Old Hickory Lake Master Plan

January 13, 2016

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

IN REPLY REFER TO

13 JAN 2016

CELRN-OP (1130)

MEMORANDUM FOR Commander, Nashville District

SUBJECT: Old Hickory Lake Master Plan Update

1. References:

a. ER 1130-2-550, 30 September 2013, subject: Recreation Operations and Maintenance Guidance and Procedures.

b. EP 1130-2-550, 30 January 2013, subject: Projection Operations- Recreation Operations and Maintenance Guidance and Procedures.

2. Recommend approval of the attached update of Master Plan Update (MP) for Old Hickory Lake. The update has been reviewed and conforms to current Corps policy. The updated MP presents an appropriate and suitable plan for the operation and administration requirements for natural resources and park management.

Encls

Approval Recommended [redacted] 15
DIANE E. PARKS
Chief, Operations Division

Approved [redacted]
STEPHEN F. MURPHY
LTC, EN
Commanding

U.S. Army Corps of Engineers
Commonly Used Acronyms and Abbreviations

AAR –After Action Review
Act- Endangered Species Act
AOR – Area of Responsibility
ASA(CW) – Assistant Secretary of the Army for Civil Works
ATR - Agency Technical Review
BLUF – Bottom Line Up Front
BMP—Best Management Practice
CE – Corps of Engineers
cfs – Cubic Feet per Second
COB – Close of Business
COL – Colonel
CONUS – Continental United States
COP – Community of Practice
COR – Contracting Officer's Representative
CRA – Continuing Resolution Authority
CRM – Cumberland River Mile
CW – Civil Works
CWA – Clean Water Act, 1977
CX – Center of Expertise
DA – Department of Army
DCW – Director of Civil Works
DE – District Engineer/ Division Engineer
DO – Dissolved Oxygen
DOD – Department of Defense
DQC - District Quality Control
EA—Environmental Assessment
EAB – Emerald Ash Borer
EC – Engineering Circular
EDW – Enterprise Data Warehouse
EIS – Environmental Impact Statement
EM – Engineering Memorandum
EO – Executive Order
EOC – Emergency Operations Center
EP – Engineering Pamphlet
ER – Engineering Regulation
ERCA – Environmental Restoration & Conservation Area
ERDC – Engineering Research & Design Center
EPA – Environmental Protection Agency
ESA- Environmental Sensitive Area
EQ – Environmental Quality
FWS – Fish and Wildlife Service
FEMA – Federal Emergency Management Agency
FOIA – Freedom of Information Act
FONSI - Finding of No Significant Impact
FR – Federal Register
FRM – Flood Risk Management
FY – Fiscal Year
GIS - Geographic Information Systems
GOV – Government
GPS – Global Positioning System
GS – General Schedule
GSA – General Services Administration
H&H – Hydrology and Hydraulics
HABS – Harmful Algal Blooms
HEC – Hydrologic Engineering Center
HEP – Habitat Evaluation Procedures
HES – Habitat Evaluation System
HQUSACE – Headquarters, U. S. Army Corps of Engineers
HTRW – Hazardous, Toxic, and Radioactive Wastes
IWR – Institute for Water Resources
LTC – Lieutenant Colonel
M&I- Municipal and Industrial
MCX – Mandatory Center of Expertise
MFR – Memorandum for Record

MG – Major General
MOU – Memorandum of Understanding
MP- Master Plan
MRLC – Multi-Resolution Land Characteristics Consortium
MSC – Major Subordinate Command
MSL/msl – Mean Sea Level
MW – Megawatt
NAV – Navigation
NEPA –National Environmental Policy Act
NHPA - National Historic Preservation Act
NLEB – Northern Long-eared Bat
NRHP –National Register of Historic Places
NTE –Not to Exceed
NVCS – National Vegetation Classification Standard
NWI – National Wetlands Inventory
O&M – Operations and Maintenance
OC – Office of Counsel
OMBIL – Operations & Maintenance Business Information Link
OMP – Operational Management Plan
PDT – Project Delivery Team
PL – Public Law
PM – Project Manager/Management
PMBP – Project Management Business Process
PMP – Project Management Plan
POC – Point of Contact
PRB – Project Review Board
Q & A – Question and Answer
QA/QC – Quality Assurance / Quality Control
QMP –Quality Management Plan
QMS – Quality Management System
R&D – Research and Development
REC - Recreation
RMC – Risk Management Center
SCORP – State Comprehensive Outdoor Recreation Plan
SHPO – State Historic Preservation Office
SITREP – Situation Report
SME – Subject Matter Expert
SMP – Shoreline Management Plan
SOP – Standard Operating Procedure
SOW – Scope of Work
T&ES – Threatened and Endangered Species
TBA – To be Announced
TBD – To be Determined
TMDL -Total Maximum Daily Load
TWRA – Tennessee Wildlife Resources Agency
USACE – U. S. Army Corps of Engineers
USC – United States Code
USFWS – United States Fish and Wildlife Service
WQ – Water Quality
WRDA – Water Resources Development Act

PREFACE

This Master Plan document for Old Hickory Lake is intended to serve as a guide for the orderly and coordinated development, management, and stewardship of all lands and water surface of the project. It presents data on existing conditions, anticipated recreational use and the type of facilities needed to service anticipated use, protect sensitive resources, and estimate future requirements. Since the 1987 master plan revision, demand on the public lands and resources has increased at the project. These new demands on project resources, as well as naturally occurring changes to the resources and new management procedures and directives within U. S. Army Corps of Engineers (USACE), has dictated the preparation of this Master Plan revision.

This revised Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on project operation and management, and an evaluation of future needs that is required to provide a balanced management plan for land and water resources. Included in the revised Master Plan is an evaluation of expressed public opinion, new resource use objectives, and a new land classification system. The format utilized for this plan is outlined in Engineer Regulation/Engineer Pamphlet 1130-2-550 (dated 30 January 2013), which sets forth policy and procedure to be followed in preparation and revision of project Master Plans.

The Natural Resources Management mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. Old Hickory Lake offers excellent potential for providing additional, needed recreational opportunities for the residents of Tennessee. This potential will be realized through the cooperative efforts of Federal, State and local organizations and private individuals as outlined in this Master Plan.

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CHAPTER 1 INTRODUCTION

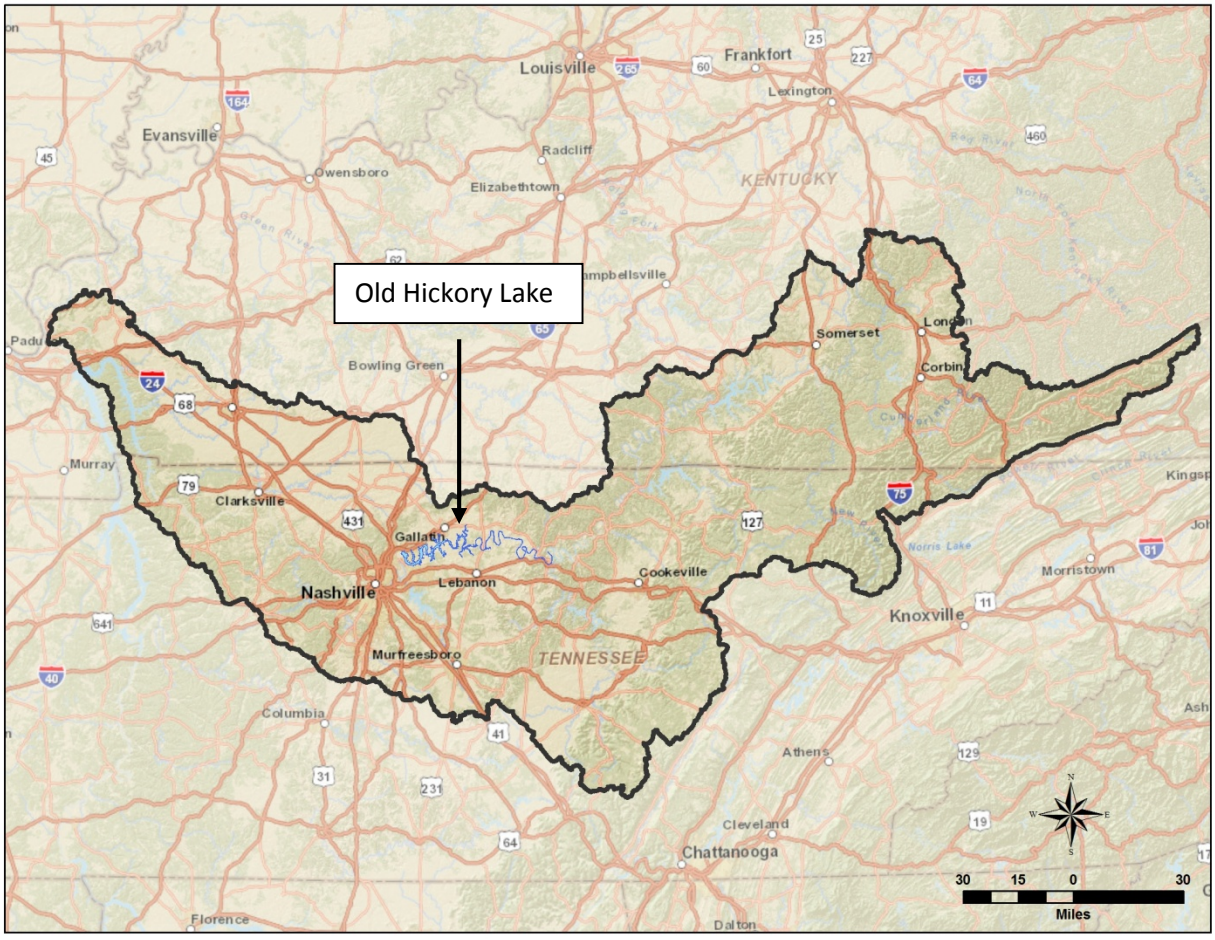


Figure 1 - Project Location of Old Hickory Lake within the Cumberland River Watershed

1-01 PROJECT AUTHORIZATION AND PURPOSE.

Old Hickory Lock and Dam was authorized as a multiple-purpose project by the Flood Control Act of 1938, ch. 795, §4, 52 State. 1215, 1217 (authorizing Corps of Engineers to prosecute various works of improvement in Ohio River Basin, including Old Hickory on the Cumberland River), and reauthorized by the Rivers and Harbors Act of 1946, ch. 595, § 1, 60 Stat. 634, 636. The primary authorized purposes for Old Hickory Lake, Lock, and Dam include the provision of a navigable river channel on the Cumberland River, and the production of hydroelectric power. Secondary purposes are recreation, fish and wildlife, and water quality.

Although recreation was not originally an authorized function of this project, lands were acquired and recreation facilities constructed to assure unencumbered access to the lake for the general public. These limited facilities were constructed under the authorities contained in Section 4 of the 1944 Flood Control Act. Additional recreation facilities have been added over the years and are operated by the U.S. Army

Corps of Engineers (Corps), the State of Tennessee, Smith County, City of Hendersonville, City of Gallatin, Sumner County, and Wilson County. The Federal Water Project Recreation Act passed in 1964 requires that the recreation features at all newly authorized Corps projects be cost shared by a non-federal sponsor before they can be built. The intent of Public Law 89-72 was administratively applied to existing projects such as Old Hickory and a local sponsor is required to significantly expand any existing recreation areas or build new ones.
In addition to the above, the resources of Old Hickory are managed to improve fish and wildlife, reduce flooding and provide water supply for the surrounding areas.

- **Hydropower**: Old Hickory Lake is one of nine multi-purpose projects with a hydroelectric power plant in the Cumberland River Basin. Built between 1952 and 1957 the power plant contains four generating units. Each unit is capable of producing 25 mega-watts with an average estimated annual energy output of 880,439,923 kilowatt-hours. The purpose of this power plant is to provide reliable hydroelectric power services at the lowest possible cost, consistent with sound business principles—in partnership with other Federal hydropower generators, the power marketing administrations, and preference customers—to benefit the Nation.

- **Navigation:** The Corps of Engineers' mission in navigation is to provide safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation. Open to barge traffic in June of 1954, Old Hickory Lake's average annual tonnage of all commodities (the three major commodities include coal, sand and petroleum) transported thru Old Hickory Lock is 4.5 million tons.

- **Recreation**: The Corps is the largest provider of water-based outdoor recreation in the nation. Ranked in the top five most visited Corps lakes nationwide, Old Hickory Lake provides a variety of outdoor recreational opportunities for millions of visitors each year. Because of the temperate climate and relatively long recreation season, visitors have numerous activities to choose from including: camping, hiking, mountain biking, picnicking, hunting, boating, fishing, swimming, and many other water sports. The numerous species of wildlife here, including abundant populations of waterfowl and wading birds, make nature study and photography additional exciting pastimes.

- **Fish & Wildlife:** The Forest Cover Act provides authority for the Corps to manage project lands and waters for all conservation purposes, including fish and wildlife conservation. Old Hickory Lake in conjunction with other Federal, state and local agencies conducts fish and wildlife management activities that seek to restore and enhance habitat, increase biodiversity, and maintain healthy populations of fish and wildlife species for use and enjoyment by present and future generations.

- **Water Quality:** The Federal water quality management laws were founded on the overall objective established in the Clean Water Act to restore and maintain the chemical, physical, and

biological integrity of the nation's waters. It is Old Hickory Lake's project purpose to protect all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc. through ecologically sound management practices.

In addition to the navigation, hydropower, recreation, fish and wildlife, and water quality the lake and dam provide financial economic impact on the region to include increased property values, increased tax revenues, and employment opportunities. Although water supply is not an authorized purpose of Old Hickory and there is no storage that can be dedicated to providing municipal and industrial water supply, the project does provide ancillary benefits of pooling to water supply users that facilitate their intake placement and reduce pumping costs.

Besides water supply, power generation and tourism and related recreation benefits, the lake provides a wide range of unquantifiable quality-of-life benefits that draw people to the surrounding area and positively impacts the economy of the region. Many individuals and businesses locate in the area in large part due to the attraction of this large body of water whether they recreate on it or not.

1-02 PURPOSE AND SCOPE OF MASTER PLAN.

This revised Master Plan replaces the 1987 Master Plan for Development and Management of Old Hickory Lake. ER 1130-2-550 (Chapter 3) and its implementing Engineering Pamphlet EP 1130-2-550 (Chapter 3), dated 30 January 2013, set forth Master Planning Procedures and Requirements. In accordance with Engineering Regulation (ER) 1130-2-550 and ER 1130-2-540, the Master Plan describes in detail how all project lands, waters, forests, and other resources will be conserved, enhanced, developed, managed, and used in the public interest throughout the life of the project. The plan includes recommendations as to the optimum location and design of recreation facilities, taking into consideration a variety of elements, such as the natural and cultural environment, economic feasibility, projected recreation demand, and future operation and management capabilities.

The Master Plan guides and articulates Corps responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources. The Master Plan deals in concepts, not in details, of design or administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the Master Plan into operational actions.

The Master Plan is developed and kept current for Civil Works projects operated and maintained by the Corps and will include all land (fee, easements, or other interests) originally acquired for the projects and any subsequent land (fee, easements, or other interests) acquired to support the operations and authorized missions of the project. The Master Plan is not intended to address the specifics of regional water quality, shoreline management, or water level management. These areas are covered in the project's Shoreline Management Plan or Water Management Plan.

The primary goals of Master Planning documents are to prescribe an overall land and water management plan, resource objectives, and associated design and management concepts, which:

1. Provide the best possible combination of responses to regional and ecosystem needs, resource capabilities and suitability, and expressed public interests and desires consistent with authorized project purposes;
2. Contribute towards providing a high degree of recreation diversity within the region;
3. Emphasize the particular qualities, characteristics, and potentials of the project;
4. Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.

The regulation states that all actions by the Corps and outgrantees must be consistent with the Master Plan (MP). The Master Planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and forecasted future environmental and socioeconomic conditions and trends. The MP shall ensure that economy and quality be given equal attention in the development of new recreation facilities. ER 1130-2-540 and its implementing Engineering Pamphlet EP 1130-2-540 (Chapter 2) set forth the Corps' Natural Resources Stewardship responsibilities and requirements to be addressed in this MP Update.

1-03 BRIEF WATERSHED AND PROJECT DESCRIPTION.

The Old Hickory Lake and Dam is located on the Cumberland River at Mile 216.2 in Sumner and Davidson Counties, Tennessee, 25 river miles upstream of Nashville, Tennessee. Construction started in 1952 and the lake was impounded in 1954. The lake has 440 miles of shoreline at a pool elevation of 445 feet above mean sea level. It extends 97.3 river miles from the dam to Cordell Hull Lock and Dam at Carthage, Tennessee.

Old hickory is a "run-of-the-river" project, which experiences minimal annual pool fluctuations. The reservoir's power pool was designed for fluctuations between elevation 442 and 445. Due to navigation and recreation hazards that are present in the lower range of the power pool, the pool is operated in the upper portion of the power pool, typically fluctuating between 444 and 445.5 at the dam. The entire project encompasses a total of 25,726 acres of fee property, 3,271 acres of flowage easement land, and 4,700 acres of riverbed. At elevation 445, Old Hickory Lake has a surface area of 22,500 acres, and when the flood surcharge pool is at capacity (elevation 451 feet above mean sea level) the surface area of the lake increases to 27,450 acres. This information is also displayed in table 1. The maximum observed elevation is 451.54 in 2010. Land was acquired under a minimum acquisition policy, restricted to the acreage that would serve the operational and maintenance requirements of the project. This conservative policy limited acquisition to a line or series of lines along tangents located at or near the 451 foot contour at the dam and extending to the 464 foot contour at the upper end of the lake. Some additional land was acquired in the mid-1960's for operational and recreational purposes.

Table 1- Old Hickory Lake Pool Elevations and Surface Acreage

Pool Stage	Elevation *(feet msl)*	Surface Water Area *(Acres)*
Flood Surcharge Pool Capacity Elevation	450	27,450
Top of Power Pool Elevation	445	22,500
Bottom of Power Pool Elevation	442	19,550

1-04 PRIOR DESIGN MEMORANDUMS.

Following passage of the Flood Control Act of 1944, the Corps undertook preparation of master plans for recreation development at Corps projects in compliance with Section 4 of that Act. In June 1954, at the time of dam closure, a master plan for recreation development at Old Hickory Lake had been prepared and approved for implementation. Since that time, portions of the Master Plan have been reevaluated on a site-by-site basis in response to particular development needs or opportunities. A complete update was conducted in 1986. Supplements have been prepared and added to the Master Plan addressing changes in land classifications and lease expansions.

1-05 LISTING OF PERTINENT PROJECT INFORMATION.

Although this revised Master Plan is focused on management of land and water surface related to project purposes of outdoor recreation and environmental stewardship of natural and cultural resources, the following information about primary project facilities is provided to aid in understanding how all project purposes are interrelated.

Old Hickory Dam was named after President Andrew Jackson's nickname "Old Hickory". The lake extends easterly along the Cumberland River to Cordell Hull Dam at mile 313.5 and comprises lands in Sumner, Davidson, Wilson, Trousdale and Smith Counties in Tennessee. Old Hickory Lake is one of a series of four lakes on the Cumberland River with a Powerhouse and Lock. There are ten lakes in the Cumberland River System. Because of the temperate climate and relatively long recreation season, Old Hickory Lake is ranked in the top five of the most visited Corps lakes nationwide. Visitors have many opportunities to fish, hunt, camp, picnic, boat, swim, and enjoy the outdoors in many other ways. In fiscal year 2012, 7.9 million visitors recreated in and on Old Hickory Lake project lands and water with a recreation economic impact of $176.5 million.

HISTORY OF THE LOCK AND DAM PROJECT

- Lock and Dam was authorized for construction by the Flood Control Act of 1938 and the Rivers and Harbors Act of 1946.
- Construction of the Old Hickory Lock and Dam Project began in January of 1952.
- The lake was impounded in 1954.

- In June of 1954, the lock was opened to commercial navigation. The lock held its grand opening to pleasure boats in September of 1956. Nearly 10,000 people swarmed the lock and dam structure to see the first pleasure boats lock through.
- In December 1956, the Old Hickory Lake project was impounded when the dam was closed.
- December of 1957, the project was completed for full beneficial use with the placement of the final hydroelectric power unit.

OLD HICKORY LOCK

- Old Hickory Lock is one of four locks located on the 381 navigable miles in the Cumberland River Basin.
- The lock is an 84 foot wide by 395 foot long single chamber lock with two sets of gates on either end.
- The major commodities transported by barge through Old Hickory Lock are coal, sand and petroleum.
- The average tonnage of all commodities transported through Old Hickory Lock is 4.5 million tons (that is approximately 3,000 full barges) annually.
- At least 2,500 lockages for recreational traffic occur each year.

OLD HICKORY DAM

- Old Hickory Dam is 3,750 feet long and 98 feet high.
- The water depth on the reservoir side of the dam is 67.5 feet at normal pool.
- The dam consists of a concrete-gravity section and rolled earth embankment.
- The 355 foot spillway section consists of six, 41.5 by 45 foot and 172,000 pound tainter gates. These gates are capable of discharging 236,000 cubic feet per second.
- Four hydropower generating units are housed inside the powerhouse section of the dam structure. Each unit is capable of producing 25 mega-watts.
- Each year, an estimated energy output of the Old Hickory Powerhouse is nearly 66.5 million (66,481,667) kilowatt hours. This production is enough to power an estimated 20,000 homes annually.

CHAPTER 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

Figure 2 –The Cumberland River Basin

2-01 GENERAL DESCRIPTION OF THE CUMBERLAND RIVER BASIN AND OLD HICKORY LAKE.

A. Cumberland River Basin. The Cumberland River Basin is one of the major tributaries of the Ohio River. The source of the Cumberland River is located at the junction of the Poor and Clover Forks near the City of Harlan, Kentucky. From Harlan, the Cumberland River meanders southwesterly to the City of Nashville, Tennessee. From Nashville, the river flows in a northwesterly direction to Smithland, Kentucky, where it joins the Ohio River. The Cumberland River Basin contains 17,914 square miles of land and water area, displayed in figure 2. The Cumberland River drops more than 800 vertical feet in its course from Harlan, Kentucky, to the Ohio River. There are five existing dams on the main stem of the Cumberland River. The five multi-purpose projects include: Barkley, Cheatham, Old Hickory, Cordell Hull, and Wolf Creek (Lake Cumberland).

B. Old Hickory Lake. Old Hickory Lake has 440 miles of shoreline at pool elevation 445, and extends approximately 97 river miles from Old Hickory Lock and Dam to Cordell Hull Lock and Dam. The general character of the shoreline is quite varied. The lower end of the lake is surrounded by suburban development which often extends to the project boundary, while the upper reaches (above Highway 109) are characterized by agricultural and forest land with some residential development. The topography of the shorelines ranges from gently sloping grassy areas to towering limestone bluffs. Figure 3 illustrates Old Hickory Lock and Dam.

Figure 3- Old Hickory Lock and Dam

2-02 PROJECT LOCATION.

Old Hickory Lock and Dam is located on the Cumberland River at mile 216.2 in Sumner and Davidson Counties, Tennessee, approximately three miles downstream from Old Hickory, Tennessee, and 25 miles upstream from the City of Nashville. The waters impounded by the dam extend upstream approximately 97 miles through Wilson, Trousdale, and Smith Counties.

Primary access to the project area from the east and west is provided by Interstates 40 and 65, U.S. Routes 70, 70N, and State Route 25. Primary access to the project from the north and south is provided by U.S. Routes 31E, 231, and State Routes 109, 141, and 85. Figure 1 illustrates the general location of the project.

2-03 ECOLOGICAL SETTING.

The Natural Resource Management Mission of the U.S. Army Corps of Engineers (ER 1130-2-550, Chapter 2, Paragraph 2-2.a.(1), dated 15 November 1996) states the following:

The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resource Management Mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations.

In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance and restoration practices.

The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector.

The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life.

In support of this mission statement, the following paragraphs describe the ecoregions where Old Hickory Lake is located and the natural resources components found within the project area.

Ecoregions are areas with generally similar ecosystems and with similar types, qualities, and quantities of environmental resources. Ecoregion boundaries are determined by examining patterns of vegetation, animal life, geology, soils, water quality, climate, and human land use, as well as other living and non-living ecosystem components.

A large area that includes generally similar ecosystems and that has similar types, qualities, and quantities of environmental resources is known as an ecoregion. The purpose of ecological land classification is to provide information for research, assessment, monitoring, and management of ecosystems and ecosystem components. Federal agencies, state agencies, and nongovernmental organizations responsible for different types of resources within the same area use this information to estimate ecosystem productivity, to determine probable responses to land management practices and other ecosystem disturbances, and to address environmental issues over large areas, such as air pollution, forest disease, or threats to biodiversity.

Old Hickory lake falls primarily within the Outer Nashville Basin Ecoregion, but also has small portions within the Inner Nashville Basin Ecoregion. See figure 4 to reference the locations of the ecoregions in middle TN.

Outer Nashville Basin Ecoregion:
The Outer Nashville Basin is a more heterogeneous region than the Inner Nashville Basin, with rolling and hilly topography with slightly higher elevations. The region encompasses most of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian-age formation, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus, and commercial phosphate is mined. Deciduous forest with pasture and cropland are the dominant land covers. The region has areas of intense urban development with the city of Nashville occupying the northwest region. Streams are low to moderate gradient, with productive, nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. The Nashville Basin has a distinctive fish fauna, notable for fish that avoid the region, as well as those that are present.

Inner Nashville Basin Ecoregion:
The Inner Nashville Basin is less hilly and lower than the Outer Nashville Basin. Outcrops of the Ordovician-age limestone are common. The generally shallow soils are redder and lower in phosphorous than those of the outer basin. Streams are lower gradient than surrounding regions, often flowing over large expanses of limestone bedrock. The most characteristic hardwoods within the inner basin are a maple-oak-hickory-ash-association. The limestone cedar glades of Tennessee, a unique mixed grassland/forest cedar glades vegetation type with many endemic species, are located primarily on the limestone of the Inner Nashville Basin. The more xeric, open characteristics and shallow soils of the cedar glades also result in a distinct distribution of amphibian and reptile species. Urban, suburban, and industrial land use in the region is increasing. (TDEC, 2000)

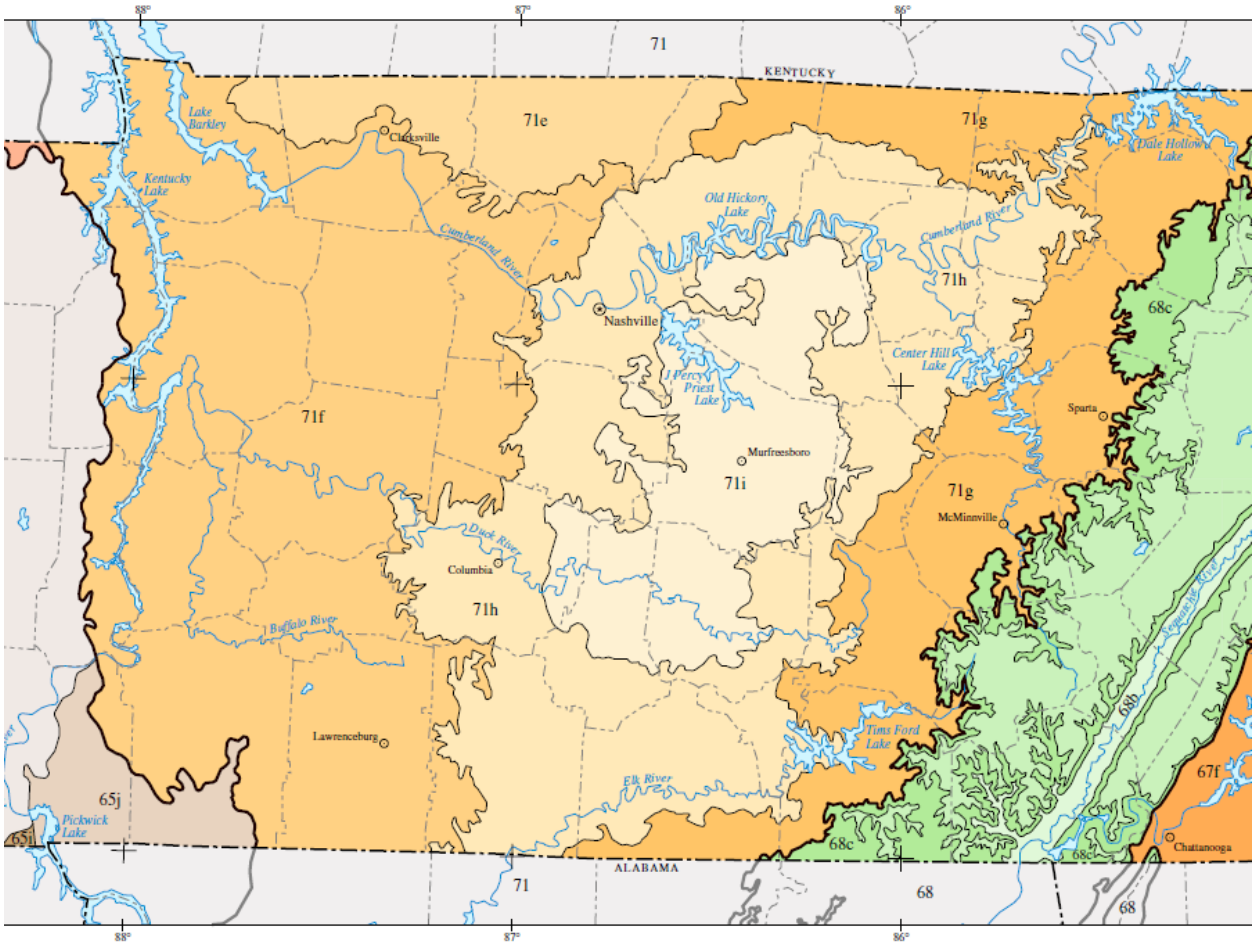


Figure 4-Ecoregions of Middle Tennessee, Old Hickory Lake falling in Ecoregions 71h and 71i

Map Source: USEPA Ecoregions of Tennessee Map

67 Ridge and Valley
- 67f Southern Limestone/Dolomite Valleys and Low Rolling Hills
- 67g Southern Shale Valleys
- 67h Southern Sandstone Ridges
- 67i Southern Dissected Ridges and Knobs

68 Southwestern Appalachians
- 68a Cumberland Plateau
- 68b Sequatchie Valley
- 68c Plateau Escarpment

69 Central Appalachians
- 69d Cumberland Mountains

71 Interior Plateau
- 71e Western Pennyroyal Karst
- 71f Western Highland Rim
- 71g Eastern Highland Rim
- 71h Outer Nashville Basin
- 71i Inner Nashville Basin

2-04 HYDROLOGY.

The entire reservoir system in the Cumberland River Basin operates in a coordinated manner to provide multiple benefits. Under normal operations, water in storage is utilized to improve river flows and ameliorate conditions at various key locations during the later summer and fall low flow season. Runoff

is captured and stored at the storage projects where it is slowly released in a controlled fashion when downstream conditions allow.

Old Hickory Lake was designed for pool fluctuations in the power pool between elevation 442 and 445. However, due to navigation and recreation hazards in the lower range of that band, it is typically operated in the upper portion of that range and allowed to fluctuate between elevation 444 and 445.5. The total drainage area at Old Hickory Dam is 11,676 sq. mi of which 1,404 sq. mi. is uncontrolled. The large upstream storage reservoirs, Wolf Creek, Dale Hollow, and Center Hill, contribute to the majority of inflows at Old Hickory. Old Hickory was not designed with flood control storage; however, it does have a small amount of space dedicated to flood surcharge storage (between elevation 445-450). These two terms are often confused with each other, but in reality they are quite different. Flood control storage can hold back vast amounts of water during flood events, reducing downstream crests. Flood surcharge storage is allocated at Old Hickory to replace the natural river valley storage lost with the impoundment of the reservoir. Without this flood surcharge storage, the presence of Old Hickory Dam would accelerate and increase flooding downstream. Flood surcharge storage is allocated so that flood crests are not worsened by the presence of Old Hickory Dam. Downstream from Old Hickory on the Cumberland River is Cheatham and Barkley reservoirs. J. Percy Priest is a storage reservoir on the Stones River also downstream of Old Hickory.

A. Groundwater. Tennessee has an abundance of high quality and good quantity of ground water according to the TDEC, Tennessee Ground Water Monitoring and Management Ground Water 305(b) Report 2014. With localized exceptions, Tennessee's ground water is good quality as is evidenced by the number of public water systems utilizing ground water and the dozen or more bottled water facilities. Once thought to be immune from contamination, there is increasing awareness that ground water should be protected as a valuable resource. There have been a limited number of reported contamination incidences of public water systems across the state.

The vulnerability of Tennessee's ground water sources is inextricably linked to the geology of the state. Ground water can be quite vulnerable to contamination, particularly in the project area that is karst terrain (limestone characterized by caves, sinkholes and springs). These limestone aquifers allow for rapid movements of contaminants and more complex flow paths.

Water in karst areas is not distinctly surface water or ground water. Surface water can enter into the ground water directly through sinkholes and disappearing streams. It is not uncommon for ground water to contaminate surface water, making surface water problems into ground water problems in Middle Tennessee. The reverse can also occur. There are a number of water systems in Middle Tennessee relying on ground water sources that have been determined to be under the direct influence of surface water. These systems are required to have filtration such as that required for surface water systems.

Both the availability and the quality of our drinking water are vital influences on public health and the economy. In Tennessee, approximately 1.5 million people rely on public water systems that use ground water as a source for their drinking water. There are approximately 400,000 people that receive their

drinking water from a public water system whose source is a combination of ground water and surface water and an additional 500,000 people get their drinking water from private wells and springs.

A breakdown of newly drilled water wells and geothermal wells drilled in 2013 by county shows the most active counties for ground water use by private citizens (Figure 5). At this time, there is no requirement for test wells or monitoring wells to be reported. Geothermal wells, as listed on Table 2, represent the number of projects, not number of individual wells drilled on the site.

Table 2 New water wells drilled in 2013

http://www.state.tn.us/environment/water/docs/water-supply/2014-gw-305b.pdf

County	New Water Wells in 2013	New Geothermal Wells in 2013	Other	Total
Wilson	28	10	2	40
Davidson	20	61	3	84
Sumner	26	4	3	33
Trousdale	6	1	0	7
Smith	9	2	0	11

Every community public water system is also required to address their source water assessment in the Consumer Confidence Report that is required to be made available to its customers annually and advise customers of the location of the TDEC Division of Water website:
http://www.tn.gov/environment/water/water-supply_source-assessment.shtml

TDEC, Division of Water Resources, Drinking Water Unit, Tennessee Ground Water Monitoring and Management Ground Water 305(b) Report 2014
http://www.state.tn.us/environment/water/docs/water-supply/2014-gw-305b.pdf

B. Surface water. Overall the water quality of Old Hickory Lake is good, however several factors contribute to occasional or seasonal water quality degradation. Old Hickory headwaters are mainly the result of Cordell Hull Dam discharges and releases from Center Hill Dam and unregulated tributaries below Center Hill Dam which enter the Caney Fork River. In order to maintain adequate dissolved oxygen (DO) levels in the upper portions of Old Hickory Lake it is important to have adequate flows moving through Cordell Hull Reservoir. If flows are reduced through this reservoir during the warm season, there is a demonstrated and dramatic reduction of DO that carries downstream into Old Hickory Lake. With Lake Cumberland returning to full pool after completion of a major rehabilitation of the Wolf Creek Dam in 2014, and supplemental flows from Dale Hollow, reductions in flows through Cordell Hull are generally rare, transitory events. Recent years have also seen the implementation of measures at Center Hill Dam that improve DO in hydropower releases and/or provide additional oxygenated releases (through sluice or oriface gates) to dramatically improve DO levels.

Old Hickory Lake receives nutrient and sediment loadings from its watershed. Sources include agricultural fields, residential areas, abandoned mining sites, septic systems, and sewage treatment

plants. Overall the watershed continues to see continued population growth and development, particularly the lower portions, roughly downstream from the Gallatin, TN area. Many of the municipal sewage treatment plants have situated their treated discharges into the deeper portions of the main channel over the last few decades. These measures have been effective in reducing the negative impact of these discharges on the lake health. Nutrient and other loadings often enter tributary streams which are inundated to form embayments. These embayments often exhibit poor water quality due to the effects of thermal stratification and poor circulation. Flows are displaced from the embayments into the main channel at varying rates and can degrade water quality, however with the maintenance of adequate main stem flows; water quality through Old Hickory is not badly degraded. This key factor of flow maintenance has been recognized and water control decisions take into account these considerations.

Manifestations of aquatic macrophytes vary generally with the overall water clarity characteristics of the lake. An aquatic macrophyte is an aquatic plant that grows in water and is either emergent, submergent or floating. In a well-balanced ecosystem, aquatic macrophytes provide cover and food for small fish and aquatic insects, as well as produces oxygen. Most aquatic macrophytes tend to occur in the more tranquil waters of embayments. During low rainfall years with clearer water, macrophytes will often increase their coverage while higher flow, wetter years see corresponding decreases in macrophyte coverage due to reduced sunlight availability. Generally, aquatic macrophytes do not cause negative impacts to operation of facilities on Old Hickory. No widespread chemical or biological controls are employed to contain aquatic macrophytes.

Many Corps reservoirs have experienced the occurrence of harmful algal blooms (HABS) in recent years. HABS have not caused any public health concerns in Old Hickory; however they remain a potential threat. The blue-green algae or cyanobacteria that cause outbreaks of HABS do live in the lake but have not been documented to exceed levels of concern. Again, maintenance of adequate flows through the project are critical to reducing the populations of these organisms.

2-05 SEDIMENTATION AND SHORELINE EROSION.

Sedimentation range lines were established for Old Hickory Lake at the time of construction. Resurveys of these ranges were conducted in 1965, 1980, 1985, and 1994. Analysis of data collected during these resurveys indicates the average annual sediment deposition rate is small and has generally been decreasing. Historic sedimentation has not occurred uniformly over the lake but rather has been greater in the tributary embayments than on the Cumberland River mainstem. A resurvey was started in 2014 but only part of the data needed for analysis had been collected at the time of composition of this document. Once this data has been collected and analyzed, it will be seen if the trend of an overall decline in the rate of sedimentation continues.

Old Hickory Lake has approximately 440 miles of shoreline consisting of clayey banks with areas of limestone outcrops, particularly in the upper end of the lake. The lake is long, sinuous, and surrounded

by hilly terrain. Thus, fetch lengths are limited with a corresponding restriction of wind-wave action. The lower half of the lake is encompassed by a large metropolitan area resulting in a high level of development in this part of the watershed. This development includes much residential development and a corresponding high usage by recreational boaters. In addition, commercial barge traffic routinely travels the lake along the mainstem of the Cumberland River. The upper half of the lake and watershed is much more rural and is characterized by large wooded areas, pasture, and farmland. The Old Hickory project is operated to maintain a relatively constant pool year-round. However, it does experience rises and falls as a result of rainfall events both in the Old Hickory watershed and in the watershed above the upstream projects (Center Hill Dam and Cordell Hull Dam). Due to the above factors, shoreline erosion is noteworthy but is typically mild to moderate. Shore protection has been installed in isolated areas, mostly rip-rap placed by adjoining landowners.

One of the Corps' navigation missions is to maintain a minimum 300’ wide x 9’ deep navigational (draft) channel for barge tow and related commercial traffic operations on the Cumberland River through the Old Hickory project. This requires channel maintenance dredging of river sedimentation in areas of shoaling within the commercial navigation channel. The navigation mission does not include dredging beyond the limits of the commercial channel.

2-06 WATER QUALITY.

A. General. Old Hickory Lake is a moderately shallow, main stem reservoir with theoretical hydraulic retention times averaging 11 days and rarely exceeding 30 days. The operation of Old Hickory Dam has little effect on the quality of water in the reservoir.

The following three criteria are the main considerations with regard to water quality in the operation of Old Hickory Dam. First, a minimum daily average flow of 1,000 cfs from the dam is necessary for waste water assimilation in the Nashville area. Even during the most extreme of droughts, this goal is relatively easy to meet. Second, periods of zero release are limited to no more than six consecutive hours. During low flow periods, this may require intermittent hydropower generation, typically at minimum loads for a duration of one hour. Lastly, Old Hickory is operated to maintain a dissolved oxygen level of 5.0 mg/L in the tailwater. This is accomplished primarily by releasing sufficient amounts of water at storage projects upstream of Old Hickory to maintain certain minimum bi-weekly average discharges at Old Hickory during the summer and fall months. These theoretical minimum bi-weekly average outflows from Old Hickory are outlined below in Table 3:

Table 3- Theoretical Minimum Flow for Water Quality (cfs)

Month	Theoretical Minimum Flow for Water Quality (cfs)
April	2,000
May	4,900
June	7,600
July	9,100
August	9,400
September	7,400*
October	2,000

* Higher flows are needed until Old Hickory destratifies.

The shape of Old Hickory Lake has a strong influence on stratification and mixing patterns. A long portion of the lake headwaters is generally confined to the natural river channel where there is little stratification due to near constant flow. Downstream towards the dam, the reservoir spreads out and slight oxygen and temperature gradients are found. Also, several large embayments can undergo heavy summer stratification as early as late May. These embayments are fairly isolated from the main channel flows and the exchange of water between the two is believed to be limited.

In general, Old Hickory Lake is thermally stratified from April or May through September. Typical stratification in Old Hickory is a thermocline of 2 to 6° C (36° to 43° F). Normally, this results in a thermal wedge extending from the dam upstream to or slightly beyond the Gallatin Fossil Plant (approximately one-third to one-half of the reservoir length). Water quality problems are primarily associated with this reach.

The Gallatin Fossil Plant withdraws water from the lake bottom and discharges to the surface. At full capacity, the 1255 MW plant pumps about 1,320 cfs for cooling water, raising the water temperature about 9° C (48° F). This heat has a relatively minor, short term effect on surface temperatures as a result of the thermally stratified wedge keeping the heated water at the surface and thus enhancing heat transfer into the atmosphere.

In Old Hickory, surface DO concentrations are generally stable, between 7 and 9 mg/L. At the dam; however, there can be occurrences of serious DO depletion with concentrations less than 1 mg/L below the 20-foot depth. Oxygen depletion near the dam and in the outflow becomes pronounced when residence times increase above 15 days. During the years 2007-2012, when the Cumberland system operations were handicapped by the pool restrictions at Wolf Creek and Center Hill, it was not uncommon for turbine DO levels to become so poor that it was necessary to supplement Old Hickory turbine discharge with spillway gate discharge in order to maintain the state minimum DO standard of 5 mg/L in the tailwater.

The lake's largest sewage treatment plant effluents are from the cities of Carthage, which is located near Cumberland River Mile (CRM) 308, Hartsville near CRM 279, Lebanon near CRM 252, Gallatin near CRM

238, and Hendersonville in the Drakes Creek embayment which connects with the main channel near CRM 222. All of these effluents combined contribute only about 13 cfs to the average reservoir flow of nearly 20,000 cfs. Local nonpoint source runoff does not significantly affect water quality in the main channel region of the reservoir due to the flushing that is characteristic of Old Hickory.

2-07 CLIMATE.

The climate of the project area is considered moderate. It is characterized by relatively mild winters, warm summers, and abundant annual rainfall. Temperatures range from summer highs (July and August) of 89^{o} F to winter lows of 28^{o} F in January (TWC, 2014). The mean annual temperature for the area ranges from 58° to 60° F, and the average relative humidity is 62 percent. The humidity tends to be highest during summer mornings and lowest during winter afternoons. Freezing temperatures seldom occur for long durations. The average growing season is approximately 225 days, extending from early April to the end of October. Annual precipitation for the basin averages 48 to 54 inches (UT, 2014).

These weather patterns generally result from cold air moving southward from Canada and warm, moist air currents moving northward from the Gulf of Mexico. As a result of these frequent low pressure systems, precipitation is usually heaviest in late winter and early spring. The most widespread flooding occurs during this period, but flooding on a smaller scale can occur during any month as a result of local heavy thunderstorms. Precipitation is generally lightest in late summer and early fall with October identified as the driest month; conversely May is usually the wettest month with approximately 5.5 inches of rainfall (NWS, 2014). High pressure systems are most frequent during late summer and early fall. Thus, periods of drought are offset by periods of ample-to-excessive precipitation throughout the year. The area receives an average of six to eight inches of snow each year between late November and March with January and February having the most snowfall. With the relatively mild temperatures throughout the winter, snow cover rarely lasts more than a few days (UT). Sun shines approximately 65% of the time in summer and 45% in winter (USDA 1997). Winds are most often (26% of the time) from a southerly direction and average nine miles per hour (Weather Spark, 2014). Though located outside of the Southern Plains ‘tornado alley’, middle Tennessee has a relatively high frequency of tornado occurrences, with the peak season being March through May (NWS, 2014).

2-08 PHYSICAL GEOGRAPHY.

A. General. The State of Tennessee is divided into three physiographic provinces. These large surface divisions are referred to as the Appalachians, the Central Highlands, and the Mississippi Plain and Plateau. Old Hickory Lake is located entirely within the Central Highlands Province, which is further divided into two physiographic regions; the Central Basin and the Highland Rim (see Figure 5).

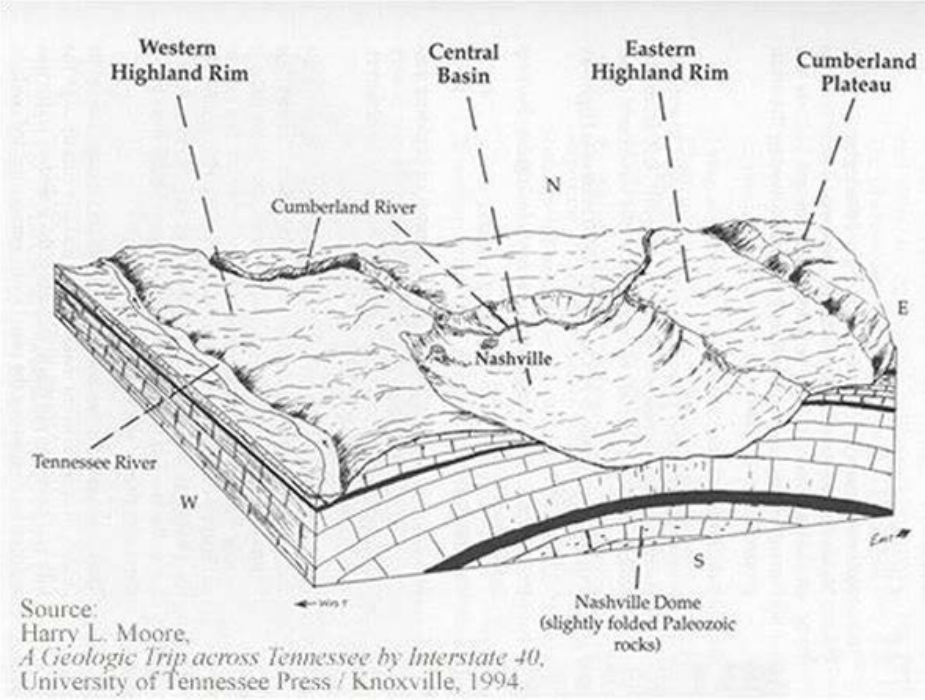


Figure 5- Central Highlands Province

2-09 TOPOGRAPHY.

A. General. While many factors must be considered in development, slopes in excess of twenty percent generally present limitations so great that intensive recreational development is not feasible or desirable. The lands surrounding Old Hickory Lake which have slopes that are too steep for development are generally located on the high energy side of the old river channel.

B. Topographic Character of Old Hickory Lake. The topography of the project area can generally be described as gently rolling to hilly. The discussion which follows describes the topography of the project in four major sections extending eastward from the lock and dam.

(1) Dam Area. The first area extends from the dam structure eastward to Saundersville (on the north shore) and Greenhill (Old Hickory area on the south shore). This area contains the Hendersonville City Parks, Old Hickory Beach, Left Bank, Shute's Branch, and Rockland recreational areas. The topography is generally characterized by rolling terrain with broad ridges, broad valleys, and gentle slopes. Steeper slopes exist along the shoreline of the Rockland Recreation Area, between Blue Turtle Bay Marina, Shutes Branch Recreation Area, and between Bluegrass Country Club and Saundersville.

(2) Saundersville Area. The area between Saundersville and Highway 109 contains Cages Bend, Cedar Creek, Lone Branch, Laguardo and Martha Gallatin Recreation Areas. Also found in this area are Lock 4, Cedar Grove and Gallatin City Park recreation areas. The topography of this area may be classified as rolling to hilly. The ridges and valleys are narrower than those within the dam area. Slopes in this area

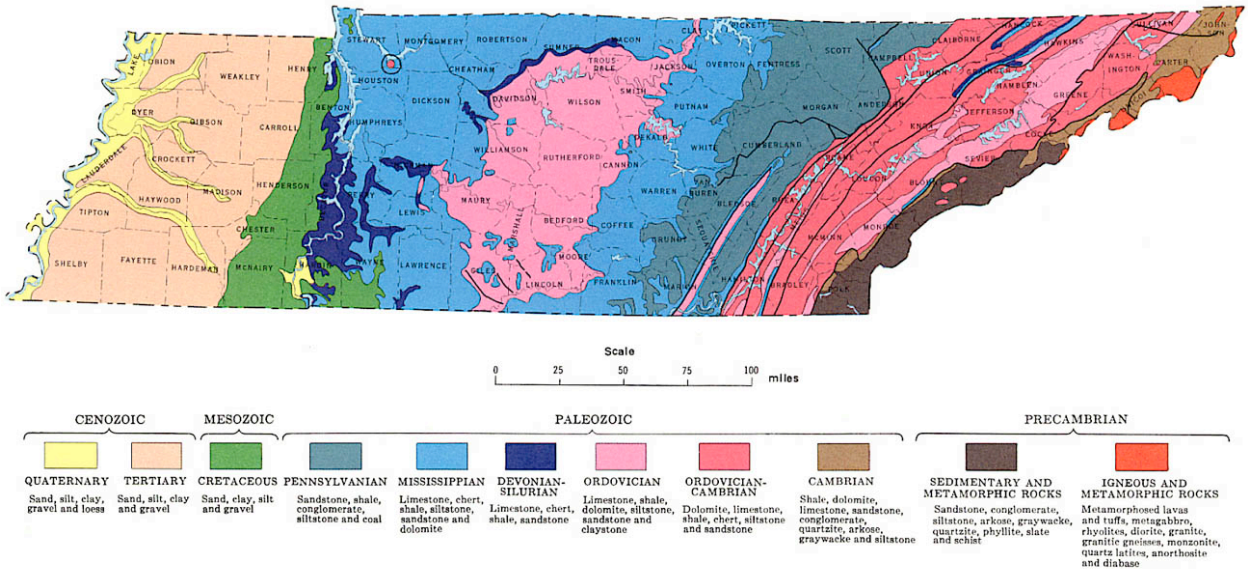
often approach 20 percent, and small limestone bluffs border the lake to the east of Cedar Creek on the southern shore.

(3) Bledsoe Creek Area. The area east of Highway 109 to Highway 231 contains Bledsoe Creek State Park, Sandy Chapel, Hunters Point access area, Shady Cove Resort and Marina, and Barton's Creek Launching Ramp. The topography is more rugged than that found in Areas 1 and 2. Two major bluffs occur: Indian Ladder and Seven Mile. The general topography may be classified as rolling to hilly, with narrow ridges and narrow valleys.

(4) Carthage Area. The area which extends to the east from Highway 231 to Carthage is characterized by hilly topography with moderate slopes. Topographic features within this area include knobs (with elevation differences of 200 feet or more), slopes in excess of twenty percent, and sinkholes.

2-10 GEOLOGY.

A. Regional Setting. Old Hickory Lake is located within the Nashville or Central Basin Physiographic Region, which is actually a structural dome. This region is the result of millions of years of wind and water erosion acting upon a rocky uplift called the Nashville Dome. Uplift created the dome and subsequent erosion dissected the area into rolling hills and broad valleys, which exposed some of the older, Ordovician age limestones. The Catheys, Cannon, Bigby, Hermitage, and Carters formations are present in the area and illustrated on Figure 6. Generally, these formations consist of variably interbedded, argillaceous, and relatively pure limestones. These limestones are susceptible to karst development, which poses a risk to any site development. Discontinuities in the rock mass can also lead to instability of rock cuts or natural outcrops. Sufficient geologic/geotechnical investigations shall be conducted prior to site development.



GENERALIZED GEOLOGIC MAP OF TENNESSEE

Figure 6- Illustrates the Generalized Geologic Map of Tennessee

Source: Website http://tnlandforms.us/landforms

B. General Characteristics of Exposed Geologic Formations. It is beyond the scope of this master plan to map the geology of the Old Hickory Lake area. However, detailed maps prepared by the United States Geologic Survey were examined to obtain the following formation descriptions which are typical of the project area. The descriptions are presented in order of occurrence from the oldest to the youngest.

(1) Carters Limestone Formation. This formation is exposed along the lowest valley walls and road cuts near the dam area. The formation varies in thickness from ten to twenty feet and is characterized by very fine-grained to cryptocrystalline, thin bedded limestone with thin shale partings. This formation weathers to a thin, irregular, clayey soil which generally occurs in rolling to hilly areas. Karst features include caverns and related sinkholes. The configuration of rock cuts and their stability will depend upon discontinuities encountered at the site. The formation provides an excellent source of general purpose limestone. Generally, areas underlain by the Carters formation offer poor septic percolation and are not well suited for intensive development.

(2) Hermitage Formation. This formation lies on top of the Carters limestone and is exposed in areas upstream from the dam. The dominant limestone rocks have a high insoluble content, are thin bedded, and include shale partings, phosphatic pellets, silt, and chert. The thickness of this formation varies from zero to ten feet. This formation weathers to moderately thick, sandy soils that provide good septic percolation. The formation generally occurs in areas with rolling to hilly terrain which may have numerous sinkholes. The configuration of rock cuts and their stability will depend upon discontinuities encountered at the site. On non-Karst areas, this formation can be well suited for intensive development, agriculture, and septic wastewater disposal systems.

(3) Bigby-Cannon Limestone Formation. This formation lies directly on top of the Hermitage formation. The formation consists of three facies: the Cannon limestone, Dove-colored limestone, and Bigby limestone. These facies layer each other laterally and vertically. The formation ranges in thickness from 50 to 100 feet. In general, this formation is light gray to brownish gray, medium to coarse grained, thin to medium-bedded, and evenly bedded. This formation weathers to a highly variable, clayey, phosphatic soil occurring in moderately rolling to hilly topography. Karst features are uncommon. The formation is suitable for commercial phosphate and general use limestone. The configuration of rock cuts and their stability will depend upon discontinuities encountered at the site. Areas underlain with the Bigby-Cannon formation can be well suited for agriculture and recreation development.

2-11 SOILS.

A. General. Soils in the project area vary from clay residuum, weathered from limestone, to alluvium. Alluvium is comprised of varying amounts of gravel, sand, silt, and clay. Natural slopes typically vary from 1 to 5 percent. Soils and geologic/geotechnical investigations will need to be conducted prior to any site development. These investigations shall be used to explore conditions at the site and ultimately determine the soil's suitability as a construction material.

B. Soil Associations in the Project Area. There are five general soil associations that occur along the shoreline of Old Hickory Lake between the dam and Highway 109 bridge, and three others that occur in the area (as shown in Figure 7). A soil association consists of a particular geographic region that has a distinctive proportional pattern of soil types. These soil associations are named for two or more major soil series of which it is composed. In addition to the major soil series, it also contains several soil types.

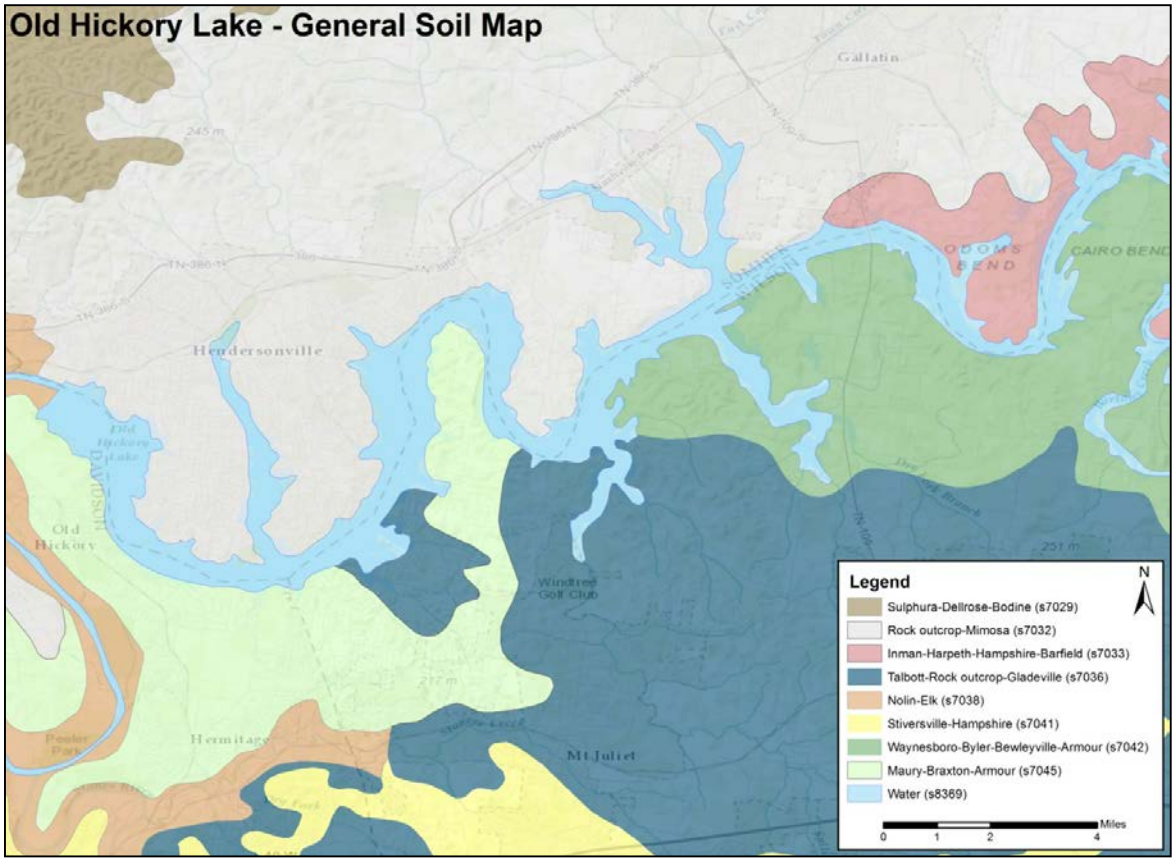


Figure 7 - General Soil Map of Old Hickory Lake

Table 4- Soil Associations Occurring along the Shoreline of Old Hickory Lake

Source: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Soil Association and Series	Description / Parent Material
Maury-Braxton-Armour Association	
Maury silt loam	Loess over clayey residuum and/or alluvium derived from limestone
Braxton silt loam	Clayey residuum weathered from limestone
Armour silt loam	Silty alluvium over clayey residuum weathered from phosphatic limestone
Talbott-Rock Outcrop-Gladeville Association	
Talbott silt loam	Clayey residuum weathered from limestone
Gladeville rock outcrop complex	Flaggy residuum weathered from limestone (60%), rock outcrops (20%), and minor components (20%)

Soil Association and Series	Description / Parent Material
Mimosa rock outcrop complex	Clay residuum weathered from limestone (70%), rock outcrops (15%), and minor components (15%)
Waynesboro-Byler-Bewleyville-Armour Association	
Waynesboro loam	Clayey alluvium derived for interbedded sedimentary rock
Byler silt loam	Loamy alluvium over clayey residuum weathered from limestone
Bewleyville silt loam	Loess over clayey or loamy alluvium
Armour silt loam	Silty alluvium over clayey residuum weathered from phosphatic limestone
Inman-Harpeth-Hampshire-Barfield Association	
Inman flaggy silty clay loam	Clayey residuum weathered from limestone and shale
Harpeth silt loam	Loess or loamy alluvium over clayey residuum weathered from limestone
Hampshire silt loam	Clayey residuum weathered from limestone and shale
Barfield	Clayey residuum weathered from limestone
Sulphura-Dellrose-Bodine Association	
Sulphura Channery Silt Loam	Channery residuum weathered from limestone and shale
Dellrose cherty silt loam	Formed in cherty materials that have moved downslope and settled on clay weathered from phosphatic limestone (minor component of Sulphura)
Bodine cherty silt loam	Formed in residuum of cherty limestone (minor component of Sulphura)
Nolin-Elk Association	
Nolin silt loam	Clayey residuum weathered from limestone
Elk silt loam	Clayey residuum weathered from limestone
Stiversville-Hampshire Association	
Stiversville silt loam	Loamy residuum weathered from limestone, sandstone, and shale
Hampshire silt loam	Clayey residuum weathered from limestone and shale

2-12 NATURAL RESOURCE ANALYSIS

This chapter covers a general inventory and evaluation of the natural resources that characterize the Old Hickory Lake project area. Section 2-11 summarizes how each particular natural resource enhances or constrains the continued operation, management, and development of Old Hickory Lake. The information presented in Chapter 2, and in Chapters 3, 4, and 5, will be used to forecast general environmental impacts, to estimate and control ecological interrelationships, to develop specific resource use objectives, to match various land-use categories, to resource capabilities and guide preparation of general site development plans.

2-12.1 FISH AND WILDLIFE.

A. Terrestrial Fauna. Old Hickory Lake provides a suitable environment for a variety of birds, amphibians, and mammals. The upper reaches of the project (east of Highway 109) offer excellent wildlife habitat conditions as a result of intensive management practices implemented by TWRA. These lands provide excellent habitat for a variety of wildlife species and excellent hunting and wildlife observation opportunities for people. Fringe areas along the lower reaches of the lake can provide habitat for many wildlife species if not landscaped, i.e., mowed by adjacent private landowners. If left undisturbed, these fringe lands become covered with native grasses and weeds which provide cover and food near a source of water. Major game mammals found in the project area include: white-tailed deer, opossum, raccoon, muskrat, eastern gray squirrel, fox squirrel, and cottontail rabbit. The major game birds in the area include the bobwhite quail, mourning dove, Canada goose, wood duck, mallard, black duck, and baldpate. Species to be managed will include small upland game, waterfowl, deer, and a variety of non-game species. A complete list and discussion of the wildlife species that inhabit the project area is included in the 2005 Operational Management Plan, Part I.

B. Aquatic Fauna. A total of 67 fish species from 18 families have been found in Old Hickory Lake. These species are divided into three categories: rough fish, game fish, and forage fish. The rough fish comprise approximately 26 percent and forage fish approximately 50 percent. The most important game fish species (in terms of sport fishery) appear to be the black basses (largemouth, spotted, and rock), walleye, sauger, crappie (white and black), and catfish (blue and channel). The rainbow trout and smallmouth bass are found in the lake, but are not common. Striped bass or rock fish have increased in importance because of annual stockings by TWRA. The black basses, temperate basses, crappie, and walleye are the most sought after game fish in the lake. A world record (25 pounds) walleye was taken on August 2, 1960. The rough fish include the bullheads (brown, black, and yellow), carp, buffalo, drum, gar (spotted and longnose), bowfin, redhorse, sucker, stoneroller, paddlefish and the darters. The dominant forage fishes include the gizzard and threadfin shad with the shiners and minnows comprising lesser varieties. Detailed life histories of these fish species (including spawning habits) are included in the Cumberland River Environmental Impact Statement.

2-12.2 VEGETATION.

General. The vegetative cover that occurs on the project represents an element in the natural beauty of the landscape. Site planning of all recreational areas at the project will capitalize on the screening and buffering attributes of vegetative cover while also providing an attractive and diverse environment. The following discussion includes descriptions of past land use and current vegetation conditions on project lands at Old Hickory Lake.

Table 5- Current Vegetation Composition at Old Hickory Lake

Vegetation Type	Percent of Project Lands
Non-Vegetated	9%
Herb Dominated	33%
Shrub Dominated	1%
Tree Dominated – Closed Canopy	36%
Tree Dominated – Open Canopy	21%

Past Land Use. The existing vegetative pattern is primarily a product of human alteration of the land as opposed to natural succession. The vegetative pattern is the result of previous timber harvests, farming, and livestock grazing. The Shoreline Management Plan and the Forest Management Plan (found in Part 1 of the Operational Management Plan, discussed in Chapters 3-5), are designed to improve or maintain the vegetation surrounding Old Hickory Lake.

Forest Types at Old Hickory Lake. Four general forest types have been identified within the project boundaries as discussed below and seen in Figure 8.

(1) Oak-Hickory Type. The oak-hickory type tends to be "dominant" in central Tennessee in that the representative species associated with this type have the ability to spread into and maintain dominance over other forest types in the area. In general, the oak hickory forest type occurs on all types of terrain throughout the project; from well drained, thin soiled slopes to dry ridges. The exact composition of a particular stand is determined by a variety of related environmental factors such as aspect, depth to bedrock, and soil characteristics. Dominant canopy species which characterize this forest type include northern red oak, white oak, chestnut oak, southern red oak, post oak, black oak, mockernut hickory, black walnut, shagbark hickory, pignut hickory , yellow poplar, white ash, and American beech. The understory vegetation consists primarily of viburnum, huckleberry, dogwood, redbud, black cherry, persimmon, and sassafras.

(2) Eastern Red Cedar Type. Next to the oak-hickory forest type, the eastern red cedar type is the most prevalent plant community on the project. The eastern red cedar forest type is prevalent on old fields and rocky areas that are too poor to support other forms of vegetation. Red cedar may occur in pure stands or it may include other woody and herbaceous plant species such as broom sedge, honeysuckle and eastern redbud.

(3) Mixed Mesophytic. Mixed mesophytic is a climax forest type that favors moist coves, lower slopes, flats, and hollows where the soils are deep, fertile, and moist. Species occurring within this type include American beech, various oaks and hickories, sugar maple, red maple, and box elder. Common understory species include pawpaw, sourwood, redbud, and dogwood.

(4) Cove Hardwood Type. The cove hardwood forest type requires deep, fertile, moist soils that are found on lower slopes, creek bottoms, coves, and flats within the project. This type of habitat is generally limited to the heads of small creeks and streams that flow into the lake.

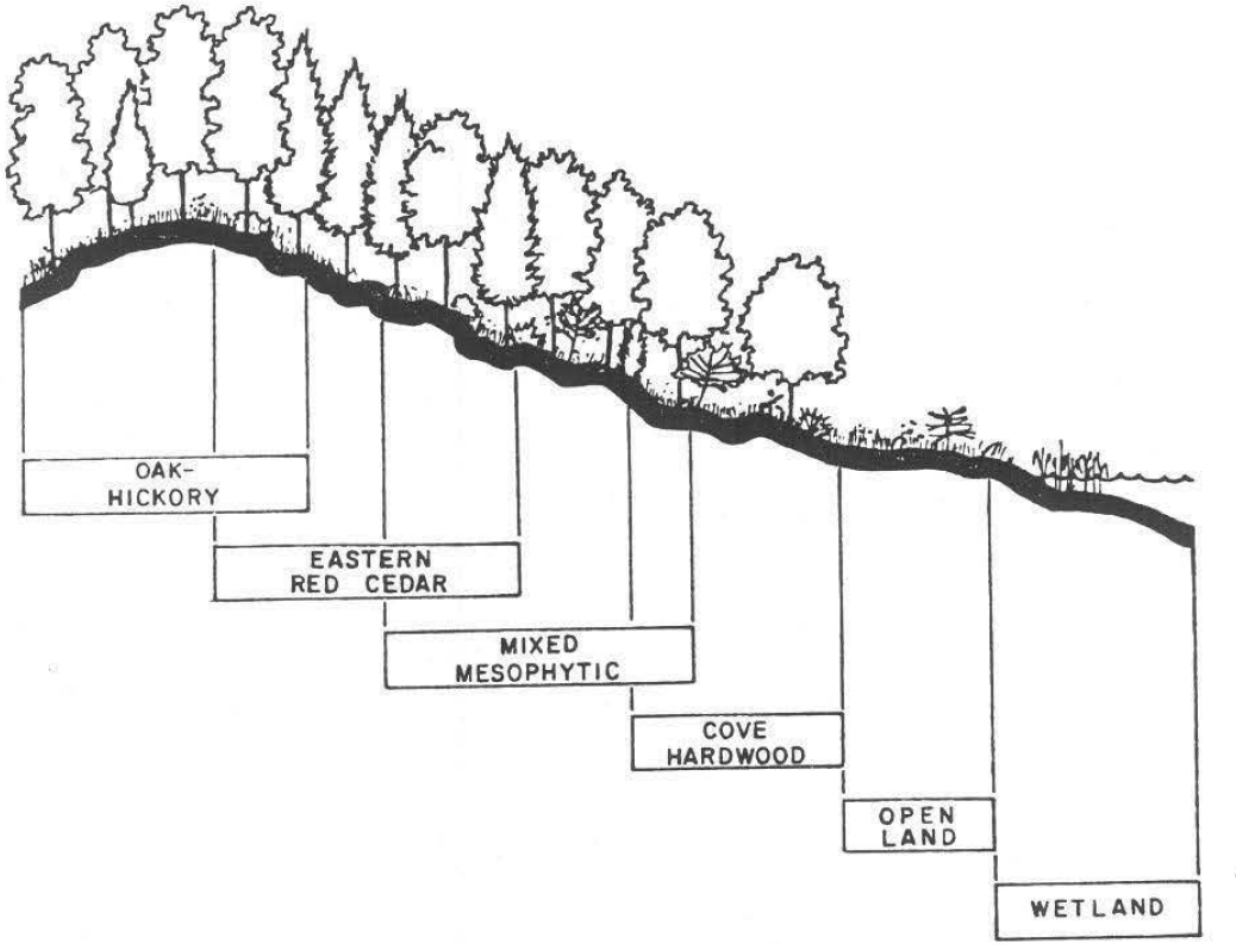


Figure 8- Typical Forest Types at Old Hickory Lake

The vegetation on Old Hickory is classified by the National Vegetation Classification Standard (NVCS)(Figure 10), with the goal being to understand the composition and vegetation of project lands using a consistent national system. Knowledge of what lands are available allows for better management of that land. The acreages (Figure 9) on Old Hickory Lake are broken down into vegetated and non-vegetated divisions and descriptions (Table 6)of the type of vegetation in each class. [1]

[1] The data was derived from the Federal Multi-Resolution Land Characteristics Consortium (MRLC) Tree Canopy and Land Use datasets, both 2011.

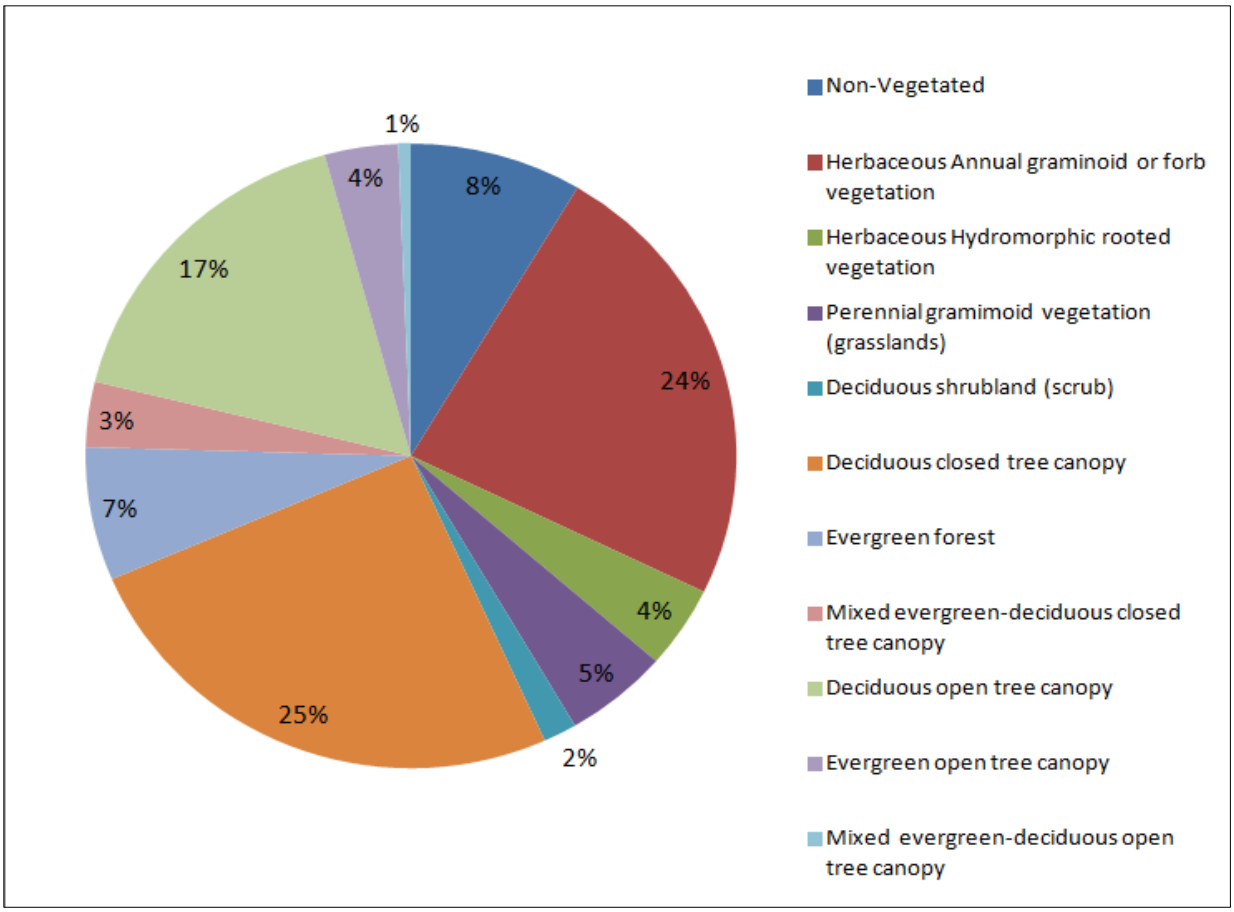


Figure 9- Vegetation Classification Acreage Records for Old Hickory Lake, as designated by the National Vegetation Classification Standard (NVCS)

Table 6- Definitions of NVCS classifications

Class\Value	Classification Description
Non-Vegetated	
Developed, Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for part of the total cover.
Barren Land (Rock/Sand/Clay)	Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.
Shrubland	
Shrub/Scrub	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true strubs, young trees in an early successional stage or trees stunted from environmental conditions.
Herbaceous	
Grassland/Herbaceous	Areas dominated by gramanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be used for grazing

Class\Value	Classification Description
Forest	
Deciduous Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
Evergreen Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
Mixed Forest	Areas dominate by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
Vegetation Condition Definitions:	
Sustainable	Meeting desired state. The acreage is not significantly impacted by any factors that can be managed and does not require intensive management. The acreage also meets operational goals and objectives set out in project OMP or other applicable management document. These acres are considered healthy and sustainable for future generations. Only minor management practices may be required to maintain the health. On lands at Old Hickory, 29% can be described as sustainable.
Transitioning	Managed to meet desired goals. The acreage is impacted by human or other environmental factors that require management of the acreage to meet goals and objectives outlined in the project OMP or other applicable management document. On lands at Old Hickory, 61% can be described as transitioning.
Degraded	Does not meet desired goals. The acreage is significantly impacted by human or other environmental factors that prevent the acreage from meeting desired goals outlined in the project OMP or other management documents. The acreage is not considered healthy. Intense management may be required to meet desired goals. On lands at Old Hickory, 10% can be described as degraded.

(5) Wetlands Complex. According to the US Fish and Wildlife Service's National Wetlands Inventory (NWI) (2014) there are approximately 949 acres identified as wetlands, exclusive of the deep water habitat, adjacent to or within Old Hickory Lake's area. Approximately 21,877.3 acres of lake are classified under the Cowardin system; this, other ponded areas (112.5 acres) and 22 acres of 'miscellaneous' classification bring the total acres at Old Hickory Lake to 22009.8 acres of wetlands. Most common classifications, beyond lake, are palustrine forested or scrub shrub (677.2 acres), palustrine emergent (140.2 acres), and riverine (28 acres). Some areas are identified as having artificial structures (dikes, impoundments) associated with historic farming practices. Much more of the fringe uplands around the perimeter of the lake that are now pastureland were likely wetlands prior to pasture

conversion. If these areas were no longer grazed by cattle and/or pasture haying ceased, plants indicative of wetland areas would return as in many areas soil and hydrology are present. Department of Interior, US Fish and Wildlife Service, 2014. National Wetlands Inventory can be accessed at http://www.fws.gov/wetlands/Data/Mapper.html .

Table 7- Acres of Wetlands by Wetland Classification Type on Old Hickory Lake

Wetlands and Deepwater Habitats Classification	Acres (approx) on Old Hickory
Lacustrine, Limnetic, Unconsolidated Bottom	20,802.60
Lacustrine, Littoral, Unconsolidated Bottom	4.80
Lacustrine, Littoral, Unconsolidated Shore	120.90
Palustrine, Emergent	140.70
Palustrine, Forested	646.20
Palustrine, Scrub-Shrub	31.00
Palustrine, Unconsolidated Bottom	93.60
Palustrine, Unconsolidated Shore	9.50
Riverine, Lower Perennial, Unconsolidated Bottom	26.10
Riverine, Lower Perennial, Unconsolidated Shore	1.90

(6) Open Lands. Almost all of the open lands at Old Hickory Lake are the result of clearing for agricultural practices. Most open land on the Upper Section of the project is licensed to the Tennessee Wildlife Resources Agency for wildlife enhancement activities.

2-12.3 THREATENED & ENDANGERED SPECIES.

A list of endangered species within the Old Hickory Lake counties is found in Table 8. In addition, species with special concern but are no longer listed include birds such as the peregrine falcon (*Falco peregrinus*) and the bald eagle (*Haliaeetus leucocephalus*), which may migrate through the area.

Table 8- Federally Listed Species Recorded in the Old Hickory Lake Project

(Data obtained from USFWS website and consultation with state and federal agencies)

Group	Species	Common Name
Mammals	*Myotis sodalist*	Indiana bat
	Myotis grisescens	gray bat
	Myotis septentrionalis	Northern long-eared bat
Mussels	*Quadrula sparsa*	Appalachian monkeyface
	Lampsilis abrupt	Pink mucket
	Dromus dromas	Dromedary pearlymussel
	Epioblasma brevidens	Cumberland combshell
	Obovaria retusa	Ring pink
	Pleurobema plenum	Rough pigtoe
	Cumberlandia monodonta	Spectaclecase

Group	Species	Common Name
	Epioblasma o. obliquata	Purple catspaw
Plants	*Lesquerella perforate*	Spring creek bladderpod
	*Physaria globosa**	Short's bladderpod
	*critical habitat designation	

Several of the listed species are mussels, which may still survive in the upper reaches of the river or historically occurred prior to impoundment. The slow, cold waters now associated with impounded rivers have resulted in the decline of mussel species as their historic range was gravelly or rocky substrates of free flowing rivers and streams. A few relic populations exist but the specimens are not reproducing. Coupled with the loss of habitat, little is known about mussel species. Information is being gathered, but still a large unknown for many listed mussels is which fish species serve as hosts for mussel larvae. The TWRA has established the Cumberland River Aquatic Center at TVA's Gallatin Fossil Plant and is currently propagating several mussel species. Efforts from this facility can help answer some of the life requisite questions of the mussels and well as raise specimens that can be relocated to suitable habitats.

A. Gray Bats. Gray bats are considered a wide-ranging species known from suitable caves over virtually the entire Cumberland and Tennessee basins. The species was Federally listed as Endangered in 1976. Gray bat colonies are residents exclusively of limestone caves or cave-like habitats, and migrate seasonally between maternity and hibernating caves. Gray bats are highly selective concerning caves; fewer than five percent of available caves offer suitable habitat for this species. Flying insects that have an aquatic life cycle make up the majority of food consumed by this species. Consequently, gray bats feed primarily along reservoirs, streams and riparian habitats, particularly above aquatic weed beds. Concentration of large numbers of gray bats into a relatively small number of caves makes the species particularly vulnerable to instances of habitat disturbance. Human intrusions into maternity caves causing young to perish and into hibernating caves causing individuals to arouse, depleting fat reserves and then starve are thought to be primarily responsible for the species decline. Other factors attributed to threatening the species are pesticide poisoning, reduction of insect prey because of stream degradation, and flooding of caves by impoundment or natural causes(USFWS 1987). Cave gating for maternity sites and critical hibernacula has helped stabilize and grow the species population (BCI 2014). This species' Recovery Plan states that the gray bat may be reclassified when the majority of its priority hibernacula are protected and maternity cave populations have stabilized or increased for five years. White nose syndrome has affected millions of bats and there is grave concern that many species could be affected with the spread of this disease, which is caused by the fungus, *Pseudogymnoascus destructans.* The endangered gray bat has been recorded for several years wintering in a cave on the south bank of the lake across from the Gallatin Fossil Plant. Through USACE, Nature Conservancy, USFWS, and TWRA cooperative agreement the cave was gated as a protection measure.

B. Indiana Bats. Indiana bats range over most of the eastern half of the US. Indiana supports the greatest numbers, with Missouri, Kentucky, Illinois and New York having large populations. Alabama, Arkansas, Connecticut, Iowa, Maryland, Michigan, New Jersey, North Carolina, Ohio, Oklahoma,

Pennsylvania, Tennessee, Vermont, Virginia and West Virginia are considered within the species' range (USFWS 2006). Tennessee is considered along the southern boundary of the bats' range. This species was listed as Endangered in 1967. The species hibernates in large colonies, in caves or in shafts and roosts primarily in trees during the non-hibernation season. Suitable wintering habitat includes caves in the karst areas of the east-central US and other 'cave-like' locations, such as abandoned mines. Temperatures within these features are the primary considerations for use or abandonment. Summer roosting sites for reproductive females include dead trees that retain large, thick slabs of peeling bark. This type of habitat is predominately found in riparian areas, including floodplain and bottomland forests and wetlands, as well as upland communities where canopy gaps in forests, fence lines and wooded edges can be found. Foraging habitat preferable to Indiana bats includes semi-open to forested habitats, forest edges and riparian areas (DOI 2007). Winter distribution of the species is well documented; limited knowledge is available for size, location and extant number of maternity colonies. The decline of the species is attributed to commercialization of roosting caves, activities changing the climate of hibernacula caves, destruction by vandals, disturbances by increasing numbers of spelunkers and bat banding programs, use as laboratory animals, potential insecticide poisoning and most recently white nose syndrome. In addition to protection of hibernation sites, protection of the foraging habitat in the vicinity of hibernacula is important. Indiana bats have shown strong site fidelity to summer colony areas and foraging habitat. Reclassification and delisting criteria outlined in the draft Recovery Plan include: (1) conserving and managing hibernacula and their winter populations, (2) conserving and managing summer habitat to maximize survival and fecundity; (3) planning and conducting research essential for recovery, and (4) developing and implementing public information and outreach programs. Indiana bat calls were isolated from an acoustic survey completed by the Tennessee Valley Authority in 2012 for its habitat assessment of the Gallatin Fossil Plant (TVA 2013).

C. Northern Long-eared Bat. The Northern Long-eared bat (NLEB) has recently been listed as Threatened by the USFWS. NLEB range within the United States includes much of the eastern and north central states. This species life requisites are much like those of the Indiana bat. Winters are spent hibernating in caves or mines with high humidity and constant temperatures; summers are roosts in tree cavities, crevices or beneath bark. NLEB diet is primarily insects found in forested areas (USFWS 2015).

D. Short's Bladderpod. Recently, in 2014, the USFWS identified areas within the Corps area of responsibility at Old Hickory Lake as critical habitat for Short's bladderpod, a plant in the mustard family. It grows up to 20 inches tall. Clusters of small yellow flowers top single, and sometimes multiple stems from April to early June. Short's bladderpod typically grows on steep, rocky, wooded slopes and talus slopes and along tops, bases, and ledges of bluffs - often near rivers or streams and on south- to west-facing slopes. Most populations are closely associated with calcareous outcrops. The main causes in general for habitat loss and degradation are potential future construction and ongoing maintenance of transportation rights-of-way; prolonged inundation and soil erosion due to flooding and water level manipulation; and over story shading due to forest succession and shading and competition from invasive, nonnative plant species.

Activities that USFWS believes could potentially harm the Short's bladderpod and result in ''take,'' include, but are not limited to: (1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act; (2) Removing and reducing to possession of the plant species from areas under Federal jurisdiction; maliciously damaging or destroying the species on any such area; or removing, cutting, digging up, or damaging or destroying the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; (3) Introducing any unauthorized nonnative wildlife or plant species to States where Short's bladderpod occur that compete with or prey upon this plant species; (4) Releasing any unauthorized biological control agents into States where Short's bladderpod occur that attack any life stage of this plant species; and (5) Modifying the habitat of Short's bladderpod on Federal lands without authorization or coverage under the Endangered Species Act for impacts to this species (DOI 2013).

E. Spring Creek Bladderpod. In 2015 USFWS identified Spring creek bladderpod as occurring within project lands. This rare plant, a winter annual, is restricted to the floodplains of three creeks (Bartons, Spring and Cedar) in Wilson County, Tennessee. It can be found in agricultural fields, flooded pastures and glades, and disturbed areas. It requires some degree of disturbance, such as scouring from natural flooding or plowing of the soil, to complete its life cycle. Factors contributing to its endangered status are an extremely limited range and loss of habitat. The primary threat is the loss of habitat due to conversion of land to uses other than cultivation of annual crops, such as the rapid commercial, residential, and industrial development that is occurring throughout Wilson County.

Actions needed to recover the Spring Creek bladderpod include: (1) Protect and manage existing occurrences and habitats; (2) develop and implement management strategies for the species; (3) develop communication with local officials to coordinate county planning; (4) utilize existing environmental laws to protect the plant and its floodplain habitat; (5) conduct monitoring at all sites; (6) conduct seed ecology studies; (7) search for new populations; (8) establish new occurrences within the historic range; (9) maintain seed source ex situ; (10) develop and implement public education plans; (11) annually assess the success of recovery efforts for the species (DOI 2006).

It is illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. In addition, for endangered plants, the Act prohibits the malicious damage or destruction on Federal lands and the removal, cutting, digging up, or damaging or destroying of endangered plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies.

2-12.4 INVASIVE SPECIES.

Invasive species are serious threats impacting wildlife and fisheries habitat as well as human health. They impose enormous costs for eradication and management efforts.

Invasive species have been introduced through routes called invasion "pathways." Transported by air, water, rail, or road, invasive species move beyond natural geographic barriers and inhabit new sites. By altering species diversity, hydrology, nutrient cycling, and other ecosystem processes, invasive species can change whole ecosystems and irreparably damage natural resources. The management of invasive species requires steps to be taken against them. These include: 1) prevention, 2) early detection and rapid response, 3) eradication, and 4) control. These steps can be costly and time consuming with less affect on the species.

Education is an important mechanism to prevent the introduction of invasive species. Recreational boaters introduce invasive species by, for example, transporting vegetation on trailers and by the release of live bait in bodies of water. Ornamental plants and pets may be imported from a different country to provide unusual products to the market. Some non-native species, intentionally introduced for beneficial purposes, later turn out to be invasive. A small percentage cause serious problems in their new environments and are collectively known as "invasive species." Most U.S. food crops and domesticated animals are non-native species and their beneficial value is obvious - for example, managed livestock consist of non-native species that are not invasive.

The eradication of an invasive species may be an option if the organism is rapidly detected and the extent of its invasion is established. Many invasive species have already been established and control is the only option. The cost of control can often be excessive and priority must be given to efficiently using the resources available.

A. Emerald Ash Borer. The emerald ash borer (EAB), *Agrilus planipennis*, attacks only ash trees. It is believed to have been introduced into Michigan 15 to 20 years ago on wood packing material carried in cargo ships or airplanes originating in its native Asia. Since then, the destructive insect has been found in numerous states including Tennessee. Typically, the emerald ash borer beetles can kill an ash tree within three years of the initial infestation. The larvae (the immature stage) feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. Adults are dark green, one-half inch in length and one-eighth inch wide, and fly only from April until September, depending on the climate of the area. In Tennessee most EAB adults would fly in May and June. Larvae spend the rest of the year beneath the bark of ash trees. When they emerge as adults, they leave D-shaped holes in the bark about one-eighth inch wide.
Extensive information about this forest pest, including photos of its various life stages and identifying damage to living trees, can be found at: http://www.emeraldashborer.info/ and thousands of related web sites. The closest confirmed finding to the Old Hickory Lake area by 2015 was Smith and Jackson County, east of Old Hickory Lake.

B. Asian Carp. The Asian carp were accidentally released in Arkansas during floods on the Mississippi River in the late 1980s and early 1990s. Both bighead and silver carp are at large throughout the basin. TWRA first detected substantial numbers of silver carp in the Mississippi River in the early 2000s. As of this update, they are abundant in reservoirs on the lower Tennessee and Cumberland rivers. They are most abundant in Kentucky and Barkley lakes, but are spreading through locks up the Cumberland River toward Old Hickory Lake. Reports have been made to TWRA about sitings of Asian carp in Old Hickory. Extra precaution should be taken to help limit the spread of carp. If caught they should not be returned to the lake or river and should be reported to TWRA. Young carp look very similar to shad and the easiest way to tell them apart is to look at the dorsal(top) fin. Shad will have a long, threadlike fin that extends toward the tail. Asian carp will not have this thread-like fin, see the figure below.

Figure 10- Comparing Asian Carp to Shad

The Water Resources Reform and Development Act of 2014 (Public Law 113-121) included direction from Congress to the USFWS to lead a multiagency effort to slow the spread of Asian carp in the Upper Mississippi River and Ohio River basins, in coordination with the Corps, the National Park Service, and the U.S. Geological Survey.

Specifically, WRRDA called for the USFWS to develop and deliver a report to Congress summarizing all activities and expenditures (both federal and non-federal) related to Asian carp prevention efforts in the two watersheds over the previous two years, as well as describing any observed changes in the range of Asian carp in Upper Mississippi River and Ohio River basins. The USFWS Director determined that research could improve the ability to control the spread of Asian carp; and quantitative measures proposed for use in documenting progress in controlling the spread of Asian carp. More information can be found at: http://www.asiancarp.us/.

C. Invasive Exotic Plants. Numerous invasive exotic plants exist on project lands and water. Invasive exotic plants pose a serious threat to biodiversity as they invade and displace native plant communities. This disrupts and alters wildlife habitat. Table 9 has common invasive plant species to Tennessee and Old Hickory Lake.

Table 9- List of Common Invasive Exotic Pest Plants in Tennessee

Trees
Mimosa (*Albizia julibrissin* Durazz)
Princess tree (*Paulownia tomentosa* (Thunb.) Sieb. & Zucc.Stevd.)
Tree-of-heaven (*Ailanthus altissima* (Mill) Swingle)
Shrubs
Autumn olive (*Elaeagnus umbellata* Thunb.)
Japanese Bush honeysuckles (*Lonicera* japonica.)
Amur Bush honeysuckle (Lonicera maackii.)
Marrows Bush honeysuckle (Lonicera marrowii.)
Japanese barberry (*Berberis thunbergii* DC.)
Multiflora rose (*Rosa multiflora* Thunb. Ex Murr.)
Privet (*Ligustrum* spp.)
Herbaceous Plants
Eurasian water-milfoil (*Myriophyllum spicatum* L.)
Garlic mustard (*Alliaria petiolata* (M. Bieb.) Cavara & Grande)
Japanese grass (*Microstegium vimineum* (Trin.) A. Camus)
Japanese Knotweed (*Polygonum cuspidatum* Sieb. & Zucc.)
Japanese spiraea (*Spiraea japonica* L.f.)
Musk thistle (*Carduus nutans* L.)
Purple loosestrife (*Lythrum salicaria* L.)
Vines
Climbing euonymus (*Euonymus fortunei* (Turcz.) Hand.-Mazz.)
Japanese honeysuckle (*Lonicera japonica* Thunb.)
Japanese wisteria (*Wisteria floribunda* (Willd.)DC.)
Kudzu (*Pueraria montana* (Lour.)Merr.)
Oriental bittersweet (*Celastrus orbiculata* Thunb.)

2-13 CULTURAL RESOURCES.

People have occupied the Cumberland River and Old Hickory Lake area for over 12,000 years. Archaeological sites dating from the PaleoIndian period (c. 12,000 -10,000 years ago), Archaic periods (c. 10,000 – 3,000 years ago), Woodland (c. 3,000 – 1000 years ago), Mississippian (1000 – 500 years ago), and historic times (post c. A.D. 1650) are present within Old Hickory project and drainage basin. These occupations are manifested as archaeological sites that provide data about the past. Prehistoric sites include rockshelters and caves, open habitation locations, and villages and hamlets. Historic sites include early historic Long-hunter camps, farmsteads, Antebellum plantations, civil war battlefields, ferry's, and old locks. To date, 97 archaeological sites have been recorded on Old Hickory Lake's lands. However, only approximately 100 acres of land has been surveyed within Old Hickory. Therefore, the potential for unrecorded archaeological sites is present throughout the project. In addition, Old Hickory Dam, Lock, and Powerhouse forms an eligible property for inclusion in the National Register of Historic

Places. Cultural resource management of cultural resources is addressed in detail in the Integrated Cultural Resource Management Plan (in prep, USACE 2015).

2-14 DEMOGRAPHICS.

The region of demographic significance considered here is the general market area in which the reservoir is situated and is confined in one geographic area considered the Primary Area counties. The Primary Area consists of Davidson, Sumner, Trousdale and Wilson Counties in Tennessee.

Overall, population growth within the Primary Area is projected to experience a faster rate of growth than that of the State of Tennessee and the Nation as a whole. The Primary Area experienced a growth rate of 32% from 1990 to 2010 while the State of Tennessee and the Nation grew at rates of 30% and 24% respectively for the same time period. Sumner and Wilson Counties, Tennessee grew 56% and 68% respectively from 1990 thru 2010, which makes these counties two of the fastest growing counties in the State of Tennessee. Table 10 below displays historic and projected population data for the Primary Area counties.

Table 10- Historic and Projected Populations for Primary Area Counties

County	1990	2000	2010	2030	2060	% Change from 1990-2010
Davidson	510,786	569,891	626,681	786,236	936,104	23%
Sumner	103,281	130,449	160,645	198,612	243,111	56%
Trousdale	5,920	7,259	7,745	8,093	16,144	31%
Wilson	67,675	88,809	113,949	160,807	220,477	68%
Primary Area Total	689,652	798,408	911,030	1,155,778	1,417,896	32%
State OF TN	4,877,203	5,689,283	6,338,970	7,433,347	8,492,360	30%
The Nation	248,709,873	281,421,906	308,498,560	363,686,916	417,691,887	24%

Source: U.S. Census Bureau, State of Tennessee, Proximity One

Figure 11 below displays estimated annual growth for part of the Primary Area. Mt. Juliet and Lebanon, Wilson County is experiencing 1.35 to 2.5% growth annually while Gallatin and Hendersonville, Sumner County is growing 2.6% or more annually. As seen in Figure 11 these are the largest cities in the general market Primary Area of Old Hickory reservoir.

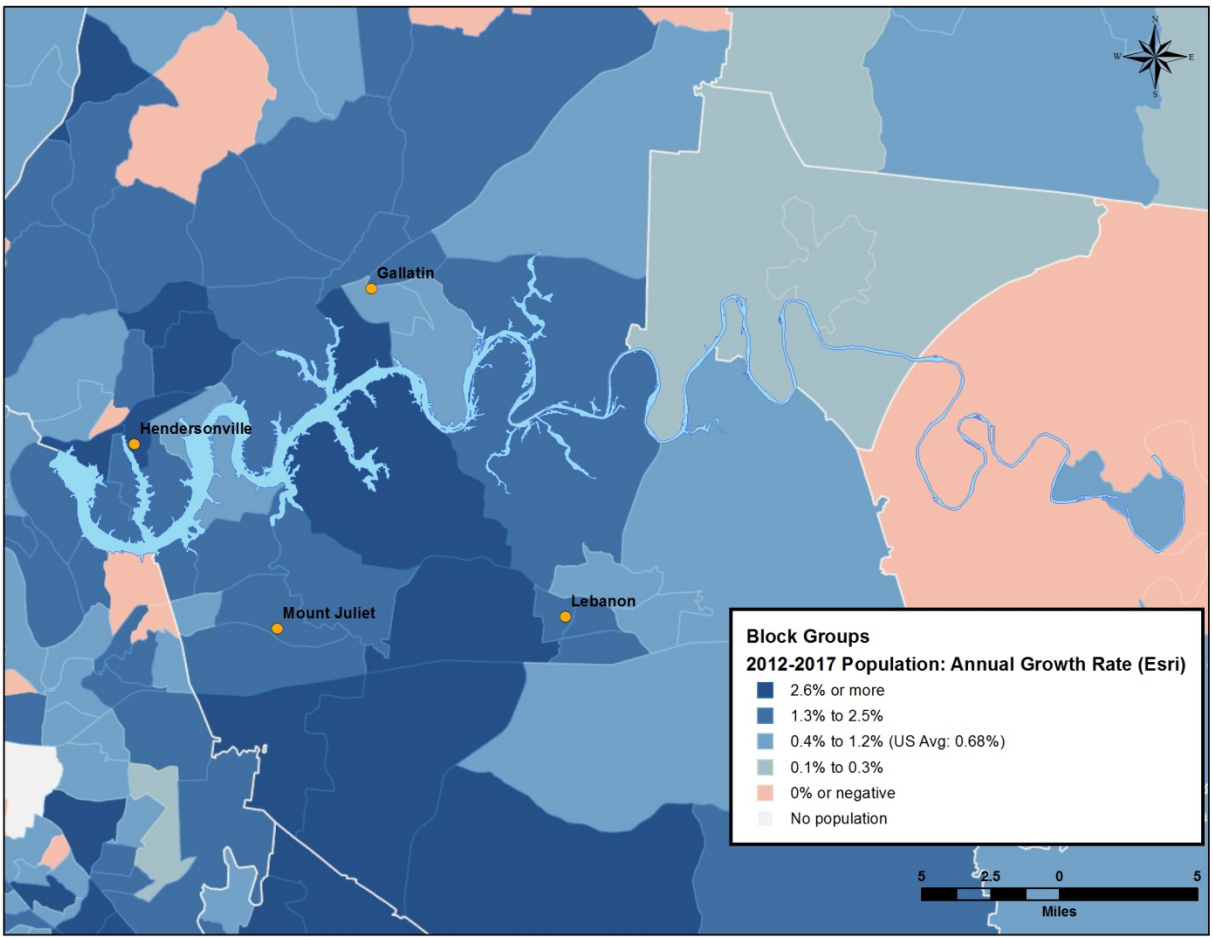


Figure 11- 2012-2017 Population Annual Growths (Primary Area)

Table 11 below displays primary cities in the general market area population changes from 2010 thru 2013. All these municipalities exceed the growth rate of the State of Tennessee.

Table 11- Primary City Population Change

City	2010	2013	% Change
Hendersonville	51,328	54,068	5.3%
Gallatin	30,399	32,307	6.3%
Mt. Juliet	24,760	28,222	14.0%
Lebanon	26,156	28,408	8.6%

Source: U.S. Census Bureau

The four counties within the Primary Area are mixed between urban and rural dwellers. Davidson County (Metropolitan Nashville) is predominantly urban while the other counties in the Primary Area have slowly increased their urban dwellers in the last two decades. Information was not available for Trousdale County's land use. Table 12 below displays the percentage if urban dwellers as opposed to rural since 1990.

Table 12- Proportion of Urban and Rural Populations

County	1990 Urban	1990 Rural	2000 Urban	2000 Rural	2010 Urban	2010 Rural
Davidson	99%	1%	95%	5%	97%	3%
Sumner	62%	38%	69%	31%	72%	28%
Trousdale	NA	NA	NA	NA	NA	NA
Wilson	45%	55%	54%	46%	62%	38%

Source: U.S. Census Bureau

The population of the Primary Area was primarily white. Of the just over 900,000 people living in the Primary Area, about 73% or over 665,000 were white while over 21% were black. Other races including Hispanic, Asian and American Indian made up the remaining 6% of the Primary Area's population.

The median age of the Primary Area was 38 years old in the 2010 census, which is slightly higher than state and national averages of about 35.5. Median age for the Primary Area increased from 36 to 38 between 2000 and 2010. Figure 12 which follow displays median age for a portion of the Primary Area.

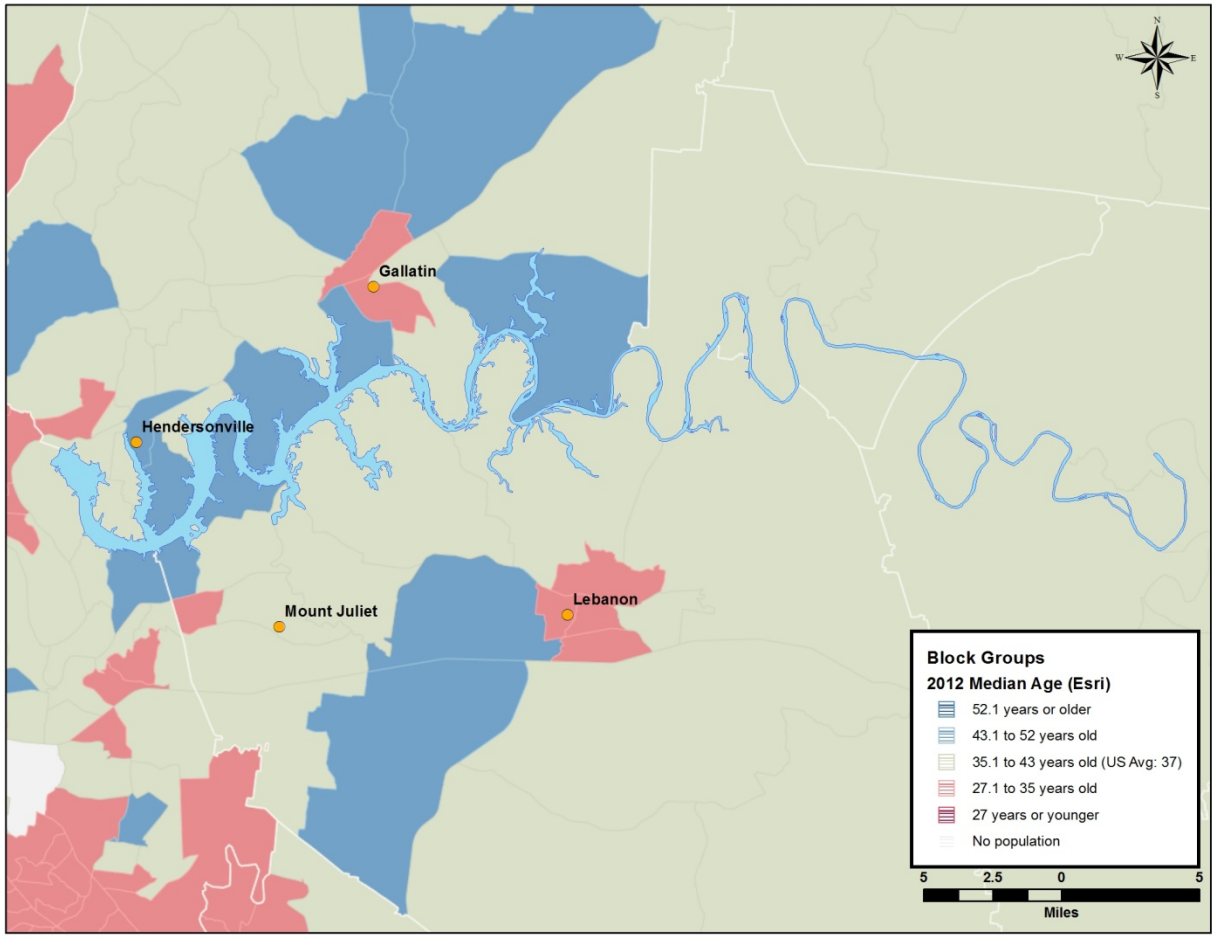


Figure 12- Median age for a portion of the Primary Area

With the exception of Trousdale County the Primary Area's education level mirrors that of the State of Tennessee and the Nation. Table 13 displays the Primary Area's percentage of residents 25-years and older who have graduated from high school and those who have a bachelor's degree or higher.

Table 13- Percent of H.S. & Bachelor's Degrees

County	H.S. Graduate or Higher	Bachelor's Degree or Higher
Davidson	86%	36%
Sumner	87%	23%
Trousdale	79%	13%
Wilson	89%	26%
State of Tennessee	84%	24%
Nation	86%	29%

Source: U.S. Census Bureau

2-15 ECONOMICS.

Tables 14-17 show the percentage of workers employed by industry in the Primary Area along with the same data for the State of Tennessee. Employment varies within the respective counties, but manufacturing is a major employer in the area. Davidson County has the most diversified employment in the Primary Area. Retail trade is the largest single non-combined category by percentage employer in Trousdale, Sumner and Wilson County's and exceeds the State of Tennessee's data in this category.

Table 14- Primary Area Counties 2013 Employment Percentages by Major Industry

Major Industry	State of TN	Davidson County	Sumner County	Trousdale County	Wilson County
Civilian employed 16 years and older	2,806,948	322,971	77,587	3,330	55,107
Agriculture, Forestry, Fishing, Hunting, Mining	1.1%	0.2%	0.5%	1.6%	1.1%
Construction	6.5%	5.6%	6.6%	4.2%	6.9%
Manufacturing	12.7%	6.9%	10.7%	9.8%	9.7%
Wholesale Trade	2.9%	2.8%	3.8%	3.7%	3.9%
Retail Trade	12.1%	11.6%	14.1%	15.8%	13.7%
Transportation, Warehousing, Utilities	6.2%	4.3%	5.7%	11.2%	6.5%
Information	2.0%	3.2%	1.8%	0.0%	2.3%
Finance, Insurance, Real Estate, Rental, Leasing	5.8%	6.9%	6.4%	3.7%	7.2%
Professional. Scientific, Management, Admin, Waste Management	9.2%	12.0%	9.6%	8.9%	9.4%
Educational Services, Health Care, Social Assistance	22.8%	24.6%	20.8%	22.9%	20.4%
Arts, Entertainment, Recreation, Accommodation, Food Services	9.2%	11.7%	10.1%	7.4%	9.2%

Major Industry	State of TN	Davidson County	Sumner County	Trousdale County	Wilson County
Other Services (except Public Administration)	5.0%	5.6%	5.2%	4.3%	4.9%
Public Administration (Including government)	4.6%	4.6%	4.6%	6.4%	4.8%
**Note: Percentages for counties may not total to 100%.*					
This table displays the top industries in the county, not all industries.					

Source: U.S Census Bureau

Table 15 displays historic unemployment rates for the counties within the Primary Area along with the State of Tennessee and the Nation. All counties within the Primary Area fair better than the State of Tennessee and the Nation in unemployment with the exception of Trousdale County. All counties in the Primary Area have recovered from the 2008 economic downfall.

Table 15- Primary Area Historic Unemployment Rates

County	2005	2010	2015
Davidson	4.5%	9.0%	5.4%
Sumner	4.6%	8.9%	5.7%
Trousdale	6.6%	10.5%	7.7%
Wilson	4.5%	8.3%	5.7%
State of Tennessee	5.6%	9.9%	7.1%
Nation	5.1%	9.6%	5.7%

Source: Bureau of Labor Statistics

The median and per capita income for the counties in the Primary Area is presented in Table 16. All counties in the Primary Area exceed the State of Tennessee in both median and per capita income.

Table 16- Primary Area Median & Per Capita Income

County	2000 Median Income	2011 Median Income	2000 Per Capita Income	2011 Per Capita Income
Davidson	$40,423	$46,737	$35,003	$47,318
Sumner	$46,695	$55,211	$27,710	$36,689
Trousdale	$32,974	$44,163	$20,965	$37,583
Wilson	$50,760	$61,400	$30,880	$38,461
State of Tennessee	$35,760	$43,989	$26,689	$36,567

Source: Bureau of Labor Statistics

2-15.1 ECONOMIC VALUE TO THE REGION

Corps provides water-based recreation opportunities throughout the country which in turn provide economic benefits to the local and regional economies. To estimate the economic impact from recreation related spending at these projects, USACE, in collaboration with researchers at Michigan State University, developed the Recreation Economics Assessment System (REAS). The REAS is an economic input-output model that was developed for all USACE projects based on recreation visits in 2012 and a set of economic ratios and multipliers for a region. Using available survey data, the REAS estimates that visitor spending at Old Hickory Reservoir to be an estimated $176.5 million annually. Of this spending at Old Hickory Reservoir, 54 percent was captured by the local economy yielding $95.4 million in direct sales to tourism related firms. These sales generated $55.9 million in direct personal income and supported 1,583 direct jobs. With multiplier effects visitor spending resulted in $154 million in total sales, $55.9 million in total personal income and supported 2,188 jobs. (MSU and USACE 2012).

2-16 RECREATION FACILITIES, ACTIVITIES AND NEEDS

The recreational opportunities at Old Hickory Lake are considered to be of great importance to Middle Tennessee. The project offers many recreational activities such as swimming, boating, water skiing, fishing, picnicking, camping, enjoying nature and wildlife, and biking.

2-16.1 ZONES OF INFLUENCE.

Old Hickory Lake is located within 500 miles, or a day's travel, of the main population base of the United States (See Figure 13). Actual public use is comprised of: 1) use from the local area; 2) weekenders from the adjacent communities in the region; and 3) destination users spending days to weeks from the further centers. Historic reports on visitation to Old Hickory Lake indicate that over 80 percent of visitation to the lake comes from within a 50-mile radius of the project. The lake does not experience the level of "vacation destination" visitors that are found at other lakes in the Cumberland River Basin.

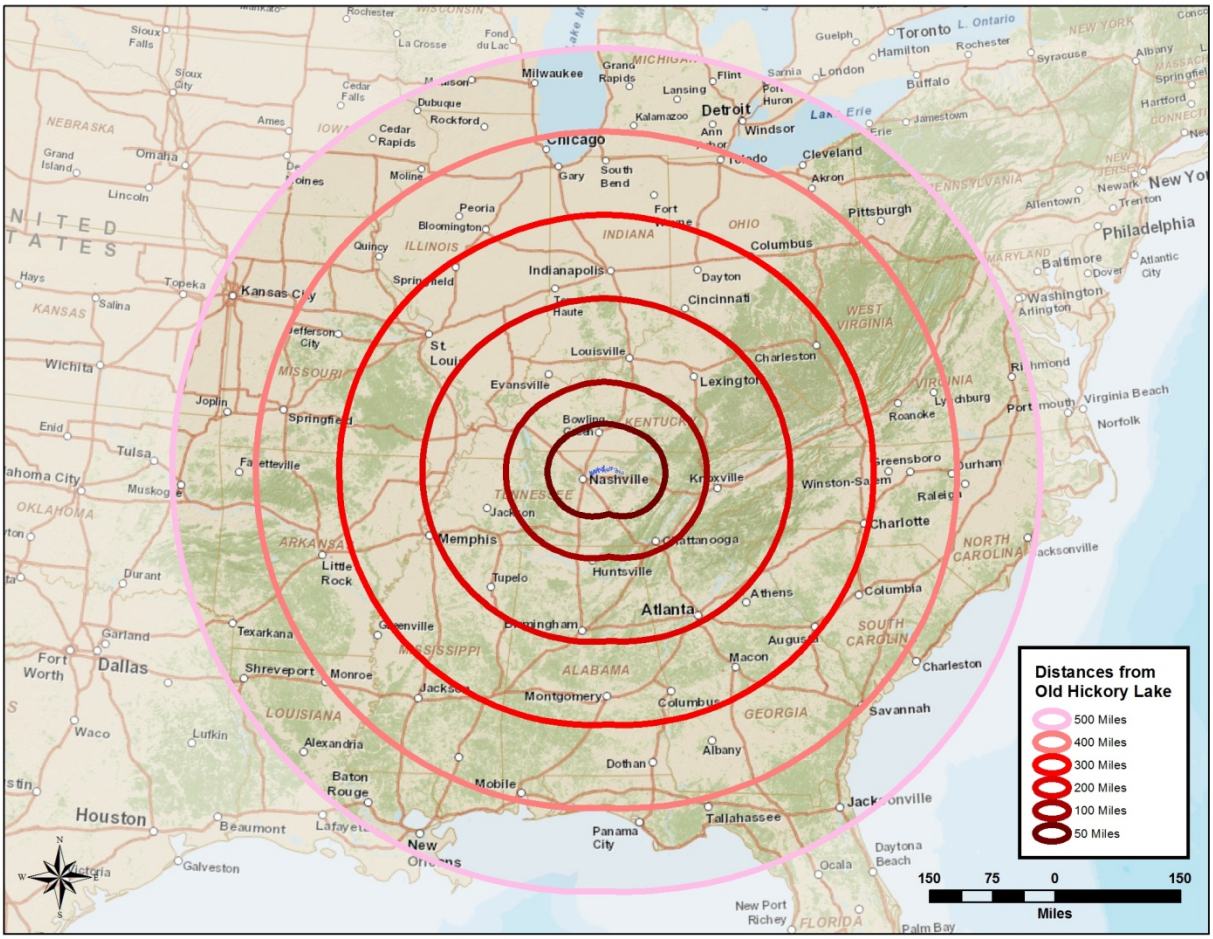


Figure 13– Distances (miles) as the crow flies from Old Hickory Lake

The five counties in the primary area of influence are Sumner, Wilson, Davidson, Trousdale, and Smith. This is based on customer comment surveys over the past decade, and this 5-county region surrounds Old Hickory Lake. This five county region has a total population of 976,337 according to the 2013 census. This figure is 4.9% or 47,982 people higher than census information in 2010, just three years earlier.

Davidson, Wilson, and Sumner counties are located on the west side of Old Hickory Lake, closer to Metro Nashville, and house commuter communities of Hendersonville, Gallatin, Old Hickory, and Mount Juliet. They have significantly higher populations (averaging 582 people per square mile in 2010). This reflects in recreation use patterns where the lake experiences much heavier recreation use on the west end of the lake than on the east end. Trousdale and Smith Counties that are located on the east end of the lake had populations of 65 people per square mile in 2010.

2-16.2 VISITATION PROFILE.

Old Hickory Lake visitors are a diverse group ranging from campers who utilize campgrounds around the lake, full time and part time residents from more than 3,000 private homes that are adjacent to the lake, hunters who utilize the Wildlife Management Areas around the lake, day users who picnic and use playgrounds, marina customers and many other user groups. The peak visitation months on Old Hickory Lake are April through November when 84 percent of the total visits occur. June is the highest visitation month and accounts for 15 percent of the annual total.[2]

Approximately 53 percent of visits to recreation areas occur in Corps managed recreation areas. Dispersed recreation visits is accounted for in visitation numbers.

Old Hickory Lake is consistently one of the top ten most visited Corps lakes in the nation, see visitation in Table 17. It is thought that this is due to the proximity to Nashville, TN, a large city, which has many commuter communities surrounding the lake.

Table 17- Visitation data by fiscal year (October-September) from the Operations Management Business Information Link (OMBIL)

Fiscal Year	Visitation
FY 1999	11,868,000
FY 2000	11,711,886
FY 2001	8,138,044
FY 2002	7,833,471
FY 2003	7,661,952
FY 2004	8,873,331
FY 2005	8,574,020
FY 2006	8,540,419
FY 2007	8,515,726
FY 2008	8,582,991
FY 2009	9,001,223
FY 2010	8,118,468
FY 2011	7,707,214
FY 2012	7,902,347

2-16.3 RECREATION ANALYSIS.

Recreational use at Old Hickory Lake continues to evolve as the population of Tennessee continues to grow. The state's population has a projected growth of 10% from 2010-2020, and Wilson County on the southwest side of Old Hickory Lake, is projected to have a population growth of 25% over the same time

[2] Visitation numbers are according to the Fiscal Year 2012 Visitation Data in the Operations Management Business Information Link (OMBIL)

period[3]. This indicates the importance of a balanced approach to managing federal lands that take serious consideration of both the public's access to recreation, parks and outdoors.

While visitation in Corps managed recreational areas remains strong, the visitation of some types of facilities installed in an outgranted area indicate that there is demand for recreational opportunities not offered in traditional Corps managed parks. There is also great demand for boat docks and vegetative modification in areas adjacent to the many subdivisions located or planned around the lake. Increased development around the lake area has been shown to decrease the natural vegetation in the developed areas both on and off Government property. That natural vegetation has been shown to be more efficient than mowed grass in capturing nutrients and sediments before they reach the lake.

2-16.4 RECREATIONAL CARRYING CAPACITY.

Old Hickory Lake is consistently in the top 10 most visited Corps lakes in the nation. This means that there is a constant public desire to enjoy the parks and waters of Old Hickory Lake, and often, especially during hot summer months, the lake becomes very crowded.

Carrying capacity has a number of connotations. Natural science disciplines view carrying capacity in terms of resource degradation and restoration. Site planners view capacity in relation to areas and sizes required to conduct activities effectively. Sociologists and psychologists are concerned about behavior and human interactions and their effect on the quality of the activity experience. Administrators consider capacity in relation to policies, management, and flexibility. Recreational carrying capacity generally relates to social capacity and resource capacity. Social capacity is the level of use beyond which the user does not achieve a reasonable level of satisfaction in their recreational experience.

Carrying capacity is defined as the maximum potential level of use which avoids overuse or overcrowding. Studies have shown that in evaluating the carrying capacity of water-based recreation, social capacity factors (overcrowding) were generally more important than resource capacity factors (overuse).

"Carrying capacity" at a reservoir the size of Old Hickory Lake is difficult to quantify merely by statistics on numbers of visitors or boats, types of uses or users, trends of adjacent development, changing demographics, or other selected social or environmental factors. Much of the determination of overcrowding, in particular, tends to be subjective. One hunter may think that having another hunter in his area of the woods is too much. Some user groups prefer to congregate in large social groups, while others prefer more spacing and smaller groups at picnic areas, swim beaches, or campgrounds. At heavily used launching areas or large marinas, congestion at the point of access may be a serious problem during heavy use periods, but overcrowding quickly is relieved a short distance from these facilities as users have a large area in which to disperse.

[3] Tennessee 2020: Vision for Parks, People & Landscapes. Tennessee Department of Environment and Conservation, 2009

Studies also indicate that overcrowding tends to exert a self-regulating force. As one area becomes increasingly crowded so that it impacts users' comfort levels, they are likely to go elsewhere. In general, even though overall use has continued to increase over the years, Old Hickory Lake is large enough to balance the intense public recreation in some areas with peaceful natural areas in others. There are times and places that are exceptions, obviously at the busiest holiday seasons at the largest and most accessible facilities, or at minor accesses with limited parking.

Since the 1987 Master Plan Update, a National Recreation Reservation Service (NRRS) has been implemented nationwide which allows the public to reserve specific campsites up to 180 days in advance and group picnic shelters up to 360 days in advance. This service can be accessed at www.recreation.gov, 7 days a week, 24 hours a day. This well-accepted program allows the public to know which areas have vacancies well in advance and helps to alleviate overcrowding.

At this time, and into the foreseeable future, the Corps has no plans of actively limiting uses beyond those already in place, such as routing users to other areas if a particular campground is full, restricting parking to designated parking spaces, ensuring that marinas do not install more moorage slips than their parking lots can accommodate associated vehicles, etc. If future public usage increases to the extent that significant use conflicts occur, a formal carrying capacity study may be warranted if it could lead to solutions not available in the absence of such a report. At this time, such a study would have little meaningful utility.

2-17 REAL ESTATE AND ACQUISITION POLICY.

A. General. Old Hickory Lake is a "run of the river" multipurpose project distinguished from storage projects on the Cumberland River by an absence of a significant flood control storage capacity. The land acquisition policy was conservative for lakes of this nature; that is, the "Eisenhower Policy" limited acquisition to an ascending line commencing on the 451' contour at the dam and extending to Elevation 464' at the upper end of the lake. This policy limited land acquisition to a very narrow fringe of land around the lake and small tracts for lake access points including a ramp and parking.

B. Effect on Recreation. Recreational lands were given little consideration during the initial acquisition program. Only small several acre tracts were blocked out at existing road ends to provide public access for launching boats. However, some relatively large land areas were purchased in fee simple where isolation of interior land areas justified the additional expense. Most of these larger land areas have been developed into major recreational sites. Over the years, a few additional parcels of land have been added to the project through a supplemental land acquisition program in the early 1960's. Future land acquisition is discussed in Chapter 5 for site specific areas and would be acquired in accordance with Chapter 5, Acquisition, of ER 405-1-12.

C. Other Effects. Since the project boundary is located very close to the lakeshore in most areas, the effects of growing residential and commercial development around the lake have created a number of problems. In the past, extensive private use and development of U.S. Government lands by adjacent

land owners interfered with public access, usage, and Corps administration. Implementation of the Shoreline Management Plan helped limit and balance these private exclusive uses on public property. Development continues to be managed through the implementation of a Shoreline Management Plan, policies in Chapters 16 and 17, Engineer Regulation 1130-2-550, and in accordance with Chapter 8, Real Property Management, of ER 405-1-12.

2-18 APPLICATION OF PUBLIC LAWS.

Development and management of federal reservoirs for various purposes is provided under various statutes. These laws cover development of recreation facilities, licensing of project lands for fish and wildlife purposes, protection of natural and cultural resources, and leasing of public lands for incidental uses other than recreation.

2-18.1 RECREATION.

Development and management of recreation facilities by the Corps, other governmental agencies, local groups, or individuals is authorized under the following public laws:

- Water Resource Policies and Authorities – Recreation Planning, Development, and Management Policies ER 1165-2-400 sets forth the basic policies for recreation management at Corps projects. Among other things, this document sets for the Corps' goal to provide economical and quality recreational opportunities in consonance with the wise use of natural resources. It calls for public and agency participation in the planning process for recreation, consistent with the authorized project purposes, protection of the visual and physical characteristics of public lands and waters, elimination of unauthorized structures and habitation on project lands, and prevention of conflicts between various user groups and activities. It also provides for the collection of user fees by the Corps and non-federal entities operating authorized recreation facilities on Corps projects. One critical prohibition contained in this regulation relates to Private Exclusive Use (Para. 14). Any form of private exclusive use, except for docks authorized under the Shoreline Management Plan, is discouraged.

- Freedom To Fish Act, Public Law 113-13 (2013). (113th Congress, 1st Session) as modified by Section 2012 of WRRDA 2014. This law directed the Nashville District to cease implementing its permanent 24/7 waterborne restrictions, to not take any action to establish a permanent physical barrier in connection with restricted areas, and transferred the sole responsibility of enforcement of restricted areas to the States. The President signed the Water Resources Reform and Development Act of 2014 on 10 June 2014. Section 2012 of the Act extends the moratorium imposed by Freedom to Fish Act on when a new or modified restricted area could be implemented or enforced to June 10, 2018.

2-18.2 REAL ESTATE AUTHORITIES, INCLUDING FEE COLLECTION.

- The Federal Property and Administrative Services Act of 1949, (PL 81-152) authorizes the Secretary of the Army to dispose of certain properties under his/her jurisdiction. Special authority for disposing of land for public port and industrial facilities is further designated in Section 108 of the Act of Congress (PL 86-465; 74 Stat. 486).

- Section 209 of the Flood Control Act of 1954 (PL 83-780), approved 3 September 1954, amended the Flood Control Act of 1944. It authorized the Secretary of the Army to grant leases to federal, state or local 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 recreation purposes when in the public interest.

- Title 10, United States Code, Section 2667, authorizes the lease of land at water resource projects for any commercial or private purpose not inconsistent with other authorized purposes, subject to specific restrictions thereupon, as set out in regulations, policy, and Delegations of Authority.

- Title 16, United States Code, Section 460d, authorizes use of public lands for any public purpose, including fish and wildlife, if it is in the public interest. Such uses are also subject to regulations, policy and Delegations of Authority. The use of project lands for easements and licenses is authorized in various Congressional Acts and codified in Titles 10, 16, 30, 32 and 43 of the United States Code. Lands and rights-of-way will be acquired pursuant to provisions of the Uniform Real Property Acquisition and Relocation Assistance Act of 1970, PL 91-646, as amended.

- Title 10, United States Code, Section 2695, authorized the acceptance of funds to cover administrative expenses related to certain real property transactions.

- The Land and Water Conservation Fund Act of 1965, approved 1 September 1964 (PL 88-578, 78 Stat. 897), contains provisions by which the Corps may charge for admission and use of its recreation areas under prescribed conditions.

- The Omnibus Budget Act - Day Use Fees, approved 10 August 1993 (PL 103-66), contains provisions by which the Corps may collect fees for the use of developed recreation sites and facilities, including campsites, swimming beaches, and boat launching ramps but excluding a site or facility which includes only a boat launch ramp and a courtesy dock.

- Section 1035 of the Water Resources Reform and Development Act of 2014 (Recreational Access) This statute addresses requests from marinas for floating cabins and associated docks within the Cumberland River Basin.

2-18.3 CIVIL WORKS AUTHORITIES.

- The Federal Water Project Recreation Act, approved 9 July 1965 (PL 89-72, 79 Stat. 213) contains cost sharing provisions for acquisition of lands and development of recreation facilities for water resources projects authorized after 1965. It also provides for cost sharing development of new areas that were not part of initial project construction.

- The Rivers and Harbors Act, approved 2 March 1945 (PL 79-14), specifies the rights and interests of the states in watershed development and water utilization and control, and the requirements for cooperation with state agencies in planning for flood control and navigation improvements.

- Section 4 of the Flood Control Act, approved 22 December 1944, (PL 78-534), authorizes providing facilities for public use, including recreation, and conservation of fish and wildlife.

- Section 14 of the Rivers and Harbors Act of 1899 and codified in 33 USC 408 (commonly referred to as "Section 408") authorizes the Secretary of the Army, on the recommendation of the Chief of Engineers of the US Army Corps of Engineers (USACE), to grant permission for the alteration or occupation or use of a USACE civil works project if the Secretary determines that the activity will not be injurious to the public interest and will not impair the usefulness of the project.

2-18.4 ACCESS TO PERSONS WITH DISABILITIES.

- The Architectural Barriers Act of 1968 (PL 90-480), together with the Acts and Amendments listed below provides information and guidance regarding universal accessibility for persons with disabilities to Corps' recreation facilities and programs.

- The Rehabilitation Act of 1973 (PL 93-112) and the Rehabilitation Act Amendments of 1974 (PL 93-516) (see Architectural Barriers Act above).

- The Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (PL 95-602) (see Architectural Barriers Act above).

- The Americans with Disabilities Act of 1990 (PL 101-336) (See Architectural Barriers Act above).

2-18.5 ENVIRONMENTAL.

- The Clean Water Act of 1972 (PL 95-217) establishes a national goal of eliminating all pollutant discharges into US waters by 1985. This Act requires that Federal agencies shall comply with all laws regarding control and abatement of water pollution, and that disposal sites for the discharge of dredged or fill material shall be specified through the Environmental Protection Agency.

2-18.6 FISH AND WILDLIFE.

Fish and wildlife resources are maintained and protected in compliance with the following public laws:

- The Fish and Wildlife Coordination Act, enacted 10 March 1934, as amended, 14 August 1946 (PL 79-732), 1958 (PL 85-624), provides authority for making project lands of value for wildlife purposes available for management by interested federal and state wildlife agencies. It further provides for more effective integration of a fish and wildlife conservation program with federal water resources developments.

- The National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq), declares a national environmental policy and requires that all federal agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach which integrates natural and social sciences and environmental design arts in planning and decision making.

- The Endangered Species Act of 1973 as amended (16 USC 1531 and 1536) requires that federal agencies shall, in consultation with the U.S. Fish and Wildlife Service (USFWS) (or the National Marine Fisheries Service), use their authorities in furtherance of conserving endangered and threatened species and take such action as necessary to assure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

- The Water Resource Development Act of 1986, Section 1135, provides for modifications in the structures or operations of a project, consistent with authorized project purposes to improve the quality of the environment, i.e. restoration of fish and wildlife habitat.

2-18.7 FOREST RESOURCES.

- Protection and Improvement of Natural Resources. The Forest Conservation Act (PL 86-717) approved 6 September 1960, provides for the protection of forest cover in reservoir areas, and specifies that reservoir areas of projects for flood control, navigation, hydroelectric power development, and other related purposes, owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers, shall be developed and maintained so as to encourage, promote and assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation, and accepted conservation practices, and to increase the value of such areas for conservation, recreation and other beneficial uses; provided, that such development and management shall be accomplished to the extent practicable and compatible with other uses of the project. The law further provides that in order to carry out the national policy declared in the first section of this Act, the Chief of Engineers, under the supervision of the Secretary of the Army, shall provide for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures on reservoir areas under his jurisdiction, so as to yield the maximum benefit and otherwise improve such areas. Programs and policies developed pursuant to the preceding sentence shall be coordinated with the Secretary of Agriculture, and with appropriate state conservation agencies.

2-18.8 CULTURAL AND HISTORICAL RESOURCES.

Cultural and Historical Considerations. A number of laws mandating the protection of cultural resources on public lands have been passed during the past 100 years. The following laws subsume, clarify or supersede all previous cultural resource law:

- The National Historic Preservation Act of 1966 (P.L. 89-665; U.S.C. 470 et seq.) established a program for the preservation of historic properties throughout the nation, including requirements for federal agencies to take into account the affects of undertakings on historic properties.

- The Archaeological Resources Protection Act of 1979 (16 USC 470 et seq.), PL 96-95, 96th Congress revision and update of 1906 Antiquities Act. Protects archaeological resources and sites that are on public lands and Indian land, and fosters increased cooperation and exchange of information between governmental authorities, the professional community, and private individuals.

- The 1980 Historic Preservation Amendment to the National Historic Preservation Act of 1966, PL 96-515, states a policy of preserving, restoring and maintaining cultural resources and requires that federal agencies take into account the effect of any undertaking on any site eligible for the National Register of Historic Places.

- The Archaeological and Historic Preservation Act of 1979, (P.L. 96-95) provides for the preservation of historical and archaeological data which might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal construction projects.

- The Archeological and Historical Data Conservation Act of 1974 – PL93-291 provides for the preservation of significant scientific, pre-historical, historical, or archeological data that might be lost or destroyed as a result of various Federal actions.

2-18.9 OTHER CULTURAL/HISTORICAL LAWS.

- The Native American Graves Protection and Repatriation Act (PL 101-601) 16 November 1990, requires federal agencies and museums to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collection. The Act requires repatriation, on request, to the culturally affiliated tribes and establishes a grant program within the Department of the Interior to assist tribes in repatriation and to assist museums in preparing the inventories and collections summaries.

- Antiquity Act of 1906, PL 59-209 establishes the role of the Federal Government in the protection, preservation, and public availability of the historic, architectural, and archeological resources of

the nation. This act requires a permit to research historical and cultural resources on Federal property and establishes penalties for destruction of antiquities on Federal land.

- The Historic Sites Act of 1935, PL 74-292 specifically establishes national policy to preserve prehistoric sites of national significance. The National Park Service was directed to make the necessary investigations to obtain the "true and accurate…facts and information…"

- Section 208 of the Water Resources Development Act(WRDA) of 2000, allows for the reburial of Native American remains found on Corps-administered lands. In consultation with affected Indian tribes, the Secretary of the Army may identify and set aside areas at civil works projects of the Department of the Army that may be used to rebury Native American remains that have been discovered on project land; and have been rightfully claimed by a lineal descendant or Indian tribe in accordance with applicable Federal law.

CHAPTER 3 RESOURCE OBJECTIVES

The following objectives have been developed to provide Master Plan guidance and direction through an array of circumstances, conditions, and situations. They will help provide the rationale for development and management decisions.

3-01 ENVIRONMENTAL OPERATING PRINCIPLES (EOPS).

The U.S. Army Corps of Engineers has reaffirmed its commitment to the environment by formalizing a set of "Environmental Operating Principles" applicable to all its decision-making and programs. These principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all Corps activities.

Sustainability can only be achieved by the combined efforts of federal agencies, tribal, state and local governments, and the private sector, each doing its part, backed by the citizens of the Nation. These principles help the Corps define its role in that endeavor.

By implementing these principles, the Corps will continue its efforts to develop the scientific, economic and sociological measures to judge the effects of its projects on the environment and to seek better ways of achieving environmentally sustainable solutions. The principles are being integrated into all project management processes throughout the Corps.

The principles are consistent with the National Environmental Policy Act, the Army Strategy for the Environment with its emphasis on sustainability and the triple bottom line of mission, environment and community, other environmental statutes, and the Water Resources Development Acts that govern Corps activities. They require the Corps to:

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

3-02 PRIMARY GOALS.

The primary goals of the Master Plan are to prescribe an overall land use management plan, resource objectives, and associated design and management concepts. The following excerpt from EP-1130-2-550, Chapter 3, expresses the goals for the Old Hickory Lake Master Plan.

- Provide the best management practices to respond to regional needs, resource capabilities and suitabilities, and expressed public interests consistent with authorized project purposes.

- Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.

- Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself while sustaining project natural resources.

- Recognize the particular qualities, characteristics, and potentials of the project.

- Provide consistency and compatibility with national objectives and other state and regional goals and programs.

3-03 PROJECT RESOURCE OBJECTIVES.

- Protect and enhance the unique qualities and visual identity of Old Hickory Lake.

- Maintain the natural qualities and appropriate vegetative cover of the shoreline lands as a buffer between developments to enhance aesthetic qualities of the environment and provide an unified natural character to protect the resource.

- Work with other agencies to maintain diverse populations of fish and wildlife species, both game and non-game species.

- With state and local partners, promote and market the project assets and recreational opportunities which are consistent with Tennessee 2020 Vision for Parks, People and Landscapes, the State Comprehensive Outdoor Recreation Plan (SCORP).

- Identify, enhance and maintain the integrity and quality of the resources of the Old Hickory Lake region, including water, soils, wildlife, forests, and vistas.

- Promote environmental education by establishing facilities at appropriate resource areas for groups, individuals and area schools. Educate visitors and adjacent landowners to environmental operating principles (supports SCORP).

3-04 CULTURAL RESOURCES OBJECTIVES.

- Recognize that project cultural resources are a vital part of the historic context and heritage of the United States and are deemed worthy of protection.

- Identify and inventory all significant cultural resources (National Register or eligible properties) which occur within the project area as funds permit.

- Prevent the inadvertent loss of the projects' cultural resources from natural or human causes through a program of evaluation, and protective or mitigative measures.

3-05 PUBLIC USE OBJECTIVES.

- Consider and provide for a spectrum of public use, providing equal opportunity for all, including individuals, families, groups, youth, elderly, and handicapped, with a variety of recreational facilities. This objective will primarily be met at existing recreation areas as upgrades and rehabilitation efforts occur.

- Provide a trail system and other low-density recreation compatible with the natural and cultural resource characteristics at Old Hickory Lake to allow for a variety of relatively passive outdoor recreation activities.

- Evaluate the demand for improved recreation facilities and increased public access on Corps-managed public lands and water for recreational activities(camping, walking, hiking, biking, boating, hunting, fishing) and facilities(campsites, picnic facilities, overlooks, boat ramps, trails, courtesy docks, parking lots, etc.) while taking into account project carrying capacity.

3-06 OPERATION MANAGEMENT OBJECTIVES.

- Promote efficiency and economy in all operation and management activities at existing and proposed facilities.

- Modify, consolidate, close, or outgrant facilities to increase efficiency and economy of operations.

- Encourage participation by local and state agencies in managing and operating recreation and wildlife areas.

CHAPTER 4 LAND ALLOCATION, LAND CLASSIFICATION, AND PROJECT EASEMENT LANDS

In accordance with EP 1130-2-550, allocated project lands are classified to provide for development and resource management consistent with authorized project purposes and the provisions of NEPA and other Federal laws. The classification process refines the land allocations to fully utilize project lands and with consideration of public desires, legislative authority, regional, and project specific resource requirements and suitability.

4-01 LAND ALLOCATION.

All of the land on Old Hickory Lake is allocated Operations Lands, meaning lands acquired for this project were in accordance with the authorizing documents for the project, such as hydropower, navigation, recreation, water quality, and fish and wildlife. This allocated use takes precedence over any of the following classification categories.

4-02 LAND CLASSIFICATION.

The land classification is the primary use for which project lands are managed. Project lands are zoned for development and resource management consistent with authorized project purposes and the provisions of NEPA and other Federal laws. Maps of the land classifications on Old Hickory are found in Appendix A.

4-02.1 PROJECT OPERATIONS.

This classification category includes those lands required for the dam structure, operations center, office, maintenance compound and other areas that are used solely for project operations.

4-02.2 HIGH DENSITY RECREATION.

These land areas are developed for intensive recreational activities by the visiting public, including developed recreation areas, campgrounds and area for marinas and resorts.

Corps lands at Old Hickory Lake designated as High Density Recreation in this Master Plan Update include:

- Old Hickory Beach
- Rockland Recreation Area
- Smith County Park
- Tailwater Left Bank Recreation Area
- Drakes Creek Park
- Memorial Park

- Cages Bend Campground
- Bledsoe Creek State Park
- Nat Caldwell Park
- Lock 3 Recreation Area
- Taylors Landing Access
- Lock 4 Park
- Martha Gallatin Recreation Area
- Laguardo Recreation Area
- Sanders Ferry Park
- Lone Branch Recreation Area
- Cedar Creek Recreation Area
- Shutes Branch Recreation Area
- Walton Ferry Access
- Mallard Point Park
- Dickerson Chapel Access
- Old Union Access
- Tyree Access
- Davis Corner Access
- Avondale Recreation Area
- Sumner County Park
- Cairo Access
- Saundersville Access
- Second Creek Access
- Carthage Access
- Rome Ferry Access
- Dickerson Chapel Access
- Hunters Point Access
- Barton's Creek Access
- Coles Ferry Access
- Riverview Access
- Liberty Branch
- Cedar Grove Access
- Bull Creek Access
- Stark Knob Access
- Gallatin Soccer Fields
- Station Camp Creek Access
- Gallatin Access
- Tailwater Right Bank Recreation Area
- Pine Cove Access
- Goose Creek Access
- Blue Turtle Bay Marina
- Cedar Creek Marina
- Gallatin Marina
- Drakes Creek Marina
- Shady Cove Marina
- Bentleys Landing
- Cherokee Resort
- Anchor High Marina
- Creekwood Marina
- Bluegrass Country Club
- The Boathouse at Benders Ferry
- Harbor Island Yacht Club
- Cedar Creek Yacht Club

4-02.3 MITIGATION.

This classification will only be used for lands acquired specifically for the purposes of offsetting losses associated with development of the project. No lands are currently acquired specifically for the purposes of offsetting losses associated with development of the project.

4-02.4 ENVIRONMENTALLY SENSITIVE AREAS.

This classification is for areas where scientific, ecological, cultural, or aesthetic features have been identified. These areas are considered by management to ensure they are not adversely impacted. Limited or no development of public use is allowed on these lands.

Establishment of Environmentally Sensitive Areas (ESA's) was called for in the Corps' 1996 Master Planning regulations. Old Hickory has a wealth of special areas that are deserving of such protection. The

preliminary Corps/public stakeholder group proposed a number of sites with potential for inclusion in this category. Several additional areas were added as a result of those proposals.
Old Hickory Lake has previously identified numerous areas as Environmental Restoration and Conservation Areas(ERCA) in the Shoreline Management Plan. The Environmental Restoration and Conservation Program is a management strategy designed to improve fish and wildlife habitat on the project through partnership projects with volunteers, non-profit groups, adjacent property owners, and the TWRA. The goal of these areas is to apply the best management practices that will enhance and restore habitat and in some instances limit public access to protect historical, natural, and cultural resources. Many of these sites are in proximity to private residences, serve as buffers along the upper reaches of creeks, and/or contain significant land areas due to the terrain or land being bought above the 451-464 contour. The Master Plan is classifying several of the larger ERCA as ESA.

In keeping with the Corps, Chief of Engineers Environmental Operating Principles, designation of Environmental Sensitive Areas (ESA's) at Old Hickory Lake are based on protection and preservation of important ecological, cultural, scientific, and aesthetic resources. ESA's also provide important water quality and developmental buffer zones. Ranking criteria for ESA's are as follows:

Rank Criteria for ESA's

1. Federally listed threatened or endangered plant or animal species.
2. Rich species diversity; large mature native tree species; unique or ecologically sensitive plant/animal species.
3. High value as nesting, resting, feeding, roosting areas – sensitive neotropical songbirds, shorebirds, waterfowl, small mammals, species of state concern.
4. Visual buffer to adjacent private development, wildflower/wildlife viewing areas, natural landscape appeal.
5. Important water quality function – serves to buffer runoff for streams, wetlands, and erosionally sensitive areas.
6. Presence or high probability for presence of archeological, historical, or geological significance.

Public land at Old Hickory Lake proposed to be designated as ESA's in this Master Plan Update include:

- Lock 5
- Lock 6
- Islands- approximately 72 islands ranging from less than an acre to approximately 20 acres
- Hartsville Battlefield
- Hartsville Bluffs
- Promontory Way Peninsula ERCA
- Cages Bend Island Area ERCA
- East Camp Creek Mud Flats ERCA

- Headwater E. Camp Creek ERCA
- Cedar Creek Upper End ERCA
- Little Creek/Benders Ferry ERCA
- Lone Branch Cove ERCA
- Spencer Creek/Davis Corner ERCA
- Bartons Creek ERCA
- Spring Creek Field

Archaeological sites were not specifically identified as ESAs due to the sensitivity of advertising their locations, and the fact that they are protected under specific federal statutes.

Additional sites may be added in the future as warranted. In some cases, ESA designations may be removed if material changes occur that substantially alter the conditions for which a site was originally selected. In either case, proposed designation changes will be advertised to the public and federal, state and local agencies before final decisions are made. The fact that a site is listed as an ESA does not limit public use, provided such use does not adversely affect the values for which they were designated. Obviously, public visitation of sites such as Hartsville Battlefield is encouraged. Designation as ESAs serve both to advertise and market the recreational aspect of the sites while giving an added layer of protection to the environmental, aesthetic, or historic values for which they were selected.

4-02.5 MULTIPLE RESOURCE MANAGEMENT LANDS.

These lands are managed for one or more, but not limited to, the sub-classifications designated within this primary classification. The land classification maps reflect the predominant sub-classification, rather than just Multiple Resource Management.

1. LOW DENSITY RECREATION

These areas are designated for low density recreation activities. Lands in the sub-classification include minimal development or infrastructure that support passive public recreational use such as hiking, wildlife observation, hunting, or similar low density recreational activities.

Corps managed lands at Old Hickory Lake designated in the sub-category of Low Density Recreation in this Master Plan Update include:

- Shutes Branch Bike Trail
- Drakes Creek Greenway
- Fraternal Order of Police Camp
- Boy Scout Camp Boxwell
- Ruilman Rehabilitation Center
- Whispering Pines
- Walton Ferry Environmental Study Area

2. WILDLIFE MANAGEMENT

These areas are designated for fish and wildlife management activities. Lands in this sub-classification are designated for stewardship of fish and wildlife resources. These areas are currently leased to the Tennessee Wildlife Resources Agency for purposes of agriculture leases, active wildlife management, public hunting, etc. Public lands consist of mixed hardwood forest, fertile bottomlands, streams, and public roads.

3. VEGETATIVE MANAGEMENT

These areas are designated for vegetative management activities. Lands in this sub-classification are designated for stewardship of forest, prairie, and other native vegetative cover.

4. FUTURE OR INACTIVE RECREATION AREAS

This sub-classification includes areas with characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be classified as multiple resource management. This designation is preliminary and serves strictly for the planning and management purposes of Old Hickory Lake. These sites have not undergone cultural resources review, environmental review, and other aspects of determination of site suitability, such as topography and compliance with cut and fill policy. If proposals for future development arise, further analysis of these sites would be conducted to ensure compatibility of proposed actions with statutory requirements and the management goals of the project.

- Smith Branch (future)
- Spencer Creek (future)
- Oakland (future)
- Walton Ferry Park (future)
- Luna Park (future)
- Lincoya Girl Scout Camp (closed)
- Easter Seal Camp (closed)
- Scarritt College (closed)
- Dickerson Chapel (secondary classification, leased to TWRA)
- Brunley Branch (secondary classification, leased to TWRA)
- Indian Ladder Bluff (secondary classification, leased to TWRA)
- Rocky Creek (secondary classification, leased to TWRA)
- Spring Creek Access(closed)
- Woods Ferry Access(closed)
- Rehobeth (closed, future)

4-03 WATER SURFACE

The establishment and management of surface water zoning program has been in coordination with TWRA. The water surface classifications include:

- Restricted. Water areas restricted for project operations, safety, and security purposes
- Designated No-Wake. Waters restricted to wakeless speeds in order to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety
- Fish and Wildlife Sanctuary. Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning
- Open Recreation. Those waters available for year round or seasonal water-based recreational use. Seaplane landing areas are only authorized in certain locations. A map of the locations where seaplanes are authorized to land can be found in Appendix A as plate 4-10

4-04 PROJECT EASEMENT LANDS

Lands in the Old Hickory Lake area for which the Corps holds an easement interest but not fee title. Easements are generally right-to-flood agreements in which landowners retain rights to full use of the land, with certain restrictions to maintain flood capacities and hold the government harmless in case of flood damages. Planned use and management of easement lands are in strict accordance with the terms and conditions of the easement estate acquired for the project.

- Operations Easement. Corps retains rights to these lands necessary for project operations
- Flowage Easement. Corps retains the right to inundate these lands
- Conservation Easement. Corps retains right to lands for recreation and wildlife management

CHAPTER 5 RESOURCE PLAN, CLASSIFICATION AND JUSTIFICATION

This chapter describes the management plans for each area of classification within the Master Plan. The classifications which exist at Old Hickory Lake are; Project Operations, High Density Recreation, Environmentally Sensitive Areas, and Multiple Resource Managed Lands. The management plans identified are in broad terms of how these project lands will be managed. A more descriptive plan for managing these lands can be found in the Old Hickory Lake Operations Management Plan.

5-01 PROJECT OPERATIONS.

This land is classified for security reasons pertaining to project operations. This would be land associated with the dam and related facilities. There are approximately 42 acres on the left descending bank and 45 acres on the right descending bank under this classification which are managed by the Corps. The management plan for this area is to continue providing physical security necessary to insure continued operations of the dam, hydropower plant, and related facilities. This means that public access must be restricted in hazardous locations, near the dam and spillway, and within the hydropower plant and related facilities. Authorization for the public to moor private floating facilities and/or the modification of land form and vegetation are not permitted within this area. The goal for these classified lands is to continue operating as done historically in order to insure project operations.

5-02 HIGH DENSITY RECREATION.

There are numerous areas around Old Hickory Lake that are designated as High Density Recreation. These are the areas that have been developed and are actively managed to provide recreation opportunities to the visiting public. Old Hickory Lake has approximately 790 acres classified as high density recreation. This classification includes the areas managed and operated by USACE, areas leased to another agency/entity for management and operation and commercial marina sites. USACE has to provide review of requests and make sure all leased areas are operated in accordance with applicable laws and regulations for the proposed activity within an area zoned high density recreation. The goal for these areas is to work with USACE partners to assure recreation areas are being managed in accordance with resource objectives identified in Chapter 3.

CAMPGROUNDS AND RECREATION AREAS

1. Old Hickory Beach, Site No. 101. -This approximately 30-acre site is located in Davidson County in Old Hickory on the left (southwest) bank of the lake immediately upstream from the earthfill embankment portion of the dam. The area is pre-dominantly open, grass covered, and relatively flat. A few trees are scattered throughout the site. Considered to be one of the more popular day use recreation area sites due to its proximity to major highways and populations centers, this site's facilities include a fee collection station, comfort station, eight boat ramps with single launch lanes, a swimming

beach, playground, two group picnic shelters, eleven unsheltered picnic sites, and four parking lots with 160 car spaces and 55 car/trailer spaces. However, there are a number of existing development problems at this site. There are not enough parking spaces to accommodate the large public beach, visitors often park along both sides of the access road. This creates severe circulation problems and represents a potential hazard to pedestrians moving from one section of the area to the other. In addition, 4 launch lanes have been developed yet only 55 car/trailer spaces have been provided to accommodate these launch lanes. Therefore, these lanes can only be utilized to 50% of their potential capacity. Because of the popularity of this area and the physical characteristics, the following recommendations are presented as a feasible redevelopment alternative: A new road needs be placed a safe distance away from beach to connect the existing parking lots utilizing the property acquired from I. E. Dupont Nemours and Company (Dupont) along with a 170-car paved parking lot on the lake side of the road. In addition, the existing boat launch area on the peninsula would be eliminated. This area will be re-vegetated and developed for picnicking to include a shelter and picnic sites. Boat launching demand will be accommodated by the development of a standard three-lane boat launching ramp. Seventy-five car/trailer spaces would be provided to fully meet the requirements of these launch lanes and a courtesy dock will be provided at the new launch area. See Plate 5-01 for a map of this recreation area.

2. Rockland Recreation Area, Site No. 102 and Tailwater Right Bank Recreation Area, Site No. 268. -These sites are located directly north on the Sumner County side of the lock and dam structure in the City of Hendersonville. Access to these sites is provided by Rockland Road just off of U.S. 31E. With approximately 38 acres of gently rolling terrain, the majority of the shoreline is characterized by small limestone bluffs and a stand of loblolly pine covers much of the undeveloped area, as shown on Plate 5-02 and 5-43. Considered one of the more heavily used areas on the lake due to its proximity to major highways and populations centers, the existing facilities at Rockland Recreation Area consist of a three lane boat ramp with two courtesy docks, six parking lots with 193 car spaces and 45 trailer spaces, two comfort facilities, a playground, interpretive trail, horseshoe pits, courtesy fishing dock, five group picnic shelters, a gazebo 88 unsheltered picnic sites and a volunteer site. Circulation within the site is considered adequate and presents no problems. The picnic area is presently developed to its capacity and will not receive additional facilities. Other facilities in this area include the Resource Manager's Office/Lake Visitor Center and maintenance area. With access gained solely through Rockland Recreation Area on Power Plant Road, the approximately 55-acre Tailwater Right Bank Recreation Area provides recreationists with a group picnic shelter, police dog training course, a concrete fishing platform, two parking lots with 60 car spaces and a field Archery Range with practice area maintained by volunteers. Future improvements at Rockland will include appropriate landscape planting, walking trails, and renovation to the tailwater fishing access and platform that will be accomplished as funding becomes available. See Plates 5-02 and 5-43 for maps of these recreation areas.

3. Smith County Park, Site No. 103. -This approximately 8-acre site operates under a lease to Smith County. The park is situated on a hillside overlooking the main channel of Old Hickory Lake at the site of what was Lock 7 before the lake was impounded. The area is a day use facility with five picnic units, one picnic shelter, a playground, and a parking lot with 10 car spaces. Smith County Park is

developed to an optimum level and no additional facilities are recommended; however, an exhibit interpreting the historical significance of the old lock site would be appropriate. Plate 5-03 for a map of this recreation area.

4. Tailwater Left Bank Recreation Area, Site No. 104. -Situated on the left descending bank directly adjacent to the lock and dam, this approximately 57-acre site is located in Davidson County in the town of Old Hickory. With relatively level topography, this site is characterized with a large, dense stand of mixed hardwood and coniferous trees surrounding a small pond. Located within the wooded area and considered a major attraction to the area is the Old Hickory Lake Nature Trail. Totaling two miles, this Nashville Greenway Project is nationally recognized by the Department of the Interior as a component of the National Trail System. The trail was built with three loops that extend from an old railroad bed used to haul materials and equipment for the construction of Old Hickory Dam. In addition to the nature trail, the Left Bank Recreation Area provides a single lane boat ramp, one comfort facility, three parking lots with 67 car spaces and 25 trailer spaces and a concrete fishing platform near the downstream lock chamber gate. Due to lack of use and vandalism problems, the picnic sites and shelter have been removed. At this time, future development could include replacing the waste water treatment plant as funding becomes available. See Plate 5-03 for a map of this recreation area.

5. Drakes Creek North Park, Site No. 105. -This approximately 63-acre site is located in Sumner County north of U.S. 31E in Hendersonville on the right descending bank of Drakes Creek. Access is via a bridge across Drakes Creek. The site is highly developed with lighted ball fields, 2 football fields, 16 baseball fields, seven comfort facilities, three basketball courts, 20 soccer fields, three sand volleyball courts, eight picnic shelters and a central building that has concessions, and a multipurpose room. Bank fishing and limited picnicking are popular here. In March 1976, the City of Hendersonville entered into a cost-sharing contract with the Corps of Engineers. The contract covered the joint Corps-City development of various sites on Old Hickory Lake. Lands owned by the City of Hendersonville surround Corps lands in this area, and recreation facilities cover lands owned by both entities. The City assumed operation and maintenance responsibility for the area under the requirements of the cost-sharing contract. The majority of the improvements here were constructed through funding the Heritage Conservation Recreation Service and matching local funds. See Plate 5-05 for a map of this recreation area.

6. Memorial Park, Site No. 106. -This park located in Sumner County in Hendersonville and is made up of several parcels totaling approximately 32-acres. The park is bordered on the north by U.S. Highway 31E a major north-south route, and therefore, use here is very heavy. Also the site is virtually adjacent to the Hendersonville commercial business district and Drakes Creek Park. In March 1976, the City of Hendersonville entered into a cost-sharing contract with the Corps of Engineers. The contract covered the joint Corps-City development of various sites on Old Hickory Lake. The City has assumed operation and maintenance responsibility for the area under the requirements of the cost-sharing contract. Bank fishing and sightseeing is very popular at this site. The site has a relatively flat topography and is sparsely covered by trees and vegetation. Existing facilities include a group shelter, picnic tables, trails, tennis courts, playgrounds, fishing pier, comfort facilities, four parking lots with 99

car spaces and open grass areas. A small peninsula has been created from an island, rip-rapped and landscaped, as well as, an access bridge has been built connecting the peninsula in a walking trail loop. See Plate 5-06 for a map of this recreation area.

7. Cages Bend Campground, Site No. 111. -In a central location to population centers, this site is located in Sumner County, 2.5 miles south of U.S. 31E on Benders Ferry Road in Gallatin. The approximate 15-acre site presently developed for camping has a gently rolling terrain with moderate deciduous tree cover. Over the years, the 43 site campground has been upgraded to provide 50 AMP service at most sites with plans to provide all sites with 50 AMP service in the future. In addition, several sites have concrete "impact areas" with a few that will accommodate ADA accessibility. Other facilities in the area include a camper registration station(fee booth), one comfort (shower/restroom) facility, playground, horseshoe pits, dump station, group picnic shelter, a one lane boat ramp with courtesy float, three parking lots that have 32 car spaces and 14 trailer spaces, and a courtesy fishing dock. Future improvements to this site include renovation to the comfort restroom/shower facility and upgrades to the campsite "impact areas" as funding becomes available. See Plate 5-07 for a map of this recreation area.

8. Bledsoe Creek State Park, Site No. 120. -The State of Tennessee operates this area under a lease agreement with the Corps. This approximate 124-acre site is located on Bledsoe Creek, approximately halfway between the cities of Gallatin and Hartsville. Excellent access to Bledsoe Creek State Park is provided by Tennessee Highway 25. The area is predominately wooded and the topography is rolling to hilly. The majority of the tree cover is deciduous with scattered cedars located in the campground area. Bledsoe Creek State Park provides 57 camp sites with water and electric hook-ups, two one lane boat launching ramps, playgrounds, trails, wildlife observation, fishing dock, two group shelters, two comfort facilities and supporting facilities. This is the only state park located on Old Hickory Lake and is a very popular destination for locals and visitors to the area. A new visitor center is currently under construction and will serve as an office for the resident Ranger, check-in station(fee booth) for campers and provide additional information on the park and surrounding area. See Plate 5-08 for a map of this recreation area.

9. Nat Caldwell Park, Site No. 121. -This small approximate 2-acre site with high public visibility is located in Sumner County along the north side of U.S. 31E on the western side of Gallatin. For many years the site was licensed to the Tennessee Department of Transportation, but due to poor development and maintenance the license was rescinded. The site was then upgraded by the Corps to include a group picnic shelter with several tables and a grill, as well as, a portable comfort facility. See Plate 5-09 for a map of this recreation area.

10. Lock 3 Recreation Area, Site No. 123. -This approximate 2-acre site located in Sumner County in Hendersonville is sparsely covered by mixed hardwood and bordered by residential houses to the east and dense vegetation and mixed hardwoods to the north. The site is easily accessible by Walton Ferry Road approximately 2.4 miles south of U.S. 31E. During the summer recreation season this site's facilities are heavily used by local residents that include two picnic sites with grills, a one lane boat ramp, comfort facilities, beach, and two parking lots with 53 car spaces and 10 trailer spaces. Future

development will include the addition of a picnic sites as funding becomes available. See Plate 5-10 for a map of this recreation area.

11. Lock 4 Recreation Area & Gallatin Access, Site No. 126. -This approximate 114 acre site is located at the end of Lock 4 Road, four miles south of Gallatin in Sumner County. The site is characterized by rolling-to-hilly topography. The flatter areas are generally grass covered, while the steeper slopes along the outside edges of the site support moderately dense stands of mixed hardwoods. The entire area is currently operated and maintained by the City of Gallatin. The facilities include a one lane boat ramp, courtesy fishing dock, a group picnic shelter, 12 non-sheltered picnic sites, comfort facilities, a nine mile mountain bike trail, and three parking lots with 38 car spaces and 10 trailer spaces. At this time, no future development is planned for this site. See Plate 5-12 for a map of this recreation area.

12. Martha Gallatin Recreation Area, Site No. 135. -This approximate 5 acre site is situated on the left descending (south) bank along the main navigation channel near the Highway 109 Bridge in Wilson County in Lebanon. This site is accessed by Wilson Road and is relatively level moderately covered by mature, mixed hardwoods vegetation. The area includes a group picnic shelter, six non-sheltered picnic sites, courtesy dock, fishing dock, comfort facilities, a one lane boat ramp with courtesy dock, and one parking lot with 33 car spaces and 14 trailer spaces. See Plate 5-13 for a map of this recreation area.

13. Laguardo Recreation Area, Site No. 136. -Highly visible from Highway 109N, this approximate 8 acre site located in Wilson County is approximately 3.5 miles south of Gallatin in the unincorporated Laguardo community. The site is relatively flat and situated in Spencer Creek in a large cove. The beach and picnic area is moderately covered by a mature mix of hardwoods and has a dense stand of mixed hardwoods. Throughout the year, this area receives moderate to heavy use by boaters, picnickers, and swimmers. During the peak season, this area can become extremely crowded and parking can become an issue. The park is accessed from Highway 109N,a major connector route, and therefore, use here is very heavy. Facilities to the site include a fee collection station, a two lane boat ramp with courtesy dock, beach, playground, group picnic shelter, 41 non-sheltered picnic sites, horseshoe pits, and comfort facilities. Future development includes appropriate landscaping, but no other facilities are recommended due to the sites limited size. See Plate 5-14 for a map of this recreation area.

14. Sanders Ferry Park, Site No. 138. -This approximate 63-acre site located on the right bank of Drakes Creek adjacent to the main body of Old Hickory Lake in Sumner County in Hendersonville, Tennessee. In March 1976, the City of Hendersonville entered into a cost-sharing contract with the Corps of Engineers. The contract covered the joint Corps-City development of various sites on Old Hickory Lake. Existing facilities include a walking trail, frisbee golf course, model airplane area, 3 lane launching ramp, highly developed picnicking with six picnic tables and eight large group shelters, and comfort facilities. A commercial boat dock previously located here has been closed. The entire area is currently operated and maintained by the City of Hendersonville under the provisions of the overall cost-sharing contract. See Plate 5-15 for a map of this recreation area.

15. Lone Branch Recreation Area, Site No. 141. -This approximate 7 acre site is located in Wilson County in a cove near the mouth of Cedar Creek. Situated on Benders Ferry Road this site is approximately 10 miles from Lebanon, 6 miles from Mt. Juliet, and 20 miles from Nashville, Tennessee. The site is relatively flat with a scattered mix of hardwood trees and light vegetative cover. During the recreation season the site is heavily visited by water recreationists of all types and picnic goers. The facilities in this area include two group picnic shelters, 23 non-sheltered picnic sites, a one lane boat ramp with courtesy dock, a comfort facility, and two parking lots that have 57 car spaces and 36 trailer spaces. The configuration of this area is very susceptible to future encroachment. This situation could be alleviated to a great extent through the acquisition of a 4.3-acre tract of land that extends into the center of the area. At this time, no future development is planned for this site. See Plate 5-16 for a map of this recreation area.

16. Cedar Creek Recreation Area, Site No.142. -This approximate 22-acre site is located in Wilson County at the end of Saundersville Road in the City of Mt. Juliet, Tennessee near the confluence of Cedar Creek and the main channel. With relatively level topography and with a moderate stand of mixed hardwoods and vegetative cover, this area is bordered by developing suburban neighborhoods. Heavily used throughout the year, this site is classified as a multi-purpose area with a campground and day use recreation area. The campground includes 60 sites with 50 AMP service to all sites. Other facilities in the campground include a camper registration station(fee booth), two comfort (restroom/shower) facilities, and a dump station. Sharing the same access road, the day use at Cedar Creek Recreation Area contains a one lane boat ramp with courtesy float, swimming beach, a comfort facility, group picnic shelter, 12 non-sheltered picnic sites, volleyball court, horseshoe pits, playground, and five parking lots with 117 car spaces and 21 trailer spaces. Several improvements were made in the area to alleviate management problems. The road connecting the day use and camping areas was closed and vegetative plantings were made to further separate the campground and public day use area. Future improvements would include widening the roads, adding parking spaces in day use area, and relocating the dump station as funding becomes available. See Plate 5-17 for a map of this recreation area.

17. Shutes Branch Recreation Area, Site No. 146. - This area is located in Wilson County on Saundersville Road in Old Hickory. Comprised of gently rolling to hilly terrain, this area is heavily wooded by cedar, pine, mixed hardwoods and a dense vegetative understory. The approximate 9-acres on the north side of Saundersville Road are made up of rolling lands moderately covered by mixed hardwoods make up the Shutes Branch Recreation Area. This site includes a group picnic shelter, 14 non-sheltered picnic sites, comfort facility, courtesy fishing dock, two one-lane boat ramps with courtesy docks, and five parking lots with 81 car spaces and 77 trailer spaces. Future development will include the replacement of the comfort facility to eliminate the need for the waste water treatment plant as funding becomes available. The Shutes Branch Campground, located on the south side of Saundersville Road closed in 2004 due of its underutilization and lack of lake access. This former campground is classified low density recreation while the day use area is classified high density recreation. Currently, the former campground area has been converted into what is called now the

Shutes Branch Mountain Bike Trail, discussed in the Low Density Recreation section of this chapter. See Plate 5-18 for a map of this recreation area.

18. Avondale Recreation Area, Site No. 210. -This approximate 15 acre site is located at the end of Avondale Access Road in Sumner County between Hendersonville and Gallatin. Situated on gently rolling hills that descend toward the shoreline, this site provides a scenic view of the main channel. The majority of this site is covered by a dense stand of mixed hardwood trees and vegetative growth with the picnic and boat ramp area lightly covered with mixed hardwoods. The facilities include a one lane boat ramp with courtesy dock, a group picnic shelter, seven non-sheltered picnic sites, comfort facilities, and one parking lot with 47 car spaces and nine trailer spaces. The access road has a 90-degree corner that has been hard to maneuver which could be eliminated in a land exchange with an adjacent property owner. Trailer spaces are not long enough to accommodate the newer and larger boat trailers that use the area and should be increased. See Plate 5-25 for a map of this recreation area.

19. Gallatin Soccer Fields, Site No. 265. -This approximate 23 acre site is located on Lower Station Camp Creek Road, North of US-31E(Nashville Pike) near Gallatin in Sumner County. The site is characterized by flat grassy topography, along the outside edge of the site is a moderately dense stand of mixed hardwood along the East Station Camp Creek. On the southeastern part of the site exists a pond and wetland area adjacent to the creek. The facilities include soccer fields, portable comfort facility, and a gravel parking lot with 100 car spaces. The entire area is operated and maintained by the City of Gallatin. At this time, no future development is planned for this site. See Plate 5-41 for a map of this recreation area.

ACCESS AREAS

There are 27 access areas on Old Hickory Lake. Fourteen are managed by the Corps and 13 are managed by cities, county, or state government. These are classified for High Density Recreation. Most of these receive high visitation during the peak recreation season through the use of boat ramps and several have the capability to provide further recreation opportunities in various forms such as more parking areas and day use facilities such as playgrounds, trails, and picnic tables. Future development of these areas would need to be supported by carrying capacity, to meet the growing demand in that area, in accordance with resource objectives identified in Chapter 3 and current policies and regulations. Most of these areas vary in previous classification from the 1987 Master Plan Revision but a large number of the areas were previous classified Low Density Recreation. Table 18 shows the areas currently managed by US Army Corps of Engineers and leased to other agencies. All these areas will be classified as high density recreation.

Table 18- Old Hickory Lake Access Areas

Site #	Site Name	Managing Agency	Acres +/-
125	Taylors Landing Park	USACE	1.6
152	Walton Ferry Access Area	USACE	13
153	Mallard Point Park	City of Hendersonville	3.8
200	Old Union Access	USACE	1.6
203	Tyree Access	Wilson County Government	1.3
205	Davis Corner Access	USACE	2.9
214	Sumner County Park	Sumner County	5.7
219	Cairo Access	USACE	4.3
221	Saundersville Access	USACE	2.9
224	Second Creek Access	Trousdale County Government	1.3
227	Carthage Access	City of Carthage	2.4
228	Rome Ferry Access	USACE	5.3
229	Dickerson Chapel Access	Wilson County Government	1.3
230	Hunters Point Access	USACE	2.2
232	Barton's Creek Access	USACE	6.3
234	Coles Ferry Access	USACE	1.8
240	Riverview Access	Wilson County Government	.6
261	Liberty Branch Recreation Area	City of Gallatin	6.7
262	Cedar Grove Access	City of Gallatin	3.6
263	Bull Creek Access	USACE	5.7
264	Stark Knob Access	USACE	7.1
266	Station Camp Creek Access	USACE	1.0
267	Gallatin Access	City of Gallatin	2.6
270	Pine Cove Access	Trousdale County Government	.7
287	Goose Creek Access	Trousdale County Government	0.2
376	Bentleys Landing Access Area	USACE/TWRA	1.1
601	Sandy Chapel Access	TWRA	2.1

COMMERCIAL MARINAS

1. Blue Turtle Bay Marina, Site No. 355. -Located 3.6 miles above the dam on the left bank, this site has a lease area of 26.45 acres. Existing facilities include covered and open boat slips, a fuel dock, launching ramp, convenience store, office, parking lot and full service restaurant. All improvements except for a portion of a parking lot at this location are on leased area. Due to the location of this marina it is susceptible to wake and wind issues. The installation of the breakwater lessens these issues. This marina provides modern, well maintained facilities and optimum utilization is being realized. See Plate 5-47 for a map of this area.

2. Shady Cove Resort, Site No. 369. -Located approximately 38.6 miles upstream from the dam on Lick Creek of Bledsoe Creek, this site has a lease area of 17.8 acres. The marina offers visitors the following facilities: covered slips, a fuel dock, launching ramp, and a courtesy dock within the lease area. Additional facilities located on private property include a full service restaurant, swimming pool and an outside bar. This site is unique because it also provides camping located on leased and private property along with supporting facilities on private property to include laundry and propane sales. Limiting factors at this location would be water depth. This marina is well maintained and experiences good public usage. See Plate 5-48 for a map of this area.

3. Cedar Creek Marina, Site No. 372. -Consisting of 17.96 acres of leased area, this dock is located approximately 18.9 miles above the dam on the left(west) bank of Cedar Creek. Facilities include covered slips, a fuel dock, launching ramp, full service restaurant with indoor and outdoor dining, office and marine repair shop all within the lease area. This marina is well maintained and experiences good public usage. See Plate 5-49 for a map of this area.

4. Gallatin Marina, Site No. 373. -Located 22.4 miles upstream from the dam on the East Fork of Station Camp Creek, this site has a lease area of 15.18 acres. All facilities at this location are within the lease area except the full service restaurant, entrance road and some parking. Covered boat slips, a fuel dock and launching ramp are located within the lease area. This marina is well maintained and experiences good public usage. See Plate 5-50 for a map of this area.

5. Drakes Creek Marina, Site No. 374. -Located about 6.7 miles above the dam on Drakes Creek and along Sanders Ferry Road in Hendersonville, this site has a lease area of 18.82 acres. Facilities within the lease area include covered slips, fuel dock, parking lot, convenience store, launching ramp and courtesy dock. The dry boat storage and some of the parking areas are partially on public and private property. An office for marina operations and boat sale and a full service marine shop are located on private property. This marina is well maintained and experiences good public usage. See Plate 5-51 for a map of this area.

6. Cherokee Resort, Site No. 377. -Located approximately 23.8 miles upstream from the dam in Wilson County Tennessee, this site has a lease area of 20.10 acres. The majority of the development exists on adjacent private land. Amenities within the lease area include: covered and open boat slips, fuel dock, parking lot, launching ramp and a courtesy dock. Additional parking, an office, pool, trailer park and a full service restaurant are located on private property. This marina is well maintained and experiences good public usage. See Plate 5-53 for a map of this area.

7. Anchor High Marina, Site No. 378. -Located just above the dam adjacent to Rockland Recreation in Hendersonville, this marina encompasses 8.08 acres. Existing amenities located within the leased area include covered boat slips, a fuel dock and a full service restaurant. A paved parking lot convenience store, office and dry boat storage building are located on adjacent private property. Although boaters that launch at Rockland Recreation Area pass by the docks the area rarely becomes congested. This marina provides well maintained facilities and optimum utilization is being realized. See Plate 5-54 for a map of this area.

8. Creekwood Marina, Site No. 390. -Situated 8.4 miles upstream from the dam on Drakes Creek along Sanders Ferry Road in Hendersonville, this site has a lease area of 18.8 acres. Facilities at this marina include: a parking area, covered and open slips, a fuel dock and an office for marina operations, all located on leased property. Due to this marina's location across the channel of Drakes Creek, it experiences some issues from wake during peak recreation. Any further expansion would only amplify this issue. This marina provides well maintained facilities and optimum utilization is being realized. See Plate 5-55 for a map of this area.

9. Private Clubs. -Several private clubs are located on Old Hickory Lake. Even though no new clubs of this type would be allowed under the current policies, those facilities do exist and will be classified according to current use only. Bluegrass Country Club (Site No. 391, 4.94 acre lease), Cedar Creek Yacht Club (Site No. 392, 3.75 acre lease), and Harbor Island Yacht Club (Site No. 393, 11.51 acre lease) will be classified High Density Recreation due to the presence of marina type facilities. See Plate 5-56, 5-57, and 5-58 for a map of these areas.

10. The Boathouse at Benders Ferry, Site No. 394. -This site is situated in Mt. Juliet between Cedar Creek Yacht Club and Lone Branch Recreation Area. The existing amenities located within the outgranted area include courteous dock and access facilities for launching boats from dry storage. A paved parking lot, convenience store, office, and dry boat storage building are located on adjacent private property. See Plate 5-59 for a map of this area.

5-03 ENVIRONMENTALLY SENSITIVE AREAS.

This classification is for areas where scientific, ecological, cultural, and aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act (Act), National Historic Preservation Act (NHPA), or applicable State statues. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit. There are many areas that fit this description on Old Hickory Lake. The larger tracts are upstream of the 109 bridge with smaller tracts located downstream. All areas identified by USFWS and the Tennessee Department of Environment and Conservation (TDEC) as being known sites to contain endangered or threatened species are included in this classification. There are approximately 427 acres zoned Environmentally Sensitive Areas(ESA).

1. Lock 5, Site No. 603. -Lock 5 is a unique historic site on the banks of the Cumberland River in Wilson County. The Lock was placed into service on October 18, 1909. The Lock was removed from service with the implementation of the full beneficial use of Old Hickory Lock and Dam in December 1957. Lock 5 has been determined eligible for listing on the National Register of Historic Places(NRHP) through consultation with the State Historic Preservation Office(SHPO). Section 110 of the NHPA guides the management of the property. The Lock 5 site consists of two stone, three-story square houses historically used by lock personnel, a small two-story brick and frame commissary, a small frame barn,

unidentified stone structure foundations, and remnants of the lock structure. Plans are in place to restore the facilities when funds are available. This area has previously been identified as a historic site in the 1987 Master Plan.

2. Lock 6, Site No. 605. -Lock 6 is a unique historic site on the banks of the Cumberland River in Trousdale County and is the location of the historic Lock 6. The Lock was placed into service on October 21, 1910. The only structure that remains is the lock landwall and remnant foundations to structures. This area has previously been identified as a historic site in the 1987 Master Plan.

3. Hartsville Battlefield, Site No. 606. -This approximately 88 acre area is located in Hartsville on both sides of the river upstream of TN-141 bridge. Hartsville Battlefield is listed on the NRHP. It is the location of the Battle of Hartsville fought on December 7, 1862 at the opening of the Stones River Campaign during the American Civil War.

The Hartsville Battle field is included in the NRHP for its association with the event (NRHP Criterion A) and for the potential to yield information about the event (NRHP Criterion D). The Union 39th Brigade, XIV Army Corps, was guarding the Cumberland River crossing at Hartsville to prevent Confederate cavalry from raiding. Under the cover of darkness, Confederate Brig. Gen. John H. Morgan crossed the river in the early morning of December 7, 1862. Col. Absalom B. Moore, commander of the 39th Brigade, stated in his after action report, that Morgan's advance troops had worn Union blue uniforms which got them through the videttes. Morgan approached the Union camp, the pickets sounded the alarm, and held the Confederates until the brigade was in battle line. The fighting commenced at 6:45 am and continued until about 8:30 am. One of Moore's units ran, which caused confusion and helped to force the Federals to fall back. By 8:30 am, the Confederates had surrounded the Federals, convincing them to surrender.

President Lincoln became involved in the affair, demanding Major General William Rosencrans, who was in control of the Union Army in Nashville to report why there was an isolated brigade in Hartsville (National Register Nomination Form 1998). Following the battle at Hartsville, General Bragg sent much of his Calvary on raids into Kentucky and western Tennessee. Meanwhile, Rosencrans moved toward Murfreesboro, and would continue the advance toward Chattanooga (National Register Nomination form 1998).

Section 110 of the NHPA guides the management of the property. Title 36 Code of Federal Regulations part 372.14(d) specifically addresses the use of metal detectors on Corps lands for the protection of archaeological and historical resources. In addition, the property is over 100 years old and the protections of the Archaeological Resources Protect Act(ARPA) apply. Unauthorized excavation and metal detecting at the site is strictly prohibited. Furthermore, ARPA penalties for such actions include a felony conviction with up to one year in jail and $10,000 fine for the first offense.

4. Hartsville Bluffs, Site 616. -Two areas have been identified in Hartsville as designations of critical habitat for Physaria globosa (Short's bladderpod) in the Federal Register. U.S. Fish and Wildlife Service designates critical habitat to the maximum extent prudent and determinable, for any species

determined to be an endangered species under the Endangered Species Act of 1973. No modifying the habitat of Short's bladderpod is allowed in these areas without authorization or coverage under the ESA for impacts to this species (Figure 14).

Short's bladderpod is a plant in the mustard family. It grows up to 20 inches tall. Clusters of small yellow flowers top single and sometimes multiple stems from April to early June. Short's bladderpod typically grows on steep, rocky, wooded slopes and talus slopes and along tops, bases, and ledges of bluffs - often near rivers or streams and on south- to west-facing slopes. Most populations are closely associated with calcareous outcrops.

The main causes in habitat loss and degradation are potential future construction and ongoing maintenance of transportation rights-of-way; prolonged inundation and soil erosion due to flooding and water level manipulation; and overstory shading due to forest succession and shading and competition from invasive and nonnative plant species.

Activities that the USFWS believes could potentially harm the Short's bladderpod and result in ''take,'' include, but are not limited to: (1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the ESA; (2) Removing and reducing to possession of the plant species from areas under Federal jurisdiction; maliciously damaging or destroying the species on any such area; or removing, cutting, digging up, or damaging or destroying the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; (3) Introducing any unauthorized nonnative wildlife or plant species to States where Short's bladderpod occur that compete with or prey upon this plant species; (4) Releasing any unauthorized biological control agents into States where Short's bladderpod occur that attack any life stage of this plant species; and (5) Modifying the habitat of Short's bladderpod on Federal lands without authorization or coverage under the Act for impacts to this species.

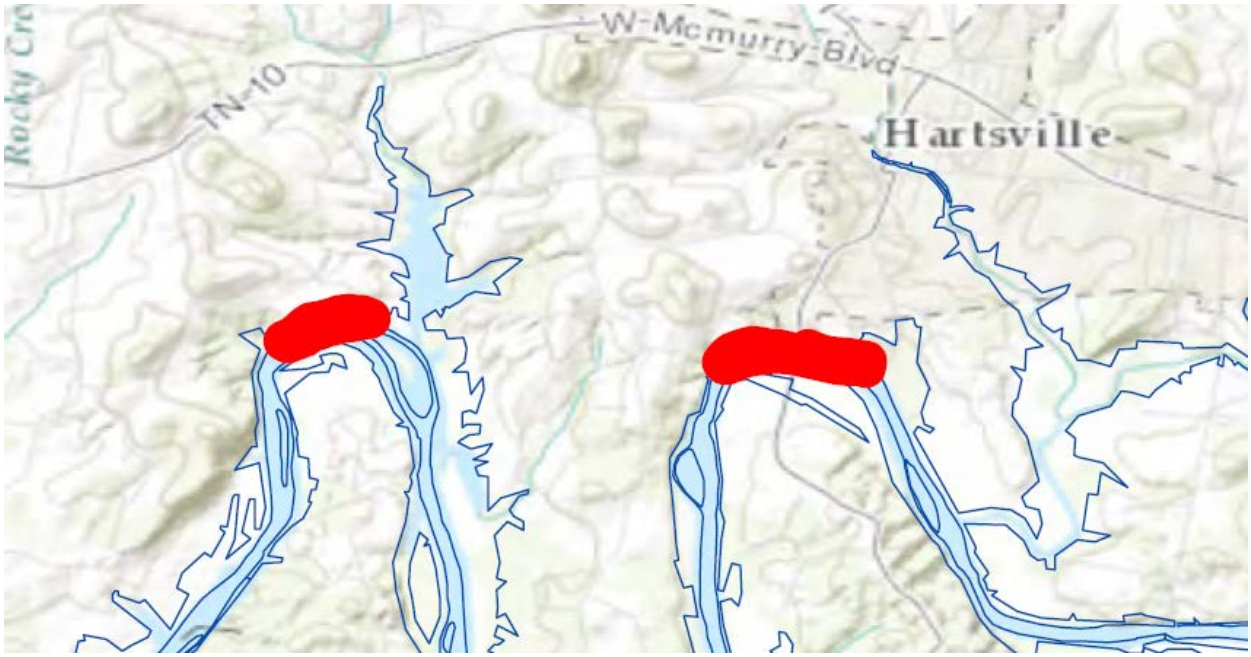


Figure 14- Critical Habitat Identified at ESAs for Short's Bladderpod Protection

5. Spring Creek Field, Site 617. -This approximately 6 acre area is designated as an Environmentally Sensitive Area because the site condition provides habitat for the endangered Lesquerella perforate (Spring Creek Bladderpod). This area is also under lease to TWRA and in 2015 USFWS identified Spring Creek Bladderpod occurring on this area. The U.S. Fish and Wildlife Service listed the Spring Creek bladderpod under the Endangered Species Act of 1973, on December 23, 1996 (61 FR 67493). This rare plant, a winter annual, is restricted to the floodplains of three creeks (Bartons, Spring and Cedar) in Wilson County, Tennessee. It can be found in agricultural fields, flooded pastures and glades, and disturbed areas. It requires some degree of disturbance, such as scouring from natural flooding or plowing of the soil, to complete its life cycle.

Factors contributing to its endangered status are an extremely limited range and loss of habitat. The primary threat is the loss of habitat due to conversion of land to uses other than cultivation of annual crops, such as the rapid commercial, residential, and industrial development that is occurring throughout Wilson County.

Actions needed to recover the Spring Creek bladderpod include: (1) Protect and manage existing occurrences and habitats; (2) develop and implement management strategies for the species; (3) develop communication with local officials to coordinate county planning; (4) utilize existing environmental laws to protect the plant and its floodplain habitat; (5) conduct monitoring at all sites; (6) conduct seed ecology studies; (7) search for new populations; (8) establish new occurrences within the historic range; (9) maintain seed source ex situ; (10) develop and implement public education plans; (11) annually assess the success of recovery efforts for the species. The authority for the action of the Federal Register/ Vol. 71, No. 172, July 12, 2006 is found in section 4(f) of the ESA, 16 U.S.C. 1533(f).

It is illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. In addition, for endangered plants, the ESA prohibits the malicious damage or destruction on Federal lands and the removal, cutting, digging up, or damaging or destroying of endangered plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. [4]

6. Islands**.** Old Hickory Lake has roughly 72 islands ranging from less than an acre to approximately 20 acres. Islands intrinsically have unique characteristics due to isolation from mainland influences, variations in aspect of slopes, aesthetic appeal, and often distinctive plant and animal communities. The majority of these islands provide sufficient nesting areas for the Bluebird, Thrushes and other native birds. Additionally, ducks and geese are frequent users of these islands for bedding and protection from prey. More recently, the Double-crested Cormorant has made these islands home using them for nesting areas. It is believed that this species is responsible for some of the damage and loss of vegetation on several of the islands. Islands also serve as a valuable resource for fish species on Old Hickory Lake. Fish use these islands for spawning areas and feeding grounds as well as shelter during high generation taking advantage of the current breaks these islands provide. It is noteworthy that several of these islands are experiencing levels of low to severe erosion. In fact, there are a few islands that are no longer above the water level.

7. Promontory Way Peninsula, Site No. 607. - This approximately 7 acre area is located in Hendersonville near private residences and serves as a needed pocket for wildlife habitat with all the development that surrounds this area. The classification of Environmentally Sensitive is reflected in the project's Shoreline Management Plan (SMP) with the area designated as an Environmental Restoration and Conservation Area (ERCA) in that plan.

8. Cages Bend Island Area, Site No. 608. - This approximately 14 acre area is located in Gallatin near the large Cages Bend Islands. This area is in close proximity to these islands and has potential for enhance and restore of this habitat. The classification of Environmentally Sensitive is reflected in the project's SMP with the area designated as an ERCA in that plan.

9. East Camp Creek Mud Flats, Site No. 609. - This approximately 15 acre area is located in Gallatin on East Station Camp Creek adjacent to Liberty Branch Recreation below the Highway 31 Bridge. This area densely populated with small hardwood trees with the highest point in this area being 450' msl.

10. Headwater E. Camp Creek, Site No. 610. - This approximately 12 acre area is located in Gallatin on East Station Camp Creek upstream of the Highway 31 Bridge. This area serves an important water quality function as a buffer for runoff and to remove pollution, provide fish and wildlife habitat,

The data was derived from the 67496 Federal Register Vol. 61, No. 247, 53808 Federal Register Vol. 70, No. 175, and 52567 Federal Register Vol. 71, No. 172.

and help sustain the health of Old Hickory Lake. This area provides a high value as nesting, resting, feeding and roosting areas for birds, waterfowl and small mammals. This area has been previously identified as an ERCA in the SMP.

11. Cedar Creek Upper End, Site No. 611. - This approximately 48 acre area is located in Mt. Juliet on the upper end of Cedar Creek. This area serves an important water quality function as a buffer for runoff and to remove pollution, provide fish and wildlife habitat, and help sustain the health of Old Hickory Lake. This area provides a high value as nesting, resting, feeding and roosting areas for birds, waterfowl and small mammals. This area has been previously identified as an ERCA in the SMP.

12. Little Creek/Benders Ferry, Site No. 612. - This approximately 12 acre area is located in Mt. Juliet on the upper end of Little Cedar Creek upstream of Benders Ferry Road Bridge. This area serves an important water quality function as a buffer for runoff and to remove pollution, provide fish and wildlife habitat, and help sustain the health of Old Hickory Lake. This area is often used as a nesting area for migratory birds and other native birds and provides a high value as nesting, resting, feeding and roosting areas for birds, waterfowl and small mammals. This area has been previously identified as an ERCA in the SMP.

13. Lone Branch Cove, Site No. 613. - This approximately 13 acre area is located in Mt. Juliet on Lone Branch. This area serves an important water quality function as a buffer for runoff and to remove pollution, provide fish and wildlife habitat, and help sustain the health of Old Hickory Lake. This area is often used as a nesting area for migratory birds and other native birds and provides a high value as nesting, resting, feeding and roosting areas for birds, waterfowl and small mammals. This area has been previously identified as an ERCA in the SMP.

14. Spencer Creek/Davis Corner, Site No. 614. - This approximately 32 acre area is located in Lebanon at the back of Spencer Creek. This area serves an important water quality function as a buffer for runoff and to remove pollution, provide fish and wildlife habitat, and help sustain the health of Old Hickory Lake. This area provides a high value as nesting, resting, feeding and roosting areas for birds, waterfowl and small mammals. This area has been previously identified as an ERCA in the SMP.

15. Bartons Creek, Site No. 615. - This approximately 20 acre area is located in Lebanon on Barton's Creek. This area is a combination of woods and fields located just downstream from Barton's Creek Access Area. The field portion of the area was previously maintained under agricultural leases and has been allowed to regenerate naturally. The area could serve as a location for future management with other agencies for introduction of state and federal threatened and endangered plant species. This area has been previously identified as an ERCA in the SMP.

5-04 MULTIPLE RESOURCE MANAGEMENT LANDS.

These areas are classified for the predominate use as described in paragraphs below. However, there are other compatible uses which may occur on these lands without impacting the predominant use. These lands fall into one of four predominate use subclassification for the purposes of this master plan, with the understanding that other activities often occur on these lands. These subclassifications are: **Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas**. The following is a description of each subclassification's resource objectives, acreages, description of use, and any subsequent uses that may occur on these lands.

5-04.1 LOW DENSITY RECREATION.

These lands are classified for multiple resource management, with the predominant subclassification for low density recreation with minimal development or infrastructure that support passive public use. There are approximately 205 acres zoned Low Density Recreation. Lands in this subclassification support passive public recreation with trails, wildlife observation blinds, nature study areas and fishing platforms. The areas included in this classification include Shutes Branch Bike Trail, Environmental Study Area in Hendersonville, Hendersonville Greenway Trail, Whispering Pines Camp, and the three quasi-public group camps. Camp Boxwell Boy Scout Camp, Fraternal Order of Police Camp, and Ruilman Rehabilitation Center are called quasi-public use areas and operated by other agencies other than the Corps for use of special groups.

1. Fraternal Order of Police, Site No. 402. -This 5.06 acre site is located on the south side of the lake north of the former Lincoya Girl Scout Camp. The Fraternal Order of Police acquired 33.6 acres by quitclaim deed and lease the remaining acres. Although the adjacent quit-claimed land has been extensively developed, no structures other than a floating dock are located on the land under lease. Considering the limited facilities, optimum utilization is being realized which warrants continuation of this lease agreement. Other uses that occur in this area include vegetative management of native species, and wildlife management for wildlife watching activities. See Plate 5-60 for a map of this area.

2. Camp Boxwell, Site No. 404. -Camp Boxwell is located west of Tennessee Highway 109 and is bound on the south by Spencer Creek and Spencer Creek Lakeside Acres Subdivision and on the north by the Ruilman Center. The 512.88 acres of formerly fee-owned Government property was quitclaimed to the Boy Scouts of America(B.S.A.) by an Act of Congress, approved 7 September 1957 (Public Law 85-341). Government land now used by the camp under lease involves 91.75 acres conducive to boat moorage and water oriented activities as well as limited hiking and primitive camping. The adjoining B.S.A. owned land has been extensively developed with paved roads, camp buildings, dining halls, a shop building, a chapel, and numerous dwellings. Hundreds of thousands of scouts of have enjoyed summer and winter camp at Boxwell Reservation since it first opened in 1959. The site is receiving optimum utilization and no future expansion plans are anticipated at this time. Other uses that occur in this area include vegetative management of native species, and wildlife management for wildlife watching activities. See Plate 5-61 for a map of this area.

3. Ruilman Rehabilitation Center, Site No. 405. -Leased to the State of Tennessee Department of Mental Health, this 42.58 acre site is located just off Woods Ferry Road near lands leased to the Boy Scouts of America and consists of predominately level open land. Although the primary purpose of the Center is for the residents and mentally challenged patients, it is also useful for college workshops in the area of mental health and groups of students who study mental illness and special needs during the summer months. Facilities include a gravel access road and parking area accommodating 15 cars, 15 picnic sites, care-taker's cottage, large dining hall and recreation hall. Funds for operation and maintenance of the Center are limited and no immediate plans to expand the facility are proposed. Other uses that occur in this area include vegetative management of native species, and wildlife management for wildlife watching activities. See Plate 5-62 for a map of this area.

4. Shutes Branch Bike Trail, Site No. 146. - Shutes Branch Campground closed in 2004 due of its underutilization and lack of lake access. Currently, the former campground area has been converted into what is called now the Shutes Branch Mountain Bike Trail. Since 2008, the 8.2 mile long serpentine trail has been constructed and maintained by volunteers and provides a great ride for beginners through expert riders. The adjacent Shutes Branch Day Use is still classified as a high density recreation area. Other values of this area include density vegetation management and the habitat for a variety of wildlife such as small and large mammals. See Plate 5-19 for a map of this area.

5. Walton Ferry Environmental Study Area, Site No. 602. -The Walton Ferry Environmental Study Area started in 1982 when several food plots for wildlife consumption were established. Since that time, the Old Hickory Lake Staff and volunteer groups have added an extensive trail system (both paved and unpaved), additional food plots, butterfly garden, orchard, planter boxes, a large variety of nut producing trees and fruit bearing shrubs, wildlife boxes, two chimney swift boxes, a fishing jetty, and a small shelter for outdoor education. The approximately 24-acre area is home to over seventy-five different species of shrubs and trees that have been planned to attract a variety of different species of wildlife such as birds, bees, butterflies, rabbits and squirrels. The area has mowed open areas and trails as well as untouched areas to provide cover for the wildlife. The area is Certified as an Arboretum by The Tennessee Urban Forestry Council. Other uses that occur in this area include vegetative management of native species, and wildlife management for wildlife watching activities. See Plate 5-65 for a map of this area.

6. Whispering Pines, Site 408. -Leased to Hendersonville Church of Christ, this site is located at the end of Harsh Lane. Facilities include a courtesy dock, boat ramp, a ball court, and picnic shelter. Other uses that occur in this area include vegetative management of native species, and wildlife management for wildlife watching activities. See Plate 5-63 for a map of this area.

In addition to these areas, the areas in the Shoreline Management Plan(SMP) allocated for Limited Development Areas have a secondary sub-classification of Low Density Recreation due the passive recreation that occurs in these areas. The predominate sub-classification will remain Vegetation Management or Wildlife Management in those areas. See section 5-01.4b and 5-01.4c for description of those areas and consult the Old Hickory Lake Shoreline Management Plan for specific information on how the shoreline is managed and specific information on permitted activities.

5-04.2 WILDLIFE MANAGEMENT.

These lands are classified for multiple resource management, with the predominant management activities focusing on wildlife management. Wildlife management is conducted primarily by Tennessee Wildlife Resources Agency (TWRA). There are currently approximately 4662 acres of land licensed to the TWRA. These areas are located on the upper reaches of Old Hickory Lake in Sumner, Wilson and Trousdale Counties. TRWA's primary strategy in these areas is to manage game species with the understanding that those actions benefit both game and non-game species. The resource plan for TWRA licensed land coincides with the objectives USACE desires to see on land classified as wildlife management. Therefore, the plan for these areas is to continue allowing TWRA to implement their management plan. A special note about USACE involvement within TWRA licensed land is the USACE is not directly involved with the work effort within these areas. However, USACE can provide support to TWRA when time and resources are available. Support often comes in assistance with creation of habitat, archeological reviews, identifying boundary line, and assistance with GIS mapping. USACE will continue to let TWRA be the lead agency when it comes to management of wildlife at these locations. Other non-game programs such as song bird nest box construction and installation of bat boxes are often performed on an intermittent basis. The plan is to continue providing effort to these initiatives in order to provide some form of management for non-game species. The goal for the areas leased to TWRA is to continue working with USACE partners to assure wildlife management is being conducted so that it benefits both game and non-game species. Mowing, vegetation alterations, and/or private dock privileges may also be granted in this classification if permitted under the SMP. Consult the Old Hickory Lake SMP for specific information on permitted activities.

1. Dickerson Chapel, Site No. 181. -This approximately 107 acre site is located along the banks of Cedar Creek in Wilson County on Dickerson Chapel Road off of Gilmore Hill Road in the out-skirts of Lebanon, Tennessee. The moderately rolling terrain of grassy fields and mixed cedar and hardwood fence rows with karsts geological features is closed by TWRA from Nov 14 through March 1 as a wildlife refuge and is managed for wildlife management. Acquisition of a right-of-way through the adjacent property will be needed to facilitate access. The primary classification for this site is wildlife management with a secondary classification of a future recreation area. Therefore, future development could include the construction of an access road, parking areas, a comfort facility, picnic facilities, a playground, and hiking trails.

2. Brunley Branch Recreation Area, Site No. 183. -This approximately 117-acre future recreation area located in Wilson County in the out-skirts of the town of Lebanon, Tennessee sits adjacent to Mann Road between the confluence of Barton's Creek and Brunley Branch on the main channel. The site consists of a peninsula that is characterized by gently rolling topography and attractive wooded areas. This area is licensed to the TWRA for use as a wildlife area. This site is well suited for development for a number of reasons, including its location near Lebanon, TN, relatively large size, and lack of recreational facilities in the area. The primary classification for this site is wildlife management with a secondary

classification of a future recreation area. Proposed development at this site could be designed to attract the interest of boaters. Site conditions could facilitate future plans for the construction of boat-in primitive camping units, hiking trails, a service road and sanitary facilities.

3. Indian Ladder Bluff, Site No. 186. -This site is situated on a bluff on the south shore of Old Hickory Lake, east at Highway 10. The site consists of approximately 61 acres of mixed hardwoods. This area is licensed to the TWRA for use as a wildlife area. The primary classification for this site is wildlife management with a secondary classification of a future recreation area. Proposed future development consists of designating the area as an environmental studies area. Proposed facilities could include trails, food plots and areas for wildlife observation.

4. Rocky Creek, Site No. 187. -This approximately 199 acre site is also proximate to the City of Hartsville. The site is located on the southern bank at Old Hickory Lake in a remote area. This site will meet the needs for an environmental study area. This area is licensed to the TWRA for use as a wildlife area. The primary classification for this site is wildlife management with a secondary classification of a future recreation area. Proposed development could include trails, food plots, wildlife observation areas and other low density activities.

5-04.3 VEGETATIVE MANAGEMENT.

These lands are classified for multiple resource management, with the predominant management activities focusing on vegetative management. There are approximately 1,518 acres of lands in this subclassification, designated for stewardship of forest, and other native vegetative cover. Management in these areas will use best management practices for native vegetation, while still allowing activities detailed in the Shoreline Management Plan (SMP). This allows flexibility of the management of various vegetative species and to insure balanced use of the public land with the protection and restoration of the natural resources of Old Hickory Lake. Shoreline use is the major portion of work effort at Old Hickory Lake when it comes to natural resources management. Mowing, vegetation alterations, and/or private dock privileges may also be granted in this classification if permitted under the SMP. Consult the Old Hickory Lake SMP for specific information on permitted activities.

Allowable vegetative management practices vary in different sections of the lake. Management may allow for cooperative management between the Corps and the adjacent landowner. Management activities in these areas may consist of native tree plantings, maintaining tree density requirement, control of woodland understory vegetation, and exotic invasive plant removal. Consult the SMP for Old Hickory Lake for specific management practices allowable around the lake.

5-04.4 FUTURE/INACTIVE RECREATION AREAS.

These are areas that were classified for recreation but were never developed or were developed and have subsequently been abandoned. Due to the minimal acquisition policy in place at the time of

impoundment, large plots of land that would facilitate developed recreation areas are rare on Old Hickory Lake. There are approximately 237 acres zoned Future/Inactive Recreation. Although there may not be an immediate need for additional recreation facilities within the location of these areas it is imperative to protect these sites for future needs. It is impossible to accurately predict future recreational trends or population growth within any given area. These sites could be utilized for public parks operated by USACE, leased to another agency/entity for management and operation or become a commercial marina site. The process for awarding a new marina site on Old Hickory Lake would require the issuance of a Notice of Availability (NOA) after an extensive study to determine the need and feasible for additional commercial concessions. This process is subject to change based on policy and procedural changes that may occur in the future. Lands classified as future/inactive recreation areas should be given extra consideration but proposals located elsewhere will be evaluated as well.

1. Spencer Creek Recreation Area, Site No. 182. -This approximately 47 acre future recreation area is located in Wilson County off of Tyree Access Road in Lebanon. Acquisition of a right-of-way through the adjacent property would be needed to facilitate access. The site has relatively flat to gently rolling terrain covered with open grassy fields and a dense stand of cedar trees dotted with mixed hardwoods. Since this site is located very close to the heavily used Laguardo recreation area, it provides an excellent opportunity to help alleviate some of the crowds at Laguardo. With this in mind, it is recommended that this area be developed along the same lines as the existing Laguardo area. Site conditions could facilitate future plans for the construction of an access road, parking areas, a major beach area, a bathhouse, 50 picnic units (18 to be located in 3 shelters), a playground, 2 comfort stations, a short hiking trail and a bicycle trail. Under the multiple resource management classification, this area's subclassification is a future/inactive recreation area. Until a time when development conditions area available, this area is managed for vegetative management activities.

2. Walton Ferry Park, Site No. 184. -This small approximately 4.7 acre site located in Sumner County in the town of Hendersonville, has varied natural features, lake frontage, and is easily accessible by surrounding residents. This site could be an excellent addition to the growing Hendersonville Greenway Trail system by provide access to the lake. Proposed facilities could consist of a trail. Until a time when development conditions area available, this area is managed for vegetative management activities.

3. Luna Park, Site No. 185. -This is a small approximately 2.7 acre site located in Sumner County in Hendersonville, is well suited for future recreational facility development. Located at the intersection of Sanders Ferry Road and Luna Lane, the park is easily accessible by surrounding residents. Proposed facilities could consist of a trail, picnic sites, and a playground. Until a time when development conditions area available, this area is managed for vegetative management activities.

4. Oakland, Site No. 188. -This approximately 36 acre site is located on the left descending bank of Spring Creek in Wilson County, approximately 2 miles from the mouth of the creek. Unlike most of the future recreation areas this site has access to a public road. The water depth adjacent to the site is shallow (2' -4') which would be problematic for boat access without extensive dredging. The area is covered with dense tree growth and the topography is relatively flat, gently sloping to the water's edge.

Proposed development could include trails, wildlife observation areas and other low density activities. Until a time when development conditions area available, this area is managed for vegetative management.

5. Smith Branch, Site No. 189. -This approximately 13 acre site is located just north of the Lincoya Site at CRM 225.1 in Mt. Juliet. It is surrounded by a well developed subdivision but there is land access via River Drive. The site is wooded and has rolling topography. The shoreline varies from low bluffs to gentle slopes to the water's edge. Site development could include boat access, comfort station, multiple shelter, and significant amount of parking due to this popular location of the lake for boaters. Until a time when development conditions area available, this area is managed for vegetative management.

6. Rehobeth, Site No. 256. -This approximately 15 acre site is located on both sides of Douglas Bend Road just off of Cages Bend Road in a cove just upstream of Cages Bend Campground. The site consists of 14 acres of mixed upland and bottom hardwoods adjacent to the back waters of the lake with no boat access to the site. Unlike most of the future recreation areas this site has access to a public road. On the other side of the road the site was a former access point but with only 2 acres did not serve as an ideal site for an access point. Proposed development could include trails, wildlife observation areas, limited picnicking sites, and other low density activities. Until a time when development conditions area available, this area is managed for vegetative management.

7. Lincoya, Site No. 401. -This approximately 36 acre site is located north of Harbor Island Yacht Club and lies adjacent to Edgewater and Knobblehurst subdivisions. The site is characterized by rolling topography, bedrock outcrops, and moderately dense deciduous forest cover. The majority of the site has been left in its natural state to provide opportunities for various outdoor experiences. Lincoya was previously used by the Girl Scouts for a group camping facility. All facilities associated with the camp have been removed from Corps Lands. It is recommended that this site remain classified for future use as a quasi-public group camp. Until a time when development conditions area available, this area is managed for vegetative management.

8. Scarritt Camp, Site No. 403. -This approximately 24 acre area is located one mile west of Cedar Creek on the south shore of Old Hickory Lake. The area is situated on a high bluff overlooking the river. The site is wooded and has rolling topography. The site was originally leased to Scarritt College and used as a primitive camp by college groups. The college has relinquished their lease and the designated camping sites have grown up with vegetation. It is recommended that this site remain classified for future use as a quasi-public group camp. Until a time when development conditions area available, this area is managed for vegetative management.

9. Easter Seal Camp, Site No. 406. -This approximately 49 acre former group camp is located at the end of Benders Ferry Road on the left bank of Spencer Creek adjacent to lands formerly leased to the Easter Seals and YMCA. 22.88 acres were sold to the Easter Seals by the Secretary of the Army on 6 November 1968. Only 5.32 acres along the shoreline remain of Corps land adjacent to the property leased to the Easter Seals. This site is currently not under a lease. Adjacent private land was developed

extensively with dining halls, cottages, and craft shops but all facilities have been removed or are in disrepair. If the site is requested to be leased from nonadjacent landowner, acquisition of a right-of-way through the adjacent property will be needed to facilitate access. It is recommended that this site remain classified for future use as a quasi-public group camp. Until a time when development conditions area available, this area is managed for vegetative management.

10. Spring Creek Access, Site No. 190. -The approximately 8 acre former access area is located at the end of Pebble Point Road in Lebanon. The site is characterized by rolling topography, bedrock outcrops, and moderately dense deciduous forest cover. The site is adjacent to private homes but does have access through a public road. Proposed development could include trails, fishing pier, picnicking sites, and access boat ramp. Until a time when development conditions area available, this area is managed for wildlife management.

11. Woods Ferry Access, Site No. 191. -This approximately 3.5 acre former access area and old ferry site is located on Kirkpatrick Road in Lebanon. The site is wooded and has rolling topography. The shoreline varies from low bluffs to gentle slopes to the water's edge. The adjacent property to the east is under an agriculture lease and could be added to the site in the future. Proposed development could include a boat ramp and courtesy dock. Until a time when development conditions area available, this area is managed for wildlife management.

5-05 WATER SURFACE.

This is in reference to water surface management needs which the project utilizes to ensure project operations. There are four types of water surface zoning utilized at Old Hickory Lake. The establishment and management of surface water zoning program has been in coordination with Tennessee Wildlife Resources Agency. The water surface classifications include:

1. Restricted. This zoning encompasses the area located around the dam and is delineated with buoys and signage. Except for 400 feet above the dam, boat access within this area is not prohibited unless project operations make the area unsafe to the public. Boat access within the four public swim beaches (Lock 3, Old Hickory Beach, Cedar Creek and Laguardo) is prohibited and the areas are delineated with Boats Keep Out buoys.

2. Designated No-Wake. All public boat launching ramps are no-wake zones generally 300' from the ramp but may be modified based on site conditions to improve public safety and are delineated with No Wake buoys. All commercial marina sites are no wake zones and are delineated with No Wake buoys, signage and/or wave breaks. The area known as Langford Cove in Mt. Juliet Tennessee is a no wake zone and is delineated by No Wake buoys and a sign attached to the bridge on Saundersville Road which is the sole water access to the cove. We will recognize all no wakes included in TWRA regulations.

3. Fish and Wildlife Sanctuary. Cedar Creek(known as Little Cedar Creek) located at CRM 263.9 is the only area on Old Hickory Lake under this zoning. This area is part of the lands leased to TWRA. Generally boat access and hunting is prohibited during the state regulated duck season.

4. Open Recreation. This is the classification for the vast majority of the water surface of the lake. Within this classification certain areas are designated for seaplane landing. See Appendix A, Plate 4-10 for the seaplane landing zones.

5.06 SPECIAL CONSIDERATIONS.

There is an abundance of cultural resources located around and within Old Hickory Lake. Special consideration should be given to any activity that may have a negative impact on cultural resources. Therefore, a thorough review of actions that have soil disturbance must be conducted and reviewed by the District Archeologist. Any action found to have negative impact must be coordinated with the appropriate state or tribal entity before authorization of work is granted. In addition, the recently developed Integrated Cultural Resource Management Plan (ICRMP) must be implemented for managing cultural resources. There are several endangered species that have a home range within the Old Hickory Lake area. Therefore, any work conducted on this project has to be in accordance to the Act. The methodology to assure all work is done in compliance with the Act is to first; review the proposed action for impacts, second; conduct a field survey to ascertain if the species or suitable habitat is present, and third; if species or suitable habitat are present, follow the requirements of the Act. Shoreline management at Old Hickory Lake is an integral part of the project. Therefore, it is a management topic that must be identified to help lay the ground work to assure compliance of the regulations. 36 CFR Section 32.30(d)(1) states: "It is the policy of the Chief of Engineers to protect and manage shorelines of all Civil Works water resource development projects under Corps jurisdiction in a manner which will promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. The objectives of all management actions will be to achieve a balance between permitted private uses and resource protection for general public use. Public pedestrian access to and exit from these shorelines shall be preserved. For projects or portions of projects where Federal real estate interest is limited to easement title only, management actions will be appropriate within the limits of the estate acquired. " Generally, Old Hickory Lake has been historically managed to achieve the results required in the above policy statement. The intention is to continue managing in this fashion to achieve a balance between public desires for shoreline use and environmental sustainability.

CHAPTER 6 SPECIAL TOPICS/ ISSUES / CONSIDERATIONS.

6-01 WATER SAFETY

The majority of Old Hickory Lake's visitors engage in water-related activities such as swimming, boating, and fishing, with the result being some unfortunate fatalities. Nationwide, the Corps participated with other agencies concerned with water safety as far back as the early 1950's. The Corps in the Nashville District started an organization in 1951 that became the National Water Safety Congress. In the mid-1970's, the Chief of Engineers issued the first official directive for the Corps to amplify its water safety educational efforts after nearly 500 lives were lost at Corps lakes in a single year. In 1986, the Corps National Water Safety Program was started with a mission to increase public awareness of boating and water safety through educational materials and products. With public safety as a primary concern, Old Hickory Lake implements the water safety program at the project level to reduce public accidents and fatalities through education, publicity, patrols on land and water and teamwork with partners. Education is provided through information in recreation areas, bulletin boards, posters, signs, banners, and brochures. The water safety materials provided by the HQUSACE Water Safety Committee are used extensively. Web pages (like the National Water Safety Congress and the National Safe Boating Council), fishing reports, and exhibits in the Visitor Center provide educational information. Water safety programs are conducted for schools and civic groups. Publicity is provided through participation in special events such as boat shows, public meetings, Shoreline Cleanups, and National Public Lands Day. News releases are issued to get the word out through radio, TV and print media, and publish newsletters. There is an extra effort during National Safe Boating Week, the kickoff to the recreation season. Partnerships with other agencies, groups and businesses help promote water safety. Team efforts at events and programs accomplish more to provide for success. The staff participates in the Nashville District Water Safety Task Force, which was formed in 1998, to review ways to promote water safety, share information and to develop a strategy for reducing public accidents and fatalities at Nashville District lakes, locks and dams.

6-02 CARRYING CAPACITY

As discussed in the 1987 Master Plan Update, carrying capacity has a number of connotations. Natural science disciplines view carrying capacity in terms of resource degradation and restoration. Site planners view capacity in relation to areas and sizes required to effectively conduct activities. Sociologists and psychologists are concerned about behavior and human interactions and their effect on the quality of the activity experience. Administrators consider capacity in relation to policies, management, and flexibility. Recreational carrying capacity generally relates to social capacity and resource capacity. Social capacity is the level of use beyond which the user does not achieve a reasonable level of satisfaction in their recreational experience. Overcrowding is realized when social capacity is exceeded. Resource capacity is the level of use beyond which irreversible biological or

physical deterioration occurs or environmental degradation makes the resource unattractive or unsuitable for enjoyable recreational use. Overuse occurs when the resource capacity is exceeded. Carrying capacity is defined as the maximum potential level of use which avoids overuse or overcrowding. An area can be considered underused if the level of use is significantly below the carrying capacity, though this definition is subject to challenge. Studies have shown that in evaluating the carrying capacity of water-based recreation, social capacity factors (overcrowding) were generally more important than resource capacity factors (overuse).

"Carrying capacity" at a reservoir the size of Old Hickory Lake is difficult to quantify merely by statistics on numbers of visitors or boats, types of uses or users, trends of adjacent development, changing demographics, or other selected social or environmental factors. Much of the determination of overcrowding, in particular, tends to be subjective. One hunter may think that having another hunter in his area of the woods is too much. Some groups prefer to congregate in large dense groups, while others prefer small dispersed groups at picnic areas, swim beaches, or campgrounds. At heavily used launching areas or large marinas, congestion at the point of access may be a serious problem during heavy use periods, but overcrowding quickly is relieved a short distance from these facilities as users have a large area in which to disperse. Studies also indicate that overcrowding tends to exert a self-regulating force. As a comment attributed to Yogi Berra, "The place is so crowded, no one goes there anymore." As one area becomes increasingly crowded so that it impacts users' comfort levels, they are likely to go elsewhere. In general, even though overall use has continued to increase over the years, Old Hickory Lake is large enough to have avoided excessive overcrowding and overuse along the majority of its length. There are times and places that are exceptions, obviously at the busiest holiday seasons at the largest and most accessible facilities, or at minor accesses with limited parking.

Since the 1987 Master Plan Update, a National Recreation Reservation Service (NRRS) has been implemented nationwide which allows the general public to reserve specific campsites up to 180 days in advance and group picnic shelters up to 360 days in advance. This service can be accessed at www.recreation.gov, 7 days a week, 24 hours a day. This well-accepted program allows the public to know which areas have vacancies well in advance and helps to alleviate overcrowding.

At this time, and into the foreseeable future, the Corps has no plans of actively limiting uses beyond those already in place, such as routing users to other areas if a particular campground is full, restricting parking to designated parking spaces, ensuring that marinas do not install more moorage slips than their parking lots can accommodate associated vehicles, etc. If future public usage increases to the extent that significant use conflicts occur, a formal carrying capacity study may be warranted if it could lead to solutions not available in the absence of such a report. At this time, such a study would have little meaningful utility.

6-03 TREE VANDALISM

The character of Old Hickory Lake's shoreline is quite varied from when the lake was constructed almost 60 years ago. Today, the lower end of the lake is surrounded by residential and commercial development, while the upper reaches (above Hwy. 109) contain more agricultural land, forests, and bluffs. However, due to the favorable terrain, minimal holdings of public property, and the proximity to Metropolitan Nashville, private development within formerly remote areas is increasing. Consequently, continued residential development on private land bordering Old Hickory Lake boundary has resulted in tree vandalism and other serious encroachments on public property.

This scenic beauty and public values are degraded when adjacent property owners, including subdivision developers, trespass on public lands and cut mature trees to gain or improve a view of the lake to optimize the value of their private properties. In all cases, the violator knows, or should have known after due diligence, the location of the shared property line. Invariably, trespasses occur over the public property line, not adjoining private property, indicating knowledge of actual boundaries. In general, the public boundary lines are clearly marked by monuments, signs and/or paint on boundary trees in accordance with standard surveying methods.
Initial efforts to prevent vandalism included warnings, citations, and at times court action to recover damages. However, some homeowners and developers viewed monetary restitution as an acceptable trade-off for improved views, which was not the intent of enforcement measures.

Trees and vegetation on public property surrounding Old Hickory Lake are being severely vandalized or killed, often by adjacent landowners. A few of these individuals are simply misguided; however, we have found that most are deliberately performing a criminal act for personal gain. The cutting of trees or the damage or removal of any vegetation for any purpose, including the creation of lake views, pruning, landscaping, mowing, or under brushing is a federal crime and is punishable under the provisions of Title 36 Code of Federal Regulations, Part 327.14. Any person who violates the provisions may be punished by a fine, imprisonment, or both. These criminal acts may also be tried and sentenced in accordance with the provisions of Title 18, US Code, Section 3401.

The vast majority of the forested hillsides, including the privately owned lands adjacent to the public shoreline, once stretched unbroken for the entire 97 mile length of the lake from Cordell Hull Dam to Old Hickory Dam. This landscape of trees and wildlife is rapidly disappearing and being replaced with development that includes individual cabins and sub-divided neighborhood complexes of homes and streets. The relentless pressures of this residential development adjacent to public lands surrounding Old Hickory Lake is resulting in a significant increase in the number of cases of damage and destruction of trees and vegetation on public lands. Previous tree vandalism has often centered around adjacent lakeshore residents seeking personal financial gain and/or to obtain improvements to their personal property in the form of lake views and vistas for their homes.

Actions by individuals that involve the destruction of the environmental features of the lake and surrounding forested shoreline can also create severe erosion problems. The presence of the natural shoreline is necessary to maintain the water quality of Old Hickory Lake. Natural vegetation along the shoreline acts as a buffer and helps to purify runoff water and control erosion along the steep hillsides. People in the cities of Hendersonville, Gallatin, Mt. Juliet, Lebanon, and Hartsville all depend on Old Hickory Lake for their drinking water.

It is the Corps' goal to maintain and preserve the outstanding features of Old Hickory Lake for the full benefit of the general public and future generations. These violators are doing more than simply destroying government property – they are stealing. They are stealing from their neighbors, friends, and visitors to the lake by removing the picturesque and remote quality that attracts many varied users to Old Hickory Lake.

In the past several years, the Corps has worked closely with violators to either restore the damaged areas or to collect the monetary value of the damages, sometimes equaling tens of thousands of dollars, and utilize the money to enhance or protect the natural resources at the lake. However, the prevention of tree vandalisms, not compensation after the fact, is the Corps' primary objective. Therefore, a more effective approach is necessary to deter the acts of vandalism and to ensure the long-term environmental quality of the lake and surrounding shoreline. For this reason, all future acts of vandalism will be investigated and, when warranted, will be turned over to the United States Attorney's Office for prospective prosecution through the federal criminal court system. The Resource Manager and Park Rangers have identified this as a high priority and are working diligently to locate, investigate, and consider federal prosecution in all cases of destruction to public property. Punishment may include heavy fines, imprisonment, or both.

During recent investigations of tree vandalism cases, violators have intentionally provided false statements to Park Rangers concerning the facts of the cases. Any person who provides a false statement to a federal officer is subject to prosecution under Title 18, U.S. Code, Section 1001.
Citizens can help stop this degradation of lake scenery. Although the Corps is making every effort to locate and take the appropriate action against offenders, our most important asset could be the eyes and ears of the general public. Community members are invited to help protect this important natural resource and provide timely assistance by calling the U.S. Army Corps of Engineers Resource Manager's Office at Old Hickory Lake if they hear a chainsaw or heavy equipment at work in an area they believe to be public property. The identity of all individuals reporting unauthorized activities on publicly owned lands will be kept confidential, and all reported violations will be investigated.
Anyone who observes or has knowledge of theft, vandalism, or any other threat or suspicious activity against Corps property is also encouraged to participate in the "Corps Watch" program, which is a nationwide crime-watch program developed to protect public property managed by the Corps of Engineers. Each year, millions of your tax dollars are lost due to property damage from vandalism, larceny, arson, and environmental and cultural resource degradation. This program is designed to

heighten public awareness of the impacts of crime within or around dams, lakes, locks, recreation areas, and other Corps of Engineers property and facilities.

Authorized by Section 205 of the Water Resources Development Act of 2000 and the Economy Act (31 U.S.C. 1535), national funding is available to issue rewards of up to $1,000 to individuals for information leading to the arrest and prosecution of offenders. "Corps Watch" uses a 24-hour-a-day toll free hotline that assures the identity of the caller is protected and the proper authorities are notified. To report theft, vandalism, or any threat or suspicious activity against Corps property, please call the "Corps Watch" hotline at 1-866-413-7970.

Together, we can protect the natural shoreline around Old Hickory Lake as an unspoiled, natural, and timeless beauty. Please call the Old Hickory Lake Resource Manager's Office at (615) 822-4846, Monday – Friday from 7:00 a.m. to 4:00 p.m. CT for additional information or to learn how you can help protect the outstanding environmental quality of the land and water resources of Old Hickory Lake. As always, your assistance with our efforts to better manage these resources is greatly appreciated.

In addition to voluntary compliance, strict enforcement of non-compliance issues, and continued educational awareness, the Nashville District has implemented other measures to discourage adjacent landowners from vandalizing public property. Renewals for permits for boat docks will be conditioned such that the permit can be suspended or revoked if the holder is guilty of tree vandalism. At these sites, and sites where no permits are involved, large, yellow and black placards may be posted when appropriate on government property notifying the public of the violation and restricting access to public lands until the area is adequately restored. This is meant to deter potential violators who would prefer that visitors and prospective buyers not be faced with visual evidence of their actions.

6-04 FLOATING CABINS

Section 1035 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) allows for floating cabins within the Cumberland River Basin provided they meet guidelines established by the Corps intended to promote public safety and to prohibit private exclusive use of federal property. This guidance was developed by HQ USACE in conjunction with other State and federal agencies and published on May 26, 2015. The guidelines establish consistent policies and procedures, and clarify responsibilities, needed to facilitate the Corps' evaluation of requests for the addition of floating cabins and the associated moorings/slips in the Cumberland River Basin. This policy is applicable to floating cabins within outgranted marina areas in the Cumberland River Basin. Floating Cabins must be maintained to required health and safety standards, and in compliance with regulations for recreational vessels issued under chapter 43 of title 46, United States Code, and section 312 of the Federal Water Pollution Control Act (33 U.S.C. 1322).

6-05 USER FEES – ENTRANCE, LAUNCHING, AND PARKING FEES

ER 1165-2-400, dated 9 August 1985, authorizes the charging of user fees to the public to offset the costs of providing and maintaining recreation facilities and services. The Corps is limited to imposing user fees for use of campgrounds and specialized sites (day-use) which are directly operated by the Corps. Non-federal public agencies and outgrantees may charge entrance and user fees commensurate with the development and services provided. All entrance and user fees must be approved by the Corps. Facilities provided at Corps projects must be open to all on equal terms and require uniform fee schedules for public use. Fees associated with parking within commercial marinas must be consistent with the surrounding market.

6-06 OFF ROAD VEHICLES

In accordance with Executive Order 11644, the Nashville District has previously considered the appropriateness of designating and developing, or allowing the development of, areas for use of off-road vehicles. The 1987 Old Hickory Lake Master Plan update concluded that, "Investigations in conjunction with E.O. 11644 indicates no present need for a designated area."

The primary factor constraining development of a successful off-road vehicle system is that there are no large tracts not already utilized for higher public use purposes at Old Hickory Lake. Unauthorized use by off road vehicles (ORV) has resulted in erosion problems, destruction of wildlife food plots and other vegetation, conflicts with other recreational users, adverse noise impacts, and aesthetic degradation.
For the safety of users and protection of the environment, substantial planning needs to be involved in laying out potential off-road recreation areas, managing access and use, and administering fee collections. Such areas generally need to be dedicated primarily to this usage, as they are not normally compatible with the type of multiple use management typical of Corps lands surrounding Old Hickory Lake, such as hunting, fishing, photography, nature hikes, bird watching, equestrian use, etc.
There are examples of popular, well-run, dedicated ORV areas within reasonable drive times of Old Hickory Lake. For a list of ORV areas visit www.riderplanet-usa.com. It is conceivable that such future use could be considered at Old Hickory Lake if some combination of public and private lands could be found, along with an agency or organization willing to develop and administer such an area. However, developments and activities on Corps lands would have to meet all environmental and other applicable regulations and be wholly developed and managed without Corps funds or administrative involvement. At this time, no such sites or qualified organizations have been identified on Old Hickory Lake.

6-07 BOUNDARY LINE DISPUTES

The Corps strictly enforces the protection of public lands and waters from unauthorized private uses. Over the years, there have been occasional disputes over the location of the public boundary lines. These generally occurred when a developer contracted with a licensed surveyor who reported discrepancies

between the deed and the marked government boundary. When the survey appeared to place the private line closer to the lake, the developer often requested the government to re-survey its line or accept the findings of the new survey.

The government boundary line has been surveyed, marked, and periodically remarked for over 50 years. U.S. Code, Title 28, Part VI, Chapter 161, paragraph 2409(g) states that: "Any civil action under this section, except for an action brought by a State, shall be barred unless it is commenced within twelve years of the date upon which it accrued. Such action shall be deemed to have accrued on the date the plaintiff or his predecessor in interest knew or should have known of the claim of the United States."
Based on the above, the Nashville District's policy is that the marked government boundary has been in place for a sufficient time that we will no longer accept challenges to it. Project personnel can assist in identifying the marked boundary, which will be considered the definitive demarcation between Corps property and adjacent private or other non-Corps lands.

6-08 ENVIRONMENTAL COMPLIANCE

Marine Sanitation Devices. Old Hickory Lake is designated as a "discharge lake" for purposes of disposing of sewage from vessels with installed heads. U.S. Coast Guard regulations pertaining to Marine Sanitation Devices (MSDs) can be found at:
http://www.access.gpo.gov/nara/cfr/waisidx_00/33cfr159_00.html

Regulations pertaining to MSDs first came about in the Water Quality Improvement Act of 1970. Section 13 of that law mandated that the newly created Environmental Protection Agency (EPA) promulgate standards designed to prevent the discharge of untreated or inadequately treated sewage into waters of the United States. Section 13 was incorporated into the 1972 Federal Water Pollution Control Act Amendments of 1972 (later renamed the Clean Water Act) as Section 312, with two additions which allowed states to petition EPA to totally prohibit discharges into specified waters.

EPA designated two types of waters, (1) no discharge waters and (2) treated effluent waters, commonly referred to as discharge waters. No discharge waters included:

- Freshwater lakes, reservoirs, or impoundments whose inlets and outlets are such as to prevent the ingress and egress of vessels subject to Coast Guard regulations.
- Rivers not capable of interstate transportation.
- Other waters designated by the State as having special water quality needs which require stricter protection than Federal standards, such as water supply reservoirs. Requests for waivers must be fully justified and EPA must determine that adequate pump-out facilities are available before a petition would be granted.

Treated Effluent Waters included:

- Coastal waters and estuaries.

- Great Lakes and their connections.
- Freshwater lakes and impoundments accessible through locks.
- Flowing waters that are capable of interstate navigation by boats subject to regulation.

Vessels with installed head on Old Hickory Lake are allowed to discharge properly treated wastes from approved Marine Sanitation Devices in the lake waters.

6-09 CLEAN MARINA PROGRAM

The Clean Marina Program is a voluntary initiative that helps marina operators become more environmentally aware and protect the natural resources that provide their livelihood – clean water and fresh air. The Program is an education and outreach initiative that encourages the implementation of best management practices at marinas. Boaters are also encouraged to adopt environmentally responsible behaviors. "Clean Marina" designations recognize marinas for exceeding regulatory requirements by voluntarily incorporating higher environmental standards into daily operations. The Clean Marina Program also serves as a forum for sharing technical guidance on such items as solid and hazardous waste management, state and Federal regulations, and pollution prevention techniques. Originally developed in coastal states to address non-point source pollution under the Coastal Zone Management Act Reauthorization Amendments of 1990, Clean Marina Programs have been adopted or are being developed in 18 states (Alabama, California, Connecticut, Delaware, Florida, Georgia, Louisiana, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, South Carolina, Texas and Virginia), the District of Columbia and several Federal agencies including the National Park Service, the Tennessee Valley Authority, and the Corps of Engineers. With 456 lakes around the United States, the Corps of Engineers, with our partners, is the largest provider of marinas east of the Mississippi River.

Building on the solid foundation of our Environmental Operating Principles and in implementation of our Civil Works Strategic Plan, the Corps of Engineers strongly endorses the Clean Marina Program. Eight marinas within the Nashville District have been awarded Clean Marina status, two of which are on Old Hickory Lake. For more information on the Clean Marina Program, see:
http://www.wood.army.mil/engrmag/PDFs%20for%20Oct-Dec%2004/Treadway.pdf
http://www.cumberlandrivercompact.org/pdf/CleanMarinaIntroduction.pdf

6-10 CULTURAL RESOURCE VANDALISM

Archaeological sites are present throughout the Old Hickory Lake. Collecting artifacts and illegal excavation of sites is prohibited under Title 36 Code of Federal Regulations, Part 327.14 (Title 36) and the Archaeological Resources Protection Act (ARPA). In addition, the Archaeological Resources Protection Act also extends to historic resources over 100 years old, which includes buildings and structures. Archaeological sites, historic buildings, and historic structures are non-renewable resources.

Once the resource is damaged and destroyed, information about the resource is lost forever. As the stewards of these resources, the Corps is responsible for protecting and managing cultural resources for future generations.

The value of archaeological sites derives from the data and the context. The relationship of artifacts to one another spatially within a site provides insight into past cultures. When artifacts are removed from those contexts through uncontrolled excavation, the context is lost and little meaning can be assigned to the artifacts. Moreover, looters tend to be interested in specific complete artifacts such as projectile points, pots, or items of personal adornment. In the search for artifacts that may be salable on the black market, looters frequently destroy middens, which may be rich with information relating to diet (such as charred seeds and bones), pot holes, which reveal information on houses, families, and structures, burials, and other data rich features. Metal detecting is equally disruptive, because digging the metal object from the ground destroys the context and removes the object from the site. In turn, any future investigations of the site would be missing important pieces of information that lead to reliable interpretations about the past.

Looting is an illegal, unethical, and selfish act that leads to the loss of public resource and incurs public expense. Looting is punishable under Title 36 and ARPA. Under ARPA, looting is a felony and a first offense may result in fines up to $100,000 and one year in prison. A second offense may result in a maximum fine of $500,000 and five years in jail. Alternatively, illegal looting activities may be prosecuted under Title 36. In addition, to the expenses incurred relating to the prosecution, the Corps must act to inventory the site damage, stabilize damage sites to prevent further natural erosion, and curate artifacts in perpetuity.

Citizens providing tips leading to the arrest and prosecution of offenders may be rewarded up to $1,000. The Archaeological Resources Protection Act, Section 205 of the Water Resources Development Act of 2000, and the Economy Act (31 U.S.C. 1535) authorize such awards. The “Corps Watch” toll free hotline at 1-866-413-7970 is available 24-hour-a-day to report theft, vandalism, or any threat or suspicious activity against Corps property. Caller identify is protected and the proper authorities are notified.

Legitimate excavations of archaeological sites is permissible by obtaining an Archaeological Resources Protection Act Permit. An ARPA permit application requires a research design, field methodology, curation agreement, and supervision by an archaeologist that meets the Secretary of Interior’s qualifications for professional archaeologists (36 CFR part 61). Pursuant to Corps regulations, ARPA permits applications are minimally reviewed by the Resource Manager’s office, Real Estate Branch, and Cultural Resource Management staff.

6-11 METAL DETECTING

Due to the potential to destroy archaeological sites and other natural resources, metal detecting is only permitted in several designated use areas. The designated metal detecting use areas for Old Hickory

Lake are the sand beach areas within the Cedar Creek Recreation Area, Laguardo Recreation Area, Lock 3 Recreation Area, and Old Hickory Beach. Metal detecting is prohibited in all other areas of Old Hickory Lake.

6-12 PADDLESPORTS

Paddlesport has been growing in popularity in recent years and continues to grow with more than six percent of Americans participating in paddling in 2013. Canoes and kayaks account for 29% of the recreational boats owned in 2012 in the U.S. Paddling participants national made 202 million annual outings in kayaks, rafts, canoes and stand up paddle boards. Access to the lake for paddlers is found in 27 access areas, 15 recreation areas, along the shoreline from adjacent private property, and are even areas without launching ramps. The project staff has been working with special interest groups to provide information on access points and specific blueways. Popular locations include creeks, coves, shallow parts of the lake, and along the shoreline away from the main navigation channel. The PFD or life jacket is the single most important piece of safety equipment and must be carried with you. They make PDF that are specific for paddlesports and should be worn whenever on the water. More information can be found at http://www.paddletsra.org/ or http://cumberlandrivercompact.org/recreationmap/.

6-13 FEDERAL FUNDING ENVIRONMENT

A significant change since the original Master Plan and subsequent updates which has significantly affected the Corps/outgrantee relationships and potential for future recreational development is the federal funding environment. Initially, many of the recreation areas designated in earlier Master Plans were, at least in part, developed by the Corps. Many access roads, parking lots, launching ramps, restrooms, and other support facilities were constructed or improved by the Corps at full federal expense in order to attract new concessionaires to meet public recreation demands. Later, provisions of Public Law 89-72 required cost-sharing partners to develop further recreational improvements. Under both scenarios, after an operator was selected through open competition and developed the site for full public use, the Corps continued to maintain the federally constructed portion of the site, including re-paving of parking lots and access roads within its boundaries. Parking and launching was free to the using public. Due to funding constraints over the last two decades, the Corps was unable to continue this service. Concessionaires were encouraged to assume maintenance responsibilities in exchange for authority to charge reasonable fees for public launching to recoup some of their costs. In addition, concessionaires were authorized, upon meeting qualification requirements, to charge for "managed parking." Few marinas, to this point, have charged for parking.

Unless unexpected changes occur in the Corps' funding environment, it is unlikely that the Corps will be able to participate in cost-sharing arrangements with local or state governments to improve local lake access points with substandard conditions regarding safety, adequate parking, and maintenance. Most

sites identified in the original Master Plan as having significant potential for commercial recreational development have been developed. The widespread national economic downturn that occurred in 2008 and 2009 led to a further softening of the economic environment for existing concessionaires and resulted in an excess of slip inventory. Authorizing additional competitive forces during this weak market condition could result in substantial negative impacts to these concessionaires.

Due to the aforementioned federal funding regime, unless the Corps itself proposes to develop an area, potential applicants would likely be responsible for completing a full market analysis and feasibility study and funding required environmental and cultural studies. At this time, the Corps has no plans to independently or jointly develop additional public recreation areas or facilities. A critical point to emphasize in this update is that, while economic development and resulting positive impacts to the local and regional economy are definite factors in evaluating proposals for recreation development, the primary consideration is the public need for, and public benefits to be achieved by, the proposal. At times, residential subdivision or commercial developers have requested to construct launching ramps or marinas to service their adjacent developments. The Corps does not authorize recreational access or other development activities for the primary purpose of enhancing the value of adjacent private developments.

6-14 GUIDELINES FOR ISSUANCE OF OUTGRANTS

National Land Use Policy for Recreational and Non Recreational Outgrants

A national land use policy for recreational outgrants, titled “Recreational Outgrant Development Policy”, was issued by the Corps in December, 2005. This policy outlines the Corps’ philosophy and guidelines related to the acceptable types of uses of Corps-managed public lands. A sister policy for activities not involving recreation, such as roadways, utilities, commercial or residential development, municipal requests for infrastructure, state and federal agency requests for use of Corps-managed lands, etc. was published 30 March 2009 titled “Non-Recreational Outgrant Policy". Both policies have been incorporated into the ER-1130-2-550 in Chapter 16 and 17.

Nashville District Outgrant Guidelines

A Real Estate outgrant is generally defined as a written document setting the terms and conditions of non-Army use of public property, and conveys or grants the right to use Army-controlled real property. Outgrant uses include such activities as public park and recreation leases, commercial concession leases, fish and wildlife licenses, agricultural leases, easements for communication uses, power lines, pipelines for water withdrawal and leases for quasi-public uses such as group camps. Each outgrant proposal will be reviewed for compatibility with all project purposes, current policies and regulations to include ER-1130-2-550, Chapter 16 and 17, ER 405-1-12, Chapter 8, environmental impacts and concerns, cultural resources effects and compliance, fish and wildlife, endangered species, public sentiment and the overall public interest. Outgrant requests will be processed in accordance with the Standing Operating Procedures (SOP), Processing Major Outgrants and standard processes set by USACE.

All federal actions are subject to NEPA (National Environmental Policy Act) coordination and compliance reviews. Minor requests with minimal environmental impact may not require a formal assessment. Requests involving more than minor impacts may require an EA (Environmental Assessment) or EIS (Environmental Impact Study). Assessments must consider, among other factors, cultural and historic resources, water quality, air quality, threatened and endangered species, economic and social impacts, aesthetics, hazardous substances, and cumulative impacts. Coordination also occurs with corresponding Federal agencies, state agencies, and public involvement with respect to requested activities.

6-15 THE SHORELINE MANAGEMENT PLAN

The Shoreline Management Plan is an appendix to the Old Hickory Lake Operational Management Plan and can be viewed at: http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll7/id/870 .

6-16 FRIENDS GROUPS

The lake community could benefit from a citizens volunteer group should as Friends of Old Hickory Lake that could have an interest in volunteer efforts around the lake and work to help provide environmental educate and/or awareness. The Friends of Old Hickory Lake would be a not-for-profit organization dedicated to the protection and conservation of Old Hickory Lake and support of the U.S. Army Corps of Engineers, similar to the Friend of Dale Hollow Lake. The purpose of the Friends of Dale Hollow Lake is to be a cooperative association with the U. S. Army Corps of Engineers and to provide coordination, communication, promotion and development of activities by the resource manager's office of Dale Hollow Lake. The Corporation has as its purpose the interpretation for the public's benefit and education of the archeological, natural, cultural, and historical environment and assistance in the interpretive activities through the use of programs, exhibits, displays and materials.

6-17 WATER SUPPLY

Old Hickory Lake is the most intensively used lake for municipal and industrial(M&I) water supply in the Cumberland River basin. Water is released from reservoirs upstream based on conditions (pool elevation, temperature, water quality) at Old Hickory Lake, which are influenced by water supply use. There are currently fifteen municipal water withdrawals from Old Hickory Lake. Six community water systems—White House, Hendersonville, Gallatin, West Wilson, Lebanon, Hartsville, Nashville-Old Hickory, and Carthage service 300,000 residents (TDEC 2014). The Corps instituted a moratorium on all new M&I water withdrawals from Old Hickory in January 2010 because of concern over impacts to authorized purposes(extremely adverse water quality conditions, inability to meet minimum hydropower production schedules, inadequate depth for navigation above Nashville) exacerbated by water supply withdrawals. An initial evaluation confirmed the amount of water supply withdrawals exceed the amount of natural inflows from the Old Hickory watershed during periods of critical drought. This means that water released from storage in upstream reservoirs is being relied upon to satisfy water supply withdrawals from Old Hickory Lake and mitigate potential impacts due to those withdrawals.

There is currently no surplus water or available storage at Old Hickory Lake to reallocate for additional M&I water withdrawals. Additional loss of water quantities as needed for M&I users would negatively affect navigation, hydropower, water quality and existing water supply users. However, if it is determined that storage can be provided from upstream reservoirs then the moratorium would be lifted in conjunction with the establishment of contractual agreements with water supply users for use of that storage. The terms of these agreements would ensure that the Water Supply Act of 1958 is being followed, and that payment for use of storage is begun before the new use is authorized. However, this process is beyond the scope of the Master Plan update.

CHAPTER 7 PUBLIC COORDINATION

7-1 INTERDISCIPLINARY, INTERAGENCY, AND PUBLIC COORDINATION RELATED TO MASTER PLAN UPDATE PROCESS

A major purpose of Master Planning documents, including appendices, is to set forth the basic operating and management philosophies for Corps of Engineers projects. It is imperative that the preparation of these plans include, to the fullest extent possible, input by, and coordination with, all members of the affected public and representatives of its interests. EP 1130-2-550 contains specific coordination and public involvement requirements. These include in-house, interdisciplinary coordination and review, interagency and public coordination, and notification of Congressional interests. To this end, the Corps formed an internal team of Nashville District Office personnel, with representatives of Operations, Office of Counsel, Real Estate, Water Quality, Engineering and Planning, and Old Hickory Project personnel including park ranger and management. This team identified representatives of various public interest groups to assist in developing an initial draft, or "strawman," update for presentation to the general public, agencies, and Congressional interests for review and comment. These representatives included members from counties surrounding the lake, marina associations, tourism organizations, and state and federal resource agencies. The make-up of the team, minutes of meeting and responses to comments and recommendations are provided with this update. As input was received, it was incorporated, as applicable, into the draft Master Plan. An Environmental Assessment evaluating the impacts of implementation of this update has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), including public interest review. Initial areas identified by the stakeholder group on July 30, 2014 meeting for consideration in this update are summarized below. Some topics were consolidated for ease of reference. Some of these initial areas were incorporated into the plan and final responses will be found in Appendix D.

- Clean Water Education for Visitors (environmental education)- including water quality
- Improve physical activity through recreation (areas/opportunities)
- Water Quality Improvement Projects
- Historic Ferry Crossing
- Encourage Volunteer Groups- Friends of Old Hickory
- Care for Habitat , Especially for Sensitive Species, use Environmental Sensitive Areas
- Opportunity to host national events (ex: national rowing competition)
- Archaeological Resources included
- Dredging
- Recreation through greenways, trails and paddlesports
- Encourage recreation in less utilized areas of the lake
- Protecting island habitats from bird overpopulation
- Wetland Mitigation
- Increase opportunities for local governments to lease areas

Corps employees hosted two public workshops, which was conducted in a semi- structured manner. Participants were asked to sign-in at a table where staff provided the participants with information regarding the structure on the workshop, comment forms, business card with location for electronic documents for the MP information and how to provide comments. After signing in, participants were directed to areas where topic-specific information tables were set up. Display boards were displayed at different tables to convey information about the following topics:
Public Involvement Process
Project Overview
Overview of the Master Plan update
Overview of the Environmental Assessment
Master Plan Resource Objectives
Overview of Recreation Areas
Land and Water Surface Classifications including Maps
How to Submit Comments

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

- Fill out a comment form at the public workshop;
- Take a comment form home to be returned;
- Submit a comment using electronic mail; and/or
- Submit a comment and mailing it in on letterhead or choice of paper.

Comments were received from concerned citizens and other stakeholders. In total, 19 comments of some form were received. Of these, nine comments were related to land classification of Future Recreation Site #184, Walton Ferry Park. Eight comments were in favor of the change that was proposed in the public comment period but two comments were in favor of more public property (adjacent to their private public) to be reclassified vegetative management and to be excluded from site #184. One comment was received that wanted site #184 removed completely from the future recreation classification.

Twenty three people signed in at the public meetings. Five people submitted written comments during the public workshop and another eight comments were received after the meeting. The comment period extending 46 day after the public workshops and closed on October 5, 2015. The information provided in the feedback from these agencies and the public was then utilized to formulate a final version of the MP. A summary of these comments and their responses can be found in Appendix D.

7-2 TIMELINE FOR MASTER PLAN UPDATE

Narrative of dates of interagency and public workshops discussing the process and involvement in the development of the MP is below in Table 19.

Table 19- Timeline for Master Plan interagency and public involvement in the development of the MP

EVENT	DATE	INVOLVEMENT
Initial Meeting	March 27, 2014	Internal Corps meeting
Old Hickory Master Plan Update Initiated	March- May, 2014	Initiate Master Plan, develop internal Corp project delivery team(PDT), written "strawman" MP initiated
Initial PDT meeting	May 13, 2014	Employees from Operations Branch, Office of Counsel, Real Estate, Water Quality, Engineering, Planning, and Old Hickory Resource Manager's office
PDT meeting	July 2, 2014	PDT meeting
Scoping Letter	June 9, 2014	Solicitation of public and agency comments concerning social and environmental issues that should be addressed in Environmental Assessment and Master Plan
Letter requesting stakeholder participation	June, 2014	Invite Agency Stakeholder Participants and make congressional interest aware
Stakeholder Meeting	July 30, 2014	Discuss Master Plan
Master Plan Prepared	July 2014 – August 2015	Prepare Draft Master Plan(including numerous internal meetings)
Follow up stakeholder engagement	June-July 2015	Provide Draft MP, classification maps, park plates to stakeholder team. Receive emails and discussion
Public Review period open	August 4, 2015 - October 5, 2015	Receive , document, and incorporate comments
News Release	August 4, 2014	New release to local newspapers about public meetings Post on facebook and website
Notify Congressional interest of workshops	August 11, 2015	Courtesy email to congressional interests
Notification of comment period	August 13, 2015	Letter sent to agencies and tribes
Draft MP and EA Published	August 14, 2015	MP, EA, and all associated documents available to all public on Old Hickory Lake Web site.
Public Workshop	August 18, 2014 and August 20, 2015	Workshops at Old Hickory Lake Resource Manager's Office in Hendersonville, TN on the 18th and Mt. Juliet High School in Mt. Juliet, TN on the 20th
Comments to Public Workshop	August 14, 2015 - October 5, 2015	Document and incorporate as necessary
Master Plan Update signed and finalized	January 13, 2016	Announce and distribute as necessary

CHAPTER 8 SUMMARY OF RECOMMENDATIONS

8-01 RECOMMENDATED CLASSIFICATION AND FUTURE DEVELOPMENT

This is a list of the recommended changes in classification from the 1987 Master Plan. Future development is also listed but may have been identified in the 1987 Master Plan also.

Table 20- Proposed Development and Land Use Classifications

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
		Project Operations	
NC-NO CHANGE **Y**- YES CHANGED FROM			
NC	99	Damsite	Nothing Proposed At This Time
		High Density Recreation	
NC	101	Old Hickory Beach	Relocate Road; Additional Parking; Remove And Replace Boat Ramp; Additional Picnic Sites
NC	102	Rockland Recreation Area	Landscaping; Walking Trails; Renovations To Tailwater Fishing Access
Y-not classified in 1987	103	Smith County Park	Optimum Development; No Additional Development Except Interpretive Exhibits
NC	104	Tailwater Left Bank Recreation Area	Replace The Waste Water Treatment Plant.
NC	105	Drakes Creek Park	Nothing Proposed At This Time
NC	106	Memorial Park	Nothing Proposed At This Time
NC	111	Cages Bend Campground	Site Upgrades; Restroom Renovation
NC	120	Bledsoe Creek State Park	State Operated
Y-low density	121	Nat Caldwell Recreation Area	Nothing Proposed At This Time
NC	123	Lock 3 Recreation Area	Picnic Shelter To Be Added

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
Y-low density	125	Taylors Landing Access	Nothing Proposed At This Time
NC and wildlife mgmt	126	Lock 4 Park	No Future Development Planned
NC	135	Martha Gallatin Recreation Area	Nothing Proposed At This Time
NC	136	Laguardo Recreation Area	Landscaping
NC	138	Sanders Ferry Park	Nothing Proposed At This Time
NC	141	Lone Branch Recreation Area	Acquisition Of 4.3 Acres; No Future Development Planned
NC	142	Cedar Creek Recreation Area	Widening Roads, Adding Parking In Day Use, Relocating Dump Station
NC	146	Shutes Branch Recreation Area	Replace Comfort Station
NC	152	Walton Ferry Access Area	Nothing Proposed At This Time
NC	153	Mallard Point Park	Nothing Proposed At This Time
Y-low density	200	Old Union Access	Nothing Proposed At This Time
NC	203	Tyree Access	Nothing Proposed At This Time
Y-low density	205	Davis Corner Access	Nothing Proposed At This Time
Y-low density	210	Avondale Recreation Area	Land Exchange; Additional Parking For Trailers
Y-low density	214	Sumner County Access	Nothing Proposed At This Time
Y-low density	219	Cairo Access	Nothing Proposed At This Time
Y-low density	221	Saundersville Access	Nothing Proposed At This Time
Y-low density	224	Second Creek Access	Nothing Proposed At This Time
Y-low density	227	Carthage Access	Nothing Proposed At This Time
Y-low density	228	Rome Ferry Access	Nothing Proposed At This Time
NC	229	Dickerson Chapel Access	Nothing Proposed At This Time
Y-low density	230	Hunters Point Access	Nothing Proposed At This Time
Y-low density	232	Barton's Creek Access	Nothing Proposed At This Time

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
Y-low density	234	Coles Ferry Access	Nothing Proposed At This Time
Y-low density	240	Riverview Access	Nothing Proposed At This Time
Y-low density	261	Liberty Branch Recreation Area	Nothing Proposed At This Time
Y-low density	262	Cedar Grove Access	Nothing Proposed At This Time
Y-low density	263	Bull Creek Access	Nothing Proposed At This Time
Y-low density	264	Stark Knob Access	Nothing Proposed At This Time
Y-wildlife mgmt	265	Gallatin Soccer Fields	Nothing Proposed At This Time
Y-low density	266	Station Camp Creek Access	Nothing Proposed At This Time
NC	268	Tailwater Right Bank	Nothing Proposed At This Time
Y-wildlife mgmt	270	Pine Cove Access	Nothing Proposed At This Time
Y-wildlife mgmt	287	Goose Creek Access	Nothing Proposed At This Time
NC	355	Blue Turtle Bay Marina	Nothing Proposed At This Time
NC	369	Shady Cove Marina	Nothing Proposed At This Time
NC	372	Cedar Creek Marina	Nothing Proposed At This Time
NC	373	Gallatin Marina	Nothing Proposed At This Time
NC, and wildlife mgmt	374	Drakes Creek Marina	Nothing Proposed At This Time
NC	376	Bentleys Landing Access	Nothing Proposed At This Time
NC	377	Cherokee Resort	Nothing Proposed At This Time
NC	378	Anchor High Marina	Nothing Proposed At This Time
NC	390	Creekwood Marina	Nothing Proposed At This Time
Y-wildlife mgmt	391	Bluegrass Country Club	Nothing Proposed At This Time
Y-wildlife mgmt	392	Cedar Creek Yacht Club	Nothing Proposed At This Time
Y-wildlife mgmt	393	Harbor Island Yacht Club	Nothing Proposed At This Time
Y-wildlife mgmt	394	The Boathouse at Benders Ferry	Nothing Proposed At This Time
Y-low density	601	Sandy Chapel	Nothing Proposed At This Time

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
		Low Density Recreation	
NC	146	Shutes Branch Bike Trail	Nothing Proposed At This Time
Y-wildlife mgmt	271	Drakes Creek Greenway	Nothing Proposed At This Time
NC	402	Fraternal Order of Police Camp	Optimum Utilization Is Being Realized
NC	404	Camp Boxwell	Optimum Utilization And No Future Expansion Plans
NC	405	Ruilman Rehabilitation Center	No Immediate Expansion Plans
Y-wildlife mgmt	408	Whispering Pines	Nothing Proposed At This Time
Y-wildlife mgmt	602	Walton Ferry Environmental Study Area	Nothing Proposed At This Time
		Future Recreation	
Y-high density& future	182	Spencer Creek	Proposed Development Could Include Access Road, Parking Areas, A Major Beach Area, A Bathhouse, 50 Picnic Units (18 To Be Located In 3 Shelters), A Playground, 2 Comfort Stations, A Short Hiking Trail And A Bicycle Trail
Y-high density& future, *reduced the size of the area	184	Walton Ferry Park	Proposed Facilities Consist Of A Trail *2 narrow fringes of shoreline less than 2.5 acres removed from the site, reclassified vegetative management
Y-wildlife mgmt& future	185	Luna Park	Proposed Facilities Consist Of A Trail, Picnic Sites, And A Playground
Y-low density& future	188	Oakland	Proposed Development Will Include Trails, Wildlife Observation Areas And Other Low Density Activities.
Y-wildlife mgmt& future	189	Smith Branch	Site Development Could Include Boat Access, Comfort Station, Multiple Shelter, And Significant Amount Of Parking Due To This

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
			Popular Location Of The Lake For Boaters.
Y-wildlife mgmt	190	Spring Creek	Proposed Development Could Include Trails, Fishing Pier, Picnicking Sites, And Access Boat Ramp
Y-wildlife mgmt	191	Woods Ferry	Proposed Development Could Include A Boat Ramp And Courtesy Dock.
Y-low density and wildlife mgmt	256	Rehobeth	Proposed Development Could Include Trails, Wildlife Observation Areas, Limited Picnicking Sites, And Other Low Density Activities.
Y-wildlife mgmt, quasi public area *reduced the size of the area slightly	401	Lincoya Camp	Remain Available For Future Use As A Quasi-Public Group Camp * narrow fringe of shoreline less than .8 acres removed from the site, reclassified vegetative management
Y-low density, future quasi public area	403	Scarritt Camp	Remain Available For Future Use As A Quasi-Public Group Camp
Y-low density	406	Easter Seal Camp	Remain Available For Future Use As A Quasi-Public Group Camp
Y-wildlife mgmt, future quasi public area reduced the size of the area slightly	407	Group Camp(Proposed)	Include With 406 Easter Seal Camp *narrow fringes of shoreline less than .2 acres removed from the site, reclassified vegetative management
		Wildlife Management	
Y-high density& future	181	Dickerson Chapel	Proposed development could include access road, parking areas, a comfort facility, picnic facilities, a playground, and hiking trails.
Y-low density& future	183	Brumley Branch	Boat-In Primitive Camping Units, Hiking Trails, A Service Road And Sanitary Facilities

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
Y-low density& future	186	Indian Ladder Bluff	Proposed Facilities Will Include Trails, Food Plots And Areas For Wildlife Observation
Y-low density& future	187	Rocky Creek	Proposed Development Will Include Trails, Food Plots, Wildlife Observation Areas And Other Low Density Activities.
Y-low density& environmental area	601	Sandy Chapel	Nothing Proposed At This Time
		Environmentally Sensitive Areas	
Y-wildlife mgmt & Enviro.	603	Lock 5 Historic Site	No Development
Y-wildlife mgmt& Enviro.	605	Lock 6 Historic Site	No Development
Y-low density	606	Hartsville Battlefield	No Development
Y-low density	607	Promontory Way Peninsula	No Development
Y-wildlife mgmt	608	Cages Bend Island Area	No Development
Y-wildlife mgmt	609	East Camp Creek Mud Flats	No Development
Y-wildlife mgmt	610	Headwater E. Camp Creek	No Development
Y-wildlife mgmt	611	Cedar Creek Upper End	No Development
Y-wildlife mgmt	612	Little Creek/Benders Ferry	No Development
Y-wildlife mgmt	613	Lone Branch Cove	No Development
Y-wildlife mgmt	614	Spencer Creek/Davis Corner	No Development
Y-wildlife mgmt	615	Bartons Creek	No Development
Y-wildlife mgmt	616	Hartsville Bluffs	No Development

Change in class from 1987 Update	Site #	Name	Proposed Development in MP Update
Y-wildlife mgmt	617	Spring Creek Field	No Development

8-02 SIGNIFICANT CHANGES TO THE REVISED MASTER PLAN

ER-1130-2-550 and ER 1130-2-540 and their implementing guidelines were issued in 2013. The primary goals, objectives, and guidelines are reflected in this Master Plan. The full text of these regulations is available on-line. Only the major changes and statements of particular interest have been addressed here and should reflect only a summary of the major changes in the MP.

Changes Related to the Master Plan. These include not only changes to the Master Plan document or regulations themselves, but also new policies, guidelines, and funding realities that affect the administration of Old Hickory Lake.

- **Web Based Master Plan:** The Master Plan Update and all associated documents will be posted on the internet to encourage fast and easy access for the public, as well as allow for changes to statistics, figures, and documents to be made significantly faster than it would be to reprint paper copies.

- **Increased Outgranting:** If non-Corps entities are willing and able to assume responsibilities for operating and maintaining existing public recreation facilities or develop new facilities that meet or exceed Corps standards, and provide the public an equal or better level of service, the Corps has a strong interest in partnering to do so.

- **The Federal Funding Environment:** Due to funding constraints over the last two decades, the Corps has been unable to continue development or cost sharing in recreation developments. Concessionaires have assumed maintenance responsibilities in exchange for authority to charge reasonable fees for public launching and “managed parking” to recoup some of their costs.

- **Land Allocation/Classification:** EP 1130-2-550 (2013) outlined land use allocations and classifications that need to be designated for all lands within Corps jurisdiction. Categories in 1987 included Wildlife and Forest Lands, Operational Lands, Environmental or Historic Lands, and Recreation Lands. Classification outlined in EP 1130-2-550 and the corresponding designations for Lands on Old Hickory Lake can be found in Chapter 4. Acres for each classification can be found in Table 21.

Table 21- Approximate Land Use Classifications Acres

CLASSIFICATION	ACRES IN 1987 MP	ACRES IN 2015 MP
PROJECT OPERATIONS	96	87
HIGH DENSITY RECREATION	2783	790
LOW DENSITY RECREATION	1295	205
FISH AND WILDLIFE	4137	--
ENV SENSITIVE AREAS	--	427
WILDLIFE MANAGEMENT	--	4662
VEGETATIVE MANAGEMENT	--	1518
FUTURE RECREATION		237
TOTAL	**8301**	**7926**
FLOWAGE EASEMENT LANDS	3272	3272
POOL AREA AT 445'MSL	22500	2250
TOTAL PROJECT WITH EASEMENT	**34073**	**33698**

- **Off Road Vehicle Use:** In reviewing E.O. 11644, it was concluded that the designation of Off Road Vehicle trails is inconsistent with the typical multiple resource management practices, such as management for hunting, fishing, photography, nature hikes, bird watching, etc.

- **Carrying Capacity:** At this time, and into foreseeable future, the Corps has no plans of actively limiting uses beyond those already in place. If future public usage increases to the extent that significant use conflicts occur, a formal carrying capacity study may be warranted if it could lead to solutions not available in the absence of such a report. At this time, such a study would have little meaningful utility.

- **Tree Vandalism:** Efforts to prevent vandalism include warnings, restitution agreements, citations, and at times court action to recover damages. Language was added to the 2008 Shoreline Management Plan allowing a moratorium to be placed on issuing of any permits/license in the affected and damaged area.

- **Boundary Line Policy:** Nashville District's policy is that the marked government boundary has been in place for a sufficient time that we will no longer accept challenges to it. Project personnel can assist in identifying the marked boundary, which will be considered the definitive demarcation between Corps property and adjacent private or other non-Crops lands. Responsibility falls on the land owner to get any boundary line disputes surveyed.

- **Floating Cabins:** Section 1035 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) and the associated HQ USACE floating cabin implementation policy, dated May 26, 2015, establish consistent policies, procedures, and responsibilities to facilitate the Corps'

evaluation of requests for the addition of floating cabins and their associated moorings/slips in the Cumberland River Basin. Public safety is paramount in the Corps' review of requests for floating cabins, as well as ensuring maximum public access to our incredible recreation areas by preventing private exclusive use.

- **User Fees:** Concessionaires are authorized to implement user fees to the public to offset the costs of providing and maintaining recreation facilities and services.

- **Clean Marina Program:** "Clean Marina" designations recognize marinas for exceeding regulatory requirements by voluntarily incorporating higher environmental standards into daily operations. The Clean Marina Program also serves as a forum for sharing technical guidance on such items as solid and hazardous water management, state and Federal regulations, and pollution prevention techniques.

- **Environmental Operating Principles:** These principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all Corps activities.

- **Nashville District and National Parking Policies:** This documents Nashville District's requirements for parking and launching facilities for all areas in the District.

- **Nashville District Fill Policy:** This policy contains the guidelines for cut and fill in the Nashville District, primarily stating that no net loss in storage is permitted.

- **Recreation Development Policy for Outgranted Corps Lands:** This policy contains guidance to establish consistent, nationwide policy that will be applied to evaluate request for recreation development at Corps water resources development projects. The intent is to provide public outdoor recreation opportunities that support project purposes and meet the recreation demands created by the project itself while sustaining our natural resources.

- **Non-Recreational Outgrant Policy:** This policy contains guidance to establish a consistent, nationwide policy that will be applied to evaluate non-recreational real estate outgrant requests for use of Civil Works lands and waters. The intent is to meet legitimate needs for the use of project lands and waters while sustaining our natural resources and protecting authorized project purposes.

- **Environmental Sensitive Areas:** The establishment of Environmental Sensitive Areas (ESA's) was called for in the Corps' 2013 Master Planning regulations. Old Hickory has a wealth of special areas that are deserving of such recognition, due to their aesthetic, cultural, ecological, or scientific values. Several areas have been reclassified ESA.

CHAPTER 9 BIBLIOGRAPHY

Availability of Online Information

One particularly important societal change since the 1987 update that has had a tremendous impact on the availability of current information is the nearly universal access to the internet and electronic mail. This allows anyone with a desire to know to gain immediate access to the latest demographic makeup and trends associated with any county in the Old Hickory Lake and surrounding area, the economic base of the region, access to local, state, and federal databases of a whole host of subjects such as threatened and endangered plant and animal species, water quality, environmental studies, tourism information, employment, and even the latest public notices and status of Corps activities, such as emergency operations, water levels, or public meetings. Obviously, such information in static form in a Master Planning document would be quickly outdated. Therefore, that type of information, which was a routine component of earlier Master Plans is not presented in this document. Internet search functions for Old Hickory Lake will generally allow access to the full text of laws, regulations, and major policies cited in this update. Where not obvious, every attempt will be made to guide the reader to applicable citations. In addition, the Corps of Engineers maintains an exhaustive information base about the Corps, its activities, projects, regulations, etc., including those pertaining to Old Hickory Lake, at http://corpslakes.usace.army.mil/. For answers to questions that cannot be found through these resources, there is always e-mail and one-on-one personal communication. Questions or comments can be directed to the Resource Manager Office at 5 Power Plant Road, Hendersonville, TN 37075, phone 615-822-4846 or to the Nashville District Corps of Engineers, Natural Resources Management Branch, P.O. Box 1070, Nashville, TN 37202-1070, phone 615-736-5118.

This report has been prepared in accordance with guidance contained within the following references:

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EP 1130-2-540, Environmental Stewardship Operations and Maintenance (1996).

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APPENDIXES

APPENDIX A LAND CLASSIFICATION PLATES, SEAPLANE LANDING ZONES

APPENDIX B PARK MAP PLATES

APPENDIX C NEPA DOCUMENTS

APPENDIX D SUMMARY PUBLIC COMMENTS

APPENDIX E TWRA WILDLIFE MANAGEMENT AREA MAP