



Yatesville Lake Project Master Plan

August 2011

prepared for:



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

Huntington, West Virginia 25701

prepared by:

URS

Project No. W91237-08-D-0023
Task Order 0021

This page intentionally left blank.

Table of Contents

1.0	Introduction and Background	1-1
1.1	Project Authorization	1-1
1.2	Authorized Project Purposes	1-2
1.2.1	Flood Risk Management	1-2
1.2.2	Recreation	1-2
1.2.3	Water Quality Control.....	1-3
1.2.4	Fish and Wildlife Management.....	1-4
1.3	Prior Master Plan	1-5
1.4	Application of Federal Laws.....	1-5
1.4.1	Recreation	1-5
1.4.2	Water Resource Protection and Flood Risk Management	1-6
1.4.3	Fish and Wildlife Resources	1-7
1.4.4	Forest Resources	1-8
1.4.5	Cultural Resources	1-9
1.4.6	Leases, Easements, and Rights-of-Way.....	1-9
1.4.7	Executive Orders.....	1-11
1.5	Purpose of the Master Plan	1-12
1.6	Scope of the Master Plan	1-13
1.7	Project Description.....	1-14
1.7.1	Location	1-14
1.7.2	History of the Project	1-15
1.7.3	Land Acquisition History.....	1-17
1.7.4	Federal Areas and Recreational Facilities.....	1-17
1.7.5	Outgrants.....	1-18
1.7.6	Project Data and Lake Operation.....	1-21
1.7.7	Lake Operation.....	1-23
1.7.8	Visitation Data	1-23
2.0	Scoping Process and Public Involvement	2-1
2.1	Public Meeting	2-1
2.2	Identified Key Issues.....	2-1

2.3	Consistency of Goals with Relevant Planning Documents.....	2-2
2.4	Agency Coordination and Partnerships	2-3
3.0	Natural Resource Analysis	3-1
3.1	Physical Environment	3-1
3.1.1	Surface Water.....	3-1
3.1.2	Wetlands	3-11
3.1.3	Groundwater	3-16
3.1.4	Physiography / Topography	3-21
3.1.5	Geology, Soils, and Minerals.....	3-22
3.1.6	Cultural Resources	3-33
3.1.7	Scenic Qualities	3-36
3.1.8	Hazardous, Toxic and Radioactive Waste	3-37
3.2	Biological Environment	3-37
3.2.1	Vegetation.....	3-37
3.2.2	Terrestrial Wildlife.....	3-43
3.2.3	Aquatic Resources	3-47
3.2.4	Threatened and Endangered and Species of Special Concern	3-48
3.2.5	Critical Habitat.....	3-51
3.2.6	Environmentally Sensitive Areas.....	3-51
4.0	Recreation Program Analysis	4-1
4.1	Overview of the Project Areas	4-1
4.1.1	Dam Site Area.....	4-1
4.1.2	Rich Creek Launch Ramp.....	4-5
4.1.3	Barker Run Marina	4-5
4.1.4	Yatesville Lake State Park	4-7
4.1.5	Wildlife Management Area.....	4-9
4.1.6	Lawrence County Recreation Area.....	4-10
4.1.7	Boy Scout Camp Cherokee.....	4-12
4.1.8	Yatesville Lake	4-13
4.2	Current Outdoor Recreational Activities and Visitation.....	4-14
4.2.1	Outdoor Recreational Activities	4-14

4.2.2	Visitation by Recreational Area.....	4-16
4.2.3	Activity Distribution	4-17
4.3	Area of Influence	4-18
4.3.1	Identifying the Area of Influence.....	4-18
4.3.2	Demographic Characteristics in the Area of Influence.....	4-19
4.4	Outdoor Recreational Opportunities at Comparable Facilities.....	4-24
4.5	Trends in Outdoor Recreational Activities	4-29
4.5.1	Age.....	4-30
4.5.2	Fishing and Hunting.....	4-30
4.5.3	Summer Activities	4-30
4.6	Identifying Potential Recreational Activity Opportunities	4-31
4.7	Recreational Demand Analysis.....	4-35
4.7.1	Impact of Comparable Facilities.....	4-35
4.7.2	Impact of Trends in Participation Rates in Recreational Activities.....	4-35
4.7.3	Impact of Demographic Changes.....	4-36
4.7.4	Projected Participation by Activity.....	4-36
4.7.5	Lake Carrying Capacity	4-37
4.8	Implications of Projected Demand on Recreational Activities.....	4-42
4.8.1	Boating.....	4-42
4.8.2	Camping.....	4-43
4.8.3	Fishing.....	4-43
4.8.4	Hunting	4-44
4.8.5	Other Activities.....	4-44
4.8.6	Picnicking	4-45
4.8.7	Sightseeing.....	4-45
4.8.8	Swimming.....	4-45
4.8.9	Water Skiing	4-45
5.0	Resource Use Objectives.....	5-1
5.1	Resource Use Objective 1	5-1
5.1.1	Measures to Achieve Objective	5-1
5.1.2	Justification.....	5-1

5.2	Resource Use Objective 2.....	5-2
5.2.1	Measures to Achieve Objective	5-2
5.2.2	Justification.....	5-2
5.3	Resource Use Objective 3.....	5-2
5.3.1	Measures to Achieve Objective	5-2
5.3.2	Justification.....	5-3
5.4	Resource Use Objective 4.....	5-3
5.4.1	Measures to Achieve Objective	5-3
5.4.2	Justification.....	5-3
5.5	Resource Use Objective 5.....	5-4
5.5.1	Measures to Achieve Objectives.....	5-4
5.5.2	Justification.....	5-4
6.0	Land Allocation and Land Classification	6-1
6.1	Land Allocation	6-1
6.2	Land Classification	6-1
6.2.1	Project Operations.....	6-5
6.2.2	Recreation – Intensive Use	6-5
6.2.3	Mitigation.....	6-5
6.2.4	Environmentally Sensitive Areas.....	6-5
6.2.5	Multiple Resource Management.....	6-6
6.2.6	Easement Lands	6-7
7.0	Resource Plan.....	7-1
8.0	Special Programs	8-1
8.1	Proposed BlueWater Development.....	8-1
8.1.1	Proposed Concept and Features	8-1
8.1.2	Suitability of Proposed Site	8-2
8.1.3	Key Issues	8-2
8.1.4	Consistency with Recreation Program Analysis Forecast and Lake Carrying Capacity Analysis	8-5
8.1.5	Alternate Sites.....	8-5
8.1.6	Conclusions.....	8-9

8.2	Use of Lawrence County Park for Fairs and Festivals	8-9
8.2.1	Proposed Site	8-9
8.2.2	Site Suitability.....	8-10
8.3	Consideration of Utility Corridors at the Project.....	8-11

List of Figures

Figure 1-1:	Location of the Yatesville Lake Project.....	1-16
Figure 1-2:	Recreational Areas in the Yatesville Lake Project.....	1-19
Figure 3-1:	Yatesville Lake Project Watershed.....	3-3
Figure 3-2:	Surface Waters within the Project Area.....	3-5
Figure 3-3:	Water Surface Zoning	3-9
Figure 3-4:	Inundation Areas Between Summer Pool Elevation and Flood Control Pool Elevation	3-13
Figure 3-5:	NWI-Delineated Wetlands.....	3-17
Figure 3-6:	Groundwater Well Locations	3-19
Figure 3-7:	Topography Suitability for Project Development.....	3-23
Figure 3-8:	Soil Suitability for Project Development.....	3-29
Figure 3-9:	Mineral Tracts and Oil and/or Gas Well Locations	3-31
Figure 3-10:	Vegetation and Land Cover	3-41
Figure 4-1:	Existing Recreational Areas and Major Facilities.....	4-3
Figure 4-2:	Area of Influence	4-20
Figure 4-3:	Comparable Recreational Facilities	4-26
Figure 6-1:	Land Classification Map	6-3
Figure 7-1:	Recommendations for Dam Site Area and Tailwater Area.....	7-7
Figure 7-2:	Recommendations for Barker Run Marina	7-8
Figure 7-3:	Recommendations for Yatesville Lake State Park.....	7-9
Figure 7-4:	Recommendations for Lawrence County Park	7-10
Figure 7-5:	Recommendations for Lawrence County Beach.....	7-11
Figure 8-1:	Proposed Bluewater Development.....	8-3
Figure 8-2:	Potential Sites for Recreational Development	8-7
Figure 8-3:	Locations of Evaluation Factors	8-15

List of Tables

Table 1-1: Federal Areas and Outgrant Recreation Areas 1-18

Table 1-2: Yatesville Lake Dam Structures..... 1-22

Table 1-3: Yatesville Lake Surface Water Elevations..... 1-23

Table 1-4: Number of Visitors to the Yatesville Lake Project, Fiscal Years 2000–
2010..... 1-23

Table 2-1: Common Recreational and Environmental Conservation Goals..... 2-4

Table 3-1: Soils in the Project Area in Order of Predominance 3-25

Table 3-2: Land Cover Types in the Project Area 3-38

Table 3-3: Animals Common to the Project Area 3-44

Table 3-4: Some of the Fish Species in Yatesville Lake 3-47

Table 3-5: Threatened and Endangered and Species at Yatesville Lake 3-49

Table 4-1: Primary Areas of the Project and the Managing Entities 4-2

Table 4-2: Facilities for Outdoor Recreational Activities at the Project 4-14

Table 4-3: Baseline Distribution of Visits by Primary Recreational Area 4-17

Table 4-4: Number of Participants for Each Recreational Activity..... 4-17

Table 4-5: Population in the Subareas of Influence..... 4-22

Table 4-6: Age Distribution of Population in the Subareas of Influence 4-22

Table 4-7: Median Household Income in the Subareas of Influence..... 4-23

Table 4-8: Comparable Recreational Facilities..... 4-25

Table 4-9: Recreational Activities at the Yatesville Lake Project and Comparable
Facilities 4-27

Table 4-10: Recreational Activities at the Project 4-32

Table 4-11: Baseline and Projected Participation in Recreational Activity and Subarea
of Influence 4-39

Table 4-12: Space Assumptions for Safe and Enjoyable Boating 4-40

Table 4-13: Numbers of Boats at Three Densities..... 4-41

Table 4-14: Estimated Number of Boats and Boaters During Peak Season, Baseline
and 2020 Projection..... 4-42

Table 6-1: Land Classifications and Project Areas..... 6-2

Table 7-1: Resource Plan for the Yatesville Lake Project..... 7-3

List of Photographs

Photograph 1-1: Yatesville Lake Dam..... 1-21

Photograph 3-1: Yatesville Lake	3-2
Photograph 3-2: Typical Project Topography.....	3-21
Photograph 3-3: Scenic View of Lake Framed by Vegetation	3-36
Photograph 3-4: Wild Turkey on Project Lands	3-45
Photograph 4-1: Project Office and Information Center at the Dam Site Area	4-2
Photograph 4-2: Oil Well Exhibit at Dam Site Area	4-2
Photograph 4-3: Courtesy Dock at Rich Creek Launch Ramp	4-5
Photograph 4-4: Parking Area at Rich Creek Launch Ramp.....	4-5
Photograph 4-5: Barker Run Marina.....	4-6
Photograph 4-6: Barker Run Marina Boat Ramp	4-6
Photograph 4-7: Fishing Jetty at Barker Run Marina	4-7
Photograph 4-8: Typical Campsite at Pleasant Ridge Campground.....	4-7
Photograph 4-9: Hole 6 at Eagle Ridge Golf Course.....	4-9
Photograph 4-10: Typical Fairway at Eagle Ridge Golf Course	4-9
Photograph 4-11: Twin Branch Boat Ramp Area.....	4-10
Photograph 4-12: Cabin at Lawrence County Park	4-10
Photograph 4-13: Tent Campsite at Lawrence County Park	4-11
Photograph 4-14: Picnic Shelter at Lawrence County Park.....	4-11
Photograph 4-15: Lawrence County Beach	4-12
Photograph 4-16: Cabin at Boy Scout Camp Cherokee.....	4-13
Photograph 4-17: Shelter and Open Field at Boy Scout Camp Cherokee	4-13
Photograph 4-18: Yatesville Lake	4-13
Photograph 4-19: Cabin at Lawrence County Recreation Area.....	4-43
Photograph 4-20: Hiking Trail at Pleasant Ridge Recreation Area.....	4-44
Photograph 4-21: Picnic Shelter at Barker Run Marina	4-45
Photograph 8-1: Music Pavilion at Lawrence County Park.....	8-10

List of Appendices

- Appendix A Acronyms and Abbreviations
- Appendix B Bibliography
- Appendix C Results of Scoping Meetings

Project Design Memoranda

Number	Title	Date
1	Site Selection	November 1968
2	Initial General Design	November 1970
	General Design	August 1972
3	Land Requirement Plan-Public Use	May 1972
4	Real Estate-Dam Site Construction Area	March 1972
4A	Real Estate-Reservoir	April 1974
	Supplement to Design Memorandum Number 4	July 1976
5	Dam and Appurtenances	June 1974
6	Road Relocations	March 1975
7	Master Plan	March 1975
	Supplement to Design Memorandum Number 7	March 1975
	Supplement #2 to Design Memorandum Number 7	April 1987
	Supplement#4 to Design Memorandum Number 7	April 1991
8	Instrumentation	March 1975
9	Concrete Aggregates	June 1975
10	Power and Telephone	June 1975
12	Initial Filling Manual	January 1990

1.0 INTRODUCTION AND BACKGROUND

This updated Master Plan provides guidance for the management and development of natural and manmade resources at the Yatesville Lake Project in eastern Kentucky. Yatesville Lake was impounded by the U.S. Army Corps of Engineers (USACE) in 1992. The USACE owns approximately 20,000 acres, which includes the Yatesville Lake dam, Yatesville Lake, and adjacent lands. The Yatesville Lake Project, which includes operational, recreational, and wildlife management areas, is referred to as the Project for the purposes of this document.

This Master Plan is intended to provide a guide for achieving the goals of managing, conserving, and enhancing natural resources while providing quality opportunities for outdoor recreation to the public. This Master Plan was developed in response to regional and local needs, resource capabilities and suitability, and expressed public interests consistent with authorized Project purposes and relevant legislation and regulations.

The Master Plan provides a summary of the purposes and history of the Project; the applicable Federal laws and directives that govern its use; resource objectives; and a detailed analysis of existing natural resources, recreational resources, and land uses. The Master Plan includes projections of future demands for recreational use of the area and a resource use plan so that the Project will continue to meet the goals of promoting awareness of the natural environment, adhering to sound environmental stewardship principles, and providing outdoor recreation opportunities for current and future generations in an efficient and effective manner. The Master Plan proposes actions for modifying recreational facilities and wildlife management approaches that are consistent with USACE's established purposes. A Programmatic Environmental Assessment has been prepared to address the potential impacts of proposed actions.

To facilitate reading this document, Appendix A contains a list of acronyms. Appendix B contains a bibliography, and Appendix C contains a summary of the comments submitted by the public and invited stakeholders during the public scoping period for the Master Plan.

1.1 Project Authorization

Construction of the Project was authorized by the Flood Control Act of 1965 (Public Law [PL] 89-298), which was passed by the 89th Congress on 27 October 1965.

On 9 May 1973, the USACE and the Commonwealth of Kentucky (Commonwealth) entered into an agreement titled "General Recreation and Fish and Wildlife Development at the Yatesville

Reservoir” concerning the planning, development, and maintenance of the Project. The agreement authorizes the Commonwealth to administer Project land and water areas for recreational purposes and to operate and maintain facilities for such purposes.

1.2 Authorized Project Purposes

The Yatesville Lake dam was constructed between 1986 and 1989 on Blaine Creek, a tributary of the Big Sandy River. The construction of the dam created Yatesville Lake. The authorized purposes of the Yatesville Lake Project are flood risk management, recreation, water quality control, and fish and wildlife management.

1.2.1 Flood Risk Management

The Flood Control Act of 1936 (PL 74-738) states that flood risk management is “a proper activity for the Federal Government in cooperation with states, their political subdivisions, and localities thereof.” Congress gave responsibility for Federal flood risk management projects to the USACE. One year later, in 1937, one of the most damaging floods along the Ohio River occurred. Part of Cincinnati was under water for more than 2 weeks, and damage exceeded \$20 million (Ohio Historical Society, 2010).

In the years following passage of the Flood Control Act of 1936, the USACE built approximately 400 reservoirs nationwide, pursuant to congressional authorization and appropriation, with the primary purpose of flood risk management. The reservoirs are estimated to have prevented more than \$19 billion in flood damage in the Ohio River Basin since the 1930s (USACE, 2009a). Subsequent acts, including the Flood Control Act of 1965, authorized additional reservoirs, including Yatesville.

1.2.2 Recreation

Section 4 of the Flood Control Act of 1944 (PL 78-534) provides for recreational development at reservoir areas under the jurisdiction of the Department of the Army. The Federal Water Project Recreation Act of 1965 (PL 89-72) requires consideration of opportunities for outdoor recreation in the planning of water resources projects. Recreational use of a project is coordinated with other existing and planned Federal, State, and local recreational developments. Non-Federal bodies are encouraged to operate and maintain project recreational facilities. Under PL 89-72, if non-Federal bodies agree in writing to administer the facilities at their expense, the recreational benefits are included in the project benefits and project cost allocated to recreation. Fees may be charged by the non-Federal bodies to repay their costs. If non-Federal bodies do not agree, no

facilities for recreation may be provided except those justified to serve other purposes or as needed for public health and safety.

The Federal Water Project Recreation Act of 1965 (PL 89-72) was passed in July 1965, three months before the passage of the Flood Control Act of 1965 (PL 78-534), which authorized the Project. USACE reservoirs authorized before the passage of PL 89-72 have recreational facilities that were constructed and are operated by the USACE. Because Yatesville was authorized after passage of PL 89-72, all recreational facilities at the Project must be constructed and operated by non-Federal bodies except those required for minimum health and safety purposes. The USACE can provide information centers and boat ramps.

Non-consumptive recreational opportunities offered at the Project through leases with the Commonwealth and Lawrence County include camping, boating, and hiking. The Project also provides consumptive recreational opportunities such as fishing and hunting. Recreational areas vary from undeveloped forested land to well-developed and heavily used campgrounds.

1.2.3 Water Quality Control

Section 102(b) of PL 92-500, the Federal Water Pollution Act Amendments of 1972, stipulates that in the planning of any USACE reservoir, consideration should be given to storage for regulating streamflow.

High chloride concentrations linked to upstream oil industry activities adversely affected Blaine Creek's water quality (USACE, 1975), creating water conditions that were detrimental to aquatic life in Blaine Creek and downstream after its confluence with the Big Sandy River. Water pollution was also caused by surface mining of coal, which has not occurred on Project lands since 1973. The *Yatesville Lake, Big Sandy River Basin, Blaine Creek, Kentucky* (Nield, 1990) identified the need for water quality control in the basin. Water quality control in the report included protection from the pollution occurring upstream of the dam (see Section 1.6.3) and use of the Yatesville Lake waters to enhance water quality downstream in the Big Sandy River.

The water quality control system at Yatesville Lake was designed with the understanding that the lake would be stratified during the summer with warm, oxygenated water on the surface and cold, unoxxygenated water at the bottom; therefore, a system of selective withdrawal inlets at various water depths was installed in the intake structures. The selective withdrawal system consists of two wet wells, each with five gated inlets and two controlled outlets or sluices. The system allows simultaneous withdrawal of water from any combination of inlets, and choices over a considerable range of outflow rates and water parameters are therefore available.

The water quality control objectives for Yatesville Lake are low-flow control and downstream flow augmentation. In 1970, the U.S. Environmental Protection Agency (EPA) agreed to the primary benefits derived from the Project uses, including water quality control, in commenting on the *Draft Environmental Impact Statement for Yatesville Lake, Blaine Creek, Big Sandy Basin, Kentucky*. The *Final Environmental Impact Statement* was filed with the Council on Environmental Quality in 1971. Storage capacity was allocated to the Project by apportioning among the various projects in the Big Sandy River Basin. Final capacity allocations encompass the comprehensive system of multi-purpose reservoirs in the Big Sandy River Basin in accordance with hydrologic efficiency and economic optimization parameters.

When the Big Sandy River Basin lakes were constructed a water quality control pool was provided for flow augmentation purposes in the Big Sandy River Basin. At the time, industry was expected to expand and population was expected to increase so the need for additional augmentation was projected. However, industry has not expanded, and the population has not increased as projected.

Even though storage is allocated, Yatesville Lake has never been operated for augmentation. Because augmentation storage is allocated by Congress, it will remain until it is reallocated or used for augmentation, which could occur in an extreme drought.

1.2.4 Fish and Wildlife Management

The Fish and Wildlife Coordination Act of 1958 (PL 85-624) authorizes the USACE to modify projects to conserve fish and wildlife resources. The Endangered Species Act of 1973 (PL 93-205) provides additional authority for operating projects to protect threatened or endangered fish and wildlife. PL 89-72, the Federal Water Project Recreation Act, requires consideration of opportunities for fish and wildlife enhancement in planning water resources projects. Non-Federal bodies are encouraged to operate and maintain project fish and wildlife enhancement facilities. If non-Federal bodies agree in writing to administer the facilities at their expense, the fish and wildlife benefits are included in the project benefits and project cost allocated to fish and wildlife. Fees may be charged by the non-Federal bodies to repay their costs. If non-Federal bodies do not so agree, no facilities for fish and wildlife may be provided.

Fish and wildlife management at Yatesville Lake is provided by the Kentucky Department of Fish and Wildlife Resources, which has a license to manage approximately 16,000 acres of the Project area.

1.3 Prior Master Plan

The first Yatesville Lake Project Master Plan was developed and approved in 1975 (USACE, 1975). This document is an update of the 1975 Master Plan.

1.4 Application of Federal Laws

Development and management of Federal reservoirs are regulated by a number of statutes and Executive Orders (EOs). The following sections provide a summary of relevant Federal statutes and EOs.

1.4.1 Recreation

The Public Laws listed below address development and management of recreational facilities on public lands and are pertinent to USACE project lands in eastern Kentucky:

- PL 74-738, Flood Control Act of 1936 (22 June 1936), authorizes the construction of civil engineering projects such as dams, levees, dikes, and other flood risk management measures through the USACE.
- PL 78-534, Flood Control Act of 1944 (22 December 1944), authorizes the Chief of Engineers to provide facilities in reservoir areas for public use, including recreation and conservation of fish and wildlife.
- PL 79-526, Flood Control Act of 1946 (24 July 1946), amends PL 78-534 to include authority to grant leases to nonprofit organizations at recreational facilities in reservoir areas at reduced or nominal charges.
- PL 83-780, Flood Control Act of 1954 (3 September 1954), further amends PL 78-534 and authorizes the Secretary of the Army to grant leases to Federal, State, or governmental agencies without monetary considerations for use and occupation of land and water areas under the jurisdiction of the Department of the Army for park and recreational purposes when in the public interest.
- Joint Land Acquisition Policy for Reservoir Projects (*Federal Register* [Volume 27, 22 February 1962]) allows the Department of the Army to acquire additional lands necessary for the realization of potential outdoor recreational resources of a reservoir.
- PL 88-578, Land and Water Conservation Fund Act of 1965 (1 September 1964), prescribes conditions under which USACE may charge for admission and use of its recreational areas.

- PL 89-72, Federal Water Project Recreation Act of 1965 (9 July 1965), requires sharing financial responsibilities in joint Federal and non-Federal recreational and fish and wildlife resources with no more than half of the cost borne by the Federal Government.
- PL 90-480, Architectural Barriers Act of 1968 (12 August 1968), requires access for persons with disabilities to facilities designed, built, altered, or leased with Federal funds.
- PL 101-336, Americans with Disabilities Act of 1990 (ADA) (26 July 1990), as amended by the ADA Amendments Act of 2008 (PL 110-325), prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires “reasonable accommodation” to persons with disabilities.
- PL 102-580, Water Resources Development Act of 1992 (31 October 1992), authorizes the USACE to accept contributions of funds, materials, and services from non-Federal public and private entities to be used in managing recreational facilities and natural resources.
- PL 103-66, Omnibus Budget Reconciliation Act – Day Use Fees (10 August 1993), contains provisions by which USACE may collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches, and boat ramps.
- PL 104-333, Omnibus Parks and Public Lands Management Act of 1996 (12 November 1996), creates a nine-member advisory commission to review the current and anticipated demand for recreational opportunities at lakes and reservoirs managed by the Federal Government, and to develop alternatives to enhance the opportunities for such use by the public.

1.4.2 Water Resource Protection and Flood Risk Management

A number of laws address water resources protection and flood risk management and the integration of these goals with other Project purposes such as recreation. The following are pertinent to USACE project lands in eastern Kentucky:

- PL 74-738, Flood Control Act of 1936 (22 June 1936), declares flood risk management to be a proper Federal activity.
- PL 78-534, Flood Control Act of 1944 (22 December 1944), specifies the rights and interests of the states in water resources development and requires cooperation and consultation with State agencies in planning for flood risk management.
- PL 85-500, Water Supply Act of 1958 (3 July 1958), authorizes the USACE to include municipal and industrial water supply storage in multi-purpose reservoir projects.

- PL 87-88, Federal Water Pollution Control Act Amendments of 1961 (20 July 1961), requires Federal agencies to address the potential for pollution of interstate or navigable waters when planning a reservoir project.
- PL 89-80, Water Resources Planning Act of 1965 (22 July 1965), provides for the optimum development of the Nation's natural resources through coordinated planning of water and water-related land resources. It provides authority for the establishment of a water resources council and river basin commission.
- PL 89-298, Flood Control Act of 1965 (27 October 1965), authorizes the Secretary of the Army to design and construct navigation, flood risk management, and shore protection projects if the cost of any single project does not exceed \$10 million.
- PL 95-217, Clean Water Act of 1977 (15 December 1977), amends PL 87-88 and requires the EPA to enter into written agreements with the Secretaries of Agriculture, the Army, and the Interior to provide maximum use of the laws and programs to maintain water quality.
- PL 99-662, Water Resource Development Act of 1986 (17 November 1986), establishes cost-sharing formulas for the construction of harbors, inland waterway transportation, and flood risk management projects.

1.4.3 Fish and Wildlife Resources

A number of laws address protection and maintenance of fish and wildlife resources. The following are pertinent to USACE project lands in eastern Kentucky:

- PL 79-732, Fish and Wildlife Coordination Act (10 March 1934), provides authority for making project lands available for management by interested State agencies for wildlife purposes.
- 16 U.S. Code (U.S.C.) §§ 668a-d, Bald and Golden Eagle Protection Act of 1940 (8 June 1940) as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles (*Haliaeetus leucocephalus*), including their nests or eggs.
- PL 85-624, Fish and Wildlife Coordination Act (12 August 1958), states that fish and wildlife conservation will receive equal consideration with other project purposes and be coordinated with other features of water resources development programs.
- PL 91-190, National Environmental Policy Act of 1969 (NEPA) (1 January 1970), establishes a broad Federal policy on environmental quality stating that the Federal

government will “... assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings ... preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety ...”

- PL 93-205, Conservation, Protection, and Propagation of Endangered Species (28 December 1973), requires that Federal agencies will, in consultation with the U.S. Fish and Wildlife Service (USFWS), further conservation of endangered and threatened species and ensure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.
- PL 95-632, Endangered Species Act Amendments of 1978 (10 November 1978), specifies a consultation process between Federal agencies and the Secretaries of the Interior, Commerce, or Agriculture for carrying out programs for the conservation of endangered and threatened species.
- PL 101-233, North American Wetland Conservation Act (13 December 1989), directs the conservation of North America wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- PL 106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000) promotes the conservation of habitat for neo-tropical migratory birds.

1.4.4 Forest Resources

The following law pertains to management of forested lands and is pertinent to USACE project lands in eastern Kentucky:

- PL 86-717, Protection and Improvement of Natural Resources (6 September 1960), provides for the protection of forest cover in reservoir areas and specifies that reservoir areas of projects developed for flood risk management or other purposes that are owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers will be developed and maintained so as to encourage, promote, and ensure fully adequate and dependable future resources of readily available timber. Timber production can be implemented through sustained yield programs, reforestation, and accepted conservation practices.

1.4.5 Cultural Resources

A number of laws mandate the protection of cultural resources on public lands. The following are pertinent to USACE project lands in eastern Kentucky:

- PL 59-209, Antiquities Act of 1906 (8 June 1906), applies to the appropriation or destruction of antiquities on federally owned or controlled lands and has served as the precedent for subsequent legislation.
- PL 74-292, Historic Sites Act of 1935 (21 August 1935), declares that it is a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.
- PL 86-523, Reservoir Salvage Act of 1960 (27 June 1960), provides for the preservation of historical and archaeological data that might otherwise be lost as the result of the construction of a dam and attendant facilities and activities.
- PL 89-665, National Historic Preservation Act of 1966 (NHPA) (15 October 1966), establishes a national policy of preserving, restoring, and maintaining cultural resources. It requires Federal agencies to take into account the effect an action may have on sites that may be eligible for inclusion on the National Register of Historic Places.
- PL 93-291, Archaeological and Historic Preservation Act of 1974 (24 May 1974), amends PL 86-523 and provides for the Secretary of Interior to coordinate all Federal survey and recovery activities authorized under this expansion of the Reservoir Salvage Act of 1960. The Federal construction agency may expend up to 1 percent of project funds on cultural resource surveys.
- PL 96-95, Archaeological Resources Protection Act of 1979 (31 October 1979), updates PL 59-209 and protects archaeological resources and sites on public lands and fosters increased cooperation and exchange of information among governmental authorities, the professional archaeological community, and private individuals.
- PL 101-601, Native American Graves Protection and Repatriation Act (16 November 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

1.4.6 Leases, Easements, and Rights-of-Way

A number of laws and regulations govern the granting of leases, easements, and rights-of-way on Federal lands. The following are pertinent to USACE project lands in eastern Kentucky:

- 10 U.S.C. § 2667, Leases: Non-excess Property of Military Departments and Defense Agencies (10 August 1956), authorizes the lease of land at water resources projects for any commercial or private purpose not inconsistent with other authorized project purposes.
- U.S.C. Titles 10, 16, 30, 32, and 43 address easements and licenses for project lands; 16 U.S.C. § 460d authorizes use of public lands for any public purpose, including fish and wildlife, if in the public interest.
- 16 U.S.C. §§ 470h-3, NHPA (15 October 1966), established for the preservation of historic property.
- 16 U.S.C. § 663, Impoundment or Diversion of Waters (10 March 1934), wildlife resources management in accordance with the approved general plan.
- 30 U.S.C. §§ 181-263, Mineral Leasing Act of 1920 (25 February 1920), promotes the mining of coal, oil, and gas on the public domain and specifies conditions of leasing agreements.
- 30 U.S.C. §§ 351-359, Mineral Leasing Act for Acquired Lands of 1947 (7 August 1947), provides that minerals subject to 30 U.S.C. §§ 181-263, the Mineral Leasing Act of 1920, that are located on acquired Federal lands are subject to the Federal mineral leasing system.
- PL 91-631, Mining and Minerals Policy Act of 1970 (28 April 1971), specifies the Federal policy for economically sound development of domestic mining.
- PL 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (2 January 1971), establishes a uniform policy for fair and equitable treatment of persons displaced as a result of Federal or federally assisted programs.
- PL 94-579, Federal Land Policy and Management Act of 1976 (21 October 1976), establishes a policy that the Federal Government receive fair market value for the use of the public lands and their resources unless otherwise provided for by statute. Provides for the inventory of public land and land use planning. Establishes the extent to which the executive branch may withdraw lands without legislative action.
- PL 95-87, Surface Mining Control and Reclamation Act (3 August 1977), regulates surfacing mining and requires permits and inspections.

1.4.7 Executive Orders

As head of the executive branch, the President can issue legally binding orders known as Executive Orders (EOs). These orders are generally issued in order to direct Federal agencies and officials in their execution of laws and policies established by Congress. The following EOs are pertinent to USACE project lands in eastern Kentucky:

- EO 11514, Protection and Enhancement of Environmental Quality (5 March 1970), outlines the responsibilities of Federal agencies in consonance with NEPA. EO 11514 was amended by EO 11991, Relating to Protection and Enhancement of Environmental Quality, in 1977.
- EO 11593, Protection and Enhancement of Cultural Environment (13 May 1971), outlines the responsibilities of Federal agencies in consonance with the NHPA, NEPA, the Historic Sites Act, and the Antiquities Act.
- EO 11644, Use of Off-Road Vehicles on Public Lands (8 February 1972), establishes a uniform Federal policy regarding the use of off-road vehicles such as trail bikes, snowmobiles and dune buggies on public lands.
- EO 11988, Flood Plain Management (24 May 1977), requires Federal agencies to avoid both long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid development of floodplains when practicable alternatives exist.
- EO 11989, Off-Road Vehicles on Public Lands (24 May 1977), amends EO 11644 and authorizes Federal agencies to close areas or trails to off-road vehicles that cause adverse effects to soil, vegetation, wildlife, wildlife habitat, and cultural or historical resources.
- EO 11990, Protection of Wetlands (24 May 1977), restricts Federal agencies from taking actions that would destroy or modify wetlands when there is a practicable alternative.
- EO 11991, Relating to Protection and Enhancement of Environmental Quality (24 May 1977), amends EO 11514 by directing the Council of Environmental Quality to issue guidance to Federal agencies for implementing procedural provisions of NEPA.
- EO 12088, Federal Compliance with Pollution Control Standards (12 October 1978), requires all Federal agencies to be in compliance with environmental laws and fully cooperate with the EPA and State, interstate, and local agencies to prevent, control, and abate environmental pollution.

- EO 12962, Recreational Fisheries (7 June 1995), directs Federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities. EO 12962 was amended by EO 13474 in 2008.
- EO 13112, Invasive Species (3 February 1999), directs each Federal agency to prevent the introduction of invasive species, to detect and respond rapidly to and control populations of invasive species in a cost-effective and environmentally sound manner, to monitor invasive species populations accurately and reliably, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded.
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (10 January 2001), directs Federal agencies, pursuant to a Memorandum of Understanding with the USFWS, to support the conservation intent of migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the greatest extent practicable, adverse impacts on migratory bird resources.
- EO 13327, Federal Real Property Asset Management (4 February 2004), promotes the efficient and economical use of Federal real property resources in accordance with their value as national assets and in the best interest of the Nation. EO 13327 was amended by EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management, in 2007.
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management (24 January 2007), instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.
- EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance (5 October 2009), expands on the energy reduction and environmental performance requirements for Federal agencies identified in EO 13423 and requires Federal agencies to make reductions in greenhouse gas emissions.

1.5 Purpose of the Master Plan

The purpose of this Master Plan is to provide guidance for the preservation, conservation, restoration, maintenance, management, and development of Project lands, waters, and associated

resources. The Master Plan is intended to aid responsible stewardship of Project resources for the benefit of present and future generations.

The Master Plan contains an evaluation of the present and potential uses of Project resources and recommendations for the future management and development of Project resources. This Master Plan is conceptual and as such, identifies conceptual activities rather than designs and exact locations.

The Master Plan is based on responses to regional and local needs, resource capabilities and suitability, and expressed public interests that are consistent with authorized Project purposes and pertinent legislation and regulations. Actions by the USACE and by the agencies and individuals granted leases or licenses for use of Project lands must be consistent with the Master Plan. The Master Plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). Policies in the Master Plan are guidelines that will be implemented through provisions of the OMP, specific Design Memoranda, and other planning mechanisms.

The broad intent of this Master Plan is to:

- Determine appropriate uses and levels of development for Project resources
- Provide a framework within which the OMP and other planning mechanisms can be developed and implemented
- Establish a basis on which outgrants and recreational development proposals can be evaluated

1.6 Scope of the Master Plan

This Master Plan includes guidance for appropriate uses, development, enhancement, protection, and conservation of the natural, cultural, and built resources of the Project. The Master Plan has eight sections and three appendices:

- Section 1.0 – Introduction and Background
- Section 2.0 – Public Involvement, Coordination, and Partnerships
- Section 3.0 – Resource Analysis
- Section 4.0 – Recreation Program Analysis
- Section 5.0 – Resource Objectives

- Section 6.0 – Land Allocation and Classification
- Section 7.0 – Resource Use Plan
- Section 8.0 – Special Programs
- Appendices
 - Appendix A: Acronyms and Abbreviations
 - Appendix B: Bibliography
 - Appendix C: Summary of Public Scoping Meetings

1.7 Project Description

The description of the Project includes location, history, water quality issues, land acquisition, the Federal areas and recreational facility, outgrants, Project data and lake operations, lake regulation, and visitation data.

1.7.1 Location

The Yatesville Lake dam is located on Blaine Creek in Lawrence County, Kentucky, approximately 5 miles west of Louisa, Kentucky. The dam is approximately 18 miles upstream from the confluence of Blaine Creek with the Big Sandy River (USACE, 2004a). The Big Sandy River from Louisa to the Ohio River serves as the boundary between Kentucky and West Virginia.

U.S. Highway 23 (U.S. 23) runs north-south approximately 1 mile east of the Project and is the closest major highway to the Project. U.S. 23 has a direct connection to Interstate 64 (I-64). State Route (SR) 3395 intersects with U.S. 23 just east of the Project site and continues west to SR 32, which parallels much of the southern reaches of the Project and provides access to the Project. SR 1760 runs north from U.S. 23 and intersects with SR 32 just south of the Yatesville Lake State Park entrance. Figure 1-1 shows the location of the Project and the major highways in the vicinity of the Project.

Communities within a 1-hour drive of the Project are Ashland, Kentucky; Grayson, Kentucky; Louisa, Kentucky; and Huntington, West Virginia. The Project is about 1.5 hours from Charleston, West Virginia, and 2.5 hours from Lexington, Kentucky.

1.7.2 History of the Project

Heavy rains or a combination of melting snow and heavy rains caused severe flooding in eastern Kentucky and on the Ohio River in February 1862, January 1918, January 1937, and February 1939. In letters to Congress in 1950 and 1951, Kentucky Governor Lawrence Wetherby described the excessive stream flooding throughout Kentucky that had recently devastated crop lands. The governor appealed to Congress to conduct surveys as the first step in developing and implementing flood risk management programs for the Kentucky watersheds (Wetherby, 1950).

The Flood Control Act of 1965 authorized the Project, and funding was initially appropriated in 1966. The USACE filed an Environmental Impact Statement in 1971 (USACE, 1971), and Congress appropriated funds in 1973. However, President Carter's review of water projects in 1977 led to the cancellation of all construction contracts.

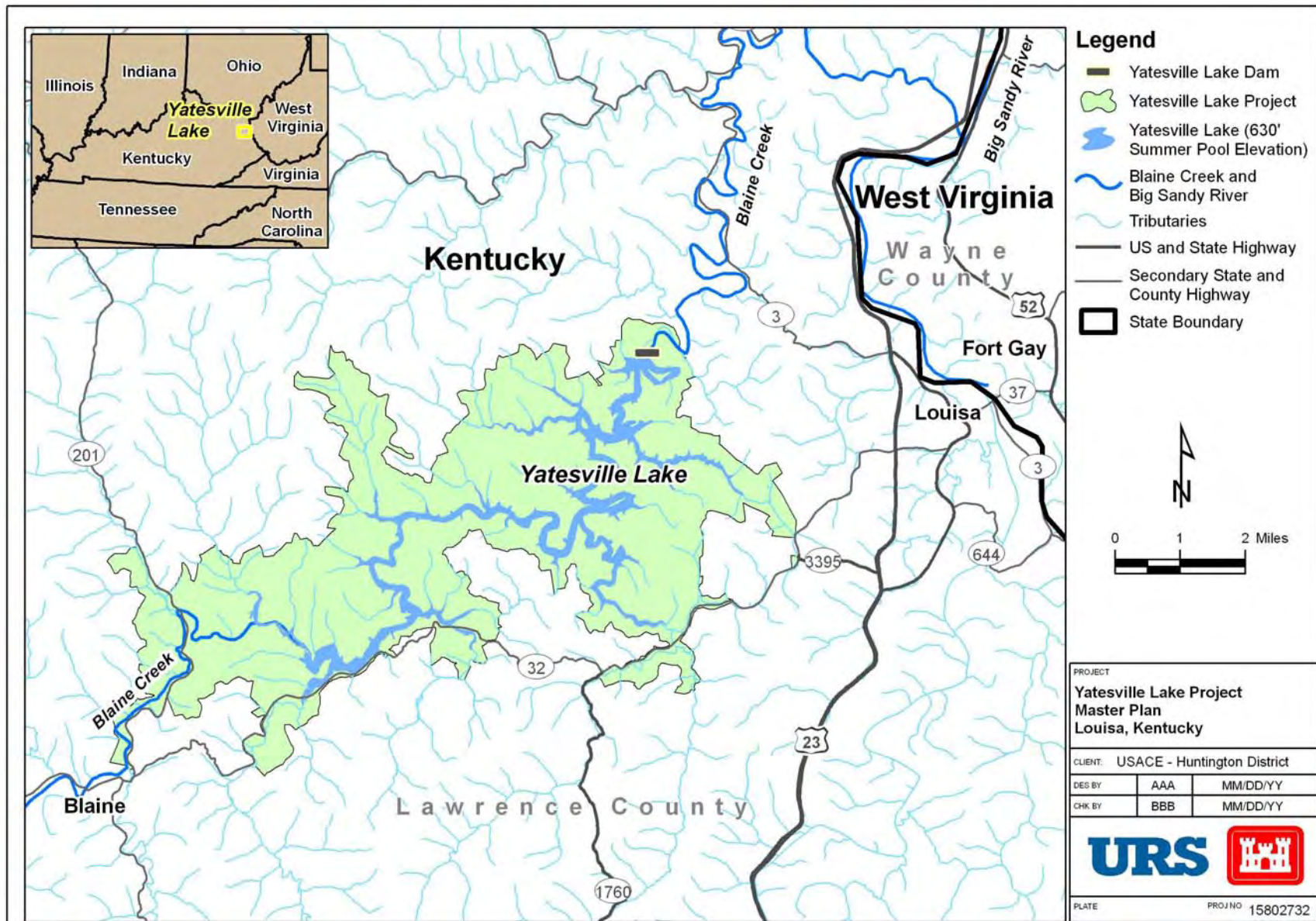


Figure 1-1: Location of the Yatesville Lake Project

The Project was dormant until 1983 when further reviews led to congressional appropriations in fiscal years (FYs) 1983 and 1984. Construction of the dam, spillway, and appurtenant structures began in 1986 and was completed in 1989. The dam was placed in operation in July 1992.

1.7.3 Land Acquisition History

The Federal Government purchased the land and fully funded the construction and operation of the Project. Acquisition of a total of 20,000 acres began in November 1973. The acquisition criteria for Yatesville Lake were based on the minimum requirements prescribed by the 1962 Joint Land Acquisition Policy. The policy called for a 300-foot horizontal guide-acquisition limit. The upper guide taking line established for flooding effects, including a 5-foot freeboard, is at elevation 650 feet National Geodetic Vertical Datum (NGVD).¹ The taking line included all lands required for rock quarries, construction sites, borrow and work areas, reservoir lands and certain large areas of lands to be isolated because of highway relocations. Blocking out low-value residual acreage on properties affected by the minimum acquisition accounts for a great number of acres in the fee taking area. Blocking out is dictated by the combination of topography and land use pattern.

Acquisition limits for the Project were recommended in the USACE Design Memoranda Numbers 1, 2 and 4, and 4A. Design Memorandum Number 1 contained recommendations for the Project site and type of dam. Design Memorandum Number 2 contained recommendations for the general design of Project features. Design Memorandum Number 4 contained recommendations for the development of the dam site and construction area. Design Memorandum Number 4A contained recommendations for the remaining Project lands.

1.7.4 Federal Areas and Recreational Facilities

The USACE manages two areas of the Project: the Dam Site Area and the Rich Creek Launch Ramp. The Dam Site Area is 391 acres and includes the dam, the tailwater, a Project Office and Information Center, parking, and an environmental interpretative trail. The Rich Creek Launch Ramp is 4 acres and includes a boat ramp, a parking area, and a courtesy loading dock.

¹ The NGVD is a standard that was developed in 1929 for measuring vertical distances.

1.7.5 Outgrants

An outgrant is the written interest granted to an entity or individual that allows the entity or individual to make use of government property through lease, easement, license, or permit. Outgrants typically establish a time frame, conditions, and restrictions on the use of the property.

Some outgrants are issued through lease and license agreements, which are contracts between the USACE and another party. Five outgrants for recreational areas have been established at the Project through lease and license agreements: Barker Run Marina, Yatesville Lake State Park, Lawrence County Recreation Area, Boy Scout Camp Cherokee, and the Wildlife Management Area (WMA).

- Table 1-1 lists the outgrants areas at the Project. The locations of the Federal recreational and outgrant areas are shown on Figure 1-2. General descriptions of the outgrant areas are provided in Section 4.1.

Table 1-1: Federal Areas and Outgrant Recreation Areas

Name of Area	Acreage	Managing Agency
Dam Site Area	433	USACE
Rich Creek Launch Ramp	7	USACE
Barker Run Marina	131	Kentucky Department of Parks
Yatesville Lake State Park	1,521	Kentucky Department of Parks
Lawrence County Recreation Area	971	Lawrence County
Boy Scout Camp Cherokee	434	Tri-State Council, Boy Scouts of America
Wildlife Management Area	15,947	KYDFWR

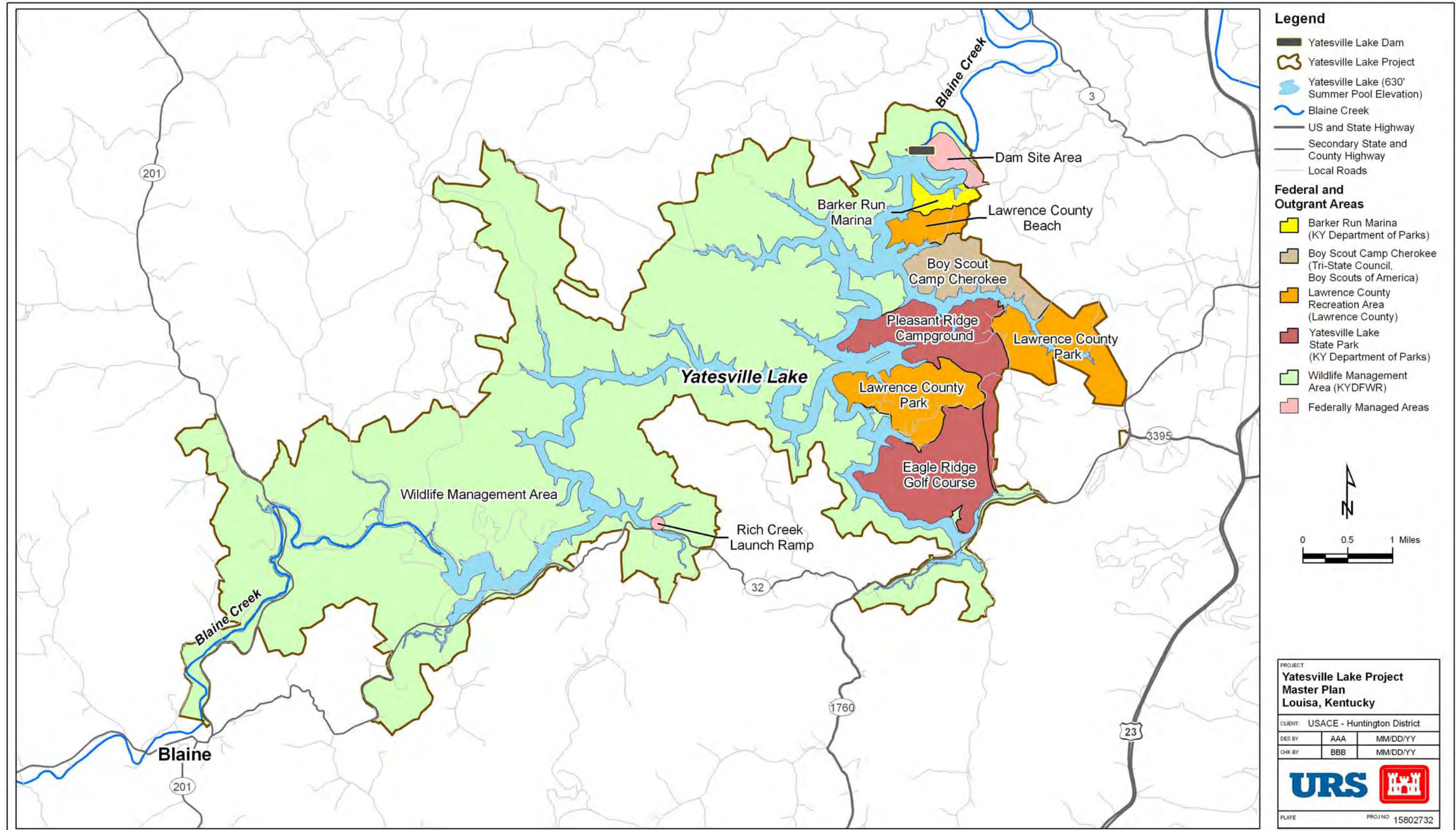


Figure 1-2: Recreational Areas in the Yatesville Lake Project

This page intentionally left blank.

1.7.6 Project Data and Lake Operation

Yatesville Lake dam is operated by the Huntington District of the USACE. Construction of the dam, spillway, and appurtenant structures began in 1986 and was completed in April 1989. The dam was placed in operation in July 1992.

The dam is an earth and rockfill structure with a central impervious core founded on rock (see Photograph 1-6). The dam was constructed using about 1 million cubic yards of rockfill obtained from the Project area. A hill adjacent to the dam was cut to provide this quantity of rock for the dam.



Photograph 1-1: Yatesville Lake Dam

The stream bed elevation at the dam is 573 feet NGVD (USACE, 1975). The top elevation of the dam is 681 feet NGVD. The top width of the dam is 32 feet, and the crest length is 855 feet (USACE, 2004a).

The spillway is an uncontrolled, excavated channel through reservoir rim; the spillway is unlined except for a 5-foot concrete sill at the crest (USACE, 1975). The crest elevation of the spillway is 645 feet NGVD, and the crest width of the spillway is 110 feet (USACE, 2004a).

The outlet works are located in the left dam abutment and include an intake structure, selective withdrawal, sluice gates, outlet tunnel, and stilling basin.

- The intake structure is a concrete wet well type and has a height of 108 feet. There are two main sluices, each controlled by a single hydraulically operated slide type gate and a hydraulically operated emergency gate.
- Selective withdrawal is accomplished by a dual wet well system. The left well has 4-foot x 3-foot inlets at 624 feet NGVD, 619 feet NGVD, 610.5 feet NGVD, 600.5 feet NGVD, and a 24-inch diameter inlet at 579 feet NGVD. The right well system is similar except that the lowest 4-foot x 3-foot inlet is at 589.5 feet NGVD (USACE, 2004a).
- There are two well outlets in the intake structure at 575 feet NGVD (USACE, 1975).
- The outlet tunnel is a 13-foot-diameter circular concrete-lined pipe that is 925 feet long (USACE, 2004a).
- The stilling basin is 112 feet by 27 feet (USACE, 1975).

Table 1-2 contains information regarding Yatesville Lake dam structures.

Table 1-2: Yatesville Lake Dam Structures

Structure	Category	Description
Dam	Type	Earth and rockfill structure with a central impervious core
	Top length	855 feet
	Top width	32 feet
	Stream bed elevation	573 feet NGVD
	Top elevation	681 feet NGVD
Spillway	Type	Uncontrolled, excavated channel
	Crest elevation	645 feet NGVD
	Width	110 feet
Outlet Works	Type/size	One concrete wet well, 108-foot tall
	Sluices	Two, each 4 feet x 9 feet
	Gates	Each sluice controlled by a single hydraulically operated slide type gate and a hydraulically operated emergency gate
	Inlet and invert elevations in left well	One 3-foot x 4-foot inlet, 624 feet NGVD Two 4-foot x 4-foot inlets, 619 feet NGVD One 4-foot x 3-foot inlet, 610.5 feet NGVD One 4-foot x 3-foot inlet, 600.5 feet NGVD One 24-inch diameter inlet, 579 feet NGVD
	Inlet and invert elevations in right well	One 3-foot x 4-foot inlet, 624 feet NGVD Two 4-foot x 4-foot inlets, 619 feet NGVD One 4-foot x 3-foot inlet, 610.5 feet NGVD One 4-foot x 3-foot inlet, 589.5 feet NGVD One 24-inch-diameter inlet, 579 feet NGVD

Sources: USACE (1975; 2004a)
NGVD = National Geodetic Vertical Datum

1.7.7 Lake Operation

Table 1-3 shows how the surface area and shoreline (perimeter) of the lake change as surface water elevations change. During periods of flooding, the elevation of the lake may be as high as 645 feet NGVD and have a surface area of as much as 3,921 acres.

Table 1-3: Yatesville Lake Surface Water Elevations

Lake Surface Level Description	Target Surface Elevation	Surface Area	Shoreline
Minimum	605 feet NGVD	630 acres	N/A
Winter Pool (December–March)	624 feet NGVD	1,895 acres	92 miles
Summer Pool (April–November)	630 feet NGVD	2,247 acres	109 miles
Maximum Flood Control Pool	645 feet NGVD	3,921 acres	164 miles

NGVD = National Geodetic Vertical Datum

N/A = not available

1.7.8 Visitation Data

USACE uses the Visitor Estimation Reporting System (VERS) to report the annual number of visits to recreational areas in the Project area. The VERS is based on accepted research guidelines and procedures adopted by the USACE. The VERS system combines the type of recreational activity and season of the year along with traffic measurements to yield data. In 1992, magnetic loop counters were installed at the Project for counting visitor vehicles. The counters are located at the Dam Site Area and Rich Creek Launch Ramp and on SR 1185 near Barker Run Marina. In 1996, an additional counter was installed in the Yatesville Lake State Park at the entrance to the Pleasant Ridge Campground.

Table 1-4 presents visitation estimates to the Project area from 2000 to 2010. A visit represents the entry of one person into a recreational area. As shown in Table 1-4, 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

Table 1-4: 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

estimated number of visitors has fallen to levels more consistent with visitation estimates between 2004 and 2006. Approximately 243,000 visits were made during FY 2010. Because of the fluctuation in visitation over the last 7 years, a baseline visitation of 310,000 was computed based on data from 2003 to 2007 to project future visitation.

2.0 SCOPING PROCESS AND PUBLIC INVOLVEMENT

The White House Council on Environmental Quality defines scoping as "... an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (Title 40 Code of Federal Regulations [CFR] § 1501.7). The scoping process for the Master Plan was used to invite public participation, identify key issues, and obtain public comment on the Master Plan formulation process.

Public involvement is an important component of developing a successful Master Plan. The public involvement effort related to developing this Master Plan occurred in August 2009, providing the public, stakeholders, and public agencies opportunities to participate in defining the key issues and resource objectives.

2.1 Public Meeting

A public meeting was held on 20 August 2009 during the scoping phase of the Master Plan. The meeting, which was conducted at the Lawrence County Community Center (80 Bulldog Lane, Louisa, Kentucky), contributed to an understanding of key Project issues and needs and the formulation of resource objectives (see Section 6.0).

Two stakeholder meetings were held on 20 August 2009, at the Lawrence County Community Center.

See Appendix C for the results of the scoping meetings.

2.2 Identified Key Issues

The following is a summary of the key issues that were identified for consideration in the Master Planning based on the scoping process, including the public and stakeholder meetings.

- Long waiting list for marina use and boat slips
- Need for additional mooring locations
- Desire for additional concessions in the marina such as a restaurant to complement operations
- Desire for improved beach access to Yatesville Lake for swimming
- Interest in expansion or enhancement of various trail systems
- Strong demand for additional camping opportunities

- Demand for further fish, wildlife, and forest management; preservation of oak and hickory stands; stocking of the lake and tailwater; creation of wetlands; and management of songbird habitat
- Interest in the execution of the concept plan for Bluewater Development, which includes cabins, a lodge and restaurant, activity building, indoor and outdoor swimming pools, and beach
- Interest in the installation of other recreational facilities including a water slide, paddleboat rental, horseshoe pits, a shuffleboard court, tennis court, basketball court, beach volleyball court, and a bathhouse
- Desire for a vehicular connection between the Barker Run Marina and Pleasant Ridge Campground in the Yatesville Lake State Park
- Interest in the establishment of utility corridors through the Project
- Interest in the development of alternative overnight accommodations such as campgrounds, cabins and lodges
- Interest in safety and accessibility issues related to vehicular and pedestrian circulation

2.3 Consistency of Goals with Relevant Planning Documents

The goals and objectives for recreation at the Project are consistent with those of other agencies that provide or plan for recreation in the area based on a review of existing planning documents prepared by the Commonwealth of Kentucky and all applicable Federal agencies, as follows:

- *Statewide Comprehensive Outdoor Recreation Plan*, developed by the Kentucky Department of Local Government (Commonwealth of Kentucky, 2008)
- *Eastern Kentucky Comprehensive Adventure Tourism Plan*, developed by the Kentucky Department of Tourism (Commonwealth of Kentucky, 2007)
- Comprehensive Wildlife Action Plan (KYDFWR, 2003b)
- Wildlife Conservation Strategy (KYDFWR, 2005)
- Recreational Fishery Resources Conservation Plan Agency Action Plan (EPA, 1996)
- Conservation Education Strategic Plan to Advance Environmental Literacy (USDA, 2007)
- 2000 RPA [Renewable Resources Planning Act] Assessment of Forest and Range Lands (USFS, 2000)

- Rivers, Trails and Conservation Assistance Program: Strategic Plan (NPS, 2005)

According to the Association of Fish and Wildlife Agencies (2005), the goals that are common to these plans include:

- Provision of high-quality opportunities for recreation
- Good stewardship of the land
- Restoration of ecological corridors
- Natural habitats for conservation of wildlife
- Preservation of cultural, natural, and historic resources

Shared goals also include approaches for achieving desired ends, including: monitoring outcomes of programs, encouraging public involvement, coordination among government entities, and developing partnerships with public, private, and nonprofit entities to develop, manage, and maintain resources. Given the commonalities in goals established by State and Federal agencies, the USACE will continue to work with State and Federal agencies, stakeholders, local government, the public, and other interested parties to enhance recreational opportunities and to support wildlife management and protection goals.

Table 2-1 lists some of the goals in plans that have been developed by other agencies and that are consistent with the Project purposes.

2.4 Agency Coordination and Partnerships

Because the goals of the KYDFWR, the Kentucky Division of Forestry, the Kentucky Department of Parks, and Lawrence County overlap with the goals of the USACE, these organizations work in partnership with the USACE at the Project.

The KYDFWR Southeastern Region has an office inside the Project area; the KYDFWR works to enhance wildlife habitat through management of the Project's WMA. The goal of sustainable management of forestry resources is shared by the KYDFWR and the Kentucky Division of Forestry. The Kentucky Division of Forestry is available to manage timber resources within the WMA. The Kentucky Department of Parks oversees the activities at the Barker Run Marina and Yatesville Lake State Park to ensure that quality recreational facilities are maintained at the Project. The other entities that partner with the USACE at the Project are the Tri-State Council of the Boy Scouts of America, Lawrence County, and local fishing clubs. The USACE and the

Table 2-1: Common Recreational and Environmental Conservation Goals

PLAN	GOAL				
	Recreational Opportunity Enhancement	Stewardship of the Land	Restoration of Ecological Corridors	Restoration of Habitats	Preservation of Natural, Historic, and Cultural Resources
Kentucky Statewide Comprehensive Outdoor Recreation Plan	✓				✓
Eastern Kentucky Comprehensive Adventure Tourism Plan	✓	✓			✓
Kentucky Comprehensive Wildlife Action Plan			✓	✓	
Kentucky Wildlife Conservation Strategy		✓	✓	✓	
EPA Recreational Fishery Resources Conservation Plan Agency Action Plan		✓		✓	✓
USFS Conservation Education Strategic Plan to Advance Environmental Literacy	✓				✓
USFS 2000 Renewable Resources Planning Act Assessment of Forest and Range Lands		✓			✓
NPS Rivers, Trails and Conservation Assistance Program Strategic Plan					✓

EPA = U.S. Environmental Protection Agency

NPS = National Park Service

USFS = U.S. Forest Service

Commonwealth of Kentucky were cost-sharing partners for the recreational development at the Project per the Cost Sharing Agreement consummated between them in 1973.

One of the Kentucky Division of Forestry's other goals is prevention of wildfires. The USACE and the Kentucky Division of Forestry have developed a Memorandum of Understanding for preventing and suppressing forest fires.

Public safety is a goal shared by Federal, State, and local government agencies. Depending on the situation that threatens public safety, Project staff contact the Lawrence County Sheriff's Department, Kentucky State Police, or KYDFWR Conservation Officers.

This page intentionally left blank.

3.0 NATURAL RESOURCE ANALYSIS

This section contains the results of an analysis of the existing conditions of the natural resources in the physical and biological environments at the Project. The information is provided to facilitate an understanding of natural resource capabilities, suitability, and constraints relative to future Project development and natural resource-related management activities. This section also provides key information for the development of resource objectives and land classification decisions.

3.1 Physical Environment

The physical environment includes the following natural resources:

- Surface water
- Wetlands
- Groundwater
- Physiography and topography
- Geology, soils, and minerals
- Historic and prehistoric resources
- Scenic elements

These natural resources are discussed in the subsections below. The existing conditions are presented followed by a brief discussion of the suitability of the resource for Project development.

3.1.1 Surface Water

Surface water pertains to water that is available at the ground surface and includes streams, Yatesville Lake (see Photograph 3-1), and the tailwater at the Project.

3.1.1.1 Existing Conditions

Streams

The Project area, which is approximately 20,000 acres, is located 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



Photograph 3-1: Yatesville Lake

the Ohio River. The Project area is approximately 18 miles upstream from the confluence of Blaine Creek with the Big Sandy River (USACE, 2004a).

A network of stream tributaries carries surface water to Blaine Creek from the 208-square-mile Blaine Creek watershed upstream of the Yatesville dam (USACE, 2004a). This network of tributaries covers approximately 550 stream miles. Approximately one-third of the tributaries in this watershed area occur within the Project boundary. Figure 3-1 shows the Yatesville Lake and Big Sandy River watershed boundaries, and Figure 3-2 shows the surface waters and tributaries within the Project area.

Upstream land use activities such as coal mining, logging, agriculture, and land development have caused soil erosion. The sediment, considered a pollutant, is transported into surface water and diminishes the clarity of streams and degrades surface water quality in 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, 2008a), the water quality of 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 (33 U.S.C. § 1313) by eutrophication, the process by which water becomes enriched with dissolved nutrients that stimulate the growth of algae and other aquatic plants. An impaired water body has chronic or recurring violations of State water quality regulations and is a priority for water quality enhancement.

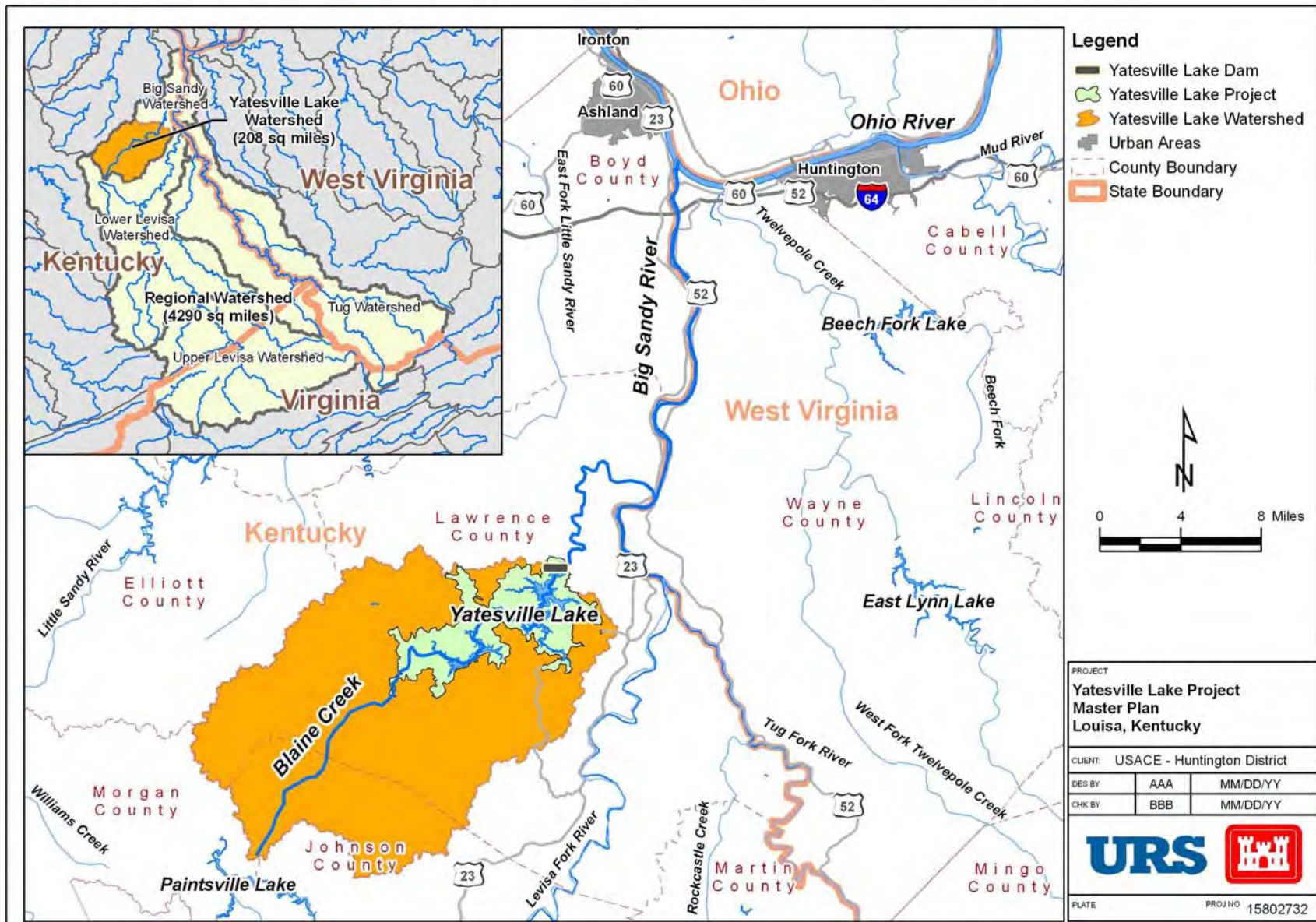


Figure 3-1: Yatesville Lake Project Watershed

This page intentionally left blank.

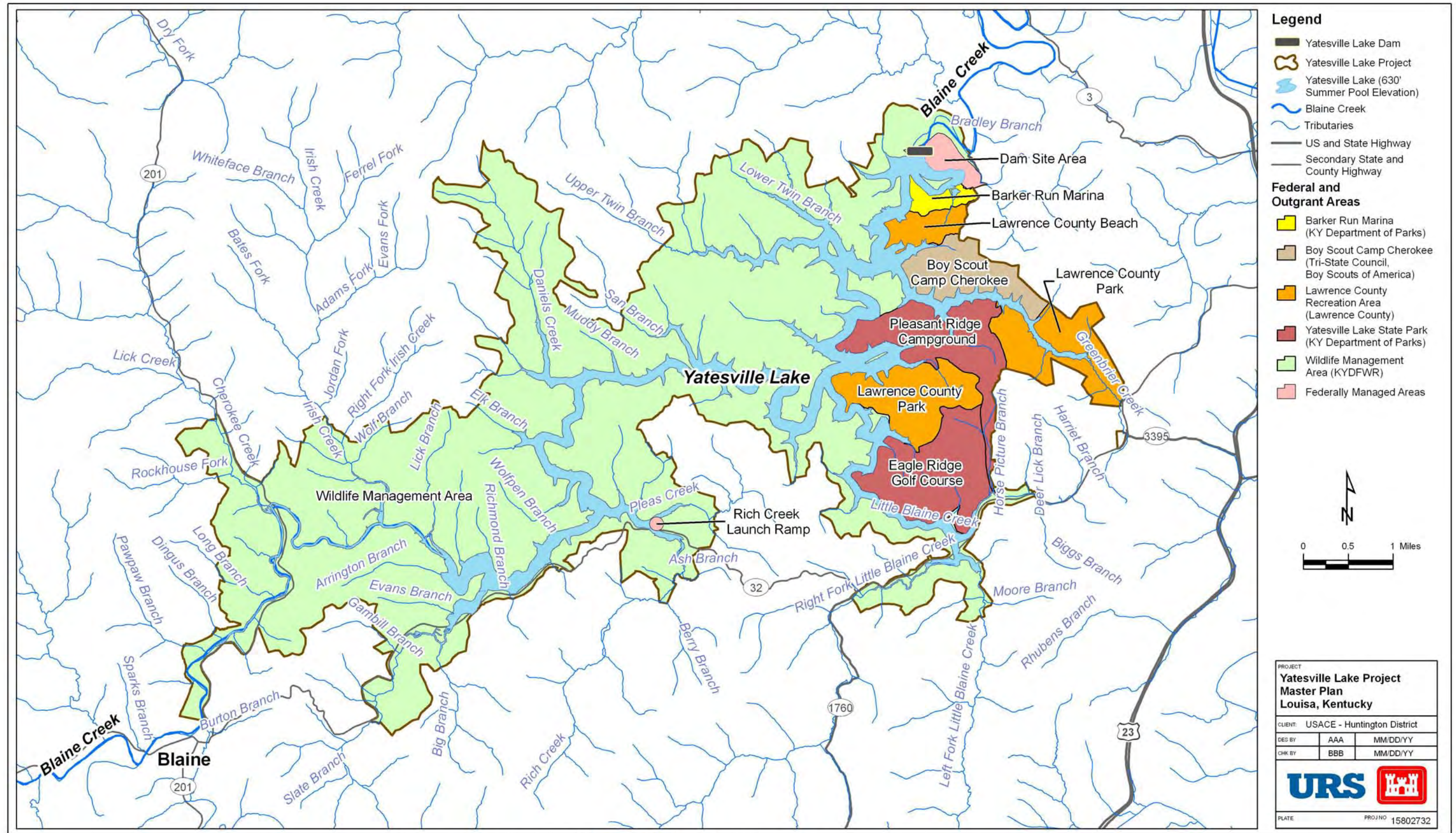


Figure 3-2: Surface Waters within the Project Area

This page intentionally left blank.

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 that have developed at junctions with tributaries; these features result in a shoreline of 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 (Figure 3-3).

The USACE regularly samples the water of Yatesville Lake at different depths for temperature, dissolved oxygen, acidity (or pH), and conductivity. KYDFWR 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 KYDFWR stocks the tailwater with rainbow and brown trout to increase recreational fishing opportunities at the Project.

3.1.1.2 Implications of Surface Water Resources for Project Development

Despite the impaired water quality in four of the tributaries to the lake, samples show that the water quality in the lake is suitable for fish habitat and safe for recreational activities including swimming. However, the relatively steep, rocky slopes limit access from the shore and can be a constraint in swimming-related activities.

The lake is well suited for boating and associated water recreational activities, such as water skiing, because of its surface area, depth, and water quality. The wider expanses of the lake are suitable for motorized boats, while coves and narrower reaches of the lake lend themselves to non-motorized boating activities. The USACE generally maintains a relatively consistent

This page intentionally left blank.

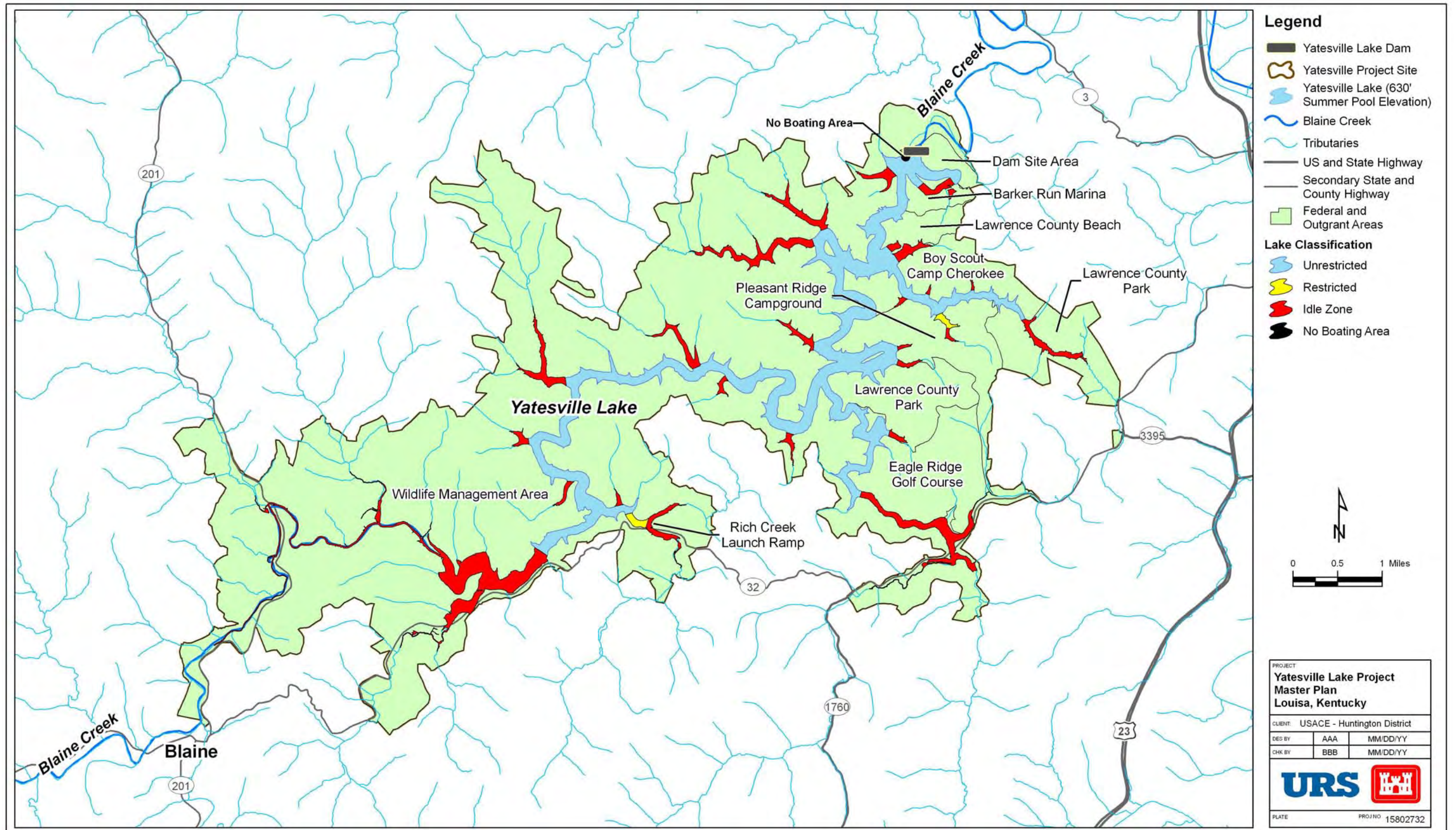


Figure 3-3. Water Surface Zoning

This page intentionally left blank.

summer pool elevation that is suitable and conducive to recreational boating and marina operations.

Because of the lake's water quality, surface area, and depth; the more than 100 miles of shoreline during the normal summer pool elevation; and the numerous coves and supporting tributaries, the lake and tailwater together support a diverse population of aquatic life. The lake can support a high level of recreational fishing pressure.

Because the primary authorized purpose of the Project is flood risk management, the lake is designed to store floodwaters to reduce flood risk downstream. The normal summer pool elevation of 630 feet NGVD can be increased to the maximum flood control pool elevation of 645 feet NGVD during a severe flood event.

Figure 3-4 shows the areas that would be inundated at an elevation of 645 feet NGVD compared to the normal summer pool elevation of 630 feet NGVD. The potential fluctuation in elevation may constrain development adjacent to the lake. As illustrated in Figure 3-4, the eastern and central sections of the Project would not be significantly affected by inundation, which is result of the steep slopes along the shoreline. The lack of inundation in the eastern and central sections provides the opportunity for recreational development relatively close to the lake. On the western end of the Project area, however, the potential inundation is significant, which limits project development opportunities close to the western portion of the lake and Blaine Creek. According to Section 2.2.1 of EM 1110-1-400, Engineering and Design Recreation Facility and Customer Services Standards (USACE, 2004b), a general guideline for planning purposes is to construct lakeside development above the 20 percent chance (5-year) flood event (639.5 feet NVGD).

3.1.2 Wetlands

In Section 404 of the Clean Water Act (33 U.S.C. § 1344), wetlands are defined as “... those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

This page intentionally left blank.

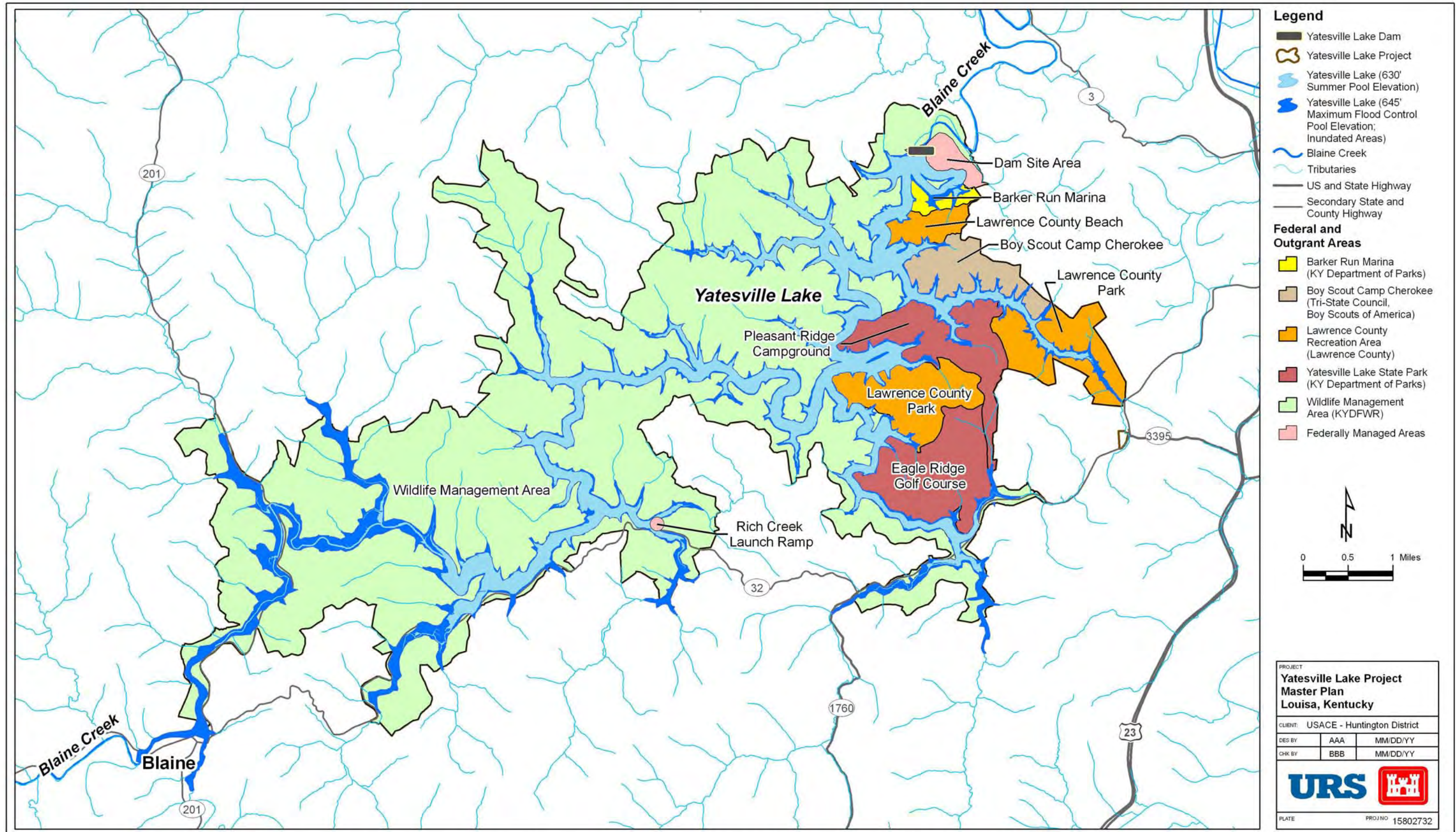


Figure 3-4: Inundation Areas Between Summer Pool Elevation and Flood Control Pool Elevation

This page intentionally left blank.

Wetlands typically include diverse vegetation that attracts a variety of wildlife species, especially when standing water is present. Various wildlife species are attracted to wetlands because of standing water and diverse vegetation. Some wildlife species are dependent on wetland ecology for food, water, and shelter and cannot survive in other environments. The wildlife attracts predators, including hunters. Because of the link between upland and aquatic systems, wetlands attract and support many species from adjacent ecosystems.

Wetlands are important in part because they hold and slowly release floodwater and snow melt. Wetlands also filter impurities out of surface water, recycle nutrients, and trap sediment. Wetlands provide recreational opportunities for bird watching, hunting, wildlife observation, and possibly fishing, canoeing, kayaking.

3.1.2.1 Existing Conditions

The National Wetland Inventory (NWI) maps from the USFWS are generalized maps that give approximate locations of wetland areas based on surveys. According to the NWI maps, 194 acres of wetlands existed in the Project area prior to impoundment. These wetlands tended to occur 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 in the Project area (see Figure 3-5), primarily along smaller tributaries and on the western side of the project where Blaine Creek is narrow with more gentle adjacent slopes.

In the early 1990s, three areas of wetlands totaling 21 acres were constructed within the WMA near the confluence of Cherokee Creek and Blaine Creek (Figure 3-5) by KYDFWR in cooperation with Ducks Unlimited, the USACE, the Natural Resource Conservation Service, and the Kentucky Power Company (Richard Mauro, Northeast Region Public Lands Wildlife Biologist, written communication, 14 December 2010). This type of project, often referred to as a “Green Tree Reservoir,” is implemented to artificially supply wildlife with desirable habitat where habitat has been identified as deficient. Constructed and natural wetlands have the same function, provide the same benefits, and are both critical to storage capacity, water quality, filtration of surface water, and wildlife habitat.

3.1.2.2 Implications of Wetland Resources for Project Development

Wetlands provide specialized habitat for select flora and fauna that would otherwise not thrive at the Project. Under EO 11990, Protection of Wetlands, Federal agencies are tasked with the responsibility to preserve and enhance wetland resources. Wetlands can be considered both a

constraint and an opportunity for Project development. They are a constraint because they are a sensitive environmental resource that should be preserved, thus limiting development opportunities for high intensity/density recreational activities. They also provide recreational opportunities as a result of their diverse habitat and wildlife, such as wildlife viewing, bird watching, and interpretive and educational activities. Prior to the implementation of any proposed actions, such as recreational development of an area, wetland delineations would need to be conducted, the potential impacts on any wetlands would need to be evaluated, and water quality certification would need to be obtained, if necessary.

3.1.3 Groundwater

Groundwater is subsurface water in geologic units called aquifers, which are recharged by precipitation and infiltration of surface waters. Groundwater supplies wells and springs and is generally pumped by wells for public and private use.

Groundwater is a vital, natural resource that is susceptible to contamination from a variety of activities. Contaminated groundwater can be difficult to remediate.

3.1.3.1 Existing Conditions

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 (see Figure 3-6). The Project area has 38 wells (Kentucky Geological Survey, 2010), but the condition of these wells is unknown. Although the Project area topography includes steep slopes, 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 (SO₄), sodium chloride (NaCl), and manganese (Mn) (Kentucky Geological Survey, 2011). Salty water commonly occurs at depths of 300 feet or more below the ground surface and may be encountered at more shallow levels. Although no groundwater contamination has been identified in the Project area, groundwater is not used to supply potable water at the Project; potable water at the Project is provided from the City of Louisa municipal water system.

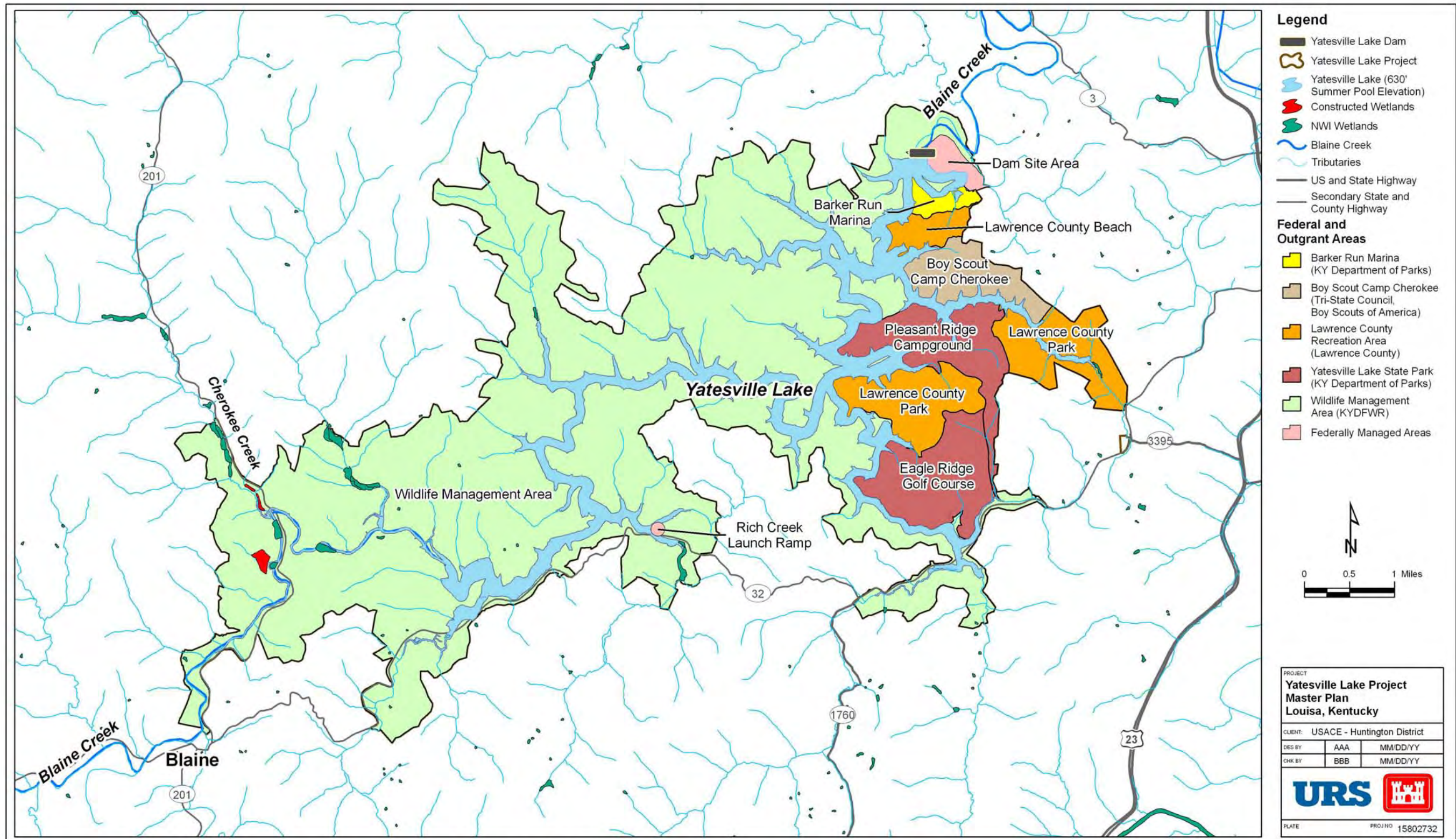


Figure 3-5: NWI-Delineated Wetlands

This page intentionally left blank.

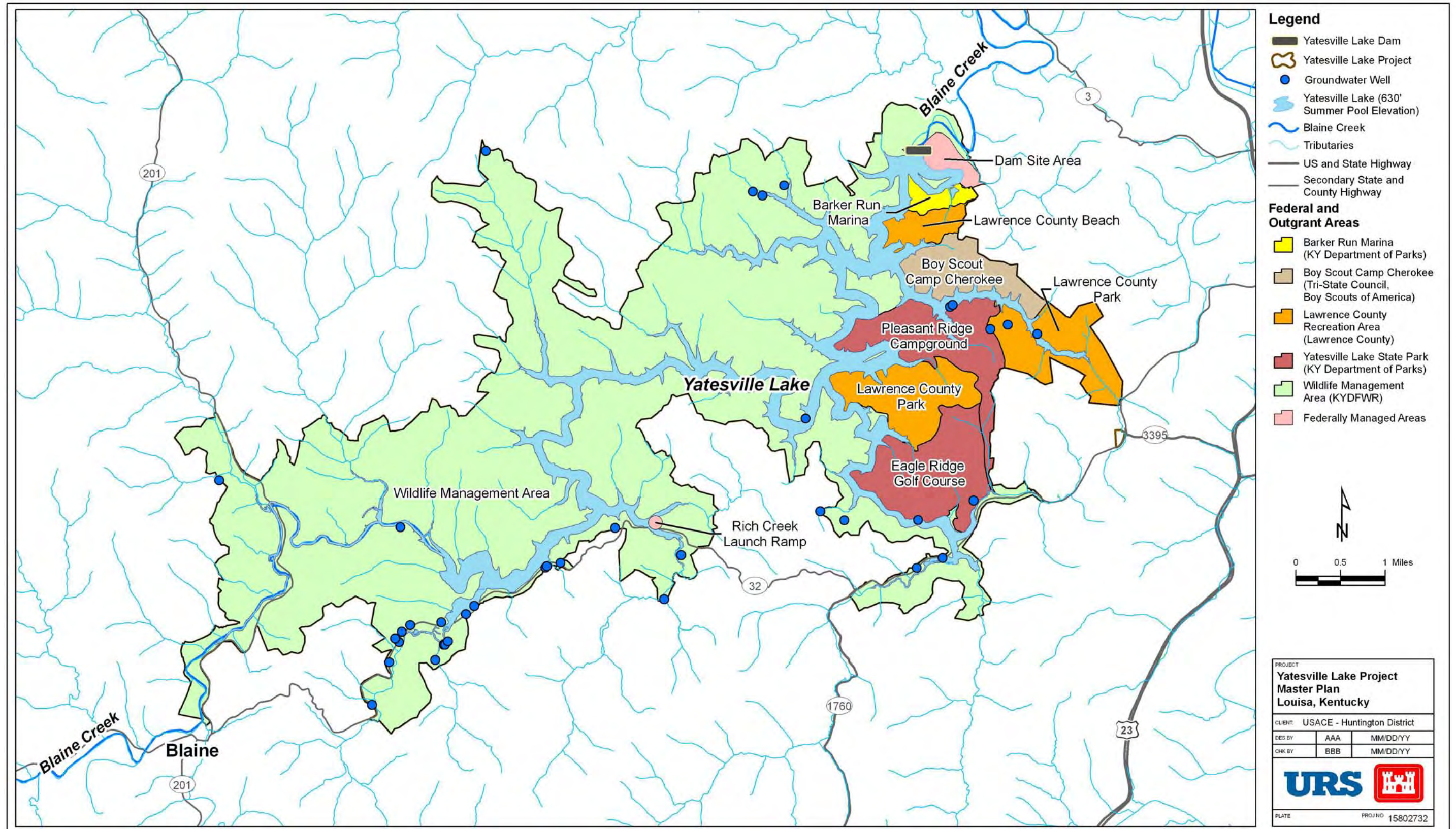


Figure 3-6: Groundwater Well Locations

This page intentionally left blank.

3.1.3.2 Implications of Groundwater Resources for Project Development

Although groundwater resources are not currently used at the Project, no constraints were identified that would limit the use or quantity of groundwater for development opportunities. Groundwater is a potential source of water for enhancing or developing additional wetlands, for irrigating the golf course or other significant maintained landscape areas, or providing potable water for Project development in remote areas.

3.1.4 Physiography / Topography

The physical features of the earth's surface are described in terms of physiography (landforms) and topography (elevation, slope, and orientation).

3.1.4.1 Existing Conditions

The Project is located in the Eastern Coalfields Physiographic Region of the Cumberland Plateau. 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 Pennsylvanian age 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 NGVD (McGrain and Currens, 1978). Approximately 75 percent of the Project area consists of steep slopes that are in excess of 15 percent. See Photograph 3-2.



Photograph 3-2: Typical Project Topography

3.1.4.2 Implications of Physiography/Topography Resources for Project Development

The topography at the Project provides significant scenic quality that enhances many of the recreational experiences, but it also poses development constraints. Areas with slopes of less than 15 percent have the highest development potential in terms of topography and provide opportunities for higher density recreational development. Slopes between 15 percent and 30 percent have more limited project development potential but can provide interesting and challenging opportunities for hiking, mountain biking, hunting, and wildlife and scenic viewing. Areas with slopes in excess of 30 percent typically have very limited development potential but provide wildlife habitat and visual buffers and add scenic quality.

As illustrated in Figure 3-7, the western and eastern segments of the Project area have the best potential to support development. The central area of the Project has the least potential for higher intensity recreational use because of the significant amount of terrain with slopes of more than 30 percent. The western segment of the project has the greatest potential for substantial development in terms of topography, but inundation of the gently sloping areas adjacent to Blaine Creek and tributaries may be a limiting factor (see Figure 3-4).

3.1.5 Geology, Soils, and Minerals

This section describes the geologic setting, soil characteristics, and mineral resources in the Project area.

3.1.5.1 Existing Geology Conditions

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 in the Project area (Kentucky Geological Survey, 2011): (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 comprises alternating layers of siltstone, sandstone, shale, coal, underclay, flint clay and limestone.

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

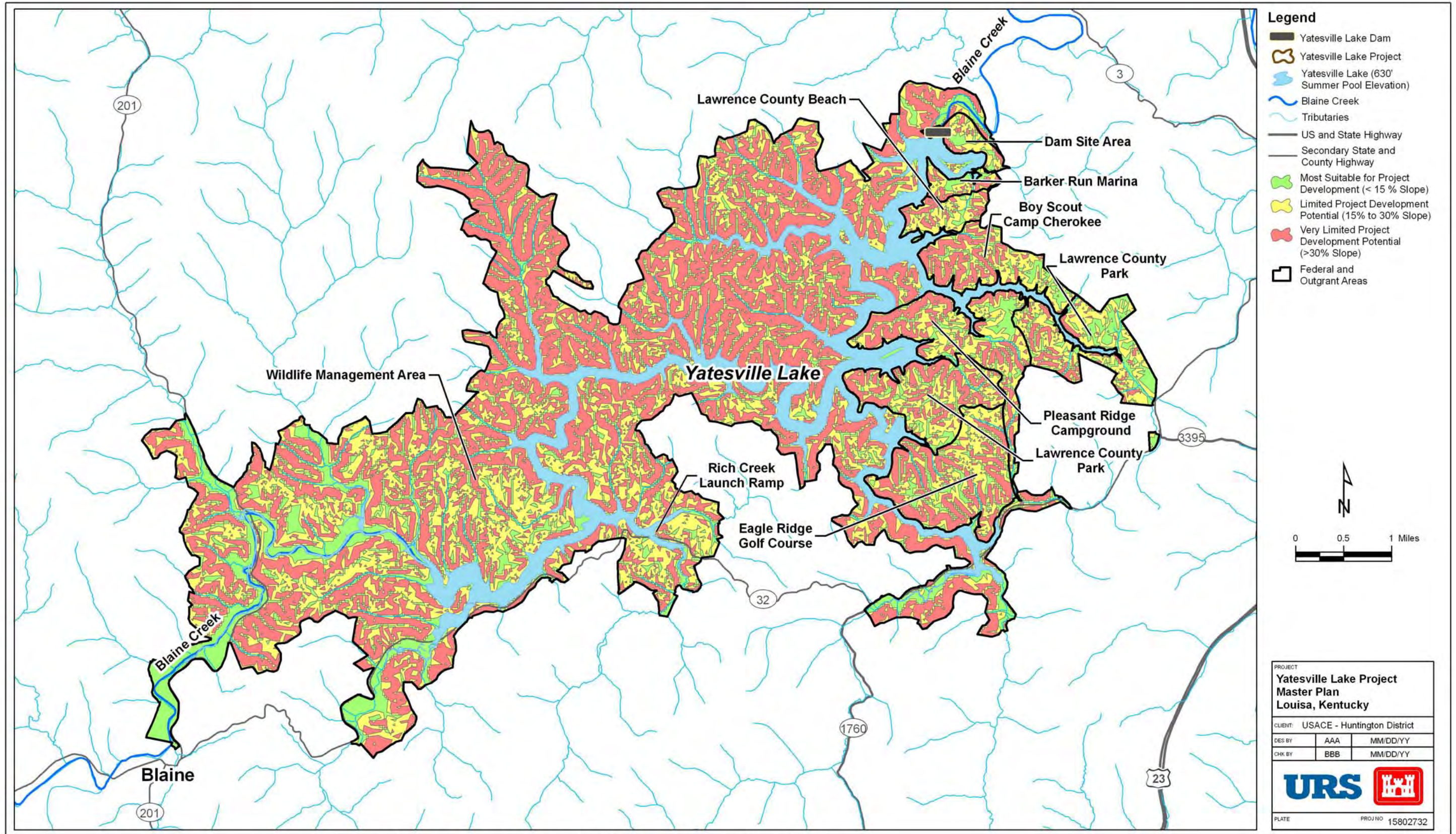


Figure 3-7: Topography Suitability for Project Development

This page intentionally left blank.

3.1.5.2 Existing Soils Conditions

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. The various soil types are grouped based on associations across the landscape. According to the 2005 Soil Survey of Lawrence and Martin Counties, Kentucky (NRCS, 2005), 21 groups (referred to as soil map units in Table 3-1) occur together at the Project, 13 of which occupy less than 1 percent of the area. Because of the limited presence of these 13 soil map units, they are excluded from further discussion. The remaining 8 soil map units are listed in Table 3-1, shown on Figure 3-8, and categorized as the following 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, it covers less than 0.5 percent of the Project 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 KYDFWR.

Table 3-1: Soils in 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.
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.

Table 3-1: Soils in the Project Area in Order of Predominance

Soil Map Unit Symbol	Soil Type	Typical Slope	Suitability Based on Slope and Soil Type
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)

3.1.5.3 Existing Minerals Conditions

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.

Two active coal mining sites are located just outside the Project area, and two active gas wells are located within Project boundaries (Figure 3-9). 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 Project purposes.

3.1.5.4 Implications of Geology, Soils, and Mineral Resources for Project Development

Geology and Soils

Many of the soils within the Project area, along with the steep sloping terrain on which they are found, are generally prone to severe erosion and have limited development potential for construction of roadways, trails, or small buildings or for the development of camping, picnicking, playground areas, or lawns. Some soils categorized as having limited development potential may be suitable for lower intensity recreational use such as hiking trails, wildlife observation, and hunting and even higher intensity recreational use where slopes are less than 15 percent. As shown on Figure 3-8, the soil types most suited to recreational development are relatively sparse within the Project area, with the largest concentrations of these areas occurring along tributaries and adjacent to the lake in the western and eastern portions of the Project area.

Minerals

Because the demand for coal, oil, and gas is anticipated to continue, there is potential for new extraction operations for minerals in the Project area. Coal, oil, and gas are leasable minerals governed by the Mineral Leasing Act of 1920 (30 U.S.C. §§ 181-263) and the Mineral Materials Act of 1947 (30 U.S.C. §§ 351 et seq.).

Since the government owns all subsurface mineral rights on Project lands, any future resource extraction would proceed through the Bureau of Land Management (BLM). The BLM 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.

Potential impacts of mineral extraction activities include the footprint of the extraction site and construction and operation of access roads. Mineral extraction within the Project boundary could infringe on general recreational areas or on fish and wildlife-related recreation, either directly or from pollutants that are a result of extraction operations.

This page intentionally left blank.

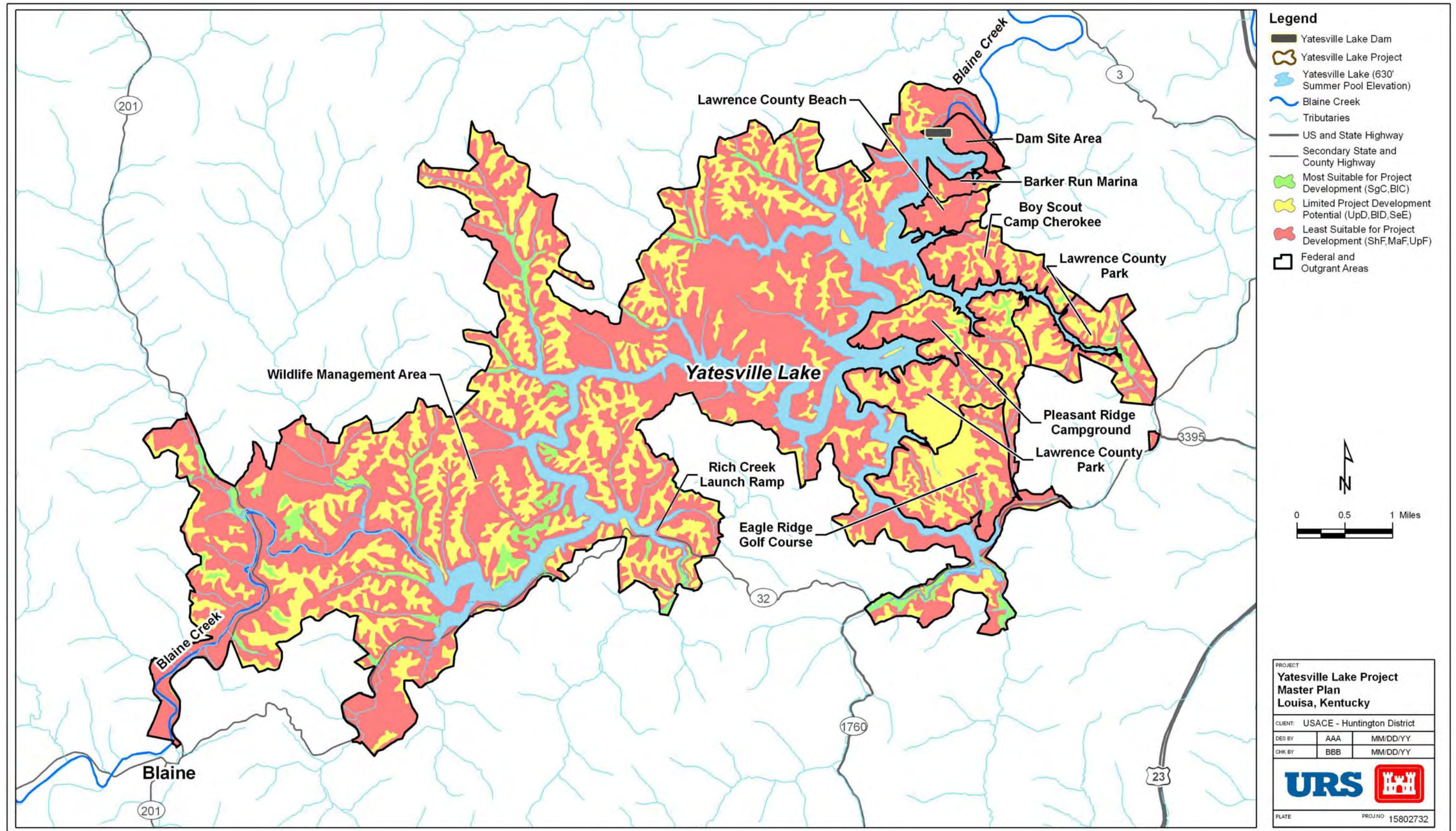


Figure 3-8: Soil Suitability for Project Development

This page intentionally left blank.

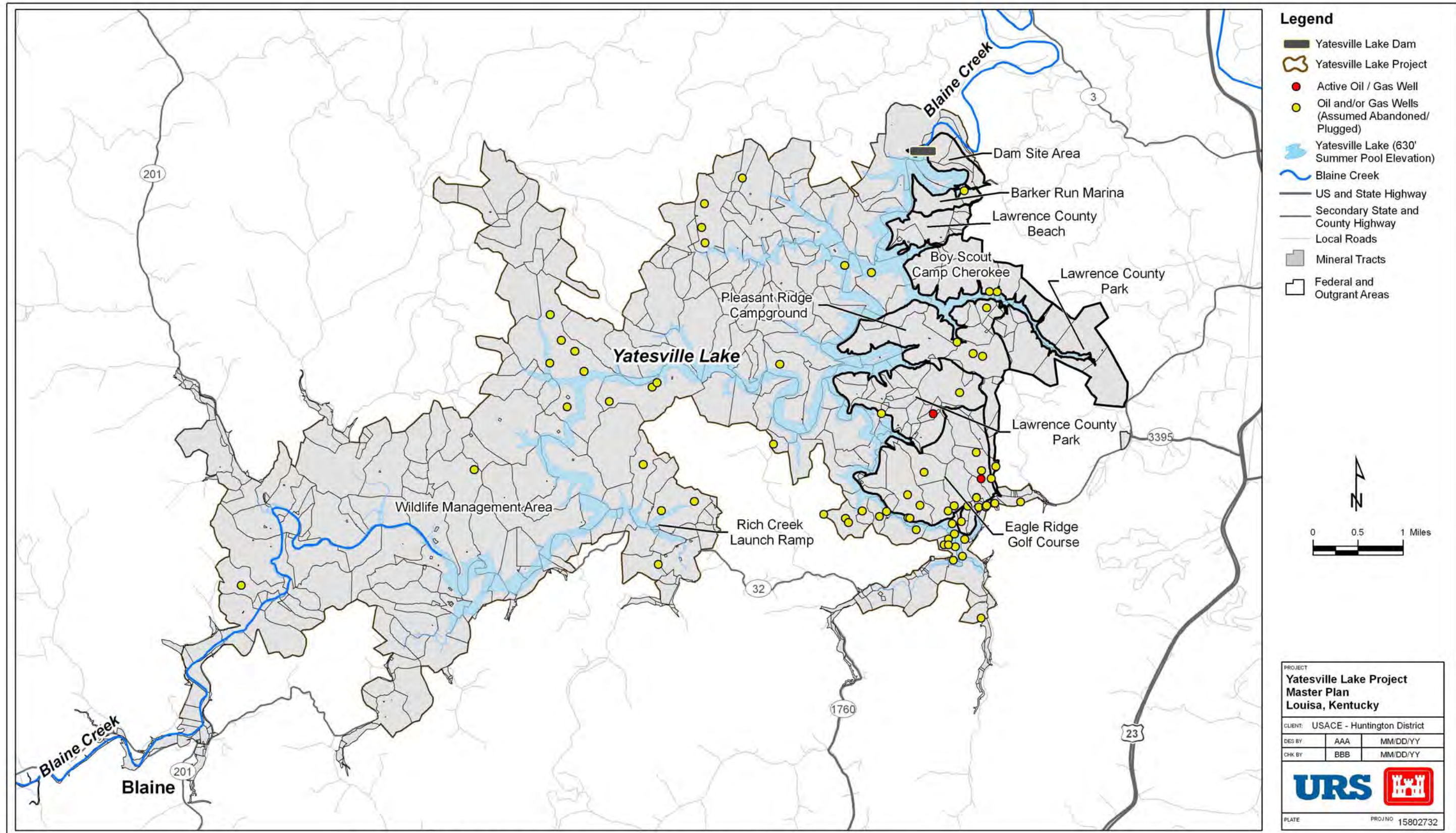


Figure 3-9: Mineral Tracts and Oil and/or Gas Well Locations

This page intentionally left blank.

3.1.6 Cultural Resources

As defined by the Advisory Council on Historic Preservation, historic property is 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 National Register properties.

3.1.6.1 Existing Conditions

A Historic Properties Management Plan (HPMP) for the Project area was completed in 2004. The HPMP contains a summary of the descriptions of the 134 archeological sites that were identified and recorded in the reservoir between 1970 and 2004. The plan 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 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. Identified archeological sites were primarily 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.

The Project area is divided into the following three impact zones:

- Conservation pool – below 605 above mean sea level (AMSL) and permanently inundated
- Littoral zone – from 605 to 630 AMSL and affected by seasonal fluctuations between the winter and summer pools
- Upland zone – above 630 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 the 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.

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 236 inventoried structures, only 10 have been determined to have local significance, and none has been recommended for the NRHP.

Since the HPMP was published in 2004, the only systematic survey that has been conducted in the reservoir occurred in 2011. 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.

3.1.6.2 Implications of Prehistoric and Historic Resources for Project Development

Resources in the conservation pool were originally situated in open field environments that were subject to deforestation, plowing, and reservoir clearing. These sites have been continuously inundated since 1992. The effect of 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.

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 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.

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. Evidence indicates that floodplains and dissected uplands have a high potential to contain sites in buried alluvial contexts. Upland slopes and the colluvial apron are also potential locations for deeply buried sites. Terrace locations in the Project area currently appear to have little potential to contain buried sites.

A systematic investigation of the entire project area has not been completed. As such, the distribution of identified sites is biased toward the littoral zone because most of surveys were conducted in the littoral zone. There is potential for the identification of additional sites in the more intensively studied inundation and littoral zones. Additional studies are required for a better understanding of the upland zone.

Proposed development should include a consideration of the identified sites and the recommendations for the treatment of these sites. Sites that are eligible or potentially eligible for the NRHP should be avoided or analyzed further before implementing any actions that have the potential to affect the sites. Avoidance measures and/or further analysis must be coordinated with the District archeologist. Actions that are proposed in areas that have not been surveyed require coordination with the District archeologist to determine whether a cultural resources survey is required.

The number and boundaries of previously evaluated real estate actions (e.g., installation of a pipeline) that have been approved by the Huntington District are not known. Geographic information system (GIS) mapping and cataloging of these smaller projects would eliminate the need for surveying. In the absence of mapping, coordination with the Huntington District archeologist would ensure that real estate actions are not subject to unnecessary resurveying. Cultural resources research, evaluation, and reporting must comply with all applicable Federal laws and regulations.

Priorities for cultural resources in the Project area are as follows:

1. Surveys of the littoral and upland zones during winter pool when most of the littoral zone is accessible
2. Stabilization and evaluation of recorded sites that are listed as potentially eligible or that need further investigation in order to determine NRHP eligibility.
3. Completion of archeological site forms for sites that were identified during the 2011 survey.
4. Assessment of artifact collections recovered in the Project area according to 36 CFR Part 79 guidelines.
5. Improvement of consultation and education efforts, including outreach to Native American

tribes, coordination with the Kentucky Heritage Council, training of project personnel, and site interpretation.

6. Update of the HPMP to include the GIS georeferenced boundary delineations and metadata of all surveyed areas, as well as locations of identified resources in the Project area.
7. GIS boundary delineations for cleared and all future real estate actions.

3.1.7 Scenic Qualities

Scenic qualities refer to the quality of the environment as perceived through visual senses.

3.1.7.1 Existing Conditions

As described previously, the topography of the Project area 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 that of the vegetation on adjacent slopes, ridges, and ravines such as post oak, Virginia pine, red oak, hemlock, and birch trees. See Photograph 3-3.



Photograph 3-3: Scenic View of Lake Framed by Vegetation

3.1.7.2 Implications of Scenic Qualities for Project Development

The Project area has significant scenic qualities and provides numerous opportunities for scenic vistas. However, enjoyment of the scenic qualities can be limited because of accessibility to the sites and obstruction of the views by vegetation. Constraints to developing additional viewsheds include topography, soil conditions, and vegetation—all of which must be evaluated prior to creating opportunities for additional scenic vistas.

3.1.8 Hazardous, Toxic and Radioactive Waste

Hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), are “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed.”

3.1.8.1 Existing Conditions

No HTRW issues were identified within the Project.

3.1.8.2 Implications of HTRW for Project Development

It is not anticipated that HTRW concerns will impact any Project development initiatives.

3.2 Biological Environment

The biological environment section provides a summary of the biological features of the Project area and planning constraints. The biological environment includes vegetation, terrestrial wildlife, aquatic resources, threatened and endangered species that may inhabit the Project, and critical and sensitive wildlife habitat.

3.2.1 Vegetation

The types of plants and the percentage of coverage in the Project area are discussed.

3.2.1.1 Existing Conditions

The majority of the land cover at the Project is forested (approximately 78 percent), broken by limited scattered open areas and grasslands (Figure 3-10) (USGS National Land Cover Database,

2001). Table 3-2 lists the land cover types in the Project area and the percentage of 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)

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 (*Fagus grandifolia*), yellow poplar (*Liriodendron tulipifera*), American basswood (*Tilia americana*), red oak (*Quercus rubra*), cucumber tree (*Magnolia acuminata*), and black walnut (*Juglans nigra*). Eastern hemlock (*Tsuga canadensis*) may be

present in some stands. Trees may grow very large in undisturbed areas, and 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 (*Betula alleghaniensis*), 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 (most red oak), yellow poplar, black cherry (*Prunus serotina*), and sweet birch (*Betula lenta*) (NatureServe, 2007).

The primary tree species within the Project are oaks (*Quercus* spp.), maples (*Acer* spp.), and hickories (*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). Because Eastern hemlocks are rapidly declining in Kentucky, 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.

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. However, these areas represent a small percentage of the total vegetation cover and are incorporated within the other land type categories shown in Table 3-2.

There is currently no plan for harvesting timber in the Project area; KYDFWR 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, KYDFWR 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 in the WMA. Native alder seedlings (*Alnus serrulata*) were planted on 1.5 acres in the Brushy Creek and SR 201 areas in 2010. KYDFWR endorses native alder plantings to provide a critical cover component for enhancing American woodcock (*Scolopax minor*) habitat. KYDFWR has existing plans for the direct seeding of 12 acres of native alder in bottoms along Brushy Creek in 2011 (Richard Mauro, Northeast Region Public Lands Wildlife Biologist, written communication, 14 December 2010); Brushy Creek joins Blaine Creek at the southwestern end of the lake.

A primary goal of the KYDFWR and USACE's comprehensive forestry management approach is to manage the forest to yield a healthy, sustainable forest. A key issue is controlling invasive species. Invasive species are problematic because they compete with native flora and fauna for the same resources. An invasive species is a species that is foreign to a particular region that out-competes native species for the same resources. At the Project, bush honeysuckle (*Lonicera* spp.), which is common to Kentucky, is an invasive species. Four species of bush honeysuckle are found in Kentucky. This species is a prolific seeder and is typically found near forest edges or in transition zones where sunlight is abundant. Because it grows rapidly and seeds prolifically, it out-competes the native vegetation that requires the same growing conditions. Kudzu (*Pueraria lobata*) is another invasive species at the Project. Bush honeysuckle and kudzu were both introduced to North America in the 19th century. Bush honeysuckle was introduced for ornamental purposes, while kudzu was introduced for erosion control (USDA, 2010a and 2010b). If these species are not monitored and managed, they can affect the native ecology. Both species can be managed chemically, mechanically, or physically.

A third invasive plant in the Project area is hydrilla (*Hydrilla verticillata*), an aquatic plant that was introduced to the United States for ornamental purposes in the early 1960s. If conditions are favorable, such as a long and warm summer, this plant spreads rapidly. It grows to the surface of the water and forms dense mats that interfere with recreational uses, water sports, and fishing. When the plant dies, the plant sinks and decomposes in the water column or on the bottom, and an over-abundance of decomposing plant material can affect the water quality. If uncontrolled, this plant can grow unabated in its growing season and ultimately affect the water chemistry and water quality. The plant can be controlled chemically, mechanically, or physically.

A fourth invasive plant in the Project area is the Tree-of-Heaven (*Ailanthus altissima*). This plant is a rapidly growing deciduous tree that was introduced to the United States in the 1700s (USDA, 2010e). It seems to be concentrated near the Yatesville Lake dam. The trees are problematic because they crowd out native species, emit an offensive odor, and can damage pavement and foundations of buildings with their vigorous root system. The trees can be managed chemically, mechanically, or physically.

Vegetation management in the Project also includes prescribed burning to maintain grasslands. Management on open lands by KYDFWR includes limited burning and cutting for maintenance of meadow habitats, which are valuable habitat for birds and other wildlife, to encourage a more desirable mix of wildlife-friendly vegetation and to reduce the fuel layer found naturally in the ecosystem.

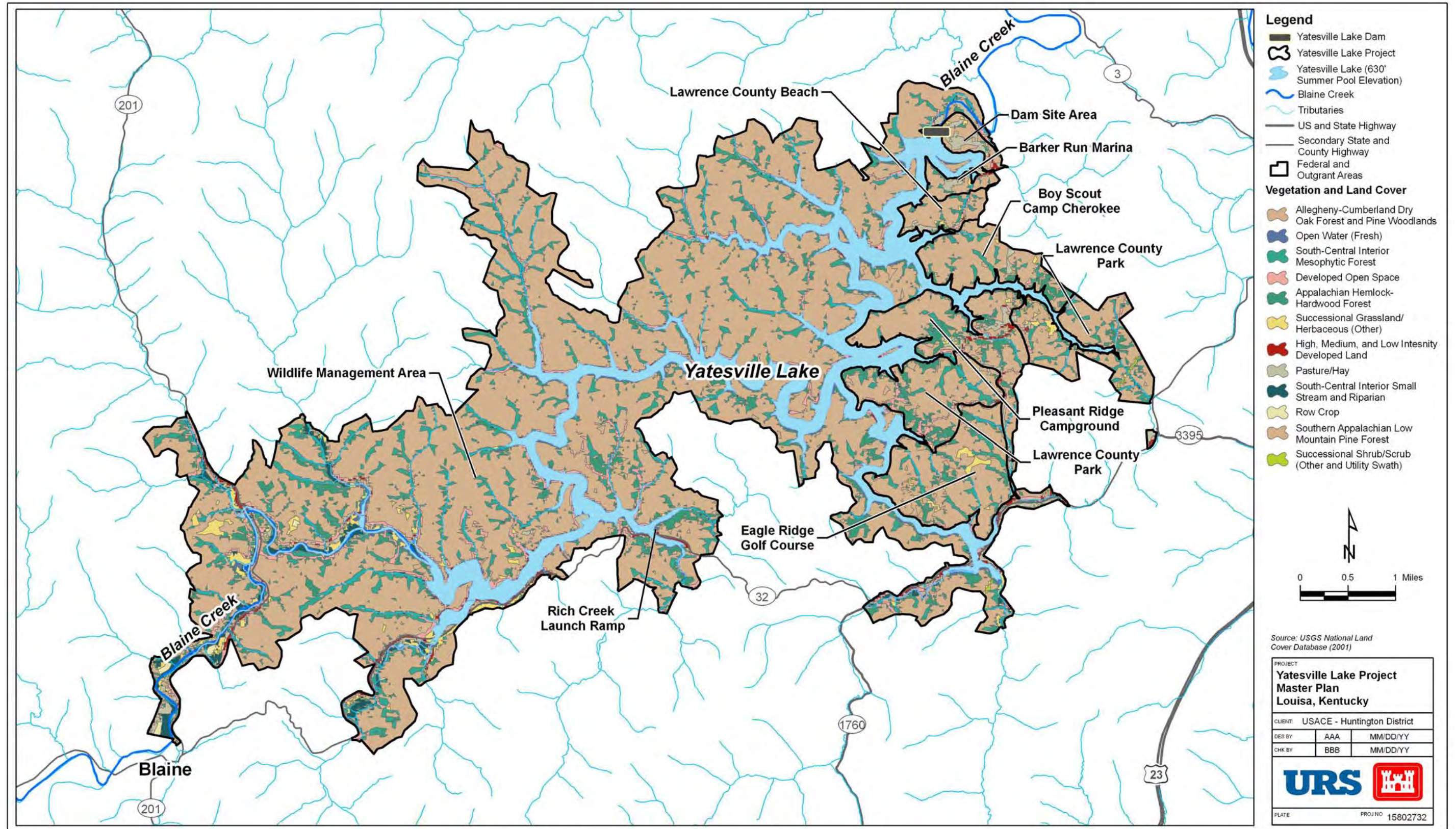


Figure 3-10: Vegetation and Land Cover

This page intentionally left blank.

In addition, the KYDFWR occasionally seeds open areas with native grass seed to augment or supplement the naturally occurring vegetation and provide benefit to small mammals, deer, turkeys, and birds by providing nesting areas, bedding areas for deer, and habitat for insects.

3.2.1.2 Implications of Vegetative Resources for Project Development

Vegetative resources enhance and support development and recreational opportunities at the Project by providing an aesthetically pleasing natural setting and landscape buffer. The forest and associated open fields provide habitat for a variety of wildlife, affording opportunities for wildlife viewing. The forest also provides suitable habitat for target game species including deer and wild turkey. Vegetation and tree roots slow stormwater runoff, providing erosion control capabilities, especially in areas with steep slopes surrounding the lake and tributaries.

The Project contains many areas that are unique and/or environmentally sensitive, including the bottomland hardwood habitats, which are becoming scarcer and consequently more valuable; and Eastern hemlocks, which provide a unique ecology, but are rapidly declining in Kentucky. These areas are critical to the healthy ecology that supports the recreational activities at the Project and provides opportunities for future activities. Areas of the forest where the canopy is dense and unbroken provide a rapidly diminishing resource that attracts a number of neo-tropical birds, some of which are in decline. A good example is the cerulean warbler (*Dendroica cerulea*), which requires this specific ecology.

Properly managed, vegetative resources will continue to provide recreational opportunities at the Project, and the resource could support many opportunities for development activities. Protecting environmentally sensitive or unique vegetative resources can be a constraint when planning for future development activities—special consideration should be given to avoid or protect these areas.

3.2.2 Terrestrial Wildlife

Terrestrial wildlife is defined as the animals that are found on land and in the air and includes amphibians, birds, mammals, and reptiles.

3.2.2.1 Existing Conditions

According to the KYDFWR, the Project area supports more than 25 amphibian species, 150 bird species, 50 mammal species, and 20 reptile species (KYDFWR, 2010g). The scientific and common names of the species most commonly found at the Project are listed in Table 3-3..

Table 3-3: Animals Common to the Project Area

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

Table 3-3: Animals Common to the Project Area

Taxonomy	Common Name	Scientific Name
	racer	<i>Coluber constrictor</i>
	rough green snake	<i>Opheodrys aestivus</i>

Sources: KYDFWR (2010b); USACE (2001)

The KYDFWR implemented wildlife restoration within the WMA when, in the 1970s and early 1980s, white-tailed deer (*Odocoileus virginianus*) and wild turkey (*Meleagris gallopavo*) (shown in Photograph 3-4) were relocated from other areas of Kentucky and other states. The KYDFWR 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, Northeast Region Public Lands Wildlife Biologist, written communication, 14 December 2010).



Photograph 3-4: Wild Turkey on Project Lands

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). KYDFWR 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.

The KYDFWR 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]), such as planting millet and wheat, to provide forage areas.

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

Although none of the main North American flyways cross the Project area, many neo-tropical migrants can be found in eastern Kentucky. Neo-tropical birds breed in North America and spend the non-breeding season in Mexico, the Caribbean, and Central and South America. The annual migration of neo-tropical 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 neo-tropical species return south (KSNPC, 2007).

3.2.2.2 Implications of Terrestrial Wildlife for Project Development

Terrestrial wildlife resources support both consumptive and non-consumptive recreational activities at the Project. White-tailed deer and wild turkey are the most popular game species, but dove, woodcock, waterfowl, and various small game species also provide opportunities for hunters at the Project. Non-consumptive recreational activities supported by terrestrial wildlife at the Project include wildlife viewing and birding (neo-tropicals and year-round species).

Wildlife management provides opportunities for stewardship, support for species that are in decline, and preservation of habitat. The concept of stewardship, described in the Environmental Stewardship and Maintenance Guidance and Procedures pamphlet (USACE, 1996), is a natural resources management tool that aims to ensure the conservation, preservation, or protection of resources for present and future generations by focusing on sustaining of ecosystems.

Properly managed, terrestrial wildlife will continue to provide recreational opportunities at the Project, and the resource could support many opportunities for development activities.

No significant issues related to terrestrial wildlife were identified that would constrain development activities.

3.2.3 Aquatic Resources

Aquatic resources refer to the animal life in surface waters including streams, wetlands, and the lake.

3.2.3.1 Existing Conditions

Yatesville Lake sustains a diverse composition of aquatic species. Some of the fish species found in the lake are listed in Table 3-4.

**Table 3-4: Some of the Fish Species
in Yatesville Lake**

Common Name	Scientific 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>Ctalurur 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>
redeer 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 tailwater below the dam is stocked annually by KYDFWR with rainbow and brown trout in April, May, and November (KYDFWR, 2010g).

Semi-aquatic species include amphibians (see Table 3-3). Amphibians are referred to as semi-aquatic because they spend half of their life cycle in aquatic ecosystems and half in terrestrial ecosystems. The Project area supports 25 species of amphibians, some of which are 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.

The lake provides habitat for many species. In development of the lake, timber was left in many of the cove areas so that it would be below the summer pool elevation 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 KYDFWR 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 structure like rocky bottoms, sandy bottoms, pooling areas, rock outcrops, and grassy areas all work together to provide habitat for aquatic life.

3.2.3.2 Implications of Aquatic Resources for Project Development

Aquatic resources support recreational fishing at the Project, including both the lake and the tailwater. These resources are healthy and can support a high level of recreational fishing pressure. As such, the aquatic resources are not considered a constraint, but an opportunity when planning for development activities.

3.2.4 Threatened and Endangered and Species of Special Concern

Threatened, endangered, and species of special concern are sensitive and protected biological resources including plant and animals that are listed for protection by the USFWS or the Commonwealth of Kentucky. Under the Federal Endangered Species Act of 1973 (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.

3.2.4.1 Existing Conditions

In February 2009, the Kentucky State Nature Preserves Commission (KSNPC) listed 13 species for Lawrence County as State-listed endangered or threatened, or species of special concern (KSNPC, 2009a). This list includes four vascular plant species, three freshwater mussel species, two fish species, two bird species, one mammal species, and one insect species. Threatened or endangered species that may occur at the Project are shown in Table 3-5 along with their State and Federal status.

Table 3-5: Threatened and Endangered and Species at Yatesville Lake

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

Of the four vascular plant species, two are listed as threatened (umbel-like sedge [*Carex tonsa* var. *rugosperma*] and small yellow Lady's-slipper [*Cypripedium parviflorum*]) and presently occur in the county. Yellow troutlily (*Erythronium rostratum*) is listed as a species of special concern and is also present in the county. Common silverbell (*Halesia teiraptera*) is listed as endangered but has not been seen for at least 20 years in the county. Of the three freshwater

mussel species, two (longsolid [*Fusconata subrotunda*] and little spectaclecase [*Villosa lienosa*]) are listed as species of concern (KSNPC, 2009b).

Fanshell (*Cyprogenia stegaria*) has both a State and Federal listing of endangered. Longsolid is listed as currently present in Lawrence County while both little spectaclecase and fanshell are known to be extirpated from the county. For the two fish species, northern brook lamprey (*Ichthyomyzon fossor*) is listed as threatened, and trout-perch (*Percopsis omiscomaycus*) is listed as a species of concern. Both species are listed as being extirpated from the county. Sharp-

shinned hawk (*Accipiter striatus*) is listed as a species of concern, and bald eagle (*Haliaeetus leucocephalus*) is listed by the State as threatened but recently delisted from the Federal list by the USFWS. Both species are known to be currently present in the county. Indiana bat (*Myotis sodalists*) is the only mammal that is listed as endangered on both State and Federal lists. The Indiana bat is known to occur in the county. The only listed insect is perlid stonefly (*Acroneuria kosztarabi*). The stonefly is a species of concern and is presently known to occur in the county (KSNPC, 2009b).

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.

3.2.4.2 Implications of Threatened and Endangered Species and Species of Special Concern on Project Development

As no federally listed threatened or endangered species have been identified as living or hibernating within the Project area, threatened or endangered species should not limit development of recreational activities at the Project. Nevertheless, habitat for these species should be preserved. One State-listed species, the bald eagle, has been identified in the Project area. Recognition and preservation of sensitive or critical habitat in the Project area for bald eagles may result in constraints, as well as opportunities, when planning for development activities. The *National Bald Eagle Management Guidelines* (USFWS, 2007) notes that depending on the type of structure and visibility from the nest, new construction should be restricted within 330 to 660 feet from a nest. Timber operators (e.g., clear cutting, removal of overstory trees) should be avoided within 330 feet of a nest at any time and avoided within 660 feet of the nest during breeding season. For the following activities, no buffer is necessary

around nests outside the breeding season and should be avoided with 330 feet of the nest during breeding season: (1) use of off-road vehicles, (2) use of motorized watercraft (including jet skis and personal watercraft), and (3) non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting). Loud, intermittent noises such as blasting should be avoided within 0.5 mile of active nests.

3.2.5 Critical Habitat

In Section 7 of the Endangered Species Act (16 U.S.C. § 1536), critical habitat is defined as an area that is essential to the conservation of a species, although the area need not actually be occupied by the species when it is designated.

3.2.5.1 Existing Conditions

The loss of critical habitat is one of the most common problems facing threatened and endangered species.

There is no designated critical habitat under Section 7 of the Endangered Species Act present within the Project area. The KSNPC has not identified any State Nature Preserves or State Natural Areas within the Project area (KSNPC, 2010).

3.2.6 Environmentally Sensitive Areas

Environmentally sensitive areas are typically areas that are designated as special status or protected by Federal or State statutes or legislation. Extremely rare or unique natural resource features may also be considered as potentially environmentally sensitive areas.

3.2.6.1 Existing Conditions

Examples of environmentally sensitive areas include protected critical habitat, threatened and endangered species, cultural resources under Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), and wetlands.

The Project area contains other unique species and habitats that could not be clearly located based on available data but that may also be considered as sensitive environmental areas including:

- Bottomland hardwood areas
- Areas of forest where the canopy is dense and unbroken, which provide a rapidly diminishing resource and habitat for the cerulean warbler

3.2.6.2 Implications of Environmentally Sensitive Areas for Project Development

Preservation of environmentally sensitive areas may result in restrictions or constraints for resource development but may provide interpretative, educational or eco-tourism opportunities.

4.0 RECREATION PROGRAM ANALYSIS

This section contains the results of an analysis of the recreation program at the Project. The intent of the analysis was to identify the current and future recreational demands that may affect the resources at the Project. Changes in population, preferences, and alternative recreational facilities may change the demand for the recreational activities in the region.

This section begins with the information that was used as a baseline for the analysis. Section 4.1 is an overview of the Project areas, Section 4.2 is a summary of the recreational activities currently available to visitors and the number of visitors, Section 4.3 defines the recreational area of influence, and Section 4.4 describes comparable activities that occur in the area of influence.

The results of the analysis are presented in the remainder of Section 4.0. The results consist of recreational trends (Section 4.5), potential recreational activities at the Project (Section 4.6), projected demand for recreational activities at the Project (Section 4.7), and the implications of the projected demand (Section 4.8).

4.1 Overview of the Project Areas

The Project comprises several areas that are managed by Federal, State, county, and nonprofit entities (see Figure 4-1). This section describes the primary areas, subareas, and existing amenities. The primary areas and managing entities are listed in Table 4-1. Table 1-1 lists the acreages of each area and the major facilities and activities (not including Yatesville Lake), and Section 7.0 contains figures showing the features of the areas.

4.1.1 Dam Site Area

The Dam Site Area comprises the Yatesville Lake dam, Tailwater Area, Project Office and Information Center, interpretive trails, and a flat, open area that can be used for activities requiring open space.

Table 4-1: Primary Areas of the Project and the Managing Entities

Primary Area	Managing Entity
Dam Site Area	USACE
Rich Creek Launch Ramp	USACE
Barker Run Marina	Kentucky Department of Parks
Yatesville Lake State Park (includes Pleasant Ridge Campground and Eagle Ridge Golf Course)	Kentucky Department of Parks
Wildlife Management Area	Kentucky Department of Fish and Wildlife Resources
Lawrence County Recreation Area (includes Lawrence County Park and Lawrence County Beach)	Lawrence County
Boy Scout Camp Cherokee	Tri-State Council of the Boy Scouts of America
Yatesville Lake	USACE

USACE = U.S. Army Corps of Engineers

The Dam Site Area and the surrounding terrain are hilly, steep, and scenic. The entry drive to the Dam Site Area offers excellent views of the lake and the surrounding woods. The Project Office and Information Center (see Photograph 4-1) offer exhibits and project information, maps, water safety information, and a history of the area. The Dam Site Area also has an oil well exhibit (see Photograph 4-2) and native grassland plots. An approximately 1.5-mile Environmental Interpretive Trail surfaced with a mixture of concrete and gravel is located near the Project Office and Information Center.



Photograph 4-1: Project Office and Information Center at the Dam Site Area



Photograph 4-2: Oil Well Exhibit at Dam Site Area

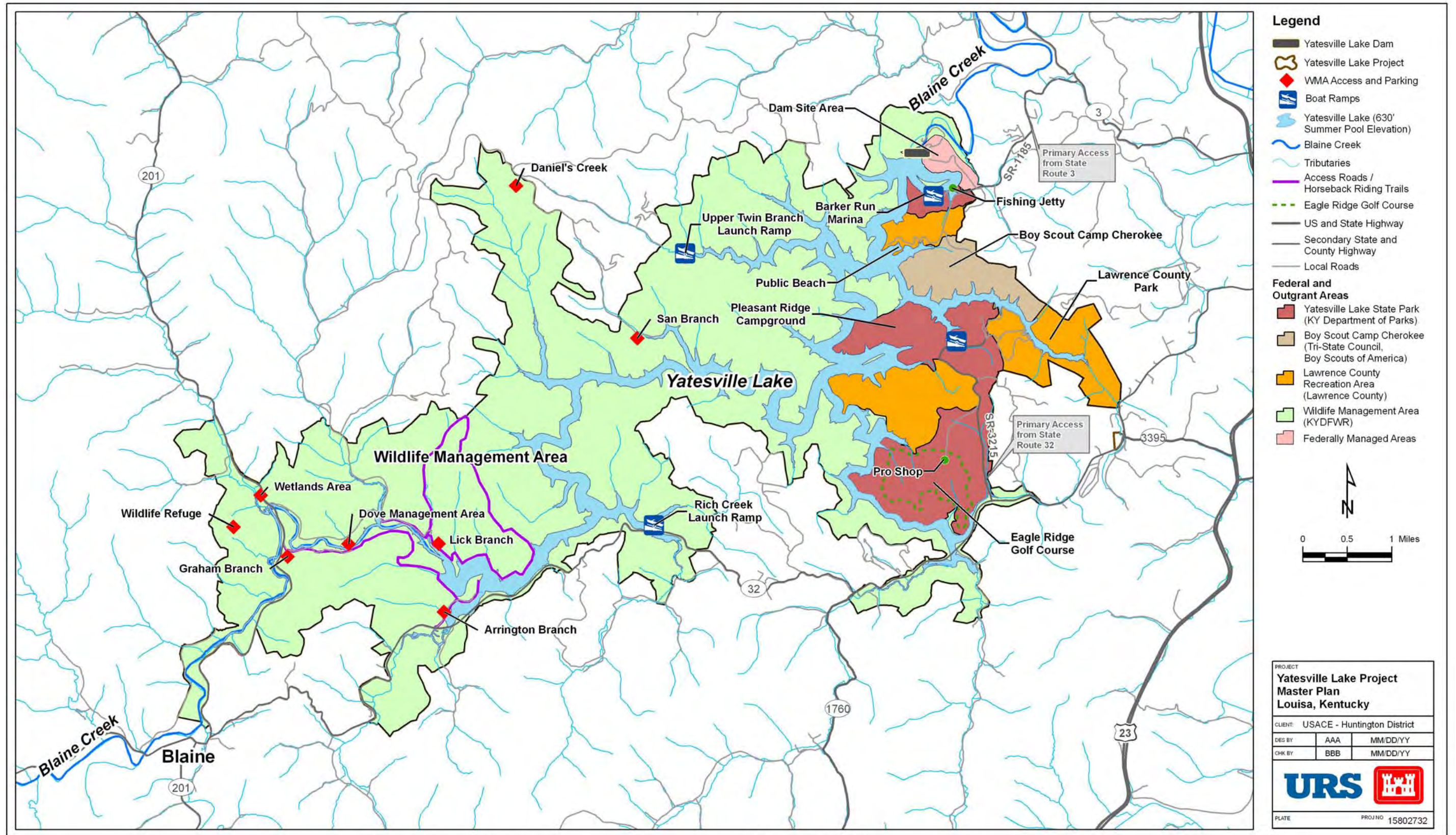


Figure 4-1: Existing Recreational Areas and Major Facilities

This page intentionally left blank.

Benches along the trail offer views of the lake. A parking area for visitors has 4 spaces for vehicles with trailers, and 62 general parking spaces.

The KYDFWR stocks the tailwater with rainbow and brown trout in April, May, and November. A gated operational ramp provides agency personnel access to the tailwater. A small gravel parking area is available for visitors to the area.

Public restrooms are provided at the Project Office and Information Center during business hours. Potable water to the area is provided by the Louisa, Kentucky municipal water system. Wastewater is handled through septic fields and lagoons.

4.1.2 Rich Creek Launch Ramp

The Rich Creek Launch Ramp consists of a two-lane boat ramp, floating courtesy dock (see Photograph 4-3), and a gated access road to the WMA. The courtesy dock is constructed of plastic decking and can accommodate two boats. A 50-space parking lot can accommodate vehicles with trailers and passenger vehicles (see Photograph 4-4).



**Photograph 4-3: Courtesy Dock
at Rich Creek Launch Ramp**



**Photograph 4-4: Parking Area
at Rich Creek Launch Ramp**

4.1.3 Barker Run Marina

Barker Run Marina (see Photograph 4-5) is managed by the Kentucky Department of Parks and consists of a 144-slip marina, a 4-lane boat ramp (see Photograph 4-6), fishing jetty, and other day-use facilities (e.g., picnic area, hiking). Three types of slips are available for rent: 50-foot slips for houseboats, 22-foot covered slips, and 22-foot uncovered slips. Overnight slips, pontoon boats, and john boats are also available for rent. The marina has fuel facilities and a small general store.



Photograph 4-5: Barker Run Marina



Photograph 4-6: Barker Run Marina Boat Ramp

A four-lane boat ramp and courtesy loading dock are available for launching boats. Three parking areas with a total of 300 spaces support the marina. Two of the parking areas are near the courtesy dock and can accommodate vehicles with trailers. The third parking lot is for passenger vehicles.

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. Resource managers and operators have expressed a need to reduce congestion, which could be accomplished by adding courtesy docks at the boat ramp and near the picnic shelters.

There are two picnic shelters for visitors—a large shelter with 10 picnic tables and a smaller shelter with 4 picnic tables. The shelters are near the parking areas for vehicles with trailers. Both shelters have electricity, lights, and a charcoal grill. The large shelter has a water spigot. Other amenities adjacent to the shelters include horseshoe pits, swings, a playground, and benches. There is a high demand for the shelters that are reserved most weekends during the recreation season from late spring through fall. Restrooms are available approximately 200 yards from the picnic shelters.

The marina area has other recreational opportunities and support facilities for visitors. Fishing opportunities are provided at a fishing jetty (see Photograph 4-7), which has dusk-to-dawn lights, and at a fishing lagoon near the entrance to the area. The lagoon is connected to the lake via a culvert.



Photograph 4-7: Fishing Jetty at Barker Run Marina

The Mary Ingles Trail System (MITS) originates at the marina and passes through Yatesville Lake State Park. MITS is a Community Millennium Trail and a National Recreation Trail and is part of the Jenny Wiley Heritage Trail By-Way System. MITS comprises six separate trail loops in the Project area: three primitive nature, rugged, wooded hiking trails; two paved exercise paths; and one nature trail (American Trails, 2009). The total length of the trail loops is 8 miles. The nature trails were designed to follow pre-existing deer paths and logging roads in order to minimize ecological impact. One loop provides an overlook of the fishing pond, picnic pavilion, and marina. Two other loops offer scenic views of Yatesville Lake.

4.1.4 Yatesville Lake State Park

Yatesville Lake State Park is managed by the Kentucky Department of Parks and comprises the Pleasant Ridge Campground and Eagle Ridge Golf Course.

4.1.4.1 Pleasant Ridge Campground

Pleasant Ridge Campground offers the opportunity for a high-quality recreational experience. The campground has three camping areas with a total of 47 campsites (see Photograph 4-8). The three areas offer distinct camping experiences.



Photograph 4-8: Typical Campsite at Pleasant Ridge Campground

The largest camping area has 27 recreational vehicle (RV) campsites, which can accommodate RVs and tents. Each campsite is equipped with electricity (20-, 30-, and 50-ampere service), a

pad, water spigot, lantern hook, picnic table, trash receptacle, and a fire ring or grill. All of the pads are flat with a gravel surface except for two campsites that have a concrete surface. There is a central dump station for sanitary disposal services. Each campsite has a parking pad that allows back-in entry. Campsites are booked for most of the recreation 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.

A central bathhouse provides facilities for these two camping areas. The bathhouse has four showers each in the men's and women's bathrooms and a laundry room with two washers, two dryers, and vending for detergent and fabric softener. Water is provided from a public water system. Wastewater is handled through septic fields and lagoons.

The third camping area has 16 tent campsites and is accessible only by boat, hiking, or authorized vehicle. These remote campsites are equipped with a picnic table, lantern hook, and fire ring or grill. Three water spigots and two chemical toilets serve this area. These sites are used less than the sites with direct vehicle access. They are typically fully booked during the holiday weekends and about 40 percent occupied the remainder of the camping season.

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.

4.1.4.2 Eagle Ridge Golf Course

The Eagle Ridge Golf Course (see Photographs 4-9 and 4-10) consists of a year-round 18-hole golf course, driving range, clubhouse, and cart barn. The golf course is considered one of the top courses in eastern Kentucky. The clubhouse has a pro shop, which offers food and limited equipment, and a patio with tables and chairs overlooking the driving range. The driving range has both natural grass and matt tees. A practice sand bunker is also available. The parking area for the course has space for 70 vehicles.



**Photograph 4-9: Hole 6
at Eagle Ridge Golf Course**



**Photograph 4-10: Typical Fairway
at Eagle Ridge Golf Course**

Water supply to the golf course is provided by the City of Louisa. Due to distribution issues, the golf course is not able to receive an adequate supply of water to meet their irrigation needs. Therefore, Yatesville Lake State Park has sought permission to draw water from the lake via a surface pipe along the access road for irrigation purposes.

4.1.5 Wildlife Management Area

The Wildlife Management Area (WMA), which is managed by the Kentucky Department of Fish and Wildlife Resources, is a very scenic part of the Project, with high-quality visual areas. The habitat is managed to support a great number and variety of wildlife species.

Eight gravel parking areas (see Figure 4-1) with a total capacity of approximately 80 vehicles allow access to trails in the WMA and to Yatesville Lake for bank fishing. Parking is also permitted along the roads in the WMA.

The WMA is well used for hunting, with approximately 15,000 acres open for hunting a variety of game. The peak hunting times are in the spring for turkeys and in the fall for white-tailed deer. A 7-acre area has been designated for dove hunting, and wetlands provide areas that can be used for duck hunting. Some wetlands are closed to hunting in December and January to provide a refuge for waterfowl.

The WMA contains approximately 15 miles of multi-use trails for hunting, horseback riding, and hiking. The single-lane Twin Branch boat ramp in the northern part of the WMA provides boat access to the lake (see Photograph 4-11). A gravel visitor parking lot is adjacent to the boat ramp.

There are no restroom facilities in the WMA. Camping is not permitted in the WMA, and bicycling is not allowed on the trails.



Photograph 4-11: Twin Branch Boat Ramp Area

4.1.6 Lawrence County Recreation Area

The Lawrence County Recreation Area is managed by Lawrence County and comprises Lawrence County Park and Lawrence County Beach.

4.1.6.1 Lawrence County Park

Lawrence County Park offers a mix of cabins and campsites for overnight camping, approximately 12 miles of trails, a conference center, picnic shelters, music pavilion, swimming area, and other amenities.

There are currently nine year-round cabins for rent (see Photograph 4-12). The cabins are a mix of one-, two-, three-, and four-bedroom. Each has electricity, water, and a complete kitchen (including cooking and eating utensils). Sheets, blankets, and pillows are provided. Parking is available at each cabin. The cabins are in high demand during the summer.



Photograph 4-12: Cabin at Lawrence County Park

The campsites are in two areas. One area has 11 RV campsites that can accommodate RVs and tents, and the other area has 12 campsites for tents only. The RV sites consist of gravel pads with 20-, 30- and 50-ampere electrical service, lantern hook, water spigot, picnic table, fire ring, and trash receptacles. The sites are wooded but are close together and allow little privacy. Visitor parking is limited. Restroom facilities are centrally located to the campsites.

The tent campsites each have a gravel pad, lantern hook, fire ring, picnic table, and an electrical outlet. All 12 tent campsites share a single water spigot and two portable chemical toilets. See Photograph 4-13.

The campground offers limited sanitary services for RVs (two of the sites have sanitary service hook-ups). However, visitors are permitted to use the sanitary disposal services at the Pleasant Ridge Campground for a nominal fee.



Photograph 4-13: Tent Campsite at Lawrence County Park

Lawrence County Park has four picnic shelters, three of which are available by reservation. Shelter #1 is near the lake and has tables, electricity, lights, water, and trash receptacles. Shelter #2 has a grill, 14 tables, electricity, lights, water, and two trash receptacles. Shelter #3 is near the music pavilion and has tables, electricity, lights, water, and trash receptacles and is adjacent to a large, open recreational area and basketball court. The shelters are in high demand and are typically reserved on weekends. Shelter #4, which is not available for reservation, has picnic tables and trash receptacles, but no electrical service.

A conference center is available for rent. The facility can accommodate 75 people and includes tables, chairs, bathroom, and small kitchen. The adjacent parking lot has space for 50 vehicles. Another parking area between the music pavilion and Yatesville Lake State Park will accommodate approximately 100 vehicles.



Photograph 4-14: Picnic Shelter at Lawrence County Park

The music pavilion has been used to support large gatherings, including a bluegrass festival and other events. The pavilion has a covered stage that is approximately 40-foot x 25-foot, two changing rooms, and electrical service. Three shelters located near the pavilion are used to support gatherings. The shelters, which are clustered close together, do not have picnic tables and are not available for individual reservation.

Lawrence County Park also has a playground and a miniature golf course, which is undergoing renovation and is expected to reopen in 2012. A courtesy dock and beach are available, but the beach area is small and not able to accommodate the Project-wide demand for swimming. Lawrence County Park also has a horse stable that is sub-leased to the Lawrence County Saddle Club.

4.1.6.2 Lawrence County Beach

The northeastern portion of Lawrence County Recreation Area has a beach with several ancillary facilities, including restrooms and playground equipment. Access to the beach is via a gated one-lane road. Restroom facilities, playground equipment, and a concession building are at the top of the hill approximately 200 yards from the beach. See Photograph 4-15.



Photograph 4-15: Lawrence County Beach

4.1.7 Boy Scout Camp Cherokee

Boy Scout Camp Cherokee is managed by the Tri-State Council of the Boy Scouts of America. Boy Scout Camp Cherokee is used primarily by the Boy Scouts but is also available to nonprofit groups. The area is gated to control access when the area is not in use. A cabin on the property is used as a mess hall and can provide overnight accommodations for approximately 30 people (see Photograph 4-16). Electrical service is provided to the cabin. There is a large fire pit outside the cabin.

A small shelter is available for general activities. An open area adjacent to the shelter is used for primitive camping and recreation (see Photograph 4-17). Trails are available for hiking and nature study and a road allows access to the lake. The area is serviced by two vault toilets. Drinking water is not available.



Photograph 4-16: Cabin at Boy Scout Camp Cherokee



Photograph 4-17: Shelter and Open Field at Boy Scout Camp Cherokee

4.1.8 Yatesville Lake

Yatesville Lake is used for boating, fishing and swimming. The views of the lake are excellent, both on and off the lake (see Photograph 4-18).

The summer pool of the lake is approximately 2,200 acres but drops to 1,900 acres during the winter. The lake is a popular boating destination that is used primarily by people with motorized boats. During the summer, approximately 1,350 acres of the lake are designated for unrestricted boat use, and approximately 900 acres are restricted to idle speed. The majority of the coves are designated as idle speed zones.



Photograph 4-18: Yatesville Lake

Boat access to the lake is provided by four boat ramps containing nine lanes for launching boats: two at Rich Creek, two at Pleasant Ridge Campground, four at Barker Run Marina, and one located in the WMA (Twin Branch). The boat ramps at both the Barker Run Marina and the Pleasant Ridge Campground are popular and experience high traffic volumes—leading to congestion during peak periods of activity. Traffic volumes at the Rich Creek and Twin Branch boat ramps are moderate to low. The Barker Run Marina supports boating activities with rental boats, slips, fuel and supplies.

The lake supports a premier bass fishery, allowing for multiple fishing tournaments from May through October. Swimming in the lake takes place from two designated swimming areas, from shore, and from watercraft. Water skiing occurs on the lake during the summer. Duck hunting also occurs on the lake but is not a significant activity.

4.2 Current Outdoor Recreational Activities and Visitation

This section contains a discussion of the recreational activities that are currently available and the number of visitors who participate in these activities.

4.2.1 Outdoor Recreational Activities

The Project provides the opportunity to enjoy a wide range of recreational activities. Table 4-2 lists the major recreational activities that are available, the locations, and facilities. Figure 4-1 shows the locations of the recreational areas.

Table 4-2: Facilities for Outdoor Recreational Activities at the Project

Activity	Location	Facilities
Boating	Rich Creek Launch Ramp	<ul style="list-style-type: none"> • Two-lane boat ramp • Courtesy loading dock • Parking for vehicles and trailers
	Barker Run Marina	<ul style="list-style-type: none"> • 144-slip marina • Boat rental • Four-lane boat ramp • Courtesy loading dock • Parking for vehicles and trailers • General store • Fuel facilities • Restrooms
	Pleasant Ridge Campground	<ul style="list-style-type: none"> • Two-lane boat ramp • Courtesy loading dock • Parking for vehicles and trailers
	Wildlife Management Area	<ul style="list-style-type: none"> • One-lane boat ramp • Gravel parking for vehicles and trailers
	Yatesville Lake	<ul style="list-style-type: none"> • More than 1,900 acres (winter) and 2,200 acres (summer) for boating

Table 4-2: Facilities for Outdoor Recreational Activities at the Project

Activity	Location	Facilities
Camping	Pleasant Ridge Campground	<ul style="list-style-type: none"> • 27 RV campsites with electricity and water • 4 tent campsites with electricity • 16 primitive tent campsites (limited accessibility) • Bathhouse and multiple restrooms
	Lawrence County Park	<ul style="list-style-type: none"> • 11 RV campsites with electricity and water • 12 tent campsites with electricity • 9 year-round cabins with electricity, water, and kitchen • Bathhouse and restroom
	Boy Scout Camp Cherokee	<ul style="list-style-type: none"> • Open field for primitive camping
Fishing	Dam Site Area	<ul style="list-style-type: none"> • Tailwater Area stocked with rainbow and brown trout three times a year • Small visitor parking lot
	Barker Run Marina	<ul style="list-style-type: none"> • Fishing jetty • Fishing lagoon
	Yatesville Lake	<ul style="list-style-type: none"> • Premier bass fishery • Bank fishing and fishing from docks and boats • Fishing tournaments from May through October
	Wildlife Management Area	<ul style="list-style-type: none"> • Bank fishing from vehicle pull-area areas
Hunting	Wildlife Management Area	<ul style="list-style-type: none"> • Designated 15,000-acre hunting area for variety of game • 7-acre dove hunting area
	Yatesville Lake	<ul style="list-style-type: none"> • Duck hunting
Other activities (e.g., hiking, horseback riding, golf)	Dam Site Area	<ul style="list-style-type: none"> • 1.5-mile Environmental Interpretive Trail • Interpretive exhibits in the Information Center about the Project, historical USACE work in the region, and historical oil drilling activities in the area
	Barker Run Marina	<ul style="list-style-type: none"> • 8 miles of hiking trails • Playground
	Pleasant Ridge Campground	<ul style="list-style-type: none"> • 2 miles of multi-use trails • Playground

Table 4-2: Facilities for Outdoor Recreational Activities at the Project

Activity	Location	Facilities
	Eagle Ridge Golf Course	<ul style="list-style-type: none"> • Year-round 18-hole public golf course • Driving range • Practice sand bunker • Pro shop • Clubhouse
	Wildlife Management Area	<ul style="list-style-type: none"> • 15 miles of multi-use trails (hiking, horseback riding, bicycling)
	Lawrence County Park	<ul style="list-style-type: none"> • Stable stalls available for overnight rentals • 12 miles of multi-use trails • Playground • Miniature golf • Conference center • Music pavilion and three associated shelters
	Lawrence County Beach	<ul style="list-style-type: none"> • Playground • Concession stand
	Boy Scout Camp Cherokee	<ul style="list-style-type: none"> • Trails for hiking and nature study
Picnicking	Barker Run Marina	<ul style="list-style-type: none"> • Two picnic shelters with multiple picnic tables
	Lawrence County Park	<ul style="list-style-type: none"> • Four picnic shelters and several picnic tables
Sightseeing	Dam Site Area	<ul style="list-style-type: none"> • Views of the lake and the dam
	Wildlife Management Area	<ul style="list-style-type: none"> • Multiple and diverse scenic views from roads and trails
Swimming	Lawrence County Park	<ul style="list-style-type: none"> • Designated swimming area
	Lawrence County Beach	<ul style="list-style-type: none"> • Designated swimming area • Parking for vehicles • Bathhouse
	Yatesville Lake	<ul style="list-style-type: none"> • Two designated swimming areas, and swimming from the shore and boats
Water Skiing	Yatesville Lake	<ul style="list-style-type: none"> • More than 1,300 acres for waterskiing

4.2.2 Visitation by Recreational Area

The Project reports visitation data through the Visitor Estimation Reporting System (VERS) (see Section 1.7.8). Visits are a “head count” of visitors based on a count of vehicles and a statistical

analysis of the number of people in a vehicle. A visit represents the entry of one person into a recreational area or site to participate in one or more recreational activities.

Project visitation data reflect estimates of the number of visits to each primary recreational area. Table 4-3 shows the baseline number of visits made to the recreational areas. The “Dispersed Area” category includes use that occurs outside developed recreational areas such as the WMA.

Table 4-3: Baseline Distribution of Visits by Primary Recreational Area

Area	Number of Visits	Percent
Barker Run Marina	108,500	35%
Dam Site Area	31,000	10%
Dispersed Areas (e.g., WMA)	46,500	15%
Rich Creek Launch Ramp	31,000	10%
Yatesville Lake State Park and Lawrence County Park	93,000	30%
Total	310,000	100%

Sources: VERS and resource managers.

4.2.3 Activity Distribution

Table 4-4 shows the baseline number of participants by recreational activity. People often engage in more than one activity while in the Project area, therefore the number of participants is higher than the number of visitors presented in Table 4-3.

Table 4-4: Number of Participants for Each Recreational Activity

Activity	Number of Participants
Boating	62,580
Camping	10,850
Fishing	85,240
Hunting	10,910
Other activities	41,190
Picnicking	36,740
Sightseeing	112,530

Table 4-4: Number of Participants for Each Recreational Activity

Activity	Number of Participants
Swimming	49,190
Water skiing	1,990
Total	411,210

Source: VERS and resource managers

4.3 Area of Influence

The area of influence is defined as the area where the majority of the people who visit the Project live. Determining the area of influence and evaluating the demographic characteristics of the area is an important part of projecting the future demand for recreational facilities at the Project.

4.3.1 Identifying the Area of Influence

Based on the nature of the recreational activities provided at the Project, the vast majority of the visitors to the Project will reside within a 2-hour driving distance (see Figure 4-2). Therefore, this distance was used to define the area of influence; this distance is also consistent with the area of influence identified in the 1975 Master Plan.

For planning purposes, the area of influence was divided into three subareas:

- **Primary** – within a 30-minute drive of the Project. Because of their proximity to the Project, residents in the primary area of influence are expected to make the Project a destination for all of the recreational opportunities that are available.
- **Secondary** – between a 30- and 60-minute drive of the Project. Residents in the secondary area of influence are expected to visit the Project for specific reasons (e.g., golf) but are not expected to make the Project a destination solely for general day-use activities, such as picnicking, that are also available in their local area.
- **Tertiary** – between a 1- and 2-hour drive of the Project. Residents in the tertiary area of influence are expected to make the Project a destination for activities that are unique, provide a high-quality recreational experience, or are significantly different from those available in their local area (e.g., boating, fishing) or for overnight activities (e.g., camping).

The primary subarea of influence includes portions of Kentucky (86 percent of the primary area of influence) and West Virginia (14 percent). The secondary subarea of influence includes portions of Kentucky (75 percent), West Virginia (21 percent), and Ohio (4 percent). The tertiary subarea of influence includes portions of Kentucky (59 percent), West Virginia (26 percent), and Ohio (15 percent).

4.3.2 Demographic Characteristics in the Area of Influence

Demographic data (population, age, and income) were compiled from data from the U.S. Census Bureau and regional and State data centers. These data were analyzed to determine the population within the area of influence and how the population is projected to change by 2020. Population data were collected for each census block group within the area of influence. The populations were summed to determine the total population. Although block group data provide a high level of accuracy for determining the population within each area of influence, this detailed level of data is available only for the 2000 census. Because more current (2008) population estimates are available at the county level, the percent change in population from 2000 to 2008 at the county level was assumed to apply to the block group level (e.g., a 3 percent increase in population at the county level would result in a 3 percent increase in population at the block group level). The compound average growth rate from 2000 to 2008 was used to estimate the 2010 population.

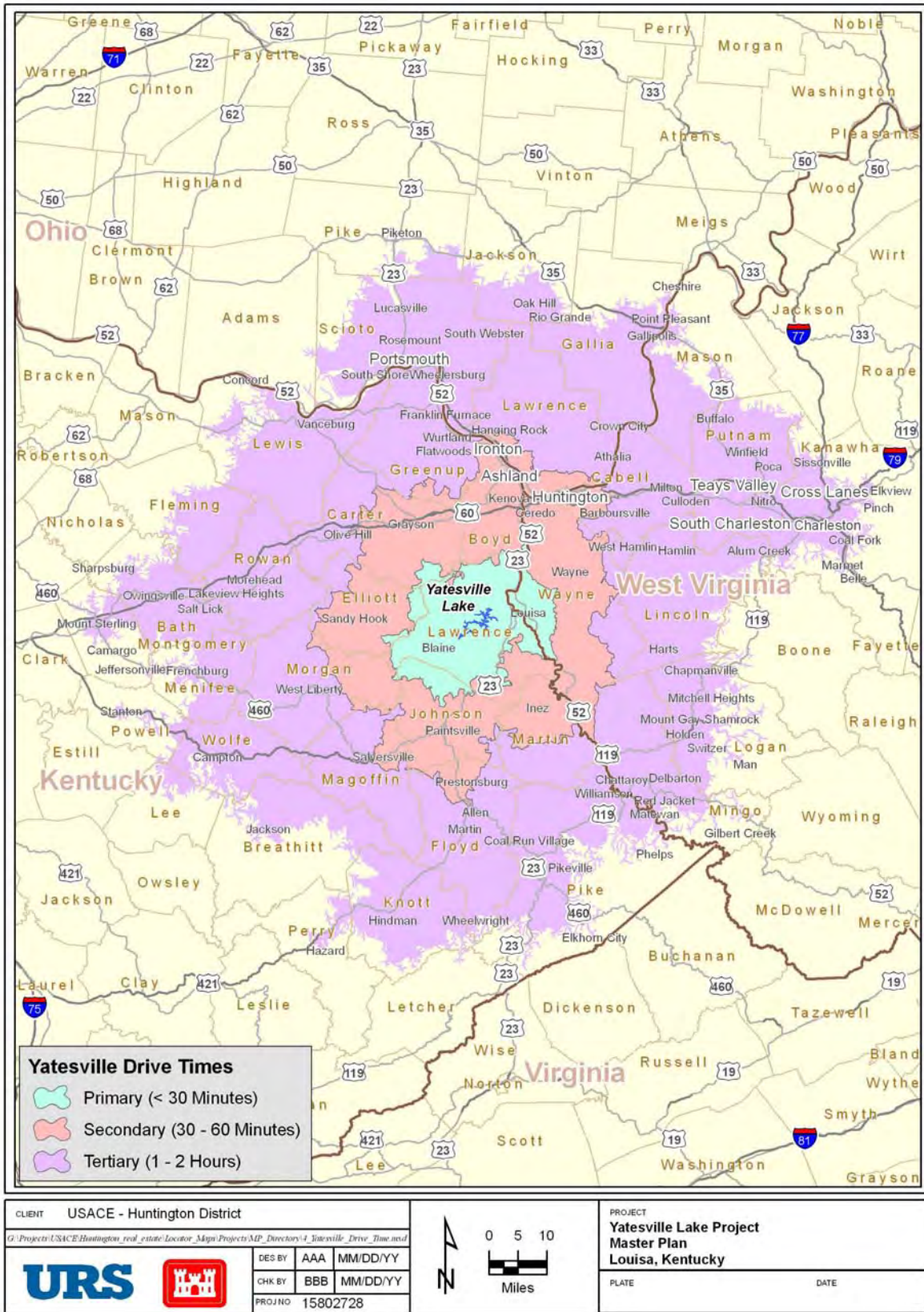


Figure 4-2: Area of Influence

The population for 2020 for each subarea was projected based on growth rates between the 2008 estimates and 2020 county level projections provided by the U.S Census Bureau. The populations of the counties in the area of influence are projected to increase at different rates.

The projected growth rate was determined for the three subareas of influence based on the change in the estimated population in each county.

Similar to the population data, changes in age at the county level were assumed to apply to the block group. The population in each age group was estimated based on the block group level. Changes in the percentage of the population in each age group in the block group were based on projected changes at the county level. The analysis used estimates of the percent change in each age group for the three subareas of influence.

Median incomes were calculated by taking a weighted average of the median incomes of the counties in areas of influence. Median incomes of the counties were compiled from 2008 U.S. Census Bureau data. 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.

4.3.2.1 Primary Subarea of Influence

The primary subarea of influence includes portions of six counties in Kentucky and one in West Virginia. The estimated populations for the primary subarea of influence are shown in Table 4-5. The population in the primary subarea of influence is projected to increase by 4.7 percent from 2010 to 2020.

Table 4-5: Population in the Subareas of Influence

Subarea	2007 Population	2010 Population (Estimated)	2020 Population (Projected)	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: Developed from data obtained from the U.S. Census Bureau

Projected changes in the age of the population in the primary subarea of influence were calculated (see Table 4-6). The results of the analysis are that the percentage of people 21 and under will decrease from 30 percent in 2000 to 26 percent by 2020. The percentage of people over 65 is projected to increase from 13 percent in 2000 to 18 percent by 2020. The percentage of people between 50 and 64 is projected to increase from 17 percent in 2000 to 21 percent by 2020. Age distribution across other age groups is projected to remain fairly constant.

Table 4-6: Age Distribution of Population in the Subareas of Influence

Age	Primary			Secondary			Tertiary		
	2000	2010	2020	2000	2010	2020	2000	2010	2020
<5	6%	6%	6%	6%	6%	6%	6%	6%	6%
5-17	19%	16%	16%	17%	16%	16%	17%	16%	16%
18-21	5%	5%	4%	6%	5%	5%	6%	5%	5%
22-29	10%	10%	9%	10%	11%	10%	10%	11%	10%
30-39	14%	13%	13%	14%	13%	13%	14%	13%	13%
40-49	15%	14%	13%	15%	14%	12%	16%	14%	13%
50-64	17%	21%	21%	17%	21%	20%	17%	21%	20%
>=65	13%	14%	18%	15%	15%	18%	14%	15%	18%

Source: Developed from data obtained from the U.S. Census Bureau

The median incomes of the households in the primary subarea of influence were estimated using a weighted average of the average 2008 median incomes of the counties in the area. The weighted median income of the primary subarea of influence is \$30,600 (see Table 4-7). The incomes in the primary subarea of influence were lower compared to the median household income of approximately \$41,000 for the Commonwealth of Kentucky.

**Table 4-7: Median Household Income
in the Subareas of Influence**

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

Source: Developed from data obtained
from the U.S. Census Bureau

4.3.2.2 Secondary Subarea of Influence

The secondary subarea of influence includes portions of 14 counties (10 in Kentucky, 3 in West Virginia, and 1 in Ohio). The estimated populations for the secondary subarea of influence are shown in Table 4-5. The population in the secondary subarea of influence is projected to increase by 1.1 percent by 2020.

Changes in the age of the population in the secondary subarea of influence were calculated (see Table 4-6). The results of the analysis are that the percentage of people 21 years old or under will decrease from 29 percent in 2000 to 27 percent by 2020. The percentage of people over 65 is projected to increase from 15 percent in 2000 to 18 percent by 2020. The percentage of people between 50 and 64 is projected to increase by 3 percent by 2020. A slight decrease in population is projected in the other age groups.

The weighted median income of the secondary subarea of influence is \$34,241 (see Table 4-7). Most of the counties in the secondary subarea of influence are in Kentucky; the incomes in the secondary subarea of influence were lower compared to the median household income of approximately \$41,000 for the Commonwealth of Kentucky. Counties in West Virginia and Ohio also exhibited lower household incomes compared to incomes reported within their respective States, which were \$37,989 for the State of West Virginia and \$60,061 for the State of Ohio.

4.3.2.3 Tertiary Subarea of Influence

The tertiary subarea of influence includes portions of 40 counties in three states (25 in Kentucky, 9 in West Virginia, and 6 in Ohio). The estimated populations for the tertiary subarea of influence are shown in Table 4-5. The population in the tertiary subarea of influence is projected to increase by 1.2 percent by 2020.

Changes in the age of the population within the tertiary subarea of influence were calculated (Table 4-6). The results of the analysis are that the percentage of people 21 or under will decrease from 29 percent in 2000 to 27 percent by 2020. The percentage of people between 50 and 64 is projected to increase from 17 percent in 2000 to 20 percent by 2020. The percentage of people over 65 is projected to increase from 14 percent in 2000 to 18 percent by 2020.

The weighted median income of the tertiary subarea of influence is \$36,344 (see Table 4-7). Kentucky and West Virginia counties in the tertiary subarea of influence reported lower median incomes than their respective states. Ohio counties within the tertiary subarea of influence had higher median household incomes than the counties in Kentucky and West Virginia but lower than the State of Ohio average of \$60,061.

4.4 Outdoor Recreational Opportunities at Comparable Facilities

Recreational opportunities provided at comparable facilities within a 2-hour drive of the Project were identified and reviewed to understand the recreational opportunities available to people living within the area of influence. No recreational facilities providing similar opportunities were identified within the primary subarea of influence. A total of 15 facilities were identified (6 in the secondary subarea of influence and 9 in the tertiary subarea). Of the six in the secondary subarea, three are in Kentucky in the outer periphery of the secondary subarea, and three are in West Virginia. Table 4-8 lists the facilities, the operating agency, and the approximate size (acres). Figure 4-3 shows the location of the facilities.

These 15 facilities support a variety of recreational activities that are similar to those offered at the Project. Table 4-9 lists the recreational activities at the 15 facilities. The information is based on the *Statewide Comprehensive Outdoor Recreation Plan* (Commonwealth of Kentucky, 2008), which is referred to as SCORP.² Several amenities were also reviewed and are listed in Table 4-9. Amenities are services or features that can increase the enjoyment of visitors. The reviewed amenities are:

- High-speed Internet access
- Lodge and/or cabins
- Marina
- Onsite restaurant
- Outdoor theater

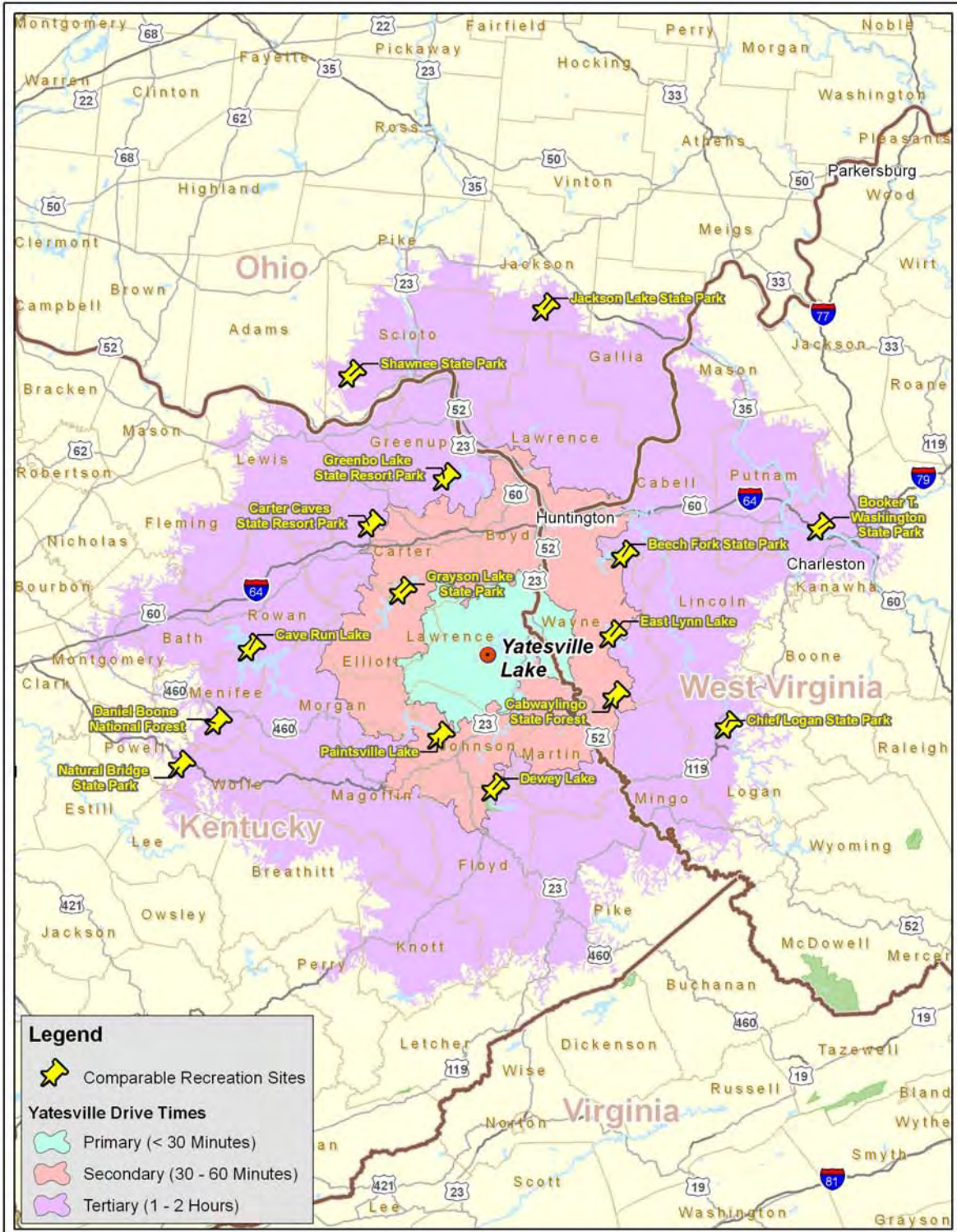
² The SCORP contains the estimated participation in recreational activities among residents of Kentucky (Commonwealth of Kentucky, 2008). Estimates are based on a scientific survey and the median number of times in a year a household participates in an activity.

Table 4-8: Comparable Recreational Facilities

Subarea	Name	State	Operating Agency	Approximate Size (acres)
Secondary	Beech Fork Lake	WV	USACE	7,500
	Cabwaylingo State Forest	WV	WVDNR	8,100
	Dewey Lake	KY	USACE	9,200
	East Lynn Lake	WV	USACE	24,800
	Grayson Lake	KY	USACE	8,000
	Paintsville Lake	KY	USACE	13,100
Tertiary	Booker T. Washington State Park	WV	WVDNR	400
	Carter Caves State Park	KY	KY Dept. of Parks	1,600
	Cave Run Lake	KY	USACE	8,300
	Chief Logan State Park	WV	WVDNR	4,000
	Daniel Boone National Forest	KY	USFS	707,000
	Greenbo Lake State Park	KY	KY Dept. of Parks	3,300
	Jackson Lake State Park	OH	ODNR	100
	Natural Bridge State Park	KY	KY Dept. of Parks	2,200
	Shawnee State Park	OH	ODNR	1,100

ODNR = Ohio Department of Natural Resources
 USACE = U.S. Army Corps of Engineers
 USFS = U.S. Forest Service
 WVDNR = West Virginia Division of Natural Resources

As shown in Table 4-9, the comparable facilities offer similar recreational activities and amenities as the Project. The comparison is particularly relevant when reviewing the activities and amenities in the secondary subarea of influence, which would have the greatest impact of the three subareas on visitation at the Project due to its closer proximity. Several of the comparable facilities in the tertiary subarea of influence offer more activities and/or amenities than the Project, but because these facilities are quite far from the Project, they have only a minor effect on the recreational patterns of the residents within the primary subarea of influence. The only significant difference in recreational activities offered by the facilities in the secondary and tertiary subareas of influence compared to the Project is that many of them offer summer camps and daily recreational events that tend to be day-use activities that draw visitors from the immediate area around the facility. Several of the comparable facilities in the secondary and tertiary subareas of influence offer high-speed Internet access and an onsite restaurant. These



CLIENT USACE - Huntington District			PROJECT Yatesville Lake Project Master Plan Louisa, Kentucky	
			PLATE	DATE
DES BY: AAA	MM/DD/YY	CHK BY: BBB	MM/DD/YY	
PROJ NO: 15802728				

Figure 4-3: Comparable Recreational Facilities

Table 4-9: Recreational Activities at the Yatesville Lake Project and Comparable Facilities

Area of Influence/ Facilities/Amenities		Yatesville Lake Project	Beech Fork Lake	Cabwaylingo State Forest	Dewey Lake	East Lynn Lake	Grayson Lake	Paintsville Lake State Park	Booker T. Washington State Park	Carter Caves State Resort Park	Cave Run Lake	Chief Logan State Park	Daniel Boone National Forest	Greenbo Lake State Resort Park	Jackson Lake State Park	Natural Bridge State Resort Park	Shawnee State Park
	Area of influence	N/A	S	S	S	S	S	S	T	T	T	T	T	T	T	T	T
Facilities	ATV trails												✓				
	Boating	✓	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
	Birdwatching/wildlife viewing/sightseeing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Bicycling on bike trail	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓		✓
	Camping	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Court activities	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	Fishing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
	Golfing	✓			✓		✓			✓						✓	✓
	Hiking	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓
	Horseback riding	✓			✓	✓	✓	✓		✓	✓		✓	✓			✓
	Hunting	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓
	Miniature golf	✓								✓		✓		✓		✓	✓
	Nature preserve/trail/historic site	✓	✓		✓	✓	✓	✓			✓	✓			✓	✓	✓
	Off-road 4-wheel driving												✓		✓		
	Open field events	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓			✓
	Picnicking	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Playground	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓
	Rock climbing									✓			✓				
	Summer camps/daily rec events				✓				✓	✓			✓	✓		✓	
Swimming	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Target shooting												✓					
Winter activities														✓		✓	
Amenities	High-speed Internet access				✓					✓		✓		✓			
	Lodges and/or cabins	✓		✓	✓					✓		✓		✓		✓	✓
	Marina	✓	✓		✓	✓	✓	✓			✓		✓	✓	✓		✓
	Onsite restaurant				✓			✓		✓		✓		✓		✓	✓
	Outdoor theatre	✓	✓		✓						✓	✓		✓	✓		

Definitions

- Area of influence S = secondary, T = tertiary
- ATV trails/riding..... All terrain vehicle
- Boating Includes boat ramps, boating activities, and/or waterskiing
- Birdwatching/wildlife Activities that involve observing or photographing wildlife, nature, or historic areas located within a site, whether walking or driving viewing/sightseeing
- Camping Backpack camping, camping at a campsite without electricity or water, and camping with electricity and water (recreational vehicle)
- Court activities Activities that require a court setup, including but not limited to basketball, tennis, and volleyball
- Golfing Golf courses and/or driving ranges
- Hiking Hiking, walking, and exercising on a fitness trail
- Horseback riding Horseback riding on trails or in designated areas; horses may or may not be provided
- Nature preserve/ Nature preserves, historic sites, visitor centers with educational tools/presentations trail/historic site
- Open field events Activities that can be performed on an open field, including but not limited to softball, soccer, lacrosse, cornhole/corn toss, football, disc golf, flying a kite, track and field events, and horseshoes
- Summer camps/daily Summer camps, horseback riding camps, events/presentations offered on a regular basis recreational events
- Swimming Designated swimming area (e.g., beach, pool)
- Winter activities Activities performed in winter, such as outdoor ice skating, snow sledding/snowshoeing, ice fishing, skiing, snowboarding, and snowmobiling
- Lodges and/or cabins Areas for overnight stay that provide more than basic shelter, such as electricity, plumbing, and furnishings
- Outdoor theatre Amphitheaters, areas for outdoor festivals/concerts/reenactments, and outdoor stages

types of amenities increase the enjoyment of visitors at the facilities, but they are not expected to cause a significant shift in visitation patterns.

A review of the planned changes to the recreational activity opportunities at the comparable facilities in the area of influence indicated that no significant changes are anticipated for the near future, such as the addition or removal of an existing recreational activity or the construction of a new facility. Minor changes may occur at the comparable facilities, but none were identified that are expected to affect current visitation patterns

In addition to the recreational activities provided at the Project and the comparable facilities, the area of influence has a number of national and State trail systems. These trail systems are on lands typically owned and managed by Federal, State, and private entities and provide access to day-use recreational activities such as hiking, ATV riding, and mountain biking. Although these systems provide access to outdoor recreational activities, they do not provide the same recreational experience (e.g., boating, fishing, swimming) as the comparable facilities and are not expected to affect the number of visitors at the Project. The significant trail systems in the area of influence are:

- Jenny Wiley Heritage Trail By-Way System
- Hatfield-McCoy Trail
- North Country National Scenic Trail
- Sheltopee Trace

4.5 Trends in Outdoor Recreational Activities

There has been much speculation in recreation literature that participation in nature-based activities is declining because of a decrease in free time and increased technology in people's everyday lives. However, a study by Cordell (2008) on trends in outdoor recreation indicated that while the national interest in nature and outdoor activities has changed over the last 60 years, overall it has not declined.

The discussion of participation trends in this section focuses on changing preferences for recreational activities. Changing preferences were identified by reviewing literature on trends in Kentucky and across the country. Changing preferences for a specific activity at the Project were identified through discussions with resource managers.

4.5.1 Age

Age can influence the preference for recreational activities. For example, as the population ages, there is a greater demand for RV camping and lodging and less demand for tent camping. In addition, older populations transition from active sports to less strenuous activities such as walking (Virginia Department of Conservation and Recreation, 2007).

4.5.2 Fishing and Hunting

According to Recreational Boating and Fishing Foundation (2010), age does not affect participation in recreational fishing. Despite these findings, there is evidence that across all age categories, participation in both fishing and hunting is decreasing. The SCORP indicates a decrease of 7 percent in the rate of participation in fishing and hunting since 2000 (Commonwealth of Kentucky, 2008). Similarly, the USFWS found that nationwide participation in fishing decreased by about 16 percent and hunting decreased by about 11 percent between 1991 and 2006 (USFWS, 2006).

The decrease in fishing and hunting is further supported by a U.S. Forest Service (USFS) study, *Outdoor Recreation in American Life: An Assessment Of Demand and Supply Trends* (Cordell et al., 1999). The study contains projections of outdoor recreational participation through the year 2050 and accounts for increases in participation due to population growth. The study projects that fishing visits will increase by 36 percent through 2050, but this is marginally less than the projected population growth of 44 percent. Therefore, the overall participation rate is actually projected to decrease over the next 40 years. Similarly, the study projects that participation in hunting will decrease by 11 percent.

4.5.3 Summer Activities

According to the SCORP, the participation rate for horseback riding and trail hiking is increasing, but the rate of increase is not specified (Commonwealth of Kentucky, 2008). The USFS projects that participation in both hiking and horseback riding will increase marginally faster than the population (Cordell et al., 1999).

The rate of participation in picnicking, swimming, camping, boating, water skiing, and sightseeing has been found to be steady (Bowker et al., 1999). While the participation rate for camping in general is steady, there is an increase in camping in an RV with electricity and water, as opposed to camping in tents. The USFS is projecting that primitive camping will increase at a slower rate than population growth and will therefore have a decrease in the rate of participation.

However, developed camping is projected to increase at a greater rate than population growth (Cordell et al., 1999).

Observing nature has been increasing and is expected to continue to increase. The USFS projects that participation in non-consumptive wildlife activities, including bird watching, photography and other forms of wildlife viewing, will increase through 2050 (Cordell et al., 1999). The number of participants is anticipated to increase more rapidly than the population for these activities. Similar to non-consumptive wildlife activities, sightseeing and visiting historic places are projected to be two of the fastest growing outdoor recreation activities.

4.6 Identifying Potential Recreational Activity Opportunities

Identifying potential recreational activity opportunities at the Project is important to development planning and future investment. This section examines the recreational activities that are available at the Project, activities that may be a viable option in the future, and activities that cannot be considered because they are inconsistent with policy (USACE, 1996) and environmental conservation goals.

The rate of participation in a particular activity may not correlate with the value people place on the activity. For example, people may place great value on camping, but it requires a large time commitment and typically people can only participate a few weekends a year. Camping can be considered as having high value but a low participation rate. Alternatively, people may play tennis more often because it requires much less time per event and can be enjoyed in the local neighborhood. Tennis can be considered as having a lower value, but a high participation rate. Therefore, although ranking the activities by rate of participation provides a general guide to the value people place on certain activities, the activities need to be evaluated carefully when planning for current and future recreational activities at the Project.

The resources available at the Project provide the opportunity for visitors to participate in many of the activities identified in the SCORP. However, some of the activities may not be consistent with resource capabilities or water and outdoor resource-based recreation policy. Therefore, the activities in the SCORP are categorized as follows for planning purposes:

- **Available** – Resources and supporting facilities for these activities are currently available at the Project.
- **Potential** – Facilities for these activities are not currently available at the Project, but they are consistent with planning goals and may be considered as potential future

activities. Facilities for these activities may be cost-shared by the USACE or constructed wholly by a non-Federal entity.

- **Inconsistent** – Facilities for these activities are not currently available at the Project and conflict with policy and environmental conservation goals.
- Table 4-10 lists the activities identified in the SCORP (in decreasing order of participation) and identifies whether an activity is currently available at the Project, has potential as a future activity, or is inconsistent with policy and environmental conservation goals.

Table 4-10: Recreational Activities at the Project

Activity	Available	Potential	Inconsistent
Bird watching/wildlife viewing	✓		
Walking	✓		
Gardening		✓	
Driving (sightseeing)	✓		
Fishing from shore, pier, or boat	✓		
Golfing	✓		
Hiking on a trail	✓		
Hunting with firearms or bows	✓		
Exercising on fitness trail	✓		
Playing basketball	✓		
Playing soccer		✓	
Playing tennis		✓	
ATV riding			✓
Off road 4-wheel driving			✓
Track and field events		✓	
Camping with electricity and water (for RV use)	✓		
Cross-country skiing	✓		
Driving range/practice range	✓		
Horseback riding on trail	✓		
Motor boating/jet skiing/waterskiing	✓		

Table 4-10: Recreational Activities at the Project

Activity	Available	Potential	Inconsistent
Orienteering or geo-caching	✓		
Picnicking	✓		
Sightseeing or photography	✓		
Swimming in a lake/river/stream	✓		
Target shooting with firearms or bow		✓	
Bicycling on bike trail		✓	
Corn toss/corn hole	✓		
Playing at a playground	✓		
Playing baseball or softball		✓	
Playing football		✓	
Playing volleyball	✓		
Skateboarding/BMX Bicycling		✓	
Swimming at a public/club pool		✓	
Visiting a dog park		✓	
Berry/mushroom picking			✓
Rock climbing		✓	
Visiting historic site		✓	
Attending a summer camp/horseback riding camp		✓	
Backpack camping	✓		
Camping at a campsite without electricity or water	✓		
Camping in a cabin	✓		
Ice skating outdoors		✓	
In line/roller skating	✓		
Mountain biking		✓	
Playing disc golf		✓	
Picnicking at a shelter	✓		
Sailing, canoeing, kayaking, river rafting	✓		

Table 4-10: Recreational Activities at the Project

Activity	Available	Potential	Inconsistent
Snow sledding/snowshoeing	✓		
Visiting a nature preserve	✓		
Visiting a nature aquarium/zoo			✓
Flying a kite	✓		
Playing horseshoes	✓		
Playing lacrosse		✓	
Downhill skiing/snowboarding		✓	
Playing in a wave pool/lazy river/spray park		✓	
Paragliding/sky diving			✓
Playing miniature golf	✓		
Playing paintball			✓
Attending outdoor festivals/concerts/reenactments	✓		
Attending outdoor racing events			✓
Snowmobiling			✓

Source of list of activities: Commonwealth of Kentucky (2008)

As shown in Table 4-10, the Project provides opportunities for more than half of the activities listed in the SCORP, including 9 of the top 10 recreational activities that are the most popular in terms of participation rate (i.e., number of times in a year that a household participates in an activity) among residents of Kentucky.

The activities listed as potential are consistent with policy and environmental conservation goals and could be provided at the Project, although a large number identified as potential can currently be enjoyed in a non-organized or family event setting using the existing resources, such as playing soccer in open field areas. The potential activities could be formally developed by a local sponsor, but a determination on the suitability of the activity would be done on an individual basis.

4.7 Recreational Demand Analysis

The recreational demand analysis included a review of several factors that can change the demand for recreational activities. Changes in the following factors could result in a shift in demand for recreational activities at the Project or affect the number of visitors:

- Change in the opportunities available to participants, such as the development of new *comparable facilities* near the Project
- Change in preferences for activities, such as *national and State participation trends* showing a decrease in hunting
- Change in the *demographic characteristics* in the area of influence including a change in population and in the median age of the population; such changes can affect the preferred activities (e.g., older visitors may prefer RV camping to tent camping)

4.7.1 Impact of Comparable Facilities

The Project and the comparable facilities in the area of influence have been open and operating for many years. This and a fairly stable visitation to the Project over the last few years is an indication that the demand for particular activities offered at the Project is in a mature state (i.e., demand has reached an equilibrium). As noted earlier, no significant planned changes are anticipated at the comparable facilities, and no new comparable facilities are anticipated. Therefore, the effect of the comparable facilities is not expected to change the existing demand for recreational activities at the Project.

4.7.2 Impact of Trends in Participation Rates in Recreational Activities

Trends in recreation were reviewed to identify potential changes in demand for recreational activities at the Project. In general, the rate of participation in consumptive resource uses, such as hunting and fishing, has been declining and is anticipated to continue declining. However, the rate of participation for non-consumptive resources uses, such as nature trails and sightseeing, has been increasing. Based on these trends, the following assumptions were used to forecast future activities and participation:

- The participation rate for “other” recreational activities, including hiking, horseback riding, and golf, will increase 5 percent between 2010 and 2020.
- The participation rate for fishing and hunting will decrease 7 percent between 2010 and 2020.

- Although the participation rate for camping is anticipated to remain stable, there will be an increased preference for camping in an RV as opposed to a tent.
- As a population ages, there will be a shift to less physical activities, such as walking.
- The participation rate for sightseeing, including observing nature and visiting historic places, will increase 5 percent between 2010 and 2020.

4.7.3 Impact of Demographic Changes

The population change in the area of influence over the next decade is projected to be small—an overall increase of 1.3 percent. In addition to population growth, the age of the population is projected to increase. Based on the projected population, change in the demographics, and observations at the Project, the following assumptions were used to forecast future activities and participation:

- The population in the primary subarea of influence is projected to grow by 4.7 percent between 2010 and 2020.
- The population in the secondary subarea of influence is projected to grow by 1.1 percent between 2010 and 2020.
- The population in the tertiary subarea of influence is projected to grow by 1.2 percent between 2010 and 2020.
- The demand for RV accessible campsites will increase because of preferences for RV camping as opposed to tent camping among older campers.
- The shift to an older population will create a demand for shorter walking and hiking trails that are easy to traverse (smooth surface and minimal slope).

4.7.4 Projected Participation by Activity

A multi-step approach was used to project the participation in each recreational activity at the Project. The approach accounts for anticipated changes in the rate of participation in specific activities and the estimated change in population in each subarea of influence. In the first step, the rate of participation for the current visitors engaged in the activities (see Table 4-4) was adjusted to estimate the impacts of preference changes on the current users.

In the second step, the estimated number of participants was adjusted to account for projected population changes within each subarea of influence. The rate of participation of the current population was assumed to be representative of the rate of the participation for new people to the area (e.g., if 15 percent of the current population participates in camping, it is assumed that

15 percent of the new people to the area would participate in camping). The current population engaged in the activities was divided among the three subareas of influence based on the assumption that 30 percent of visitors live in the primary subarea of influence³; 60 percent live in the secondary subarea of influence; and 10 percent live in the tertiary subarea of influence. The current rate of participation in each activity was applied to the change in the population to estimate the number of visitors that would participate in an activity in 2020. The estimated number of people for each activity was also adjusted based on projected preference changes.

The estimated number of participants in each activity in 2020 (based on changes in preferences) was added to the estimated new entrants (or decline) from a change in population. Table 4-11 shows the baseline and projected number of visitors for each of the primary activities, sorted by subarea of influence.

As indicated in Table 4-11, overall participation is expected to increase by 10,080 visits (approximately 2.5 percent) by 2020, and 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 participation are anticipated to be in the “Other” category (which includes hiking, horseback riding, and golf) and in sightseeing.

4.7.5 Lake Carrying Capacity

Although it is projected that the number of people participating in fishing could decrease by 5 percent, boating is expected to increase by 2.2 percent by year 2020. The increase in boating could lead to an overall increase in the number of boats using Yatesville Lake as a result of the shift from recreational fishing to recreational boating. Therefore, the carrying capacity of Yatesville Lake for boating was analyzed to determine whether the lake capacity is adequate for current and future demand. Carrying capacity refers to the number of boats that might use the lake at one time. If the number of boats exceeded the carrying capacity of the lake, boaters would

³ The distribution of the population for each subarea of influence is based on observations by resources managers. These observations, listed below, are consistent with the demographic characteristics of the area and the location of comparable facilities:

- Although closest to the Project, the primary subarea of influence has a small population compared to the secondary area of influence.
- Comparable facilities have a greater impact on the recreational destination to those living farther from the Project, such as in the tertiary subarea of influence.
- People may be unwilling to cross State lines for recreational purposes, especially for hunting and fishing, which would require the purchase of a nonresident license.

not experience a reasonable level of satisfaction in the boating experience or a reasonable level of safety.

**Table 4-11: Baseline and Projected Participation in
Recreational Activity and Subarea of Influence**

Activity	Subarea of Influence	Baseline Participants	Projected for 2020	Change
Boating	Primary	18,770	19,660	890
	Secondary	37,550	37,960	410
	Tertiary	6,260	6,330	70
	Subtotal	62,580	63,950	1,370
Camping	Primary	3,250	3,410	160
	Secondary	6,510	6,580	70
	Tertiary	1,080	1,100	20
	Subtotal	10,840	11,090	250
Fishing	Primary	25,570	24,910	-660
	Secondary	51,140	48,090	-3,050
	Tertiary	8,520	8,020	-500
	Subtotal	85,230	81,020	-4,210
Hunting	Primary	3,270	3,190	-80
	Secondary	6,540	6,150	-390
	Tertiary	1,090	1,030	-60
	Subtotal	10,900	10,370	-530
Other	Primary	12,360	13,590	1,230
	Secondary	24,710	26,240	1,530
	Tertiary	4,120	4,380	260
	Subtotal	41,190	44,210	3,020
Picnicking	Primary	11,020	11,540	520
	Secondary	22,040	22,280	240
	Tertiary	3,670	3,720	50
	Subtotal	36,730	37,540	810
Sightseeing	Primary	33,760	37,130	3,370
	Secondary	67,520	71,670	4,150
	Tertiary	11,250	11,960	710
	Subtotal	112,530	120,760	8,230
Swimming	Primary	14,760	15,460	700
	Secondary	29,510	29,840	330
	Tertiary	4,920	4,980	60
	Subtotal	49,190	50,280	1,090
Water Skiing	Primary	600	630	30
	Secondary	1,190	1,210	20
	Tertiary	200	200	0
	Subtotal	1,990	2,040	50
Total		411,180	421,260	10,080

Because of shallow water, narrow portions of the lake, docks, and other constraints, 15 percent of Yatesville Lake is estimated to be unsuitable for boating. Although some of the unsuitable area can be used safely by non-motorized boats or motorboats fishing close to shore, the area was removed from the lake carrying capacity analysis. The summer pool lake is 2,247 acres; therefore, the estimated number of acres available for boating in the summer months is:

$$\text{Acres available for boating during summer} = 2,247 - (0.15 * 2,247) = 1,910 \text{ acres}$$

Non-motorized boats (e.g., canoes, rowboats) require less lake space than motorboats for safety, and motorboats require more space than non-motorized boats for boating enjoyment. Based on observations by resource managers, it is estimated that the distribution of boats on the lake at any one time is 1 percent non-motorized boats and 99 percent motor boats.

The carrying capacity of Yatesville Lake was estimated for three scenarios: high, medium, and low density of boats (see Table 4-12), which is consistent with the carrying capacity analyses conducted for the *Lucky Peak Master Plan* in Walla Walla, Washington (USACE, 2006).

Table 4-12: Space Assumptions for Safe and Enjoyable Boating

Type of Boat	Low-Density Requirement Per Boat	Medium-Density Requirement Per Boat	High-Density Requirement Per Boat
Non-motorized	2.5 acres	1.3 acres	0.5 acre
Motorboat	20 acres	10 acres	5 acres

Based on these assumptions, the number of boats that might comfortably be accommodated on Yatesville Lake at any one time for each scenario is estimated as follows.

For each scenario:

$$L + M = T$$

Where:

L = number of non-motorized boats

M = number of motorboats

T = total number of boats

Low-density scenario: $(L * 2.5 \text{ acres/boat}) + (M * 20 \text{ acres/boat}) = 1,910 \text{ acres}$

Medium-density scenario: $(L * 1.3 \text{ acres/boat}) + (M * 10 \text{ acres/boat}) = 1,910 \text{ acres}$

High-density scenario: $(L * 0.5 \text{ acre/boat}) + (M * 5 \text{ acres/boat}) = 1,910 \text{ acres}$

Table 4-13 displays the number of boats that could use Yatesville Lake at any one time for each density scenario.

Table 4-13: Numbers of Boats at Three Densities

Type of Boat	Number of Boats		
	Low Density	Medium Density	High Density
Non-motorized	1	2	4
Motorboat	95	191	382
Total Boats	96	193	386

The numbers of boats that could fit comfortably on the lake in the low-, medium-, and high-density scenarios were compared to the estimated number of boats (based on the estimated number of boaters) that use the lake on a weekend day during peak season. Weekend days during peak season were targeted in order to estimate the number of boaters on Yatesville Lake during periods of highest volume.

An analysis was performed to evaluate the effect of the number of boats on the lake’s carrying capacity. The number of boats was derived based on the following assumptions, which are based on observations from resource managers:

- Peak boating season is 3 months long
- 60 percent of the total boaters for the season use the lake during peak season
- Three boaters per boat
- 75 percent of boating activities occur on a summer weekend
- 8 weekend days per month
- Duration of each boat trip is 6 hours or half of a summer day

Table 4-14 shows the projected number of boats on the lake at any one time on a summer weekend day based on these assumptions. As shown on the table, a total of 196 boats are projected to use the lake at any one time on a summer weekend day, which reflects medium-density usage with the capacity to accommodate additional boats. This is consistent with observations from resource managers who indicated that overcrowding is not an issue on Yatesville Lake.

**Table 4-14: Estimated Number of Boats and Boaters
During Peak Season, Baseline and 2020 Projection**

Peak Season	Boaters per Month	Boats per Month	Boats on Weekend Day	Boats at One Time on Weekend Day
Baseline	12,515	4,172	391	196
2020 projection	12,790	4,263	400	200

The total number of boats on the lake at any one time was also examined for a summer weekend day in 2020. Based on the assumptions presented above and a projected 12,790 boaters per month during peak season, it is estimated there will be a total of 200 boats at any one time during a summer weekend day. The projected number of boats is similar to the baseline number of boats estimated to use Yatesville Lake on a weekend day, indicating that overcrowding is not anticipated to be an issue in the future.

4.8 Implications of Projected Demand on Recreational Activities

Based on previously discussed trends and changing demographics, demand for recreational activities at the Project are expected to change over the next 10 years. This section describes the implications of the trend and demand analysis on recreational activities at the Project.

4.8.1 Boating

Boating is a popular activity at the Project. The number of boaters is anticipated to increase as the population in the area grows. The analysis of the carrying capacity of Yatesville Lake indicates that the current use falls between the low- and moderate-density scenarios. Even with the additional boaters expected by 2020, the density scenario is anticipated to remain in the moderate range.

Although the overall capacity of the lake can accommodate the current and future boaters, some facilities that support boaters are insufficient. There is an identified unmet demand for boat slips and rental boats at the Marina—there is a waiting list for slips, and the pontoon boats are often fully reserved on weekends during the boating season. Meeting the demand is estimated to require adding 50 slips (10 to 15 houseboat slips and 30 to 40 covered slips).

The boat ramp capacity is sufficient to serve the estimated number of boats that use the lake, but there is often congestion at the popular boats ramps during peak periods of activity. The boat ramps at both the Barker Run Marina and the Pleasant Ridge Campground experience high

traffic volumes. Providing two additional courtesy docks (one at the boat ramp area and one near the picnic area) would assist in reducing congestion at the Barker Run Marina boat ramp by moving boats away from the ramps while other activities are being performed (such as parking the vehicle). The traffic volumes at the Rich Creek and Twin Branch boat ramps are moderate to low. Parking for vehicles with trailers is adequate to meet current and future needs.

4.8.2 Camping

Camping facilities at the Project operate at capacity, with no empty RV campsites available on weekends during the camping season, indicates a current unmet demand for quality camping in the area of influence. This demand is anticipated to increase by 2020 as the population increases. It is estimated that developing an additional 24 campsites at the Project would help address the current unmet demand and anticipated future demand.



Photograph 4-19: Cabin at Lawrence County Recreation Area

The trend in camping is expected to shift away from tent camping toward RV-accessible campsites with electricity and water. There is already a higher demand for RV campsites. Meeting the demand is estimated to require adding 20 RV and 4 tent campsites. Cabins are also in high demand and frequently requested by visitors (see Photograph 4-19). This demand is anticipated to increase as visitors shift from tent camping to other forms of lodging as the population ages. Meeting the demand is estimated to require adding 14 cabins. The shift to other forms of lodging also includes demand for facilities with more amenities, such as hotels and lodges. Visitors have expressed interest in a lodge.

4.8.3 Fishing

Fishing is a popular activity at the Project. Projections indicate a decrease in fishing visits at the Project, even when accounting for an increase in population. Fishing occurs on Yatesville Lake from boat and shore, including the fishing jetty and fishing lagoon at Barker Run Marina. Yatesville Lake has a healthy fish population evidenced by the large number of fishing tournaments throughout the fishing season. The stocked tailwater also provides opportunities to fish for trout and other species.

The facilities that support fishing activities are sufficient, but congestion is a concern at Barker Run Marina boat ramp, particularly when fishing tournaments are underway. Access to Yatesville Lake for shore fishing is available from multiple trails leading from roads in the outgrant areas and the WMA. No concerns were identified regarding the availability of appropriate shore fishing.

4.8.4 Hunting

Hunting is popular at the Project, especially for deer, dove, and turkey. However, projections indicate a decrease in visits for hunting activities at the Project, even when accounting for an increase in population. Because the WMA adequately addresses the current demand (no areas of congestion or conflict were identified), the current facilities are adequate to meet future demand.

4.8.5 Other Activities

Visitors engage in many activities that are included in the “Other” category, such as walking, hiking (see Photograph 4-20), golf, and horseback riding. The rate of participation in this category is expected to grow, leading to an increased number of participants engaged in these activities at the Project.

Facilities that support the current participation level in these activities appear to be appropriate for the current needs although it was observed that trail use would increase if the trails were easier. Changing demographics and preferences are anticipated to shift the activities that visitors participate in to less strenuous forms of activities, indicating a further increase in demand for walking and nature trails that are shorter in length and easier to traverse. Scenic views, wildlife viewing opportunities, and interpretive signage should be considered when developing and managing walking and nature trails.



Photograph 4-20: Hiking Trail at Pleasant Ridge Recreation Area

4.8.6 Picnicking

Picnicking is a popular activity at the Project and demand is anticipated to increase slightly by 2020 as the population increases. Picnicking is associated primarily with shelters, which are typically fully reserved on weekends during spring, summer, and fall (see Photograph 4-21). Meeting the demand is estimated to require adding four shelters. In addition, site evaluations indicate a need for picnic tables independent of shelters.



Photograph 4-21: Picnic Shelter at Barker Run Marina

4.8.7 Sightseeing

Sightseeing, including wildlife viewing, is the most popular recreational activity at the Project. There are a number of areas along roads and trails that provide scenic views to visitors. By 2020, the number of sightseers is expected to increase because of changes in trends and population increases. This demand could be met by providing additional access to viewsheds.

4.8.8 Swimming

There are two designated swimming beaches available at the Project and visitors also swim in Yatesville Lake from the shore or while boating. The demand for swimming is anticipated to increase as the population in the area of influence increases. The swimming opportunities are sufficient to meet the current and future demand for swimming. .

4.8.9 Water Skiing

Water skiing takes place on Yatesville Lake during the summer months but is not a significant recreational activity in comparison to other activities. The lake is able to handle the capacity of current and anticipated number of water skiers. This page intentionally left blank

5.0 RESOURCE USE OBJECTIVES

The objectives for the use of Project resources, both manmade and natural, are presented in this section. The objectives are used to guide development in the Project area and also guide resource management to obtain the greatest possible benefit through meeting the needs of the public and protecting and enhancing the environment. In the development of the objectives, the following were considered: authorized Project purposes, applicable Federal laws and directives, regional needs, resource capabilities, and expressed public desires. The information in Sections 2, 3, and 4 form much of the basis for the resource use objectives.

While implementing the following objectives, seek opportunities to increase efficiencies, cost effectiveness, and innovation at the Project. Consistent with EO 13514, specific measures to pursue include energy efficiencies, reduction of water consumption, reduction of carbon emissions and reduction of operations and maintenance costs.

5.1 Resource Use Objective 1

Enhance the recreational use of Yatesville Lake and the tailwaters for recreational boating and fishing opportunities.

5.1.1 Measures to Achieve Objective

1. Periodically, reassess designation and enforcement procedures of idle-only zones to address safety concerns.
2. Provide mooring locations for boats.
3. Improve boat ramp facilities through efficiencies to address congestion.
4. Provide additional slips and rental boats at the marina.
5. Designate an operational boat ramp in the area of the tailwater as a public boat ramp for non-motorized boats.
6. Provide additional facilities in the area of the tailwater to support recreational use.

5.1.2 Justification

Demand for boating has historically been strong at the Project. Results of the public scoping meeting indicate an interest in additional boat slips, concerns with idle-only zones (and enforcement of these zones), and mooring locations for boats. There is currently a waiting list for

boat slips at Barker Run Marina. The carrying capacity of Yatesville Lake indicates that additional recreational boating activities can be supported.

The lake has significant aquatic resources and the capability to support fishing. The tailwater is stocked with rainbow trout, but the facilities to support anglers are limited.

5.2 Resource Use Objective 2

Enhance quality and diversity of overnight visitation opportunities.

5.2.1 Measures to Achieve Objective

1. Increase the number of RV campsites that can accommodate RVs and tents.
2. Provide additional cabins.
3. Identify appropriate locations for a lodge.

5.2.2 Justification

The recreational program analysis results show a projected increase in participation in camping, particularly RV camping. The demand for cabins is high and there are frequent requests for additional cabins. The local area has few options for lodging. Providing additional lodging facilities could increase the popularity of the Project to golfers, who have expressed an interest in non-camping overnight stays.

5.3 Resource Use Objective 3

Enhance recreational day-use activities.

5.3.1 Measures to Achieve Objective

1. Enhance horseback riding by improving facilities at trailheads.
2. Provide walking and hiking opportunities consistent with aging demographics, such as providing shorter and easier to traverse trails.
3. Periodically update visitor displays in the Information Center.
4. Increase public awareness of native grasslands through the addition of interpretative signage.
5. Provide additional picnic facilities, such as shelters, to meet current and future demand.
6. Provide additional food service facilities.

5.3.2 Justification

The Project is host to interesting topography, scenic resources, and abundant wildlife that provide a quality environment for trail hiking, sightseeing, and associated eco-tourism activities. Stakeholders have expressed a desire for improved horseback riding trailhead facilities and day-use opportunities. Walking and hiking are popular activities in Kentucky, with trends showing an increase in participation in these activities.

Demand for picnic shelters is high, with shelters typically reserved every weekend during the recreation season. There is a need for additional picnic shelters.

Comments from the public indicate that there is a demand for on-site food service to support the recreational activities.

5.4 Resource Use Objective 4

Support unique and environmentally sensitive ecosystems.

5.4.1 Measures to Achieve Objective

1. Manage habitat to support a selected number of regionally important neo-tropical migrant species that are in decline.
2. Identify and delineate the location, size, and type of wetlands.
3. Enhance existing wetlands or/and create new wetlands.
4. Protect, enhance and create bottomland hardwoods ecosystems.
5. Prevent introduction of invasive species and, where present, control and monitor.
6. Restore native species and habitat conditions in ecosystems that have been invaded.

5.4.2 Justification

In addition to supporting the laws and EOs described in Section 1.0 that require the conservation of wildlife and plant species and prohibit the destruction of wetlands, there are opportunities at the Project to provide support for environmentally sensitive areas. A number of unique ecosystems at the Project, such as bottomland hardwoods, are in decline throughout the region and require support to avoid further decline. A comprehensive delineation of the wetlands at the Project has not been completed since the construction of the Yatesville Lake dam. Conservation of the natural habitat within the Project would maintain the rich ecological diversity of the area and also attract visitors to the Project.

5.5 Resource Use Objective 5

Improve water supply to Project areas.

5.5.1 Measures to Achieve Objectives

1. Develop a long-term solution to meet irrigation needs at the Eagle Ridge Golf Course.
2. Provide potable water supply at Boy Scout Camp Cherokee.

5.5.2 Justification

Providing a regular and adequate water supply is important for the effective operation and maintenance of the Eagle Ridge Golf Course. The current method of obtaining water is through the public service district. Due to distribution issues, adequate water supply for irrigation at the course is not available and the state must seek an alternative source. Although primitive camping is part of the Boy Scout tradition, providing potable water at Boy Scout Camp Cherokee would make the area more usable.

6.0 LAND ALLOCATION AND LAND CLASSIFICATION

The land allocation and land classification information presented in this section provides for the orderly development, use, and management of Project lands and waters. Land allocation and classification categories are established for projects and are based on ER 1130-2-550, *Recreation Operations and Maintenance Policies* (USACE, 1996b).

6.1 Land Allocation

Land allocations identify the authorized purposes for which project lands were acquired. The entire Project has a land allocation of Operations. Operations lands are lands that are acquired to provide safe, efficient operation of the Project for its authorized purposes. The Project purposes are flood risk management, recreation, water quality control, and fish and wildlife management. No separable lands for recreation, fish and wildlife, or mitigation were acquired for the Project.

6.2 Land Classification

Allocated Project lands are further classified to provide for development and resource management consistent with the authorized Project purposes and the provisions of NEPA and other Federal laws. The classification process refines the land allocation to fully use Project lands and considers public desires, legislative authority, regional and Project-specific resource requirements, and suitability. General land classification categories as defined in ER 1130-2-550 (USACE, 1996b) include:

1. Project Operations
2. Recreation
3. Mitigation
4. Environmentally Sensitive Areas
5. Multiple Resource Management
 - (a) Recreation – Low Density
 - (b) Wildlife Management General
 - (c) Vegetative Management
 - (d) Inactive and/or Future Recreational Areas
6. Easement Lands

Table 6-1 identifies land classifications per ER 1130-2-550, and the Project areas included in the classifications and the associated acreages. The land classifications are discussed below, and the land classifications in the Project area are shown in Figure 6-1.

Table 6-1: Land Classifications and Project Areas

Land Classification		Project Area	Acreage
1	Project Operations	Dam Site Area	433
		Rich Creek Launch Ramp	7
		Total	440
2	Recreation – Intensive Use	Barker Run Marina	131
		Yatesville Lake State Park	1,521
		Lawrence County Park	784
		Lawrence County Beach	187
		Boy Scout Camp Cherokee	434
		Total	3,057
3	Mitigation	No applicable lands	0
4	Environmentally Sensitive Areas	Environmentally Sensitive Areas occur intermittently throughout the Project, but they are not identified as a separate land classification.	
5	Multiple Resource Management		
	(a) Recreation – Low Density	No applicable lands	0
	(b) Wildlife Management General	Wildlife Management Area	15,947
	(c) Vegetative Management	No applicable lands	0
	(d) Inactive and/or Future Recreational Areas	Tailwater Area	291
		Total	16,238
6	Easement Lands	Easement Lands	433
		Total	433

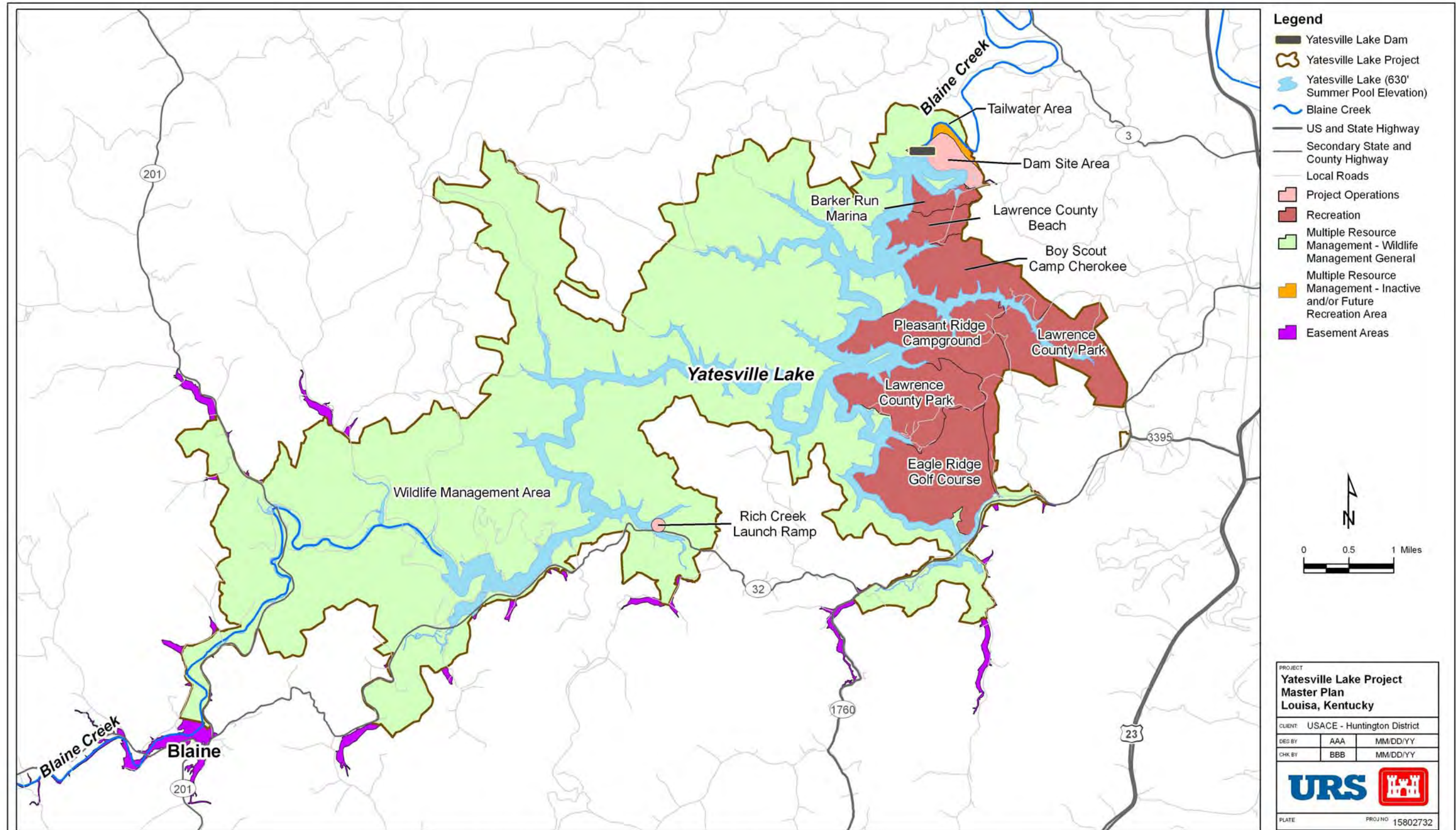


Figure 6-1: Land Classification Map

This page intentionally left blank.

6.2.1 Project Operations

The Project Operations classification includes lands required for the dam and associated structures, operations center, administrative offices, maintenance compounds, and other areas that are used to operate and maintain the Project. When compatible with operational requirements, Project Operations lands may be used for wildlife habitat management, recreational use, or agricultural activities. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements.

6.2.2 Recreation – Intensive Use

The Recreation – Intensive Use classification includes lands that are designated for intensive levels of recreational use to accommodate and support the recreational needs and desires of visitors. These lands include lands on which existing or planned major recreational facilities are located and allow for developed public recreational facilities, concession development, and high-density or high-impact recreational use.

In general, no uses of these lands are allowed that would interfere with public enjoyment of recreational opportunities. Low-density recreation and wildlife management activities compatible with intensive recreation use are acceptable, especially on an interim basis. No agricultural uses are permitted on those lands except on an interim basis for maintenance of scenic or open space values. Permits, licenses, and easements are not issued for noncompatible manmade intrusions such as pipelines, overhead transmission lines, or non-Project roads, except when warranted by the public interest

6.2.3 Mitigation

The Mitigation classification includes land acquired or designated specifically for mitigation. No mitigation lands exist at the Project.

6.2.4 Environmentally Sensitive Areas

The Environmentally Sensitive Area classification includes areas where scientific, ecological, cultural, or aesthetic features have been identified. Public use is normally limited or prohibited to ensure that the sensitive areas are not adversely affected. Agricultural and grazing uses are not permitted. Environmental Sensitive Areas are located intermittently throughout the Project within other land classification areas.

6.2.5 Multiple Resource Management

The Multiple Resource Management classification includes lands that are managed for one or more of the following subcategories: (a) low-density recreation, (b) wildlife management, (c) vegetative management, and (d) inactive and/or future recreation. However, management is not limited to these activities to the extent they are compatible with the primary allocation(s).

6.2.5.1 Recreation – Low Density

The Recreation – Low Density subclassification includes lands that are designated for dispersed and/or low-impact recreational use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as walking, fishing, hunting, or nature study. Site-specific, low-impact activities such as primitive camping and picnicking are allowed. Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings.

Manmade intrusions, including powerlines, non-project roads, and water and sewer pipelines, may be permitted under conditions that minimize adverse effects on the natural environment. Vegetation management, including agricultural activities that do not greatly alter the natural character of the environment are permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. When not in conflict with the safety of visitors and project personnel, hunting and fishing are allowed pursuant to tribal or State fish and wildlife management regulations.

No lands within the Project have been classified in this subcategory.

6.2.5.2 Wildlife Management General

The Wildlife Management General subclassification includes lands that are designated for wildlife management. These lands contain valuable wildlife habitat components that are maintained to yield habitat suitable for a designated wildlife species or group of species. These lands may be administered by other public agencies under a lease, license, permit, or other formal agreement.

Private use of wildlife lands is prohibited except for agricultural activities undertaken to improve wildlife habitat. Licenses, permits, and easements are not allowed for manmade intrusions such as pumping plants, pipelines, cables, transmission lines, or non-project roads. Exceptions are allowed when necessary for the public interest. Wildlife lands are available for sightseeing, wildlife viewing, nature study, and hiking. Consumptive uses of wildlife, including hunting,

fishing, and trapping, are allowed when compatible with the wildlife objectives for a given area and with Federal and State fish and wildlife management regulations.

At the Project, the KYDFWR has primary jurisdiction for wildlife management activities, and the USACE supports these activities.

6.2.5.3 Vegetative Management

The Vegetative Management subclassification includes lands that are designated for vegetative management. Management activities focus on the protection and development of forest resources and vegetative cover.

The Project has no project lands in this subcategory, but all Project lands are managed to protect and develop vegetative cover in conjunction with other lands.

6.2.5.4 Inactive and/or Future Recreational Areas

The Inactive and/or Future Recreational Areas subclassification includes lands that are designated recreational areas that are planned or that contain existing recreational areas that have been closed temporarily.

6.2.6 Easement Lands

The Easement Lands classification includes all lands for which USACE holds an easement interest but no fee title. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the Project.

Significant flowage easements have been acquired beyond the Project area and are shown in Figure 6-1.

This page intentionally left blank.

7.0 RESOURCE PLAN

This section presents the plan for resource use and development at the Yatesville Lake Project. The plan includes identified issues and the recommended actions or strategies to address each issue. The issues and recommendation are presented in Table 7-1. Table 7-1 contains the following information for each Project area:

- **Land Classification** – Land use classification. See Section 6.0 for more information on land classifications.
- **Management Agency** – Agency or agencies directly responsible for managing a Project area.
- **Issues** – Identified issues, which are based on input from the public and interested agencies. Each issue relates to the resource use objective (RUO) listed in Section 5.0.
- **Recommendations** – Proposed actions or strategies to address the identified key issues. Recommendations are conceptual in nature and will be translated into operational terms in the Operational Management Plans. Prior to the implementation of any development activity, additional environmental studies and economic analysis may be conducted if necessary. The recommendations relate to the Project-specific measures that are intended to achieve the objective listed in Section 5.0.

This page intentionally left blank.

Table 7-1: Resource Plan for the Yatesville Lake Project

Project Area	Land Classification	Management Agency	Issue	Recommendations
Dam Site Area	Project Operations	USACE	The Information Center provides interpretive and educational opportunities to enhance awareness of Project features, purposes, and benefits, but the information is outdated. (RUO 3)	<ul style="list-style-type: none"> Periodically update visitor displays in the Information Center. Updated displays should include Project description, site ecology, area history, cultural resources, and other management objectives.
			There is no trail access from the Visitor Center to the Tailwater Area. Evidence of foot traffic is indicates that there is a need for this access. Opportunities also exist to provide additional interpretive signage in this area. (RUO 3)	<ul style="list-style-type: none"> Extend the existing trail located south of the Visitor Center to the top of the dam. The trail should be easy to traverse to accommodate a wide range of users and include interpretive signage. See Figure 7-1. Increase public awareness of the grassland plots and ecosystem characteristics by installing interpretive signage.
Tailwater Area	Multiple Resource Management	USACE	The Tailwater Area is stocked and provides fishing opportunities but has minimum parking, limited stream access, and no support facilities. The site is underdeveloped. Due to requirements of PL 89-72, all recreational facilities must be cost shared with a non-federal sponsor. (RUO 1)	<ul style="list-style-type: none"> Seek a non-Federal cost-sharing partner to develop and manage the Tailwater Area. Develop recreation-related facilities, such as additional parking, restrooms, picnic shelter, and associated site amenities. See Figure 7-1. Open the existing operations boat ramp to public use for small boats (e.g., canoe, kayak, small john boat)
Rich Creek Launch Ramp	Project Operations	USACE	Due to the remote location of this area, it does not get the use that other launch ramps get. Remote location also makes it difficult to provide security.	<ul style="list-style-type: none"> No additional development is recommended.
Barker Run Marina	Recreation (Intensive Use)	Kentucky Department of Parks	There is demand for additional boat slips, houseboat slips, and/or mooring locations for rental purposes. (RUO 1)	<ul style="list-style-type: none"> Increase the number of slips by 50 (15 houseboats slips and 35 covered slips) to meet demand for both boats and houseboats. Potential area for expansion of the existing marina is to the south of the boat ramp. To reduce conflicts with other boaters, it is recommended that all of the houseboat slips be located in the new area. See Figure 7-2. To accommodate the additional slips and reduce congestion in the parking areas, it is recommended that additional parking be proved to the south of the existing parking area. See Figure 7-2. The designation of the idle-only zones and the enforcement policy should be evaluated and revised if appropriate.
			There is congestion at the boat ramp during the summer season including weekends, holidays, and fishing tournaments. There have been safety concerns expressed by the public regarding traffic in the marina area. Tournaments in Kentucky are only required to notify the KDFWR if there will be more than 100 boats. Tournaments with less than 100 boats do not need to notify the lake resource managers. (RUO 1)	<ul style="list-style-type: none"> Provide procedural signage at boat ramp area to increase launch efficiency. Extend courtesy dock next to boat ramp to 8 feet x 40 feet. Extending the dock would allow more boats to be docked while boaters are attending to other tasks. See Figure 7-2. Provide an additional 8-foot x 40-foot courtesy dock at the boat ramp. An additional dock on the other side of the boat ramp would allow more boats to be docked while boaters are attending to other tasks. See Figure 7-2. The designation of the idle-only zones and the enforcement policy should be periodically evaluated and revised as needed.

Table 7-1: Resource Plan for the Yatesville Lake Project

Project Area	Land Classification	Management Agency	Issue	Recommendations
			Current picnic area and associated facilities do not meet demand and needs. Parking for the shelters and restroom facilities are 200 yards away. (RUO 3)	<ul style="list-style-type: none"> Relocate the two picnic shelters and playground equipment to the open area near the fishing jetty. Construct associated parking and restroom facilities to accommodate visitors. See Figure 7-2. Construct a 8-foot x 24-foot courtesy dock near the relocate picnic area. A courtesy dock would allow picnickers with boats to dock near the picnic area. See Figure 7-2.
Yatesville Lake State Park (Pleasant Ridge Campground and Eagle Ridge Golf Course)	Recreation (Intensive Use)	Kentucky Department of Parks	There is congestion at the boat ramp during the summer season including weekends, holidays, and fishing tournaments. (RUO 1)	<ul style="list-style-type: none"> Provide procedural signage at boat ramp area to increase launch efficiency.
			Current camping facilities do not meet demand and needs. The campsites are reserved throughout the recreation season and there are frequent requests for cabins. (RUO 2)	<ul style="list-style-type: none"> Provide 20 additional RV campsites to meet demand. Develop the individual sites with picnic table, fire ring, electricity, and lantern hook. Potential area for campsites is northwest of the existing campground. Provide a bathhouse to support the additional campsites. The bathhouse should be located in the area of the new campsites and contain both toilets and showers. See Figure 7-3. Provide 10 cabins to meet demand. Cabins should be self-contained. Potential area for the cabins is northeast of the existing campground. See Figure 7-3. Provide wireless Internet service throughout the campground. Wireless Internet is an amenity that is becoming more popular and would be used by a wide variety of visitors.
			Recreational facilities do not meet the needs and demands of visitors. There is a lack of sports-related opportunities for campground visitors. (RUO 3)	<ul style="list-style-type: none"> Develop sports-related opportunities (such as volleyball or basketball courts) that would provide recreational opportunities for older children and young adults. See Figure 7-3.
			Water supply issues limit the proper maintenance of the Eagle Ridge Golf Course, especially during drought conditions. (RUO 5)	<ul style="list-style-type: none"> Develop a permanent water supply that can accommodate irrigation at the golf course.
Wildlife Management Area	Multiple Resource Management, Wildlife Management General	KYDFWR	The Project area includes unique habitats such as wetlands, habitat that supports neo-tropical migratory birds, and bottomland hardwood. (RUO 4)	<ul style="list-style-type: none"> Conduct baseline study that identifies habitats throughout the Project (e.g., wetland delineation) and develop monitoring program. Knowing the amount and range of the habitats would allow losses or gains to be tracked.
			Facilities do not meet the needs and demands of visitors. Trails are difficult to access for vehicles with trailers. (RUO 3)	<ul style="list-style-type: none"> Improve the parking areas at Arrington Branch and Lick Creek trailheads to accommodate vehicles with horse trailers. See Figure 4-1 for location of trailheads. The parking areas should be improved to ease the turn-around and parking of vehicles with trailers.

Table 7-1: Resource Plan for the Yatesville Lake Project

Project Area	Land Classification	Management Agency	Issue	Recommendations
Lawrence County Park	Recreation (Intensive Use)	Lawrence County	Current camping facilities do not meet demand and needs. There is unmet demand for campsites and cabins. (RUO 2)	<ul style="list-style-type: none"> • Construct four additional tent campsites to meet demand. Develop the individual sites with picnic table, fire ring, electricity, and lantern hook. Potential area for campsites is southeast of the current campground. See Figure 7-4. • Construct three additional cabins to meet demand. Potential area for the cabins is along Head Water road of the current campground. See Figure 7-4 • Provide wireless Internet service throughout campground. Wireless Internet is an amenity that is becoming more popular and would be used by a wide variety of visitors.
			Recreational facilities do not meet the needs and demands of visitors. Shelters are reserved throughout the recreation season. (RUO 3)	<ul style="list-style-type: none"> • Construct a picnic shelter near the shoreline to meet demand. Develop the site with picnic tables, charcoal grills, and trash receptacles. Potential area for the picnic shelter is to the southeast of the current shelters. See Figure 7-4. • Construct an additional restroom facility near the picnic area. Providing restrooms adjacent to the picnic area would make the facility more accommodating to visitors. See Figure 7-4.
Lawrence County Beach	Multiple Resource Management (Inactive and/or Future Recreation Area)	Lawrence County	The Lawrence County Beach area is underdeveloped. The area could be further developed to address the demands and the needs visitors to the Project. (RUO 3)	<ul style="list-style-type: none"> • Construct two picnic shelters. Develop the site with picnic tables, charcoal grills, and trash receptacles. Potential area for the picnic shelters is adjacent to the existing concession stand. See Figure 7-5. • Expand and improve the parking area to accommodate the increased number of visitors. See Figure 7-5. • Provide mooring posts to provide visitors a place to secure their boats while using the area. See Figure 7-5. • Develop a trail (approximately 1 mile) connecting Lawrence County Beach with Barker Run Marina. Connecting these two areas would provide visitors relatively easy access between the recreational activities that are available in each area. The trail should be easy to traverse to accommodate to a wide range of users and include interpretive signage. See Figure 7-5. • Widen the approach road to the beach and implement traffic calming measures such as speed bumps to improve overall access and safety in the area
Boy Scout Camp Cherokee	Recreation (Intensive Use)	Boy Scouts of America	Camp Cherokee does not have a permanent onsite drinking water source, which has been a constraint for groups using the area. (RUO 5)	<ul style="list-style-type: none"> • Determine the feasibility of installing a permanent source of potable water near the cabin and shelter area. • If potable water is provided, construct bathhouse to increase use by outside groups and provide a more comfortable experience to visitors.
			The condition of the road from the cabin area to the lake makes it difficult to transport equipment to the lake for day-use activities. (RUO 3)	<ul style="list-style-type: none"> • Improve existing road to allow easier access between cabin area and the lake for camp staff and visitors transporting equipment and supplies.

Table 7-1: Resource Plan for the Yatesville Lake Project

Project Area	Land Classification	Management Agency	Issue	Recommendations
Yatesville Lake	Project Operations	USACE	Opportunities for mooring boats for day and overnight use are limited. (RUO 1)	<ul style="list-style-type: none"> • Provide mooring buoys at different locations around the lake for day and overnight use. The buoys should be large enough to accommodate houseboats. A potential location for mooring buoys is to the north of the marina. See Figure 7-2.

KYDFWR = Kentucky Department of Fish and Wildlife Resources

USACE = U.S. Army Corps of Engineers



PROJECT	
Yatesville Lake Project Master Plan Louisa, Kentucky	
CLIENT	
DES BY	
CHD BY	
 	
PLATE	PROJ NO 15802732

Figure 7-1: Recommendations for Dam Site Area and Tailwater Area

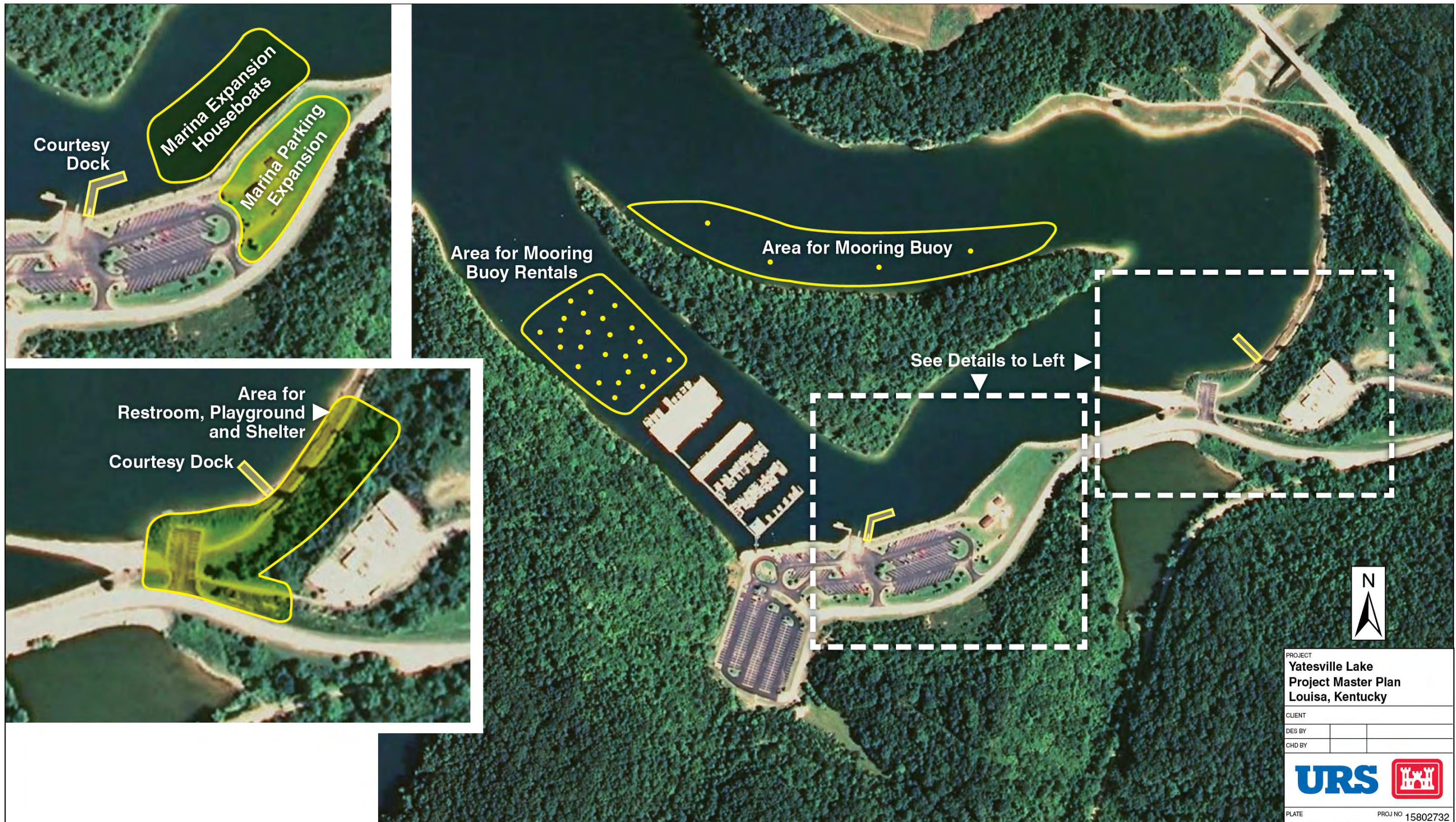


Figure 7-2: Recommendations for Barker Run Marina



PROJECT	
Yatesville Lake Project Master Plan Louisa, Kentucky	
CLIENT	
DES BY	
CHD BY	
 	
PLATE	PROJ NO 15802732

Figure 7-3: Recommendations for Yatesville Lake State Park

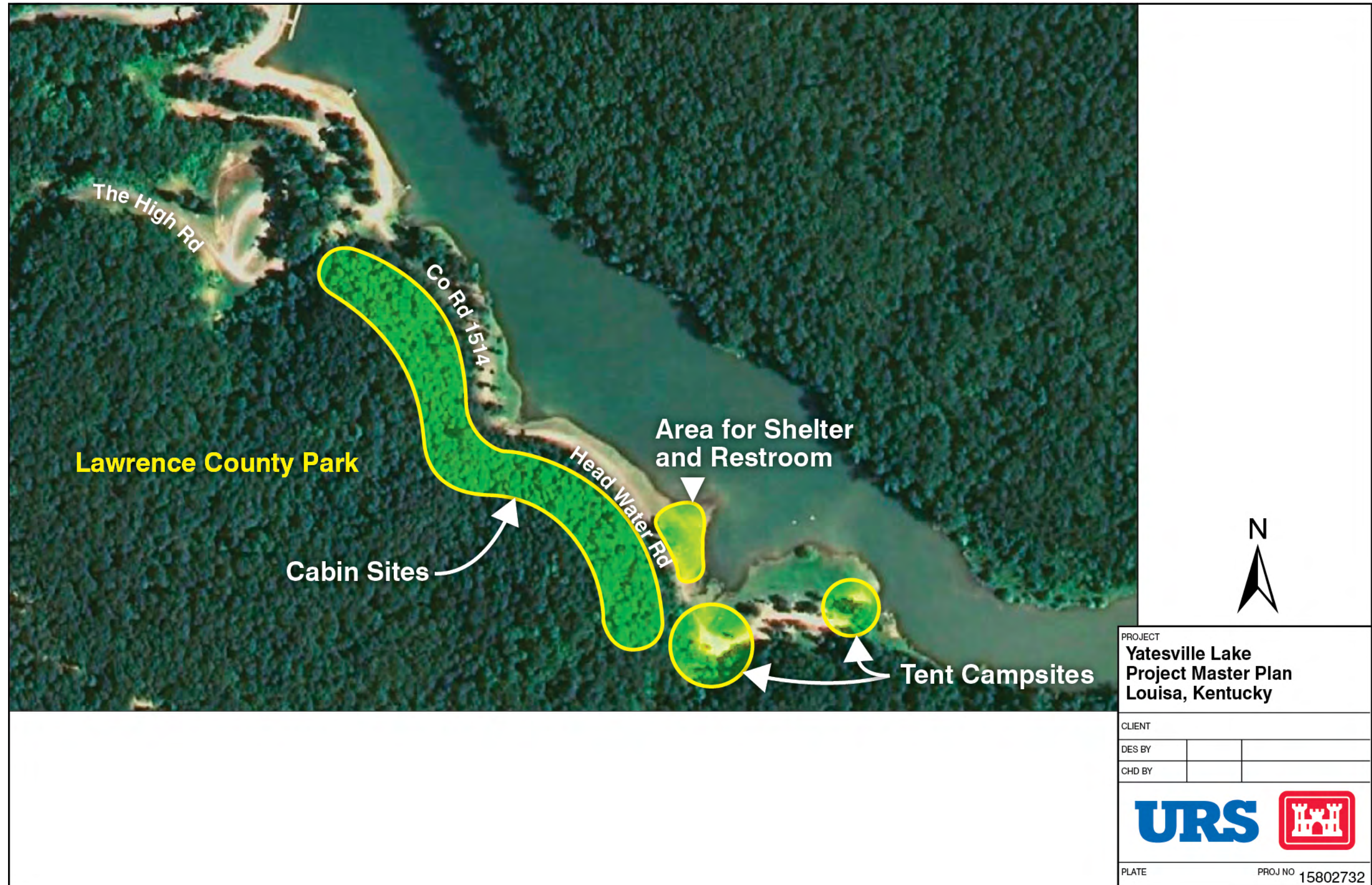


Figure 7-4: Recommendations for Lawrence County Park

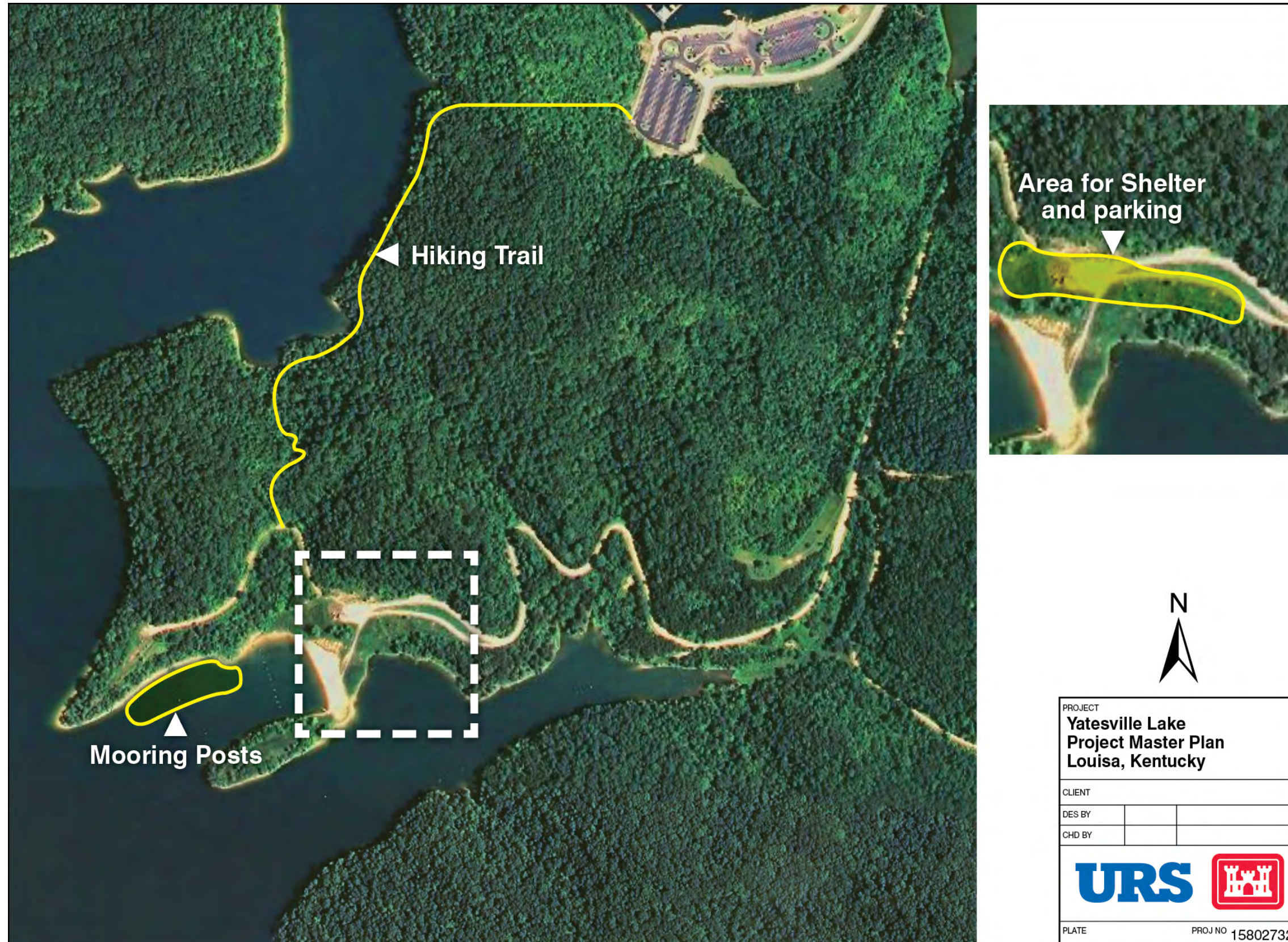


Figure 7-5: Recommendations for Lawrence County Beach

8.0 SPECIAL PROGRAMS

According to EP 1130-2-550, *Recreation Operations and Maintenance Guidance and Procedures* (USACE, 1996a), special programs are programs or situations that should be identified and discussed in a Master Plan but are not covered in the other sections of the plan. Three special programs were identified during the public scoping process. The special programs are:

- Proposed BlueWater Resort development
- Use of Lawrence County Park for fairs and festivals
- Consideration of utility corridors at the Project

8.1 Proposed BlueWater Development

A private developer has contacted the USACE Huntington District and expressed an interest in constructing a comprehensive destination resort at the Project on land currently leased to Lawrence County. The resort would be called the BlueWater Resort. At present, the entire development is conceptual, and a formal feasibility study has not been conducted.

8.1.1 Proposed Concept and Features

The proposed site for the development project is just south of the Barker Run Marina and near Lawrence County Beach. The proposed project includes a phased development comprising approximately 200 portable, prefabricated cabins that would not be affixed via foundations or concrete slabs and could be easily moved on and off the site. Persons occupying the cabins would not be permitted to stay more than 30 days, per USACE policy. The proposed project also includes a swimming pool, club house, welcome center, family activity center, country store, chapel, public recreational areas, resort lodge, outlook tower, and related administrative facilities. See Figure 8-1.

The proposed development appears to be generally consistent with USACE policy. The *Recreational Development Policy for Outgranted Corps Lands* memorandum (USACE, 2005) states "... The primary rationale for any future recreational development must be dependent on the project's natural or other resources. This dependency is typically reflective in facilities that accommodate or support water-based activities, overnight use ... and comprehensive resort facilities."

8.1.2 Suitability of Proposed Site

The proposed site has good access from SR 1185 and Boy Scout Road. All proposed improvements are above the maximum flood control pool elevation of 645 NGVD. Based on topography suitability mapping, the site has some limitations but appears generally suitable. The road configuration is well integrated with the natural contouring of the site to minimize grade for access to cabins. The elevation of the site should afford good views of the lake. Vegetative management would be limited, however, to accommodate placement of the cabins and for the construction of supporting roads and other structures. No tree clearing would be allowed to facilitate views. The existing Lawrence County Beach is close to the site. The site has quality vegetation to support the overall recreational experience. Sewage treatment and potable water facilities capable of supporting a portion of this development are available onsite. Additional capacity would be needed if all of the proposed cabins (200) are installed.

A review of the secondary information and data sources referenced in Section 3.1.5 on geology and soils indicates that best management practices (BMPs) should be followed to minimize erosion during the construction phase of the project because the potential for soil erosion is likely to be high. No wetlands have been identified on the site (see Section 3.1.2 and Figure 3-5). Two potential cultural sites have been identified in the area proposed for development, and both sites have been evaluated for their significance (Cultural Resource Analysts, Inc., 2004). Site 15La30 does not meet criteria for listing on the National Register of Historic Places, and Site 15La113 is presumed not eligible. Therefore, the two evaluated sites do not appear to be a limiting factor in the proposed development. A Phase I cultural resources study of the entire site would be needed. No threatened or endangered species are known to occur in this area, but the appropriate studies and agency coordination would be needed during the planning stage in order to comply with the Endangered Species Act (see Section 3.2.4).

8.1.3 Key Issues

Proximity of the site to the existing Barker Run Marina is a potential key factor in the success of the development.

The developer has indicated a desire for transient boat slips to meet the needs of the resort patrons. The marina is currently at capacity and recommendations have been made to meet the current demand (see Section 7.0), but the BlueWater development would create additional demand. The demand could be met through additional expansion of the marina to the northwest of the current facilities. There is the also potential for transient slips to be constructed below the development to meet the additional demand.

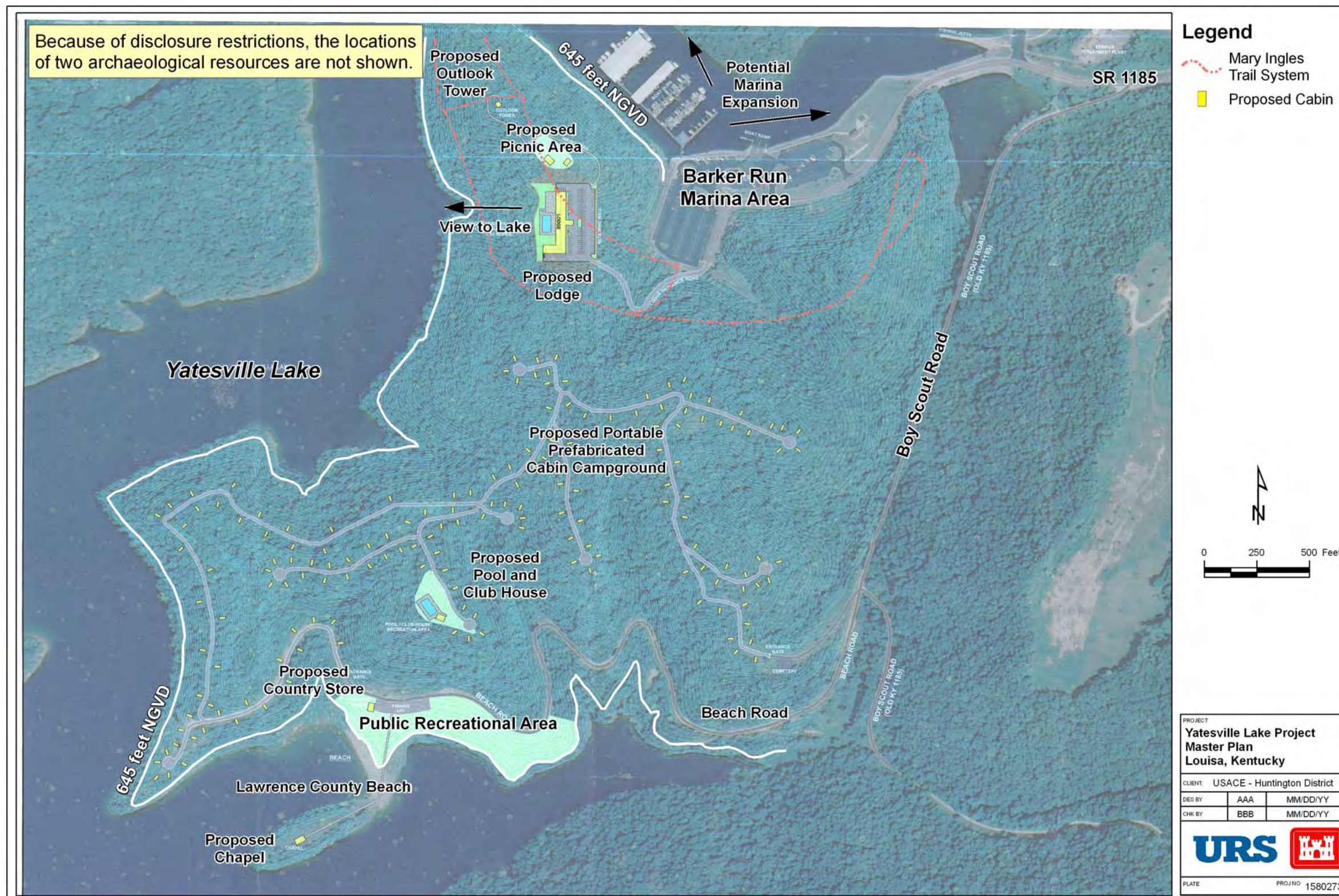


Figure 8-1: Proposed Bluewater Development

This page intentionally left blank.

A portion of the approximately 8-mile Mary Ingles Trail System is in the proposed development site. The conceptual footprint of the development could affect the existing trail. The development should use the trail to integrate the BlueWater facilities with the marina and beach to encourage pedestrian/bicycle use and reduce automobile use in the area. All trail modifications need to be coordinated closely with the responsible agency.

8.1.4 Consistency with Recreation Program Analysis Forecast and Lake Carrying Capacity Analysis

Overnight facilities are at capacity in the Project, and the existing demand is unmet (see Section 4.0). The campsites in the Pleasant Ridge Campground are fully occupied during the weekends throughout the summer recreation season. Both the Yatesville State Park and the Lawrence County Park are interested in providing a greater number of campsites and cabins, subject to available funding. The BlueWater proposal near Barker Run Marina includes approximately 200 cabins. Although there is a demand for additional overnight accommodations, 200 cabins as proposed by the developer appear to be aggressive. A market study and feasibility study must be completed before any final decisions are made regarding the development. Once a formal proposal has been submitted to the USACE, the following issues should be addressed: number of units, length of stay, financing of the units, escrow requirements, and phasing of the development.

8.1.5 Alternate Sites

Two other sites have been identified and screened as potential sites for a development such as the proposed BlueWater development.

Alternate Site #1 is west of the existing Pleasant Ridge Campground (see Figure 8-2) and is part of the Yatesville State Park lease. SR 3215 provides access to the area. A fairly large garage and maintenance structure operated by the Kentucky Transportation Cabinet is located near the entrance to the site and would potentially distract from the scenic quality of the entrance. The site offers good views of the lake and is well vegetated. Topography and soil conditions are similar to the proposed site but with steeper terrain adjacent to the shore. The site is not near the Barker Run Marina or public sewer service but is near the public beach in Lawrence County Park, a public water supply line along SR 3215, and the Eagle Ridge Golf Course.

This page intentionally left blank.



Figure 8-2: Potential Sites for Recreational Development

This page intentionally left blank.

Alternate Site #2 is just south of Alternate Site #1, south of the Pleasant Ridge Campground, and north of the Eagle Ridge Golf Course (see Figure 8-2). Alternate Site #2 is in an area that is currently outgranted to Lawrence County. The site also offers good views of the lake, and soils and topography appear equally or potentially more suitable than the proposed site. The proximity to the Eagle Ridge Golf Course is also an advantage as is access to a public water supply along the golf course road. Good vehicular access to the site would be from the paved golf course road. Lack of proximity to sewer service is a limiting factor. This site does not have efficient access to the marina or the Lawrence County Beach but is convenient to the smaller beach at the Lawrence County Park.

8.1.6 Conclusions

As discussed in Section 8.1.2, the proposed area appears to have adequate development potential for concession, resort, and quasi-public development. If the proposed BlueWater development does not materialize, the site could still be developed dependent on the merits of another submitted proposal. Proximity to the marina and the beach, along with good road access, are some of the advantages that may attract future development proposals.

8.2 Use of Lawrence County Park for Fairs and Festivals

During the scoping meetings, attendees discussed the potential of using Lawrence County Park for a fair or festival. The site has been used in the past for festivals, such as a bluegrass festival, which attracted up to 500 people. The issue is whether Lawrence County Park can be used for fairs and festivals and if the park can support larger crowds and events than the bluegrass festival.

8.2.1 Proposed Site

Lawrence County Park currently has a music pavilion (see Photograph 8-1), activity center, camping areas, cabins, picnic shelters, playgrounds, and game courts. The large area of gently sloping land in front of the music pavilion appears well suited for festivals and fairs. Temporary structures could be installed, and the music pavilion itself could be used to stage shows and other activities.



Photograph 8-1: Music Pavilion at Lawrence County Park

8.2.2 Site Suitability

Primary access to the Lawrence County Park is via SR 3215, a two-lane roadway. The roadway traverses Yatesville State Park and Lawrence County Park and is located west of the Pleasant Ridge Campground. The Lawrence County Park entrance road—Webb Hollow-Greenbrier Road—leads to the music pavilion site.

Several key factors were reviewed when considering the site suitability for larger events: parking, noise, traffic, and water supply and restroom facilities.

Parking

Two parking lots adjacent to the music pavilion can accommodate approximately 150 vehicles. A grassed area near the parking lots, which has been used for overflow parking during previous events, can accommodate additional vehicles. Parking would be a constraint for events expected to attract more than 250 vehicles.

Noise

Noise from fairs and festivals may be an issue that disrupts the recreational experience of other visitors. Although, noise complaints from previous events have been addressed by having fair officials turn down the volume of the speakers. Other activities during these events have not led to complaints. Larger events would lead to greater noise related impacts to other visitors to the

Project, such as those visiting the adjacent campground. Noise impacts would be a constraint for larger events, especially those that extend into the late-evening hours.

Traffic

Traffic congestion along roadway during larger events could delay response times for police and emergency service providers. Webb Hollow-Greenbrier Road SR 3215, the primary access road into the park is a two-lane roadway. Traffic-related concerns were not identified for previous events and are not considered to be a limiting constraint on future events.

Water Supply and Restroom Facilities

The area has a permanent restroom facility and potable water. No issues with potable water and restrooms were identified during previous events. Additional water and restroom facilities using portable chemical toilets could be accommodated to handle larger crowds, and are therefore not anticipated to be a limiting constraint on future events.

Based on the above assessment, festivals and fairs that would attract in excess of 500 people could have noise and parking related constraints.

8.3 Consideration of Utility Corridors at the Project

The Energy Policy Act of 2005 (PL 109-58) directed the Secretaries of Agriculture, Commerce, Defense, Energy, and Interior to identify corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal lands and to schedule prompt action to identify, designate, and incorporate the corridors into the applicable land use plans. In 2009, the USACE issued a Non-Recreational Outgrant Policy (USACE, 2009b), which states that the primary rationale for authorizing any future non-recreational outgrant request for use on USACE lands or waters will be (1) there is no viable alternative to the activity or structure being located on Civil Works land or waters or (2) it will direct benefit the Federal Government. Public utilities including power lines and gas and fuel pipelines are examples of outgrant requests that have been received by the USACE. Although no proposal has been made for either a major underground or aboveground utility line through the Project, such proposals may be put forth in the future.

Developing a utility corridor for a major electrical transmission line or pipeline is a complex undertaking and must take into account numerous engineering and environmental issues as well as acquisition of rights-of-way and easements. The evaluations of many of these issues are

guided by factors developed by numerous regulating agencies, including Federal, State, and municipal entities.

The focus of this section is on factors that should be considered if a proposal for a utility is presented. The factors identified do not replace or take precedence over those that are used by regulating agencies, but provide a guide to reducing the recreational and environmental impacts to the Project if a utility corridor cannot be located off of Project lands. The following key factors should be reviewed and assessed to identify potential locations that would cause the least disruption to the recreational and environmental goals of the Project:

1. Existing utility corridors
2. Intensive-use recreation areas
3. Environmentally or culturally sensitive areas
4. Existing roadways
5. Footprint on Project land

Existing Utility Corridors

The use of existing utility corridors should be evaluated to determine whether the proposed utilities can be placed along the same corridor. Using an existing corridor would cause less disruption to Project lands than constructing a new corridor. Future utilities should be grouped into the same corridor to reduce the recreational and environmental impacts.

There are two pipelines that traverse Project lands (Figure 8-3).

Intensive-Use Recreation Areas

One of the primary objectives of the Project is recreational use. The presence of a utility corridor would disrupt the use and enjoyment of the Project by visitors. Therefore, Project areas listed as intensive-use (Figure 8-3, see Table 6-1) should be avoided to cause the least disruption to the recreational use of the Project by visitors.

In addition to direct impacts on recreational use, utility corridors may affect the natural beauty of the Project lands. Even if a utility corridor does not cross an intensive-use recreation area, it may impact visitors using the intensive-use areas. For example, an overhead transmission line crossing the lake may impair the viewshed. Therefore, the visual impacts in areas that have intensive recreational use should be evaluated.

Although Yatesville Lake is not listed as a recreation area, it is heavily used by boaters and fisherman. Locating certain types of utilities, such as an overhead transmission line, would cause considerable disruption and loss of aesthetic value to the users. If the utilities must cross the lake, the narrow portions of the lake should be considered.

Environmentally or Culturally Sensitive Areas

A number of environmental and cultural sensitive areas located throughout the Project (Figure 8-3). These areas are unique and should be maintained; therefore, potential utility corridors should avoid these areas.

Existing Roadways

Roadways are present throughout the Project to provide access to the Project and allow residents to pass through the area (Figure 8-3). These roadways have already been removed from recreational use and have encountered environmental impacts. Placing utility corridors adjacent to existing roadways would decrease the recreational and environmental impacts to the Project.

Footprint on Project Lands

The width of the Project varies throughout the Project area (Figure 8-3). If a utility corridor must pass through the Project, the option that presents the smallest footprint on Project lands should be selected.

Once a formal proposal is received, an evaluation should be conducted using the factors above to identify potential impacts. Recommendations for alternative utility corridor locations should be based on the evaluation.

This page intentionally left blank..

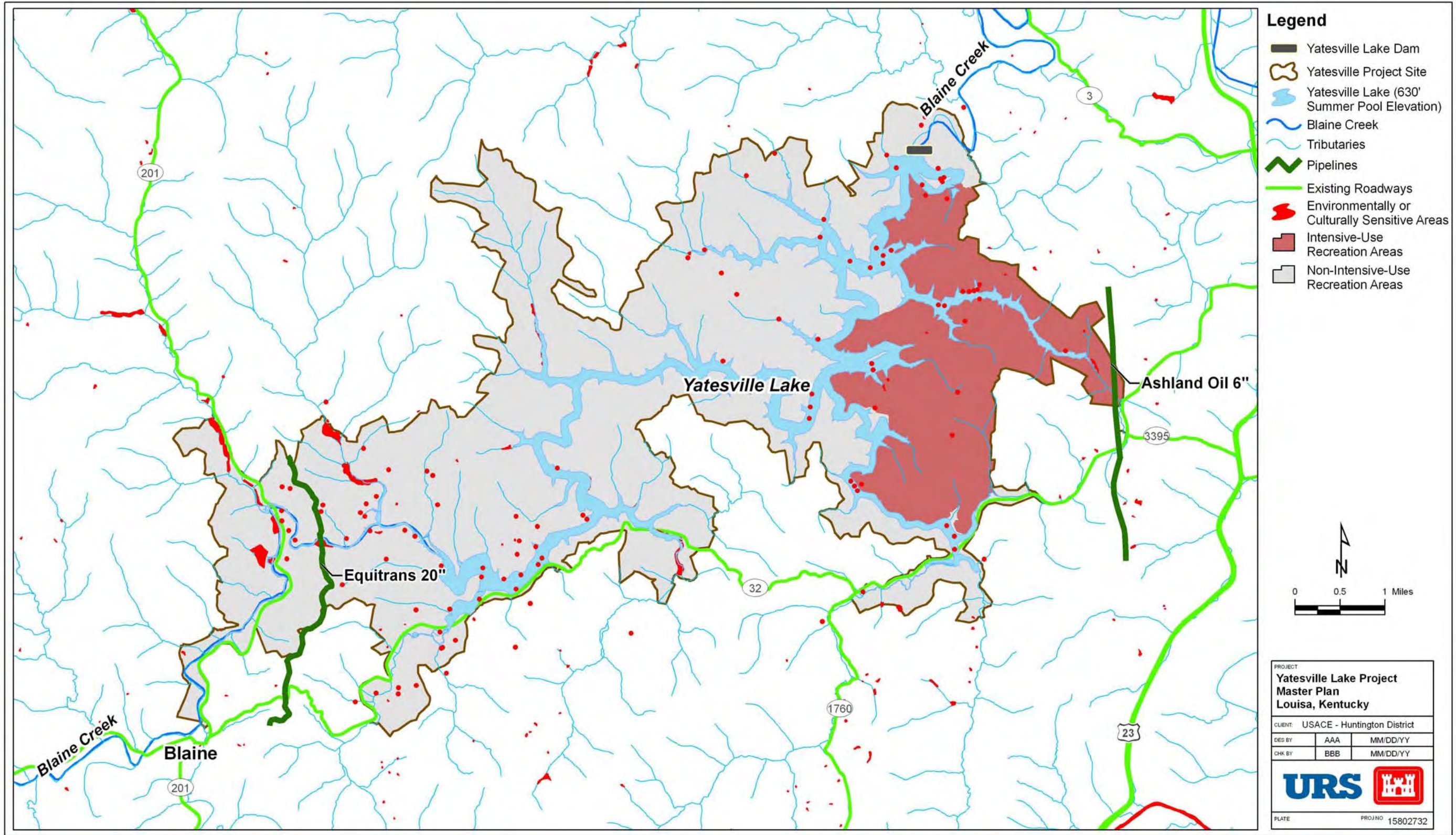


Figure 8-3: Locations of Evaluation Factors

This page intentionally left blank.

**Appendix A:
Acronyms and Abbreviations**

This page intentionally left blank.

AMSL	above mean sea level
ATV	all terrain vehicle
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
Commonwealth	Commonwealth of Kentucky
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FY	fiscal year
HPMP	Historic Properties Management Plan
KSNPC	Kentucky State Nature Preserves Commission
KYDFWR	Kentucky Department of Fish and Wildlife Resources
MITS	Mary Ingles Trail System
NCSU	North Carolina State University
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OMP	Operational Management Plan
PL	Public Law
Project	Yatesville Lake Project
RPA	Resources Planning Act
RUO	resource use objective
RV	recreational vehicle
SCORP	Statewide Comprehensive Outdoor Recreation Plan (Commonwealth of Kentucky, 2008)
spp.	<i>species pluralis</i> (multiple species)
SR	State Route
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VERS	Visitor Estimation Reporting System
WMA	Wildlife Management Area

Appendix B: Bibliography

This page intentionally left blank.

- American Trails. 2009. National Recreation Trails Database. Available at <http://tutsan.forest.net/trails/default.htm>. Accessed 28 January 2011.
- Association of Fish and Wildlife Agencies. 2005. *State Wildlife Action Plans*. Available at http://www.wildlifeactionplans.org/pdfs/wildlife_action_plans_summary_report.pdf.
- ASC Group, Inc. 2010. *Archaeological Survey of Shoreline, Dam Areas, and Recreation Areas for the U.S. Army Corps of Engineers, Huntington District Lakes in Kentucky, Ohio, Virginia, and West Virginia (Draft)*. Contract W912P9-09-D-0536.
- Bowker, J., D. English, and H. Cordell. 1999. *Projections of Outdoor Recreation Participation to 2050*. Available at http://www.srs.fs.usda.gov/pubs/ja/ja_bowker005.pdf. Accessed 30 January 2011.
- Commonwealth of Kentucky. 2007. *Eastern Kentucky Comprehensive Adventure Tourism Plan*. Department of Tourism. Available at <http://www.kyadventures.com/studies-reports.html>.
- Commonwealth of Kentucky. 2008. *Outdoor Recreation in Kentucky: Assessment, Policies, and Actions, Kentucky Statewide Comprehensive Outdoor Recreation Plan*. Available at <http://dlg.ky.gov/grants/federal/lwcf.htm>. Accessed 30 January 2011.
- Cordell, H.K. 2008. "The Latest on Trends in Nature-Based Outdoor Recreation." *Forest History Today*, Spring 2008.
- Cordell, H.K., Bergstrom, J.C., Hartmann, L.A., and English, D.B.K. 1990. *An Analysis of the Outdoor Recreation and Wilderness Situation in the United States: 1989-2040*. General Technical Report RM-189. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Fort Collins, CO.
- Cordell, H.K., C. Betz, J.M. Bowker, D.B.K. English, S.H. Mou, J.C. Bergstrom, R.J. Teasley, MA. Tarrant, and J. Loomis. 1999. *Outdoor Recreation in American Life: An Assessment of Demand and Supply Trends*. Champaign, IL: Sagamore Publishing.
- Cultural Resource Analysts, Inc. 2004. *Historic Properties Management Plan for Yatesville Lake, Lawrence County, Kentucky*. Contract DACW69-03-D-0005.
- Defenders of Wildlife. 1998. *Frayed Safety Nets: Conservation Planning under the Endangered Species Act*. Available at http://www.defenders.org/resources/publications/programs_and_policy/habitat_conservation/private_lands/frayed_safety_nets_-_table_of_contents_preface_executive_summary.pdf.
- Defenders of Wildlife. 2006. *Conservation Across the Landscape: A Review of the State Wildlife Action Plans*. Available at http://www.defenders.org/resources/publications/programs_and_policy/habitat_conservation/private_lands/living_lands/conservation_across_the_landscape_handout.pdf.

- EPA (U.S. Environmental Protection Agency). 1996. *Recreational Fishery Resources Conservation Plan Agency Action Plan*. Available at <http://www.epa.gov/owow/fish/epafin.html>. Accessed 25 January 2011.
- Haas, G.E., M.D. Wells, V. Lovejoy, and D. Welch. 2007. *Estimating Future Recreation Demand: A Decision Guide for the Practitioner*. U.S. Department of the Interior, Bureau of Reclamation, Office of Program and Policy Services, Denver Federal Center. Denver, Colorado.
- Hodson, R.G. 1989. *Hybrid Striped Bass – Biology and Life History*. Southern Regional Aquaculture Center. July 1989. Available at <http://aqua.ucdavis.edu/DatabaseRoot/pdf/300FS.PDF>.
- Homer, C., C. Huang, L. Yang, B. Wylie, and M. Coan. 2004. *Development of a 2001 National Landcover Database for the United States*. Photogrammetric Engineering and Remote Sensing, Vol. 70, No. 7, July 2004, pp. 829-840.
- Kentucky Department of Agriculture, Office of Consumer and Environmental Protection. 2010. *Best Management Practices*. Available at <http://www.kyagr.com/consumer/envsvs/technical/bmp.htm>. Accessed 23 February 2010.
- Kentucky Division of Geographic Information. 2005. *Kentucky Wetlands Image Download Center*. Available at www.kymartian.ky.gov/wetlands1z. Accessed 17 March 2010.
- Kentucky Division of Water. 2002. *Big and Little Sandy River Basin Status Report*. Frankfort, KY.
- Kentucky Division of Water. 2008a. *Final 2008 Integrated Report to Congress on the Condition of Water Resources in Kentucky*, Volume II. 303(d) List of Surface Waters. Frankfort, KY.
- Kentucky Division of Water. 2008b. *2008 Integrated Report to Congress on Water Quality in Kentucky*, Volume I. 305(b). Frankfort, KY.
- Kentucky Fishing. 2010. *All About Fishing*. Available at <http://www.aa-892fishing.com/ky/Kentucky-fishing.html>. Accessed 23 February 2010.
- Kentucky Geological Survey. 2009. Kentucky Geologic Map Information Service Interactive On-line Mapper. Available at <http://kgs.uky.edu/kgsweb/main.asp>. Accessed 6 February 2011.
- Kentucky Geological Survey. 2011. Groundwater Atlas for Lawrence County. Available at <http://www.uky.edu/KGS/water/library/gwatlas/Lawrence/Waterquality.htm>. Accessed 2 February 2011
- Kentucky Geological Survey. 2010. Ground Water Data Repository. Available at <http://kgs.uky.edu/kgsweb/download/rivers/WWELLS.ZIP>. Accessed 10 February 2010.

- Kentucky State Data Center. April 2009. *Projections of Total Population, 2000-2050: State, Area Development Districts, and Counties*. Available at <http://ksdc.louisville.edu/kpr/pro/projections.htm>. Accessed 19 May 2010.
- KSNPC (Kentucky State Nature Preserves Commission). 2007. *Across the Americas: Kentucky's Ecological Link to Latin America*. Available at <http://www.naturepreserves.ky.gov/inforesources/LAconnection.htm>. Accessed 12 February 2010.
- KSNPC (Kentucky State Nature Preserves Commission). 2009a. *Natural Heritage Program Database Standard Occurrence Report*. Frankfort, KY.
- KSNPC (Kentucky State Nature Preserves Commission). 2009b. *County Report of Endangered, Threatened and Special Concern Plants, Animals and Natural Communities for Kentucky*.
- KSNPC (Kentucky State Nature Preserves Commission). 2010. *State Nature Preserves and State Natural Areas*. Available at <http://www.naturepreserves.ky.gov/stewardship/preserves.htm>. Accessed 10 February 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2001. *Kentucky's Threatened and Endangered Species*. Available at <http://fw.ky.gov/pdf/t&ebook.pdf>.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2003a. *Comprehensive Wildlife Action Plan*.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2003b. *Habitat Protection and Restoration*. Available at <http://fw.ky.gov/navigation.aspx?cid=331>. Accessed 15 February 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2005. *Kentucky's Wildlife Action Plan*. Available at <http://fw.ky.gov/kfwis/stwg/default.asp>. Accessed 15 February 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2009. *Kentucky Hunting and Trapping Guide 2009-2010*.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010a. *Designated Horseback Riding Trails on Wildlife Management Areas*. Available at <http://fw.ky.gov/pdf/wmahorsebacktrails.pdf>.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010b. *Kentucky Fishing and Boating Guide*. Available at <http://fw.ky.gov/navigation.aspx?cid=800>. Accessed 2 August 2010.

- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010c. *Kentucky's Hunting Access Sites, Yatesville Lake WMA*. Available at <http://fw.ky.gov/kfwis/arcims/wma.asp?strID=23>. Accessed 17 March 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010d. *Kentucky's Land Cover Information for Public Hunting Area Yatesville Lake WMA*. Available at <http://fw.ky.gov/kfwis/arcims/WMALandcover.asp?strID=23>. Accessed 13 August 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010e. *Public Land Hunting*. Available at <http://fw.ky.gov/pdf/deerguide10publiclandhunting.pdf#page=12>. Accessed 13 August 2010.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010f. *Yatesville Lake Fish Management Plan 2010*. Frankfort, KY.
- KYDFWR (Kentucky Department of Fish and Wildlife Resources). 2010g. *Yatesville Lake State Park*. Available at <http://parks.ky.gov/findparks/recparks/yl/876>. Accessed 18 February 2010.
- McGrain, P., and Currens, J.C.,1978. *Topography of Kentucky: Kentucky Geological Survey*, ser. 11, Special Publication 25.
- National Fish and Wildlife Foundation. 2003. *Conservation Plan*. Available at <http://www.nfwf.org/AM/Template.cfm?Section=Search&template=/CM/ContentDisplay.cfm&ContentFileID=875>.
- NatureServe. 2007. *International Ecological Classification Standard: Terrestrial Ecological Classifications*. NatureServe Central Databases. Arlington, VA.
- NCSU (North Carolina State University). 2010. *Land Cover Report, Yatesville 930 Lake*. Available at <http://www.basic.ncsu.edu/segap/index.html>. Accessed 16 February 2010.
- Nield, M.C. 1990. *Yatesville Lake, Big Sandy River Basin, Blaine Creek, Kentucky. Foundation Report. Construction of Dam and Appurtenant Works, Phase 2. Volume 1*. USACE, Huntington District.
- NPS (National Park Service). 1986. *1982-83 Nationwide Recreation Survey*. U.S. Government Printing Office Publication 1986-491-070/40078.
- NPS (National Park Service). No date. *Strategic Plan: Rivers, Trails, and Conservation Assistance Program*. National Center for Recreation and Conservation Strategic Plan. Available at <http://www.nps.gov/nrcr/programs/rtca/whatwedo/rtcastrategicplan.pdf>. Accessed 25 January 2011.
- NRCS (Natural Resources Conservation Service). 2005. *2005 Soil Survey of Lawrence and Martin Counties, Kentucky*.

- Ohio Department of Development. 2011. *Population Projections by Age and Sex: 2005 – 2030*. Available at <http://www.development.ohio.gov/research/files/p200.htm>. Accessed 25 January 2011.
- Ohio Historical Society. 2010. *Ohio River Flood of 1937*. Available at <http://www.ohiohistorycentral.org/entry.php?rec=528>. Accessed 17 March 2010.
- Prato, T. 2008. *Adaptive management for natural parks: Considerations for an experimental approach*. U.S. Department of Interior (USDOI), National Park Service (NPS). Available at http://72.41.119.75/Library/Recreation_Research/Adaptive_Management_Natural_Parks_2008.pdf.
- Ray, J.A., J.S. Webb, and P.W. O'Dell. 1994. *Groundwater Sensitivity Regions of Kentucky*. Kentucky Department for Environmental Protection, Division of Water, Groundwater Branch. Frankfort, KY.
- Recreational Boating and Fishing Foundation. 2010. Special Report on Fishing and Boating. Available at <http://rbff.mediaroom.com/index.php?s=43&item=238>. Accessed 17 August 2010.
- Rezek, J. and S. Grado. 2009. *Recreational Visitation Patterns on Lake Impoundments in East-Central Mississippi*. Available at <http://sofew.cfr.msstate.edu/papers/Rezek07.pdf>.
- Sporting Conservation Council. 2008. *Facilitation of Hunting Heritage and Wildlife Conservation: The Recreational Hunting and Wildlife Conservation Plan as directed by Executive Order 13443*. Available at <http://www.nationaltrappers.com/RecHuntingActionPlan.pdf>.
- USACE (U.S. Army Corps of Engineers). 1970. *Draft Environmental Impact Statement, Yatesville Lake, Blaine Creek, Big Sandy Basin, Kentucky*.
- USACE (U.S. Army Corps of Engineers). 1971. *Final Environmental Impact Statement, Yatesville Lake, Blaine Creek, Big Sandy Basin, Kentucky*.
- USACE (U.S. Army Corps of Engineers). 1975. *Yatesville Lake Master Plan*. Huntington, WV.
- USACE (U.S. Army Corps of Engineers). 1994. *Authorized and Operating Purposes of Corps of Engineers Reservoirs*.
- USACE (U.S. Army Corps of Engineers). 1996a. *Recreation Operations and Maintenance Guidance and Procedures (EP 1130-2-550)*. Washington, DC.
- USACE (U.S. Army Corps of Engineers). 1996b. *Recreation Operations and Maintenance Policies*. Engineering Regulation (ER) 1130-2-550. Washington, DC.
- USACE (U.S. Army Corps of Engineers). 1996c. *Environmental Stewardship and Maintenance Guidance and Procedures*. CECW-ON Pamphlet No. 1130-2-540. November 15.

- USACE (U.S. Army Corps of Engineers). 2001. *Management of Bottomland Hardwood Forests for Non-Game Bird Communities on Corps of Engineers Projects* (ERDC TN-EMRRP-SI-21). September. Available at <http://el.ercd.usace.army.mil/elpubs/pdf/si21.pdf>. Accessed 26 January 2011.
- USACE (U.S. Army Corps of Engineers). 2004a. *Water Control Manual – Yatesville Lake*. Huntington, WV.
- USACE (U.S. Army Corps of Engineers). 2004b. *Engineering and Design Recreation Facility and Customer Services Standards*, EM 1110-1-400. Washington DC.
- USACE (U.S. Army Corps of Engineers). 2004. *Historic Properties Management Plan*, Huntington, WV.
- USACE (U.S. Army Corps of Engineers). 2006. *Lucky Peak Master Plan*. Walla Walla, WA. Available at <http://www.nww.usace.army.mil/planning/er/lpeak/>. Accessed on 26 January 2011.
- USACE (U.S. Army Corps of Engineers). 2009a. *Ohio River Basin Comprehensive Renaissance Study*. Available at <http://www.orboutreach.com/>. Accessed 25 January 2011.
- USACE (U.S. Army Corps of Engineers). 2009b. *Recreational Development Policy for Outgranted Corps Lands*. Directorate of Civil Works.
- USACE (U.S. Army Corps of Engineers). 2010. Huntington District – Yatesville Lake. Available at http://www.lrh.usace.army.mil/kd/go.cfm?destination=Page&Pge_ID=1243. Accessed 10 February 2010.
- USDA (U.S. Department of Agriculture). 1965. Soil Survey of Elliott County, Kentucky. Soil Conservation Service. Natural Resources Conservation Service Soil Data Mart. Available at <http://soildatamart.nrcs.usda.gov/>. Accessed 10 February 2010.
- USDA (U.S. Department of Agriculture). 1983. Soil Survey of Carter County, Kentucky. Soil Conservation Service, Natural Resources Conservation Service Soil Data Mart. Available at <http://soildatamart.nrcs.usda.gov/>. Accessed 10 February 2010.
- USDA (U.S. Department of Agriculture). 2007. *Conservation Education Strategic Plan to Advance Environmental Literacy*.
- USDA (U.S. Department of Agriculture). 2010c. *Web Soil Survey: National Cooperative Soil Survey*. Available at http://soils.usda.gov/survey/printed_surveys/state.asp?state=Kentucky&abbr=KY. Accessed 30 July 2010.
- U.S. Department of Commerce, Bureau of Census. 2000. US Census of Population and Housing, SF1 and SF3 data tables. Available at <http://factfinder.census.gov>. Accessed 19 May 2010.

- U S. Department of Commerce, Bureau of Census. June 2010. *2008 Population Estimates*. Available at <http://www.census.gov/popest/cities/>. Accessed 17 June 2010.
- USFS (U.S. Forest Service). 2000. *2000 RPA [Renewable Resources Planning Act] Assessment of Forest and Range Lands*. Available at <http://www.fs.fed.us/pl/rpa/rpaasses.pdf>. Accessed 25 January 2011.
- USFS (U.S. Forest Service). 2007. *Conservation Education Strategic Plan To Advance Environmental Literacy*, FS-879. Available at http://fs.usda.gov/Internet/FSE_DOCUMENTS/fsmrs_100509.pdf.
- USFWS, 2006. USFWS and U.S. Census Bureau. *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Available at http://library.fws.gov/pubs/nat_survey2006_final.pdf. Accessed 23 February 2010.
- USFWS (U.S. Fish and Wildlife Service). 2008. *Threatened and Endangered Species in Kentucky*. Available at <http://www.fws.gov/cookeville/docs/endspec/ky/kycty.html>. Accessed 6 February 2010.
- USFWS (U.S. Fish and Wildlife Service). 2010. National Wetland Inventory map data. February 2010. Available at <http://www.fws.gov/wetlands/Data/Mapper.html>. Accessed 8 February 2010.
- USFWS (U.S. Fish and Wildlife Service) and U.S. Department of Commerce, U.S. Census Bureau. 2006. *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*.
- USFWS (U.S. Fish and Wildlife Service) and U.S. Census Bureau. 2006 *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Available at http://library.fws.gov/pubs/nat_survey2006_final.pdf. Accessed 23 February 2010.
- USGS (U.S. Geological Survey). 2001. National Land Cover Database.
- Walsh, R.G., Jon, K.H., McKean, J.R., and Hof, J. 1992. Effect of Price on Forecasts of Participation in Fish and Wildlife Recreation. *Journal of Leisure Research*, 21, 140-156.
- Watchable Wildlife. 2005. *Yatesville Lake WMA Wetlands Viewing Area*. <http://www.wildlifeviewingareas.com/wv-app/ParkDetail.aspx?ParkID=251>. Accessed 13 August 2010.
- West Virginia University, Bureau of Business and Economic Research. September 2009. *West Virginia Population Projection by Age-Group, Sex, and County*. Available at <http://www.be.wvu.edu/demographics/populationprojection.htm>. Accessed 19 May 2010.

Wetherby, L.W. 1950. *The Public Papers of Governor Lawrence W. Wetherby, 1950-1955*.
Lexington: The University Press of Kentucky. Available at
http://books.google.com/books?id=Mdg-Uz7yTu0C&pg=PA182&lpg=PA182&dq=The+Public+Papers+of+Governor+Lawrence+W.+Wetherby+1950+flood&source=bl&ots=wxvN61sA7Z&sig=52Nh4xIP946szDTwsWSjPHPSmgc&hl=en&ei=5gJ7S7bWF-Xh8AaRzJW7Cg&sa=X&oi=book_result&ct=result&resnum=1#v=onepage&q=&f=false.
Accessed 25 January 2011.

Appendix C:
Results of Scoping Meetings

This page intentionally left blank.

SCOPING MEETING NOTES

Yatesville Lake Public Meeting Minutes

Thursday, 20 August 2009

Attendees

Dan Bock, U.S. Army Corps of Engineers, Huntington District
Kim Barnett, U.S. Army Corps of Engineers, Huntington District
Sam Harlan, U.S. Army Corps of Engineers, Huntington District
John Preston, U.S. Army Corps of Engineers, Huntington District
Lea Bodmer, U.S. Army Corps of Engineers, Huntington District
Stoney Burke, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake
Shirla Wells, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake
Kelly Stoll, URS Group, Inc.
Jagadish Prakash, URS Group, Inc.
Jack Bunja, URS Group, Inc.

COMMENTS / ISSUES

General Recreation (11 comments)

- More trails for biking, horses, hiking – 3
- Increase in camping sites and cabins/floating cabins – 3
- Horse Camp for 25 plus trucks and trailers – 1
- Increase marina facilities – 1
- Shoreline areas for houseboats/pontoons to moor - 1
- Water park – 1
- More lodging and restaurants – 1

Fish & Wildlife Recreation (2 comments)

- Regular stocking of fish – 2

Other (1 comment)

- More lake patrols – 1

Water Quality (0 comments)

Key Issues

- Add additional horse and walking trails
- Additional cabins and camp sites
- Lodging
- Recreation – restaurants, water park

Attendees

Edward Michael, Lawrence County
Dan Bock, U.S. Army Corps of Engineers, Huntington District
Kim Barnett, U.S. Army Corps of Engineers, Huntington District
Sam Harlan, U.S. Army Corps of Engineers, Huntington District
John Preston, U.S. Army Corps of Engineers, Huntington District
Lea Bodmer, U.S. Army Corps of Engineers, Huntington District
Stoney Burke, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake
Shirla Wells, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake
Pauletta Case, Citizen
Kelly Stoll, URS Group, Inc.
Jagadish Prakash, URS Group, Inc.
Jack Bunja, URS Group, Inc.

KEY POINTS**Project purpose of Yatesville Lake as authorized:**

- Flood Damage Reduction
- Water Quality
- General Recreation
- Fish and Wildlife Recreation

The Yatesville Lake Master Plan looks at 3 key items:

- Regional Need
- Resource Management
- Local Input

COMMENTS/ISSUES**Ms. Pauletta Case**

- No wake zone near house boats in the marina
- Robust fish stocking program
- Would like opportunity to lease any public lands that are adjacent to her property if available

Lawrence County

- Enhance the Horse and Saddle Club
 - Add meeting room/center

- Add more parking
- Add hitching posts and benches on trail
- Route 32 side of the lake
 - Add one cabin per year to camping area
 - Add seven additional primitive campsites
 - Provide paddleboats
 - Waterslide
 - Add horseshoes and shuffleboard
 - Improve parking and lighting at the amphitheatre
 - Hold a County Fair in the area
 - Add tennis court
 - Add basketball court
 - An additional bathhouse
 - Add sand volleyball courts
 - Grow beach area to hold 100 people
 - Add ATV trails
- Waiting for Bluewater Development on beach side
 - Bluewater would have lodge, water park, and cabins
 - If Bluewater falls through, they will have to develop the beach side more

Attendees

Richard Mauro, Kentucky Department of Fish and Wildlife

Scott Freidhof, Kentucky Department of Fish and Wildlife

Mike Sullivan, Yatesville Lake State Park

Dan Bock, U.S. Army Corps of Engineers, Huntington District

Kim Barnett, U.S. Army Corps of Engineers, Huntington District

Sam Harlan, U.S. Army Corps of Engineers, Huntington District

John Preston, U.S. Army Corps of Engineers, Huntington District

Lea Bodmer, U.S. Army Corps of Engineers, Huntington District

Shirla Wells, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake

Stoney Burke, U.S. Army Corps of Engineers, Huntington District, Yatesville Lake

Kelly Stoll, URS Group, Inc.

Jagadish Prakash, URS Group, Inc.

Jack Bunja, URS Group, Inc.

KEY POINTS**Project purpose of Yatesville Lake as authorized:**

- Flood Damage Reduction
- Water Quality
- General Recreation
- Fish and Wildlife Recreation

The Yatesville Lake Master Plan looks at 3 key items:

- Regional Need
- Resource Management
- Local Input

COMMENTS/ISSUES**Kentucky Department of Fish and Wildlife**

- Instituting forest management program
- They can produce detailed maps for the Corps
- They have trails and hunting is open on Yatesville Lake
- They would like to create more wetlands on Yatesville Lake

Yatesville State Park

- There is a campground, golf course, and marina

- They always try to budget to increase the campground and marina area
- Budget is always an issue for development

QUESTIONS/DISCUSSIONS

- Dividing area into smaller units based on geography
- They are marking the area with GPS and mapping it through GIS
- They collect data on rare species and that information is available
- Want to preserve oak hickory habitat
- The golf course was recently closed for re-seeding
- Campground closes in November but everything else stays open
- Marina is the largest money maker

This page intentionally left blank.