

T E N N E S S E E   V A L L E Y   A U T H O R I T Y



# Multiple Reservoir Land Management Plans

DRAFT ENVIRONMENTAL IMPACT STATEMENT

## *Volume IV* *Great Falls Reservoir*

December 2016





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# **GREAT FALLS RESERVOIR**

*Draft Reservoir Land Management Plan*

## **VOLUME IV**

### **MULTIPLE RESERVOIR LAND MANAGEMENT PLANS DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Prepared by  
Tennessee Valley Authority

December 2016

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## **ACRONYMS AND ABBREVIATIONS**

<b>APE</b>	Area of Potential Effect
<b>CFM</b>	Caney Fork Mile
<b>cfs</b>	Cubic Feet per Second
<b>CVLP</b>	Comprehensive Valley Wide Land Plan
<b>EIS</b>	Environmental Impact Statement
<b>EO</b>	Executive Order
<b>msl</b>	Mean Sea Level
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NEPA</b>	National Environmental Policy Act
<b>NHPA</b>	National Historic Preservation Act
<b>NRHP</b>	National Register of Historic Places
<b>NRI</b>	Nationwide Rivers Inventory
<b>NRP</b>	Natural Resource Plan
<b>NWI</b>	National Wetland Inventory
<b>RLMP</b>	Reservoir Land Management Plan
<b>RVSMP</b>	Reservoir Vital Signs Monitoring Program
<b>SHPO</b>	State Historic Preservation Officer
<b>SMI</b>	Shoreline Management Initiative
<b>SMP</b>	Shoreline Management Plan
<b>TVA</b>	Tennessee Valley Authority
<b>TVA Board</b>	TVA Board of Directors
<b>USDA</b>	U.S. Department of Agriculture
<b>Valley</b>	Tennessee River Valley Region

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## CHAPTER 1. INTRODUCTION

The draft Great Falls Reservoir Land Management Plan (RLMP) is a study of the Tennessee Valley Authority (TVA)-managed public land surrounding Great Falls Reservoir. It is one of eight draft RMLPs considered under Alternative B of this Environmental Impact Statement (EIS). The EIS Volume I contains information on the scoping process, allocation process, alternatives, comparison of the alternatives, and analysis of impacts. In addition, the EIS contains a summary, an index, and appendices.

Volume IV of the EIS address TVA’s draft RLMP for Great Falls Reservoir. This Volume provides background information about TVA land management throughout its history and specifically TVA management of public land surrounding Great Falls Reservoir. It explains the purpose of the draft RMLP and describes the process used in its development. The draft RLMP includes the planning process, which lists the objectives around which the RMLP was developed and a summary of the allocation process. The Great Falls Reservoir Regional Overview (Chapter 2) describes the natural and social development of the reservoir and the surrounding area. The Parcel Descriptions (Chapter 4) include total acreage and parcel descriptions documenting proposed land management allocations. The allocation map is included as Appendix A of this draft RMLP.

Once TVA completes its Multiple RLMP EIS, this Volume will serve as the consolidated planning document addressing management of TVA reservoir lands on Great Falls Reservoir and will be available to TVA staff and the public.

### 1.1 Tennessee Valley Authority History

President Franklin Roosevelt needed creative solutions to lift the nation out of the depths of the Great Depression, and TVA is considered one of his most innovative initiatives. Roosevelt envisioned TVA as an agency different from any other. He asked Congress to create “a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise.” On May 18, 1933, Congress passed the Tennessee Valley Authority Act (TVA Act). A link to the TVA Act is available at <https://www.tva.com/About-TVA/Our-History>.

From the start, TVA established a unique problem-solving approach to fulfilling its mission: Integrated Resource Management. Each issue TVA faced—whether it was power production, navigation, flood control, malaria prevention, reforestation, or erosion control—was studied in its broadest context. TVA weighed each issue relative to the others. From this beginning, TVA has

held fast to its strategy of integrated solutions, even as the issues changed over the years. A short TVA history is available at <http://www.tva.com/abouttva/history.htm>.

## **1.2 Overview of TVA's Mission and Environmental Policy**

### **1.2.1 TVA's Mission**

TVA has a rich history of improving quality of life and economic prosperity for people and businesses in the TVA service area. TVA was created by Congress in 1933 and charged with a unique mission—to improve the quality of life in the Valley through the integrated management of the region's resources. For more than eight decades, we have worked tirelessly to carry out that mission, and we are working just as hard to make life better for the nine million people who live in the Valley today. We serve the people of the Tennessee Valley by focusing on three key areas: energy, environment, and economic development.

### **1.2.2 Environmental Policy**

As stated in TVA's 2007 Strategic Plan, "TVA will be proactive in addressing environmental concerns, including those related to global climate change." About half of the identified strategic objectives and critical success factors in the plan relate directly to TVA's environmental activities and policy-making.

Following the release of the 2007 Strategic Plan, the TVA Board asked for the development of an integrated environmental policy to outline objectives and critical success factors across the multiple areas of TVA's activities. In 2008, the TVA Board approved the Environmental Policy, which provides guiding principles for reducing the environmental impacts of TVA operations while continuing to provide reliable and affordable power to the Valley. In 2010, a biennial review of the Environmental Policy was completed, which did not result in major changes or revisions. TVA's overarching Environmental Policy objective is to provide cleaner, reliable, and affordable energy; support sustainable economic growth in the Valley; and engage in proactive environmental stewardship in a balanced and ecologically sound manner. A copy of the Environmental Policy is available at <http://www.tva.com/environment/policy.htm>.

### **1.2.3 Land Policy**

On behalf of the United States, TVA originally acquired approximately 1.3 million acres of land in the Valley. Creation of the TVA reservoir system inundated approximately 470,000 acres with water. TVA has transferred or sold approximately 508,000 acres, the majority of which was transferred to other federal and state agencies for public uses. TVA currently controls approximately 293,000 acres of reservoir lands, which continue to be managed pursuant to the

TVA Act (Figure 1-1). As part of its management of these lands, TVA allocates them to various land use zones (see Section 3.1). These TVA-managed lands are frequently referred to as “TVA lands” in this document.

In 2006, TVA adopted a Land Policy to guide retention, disposal, and planning of real property. Accordingly, it is TVA’s policy to manage its lands to protect the integrated operation of the TVA reservoir and power systems, to provide for appropriate public use and enjoyment of the reservoir system, and to provide for continuing economic growth in the Valley. Recognizing that historical land transfers have contributed substantially to meeting multipurpose objectives, TVA maintains the policy of retaining in public ownership the reservoir lands under its control except in those rare instances where the benefits to the public will be so significant that transferring lands to private ownership or another public entity is justified. The Land Policy is available at <https://www.tva.gov/Environment/Environmental-Stewardship/Land-Management/TVA-Land-Policy>.

#### **1.2.4 Shoreline Management Policy**

In November 1998, TVA completed a Shoreline Management Initiative (SMI) EIS (TVA 1999) analyzing possible alternatives for managing residential shoreline development throughout the Valley. In April 1999, TVA adopted the agency’s current Shoreline Management Policy (SMP), which incorporates a strategy of managing public shoreline through an integrated approach that conserves, protects, and enhances shoreline resources and public use opportunities while providing for reasonable and compatible use of the shoreline by adjacent residents. The SMP defines the standards for vegetation management, docks, shoreline stabilization, and other residential shoreline alterations. The SMI EIS is available at <https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Shoreline-Management-Policy>.

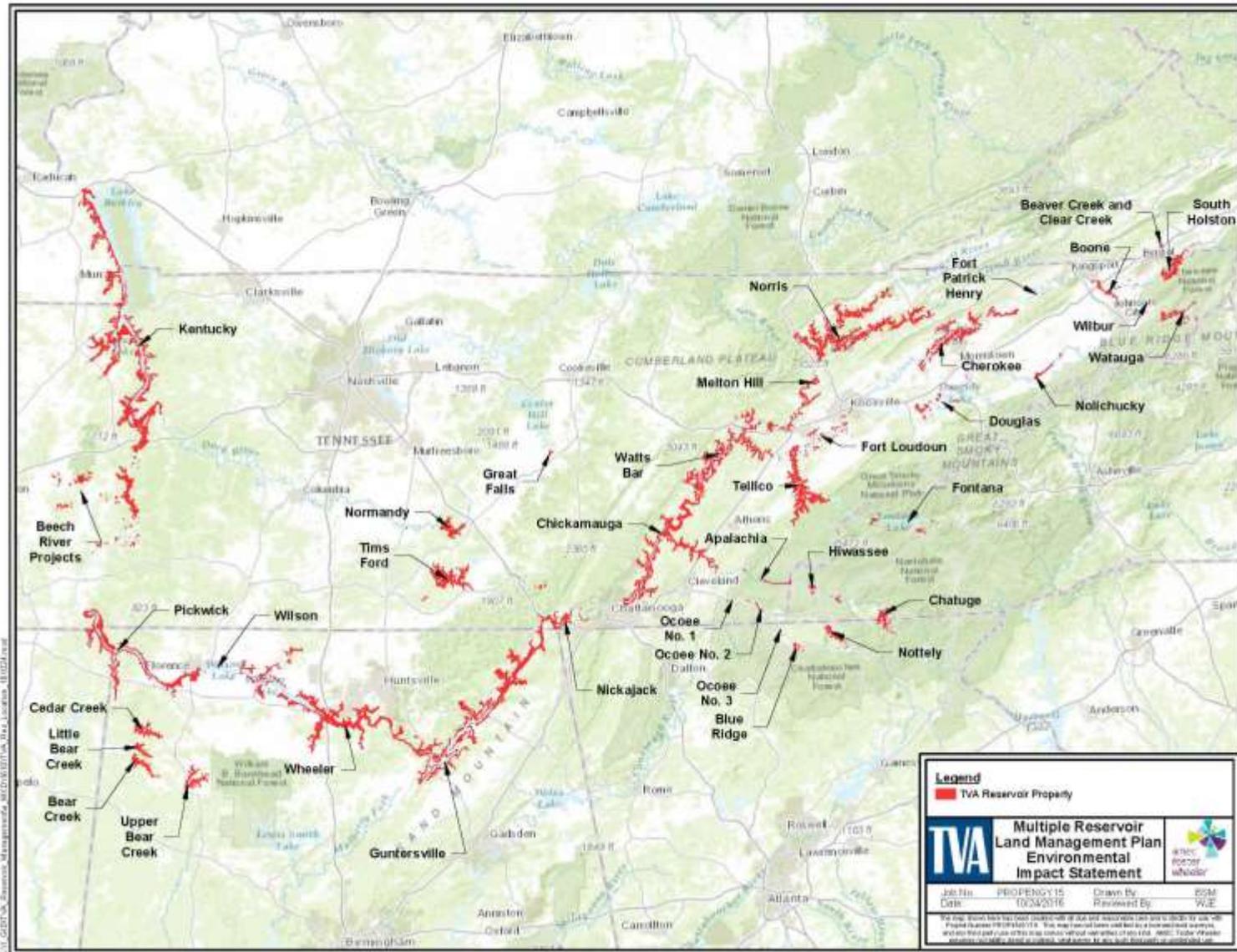


Figure 1-1. TVA Managed Reservoir Land

### **1.3 The Natural Resource Plan**

In 2011, TVA completed a Natural Resource Plan (NRP) (TVA 2011) that strategically guides the management of both renewable and nonrenewable resources, underscoring the importance of protecting those resources that will be lost forever if they are not actively protected or improved today. TVA is one piece of the solution and recognizes the need for a coordinated and collaborative effort to meet the near- and long-term resource needs. As such, the NRP is designed to:

- Integrate the objectives of six resource areas (biological, cultural, recreation, water, public engagement and reservoir lands planning).
- Provide optimum public use benefit.
- Balance competing and sometimes conflicting resource uses.

These competing interests, coupled with today's environmental awareness and focus on preserving nonrenewable resources, underscore the necessity for a consistent approach to the management of TVA lands. The NRP represents TVA's high-level strategy for managing its natural resources in the near and long term. Detailed implementation plans, such as this draft RLMP, are being developed based on the NRP to drive specific implementation efforts. The NRP is available at <https://tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Natural-Resource-Plan>.

### **1.4 Purpose of Reservoir Land Planning**

As a regional development agency and the nation's largest public power provider, TVA is committed to protecting and sustaining the environmental resources of the Valley for future generations through leadership in clean energy innovation and environmental management. In managing its public lands and resources, TVA seeks to provide efficient resource stewardship that is responsive to stakeholder interests.

TVA intends to manage its public land for an optimum level of multiple uses and benefits that protect and enhance natural, cultural, recreational, and visual resources in a cost-effective manner. Through this approach, TVA ensures that resource stewardship issues and stakeholder interests are considered while optimizing benefits and minimizing conflicts.

## *Draft Great Falls Reservoir Land Management Plan*

As part of the NRP, TVA developed a Comprehensive Valleywide Land Plan (CVLP). The CVLP guides resource management and administration decisions on the approximately 293,000 acres of TVA lands around 46 reservoirs. It identifies the most suitable uses for the land under TVA's control, identifying areas for project operations, sensitive resource management, natural resource conservation, industrial/commercial development, developed recreation, and shoreline access. The objectives of the CVLP are designed to implement TVA's mission of serving the Valley through energy, environment, and economic development. Under the CVLP methodology, TVA will draft and update RLMPs, such as this draft plan, for a portion of a reservoir, an entire reservoir, or a group of reservoirs. RLMPs are consistent with TVA's policies and programs discussed within this chapter.

The CVLP will be recalibrated as needed (as described under Alternative B in Volume I of this EIS, TVA proposes to update the target ranges of the CVLP to incorporate the findings of the eight draft RLMPs). The CVLP was based, in part, on the anticipation that some parcels of land may be better allocated to different land use zones from those initially identified. For example, field assessments may identify additional areas that warrant the sensitive resource management allocation. In addition, during the creation or update of each individual RLMP, TVA may determine, either for its own management purposes or as a result of public input, that certain parcels of land should be used differently from how they have been used in the past. The preliminary results of the Great Falls Reservoir planning effort have been included in determining the proposed revisions to the CVLP.

The draft Great Falls RLMP and revisions to the CVLP will be included in the five-year cyclic review of the NRP.

## **CHAPTER 2. REGIONAL OVERVIEW**

### **2.1 History of Great Falls Dam**

The Cumberland River Basin rises in southeastern Kentucky, abutting the border with the Commonwealth of Virginia. The basin includes 7,560 square miles in Kentucky and a 10,160-square mile arc through the northern part of middle Tennessee. The basin is approximately 350 miles long and averages 50 miles wide.

At its source, the Cumberland River and its tributaries are flowing in narrow steep sided valleys through very rugged country. The narrow valleys continue until Burnside, where the river emerges from the Cumberland Plateau onto the relative openness of the Highland Rim. As the river crosses the Highland Rim, the valley cuts deeper into the surface.

The Cumberland River continues south into Tennessee. Between Celina and Carthage, the ridge tops gradually fall back as the river transitions from the domain of the Highland Rim into that of the Central Basin. Below Carthage the effects of the Highland Rim are left behind and the river once again flows through a relatively open area where the prevailing elevation is only about 100 feet above the river. Just west of Nashville, the flow re-enters the Highland Rim province, and the surrounding territory is once again several hundred feet above the valley.

Great Falls Dam is located on the Caney Fork River about halfway between McMinnville and Sparta, Tennessee. The main lake is comprised of the Caney Fork, which at this point flows westerly. Major tributaries include the Collins River, Rocky River, Calfkiller River and Cane Creek. In their original, natural state, all these streams were comparatively shallow with swift flow over the beds of deep ravines.

The Tennessee Electric Power Company, on April 24, 1912, acquired the franchises and property of the Great Falls Power Company, and four years later completed Great Falls Dam. Initial operations at the dam occurred in December 1916. In 1925, Tennessee Electric Power Company redesigned the dam and raised it about 35 feet to its present height. After an extended legal dispute between the company and TVA, on August 16, 1939, TVA acquired the dam, the reservoir land and improvements, all flowage easements, the powerhouse and generation facilities, and the electric distribution system.

The dam consists of 18 radial gates controlling water flow through the spillway. There are four 19-ton fixed hoists that operate four of the spillway gates and two electrically operated traveling hoists operate the other gates.

## **2.2 Great Falls Reservoir and Present Shoreline**

Although construction of the dam raised the water elevation approximately 70 feet, Great Falls Reservoir is confined to deep ravines, and most of the adjacent property consists of steeply rolling land and bluffs. Near the upper end of the Caney Fork arm, the reservoir is principally confined to the original stream banks, which are comparatively low, and the adjoining bottomland is subjected to periodic headwater flooding.

Great Falls Reservoir is a single-purpose power project with a limited amount of flood storage. The dam is 92 feet high and stretches 800 feet across the Caney Fork. The reservoir is 22 miles long and has 120 miles of winding shoreline. There are approximately 1,830 acres of water surface and flood-storage capacity of 30,500 acre-feet. The summer pool elevation is elevation 800.0-foot mean sea level (msl), and the normal minimum pool is elevation 785 feet msl. The minimum tailwater elevation at the powerhouse is 649 feet msl, and the tailwater elevation with the powerhouse in full operation is 657.6 feet msl.

The drainage area upstream of the Great Falls Dam is 1,675 square miles. The maximum known flood at the dam site was recorded at 210,000 cubic feet per second (cfs) in March 1929. The average daily water flow at the site is about 3,146 cfs.

### **2.2.1 Land Use and Prime Farmland**

TVA acquired approximately 8,000 acres of land in fee and flowage easement rights on Great Falls Reservoir in a deed dated August 15, 1939 from Tennessee Electric Power Company. TVA sold most of its fee property in the 1950s except for the remaining portion of approximately 362 acres surrounding the Great Falls Dam. TVA retains an estimated 4,000 to 4,500 acres in flowage easements. Other than the fee acreage surrounding Great Falls Dam, any remaining fee property owned by TVA would be slivers of remaining parcels not sold in the 1950s and mostly at or under the water's surface and would require extensive title and survey work by TVA to confirm if any exists. The approximate 362 acres surrounding the dam are the scope of this draft RLMP.

The area surrounding the reservoir is rural, and the shoreline of the reservoir is primarily comprised of a forested areas, residential development, suburban areas, parks, farmed areas

and recreational areas. These uses are generally reflected in the land cover database for the parcels around the reservoir and the surrounding area (which identifies the land cover as primarily forested and developed open space. Developed open space includes single family housing units on large lots, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

There are approximately 120 miles of shoreline along the Great Falls Reservoir (see Volume I, Table 3-1). Although all of the residential development on Great Falls Reservoir is on private land, TVA holds flowage easement rights along portions of the private shoreline. Any structures placed within existing flowage easements are subject to Section 26a of the TVA Act. Section 26a of the TVA Act requires that TVA's approval be obtained prior to the construction, operation, or maintenance of obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries.

TVA public lands on Great Falls Reservoir include 23.2 acres of prime farmland, all of which occurs on land that would be allocated as Zone 6 (Developed Recreation). Prime farmland has the best combination of soil physical and chemical characteristics for producing food and fiber and is protected from conversion to industrial and nonagricultural uses by the United States Department of Agriculture (USDA). It is noted, however, that current soil mapping of prime farmland soils does not account for existing developed uses that may have previously disturbed and potentially converted prime farmland. No land of statewide importance designation occurs around the Great Falls Reservoir.

In Zone 6, major soil disturbances could occur in specific locations, if recreation facilities are constructed. Conversely, large areas could remain unaffected for more dispersed recreation management.

For more information on land use and prime farmland and potential impacts of the draft RLMP, see Sections 3.2 and 3.3, Volume I of the EIS.

### **2.2.2 Recreation**

TVA provides public lands for developed and dispersed recreational purposes through the reservoir lands planning process. Developed recreation includes campgrounds, lodges, marinas, boat ramps, parks, swimming pools, beaches and golf courses. Dispersed recreation activities include picnicking, primitive camping, hiking, bank fishing, hunting, kayaking, and canoeing. In 2005, TVA developed a recreation strategic plan aimed at collaboratively

enhancing recreational opportunities and addressing unmet recreational needs while managing the resources of the Tennessee River system (TVA 2005). This strategy laid out guiding principles for how to best design and develop recreation opportunities. During this reservoir lands planning effort, tracts of TVA-managed lands around Great Falls Reservoir were categorized based upon a suitable use that is consistent with TVA policy and guidelines, and applicable laws and regulations. Whitewater rapids below the dam are world-renowned for kayaking and canoeing and have been the site for national and international paddling events

Great Falls Reservoir is an outdoor recreation resource that attracts visitors from within and outside the region. The only recreation area that has been developed on the Great Falls Reservoir is Rock Island State Park which includes the rugged beauty of the Caney Fork Gorge. This park is managed by the state of Tennessee. The park has an observation area, picnic facilities, restrooms and trails (Tennessee State Parks 2016). The Caney Fork River Gorge contains scenic overlooks, waterfalls, deep pools and limestone paths perfect for hiking, swimming, fishing, kayaking, and exploring.

Developed recreation area lands that are managed by TVA or another public agency for recreation purposes are shown on Table 2-1. Table 2-1 does not itemize recreation areas on non-TVA shorelands (Zone 1) because these areas are beyond the scope of this draft RLMP. Great Falls Reservoir parcel descriptions (see Chapter 4) further describe the management entity and management descriptions of recreation facilities on lands managed by either TVA or under contractual agreement.

**Table 2-1. Developed Public Recreation Areas on TVA Lands on Great Falls Reservoir**

<b>Recreation Area</b>	<b>Managing Entity</b>	<b>Parcel Location</b>
Great Falls Dam Reservation	TVA	1
Rock Island State Park	State of Tennessee	2

Dispersed recreation areas provide unconfined opportunities that are predominantly nature-based or water-based. Dispersed recreation in the forms of kayaking, bank fishing, hiking trails, and sight-seeing occur at Great Falls on lands that would be allocated to Zone 2 (Project Operations) and additional dispersed recreation occurs on undeveloped areas of the Rock Island State Park that is proposed for allocation to Zone 6 (Developed Recreation).

The state of Tennessee has requested that TVA grant a term easement for public and commercial and recreation purposes over Parcel 2 in order to provide additional developed recreation opportunities (see Parcel 2 description in Chapter 4).

For more information on recreation resources and the potential impacts of the proposed land use allocations in the draft RLMP, see Section 3.4 of Volume I of the EIS.

### 2.2.3 Terrestrial Ecology

Great Falls Reservoir lies within the Interior Plateau ecoregion (USEPA 2013). The Interior Plateau ecoregion is a series of grassland plateaus and forested uplands that are generally lower in elevation than the Appalachian Mountains to the east, but higher than the plains to the south. The variety of landforms, soils, climate, and geology across the Interior Plateau have allowed for an extremely diverse assemblage of animals including migratory birds of conservation concern. Deciduous forests and mixed evergreen-deciduous forests provide wildlife habitat among the agriculture and more urbanized areas (USGS 2016). Table 2-2 contains a summary of the land cover within and in the vicinity of Great Falls Reservoir (Homer et al. 2015).

**Table 2-2. Land Cover on TVA Owned Parcels and within the Vicinity of Great Falls Reservoir**

Land Cover Type	TVA Property		Vicinity (5-Mile Radius)	
	Acres <sup>1</sup>	Percent Cover (%)	Acres <sup>1</sup>	Percent Cover (%)
Barren Land	8.9	2.5	353.6	0.1
<b>Developed</b>				
Developed, High Intensity	0	0.0	429.3	0.2
Developed, Medium Intensity	3.3	0.9	1,630.1	0.6
Developed, Low Intensity	7.3	2.0	5,154.9	2.0
Developed, Open Space	51.8	14.3	13,750.9	5.3
<b>Forest</b>				
Deciduous Forest	229.3	63.3	116,659.8	44.9
Evergreen Forest	9.1	2.5	9,039.4	3.5
Mixed Forest	25.6	7.1	7,244.1	2.8
<b>Shrubland</b>				
Shrub-Scrub	8.1	2.2	5,120.4	2.0
<b>Herbaceous</b>				
Grassland/Herbaceous	4.8	1.3	4786.9	1.8
Hay/Pasture	7.9	2.2	76,752.5	29.5

Land Cover Type	TVA Property		Vicinity (5-Mile Radius)	
	Acres <sup>1</sup>	Percent Cover (%)	Acres <sup>1</sup>	Percent Cover (%)
<b>Planted/Cultivated</b>				
Cultivated Crops	3.6	1.0	14,101.8	5.4
<b>Wetlands/Open Water</b>				
Woody Wetlands	0		1,017.9	
Emergent Herbaceous Wetlands	0.04	0.0	123.7	0.0
Open Water	2.7	0.7	3,791.9	1.5
<b>Total</b>	<b>362.4</b>	<b>100</b>	<b>259,957.1</b>	<b>100</b>

<sup>1</sup> Source: Homer et al. 2016

Oak-hickory deciduous forest is the most abundant forest type in the eastern United States and is prevalent in the Great Falls Reservoir region. Some mixed deciduous-evergreen and evergreen forests are also present in this region. Numerous bird species nest in deciduous forests. Typical species include wild turkey, whip-poor-will, ruby-throated hummingbird, red-eyed vireo, black-throated green warbler, black-and-white warbler, ovenbird, hooded warbler, and the scarlet tanager. Several additional migratory bird species of concern utilize these habitats in this area including black-billed cuckoo, Kentucky warbler, red-headed woodpecker, wood thrush and worm-eating warbler (USFWS 2016a). Common mammal species of deciduous forests include white-tailed deer, red bat, eastern chipmunk, eastern gray and southern flying squirrels, white-footed mouse, short-tailed shrew, gray fox, and bobcat.

Deciduous forests and mixed evergreen-deciduous forests account for 70 percent of the land cover within the Great Falls Reservoir parcels (see Table 2-2). Some of these deciduous forested areas are quite mature with large diameter trees. Evergreen forests make up an additional three percent of the land cover. Seeps, streams, and temporary ponds in deciduous forests provide habitat for numerous amphibians including American and Fowler’s toads, green frog, northern cricket frog, and other frogs, and a range of salamanders including spotted and mole salamanders. Reptiles commonly found in deciduous forests especially near water include eastern fence lizard, ground skink, five-lined skink, eastern box turtle, eastern worm snake, black racer, and ring-necked snake. The riparian zones along streams within deciduous forests provide nesting habitat for Acadian flycatchers, northern parula, and migratory species of

concern in this area, including the Louisiana waterthrush and prothonotary warbler (USFWS 2016a).

Evergreen and mixed evergreen-deciduous forests provide nesting for woodland birds including pine and yellow-throated warblers, great crested flycatcher, and chuck-will's-widow. Several additional migratory bird species of concern utilize these habitats in this area including black-billed cuckoo, Kentucky warbler, fox sparrow, and prairie warbler (USFWS 2016a). Other animals that inhabit evergreen and evergreen-deciduous forests but are not restricted to them include white-tailed deer, wild turkey, eastern mole, eastern kingsnake, smooth earth snake, eastern fence lizard, six-lined racerunner, and a variety of salamanders, frogs, and toads, especially near wet areas.

Non-forested herbaceous community types in the Great Falls Reservoir region are dominated by pasturelands and hayfields. Herbaceous habitats including grasslands, barrens, hayfields, and pastures account for approximately 4 percent of the land cover on the reservoir parcels (see Table 2-2). Early successional habitats provide habitat for a variety of bird species including eastern bluebird, eastern meadowlark, American crow, American kestrel, and red-tailed hawk. Several additional migratory bird species of concern utilize these habitats in this area including Henslow's sparrow, dickcissel, sedge wren, short-eared owl, and willow flycatcher (USFWS 2016a). Amphibians and reptiles that use these habitats include spring peeper and common garter snake.

Bird and mammal diversity greatly increases at edge habitats especially those between forested areas bordered by early successional habitats. Birds commonly found at these edge habitats include wild turkey, great crested flycatcher, white-eyed vireo, Carolina wren, blue-gray gnatcatcher, brown thrasher, common yellowthroat, yellow-breasted chat, indigo bunting, eastern towhee, field and song sparrow, and orchard oriole. Several additional migratory bird species of concern utilize these habitats in this area including blue-winged warbler, dickcissel, loggerhead shrike, red-headed woodpecker, and willow flycatcher (USFWS 2016a). Mammals typically inhabiting edges include eastern cottontail, red fox, coyote, long-tailed weasel, and striped skunk.

The reservoir parcels provide wetlands, including wooded swamps and open water habitats, and associated riparian zones that are used by a variety of wildlife. Common species include great blue heron, green heron, belted kingfisher, common yellowthroat, and northern parula. No

colonial nesting bird colonies/heronries have been observed on TVA parcels on Great Falls Reservoir (TVA 2016). Many additional migratory bird species of concern utilize these habitats in this area including bald eagle, least bittern, Louisiana waterthrush, prothonotary warbler, rusty blackbird, sedge wren, short-eared owl, and willow flycatcher (USFWS 2016a). Shallow embayments, especially those with emergent vegetation, provide foraging habitat for waterfowl. Common waterfowl include wood ducks, Canada geese, and mallards. Other waterfowl periodically present include American black duck, gadwall, green-winged teal, ring-necked duck, lesser scaup, common goldeneye, bufflehead, and hooded merganser.

Shorebird use of the Great Falls Reservoir is limited to shallow embayments and exposed mud flats. Species such as spotted sandpiper that forage along the margins of reservoirs and killdeer that are not restricted to foraging on mud flats are commonly observed. Common amphibians found in the riparian zones include green frog, eastern narrowmouth toad, and Fowler's toad. Reptiles include northern water snake, common snapping turtle, and painted turtles. Common mammals include mink, muskrat, raccoon, and American beaver.

A search of the TVA Natural Heritage database in May 2016 indicated that 407 caves are located within 3 miles of Great Falls Reservoir. One cave is located on a TVA parcel (TVA 2016).

For information on terrestrial ecology and potential impacts of the draft RLMP, see Volume I, Section 3.5.

#### **2.2.3.1 Invasive Nonnative Species**

Many of the planned TVA parcels around Great Falls Reservoir contain a substantial amount of invasive nonnative species. Executive Order (EO) 13112 defines an invasive nonnative species as any species including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem; and whose introduction does or is likely to cause economic or environmental harm or harm to human health (Federal Register Volume 64, Number 25, The Southeastern Exotic Plant Pest Council provides a list of nonnative invasive species that could pose potential threats to native ecosystems and human health for each southeastern state. In reviewing the Tennessee exotic plant pest list (Tennessee Exotic Plant Pest Council 2009), there were 26 species occurring in Tennessee that pose a severe threat to native ecosystems observed in the Great Falls Reservoir region (Table 2-3).

**Table 2-3. Invasive Non-native Plant Species that Pose a Severe Threat Known to Occur in Tennessee**

Common Name	Scientific Name
Asian bittersweet	<i>Celastrus orbiculatus</i>
Autumn olive	<i>Elaeagnus umbellata var. parviflora</i>
Cheat grass	<i>Bromus tectorum</i>
Chinese privet	<i>Ligustrum sinense</i>
Chinese yam	<i>Dioscorea oppositifolia</i>
Common privet	<i>Ligustrum vulgare</i>
Common St. John's-wort	<i>Hypericum perforatum</i>
Hydrilla	<i>Hydrilla verticillata</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Japanese stiltgrass	<i>Microstegium vimineum</i>
Johnson grass	<i>Sorghum halepense</i>
Korean clover	<i>Kummerowia stipulacea</i>
Kudzu	<i>Pueraria montana var. lobata</i>
Mimosa	<i>Albizia julibrissin</i>
Multiflora rose	<i>Rosa multiflora</i>
Princess tree	<i>Paulownia tomentosa</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Sericia lespedeza	<i>Lespedeza cuneata</i>
Shrubby bushclover	<i>Lespedeza bicolor</i>
Tree of heaven	<i>Ailanthus altissima</i>

Source: Tennessee Exotic Plant Pest Council 2009

All of these species have the potential to adversely impact the native plant communities because of their potential to spread rapidly and displace native vegetation. TVA considers all of the species a severe threat to local plant communities.

In addition to invasive or non-native plant species discussed above, there are several exotic, non-native, and/or pest insect species and plant diseases that are known to occur within the counties encompassing Great Falls Reservoir. These insects and diseases can have devastating impacts on native plant communities and human crops/fruits. The insects include: Japanese beetle (*Popillia japonica*), brown marmorated stink bug (*Halyomorpha halys*), kudzu bug (*Megacopta cribraria*), spotted wing drosophila (*Drosophila suzukii*), and southern pine beetle (*Dendroctonus frontalis*) (EDDMapS 2016). These species all have the potential to pose problems to native vegetation, wildlife, crops, landscaping and gardens, and/or overall

ecosystems due to the lack of natural predators or diseases to help control their populations giving them the ability to out-compete native species.

The following plant diseases are also known to occur in the counties containing Great Falls Reservoir: butternut canker (*Sirococcus clavigignenti-juglandacearum*), dogwood anthracnose (*Discula destructiva*), Heterobasidion root rots (*Heterobasidion* spp.), and oak wilt (*Ceratocystis fagacearum*). Most of these diseases target certain plant species or groups of species, and can have serious impacts to local populations of those plants and trees.

There are several exotic, non-native, and/or pest terrestrial wildlife and other insect species that are known to occur within the region. These include: Asian tiger mosquito (*Aedes albopictus*), cat (feral) (*Felis catus*), and European starling (*Sturnus vulgaris*) (EDDMapS 2016). These species have the potential to pose problems to native wildlife and ecosystems due to their ability to out-compete native species and spread quickly. Some of these species can pose threats to human health and safety. Asian tiger mosquitoes are known to transmit various diseases to humans.

#### **2.2.4 Aquatic Ecology**

Streams of the Highland Rim Ecoregion are characterized by coarse chert gravel and sand substrates interspersed with bedrock areas, moderate gradients, clear waters, and moderate to low productivity, and thus little aquatic vegetation except near spring sources (Etnier and Starnes 1993). The Highland Rim, because of its geologic complexity and numerous semi-independent drainage systems, harbors the most diverse fish fauna of any region of comparable size in North America. The greater area in which the Great Falls Reservoir is located is unique in that virtually all of the surface strata is composed of chert rock and its soil derivatives, which support limited tree life. Much of the area appears as a natural prairie and numerous springs emanate to the surface from the many aquifers in the softer Mississippian limestones below, and the area is characterized by spring-associated fish faunas.

The aquatic ecological conditions in streams and reservoirs are monitored under a number of TVA programs including the Reservoir Vital Signs Monitoring Program (RVSMMP). However, Great Falls Reservoir is not part of the RVSMMP program. In general, the aquatic community within Great Falls Reservoir is typical of most large river systems in Tennessee and eastern U.S. Common fish species include brook trout, crappie, muskie, channel catfish, flathead catfish, bluegill, carp, smallmouth bass, largemouth bass, and walleye.

#### **2.2.4.1 Invasive Nonnative Aquatic Species**

Although there are many exotic or introduced aquatic species within the region, there are a few species that are considered more detrimental due to their ability to have broad impacts to overall aquatic systems as well as direct impacts to humans. These include Asian carp, especially bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*Hypophthalmichthys molitrix*) (EDDMapS 2016), and zebra mussels (*Dreissena polymorpha*).

Asian carp cause serious damage to the native fish populations in the lakes and rivers that they infest because they out-compete other fish for food and space. Carp are also thought to lower water quality, which can kill off sensitive organisms like native freshwater mussels. Asian carp have been known to dominate entire streams, effectively pushing out the native species. Asian carp are also known to pose danger to humans due to their habit of jumping out of the water and striking boaters and water skiers and damaging boats and equipment.

Zebra mussels are notorious for their biofouling capabilities by colonizing water supply pipes of hydroelectric and nuclear power plants, public water supply plants, and industrial facilities. They colonize pipes constricting flow, therefore reducing the intake in heat exchangers, condensers, firefighting equipment, and air conditioning and cooling systems. Navigational and recreational boating can be affected by increased drag due to attached mussels. Small mussels can get into engine cooling systems causing overheating and damage. Navigational buoys have been sunk under the weight of attached zebra mussels. Zebra mussels can have profound effects on the ecosystems they invade. They primarily consume phytoplankton, but other suspended material is filtered from the water column including bacteria, protozoans, zebra mussel veligers, other microzooplankton and silt (Benson et al. 2016).

For information on aquatic ecology and potential impacts of the draft RLMP, see Volume I, Section 3.6.

#### **2.2.5 Threatened and Endangered Species**

TVA biologists and natural resource specialists used the TVA Natural Heritage database to assess the endangered and threatened species within and around Great Falls Reservoir. The TVA Natural Heritage database was created to ensure that environmental compliance activities are conducted in a consistent manner across the TVA Region and that these activities meet the requirements of National Environmental Policy Act (NEPA) and the Endangered Species Act. The federally listed and state-listed species identified from the TVA Natural Heritage database searches that are known to occur in the counties surrounding Great Falls Reservoir are

presented in Table 2-4. For the purpose of this document state-listed species includes those that are being tracked, in need of management, candidates, proposed for listing and of special concern. As noted below, there are two state-listed plants species occurring on two TVA parcels on Great Falls Reservoir. Only one of the terrestrial wildlife species considered in need of management by the state is known to occur on TVA parcels, however, suitable habitat is present for many of the other species of concern. There are no records of any listed aquatic species on TVA parcels, however, there are records of five listed species within Great Falls Reservoir.

**Table 2-4. Federally and State-Listed Species in the Great Falls Reservoir Counties**

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State (Rank)
<b>Amphibians</b>			
Barking treefrog	<i>Hyla gratiosa</i>	--	D (S3)
Four-toed salamander	<i>Hemidactylium scutatum</i>	--	D (S3)
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	D (S3)
Tennessee Cave salamander	<i>Gyrinophilus palleucus</i>	--	T (S2)
<b>Arachnids</b>			
A cave obligate harvestman	<i>Phalangodes appalachius</i>	--	TRKD (S3)
A cave obligate pseudoscorpion	<i>Kleptochthonius daemonius</i>		TRKD (S1S2)
An eptonetid spider from Ghost River Cave	<i>Appaleptoneta sp. 1</i>	--	TRKD (S1)
A harvestman from Cummings Cove Cave	<i>Theromaster sp. 1</i>	--	TRKD (S1)
<b>Birds</b>			
Bald eagle	<i>Haliaeetus leucocephalus</i>	DM	D (S3)
Cerulean warbler	<i>Setophaga cerulea</i>	--	D (S3B)
Common barn-owl	<i>Tyto alba</i>	--	D (S3)
Golden eagle	<i>Aquila chrysaetos</i>	--	T (S1)
Golden-winged warbler	<i>Vermivora chrysoptera</i>	--	D (S3B)
Least bittern	<i>Ixobrychus exilis</i>	--	D (S2B)
Peregrine falcon	<i>Falco peregrinus</i>	PS:E	E (S1B)
Swainson's warbler	<i>Limnothlypis swainsonii</i>	--	D(S3)
<b>Crustacean</b>			
Swamp River Cave amphipod	<i>Stygobromus sp. 22</i>	--	TRKD (S3)
Yeatmans groundwater copepod	<i>Diacyclops yeatmani</i>	--	TRKD (S1)
<b>Diplopods</b>			
A cave millipede	<i>Chaetaspis mollis</i>	--	TRKD (S1)
A cave obligate millipede	<i>Tetracion tennesseensis</i>	--	TRKD (S2S3)
A cave obligate millipede	<i>Scoterpes ventus</i>	--	TRKD (S1)
<b>Fish</b>			
Barrens darter	<i>Etheostoma forbesi</i>	--	E (S1)

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State (Rank)
Barrens topminnow	<i>Fundulus julisia</i>	--	E (S1)
Bedrock shiner	<i>Notropis rupestris</i>	--	D (S2)
Bluemask darter	<i>Etheostoma akatulo</i>	LE	E (S1)
Cherry darter	<i>Etheostoma etneri</i>	--	TRKD (S3)
Flame chub	<i>Hemitremia flammea</i>	--	D (S3)
Redband darter	<i>Etheostoma luteovinctum</i>	--	D (S4)
Sooty darter	<i>Etheostoma olivaceum</i>	--	D (S3)
Southern cavefish	<i>Typhlichthys subterraneus</i>	--	D (S3)
<b>Gastropods</b>			
Cupped vertigo	<i>Vertigo clappi</i>	--	TRKD (S1)
Ornate rocksnail	<i>Lithasia geniculata</i>	--	TRKD (S2)
Rockpile liptooth	<i>Daedalochila auriformis</i>	--	TRKD (S1)
Umbilicate river snail	<i>Leptoxis subglobosa umbilicata</i>	--	TRKD (S1)
<b>Insects</b>			
A cave cricket	<i>Hadenoecus opilionides</i>	--	TRKD (S3)
A cave obligate beetle	<i>Pseudanophthalmus templetoni</i>	--	TRKD (S1)
A cave obligate beetle	<i>Tychobythinus strinatii</i>	--	TRKD (S1S2)
A cave obligate beetle	<i>Pseudanophthalmus farrelli</i>	--	TRKD (S1S2)
A cave obligate beetle	<i>Pseudanophthalmus robustus</i>	--	TRKD (S3)
A cave obligate beetle	<i>Nelsonites walteri</i>	--	TRKD (S3)
A cave obligate beetle	<i>Pseudanophthalmus vanburenensis</i>	--	TRKD (S1)
A cave obligate beetle	<i>Pseudanophthalmus macrae</i>	--	TRKD (S1S2)
A cave obligate springtail	<i>Pseudosinella aera</i>	--	TRKD (S2)
A cave obligate springtail	<i>Pseudosinella christianseni</i>	--	TRKD (S2)
A cave obligate springtail	<i>Pseudosinella spinosa</i>	--	TRKD (S2)
A rove beetle	<i>Aloconota diversiseta</i>	--	TRKD (S1)
A rove beetle	<i>Atheta lucifuga</i>	--	TRKD (S2)
A springtail	<i>Sinella cavernarum</i>	--	TRKD (S3)
A springtail	<i>Pseudosinella hirsuta</i>	--	TRKD (S3)
A springtail from Indian Cave	<i>Folsomia sp.2 nr. macrochaeta</i>	--	TRKD (S1)
A Viatica Group springtail	<i>Hypogastrura sp. 1</i>	--	TRKD (S1)
Copeland's springtail	<i>Triacanthella copelandi</i>	--	TRKD (S1)
Cumberland ground beetle	<i>Trechus cumberlandus</i>	--	TRKD (S2)
Indian Cave Point cave beetle	<i>Pseudanophthalmus tiresias</i>	C	TRKD (S1)
Rumbling Falls Cave beetle	<i>Pseudanophthalmus sp. 27</i>	--	TRKD (S1)
Rumbling Falls Cave dipluran	<i>Litocampa sp. 5</i>	--	TRKD (S1)
Swamp River Cave onychiurus	<i>Onychiurus sp. 2</i>	--	TRKD (S1)
Swamp River Cave neanura	<i>Neanura sp. 1</i>	--	TRKD (S1)
Swamp River Cave pseudosinella	<i>Pseudosinella sp. 5</i>	--	TRKD (S1)
Yeatman's Groundwater Copepod	<i>Diacyclops yeatmani</i>	--	TRKD (S1)

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Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State (Rank)
<b>Mammals</b>			
Allegheny woodrat	<i>Neotoma magister</i>	--	D (S3)
Eastern small-footed bat	<i>Myotis leibii</i>	--	D (S2S3)
Gray bat	<i>Myotis grisescens</i>	LE	E (S2)
Indiana bat	<i>Myotis sodalis</i>	LE	E (S1)
Northern long-eared bat	<i>Myotis septentrionalis</i>	LT	-- (S1S2)
Pygmy shrew	<i>Sorex hoyi</i>	--	TRKD (S2)
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	--	D (S3)
Smoky shrew	<i>Sorex fumeus</i>	--	D (S4)
Southeastern shrew	<i>Sorex longirostris</i>	--	D (S4)
<b>Mussels</b>			
Cumberland pigtoe	<i>Pleurobema gibberum</i>	LE	E (S1)
Dromedary pearlymussel	<i>Dromus dromas</i>	LE	E (S1)
Forkshell	<i>Epioblasma lewisii</i>	--	EXTI (SX)
Little-wing pearlymussel	<i>Pegias fabula</i>	LE	E (S1)
Salamander mussel	<i>Simpsonaias ambigua</i>	--	TRKD (S1)
Smooth rabbitsfoot	<i>Quadrula cylindrica</i>	LT	TRKD (S3)
Spectaclecase	<i>Cumberlandia monodonta</i>	LE	TRKD (S2S3)
White wartyback	<i>Plethobasus cicatricosus</i>	LE	E (S1)
<b>Plants</b>			
American barberry	<i>Berberis canadensis</i>	--	SPCO (S2)
American chestnut	<i>Castanea dentata</i>	--	SPCO (S2S3)
American ginseng	<i>Panax quinquefolius</i>	--	S-CE (S3S4)
American pillwort	<i>Pilularia americana</i>	--	SPCO (S1S2)
American water-pennywort	<i>Hydrocotyle americana</i>	--	E (S1)
Barratt's sedge	<i>Carex barrattii</i>	--	E (S2)
Beakrush	<i>Rhynchospora perplexa</i>	--	T (S2)
Beakrush	<i>Rhynchospora rariflora</i>	--	E (S1)
Beardgrass	<i>Gymnopogon brevifolius</i>	--	SPCO (S1S2)
Blomquist leafy liverwort	<i>Lejeunea blomquistii</i>	--	SPCO (S1S2)
Blue cohosh	<i>Caulophyllum giganteum</i>	--	T (S1)
Branching whitlow-wort	<i>Draba ramosissima</i>	--	SPCO (S2)
Butternut	<i>Juglans cinerea</i>	--	T (S3)
Button snakeroot	<i>Eryngium integrifolium</i>	--	T (S1)
Canby's lobelia	<i>Lobelia canbyi</i>	--	T (S2S3)
Coastal-plain yellow-eyed-grass	<i>Xyris ambigua</i>	--	E (S1)
Creeping St. John's-wort	<i>Hypericum adpressum</i>	--	E (S1)
Crested fringed orchid	<i>Platanthera cristata</i>	--	SPCO (S2S3)
Cumberland rosemary	<i>Conradina verticillata</i>	LT	T (S3)
Deam's copperleaf	<i>Acalypha deamii</i>	--	SPCO (S1)
Death-camas	<i>Zigadenus leimanthoides</i>	--	T (S2)
Drooping bluegrass	<i>Poa saltuensis</i>	--	T (S1)
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	--	T (S3)
Dwarf milkwort	<i>Polygala nana</i>	--	E (S1)

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State (Rank)
Dwarf sundew	<i>Drosera brevifolia</i>	--	T (S2)
Eggert's sunflower	<i>Helianthus eggertii</i>	DM	SPCO (S3)
Foxtail clubmoss	<i>Lycopodiella alopecuroides</i>	--	T (S2)
Granite gooseberry	<i>Ribes curvatum</i>	--	T (S1)
Globe-fruited ludwigia	<i>Ludwigia sphaerocarpa</i>	--	T (S1)
Hairy umbrella-sedge	<i>Fuirena squarrosa</i>	--	SPCO (S1)
Harper's umbrella-plant	<i>Eriogonum longifolium</i> var. <i>harperi</i>	--	E (S1)
Horse-tail spikerush	<i>Eleocharis equisetoides</i>	--	E (S1)
Lance-like spikerush	<i>Eleocharis lanceolata</i>	--	SPCO (S1)
Large-leaved grass-of-parnassus	<i>Parnassia grandifolia</i>	--	SPCO (S3)
Leggett's pinweed	<i>Lechea pulchella</i>	--	E (S1)
Liverwort	<i>Cololejeunea ornata</i>	--	T (S1)
Liverwort	<i>Radula voluta</i>	--	SPCO (S2)
Liverwort	<i>Metzgeria uncigera</i>	--	SPCO (S1)
Loesel's twayblade	<i>Liparis loeselii</i>	--	T (S1)
Loose-head beakrush	<i>Rhynchospora chalarocephala</i>	--	T (S1)
Loosestrife	<i>Lysimachia x producta</i>	--	SPCO (S1)
Low frostweed	<i>Helianthemum propinquum</i>	--	E (S1S2)
Maidencane	<i>Panicum hemitomom</i>	--	SPCO (S2)
Manna-grass	<i>Glyceria acutiflora</i>	--	SPCO (S2)
Marsh pea	<i>Lathyrus palustris</i>	--	SPCO (S1)
Narrow blue flag	<i>Iris prismatica</i>	--	T (S2S3)
Narrow-leaved wild leek	<i>Allium burdickii</i>	--	T-CE (S1S2)
Narrowleaf bushclover	<i>Lespedeza angustifolia</i>	--	T (S2)
Nestronia	<i>Nestronia umbellula</i>	--	E (S1)
Northern white cedar	<i>Thuja occidentalis</i>	--	SPCO (S3)
Palamocladium	<i>Palamocladium leskeoides</i>	--	T (S1)
Pale manna grass	<i>Torreyochloa pallida</i>	--	SPCO (S1)
Panic-grass	<i>Dichantherium acuminatum</i> ssp. <i>leucothrix</i>	--	SPCO (S1)
Price's potato-bean	<i>Apios priceana</i>	LT	E (S3)
Prickly hornwort	<i>Ceratophyllum echinatum</i>	--	SPCO (S1)
Rose pogonia	<i>Pogonia ophioglossoides</i>	--	E (S2)
Shadow-witch orchid	<i>Ponthieva racemosa</i>	--	E (S1)
Sharp's lejeunea	<i>Lejeunea sharpii</i>	--	E (S1S2)
Shining ladies'-tresses	<i>Spiranthes lucida</i>	--	T (S1S2)
Short-head rush	<i>Juncus brachycephalus</i>	--	SPCO (S2)
Small white leek	<i>Allium tricoccum</i>	--	S-CE (S1S2)
Spreading false-foxtail	<i>Aureolaria patula</i>	--	SPCO (S3)
Spotty featherwort	<i>Plagiochila punctata</i>	--	SPCO (S1)
Sundew	<i>Drosera capillaris</i>	--	T (S1)
Svenson's Wild-rye	<i>Elymus svensonii</i>	--	T (S2)
Swamp loosestrife	<i>Lysimachia terrestris</i>	--	E (S1)

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State (Rank)
Swamp lousewort	<i>Pedicularis lanceolata</i>	--	SPCO (S1S2)
Ten-angle pipewort	<i>Eriocaulon decangulare</i>	--	E (S1)
Torrey muhly	<i>Muhlenbergia torreyana</i>	--	E (S1)
Virginia chainfern	<i>Woodwardia virginica</i>	--	SPCO (S2)
Virginia spiraea	<i>Spiraea virginiana</i>	LT	E (S2)
Water-milfoil	<i>Myriophyllum pinnatum</i>	--	E (S1)
Western wallflower	<i>Erysimum capitatum</i>	--	E (S1S2)
White fringeless orchid	<i>Platanthera integrilabia</i>	THR	E (S2S3)
Wood lily	<i>Lilium philadelphicum</i>	--	E (S1)
Wolf spikerush	<i>Eleocharis wolfii</i>	--	E (S1)
Yellow-eyed-grass	<i>Xyris laxifolia</i> var. <i>iridifolia</i>	--	T (S2)
Yellow fringeless orchid	<i>Platanthera integra</i>	--	E (S1)
Yellow trout-lily	<i>Erythronium rostratum</i>	--	SPCO (S2)
Zigzag bladderwort	<i>Utricularia subulata</i>	--	T (S1)
<b>Reptiles</b>			
Eastern slender glass lizard	<i>Ophisaurus attenuatus longicaudus</i>	--	D (S3)
Northern pine snake	<i>Pituophis melanoleucus</i>	--	T (S3)

<sup>1</sup>**Federal status abbreviations:** LE = Listed endangered, LT = Listed threatened; PS = Partial Status; C = Candidate; DM = Recovered, Delisted, and Being Monitored

**State status abbreviations:** E = Endangered; T = Threatened; D = In need of management; NOST = No status; SPCO = Special concern; TRKD = Tracked by state natural heritage program; S-CE = Special Concern - Commercially Exploited

**State rank abbreviations:** S1 = Critically imperiled, often with five or fewer occurrences, S2 = Imperiled, often with <20 occurrences; S3 = Rare or uncommon, often with <80 occurrences; S4 = Widespread, abundant, and apparently secure within the state, but with cause for long-term concern; SH = Of historical occurrence in Tennessee, e.g. formally part of the established biota, with the expectation that it may be rediscovered; SX = Believed to be extirpated from the state; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2); S#B = Breeds in Tennessee; S#N = Occurs in Tennessee in a non-breeding status

Source: TVA 2016

In order to determine which of the species listed in each county are known to occur in the general vicinity of the reservoir, a more refined database search was conducted. Database searches are based on the following criteria: (1) distance, (2) element occurrence rank values, and (3) species or type of element present. Accordingly, plants are assessed within a 5-mile radius, aquatic species within a 10-mile radius, and terrestrial species within a 3-mile radius.

For information on threatened and endangered species and the potential impacts of the draft RLMP, see Volume I, Section 3.7.

### 2.2.5.1 Plants

Reviews of the TVA Natural Heritage database indicated that within the surrounding counties, there are three plant species listed as federally threatened or endangered, one proposed

threatened species, and one species deemed in need of management. There are an additional 50 plant species that are state-listed as threatened or endangered and 25 that are considered species of special concern (Table 2-4). Within 5-miles of the reservoir, there are three federally listed species and 14 additional state-listed species or species of concern. These species and their habitat requirements are discussed in Table 2-5.

Two species within Rock Island State Park have been recorded within a parcel proposed for allocation to Zone 6 (Developed Recreation) under the draft RLMP (Alternative B).

**Table 2-5. Habitat Requirements for Plant Species of Conservation Concern within 5 Miles of Great Falls Reservoir**

Common Name	Habitat Requirements	Suitable Habitat Present
American barberry	Open woods, and on bluffs and cliff along river banks <sup>2</sup>	Yes
American ginseng	Rich moist hardwood dominated woods under a closed canopy <sup>2</sup>	Yes
Blomquist leafy liverwort	Rock and boulders in moist areas <sup>2</sup>	Yes
Butternut	Rich bottomland forests <sup>2</sup>	Likely
Cumberland rosemary	Gravel/cobble/boulder/sand bar sand river banks within in sunny riparian areas <sup>2</sup>	Likely
Deam's copperleaf	Mesic woods, sandbars <sup>1</sup>	Likely
Liverwort ( <i>Radula volute</i> )	Damp shaded rocks along streams. 1772-3609 ft elevation <sup>2</sup>	Likely
Loesel's twayblade	Calcareous seeps <sup>1</sup>	Likely
Narrow-leaved wild leek	Rich woods <sup>1</sup>	Likely
Palamocladium	Moss. Seepy limestone cliffs and bluffs <sup>1</sup>	Yes Recorded in a TVA Zone 6 Parcel
Sharp's lejeunea	Rocks, boulders, bluffs, cliff faces. Usually limestone, sometimes sandstone or dolomite <sup>2</sup>	Likely
Shining ladies'-tresses	Alluvial woods and moist slopes <sup>1</sup>	Likely
Short-head rush	Seeps and wet bluffs <sup>2</sup>	Yes Recorded in a TVA Zone 6 Parcel
Virginia spiraea	Creek edges, gravel bars, rubble and boulders <sup>2</sup>	Likely
White fringeless orchid	Wet areas in acidic muck or sand. At the head of streams or seepage slopes <sup>2</sup>	Unlikely
Wood lily	Dry openings, frequently in powerline cuts <sup>1</sup>	Likely

Common Name	Habitat Requirements	Suitable Habitat Present
Yellow-eyed-grass	Pond margins and marshes <sup>1</sup>	Likely

<sup>1</sup> Source: TDEC 2014

<sup>2</sup> Source: NatureServe 2016

For information on plant communities and potential impacts of the draft RLMP, see Volume I, Section 3.5.3.

### 2.2.5.2 Terrestrial Wildlife

Reviews of the TVA Natural Heritage database indicate that there are three federally listed terrestrial species and 21 state-listed species, 16 of which are deemed in need of management in the counties surrounding Great Falls Reservoir (see Table 2-4). There are several other species that are being tracked by the state natural heritage program. Three federally listed species and eight additional state-listed species, or species in need of management, have been recorded within 3 miles of the reservoir (Table 2-6). An additional 20 tracked arachnid, diplopod, and insect species occur within 3 miles of the reservoir. These species and their habitat requirements are described in Table 2-6. No federally listed species have been recorded within TVA parcels. One state-listed species of concern has been recorded on a TVA parcel.

**Table 2-6. Habitat Requirements for Wildlife Species of Conservation Concern within 3 Miles of Great Falls Reservoir**

Common Name	Habitat Requirements	Suitable Habitat Present
<b>Arachnids</b>		
A harvestman from Cummings Cove Cave ( <i>Theromaster sp. 1</i> )	Terrestrial cave associate; known from one cave in the Cumberland Plateau; Van Buren County. Rare not state listed. <sup>2</sup>	Unlikely, only known from one cave, not on TVA parcel
<b>Amphibians</b>		
Barking treefrog	Low wet woods and swamps, sandy areas of pine savannas. Dependent on trees near water <sup>1</sup>	Likely in wetlands along the Caney Fork and Cummings River
Tennessee Cave salamander	Aquatic, cave obligate <sup>1</sup>	Potentially but, not known in the single cave on TVA parcels
Hellbender	Creeks and Rivers <sup>1</sup>	Potentially along the undammed portions of the Caney Fork and the Collins River
<b>Birds</b>		
Least bittern	Herbaceous wetland <sup>1</sup>	Potentially in wetlands along the Caney Fork
Common barn-owl	Nesting: cliffs, hollow trees, buildings, open forests Foraging: dense grass	Likely, however nearby records are historic

Common Name	Habitat Requirements	Suitable Habitat Present
	fields including marshes <sup>1</sup>	
Bald eagle	Forested areas near open water <sup>1</sup> . In TN, overwintering on reservoirs and large rivers <sup>2</sup>	Likely, one nest recorded in vicinity in 2010
<b>Diplopods</b>		
A cave obligate millipede ( <i>Scoterpes ventus</i> )	Terrestrial cave obligate; wet caves of the Cumberland Plateau & Sequatchie Valley <sup>2</sup> Rare, not state listed	Potentially, but Unlikely, not known to occur in TVA cave
A cave obligate beetle ( <i>Nelsonites walteri</i> )	Terrestrial cave obligate <sup>2</sup>	Potentially, but not known to occur in TVA cave
A cave obligate millipede ( <i>Tetracion tennesseensis</i> )	Subterranean cave obligate <sup>1</sup>	Potentially, but not known to occur in TVA cave
<b>Insects</b>		
A cave cricket ( <i>Hadenoeocus opilionides</i> )	Caves <sup>1</sup>	Potentially, but not known to occur in TVA cave
A cave obligate beetle ( <i>Pseudanophthalmus macradel</i> )	Terrestrial cave obligate <sup>2</sup>	Potentially, but not known to occur in TVA cave
A cave obligate beetle ( <i>Pseudanophthalmus vanburenensis</i> )	Terrestrial cave obligate <sup>2</sup>	Potentially, but not known to occur in TVA cave
A cave obligate beetle ( <i>Pseudanophthalmus robustus</i> )	Subterranean cave obligate <sup>1</sup>	Potentially, but not known to occur in TVA cave
A rove beetle ( <i>Atheta lucifuga</i> )	Terrestrial cave associate; reported from two caves in the Cumberland Plateau; Van Buren County. Rare, not State Listed <sup>2</sup>	Potentially, but not known to occur in TVA cave
A rove beetle ( <i>Aloconota diversiseta</i> )	Terrestrial cave obligate. Rare, not state listed <sup>2</sup>	Potentially, but not known to occur in TVA cave
A springtail ( <i>Sinella cavernarum</i> )	Subterranean obligate <sup>1</sup>	Potentially, but not known to occur in TVA cave
A springtail from Indian Cave ( <i>Folsomia sp.2 nr. Macrochaeta</i> )	Terrestrial cave obligate. Rare, not state listed <sup>2</sup>	Potentially, but not known to occur in TVA cave
A Viatica group springtail ( <i>Hypogastrura sp. 1</i> )	Terrestrial cave obligate; Van Buren County; known from one cave in the Cumberland Plateau. Rare, not state listed <sup>2</sup>	Unlikely, only known from one cave, not on TVA parcel
Copeland's springtail ( <i>Triacanthella copelandi</i> )	Terrestrial cave associate; middle Cumberlands; also reported from Great Smoky Mtns. Rare, not state listed <sup>2</sup>	Potentially, but not known to occur in TVA cave
Cumberland ground beetle ( <i>Trechus cumberlandus</i> )	Terrestrial associate of caves, springs, sinkholes; escarpment of the Cumberland Plateau, generally. Rare, not state listed	Potentially, but not known to occur in TVA cave
Rumbling Falls Cave beetle ( <i>Pseudanophthalmus sp. 27</i> )	Terrestrial cave obligate; middle Cumberlands; Van Buren & White counties. Rare, not state listed	Potentially, but not known to occur in TVA cave

Common Name	Habitat Requirements	Suitable Habitat Present
Rumbling Falls Cave dipluran ( <i>Litocampa sp. 5</i> )	Terrestrial cave obligate, Cumberland Plateau escarpment. Rare, not state listed	Potentially, but not known to occur in TVA cave
Swamp River Cave Neanura ( <i>Neanura sp. 1</i> )	Terrestrial cave obligate; Rumbling Falls area, Van Buren Co; known from a single cave. Rare, not state listed <sup>2</sup>	Unlikely, only known from one cave, not on TVA parcel
Swamp River Cave Onychiurus ( <i>Onychiurus sp. 2</i> )	Terrestrial cave obligate, middle Cumberlands; reported from a single cave in Van Buren County. Rare, not state listed <sup>2</sup>	Unlikely, only known from one cave, not on TVA parcel
Swamp River Cave Pseudosinella ( <i>Pseudosinella sp. 5</i> )	Terrestrial cave obligate. Rare, not state listed <sup>2</sup>	Unlikely, only known from one cave, not on TVA parcel
<b>Mammals</b>		
Allegheny woodrat	Rocky outcrops, cliffs. Usually at higher elevations <sup>1</sup>	Likely. Woodrats have been observed in a building on Parcel 2. May have been this species
Gray bat	Caves <sup>1</sup>	Likely foraging habitat over reservoir
Indiana bat	In winter, hibernacula are found in caves. During summer, roosts are found in wooded or semi wooded areas that have suitable trees with loose bark <sup>1</sup>	Summer roosting/foraging habitat likely
Rafinesque's big-eared bat	A woodland bat. Hibernation occurs in caves. Summer roosting occurs in hollow trees, buildings, under bridges or in culverts <sup>1</sup>	Yes. Located in a TVA Zone 2 Parcel. One record of this bat in a building at Great Falls Dam in June 2016
Northern long-eared bat	In winter, hibernacula are found in caves. During summer, roosts are found in wooded or semi wooded areas that have suitable trees with loose bark <sup>1</sup>	Summer roosting/foraging habitat likely

<sup>1</sup> Source: NatureServe 2016

<sup>2</sup> Source: TWRA 2016

For information on terrestrial wildlife and potential impacts of the draft RLMP, see Volume I, Section 3.5.4.

#### 2.2.5.2.1 Amphibians

Due to the presence of scrub-shrub wetlands (as indicated by the National Wetlands Inventory) in and along the dammed portion of the Caney Fork River, there is potential for suitable habitat for the barking treefrog within the TVA parcels.

The Tennessee cave salamander is not likely to be found within the TVA parcels is not known from the one known cave within the parcels. However survey of this cave would be required to determine if this species or suitable habitat for this species is present on the TVA parcels.

Hellbenders can be found in creeks and rivers. There is a potential for this species to be found in the undammed sections of the rivers adjacent to the parcels.

#### 2.2.5.2.2 Birds

Both the least bittern and barn owl have been recorded in the vicinity of the reservoir, however the records are historic. Nonetheless suitable habitat for both may exist on TVA parcels.

Emergent and scrub-shrub wetlands within and along the Caney Fork could provide habitat for least bittern. Nesting cavities for barn owl may be present within the mature forested sections of the TVA parcels. A bald eagle nest was recorded in 2010 near the reservoir. Additional nesting habitat for bald eagle around the reservoir and in the TVA parcels is likely. Foraging habitat for common barn owl and Bald eagle occurs on TVA parcels.

#### 2.2.5.2.3 Mammals

Allegheny woodrat has the potential to occur within the TVA parcel. A nesting woodrat was observed in a building at Rock Island State Park in 2016. Collection was not possible for confirmation of Allegheny woodrat species. Additional cave habitat on the TVA parcel may provide suitable habitat for this species.

Within 3 miles of Great Falls Reservoir, there are 407 known caves. Seven of these caves are known to provide roosting habitat for bats at least part of the year. Gray bats rely on caves year round. Due to large number of caves in the region, it is likely that gray bats could be found in the project area for foraging or roosting.

Indiana bats and northern long-eared bats roost in wooded areas in the summer. Because the TVA parcels have a high cover of mature forest, and there are winter records of Indiana bats and northern long-eared bats in the surrounding caves and summer records of northern long-eared bat in the surrounding landscape, it is likely that Indiana bats and northern long-eared bats could be found in the TVA parcels.

Rafinesque's big-eared bats summer roosts include wooded areas as well as buildings, bridges, culverts, and other man-made structures. In 2016, a Rafinesque's big-eared bat was observed in a building at Great Falls Dam. Additionally, there are records of these bats roosting in caves

within the region. Habitat for the Rafinesque’s big-eared bat exists within the reservoir and TVA parcels.

#### 2.2.5.2.4 Invertebrates

There are 20 species of rare terrestrial invertebrates being tracked within 3 miles of the reservoir. Most of these species are cave obligate and only known to exist in a few caves. None of these species have been recorded in the one cave on a TVA parcel. Surveys of the cave would be required to determine if any of these cave obligate species occur on the TVA parcel.

#### 2.2.5.3 Aquatic Species

In the counties surrounding Great Falls Reservoir, there are seven federally listed aquatic animal species, six of which are listed as endangered. There are an additional 16 additional state-listed species, two of which are considered state endangered and five considered in need of management (Table 2-4). Within 10 miles of the reservoir, there are a total of 13 listed species (Table 2-7). There are no records of any listed aquatic species on TVA parcels, however, there are records of five listed species within Great Falls Reservoir.

**Table 2-7. Habitat Requirements for Aquatic Species of Conservation Concern within 10 Miles of Great Falls Reservoir**

Common Name	Habitat Requirement	Suitable Habitat Present
<b>Fish</b>		
Bedrock shiner*	Bedrock pools of headwaters and streams. Tolerates stagnant conditions <sup>2</sup>	Record within southern tributary. Unlikely to be found in TVA parcels
Bluemask darter*	Streams with slow to moderate current over clean sand and fine gravel; Caney Fork River system (above Great Falls Reservoir) <sup>1</sup>	In southern and eastern tributaries. Unlikely to be found within TVA parcels
Cherry darter	Gravel riffles of creeks and small rivers. Often in springs and bedrock pools <sup>1</sup>	Unlikely to be found within TVA parcels
Flame chub	Springs and spring fed streams <sup>1</sup>	Unlikely to be found within TVA parcels
Redband darter	Limestone streams; Nashville Basin & portions of Highland Rim <sup>1</sup>	Unlikely to be found within TVA parcels
Sooty darter	Small streams with slabrock on limestone bedrock; Nashville Basin tributaries to Cumberland and lower Caney Fork rivers <sup>1</sup>	Unlikely to be found within TVA parcels
Southern cavefish*	Aquatic cave obligate; cave streams, karst waters, and water supply wells; reported from all karst regions excluding Blue Ridge and Ridge and Valley <sup>1</sup>	One record from 1960 below dam. Unlikely as there are no aquatic caves within the parcels
<b>Gastropod</b>		
Cupped vertigo	In leaf litter and moss on forested hillsides;	Habitat likely

Common Name	Habitat Requirement	Suitable Habitat Present
	Blue Ridge; Monroe County <sup>2</sup>	
Ornate rocksnail	Large rivers, does not readily adapt to reservoirs	Unlikely
Umbilicate river snail	Freshwater <sup>1</sup>	Unknown
<b>Insects</b>		
Yeatmans Groundwater Copepod ( <i>Diacyclops yeatmani</i> )	Aquatic cave obligate; central southern Cumberlands generally; possibly part of a species complex. Rare, not state listed <sup>2</sup>	Potentially, but not known to occur in TVA cave
<b>Mussels</b>		
Cumberland pigtoe*	Shallow gravel riffles of small to medium rivers <sup>2</sup>	Record in Cane Creek unlikely to be found in TVA parcels
Little-wing pearl mussel*	Cool, clear, high-gradient streams in sand, gravel, and cobble substrates, riffles; portions of Cumberland and upper Tennessee river system <sup>1</sup>	Record in Cane Creek unlikely to be found in TVA parcels

<sup>1</sup> Source: TDEC 2014

<sup>2</sup> Source: NatureServe 2016

\* Records within Reservoir

For information on aquatic species and potential impacts of the draft RLMP, see Volume I, Section 3.6.

### 2.2.6 Water Quality

TDEC establishes water quality standards for individual waterbodies by identifying the most stringent criteria for each assigned use and considering the antidegradation status. The seven designated uses for the waterways of the State are defined in Rules of Tennessee Department of Environment and Conservation, Chapter 0400-40-04 and include: domestic water supply, industrial supply, fish and aquatic life, trout stream, naturally reproducing trout stream, livestock watering and wildlife, and irrigation. Waterbodies in Tennessee that do not fully support their designated uses based on a review of water quality data and information are considered to be impaired and included in the 303(d) list.

TVA does not conduct a reservoir health rating for the Great Falls Reservoir. However, TDEC has assessed the reservoir (water body ID TN0513010802217.6 – 1000) and found the water quality meets the standards for TDEC's designated uses for Great Falls (TDEC 2016). Great Falls Reservoir is categorized by TVA as a storage reservoir with storage used primarily for hydroelectric power generation, and has no designated flood storage volume.

It is noted however, that the segment of Caney Fork River immediately downstream of the Great Falls dam (water body ID TN05130108025 – 1000 TN0513010802217.6 – 1000) is impaired due to the presence of the reservoir and operations which cause streamflow decreases and habitat impacts (TDEC 2016). An 8.7-mile long segment of Rocky River (TN05130108024-1000), a tributary to Great Falls near the dam, is identified as a sediment impaired stream. Higher in the Great Falls watershed, segments of Rocky River, Dry Fork and Piney Creek are assessed as impaired due to abandoned mine lands (TDEC 2016).

For information on water quality and potential impacts of the draft RLMP, see Volume I, Section 3.8.

### **2.2.7 Wetlands**

Wetlands are transitional ecosystems between terrestrial and aquatic communities, where saturation with water is the dominant factor in determining the types of plants and animals present. Wetlands are ecologically important because of their beneficial effect on water quality, their moderation of flow regimes by retaining and gradually releasing water, their value as wildlife habitat, and as areas of botanical diversity. Wetlands exist within and adjacent to TVA reservoirs and are influenced by surface water and groundwater connections to the water levels in these reservoirs. The presence of wetlands immediately on or adjacent to TVA reservoirs is related to the land use characteristics and development status of the shoreline. Lands supporting more intense shoreline development are typically noted as having a decrease in wetland features.

Emergent wetlands typically occur in a narrow elevation zone centered on the summer pool elevation and contain water for much of the growing season. Vegetation typically includes cattail, bulrush, arrowhead, and water plantain. Scrub-shrub wetlands are typically associated with reservoir shorelines and coves and are often transition zones between emergent and forested wetlands. The vegetation can include hardwood trees less than 15 feet-tall but are dominated by shrubs such as silky dogwood, red osier dogwood, buttonbush, alder, willow, and elderberry. Forested wetlands occur on lower-lying, undisturbed areas and along tributary streams on power generation sites. These areas are dominated by flood tolerant hardwood species such as oaks, maples, and ash.

Vegetated wetlands occur with greater frequency and size along the mainstem reservoirs and tailwaters than along the tributary reservoirs and tailwaters, such as Great Falls. This is due in part to the larger-sized watersheds of mainstem reservoirs resulting in a greater volume of

water; greater predictability of the annual hydrologic regime; shoreline and drawdown zone topography (wider and flatter floodplains, riparian zones, and drawdown zones and large areas of shallow water); and larger sections of relatively still, shallow-water areas. Wetlands tend to be smaller and do not occur as frequently on tributary reservoirs because of the relatively steep drawdown zones, the rolling to steep topography of adjacent lands, shoreline disturbance caused by wave action, and the lower predictability and shorter duration of summer pool levels. On tributary reservoirs, wetlands are typically located at the backs of coves where tributary streams enter the reservoir and in very patchy, small (less than 0.01 acre) areas along the shoreline.

The information presented in this document is derived from the National Wetland Inventory database and supplemented with previous on-the-ground surveys done by TVA, including for the SMI EIS (TVA 1999). Field surveys were not performed for this RLMP to gather more up-to-date information regarding the types and locations of wetlands within the Great Falls Reservoir. The only types of wetlands mapped within the Great Falls Reservoir besides open water are emergent and scrub-shrub (Table 2-8).

**Table 2-8. Wetland Types within the Great Falls Reservoir**

<b>Wetland Type</b>	<b>Acres</b>
Emergent	2.2
Scrub-Shrub	1.1
Open Water	5.0
<b>Total</b>	<b>8.3</b>

Source: USFWS 2016

Some of the wetland areas within the reservoir are present in local, state, and federally managed areas including wildlife refuges, wildlife management areas, national forests, parks, and recreation areas; and TVA-designated sites including small wild areas, habitat protection areas, and ecological study areas (Section 2.2.11).

For more information on wetlands and the potential impacts of the draft RLMP, see Volume I, Section 3.9.

### **2.2.8 Floodplains**

The area encompassed by the RLMP extends from the lower limit of TVA’s property, just below the Great Falls Dam at approximate Caney Fork mile (CFM) 90.2, upstream to about

CFM 109.9. Great Falls Dam is located at CFM 91.1. The 100-year floodplain is the area that would be inundated by the 100-year flood (base flood).

In Great Falls Reservoir, the 100-year flood elevations for the Caney Fork vary from 815.5 feet msl at the Great Falls Dam at CFM 91.1 to elevation 822.2 feet msl at CFM 109.9. The 500-year flood elevations vary from 820.0 feet msl at CFM 91.1 to 827.7 feet msl at CFM 109.9.

Tabulations of the 100- and 500-year flood elevations are included in Volume I, Appendix D. For more information on the potential impacts of the draft RLMP on floodplains, see Volume I, Section 3.10.

### **2.2.9 Air Quality**

In accordance with the Clean Air Act Amendments of 1990, all counties that include parts of the Great Falls Reservoir are designated with respect to compliance, or degree of noncompliance, with the National Ambient Air Quality Standards (NAAQS). The NAAQS have been established to protect the public health and welfare with respect to six pollutants: particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead. An area with air quality better than the NAAQS is designated as “attainment;” an area with air quality worse than the NAAQS is designated as “non-attainment.” Warren and White counties are considered in attainment for all NAAQS. The Mammoth Cave National Park is a designated Prevention of Significant Deterioration Class I air quality area approximately 89 miles from the Great Falls Reservoir and is afforded special protection. General information about air emissions and climate change are identified in Volume I, Section 3.11.

Sources of air emissions within TVA lands along the Great Falls Reservoir occur at the park and dam facilities and from truck and vehicle transportation.

Currently, air emissions from uses on TVA lands on the Great Falls Reservoir are low. Future projects that have the potential to affect ambient air quality would be planned in detail to minimize air emission impacts and would comply with Clean Air Act regulations.

For information on air quality and the potential impacts of the draft RLMP, see Volume I, Section 3.11.

### **2.2.10 Cultural and Historic Resources**

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events that lack material

evidence of those events. Cultural resources that are listed, or considered eligible for listing, on the National Register of Historic Places (NRHP) are called historic properties. To be considered an historic property, a cultural resource must possess both integrity and significance. A historic property's integrity is based on its location, design, setting, materials, workmanship, feeling, and association. The significance is established when historic properties meet at least one of the following criteria: (a) are associated with important historical events or are associated with the lives of significant historic persons; (b) embody distinctive characteristics of a type, period, or method of construction; (c) represent the work of a master, or have high artistic value; or (d) have yielded or may yield information important in history or prehistory (36 CFR Part 60.4).

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their proposed undertakings on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment on those effects. TVA determined that the draft RLMP (Alternative B) is an "undertaking" as defined by the regulations under NHPA. Once an action is determined to be an undertaking, the regulations require agencies to consider whether the proposed activity has the potential to impact historic properties. If the undertaking is such an activity, then the agency must follow the following steps: (1) involve the appropriate consulting parties; (2) define the area of potential effects (APE); (3) identify historic properties in the APE; (4) evaluate possible effects of the undertaking on historic properties in the APE; and (5) resolve adverse effects. (36 CFR § 800.4 through 800.13.). An APE is defined as the "geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." (36 CFR § 800.16.). Concerning cultural resources, the APE is taken as the affected environment for purposes of this EIS. TVA defined the APE to be the area where TVA is proposing in its draft RLMP to change the current Zone allocation (Alternative A).

Section 106 of the NHPA requires federal agencies to consult with the respective State Historic Preservation Officer (SHPO) and Indian tribes when proposed federal actions could affect historic and cultural resources, including archaeological resources, which are also protected under the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act, in addition to the NHPA.

#### **2.2.10.1 Archaeological Resources**

The Great Falls Reservoir region has been an area of human occupation for the last 12,000 years. This includes five broad cultural periods: Paleo-Indian (>12,000-8,000 BC),

Archaic (8000-1600 BC), Woodland (1600 BC-AD 1000), Mississippian (AD 1000-1700), and Historic (AD 1700-present). These divisions are based on stylistic changes in artifact types and technological and cultural adaptations. Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on flood plains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands. The influx of European settlers into this region resulted in the establishment of Warren County in 1807. The early economy of the county was based on agriculture with industrial development following the surrounding regional trends of timbering and mining through the 19th century (Dillon 2009). The Civil War destroyed some of this early infrastructure and commercial development. Post-Civil War economic development saw a continuation of timbering and mining with the later edition of textile manufacturing. The creation of Great Falls Dam ushered in electrification in the county and facilitated further industrial development.

The Great Falls Reservoir area did not experience the same archaeological interest as TVA's larger reservoirs. Much of what we know about the prehistory of the Great Falls Reservoir area comes from archaeological investigations from surrounding areas. Archeological sites along Great Fall Reservoir tend to be open habitation, rockshelters, and caves that were recorded in the late 1970's and 1980's. In 2016, 28 acres of TVA land at Great Falls was subjected to an intensive archaeology survey by TVA. The archaeological survey, completed in August 2016, was conducted to consider potential impacts from a proposed roadway realignment on TVA land running along the Caney Fork River in Warren County, Tennessee. Two historic cemeteries and an archaeological site (40WR125) were identified during the survey. Site 40WR125 consists of dispersed prehistoric stone tools and manufacturing debris and the visible remains of 18 different historic structures possibly associated with the late nineteenth century Great Falls Cotton Mill and the early twentieth century Great Falls Hydroelectric Dam construction.

#### **2.2.10.2 Historic Structures**

Great Falls Dam was listed on the National Register of Historic Places in 1989 for its significance to Pre-TVA Hydroelectric Development in Tennessee. The acquisition of land for Great Falls Reservoir may have resulted in the removal of many structures and other man-made features. The few structures that remain likely represent all historical periods including individual farmsteads and industrial sites such as mills. However, many of these structures' NRHP eligibility has not been assessed, and a complete survey for historic structures has not been conducted. However, as noted above, a TVA survey completed in 2016 found the visible

remains of 18 historic structures. The presence of other historic structures on Great Falls Reservoir cannot be ruled out until a historic structure inventory has been conducted as part of a project-specific environmental review (all projects occurring on TVA land receive such a review as part of the NEPA and Section 106 processes). Furthermore, many historic structures remain on adjacent non-TVA land that may be indirectly impacted by activities on TVA land.

### **2.2.11 Natural Areas and Ecologically Significant Sites**

Natural areas include managed areas, ecologically significant sites, and Nationwide Rivers Inventory (NRI) streams. Managed areas include lands held in public ownership that are managed by an entity (e.g., U.S. Army Corps of Engineers, State of Tennessee) to protect and maintain certain ecological and/or recreational features. A management plan or similar document defines what types of activities are compatible with the intended use of the managed area. Ecologically significant sites are tracts of privately owned land that are either recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant, but not specifically managed by TVA's Natural Areas Program. NRI streams are free-flowing segments of rivers recognized by the U.S. National Park Service as possessing outstandingly remarkable natural or cultural values that may potentially qualify them as part of the National Wild and Scenic Rivers System.

The TVA Natural Heritage database indicates that there are three natural areas on or within TVA parcels along Great Falls Reservoir. The areas include Center Hill Lake, Great Falls Reservoir Reservation, and Rock Island State Park. An additional 16 natural areas lie within 3 miles of Great Falls Reservoir. For more information on managed areas and sensitive ecological sites, see Volume I of the EIS, Section 3.13 and Appendix D.

### **2.2.12 Aesthetic and Visual Resources**

Visual resources within the Great Falls Reservoir are not unusually unique on a state, regional, or national level. The area surrounding Great Falls Reservoir is a scenic wilderness with numerous waterfalls, including the one that gives the reservoir its name. Great Falls is a 30-foot-tall horseshoe cascading waterfall, located below the 19th century cotton textile mill that it powered over 100 years ago. Whitewater rapids below the dam are world-renowned for kayaking and canoeing and have been the site for national and international paddling events.

The area surrounding the reservoir is rural and the shoreline of the reservoir is primarily comprised of forested areas, parks, and developed recreational areas. Downstream of Great Falls Dam is Rock Island State Park, which includes the rugged beauty of the Caney Fork

Gorge. The overlooks in this area are some of the most scenic and significant along the Eastern Highland Rim. The Caney Fork River Gorge contains scenic overlooks, waterfalls, deep pools and limestone paths perfect for hiking, swimming, fishing, kayaking, and exploring.

For information on these resources and the potential impacts of the draft RLMP, see Volume I, Section 3.14.

### **2.2.13 Noise**

Sources of noise within lands along the Great Falls Reservoir include those associated with forested areas, residential development, suburban areas, parks, farmed areas, and recreational areas. Characteristics of noise emissions associated with common land uses are identified in Volume I of the EIS, Section 3.15.

TVA owns two parcels on this reservoir, one would be allocated to Zone 6 (Developed Recreation), which consists of Rock Island State Park and the other parcel is allocated as Zone 2 (Project Operations), which consists of the Great Falls Dam Reservation. Rock Island State Park supports passive recreation and camping. Traffic in this area may result in noise within vicinity of the access roads and parking areas. The bulk of the noise emitted from the Great Falls Dam and powerhouse is related to the release of water and the noise emissions from the powerhouse. Noise from these sources will attenuate with distance from the source and as such, the noise levels associated with TVA lands around the reservoir is relatively low.

### **2.2.14 Socioeconomics and Environmental Justice**

#### **2.2.14.1 Population and Economy**

The population of the two county area that contains the Great Falls Reservoir is described in Table 2-9. Warren County had a population of 40,435 in 2015 while White County had a population of 26,521. Neither of the two counties had population growth rates exceeding the state of Tennessee's 3.9 percent from 2010 to 2015. Both of the counties in the area contain rural population percentages, which are nearly double the 33.6 percent rural population percentage of the states. Warren County has a 61.4 percent rural population and White County has a 78.2 percent rural population. Although relatively rural, the 2015 to 2020 projected growth rate of 23.8 percent for Warren County far exceeds the projected rates of 6.3 percent for White County and 8.3 percent for the state of Tennessee.

**Table 2-9. Population and Percent Growth – Great Falls Reservoir**

Population	County		State
	Warren	White	Tennessee
Population (2020 - Projection)	50,056	28,185	7,195,375
Population (2015 - Estimate)	40,435	26,521	6,600,299
Population (2014 - Estimate)	39,867	26,086	6,451,365
Population (2010)	39,839	25,841	6,346,105
Projected Growth (2015-2020)	23.8%	6.3%	8.3%
Percent Change (2010-2015)	1.5%	2.6%	3.9%
Percent Change (2010-2014)	0.1%	0.9%	1.6%
Percent Rural (2010)	61.4%	78.2%	33.6%

Sources: USCB 2015 and USCB 2010a

As presented in Table 2-10, from 2010 to 2014, an average of 5.5 percent of the population was unemployed within the Great Falls Reservoir area. The state of Tennessee during that same period had an unemployment rate of 6 percent. For both counties, employment was generally within three sectors: Management and Business Science, and Arts; Sales and Office; and Production, Transportation, and Material Moving. When compared to the median household income of \$44,621 for the state of Tennessee, Warren and White counties are significantly lower. The median household income between 2010 and 2014 for Warren County was \$34,592 and \$33,933 for White County.

**Table 2-10. Employment and Income, 2010-2014 – Great Falls Reservoir**

Employment and Income	County		State
	Warren	White	Tennessee
Civilian Employed Population 16 Years and Over	15,870	9,907	2,835,895
Management and Business Science and Arts	26%	23%	34%
Service Occupations	16%	19%	17%
Sales and Office	22%	21%	25%
Natural Resources, Construction, and Maintenance	12%	13%	9%
Production, Transportation and Material Moving	24%	24%	15%
Percent of Population > 16 years Unemployed	5%	6%	6%
Median Household Income	\$34,592	\$33,933	\$44,621

Source: USCB 2010b

**2.2.14.2 Environmental Justice**

EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” formally requires Federal agencies to incorporate Environmental Justice as part of NEPA. Specifically, it directs them to address, as appropriate, any disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority and low-income populations. Although TVA is not one of the agencies subject to this order, TVA routinely considers Environmental Justice impacts as part of the project decision-making process.

The minority population within the Great Falls Reservoir area is lower than the state of Tennessee’s which has a minority population of 25.4 percent (Table 2-11). The percent minority within Warren County is 13.9 whereas White County has a rate half as much at 6.0 percent. Both Warren and White counties have higher poverty rates than the state of Tennessee. The percent of the population below the poverty level for 2010 to 2014 in Warren County was 21.5 percent and 22.1 percent in White County. The state of Tennessee’s poverty rate was only 17.8 percent during that same time period.

**Table 2-11. Minority Population and Poverty, 2010-2014– Great Falls Reservoir**

Minority Population and Poverty	County		State
	Warren	White	Tennessee
Total Population	39,867	26,086	6,451,365
White Alone <sup>1</sup>	36,539	25,002	5,029,109
Black or African American Alone <sup>1</sup>	638	469	1,082,001
American Indian and Alaska Native Alone <sup>1</sup>	76	25	17,656
Asian Alone <sup>1</sup>	224	10	98,441
Native Hawaiian and Other Pacific Islander Alone <sup>1</sup>	12	0	3,256
Two or More Races	1,315	563	122,662
Hispanic or Latino <sup>2</sup>	3,275	497	309,828
Percent Minority	13.9%	6.0%	25.4%
Percent of Population Below Poverty Level	21.5%	22.1%	17.8%

<sup>1</sup>Includes persons reporting only one race

<sup>2</sup>Hispanics may be of any race, so also are included in applicable race categories.

Source: USCB 2010b

For information on socioeconomics and the potential impacts of the draft RLMP, see Volume I, Section 3.15 of the EIS.

### **2.3 The Future Management of Reservoir Lands**

Varying types of land management or conservation techniques coupled with development could occur along Great Falls Reservoir. Business opportunity, overall economy, local incentives, and community planning practices are factors that could contribute to the types of industry locating or expanding along the reservoir. Recreation demand is driven by population levels, recreation participation rates, changing preferences for different types of recreation, and innovations in recreation equipment. As noted above (Section 2.2.2) and below under the description of Parcel 2 (Chapter 4), the State of Tennessee has requested that TVA grant a term easement over the 343-acre Parcel 2 in order to provide additional developed recreation opportunities. TVA is currently considering this proposal.

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## CHAPTER 3. LAND PLANNING PROCESS

### 3.1 Process for Planning Land

The reservoir land management planning process involves allocation of TVA fee-owned land to seven defined land use zones. The term “land use zone” refers to a descriptive set of criteria given to distinct areas of land based on location, features, and characteristics. The land use zone definitions listed in Table 3-1 are identical to those listed in the NRP (TVA 2011). The definition of a land use zone provides a clear statement of how TVA will manage public land and allocation of a parcel to a particular land use zone identifies that land for specific uses. Implementation of an RLMP minimizes conflicting land uses and makes it easier to handle requests for use of public land.

This draft RLMP was developed by a team of land managers and technical experts from TVA, knowledgeable about the reservoir and its resources. The planning team made land use decisions by integrating public needs, environmental conditions, economic benefits, state and federal policies, and the original congressional intent of the Great Falls Reservoir project. The process includes information from resource data, computer analysis, the public, other agencies, and knowledgeable TVA staff. This draft RLMP is consistent with the strategic direction of the NRP and the objections of the CVLP. Furthermore, the categorization and management of TVA-owned shoreline access land along Great Falls Reservoir tiers from the SMI EIS (TVA 1999).

The planning process is completed once TVA conducts an environmental review of the draft RLMP as well as reasonable alternatives, in compliance with NEPA. This process allows the public and intergovernmental partners to review TVA’s proposed allocations and provide input.

**Table 3-1. Land Use Zone Definitions**

Zone	Definition
<p>Zone 1 Non-TVA Shoreland</p>	<p>Shoreland that TVA does not own in fee. This land may be privately owned or owned by a governmental entity other than TVA. Uses of this non-TVA land may include residential, industrial, commercial, and/or agricultural. In many instances, TVA may have purchased the right to flood and/or limit structures on this non-TVA land (i.e., flowage easement). TVA’s permitting authority under Section 26a of the TVA Act applies to construction of structures on non-TVA shoreland.</p> <p>Non-TVA shoreland allocations are based on deeded rights and, therefore, will not change as a result of the lands planning process. This category is provided to assist in comprehensive evaluation of potential environmental impacts of TVA’s allocation decision.</p>

Zone	Definition
<p>Zone 2 Project Operations</p>	<p>Land currently used, or planned for future use, for TVA operations and public works projects, including:</p> <ul style="list-style-type: none"> <li>• Land adjacent to established navigation operations — Locks, lock operations and maintenance facilities, and the navigation work boat dock and bases.</li> <li>• Land used for TVA power projects operations — Generation facilities, switchyards, and transmission facilities and rights-of-way.</li> <li>• Dam reservation land — Areas acquired and managed for the primary purpose of supporting the operation and maintenance of TVA dams and associated infrastructure; secondary uses may also include developed and dispersed recreation, maintenance facilities, miscellaneous TVA field offices, research areas, and visitor centers.</li> <li>• Navigation safety harbors/landings — Areas used for tying off commercial barge tows and recreational boats during adverse weather conditions or equipment malfunctions.</li> <li>• Navigation dayboards and beacons — Areas with structures placed on the shoreline to facilitate navigation.</li> <li>• Public works projects — Includes rights-of-way for public utility infrastructure, such as sewer lines, water lines, transmission lines, and major highway projects.</li> </ul>
<p>Zone 3 Sensitive Resource Management</p>	<p>Land managed for protection and enhancement of sensitive resources. Sensitive resources, as defined by TVA, include resources protected by state or federal law or executive order and other land features/natural resources TVA considers important to the area viewscape or natural environment.</p> <p>Recreational natural resource activities, such as hunting, wildlife observation, and camping on undeveloped sites, may occur in this zone, but the overriding focus is protecting and enhancing the sensitive resource the site supports.</p> <p>Areas included are:</p> <ul style="list-style-type: none"> <li>• TVA-designated sites with potentially significant archaeological resources.</li> <li>• TVA public land with sites/structures listed in or eligible for listing in the National Register of Historic Places.</li> <li>• Wetlands — Aquatic bed, emergent, forested, and scrub-shrub wetlands as defined by TVA.</li> <li>• TVA public land under easement, lease, or license to other agencies/individuals for resource protection purposes.</li> <li>• TVA public land fronting land owned by other agencies/individuals for resource protection purposes.</li> <li>• Habitat protection areas — These TVA natural areas are managed to protect populations of species identified as threatened or endangered by the U.S. Fish and Wildlife Service, state-listed species, and any unusual or exemplary biological communities/geological features.</li> <li>• Ecological study areas — These TVA natural areas are designated as suitable for ecological research and environmental education by a recognized authority or agency. They typically contain plant or animal populations of scientific interest or are of interest to an educational institution that would utilize the area.</li> <li>• Small wild areas — These TVA natural areas are managed by TVA or in cooperation with other public agencies or private conservation organizations to protect exceptional natural, scenic, or aesthetic qualities that can also support dispersed, low-impact types of outdoor recreation.</li> </ul>

Zone	Definition
	<ul style="list-style-type: none"> <li>• River corridor with sensitive resources present — A river corridor is a segment of a river and the adjacent land along the banks. River corridors often consist of a linear green space of TVA land serving as a buffer to tributary rivers entering a reservoir. These areas will be included in Zone 3 when identified sensitive resources are present.</li> <li>• Significant scenic areas — Areas designated for visual protection because of their unique vistas or particularly scenic qualities.</li> <li>• Champion tree site — Areas designated by TVA as sites that contain the largest known individual tree of its species in that state. The state forestry agency “Champion Tree Program” designates the tree, while TVA designates the area of the sites for those located on TVA public land.</li> <li>• Other sensitive ecological areas — Examples of these areas include heron rookeries, uncommon plant and animal communities, and unique cave or karst formations.</li> </ul>
<p style="text-align: center;">Zone 4 Natural Resource Conservation</p>	<p>Land managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this zone. Appropriate activities in this zone include hunting, timber management to promote forest health, wildlife observation, and camping on undeveloped sites. Areas included are:</p> <ul style="list-style-type: none"> <li>• TVA public land managed for wildlife or forest management projects.</li> <li>• TVA public land under easement, lease, or license to other agencies for wildlife or forest management purposes.</li> <li>• TVA public land fronting land owned by other agencies for wildlife or forest management purposes.</li> <li>• Dispersed recreation areas maintained for passive, dispersed recreation activities, such as hunting, hiking, bird watching, photography, primitive camping, bank fishing, and picnicking.</li> <li>• Shoreline conservation areas — Narrow riparian strips of vegetation between the water’s edge and TVA’s back-lying property that are managed for wildlife, water quality, or visual qualities.</li> <li>• Wildlife observation areas — TVA natural areas with unique concentrations of easily observed wildlife that are managed as public wildlife observation areas.</li> <li>• River corridor without known sensitive resources present — A river corridor is a linear green space along both stream banks of selected tributaries entering a reservoir managed for light boat access at specific sites, riverside trails, and interpretive activities. River corridors will be included in Zone 4 unless sensitive resources are known to be present (see Zone 3).</li> <li>• Islands where sensitive resources are not known to be present or that support existing development.</li> </ul>
<p style="text-align: center;">Zone 5 Industrial</p>	<p>Land currently used, or planned for future use, for economic development, including businesses in distribution/processing/assembly and manufacturing. Preference will be given for businesses requiring water access. There are two primary types of uses for TVA land allocated for Industrial: (1) access for water supply or structures associated with navigation such as barge terminals, mooring cells, etc., or (2) land-based development potential.</p> <p>Areas included are:</p> <ul style="list-style-type: none"> <li>• TVA public land under easement, lease, or license to other agencies/individuals/ entities for industrial purposes.</li> </ul>

Zone	Definition
	<ul style="list-style-type: none"> <li>• TVA public land fronting land owned by other agencies/individuals/entities for industrial purposes.</li> </ul> <p>In some cases, TVA land allocated to industrial use would be declared surplus and sold at public auction.</p> <p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> <li>• Industry — Manufacturing, fabrication, and distribution/processing/assembly involving chemical, electronics, metalworking, plastics, telecommunications, transportation, and other industries. Industry does not include retail or service-based businesses.</li> <li>• Industrial access — Access to the waterfront by back-lying property owners across TVA property for water intakes, wastewater discharge, or conveyance of commodities (i.e., pipelines, rail, or road). Barge terminals are associated with industrial access corridors.</li> <li>• Barge terminal sites — Public or private facilities used for the transfer, loading, and unloading of commodities between barges and trucks, trains, storage areas, or industrial plants.</li> <li>• Fleeting areas — Sites used by the towing industry to switch barges between tows or barge terminals that have both offshore and onshore facilities.</li> <li>• Minor commercial landing — A temporary or intermittent activity that takes place without permanent improvements to the property. These sites can be used for transferring pulpwood, sand, gravel, and other natural resource commodities between barges and trucks.</li> </ul>
<p>Zone 6 Recreation</p>	<p>Land currently used, or planned for future use, for concentrated, active recreational activities that require capital improvement and maintenance of developed infrastructure, including:</p> <ul style="list-style-type: none"> <li>• TVA public land developed for recreational purposes, such as campgrounds, day use areas, etc.</li> <li>• TVA public land under easement, lease, or license to other agencies/individuals/entities for developed recreational purposes.</li> <li>• TVA public land fronting land owned by other agencies/individuals/entities for developed recreational purposes.</li> </ul> <p>Residential use, long-term accommodations, and/or individually owned units are not permitted on land allocated for developed recreation. Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> <li>• Public recreation — Recreation amenities developed and owned by a public agency that are open to the public. Public recreation areas may have varying levels of development, ranging from a water access site (e.g., launching ramp) to a marina facility. Facilities at public recreation areas could include playgrounds/play structures, picnic facilities, tennis courts, horseshoe areas, play courts, recreation centers, trails, greenways, natural areas, amphitheaters, food concessions (vending, snack bar), access to water for fishing and boating, swimming areas and swimming pools, launching ramps, courtesy piers, canoe access, marina facilities owned by the public entity, parking, and campgrounds. Cabins or other overnight accommodations (other than campgrounds) are only permitted if the public recreation area is operated by a state or state agency as a component of a state park system.</li> <li>• Public recreation areas and facilities are typically owned and operated by the federal, state, county, or local government. However, private</li> </ul>

Zone	Definition
	<p>entities may operate recreation facilities on public recreation land as concessionaires under agreement with the public entity controlling the property. The use of the facilities may be offered free or for a fee. Time-forward, public-private partnerships where facilities are owned by private investors will not be approved on public recreation land. All structures and facilities should be owned by the public entity.</p> <ul style="list-style-type: none"> <li>• Commercial recreation — Recreation amenities that are provided for a fee to the public intending to produce a profit for the private owner/operator. These primarily water-based facilities typically include marinas and affiliated support facilities such as stores, restaurants, campgrounds, and cabins and lodges. Where applicable, TVA will require appropriate compensation for the commercial use of the property.</li> </ul>
<p>Zone 7 Shoreline Access</p>	<p>TVA-owned land where Section 26a applications and other land use approvals for residential shoreline alterations are considered in accordance with TVA's Shoreline Management Policy. Types of development/management that may be permitted on this land are:</p> <ul style="list-style-type: none"> <li>• Residential water use facilities, e.g., docks, piers, launching ramps/driveways, marine railways, boathouses, enclosed storage space, and nonpotable water intakes.</li> <li>• Shoreline access corridors, e.g., pathways, wooden steps, walkways, or mulched paths that can include portable picnic tables and utility lines.</li> <li>• Shoreline stabilization, e.g., bioengineering, riprap, gabions, and retaining walls.</li> <li>• Shoreline vegetation management.</li> </ul>

Prior to proposing parcel allocations, the TVA planning team reviewed the characteristics of each parcel (i.e., location and existing conditions). The planning team honored all existing commitments—that is, existing leases, licenses, and easements. No sensitive resources surveys were conducted on committed land. The remaining parcels were proposed to be allocated based on reservoir planning objectives and public input. Proposed management of each parcel was made by consensus among the TVA planning team. When developing the proposed RLMPs, the planning team identified proposed allocations and used the zone definitions listed above to reach consensus on the proposed allocations of the reservoir land.

In developing draft RLMPs, TVA typically proposes to allocate lands currently committed to a specific use to a zone compatible with that use unless there is an overriding need to change the use. Land currently committed to a specific use was allocated to a zone compatible with that use unless there was an overriding need to change the use. Some committed land uses are determined by the covenants and provisions of easements, leases, licenses, and sale and transfer agreements. Committed lands include the following: properties where TVA has granted land rights (easements, leases, etc.) for specific uses, properties where TVA has previously

identified resources in need of protection, Project Operations lands (transmission lines, dam reservations, public infrastructure, etc.), and lands fronting wildlife management areas. Possible reasons to change a committed land use would be to prevent or remedy ongoing adverse impacts resulting from the actions of a license or easement holder.

All of the TVA land surrounding Great Falls Reservoir (approximately 362.3 acres) are committed due to existing TVA or other public infrastructure projects. Agricultural licenses are not considered as committed uses because they are an interim use of TVA land.

### **3.2 Great Falls Reservoir Goals and Objectives**

The NRP established long-term land planning goals and objectives. While these goals and objectives were established to guide planning decisions across the Valley, these same goals and objectives can be applied when planning specific reservoirs.

#### ***Goal***

TVA will strive to continue to balance shoreline development, recreational use, sensitive and natural resource management, industrial use and other land uses in a way that maintains the quality of life and other important values across the region.

#### ***Objectives***

Apply a systematic method of evaluating and identifying the most suitable uses of TVA public lands using resource data, stakeholder input, suitability and capability analyses, and TVA staff input.

- Identify land use zone allocations to optimize public benefit and balance competing demands for the use of public lands.
- Identify land use zone allocations to support TVA's broad regional resource development mission. TVA reservoir properties are managed to provide multiple public benefits, including recreation, conservation, and economic development.
- Provide a clear process by which TVA will respond to requests for use of TVA public land.
- Comply with federal regulations and executive orders.

- Enhance the protection of significant resources, including threatened and endangered species, cultural resources, wetlands, unique habitats, natural areas, water quality, and the visual character of the reservoir.
- Provide a mechanism that allows local, state, and federal infrastructure projects when the use is compatible with the zone allocation.

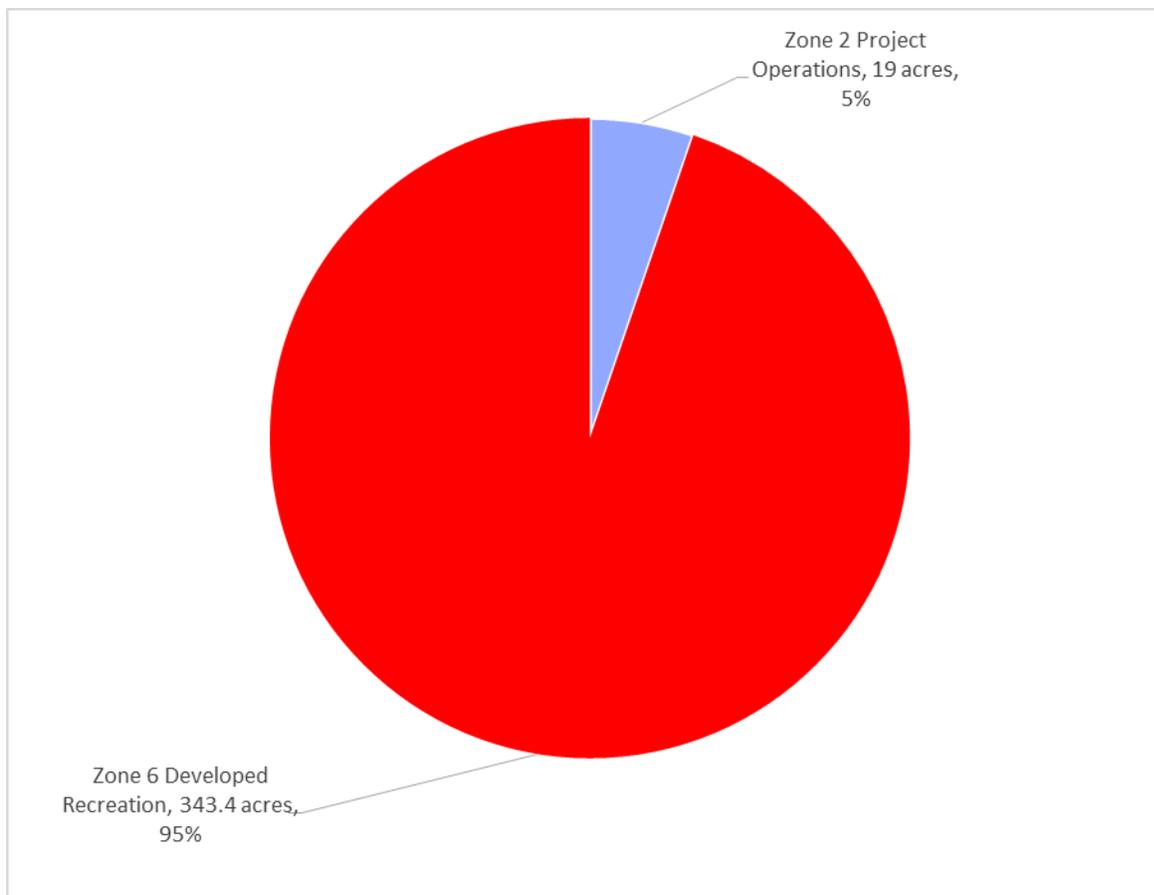
### 3.3 Parcel Allocations

TVA’s land planning process (Section 3.1) along with the goals and objectives specific to Great Falls Reservoir (Section 3.2) were used to develop this draft RLMP. Through this process, TVA proposes allocations for each reservoir parcel to one of the seven planning zones as indicated in Table 3-2.

**Table 3-2. Summary of Proposed Land Use Allocations for Great Falls Reservoir Land Management Plan (Alternative B)**

Allocation Designation		Number of Parcels	Acres
Zone 2	Project Operations	1	19.0
Zone 3	Sensitive Resource Management	0	0
Zone 4	Natural Resource Conservation	0	0
Zone 5	Industrial	0	0
Zone 6	Developed Recreation	1	343.4
Zone 7	Shoreline Access	0	0
<b>Total</b>		<b>2</b>	<b>362.4</b>

Figure 3-1 represents the percent of land acreage on Great Falls Reservoir that would be allocated to each land use zone.



**Figure 3-1. Percent of Great Falls Reservoir Acreage Allocated by Zone**

TVA owns only two parcels on this reservoir, one is proposed to be allocated to Zone 6 (Developed Recreation) which consists of Rock Island State Park and is managed by the State of Tennessee. The other parcel is proposed to be allocated as Zone 2 (Project Operations), which consists of the Great Falls Dam Reservation. The dam reservation parcel receives heavy informal public use and includes the dam powerhouse and associated access roads, transmission lines and substations. The Great Falls Dam and powerhouse are historically significant structures and are eligible for listing on the National Register of Historic Places (NRHP). See Appendix B for a description of proposed parcel allocations.

When TVA developed its CVLP in 2011, it was anticipated that the entire TVA property footprint on Great Falls would be allocated to Zone 2 (Project Operations). However, this draft RLMP proposes to allocate most of the TVA property to Zone 6 (Developed Recreation) to reflect existing and potential future public recreation use and operation by the State of Tennessee.

**Table 3-3. Draft Great Falls Reservoir Land Management Plan (Alternative B) and 2011 Comprehensive Valleywide Land Plan Comparison**

Allocation Designation		Draft Great Falls Reservoir Land Management Plan	2011 Comprehensive Valleywide Land Plan
Zone 2	Project Operations	5.2%	100%
Zone 3	Sensitive Resource Management	0%	0%
Zone 4	Natural Resource Conservation	0%	0%
Zone 5	Industrial	0%	0%
Zone 6	Developed Recreation	94.8%	0%
Zone 7	Shoreline Access	0%	0%

TVA does not propose to change the allocation of the two parcels (362.4 acres) on Great Falls Reservoir. See Appendix B for parcel allocation description tables.

### 3.4 Property Administration

As stewards of public land, TVA uses the RLMP, along with TVA policies and guidelines, to manage resources and to respond to requests for the use of TVA land. Inquiries about or requests for the use of TVA land can be made to the TVA Public Land Information Center at 800-TVA-LAND or 800-882-5263 between 8 a.m. and 6 p.m. Eastern time Monday through Friday.

Pursuant to the TVA Land Policy, TVA would consider changing a land use designation outside of the normal planning process only for the purpose of water access for industrial or commercial recreational operations on privately owned back-lying land or to implement TVA's SMP.

Additionally, there are a small number of TVA parcels in the Valley that have deeded access rights for shoreline access that are currently utilized for other uses such as commercial recreation and industrial. Should the private back-lying land become residential, a request for a change of allocation of the parcel to Zone 7 (Shoreline Access) would be subject, with the appropriate environmental review, to action by the TVA Board or its designee or to Board-approved policy.

Consistent with the TVA Land Policy, those parcels or portions of parcels that have become fragmented from the reservoir may be declared surplus and sold at public auction. Public works/utility projects, such as easements for pipelines, power or communication wires, roads, or

other public infrastructure, proposed on TVA lands that do not affect the proposed allocated land use or sensitive resources would not require an allocation change as long as such projects would be compatible with the use of the allocated zone. Proposed public works/utility projects would be subject to a project-specific environmental review. Any other requests involving a departure from the planned uses would require appropriate approval. Proposals consistent with TVA's policies and the allocated use, and otherwise acceptable to TVA, will be reviewed in accordance with NEPA and must conform to the requirements of other applicable environmental regulations and other legal authorities.

## CHAPTER 4. PARCEL DESCRIPTIONS

Note: This chapter describes the proposed land use determined to be most suitable for each parcel of TVA land as shown on the plan maps (Appendix A, Panel 1). The parcel descriptions include the acreage rounded to the nearest tenth and the proposed land use. Relevant data regarding the planned use are provided for each tract and include existing land uses, physical characteristics of the land, presence of existing private water use facilities, and any special considerations related to the future use.

Under Section 26a of the TVA Act, TVA reviews requests for construction of water use facilities on TVA-managed reservoirs in the Tennessee River Watershed. Section 26a provides that any obstructions along, across, or in the Tennessee River system (including water use facilities) must be approved by TVA. TVA's Section 26a authority is limited to structures within TVA flowage easement on Great Falls Reservoir because it is on the Cumberland River system. No existing private water use facilities are currently present.

### Parcel 1 - (19.0 acres)

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel is the Great Falls Dam Reservation and receives heavy informal public use. Existing facility development includes the dam powerhouse and associated access roads, transmission lines and substations. Tennessee State Route (SR) 287, which travels through rural Warren and Van Buren counties, is located on this parcel. Because this tract contains the Great Falls Dam Reservation, it is also considered historically significant. Great Falls Dam and powerhouse are historically significant structures and eligible for listing on the National Register of Historic Places. Requests for private water use facilities will not be considered.

**Table 4-1. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Warren and White, Tennessee
Topographic Map	Campaign and Doyle
Stream Mile and Bank	Caney Fork River Mile 91.1B
Land Use/Land Cover	Mixture of powerhouse, roads, substations, and water control structures
Known Dispersed Recreation Opportunities	Bank fishing, hiking, canoe and kayaking
Current Agreements/Commitments	Term easement to Middle Tennessee Natural Gas Utility District for gas/natural gas utilities
Potential Projects	Placement on the National Register of Historic Places
Potential Partners	State of Tennessee

**Parcel 2 - (343.4 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

Parcel 2 is located at the confluence of the Caney Fork and Collins River. The parcel lies on both banks of the Caney Fork and the left descending bank of the Collins River. This parcel overlooks the Caney Fork Gorge below Great Falls Dam. Great Falls waterfall is a 30-foot horseshoe cascading waterfall located below the 19<sup>th</sup> century Great Falls Cotton Mill.

Historically, Tennessee State Parks have managed this parcel as part of the Rock Island State Park. Amenities include an observation area, picnic facilities, restroom facilities, and trails. Additional information about Rock Island State Park can be found the Tennessee State Parks' Web site, <http://tnstateparks.com/parks/about/rock-island>. Within Rock Island State Park there are records of two state-listed species, palamocladium (*Palamocladium leskeoides*) and short-head rush (*Juncus brachycephalus*).

As noted in Section 2.2.2, the State of Tennessee has requested that TVA grant a term easement for public and commercial recreation use over this TVA parcel. The State's proposed plans for the property include relocating SR-287 away from the Great Falls Cotton Mill and allowing a third-party to restore the mill for commercial recreation purposes (such as a restaurant, event center, etc.).

The Great Falls Cotton Mill is a three-story textile mill completed in 1892. This structure was listed on the National Register of Historic Places in 1982. The mill has great local and statewide significance and is in remarkably good condition. During a 2016 survey of the area, two historic cemeteries and an archaeological site (40WR125) were identified. Site 40WR125 consists of dispersed prehistoric stone tools and manufacturing debris and the visible remains of 18 different historic structures, possibly associated with the Great Falls Cotton Mill and the early twentieth century Great Falls Dam

The parcel is mostly forested with access via SR-287. One cave occurs on this parcel. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

**Table 4-2. Parcel Information**

Location Component	Parcel Specific Information
County, State	Warren and White, Tennessee
Topographic Map	Campaign and Doyle
Stream Mile and Bank	Caney Fork River Mile 91.1
Land Use/Land Cover	Mostly forested with roads, cotton mill and appurtenant structures
Known Dispersed Recreation Opportunities	Bank fishing, hiking, canoe and kayaking
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• None identified</li> </ul>
Potential Projects	Relocating SR 287, Restoration of Great Falls Cotton Mill
Potential Partners	None identified

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## CHAPTER 5. PLANNING TEAM

### **Chellye L Campbell**

Position: Senior Specialist, Land Policy  
Education: B.S., Biology  
Experience: 15 years in Planning and Managing Land  
Involvement: Deed interpretation and Land Policy guidance

### **Thomas O. Maher**

Position: Archaeologist  
Education: Ph.D., Anthropology  
Experience: 32 years in the field of Archaeology  
Involvement: Planning Team and Cultural Resource Management

### **Leonard L. McCurdy, Jr.**

Position: Senior Specialist, Reservoir Land Use and Permitting  
Education: B.S., Environmental Studies–Chemistry; J.D., Law  
Experience: 25 years in the field of Law including 18 years in TVA real property rights  
Involvement: Deed interpretation and Land Policy guidance

### **Heather L. Montgomery**

Position: Senior Program Manager, Reservoir Lands Planning  
Education: B.S., Environmental Biology  
Experience: 15 years in Planning and Managing Land and Environmental Impacts Evaluation  
Involvement: Program Manager

### **Mark T. Morrissey**

Position: Watershed Representative  
Education: B.S., Geography  
Experience: 2 years in Planning and Managing Land; 5 years in Industrial Safety and Compliance  
Involvement: Planning Team and preparation of geographic information system

### **Karen E. Rylant**

Position: Senior Specialist, Section 26a Policy and Process  
Education: Ph.D., Agronomy (Soil Chemistry); M.S., Soil Fertility; B.A., Chemistry, B.A., Geology  
Experience: 8 years in Environmental Research; 4 years in Land and Shoreline Management  
Involvement: Deed interpretation and Section 26a guidance

### **Lesley M. White**

Position: Recreation Agreements Specialist  
Education: M.S. and B.S., Biological Sciences  
Experience: 9 years in Land Management and Permitting  
Involvement: Planning Team

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## GLOSSARY

<b>acre</b>	A unit measure of land area equal to 43,560 square feet
<b>agricultural licensing</b>	Some parcels or portions of parcels designated for other purposes or uses may also be suitable for interim agricultural licensing. These parcels have been identified using the criteria contained in TVA's agriculture instruction. Normal tenure for a TVA agricultural license is five years. Land with extreme erosion potential may not be licensed for agricultural use unless erosion and sediment controls, including the use of best management practices, can be successfully implemented. Further investigation and/or mitigation of adverse impacts to natural or cultural resources may be required prior to approval of license agreements.
<b>cultural resources</b>	Archaeological, historic, and architectural resources
<b>dam reservation</b>	Lands generally maintained in a park-like setting by TVA to protect the integrity of the dam structure, hydroelectric facilities, and navigation locks. The reservation also provides for public visitor access to the TVA dam facilities and recreation opportunities, such as public boat access, bank fishing, camping, picnicking, etc. Hunting is not typically allowed on dam reservations.
<b>deciduous</b>	Vegetation that sheds leaves in autumn and produces new leaves in the spring.
<b>dispersed recreation</b>	Recreation of an informal nature such as hunting, hiking, biking, bird watching, photography, primitive camping, bank fishing, and picnicking, and etc. that occur on TVA land. These activities are not associated with developed facilities although some improvements may occur for access, health and safety, or to protect the environment.
<b>embayment</b>	A bay or arm of the reservoir
<b>emergent wetland</b>	Wetlands dominated by erect, rooted herbaceous plants, such as cattails and bulrushes.
<b>endangered species</b>	A species in danger of extinction throughout all or a significant part of its range. Endangered species recognized by the Endangered Species Act or similar state legislation have special legal status for their protection and recovery.
<b>Environmental Policy</b>	A TVA Board-approved policy that communicates guiding principles to lead TVA successfully in the reduction of its environmental impact while continuing to provide reliable and competitively priced power to the Valley
<b>floodplain</b>	Any land area susceptible to inundation by water from any source by a flood of selected frequency. For purposes of the National Flood Insurance Program, the floodplain, as a minimum, is that area subject to one percent or greater chance of flooding (100-year flood) in any given year.
<b>forest</b>	Vegetation having tree crowns overlapping, generally forming 60 to 100 percent cover.
<b>Land Policy</b>	A TVA Board-approved policy that guides retention, disposal, and planning interests in real property
<b>mitigation</b>	An action that either will result in avoidance or an effect or cause the results of an activity to be minor in significance

<b>natural areas</b>	Ecologically significant sites, lands set aside for particular management objectives, and lands that contain sensitive biological, cultural or scenic resources. The TVA natural area program includes small wild areas, habitat protection areas, wildlife observation areas, and ecological study areas.
<b>plan tract</b>	A numbered parcel of TVA fee-owned land that has been assigned, through the reservoir land planning process, an allocation to guide future land use decisions.
<b>prime farmland</b>	Generally regarded as the best land for farming, these areas are flat or gently rolling and are usually susceptible to little or no soil erosion. Prime farmland produces the most food, feed, fiber, forage, and oil seed crops with the least amount of fuel, fertilizer, and labor. It combines favorable soil quality, growing season, and moisture supply and, under careful management, can be farmed continuously and at a high level of productivity without degrading either the environment or the resource base. Prime farmland does not include land already in or committed to urban development, roads, or water storage.
<b>riparian</b>	Related to or located on the banks of a river or stream
<b>scrub-shrub</b>	Woody vegetation less than about 20-feet-tall. Species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions
<b>shoreland</b>	The surface of land lying between the minimum pool elevation of a TVA reservoir and the maximum shoreline contour or TVA back-lying property (whichever is further)
<b>shoreline</b>	The line where the water of a TVA reservoir meets the shore when the water level is at the normal summer pool elevation.
<b>shoreline access rights</b>	TVA land encumbered with deeded or implied rights held by adjacent property owners. The deeded or implied rights allow individuals to construct water use facilities upon receipt of TVA's written approval of plans.
<b>threatened species</b>	A species threatened with extinction throughout all or a significant portion of its range or territory. Threatened species recognized by the Endangered Species Act or similar state legislation have special legal status for their protection and recovery.
<b>wetlands</b>	As defined in TVA Environmental Review Procedures, "Wetlands are those areas inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances do or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds.
<b>wildlife management area</b>	Land and/or water areas designated by state wildlife agencies, such as the Tennessee Wildlife Resources Agency, for the protection and management of wildlife. These areas typically have specific hunting and trapping regulations as well as rules regarding appropriate uses of these areas by the public.

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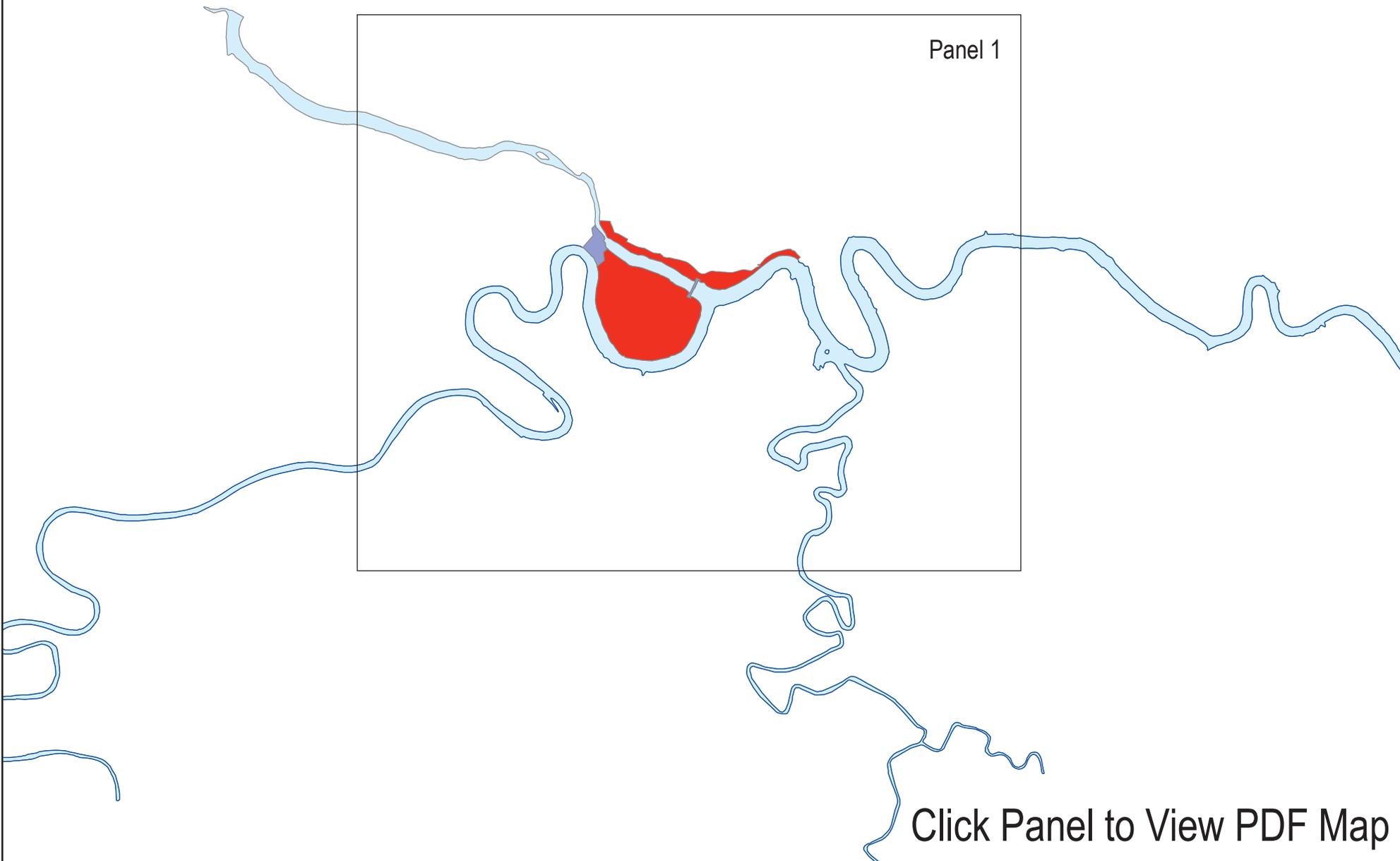
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**Appendix A – Draft Land Management Plan Maps – Panel 1**

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# Great Falls Reservoir



Panel 1

Click Panel to View PDF Map



**Appendix B – Comparison of Parcel Allocations by Alternative**



## APPENDIX B

### Comparison of Parcel Allocations by Alternative

#### GREAT FALLS RESERVOIR

TVA does not propose to change the allocation of the two parcels (362.4 acres) on Great Falls Reservoir. See Table below:

<b>Number of Parcels Per Zone Allocation</b>			
Zone 2	1	Zone 5	0
Zone 3	0	Zone 6	1
Zone 4	0	Zone 7	0
<b>Parcel</b>	<b>No Action Allocation</b>	<b>Proposed Allocation</b>	<b>Acres per Allocation</b>
1	2	2	19.0
2	6	6	343.4
<b>Total = 2 Parcels</b>		<b>Total = 362.4 Acres</b>	

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