sites identified as part of the 2011 survey.
4. Accessing artifact collections recovered from the Project according to the guidelines established in 36 CFR Part 79.
5. Improving consultation and education efforts including outreach to Native American tribes, coordination with the Kentucky Heritage Council, training of project personnel, and site interpretation.
6. Updating the HPMP to include the GIS georeferenced boundary delineations and metadata for all surveyed areas and identified resources in the Project.
7. Producing GIS boundary delineations for previously evaluated as well as all future real estate actions.

Prior to development/construction, the USACE would evaluate the potential for the Proposed Action to adversely affect cultural resources and would consult with the Kentucky State Historic Preservation Officer under Section 106 of the NHPA before implementing any actions that have a potential to affect the sites that are eligible or potentially eligible for the NRHP. Actions that are proposed in areas that have not been surveyed require coordination with the USACE archeologist to determine whether a cultural resources survey is required.

4.3.6 Aesthetics

4.3.6.1 No Action

Under the No Action Alternative, there would be a potential for increased adverse impacts on the aesthetics of the Project area. Outgrants would continue to be requested. If the outgrants are not concentrated in a designated area, there is additional likelihood of land disturbance, which could negatively affect aesthetic qualities. An increased number of visitors could result in littering, trash, trampled vegetation, and congestion that would adversely affect the aesthetics of the Project area. The USACE would monitor Project areas and implement measures such as additional trash receptacles, restoration of affected areas, or restrictions as needed to avoid or minimize impacts.

4.3.6.2 Proposed Action

With continuous requests for outgrants of Project lands, implementing the Proposed Action would reduce the potential impacts to the aesthetics in the Project area by concentrating development in designated areas. However, aboveground utility lines from implementation of a utility corridor could affect the viewshed. By developing corridors for activities such as trails, greenways, and utility lines, activities would be concentrated, and there would be less potential for land disturbance, which often reduces the aesthetic quality of natural areas. In addition, an updated inventory and resource analysis would more accurately identify the areas that provide high-quality aesthetics.

An increased number of visitors could result in littering, trash, trampled vegetation, and congestion that would adversely affect the aesthetics of the Project area. The USACE would monitor Project areas and implement measures such as additional trash receptacles, restoration of affected areas, or restrictions as needed to avoid or minimize impacts.

4.4 Land Use

4.4.1.1 No Action

No changes in existing land use would occur under the No Action Alternative. Under existing conditions, the public and private uses of Yatesville Lake do not affect industrial areas or local industry.

4.4.1.2 Proposed Action

For Project lands where the federal government owns all subsurface mineral rights, any future resource extraction would proceed through the Bureau of Land Management. The Bureau of Land Management would coordinate any new leases with the USACE to avoid or minimize impacts to recreational, natural, or sensitive resources associated with access road and extraction site development. For Project lands where the federal government does not own the subsurface mineral rights, the owner of the mineral rights would apply to the Kentucky Division of Mine Permits for approval and permitting of the extraction process and amounts. Because mineral extraction can cause disturbances, the federal government would be allowed to review and comment on the application. The Proposed Action would not affect industrial areas or local industry.

4.5 Cumulative Impacts

Cumulative impacts would result from the incremental impact of the Proposed Action added to impacts from other past, present, or reasonably foreseeable future actions in the local area.

Geographical boundaries for this discussion of cumulative impacts are the Project area and Lawrence County. Temporal boundaries are the reservoir impoundment (1991) to 50 years into the future (2041).

4.5.1 Past and Present Actions

Blaine Creek was impounded for the creation of Yatesville Lake, which occurred in 1991. The authorized purposes of the Yatesville Lake Project are flood risk management, recreation, water quality control, and fish and wildlife management. Project purposes of recreation and associated natural resource management are the focus of the Master Plan Update. Yatesville Lake contributes to the local economy through visitor spending and by providing local jobs. Recreational facilities are associated with the high volume of visitation. Some areas reach and sometimes exceed capacities for parking, camping, and picnicking facilities. Boat traffic on the lake is often heavy.

4.5.2 Reasonably Foreseeable Future Actions

Visitation in the Project is expected to increase as the regional population increases. Pressure on the lake's resources is therefore expected to continue. Requests for outgrants and encroachments on public lands are also expected to continue.

4.5.3 Impacts

As the area around Yatesville Lake experiences increased development, terrestrial resources surrounding the reservoir will become even more limited. With the loss of vegetated land area outside USACE boundaries, wildlife is likely to be concentrated in the remaining forested lands. In addition, more pressure will be placed on the public lands for the facilities and activities that are provided.

Land development and stormwater runoff from developed, agricultural, logging, and mining areas are the primary sources of water quality pollution in the lake. With urban development and loss of pervious surfaces (vegetated areas where water can infiltrate) upstream in Lawrence County, there is increased potential for stormwater runoff and a reduction in water quality draining into the lake.

Because visitation to the Yatesville Lake Project is expected to increase, demands for recreational facilities will also continue to increase. Facilities will need continual repair and upgrade to meet visitor expectations. In addition, there may be conflicting demands for recreational opportunities on the lake and Project lands. The continued request for uses of Project lands by various interests will also add more demands on Project lands and waters; however, the USACE would limit development to a sustainable level.

Implementation of the Proposed Action (implementation of the Master Plan Update) would provide a tool for the resource staff of Yatesville Lake to ensure that natural resources and Project facilities are being used to the greatest extent possible without degrading resources. Designating areas for existing and future outgrants of Project lands would limit locality and severity of potential impacts while expediting evaluation period for requests.

4.6 Summary of Mitigation Measures and Agency Consultation Requirements

The following measures would be implemented as appropriate to avoid or minimize adverse impacts on resources:

- Implementing erosion and sediment control BMPs for all projects and obtaining an NPDES General Permit for Stormwater Discharges Associated with Construction Activities from the Kentucky Division of Water for any project that would disturb more than 1 acre of ground
- Obtaining Section 401 Water Quality Certification from the Kentucky Division of Water for work in waters of the United States, including the nearshore environment of the lake and wetlands
- Coordination with the USFWS under Section 7 of the ESA where there is a potential to adversely affect Federally listed threatened and endangered species
- Avoiding tree removal between October 15 and March 31 in the WMA to protect some State-listed species, avoiding activities that would result in disturbances to federally listed bats under Section 7 of the ESA between April 1 to November 15, following bald eagle habitat management practices, and consulting under the Bald and Golden Eagle Protection Act
- Compliance with Section 106 of the NHPA prior to construction

In addition, the USACE would consult with the following agencies prior to implementation of the Proposed Action:

- USFWS under Section 7 of the ESA and Bald and Golden Eagle Protection Act
- Kentucky State Historic Preservation Officer under Section 106 of the NHPA and other Consulting Parties including Native American tribes as appropriate

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**Appendix A:
Yatesville Lake Project Master Plan (2011)**

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Appendix B
Distribution List for the
Draft Programmatic Environmental Assessment

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List of persons invited to review the Draft PEA	
<i>Name</i>	<i>Affiliation</i>
Mr. Mike Sullivan	Yatesville Lake State Park
Mr. Ricky Loudin	Boy Scout Camp Cherokee
Mr. Kevin Frey	Kentucky Department of Fish and Wildlife Resources
Mr. Chris Garland	Kentucky Department of Fish and Wildlife Resources
Ms. Monica Conrad	Kentucky Tourism, Arts & Heritage Cabinet
Mr. Richard Mauro	Kentucky Department of Fish and Wildlife Resources
Mr. John A. Osborne	Lawrence County Judge/Executive

Note: The SEA was also submitted to the Kentucky State Clearinghouse for interagency review and comment.

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