

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 VII* *Normandy Reservoir*

December 2016





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# **NORMANDY RESERVOIR**

*Draft Reservoir Land Management Plan*

## **VOLUME VII**

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

Prepared by  
Tennessee Valley Authority

December 2016

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## **ACRONYMS AND ABBREVIATIONS**

<b>§</b>	Section
<b>APE</b>	Area of Potential Effect
<b>CFR</b>	Code of Federal Regulations
<b>CVLP</b>	Comprehensive Valleywide Land Plan
<b>dBA</b>	A-Weighted Decibel
<b>DSNA</b>	Designated State Natural Area
<b>EIS</b>	Environmental Impact Statement
<b>EO</b>	Executive Order
<b>HPA</b>	Habitat Protection Area
<b>msl</b>	Mean Sea Level
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NEPA</b>	National Environmental Policy Act
<b>NRCS</b>	Natural Resources Conservation Service
<b>NRHP</b>	National Register of Historic Places
<b>NRI</b>	Nationwide Rivers Inventory
<b>NRP</b>	Natural Resource Plan
<b>RFAI</b>	Reservoir Fish Assemblage Index
<b>RLMP</b>	Reservoir Land Management Plan
<b>ROW</b>	Right-of-Way
<b>RVSMMP</b>	Reservoir Vital Signs Monitoring Program
<b>SHPO</b>	State Historic Preservation Officer
<b>SMI</b>	Shoreline Management Initiative
<b>SMP</b>	Shoreline Management Policy
<b>TWRA</b>	Tennessee Wildlife Resources Agency
<b>TVA</b>	Tennessee Valley Authority
<b>USDA</b>	U.S. Department of Agriculture
<b>USDOI</b>	U.S. Department of the Interior
<b>USGS</b>	U.S. Geological Survey
<b>WMA</b>	Wildlife Management Area

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## CHAPTER 1. INTRODUCTION

The draft Normandy Reservoir Land Management Plan (RLMP) is a study of the Tennessee Valley Authority (TVA)-managed public land surrounding Normandy Reservoir. It is one of eight proposed RLMPs 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 VII of the EIS addresses TVA's proposed RLMP for Normandy Reservoir. This document provides background information about TVA land management throughout its history and specifically TVA management of public land surrounding Normandy Reservoir. It explains the purpose of the draft RLMP and describes the process used in its development. The draft RLMP includes the planning process, which lists the objectives around which the RLMP was developed and a summary of the allocation process. The Normandy 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 RLMP.

Once TVA completes its Multiple RLMP EIS, this Volume will serve as the consolidated planning document addressing management of TVA reservoir lands on Normandy 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 (U.S.), 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>.

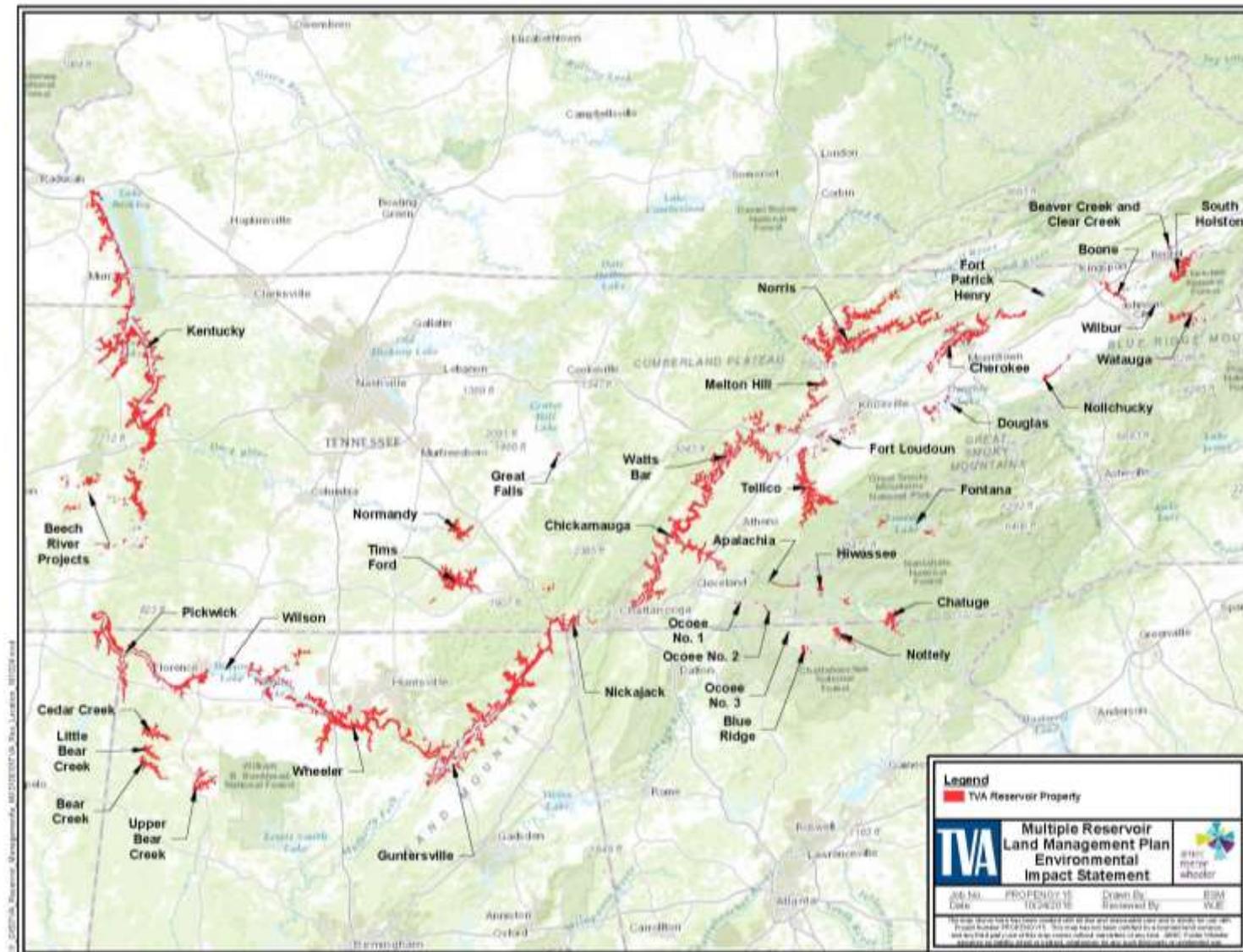


Figure 1-1. TVA Managed Reservoir Land

### 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.

As part of the NRP, TVA developed a Comprehensive Valleywide Land Plan (CVLP) (TVA 2011). 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 develop 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 proposed 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 Normandy Reservoir planning effort have been included in determining the potential revisions to the CVLP.

The draft Normandy RLMP and proposed revisions to the CVLP Allocation Ranges will be included in the five-year cyclic review of the NRP.

## **CHAPTER 2. REGIONAL OVERVIEW**

The headwaters of the Tennessee River are in eastern Tennessee, in southwestern Virginia, western North Carolina, and in northern Georgia. The Tennessee River is formed by the confluence of the Holston and French Broad rivers just above Knoxville, Tennessee. The river flows in a southwesterly direction through Tennessee, crosses northern Alabama, forms a small portion of the northeastern boundary of Mississippi, and then flows north through western Tennessee and western Kentucky to empty into the Ohio River at Paducah, Kentucky, a distance of about 650 miles. The Tennessee River drains an area of 40,910 square miles—about equal to the area of Ohio. The headwaters are in the Smoky Mountains and the Blue Ridge Mountains, which are the highest ranges east of the Rockies. The mountain region is in striking contrast to the relatively flat lands of northern Alabama and to the rolling land of western Kentucky.

The TVA Act was amended August 31, 1935, requiring TVA to report to Congress their recommendations for the unified development of the Tennessee River System. The proposed system would include nine main river, multi-purpose dams, and three or more tributary storage dams. The system would contribute substantially to the control of floods on the Tennessee, lower Ohio, and lower Mississippi Rivers, establish a formalized navigation channel, and provide many related benefits, including a large supply of electric power. By the end of 1970, the integrated water control system in the Valley was comprised of 32 major dams, nine on the Tennessee River and 23 on its tributaries.

### **2.1 History of Normandy Dam**

Normandy Dam is a part of the Duck River Project that was created to aid the economic advancement of the upper Duck River region. Normandy is TVA's largest non-power tributary storage project. It is located at Duck River mile 248.6 in Bedford and Coffee counties in middle Tennessee. It is operated for flood damage reduction, water supply, recreation and economic development. Normandy also provides water for a fish hatchery immediately downstream of Normandy Dam.

Construction of Normandy Dam began on June 7, 1972 and was completed on January 5, 1976. Normandy Dam consists of a rolled earth-filled embankment that is 110-feet-high and stretches 2,800 feet across the Duck River. The earth filled embankment required 180,000 cubic yards of dirt and 170,000 cubic yards of rock to be removed from the construction site. It also required approximately 1,800,000 cubic yards of earth fill and 30,000 cubic yards of concrete. Normandy

Dam has two spillways that are 40-feet-high by 36-feet-wide with radial gates that are operated on site by two hoists.

Before the construction of Normandy Dam, 90 families and one cemetery were relocated. The highway system of Bedford and Coffee counties received approximately 14 miles of road relocations and also included the construction of two major bridges. The relocation of public utilities included power transmission lines, distribution lines, and telephone lines.

## **2.2 Normandy Reservoir and Present Shoreline**

Normandy Dam is located at Duck River mile 248.6, approximately 8 miles north of Tullahoma, Tennessee, and 1.5 miles upstream from Normandy, Tennessee. Normandy Dam stretches over 1,800 feet across the Duck River in Bedford and Coffee counties in Tennessee.

Normandy Reservoir has a flood-storage capacity of 48,000 acre-feet between top-of-gates elevation 880-feet mean sea level (msl) and elevation 864-feet msl. The water level in Normandy Reservoir varies around 11 feet in a normal year. The minimum winter elevation for the reservoir is 664-feet msl, and the typical summer operating range is 875 feet msl.

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

To create this reservoir, TVA originally acquired approximately 7,790 acres of land and land-rights for flooding, erosion control, and other purposes. The total amount of land inundated by the reservoir was approximately 2,993 acres. The remaining approximate 4,797 acres are the scope of this RLMP. These lands are currently managed in accordance with allocations made by TVA in the Normandy RLMP completed in 1990.

The shoreline of Normandy Reservoir is primarily composed of forested areas, with some residential development, parks, and recreational uses. These uses are generally reflected in the land cover database for the parcels around the reservoir and the surrounding area which identifies land cover in these areas as primarily forested and farmed areas with a relatively large amount of 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 is also currently a term agricultural license below Normandy Dam for hay production.

According to TVA's 1998 SMI EIS, TVA owns all of the 75 miles of shoreline on Normandy Reservoir (see Volume I, Table 3-1). Approximately 15 percent of the TVA owned shoreline is available for residential shoreline access (see Volume I, Table 3-2). In the SMI EIS, TVA

estimates that approximately 41 percent of this TVA owned shoreline is currently developed with residential subdivisions. TVA has holds flowage easement rights along portions of this private shoreline.

As identified in above, TVA originally purchased approximately 7,791 acres of land in fee for Normandy Reservoir and approximately 2,993 acres are flood prone. Any structures placed within existing flowage easements or within the 500-year floodplain 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 any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries.

TVA public land on the Normandy Reservoir contains 640.4 acres of identified prime farmland (Table 2-1). Prime farmland has soil with the best combination of 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 Normandy Reservoir.

**Table 2-1. Prime Farmland in Normandy Reservoir**

<b>Proposed Zone (Draft RLMP)</b>	<b>Prime Farmland (acres)</b>
Zone 2 – Project Operations	222.5
Zone 3 – Sensitive Resource Management	80.8
Zone 4 – Natural Resource Conservation	252.4
Zone 5 – Industrial	0.0
Zone 6 – Developed Recreation	82.7
Zone 7 – Shoreline Access	2.0
<b>Total</b>	<b>640.4</b>

Source: USDA Natural Resources Conservation Service (NRCS) 2016

The largest portion (252.4 acres) of prime farmland acreage occurs in areas that would be allocated to Zone 4 (Natural Resource Conservation), which would have little or no soil disturbance. Major soil disturbance could occur when TVA or other public facilities are constructed in lands designated for Zone 2 (Project Operations), which would include 222.5 acres of prime farmland. However, most parcels that would be designated for Zone 2 already contain facilities that are not likely to require substantial modification. Only 82.7 acres of

prime farmland occur in areas that would be allocated to Zone 6 (Developed Recreation), where major soil disturbances could occur in specific locations, if recreation facilities are constructed. Conversely, large areas would remain unaffected for more dispersed recreation management. The least amount of prime farmland (2 acres) occurs in parcels that would be allocated to Zone 7 (Shoreline Access).

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

### **2.2.2 Recreation**

TVA provides public lands for developed and dispersed recreational purposes through the reservoir lands planning process. Developed recreation uses include campgrounds, lodges, marinas, boat launching-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 Normandy Reservoir were categorized based upon a suitable use that is consistent with TVA policy and guidelines and applicable laws and regulations.

On Normandy Reservoir, developed recreation provides modern facilities and amenities such as campgrounds and developed boat launching-ramps, swimming beach and picnic facilities. These uses primarily occur on TVA lands that would be allocated to Zone 6 (Developed Recreation) and Zone 2 (Project Operations). On the Normandy Reservoir, approximately 5 percent (258.8 acres) of TVA land would be allocated to Zone 6 and approximately 17 percent (790.7 acres) would be allocated to Zone 2.

The Normandy Reservoir is an outdoor recreation resource that attracts visitors from within and outside the region. Five parcels contain recreation areas, which have been developed on the Normandy Reservoir. Many of these recreation areas are located on properties that TVA transferred, leased or licensed for recreation development and use. No public parks have been developed on lands made available by TVA.

Recreational facilities around Normandy Reservoir include two campgrounds operated commercially under 30-year recreation easements. The Barton Springs Campground and the

Cedar Point Campgrounds provide campsites, bathhouses, swimming areas, and pavilions. Cedar Point also includes a boat-launching ramp. Tennessee Wildlife Resource Agency (TWRA) manages additional lake access areas, each with paved parking lots and boat-launching ramps, at Boyd’s Branch, Ward’s Chapel and upstream of the Normandy Dam. On the downstream portion of the Normandy Dam Reservation, there is a public access area with paved parking, bank fishing facilities, and a canoe launch. This access area is on the upstream end of a 28-mile scenic floatway on the Duck River.

Table 2-2 itemizes developed recreation area lands that are managed by TVA or another public agency for recreation purposes. Table 2-3 summarizes commercial, private, and semi-private developed recreation areas. Table 2-2 and Table 2-3 do not itemize recreation areas on Non-TVA Shorelands (Zone 1) because these areas are beyond the scope of this draft RLMP. Normandy 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 2-2. Developed Public Recreation Areas on TVA Lands on the Normandy Reservoir**

Recreation Area	Managing Entity	Parcel Location
Normandy Dam Reservation	TVA	1
Boyd’s Branch Boat Ramp	TWRA	4
Wards Chapel Boat Ramp	TWRA	13

**Table 2-3 Developed Commercial, Private and Semi-Private (camps) Recreation Areas on TVA Lands on the Normandy Reservoir**

Recreation Area	Managing Entity	Parcel Location
Cedar Point Campground	Recreation Resources Management	5
Barton Springs Campground and Boat Ramp	Recreation Resources Management	29

Some of the TVA lands around Normandy Reservoir provide excellent opportunities for dispersed or nature-based recreation activities. Dispersed recreation could occur on lands allocated to Zone 2 (Project Operations) and undeveloped areas allocated as Zone 6 (Developed Recreation) as well as on land allocated to Zone 3 (Sensitive Resource Management) (approximately 8 percent or 371.7 acres) or Zone 4 (Natural Resource Conservation) (70 percent or 3,362.8 acres). For example, on lands allocated to Zone 4 (Natural

Resource Conservation) appropriate dispersed recreation activities include hunting, bank fishing, and hiking.

For more information on recreation resources and the potential impacts of the draft RLMP, see Volume I, Section 3.4.

### 2.2.3 Terrestrial Ecology

Normandy 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 (U.S. Geological Survey [USGS] 2016). Table 2-4 contains a summary of the land cover within and in the vicinity of Normandy Reservoir.

**Table 2-4. Land Cover on TVA Owned Parcels and within the Vicinity of Normandy Reservoir**

Land Cover Type	TVA Property		Vicinity (5-Mile Radius)	
	Acres <sup>1</sup>	Percent Cover (%)	Acres <sup>1</sup>	Percent Cover (%)
Barren Land	53.0	1.1	260.9	0.2
<b>Developed</b>		0.0		0.0
Developed, High Intensity	1.5	0.0	574.2	0.4
Developed, Medium Intensity	20.8	0.4	1,719.7	1.3
Developed, Low Intensity	19.0	0.4	5,798.8	4.4
Developed, Open Space	148.0	3.1	12,426.0	9.4
<b>Forest</b>		0.0		0.0
Deciduous Forest	3,472.4	72.4	53,461.4	40.6
Evergreen Forest	182.9	3.8	2,817.2	2.1
Mixed Forest	160.2	3.3	1,731.5	1.3
<b>Shrubland</b>		0.0		0.0
Shrub/Scrub	62.1	1.3	2,821.6	2.1
<b>Herbaceous</b>		0.0		0.0
Grassland/Herbaceous	68.9	1.4	1,628.1	1.2
Hay/Pasture	382.2	8.0	35,646.8	27.1
<b>Planted/Cultivated</b>		0.0		0.0
Cultivated Crops	34.4	0.7	6,550.0	5.0

<b>Wetlands/Open Water</b>		0.0		0.0
Woody Wetlands	59.9	1.2	3,196.2	2.4
Emergent Herbaceous Wetlands	4.7	0.1	56.3	0.0
Open Water	127.3	2.7	2,936.5	2.2
<b>Total</b>	<b>4,797.3</b>	<b>100</b>	<b>131,625.0</b>	<b>100</b>

<sup>1</sup> Source: Homer et al. 2015

Oak-hickory deciduous forest is the most abundant forest type in the eastern U.S. and is prevalent in the Normandy 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, wood thrush, 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 2016b). 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 78 percent of the land cover within the Normandy Reservoir parcels (see Table 2-4). Evergreen forests make up an additional four 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, and great crested flycatcher. 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). Portions of this forest type have been damaged by southern pine beetles in recent years. Several stands of dead pines exist on TVA lands, and TVA has performed salvage harvests in some stands. Dead pines provide foraging

sites for woodpeckers and roosting sites for little brown and silver-haired bats. 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 Normandy Reservoir region are dominated by pasturelands and hayfields. Herbaceous habitats, including grasslands, barrens, hayfields, and pastures account for approximately nine percent of the land cover on the reservoir parcels (Table 2-4). Early successional habitats provide habitat for a variety of bird species including eastern bluebird, eastern meadowlark, American crow, and red-tailed hawk. Several additional migratory bird species of concern utilize these habitats in this area including 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, eastern harvest mouse, 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 at Normandy Reservoir (TVA 2016a). 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 present 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 Normandy 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 21 caves are located within 3 miles of Normandy Reservoir. Twelve caves are located on TVA parcels (TVA 2016a).

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 Normandy Reservoir contain a substantial amount of invasive nonnative species. Executive Order (EO) 13112 defines an alien 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.

The Southeast 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 (SE-EPPC 2016). 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 2-5).

**Table 2-5. 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>

Common Name	Scientific Name
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 Normandy Reservoir. These insects and diseases can have devastating impacts on native plant communities and human crops/fruits. The insects include: Japanese beetle (*Popillia japonica*) 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 Normandy Reservoir: butternut canker (*Sirococcus clavigignenti-juglandacearum*), dogwood anthracnose (*Discula destructiva*), and Heterobasidion root rots (*Heterobasidion* spp.) 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 Duck River, a tributary to the Tennessee River within Kentucky Reservoir, is designated as a State Scenic River that is approximately 270 miles long. The Duck River watershed covers approximately 3,500 square miles (USACE 2012). Studies have documented aquatic faunal recovery in the Duck River from past disturbance in the watershed (Ahlstedt et al. 2004, Hubbs et al. 2010). This recovery is attributed to land protection and restoration efforts, improvements in Normandy Reservoir releases by TVA, the settling of channel morphology from earlier destabilizing events, removal of historic point and nonpoint sources of pollution from phosphate and iron ore mining, and the natural hardness of the water and abundance of groundwater inputs to the system (Palmer 2005).

The Duck River is globally important for biological diversity, especially for aquatic species, with approximately 151 species of fish, 69 species of mussels, and 22 species of aquatic snails. The Duck River is recognized as the most biologically diverse river system in Tennessee, supporting populations of many species that are found nowhere else (Palmer 2005). In particular, the Duck River is of tremendous importance to freshwater mollusks of the Cumberlandian mussel fauna and is a source and repository for state and federally listed species in need of conservation (Cumberlandian Region Mollusk Restoration Committee 2010). Historically, 75 mussel species occurred in the Duck River (Ahlstedt et al. 2004), but six mussel species of this extraordinary assemblage are presumed extinct (Hubbs et al. 2010).

Aquatic ecological conditions in streams and reservoirs are monitored under a number of TVA programs. Aquatic ecological conditions in the larger reservoirs have been monitored using the Reservoir Vital Signs Monitoring Program (RVSM), which focuses on (1) physical and chemical characteristics of waters; (2) physical and chemical characteristics of sediments; (3) sampling the benthic macroinvertebrate community; and (4) fish assemblage sampling. The RVSM data include annual fish sampling on tributary reservoirs on a two-year rotation

sampling cycle. Ratings are based primarily on fish community structure and function, using an analysis tool known as the Reservoir Fish Assemblage Index (RFAI) (McDonough and Hickman 1999).

Normandy Reservoir has consistently had poor ecological health ratings since 2000. Historically, the main issue has been low dissolved oxygen. In 1994, TVA installed aeration equipment in the reservoir to add oxygen to the deep water near the dam and to improve conditions in the Duck River downstream from the dam. A new, larger compressor and four new diffuser lines were added to the aeration system in 1997. Two of the new diffuser lines extended upstream of the sampling location and influenced the ecological health ratings. Three indicators (dissolved oxygen, chlorophyll and bottom life) exhibited marked changes.

The sampling site for bottom life was moved upstream to just upstream of the diffuser lines in 2008. TVA monitors one location on Normandy Reservoir — the deep, still water near the dam — for both RFAI and benthic community samples usually on a two-year cycle since 1996 (Table 2-6).

**Table 2-6. RFAI and Benthic Community Scores for Normandy Reservoir (2008-2013)**

Year	RFAI Scores	Benthic Community Scores
	Forebay	Forebay
2008	Good	--
2010	Good	--
2013	Good	Poor

Source: TVA 2016b

In the most recent sampling in 2013, the fish community rated good, as in all previous years. Bottom life (benthic community) has historically rated poor since the 1990s. The fish species collected during the RVSMP sampling efforts represent typical species found in large river and lentic habitats (Table 2-7). The poor rating for bottom life changed to a low-fair from 1998 to 2006, probably because of the improved dissolved oxygen conditions that resulted from the aeration system. The sample site was moved upstream of the diffuser lines in 2008, however episodes of low dissolved oxygen have impacted the density and composition of organisms found on the reservoir bottom each year. The majority of the organisms collected have been species capable of tolerating poor water quality conditions. Higher ratings in 1998-2006 were the result of improvements in the number of tolerant organisms collected rather than an improvement in the variety of organisms.

**Table 2-7. Fish Species in Normandy Reservoir**

<b>Common Name</b>	<b>Scientific Name</b>
Black crappie	<i>Pomoxis nigromaculatus</i>
Black redhorse	<i>Moxostoma duquesnei</i>
Blue catfish	<i>Ictalurus furcatus</i>
Bluegill	<i>Lepomis macrochirus</i>
Bullhead minnow	<i>Pimephales vigilax</i>
Channel catfish	<i>Ictalurus punctatus</i>
Common carp	<i>Cyprinus carpio</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Golden redhorse	<i>Moxostoma erythrurum</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Green sunfish	<i>Lepomis cyanellus</i>
Hybrid white x yellow bass	<i>Hybrid morone (chrysops x miss)</i>
Largemouth bass	<i>Micropterus salmoides</i>
Largescale stoneroller	<i>Campostoma oligolepis</i>
Logperch	<i>Percina caprodes</i>
Longear sunfish	<i>Lepomis megalotis</i>
Longnose gar	<i>Lepisosteus osseus</i>
Mountain shiner	<i>Lythrurus lirus</i>
Redear sunfish	<i>Lepomis microlophus</i>
River redhorse	<i>Moxostoma carinatum</i>
Rock bass	<i>Ambloplites rupestris</i>
Silver redhorse	<i>Moxostoma anisurum</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Snubnose darter	<i>Etheostoma simoterum</i>
Spotfin shiner	<i>Cyprinella spiloptera</i>
Spotted bass	<i>Micropterus punctulatus</i>
Spotted sucker	<i>Minytrema melanops</i>
Threadfin shad	<i>Dorosoma petenense</i>
Walleye	<i>Stizostedion vitreum</i>
Warmouth	<i>Lepomis gulosus</i>
White bass	<i>Morone chrysops</i>
White crappie	<i>Pomoxis annularis</i>
Yellow perch	<i>Perca flavescens</i>

Source: TVA 2016c

**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 Normandy 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. Federally listed and state-listed species identified from the TVA Natural Heritage database searches that are known to occur in the counties surrounding Normandy Reservoir are listed in Table 2-8. For the purpose of this document state-listed species include those that are being tracked, in need of management, candidates, proposed for listing and of special concern. As noted below, one listed plant species is known to occur on TVA parcels on Normandy Reservoir. There are two terrestrial wildlife species known to occur on TVA parcels, however, suitable

habitat is present for many of the other listed species. Five listed aquatic species are known to occur within TVA parcels and six are known to occur in the reservoir adjacent to the parcels.

**Table 2-8. Federally and State-Listed Species in the Normandy Reservoir Counties**

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State
<b>Amphibians</b>			
Barking treefrog	<i>Hyla gratiosa</i>	--	D (S3)
Four-toed salamander	<i>Hemidactylium scutatum</i>	--	D (S3)
Gopher frog	<i>Rana capito</i>	--	TRKD (S1)
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	D (S3)
Tennessee cave salamander	<i>Gyrinophilus palleucus</i>	--	T (S2)
<b>Birds</b>			
Bald eagle	<i>Haliaeetus leucocephalus</i>	DM	D (S3)
Henslow's sparrow	<i>Ammodramus henslowii</i>	--	D (S1B)
<b>Fish</b>			
Ashy darter	<i>Etheostoma cinereum</i>	--	T (S2S3)
Barrens darter	<i>Etheostoma forbesi</i>	--	E (S1)
Barrens topminnow	<i>Fundulus julisia</i>	--	E (S1)
Bedrock shiner	<i>Notropis rupestris</i>	--	D (S2)
Blotchside logperch	<i>Percina burtoni</i>	--	D (S2)
Coppercheek darter	<i>Etheostoma aquali</i>	--	T (S2S3)
Flame chub	<i>Hemitremia flammea</i>	--	D (S3)
Golden darter	<i>Etheostoma denoncourtii</i>	--	D (S2)
Longhead darter	<i>Percina macrocephala</i>	--	T (S2)
Redband darter	<i>Etheostoma luteovinctum</i>	--	D (S4)
Saddled madtom	<i>Noturus fasciatus</i>	--	T (S2)
Slenderhead darter	<i>Percina phoxocephala</i>	--	D (S3)
Southern cavefish	<i>Typhlichthys subterraneus</i>	--	D (S3)
Striated darter	<i>Etheostoma striatulum</i>	--	T (S1)
<b>Gastropod</b>			
Helmet rocksnail	<i>Lithasia duttoniana</i>	--	TRKD (S2)
Ornate rocksnail	<i>Lithasia geniculata</i>	--	TRKD (S2)
Rockpile liptooth	<i>Daedalochila auriformis</i>	--	TRKD (S1)
Rugose rocksnail	<i>Lithasia jayana</i>	--	TRKD (SX)
<b>Insect</b>			
Duck River cave beetle	<i>Pseudanophthalmus tullahoma</i>	--	TRKD (S1)
Tennessee clubtail dragonfly	<i>Gomphus sandrius</i>	--	TRKD (S1)
<b>Mammals</b>			
Allegheny woodrat	<i>Neotoma magister</i>	--	D (S3)
Common shrew	<i>Sorex cinereus</i>	--	D (S4)
Gray bat	<i>Myotis grisescens</i>	LE	E (S2)
Indiana bat	<i>Myotis sodalis</i>	LE	E (S1)
Meadow jumping mouse	<i>Zapus hudsonius</i>	PS	D (S4)
Northern long-eared bat	<i>Myotis septentrionalis</i>	LT	E (S1S2)
Smoky shrew	<i>Sorex fumeus</i>	--	D (S4)
Southeastern shrew	<i>Sorex longirostris</i>	--	D (S4)
<b>Mussels</b>			

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Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State
Birdwing pearl mussel	<i>Lemiox rimosus</i>	LE	E (S1)
Cumberland pigtoe	<i>Pleurobema gibberum</i>	LE	E (S1)
Fluted kidneyshell	<i>Ptychobranthus subtentum</i>	LE	TRKD (S2)
Pale lilliput	<i>Toxolasma cylindrellus</i>	LE	E (S1)
Round hickorynut	<i>Obovaria subrotunda</i>	--	TRKD (S2S3)
Slabside pearl mussel	<i>Pleuronaia dolabelloides</i>	LE	TRKD (S2)
Smooth rabbitsfoot	<i>Quadrula cylindrica</i>	LT	TRKD (S3)
Tan riffleshell	<i>Epioblasma florentina walkeri</i>	LE	E (S1)
Tennessee heelsplitter	<i>Lasmigona holstonia</i>	--	TRKD (S2)
Turgid Blossom pearl mussel	<i>Epioblasma turgidula</i>	LE	EXTI (SX)
<b>Reptiles</b>			
Northern pine snake	<i>Pituophis melanoleucus</i>	--	T (S3)
<b>Plants</b>			
A goldenrod	<i>Solidago stricta</i> var. <i>gracillima</i>	--	SPCO (S1)
A liverwort	<i>Pellia appalachiana</i>	--	SPCO (S2)
American ginseng	<i>Panax quinquefolius</i>	--	S-CE (S3S4)
American smoke-tree	<i>Cotinus obovatus</i>	--	SPCO (S2)
Appalachian bristle fern	<i>Trichomanes boschianum</i>	--	T (S1S2)
Barratt's sedge	<i>Carex barrattii</i>	--	E (S2)
Barrens silky aster	<i>Symphotrichum pratense</i>	--	E (S1)
Beakrush	<i>Rhynchospora perplexa</i>	--	T (S2)
Beardgrass	<i>Gymnopogon brevifolius</i>	--	SPCO (S1S2)
Blackfoot quillwort	<i>Isoetes melanopoda</i>	--	E (S1S2)
Boykin's milkwort	<i>Polygala boykinii</i>	--	T (S2)
Broadleaf Barbara's-buttons	<i>Marshallia trinervia</i>	--	T (S2S3)
Broadleaf bunchflower	<i>Melanthium latifolium</i>	--	E (S1S2)
Butternut	<i>Juglans cinerea</i>	--	T (S3)
Button snakeroot	<i>Eryngium integrifolium</i>	--	T (S1)
Buxbaum's sedge	<i>Carex buxbaumii</i>	--	E (S1)
Canby's lobelia	<i>Lobelia canbyi</i>	--	T (S2S3)
Carolina anemone	<i>Anemone caroliniana</i>	--	E (S1S2)
Cluster fescue	<i>Festuca paradoxa</i>	--	SPCO (S1)
Coast pepper-bush	<i>Clethra alnifolia</i>	--	E (S1)
Coastal false-asphodel	<i>Triantha racemosa</i>	--	E (S1)
Creeping St. John's-wort	<i>Hypericum adpressum</i>	--	E (S1)
Death-camas	<i>Zigadenus leimanthoides</i>	--	T (S2)
Downy gentian	<i>Gentiana puberulenta</i>	--	E (S1)
Duck River bladderpod	<i>Paysonia densipila</i>	--	SPCO (S3)
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	--	T (S3)
Dwarf sundew	<i>Drosera brevifolia</i>	--	T (S2)
Eaton's witchgrass	<i>Dichanthelium acuminatum</i> ssp. <i>spretum</i>	--	E (S1)
Eggert's sunflower	<i>Helianthus eggertii</i>	--	SPCO (S3)
Elliott's blueberry	<i>Vaccinium elliotii</i>	--	E (S1)
Falling beaked-rush	<i>Rhynchospora caduca</i>	--	SPCO (S1)
Fen indian-plantain	<i>Arnoglossum plantagineum</i>	--	T (S2)
Foxtail clubmoss	<i>Lycopodiella alopecuroides</i>	--	T (S2)
Fringed yellow-eyed-grass	<i>Xyris fimbriata</i>	--	E (S1)

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State
Globe-fruited ludwigia	<i>Ludwigia sphaerocarpa</i>	--	T (S1)
Grassleaf arrowhead	<i>Sagittaria graminea</i>	--	T (S1)
Hairy fimbristylis	<i>Fimbristylis puberula</i>	--	T (S1S2)
Horned bladderwort	<i>Utricularia cornuta</i>	--	E (S1)
Large cranberry	<i>Vaccinium macrocarpon</i>	--	T (S2)
Large-leaved grass-of-parnassus	<i>Parnassia grandifolia</i>	--	SPCO (S3)
Leafy prairie-clover	<i>Dalea foliosa</i>	LE	E (S2S3)
Leather-flower	<i>Clematis glaucophylla</i>	--	E (S1)
Leggett's pinweed	<i>Lechea pulchella</i>	--	E (S1)
Leo's trifolium	<i>Trifolium calcaricum</i>	--	E (S1)
Limestone fame-flower	<i>Phemeranthus calcaricus</i>	--	SPCO (S3)
Liverwort	<i>Radula voluta</i>	--	SPCO (S2)
Liverwort	<i>Frullania obcordata</i>	--	SPCO (S1)
Loesel's twayblade	<i>Liparis loesellii</i>	--	T (S1)
Loose-head beakrush	<i>Rhynchospora chalarocephala</i>	--	T (S1)
Low frostweed	<i>Helianthemum propinquum</i>	--	E (S1S2)
Low nutrush	<i>Scleria verticillata</i>	--	SPCO (S2)
Maidencane	<i>Panicum hemitomom</i>	--	SPCO (S2)
Marsh bellflower	<i>Campanula aparinoides</i>	--	SPCO (S2)
Marsh pea	<i>Lathyrus palustris</i>	--	SPCO (S1)
Missouri evening-primrose	<i>Oenothera macrocarpa</i> ssp. <i>macrocarpa</i>	--	T (S2)
Narrow blue flag	<i>Iris prismatica</i>	--	T (S2S3)
Narrowleaf bushclover	<i>Lespedeza angustifolia</i>	--	T (S2)
Nestronia	<i>Nestronia umbellula</i>	--	E (S1)
Nuttall's milkwort	<i>Polygala nuttallii</i>	--	E (S1)
Ovate catchfly	<i>Silene ovata</i>	--	E (S2)
Pale green orchid	<i>Platanthera flava</i> var. <i>herbiola</i>	--	T (S2)
Pale-purple coneflower	<i>Echinacea pallida</i>	--	E (S1)
Panic-grass	<i>Dichantherium acuminatum</i> ssp. <i>leucothrix</i>	--	SPCO (S1)
Prairie-dock	<i>Silphium pinnatifidum</i>	--	T (S2)
Red root	<i>Lachnanthes carolina</i>	--	E (S1)
Ridge-stem false-foxglove	<i>Agalinis oligophylla</i>	--	E (S1)
Rose pogonia	<i>Pogonia ophioglossoides</i>	--	E (S2)
Rough rattlesnake-root	<i>Prenanthes aspera</i>	--	THR (S1)
Sand cherry	<i>Prunus pumila</i>	--	E (S1)
Sedge	<i>Carex hirtifolia</i>	--	SPCO (S1S2)
Sharp's lejeunea	<i>Lejeunea sharpii</i>	--	SPCO (S1S2)
Snowy orchid	<i>Platanthera nivea</i>	--	E (S1)
Southern twayblade	<i>Listera australis</i>	--	E (S1S2)
Spreading false-foxglove	<i>Aureolaria patula</i>	--	SPCO (S3)
Sunnybell	<i>Schoenolirion croceum</i>	--	T (S3)
Swamp loosestrife	<i>Lysimachia terrestris</i>	--	E (S1)
Swamp lousewort	<i>Pedicularis lanceolata</i>	--	SPCO (S1S2)
Tennessee milk-vetch	<i>Astragalus tennesseensis</i>	--	SPCO (S3)
Torrey muhly	<i>Muhlenbergia torreyana</i>	--	E (S1)

Common Name	Scientific Name	Status <sup>1</sup>	
		Federal	State
Virginia chainfern	<i>Woodwardia virginica</i>	--	SPCO (S2)
Virginia rose	<i>Rosa virginiana</i>	--	SPCO (SH)
Water-milfoil	<i>Myriophyllum pinnatum</i>	--	E (S1)
White-bract thoroughwort	<i>Eupatorium leucolepis</i>	--	E (S1)
Wolf spikerush	<i>Eleocharis wolfii</i>	--	E (S1)
Wooly sedge	<i>Carex pellita</i>	--	E (S1)
Yellow fringeless orchid	<i>Platanthera integra</i>	--	E (S1)
Yellow-eyed-grass	<i>Xyris laxifolia</i> var. <i>iridifolia</i>	--	T (S2)
Zigzag bladderwort	<i>Utricularia subulata</i>	--	T (S1)

**<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; SX = Believed to be extirpated from the state; SH = Of historical occurrence in Tennessee, e.g. formally part of the established biota, with the expectation that it may be rediscovered; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2); S? = Unranked at this time or rank uncertain; \_B = Breeds in Tennessee

Source TVA 2016a

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 is one federally listed plant species, the endangered leafy prairie-clover. There are 86 state-listed species within the surrounding counties. Of these plants, 50 exist within 5 miles of the reservoir. Only American ginseng has been recorded on TVA parcels proposed to be allocated to Zone 4 (Natural Resource Conservation). These species and their habitat requirements are discussed in Table 2-9.

**Table 2-9. Habitat Requirements for Plant Species of Conservation Concern within 5 Miles of Normandy Reservoir**

Common Name	Habitat Requirements	Suitable Habitat Present
A goldenrod ( <i>Solidago stricta</i> var. <i>gracillima</i> )	Wet barrens and fields <sup>2</sup>	Limited habitat
American ginseng	Rich moist hardwood dominated woods under a closed canopy. <sup>1</sup>	Yes Recorded in a TVA Zone 4 Parcel
Appalachian bristle fern	Rocky seeps on non-calcareous rocks <sup>5</sup>	Little non-calcareous habitat
Barratt's sedge	Bogs, swamps, wet woods, usually on acidic substrate <sup>5</sup>	Likely
Beakrush	Sand and peat of ponds and lakeshores, depressions in savannas and flatwoods, seeps <sup>5</sup>	Likely
Beardgrass	Barrens <sup>2</sup>	Limited habitat
Blackfoot quillwort	Seasonal streambeds and wet depressions <sup>2</sup>	Likely
Broadleaf Barbara's-buttons	Understories of mixed hardwood forests along streams, in slightly disturbed sites. <sup>5</sup>	Likely
Broadleaf bunchflower	Mesic/dry, rocky, wooded slopes <sup>5</sup>	Somewhat likely
Butternut	Rich woods and hollows <sup>2</sup>	Likely
Canby's lobelia	Oak barrens, wet areas <sup>2</sup>	Likely
Cluster fescue	Wet woods and prairies <sup>2</sup>	Likely
Death-camas	Acidic wetlands <sup>2</sup>	Likely
Downy gentian	Barrens <sup>2</sup>	Limited habitat
Dwarf huckleberry	Xeric sandhills, pine oak uplands, barrens and heaths. Mesic to wet pine flatwoods, pine barrens, sometimes in seepage communities <sup>5</sup>	Limited habitat
Dwarf sundew	Moist sandy-peaty pinelands and roadsides <sup>5</sup>	Somewhat likely
Eaton's witchgrass	Sandy peaty pine barrens <sup>2</sup>	Limited habitat
Eggert's sunflower	Open barrens, open oak-history woodlands <sup>5</sup>	Likely
Elliott's blueberry	Open flatwoods and dry slopes <sup>2</sup>	Likely
Foxtail clubmoss	Bogs, marshes, ditches, and borrow pits <sup>5</sup>	Likely
Globe-fruited ludwigia	Swamps and shallow pools <sup>2</sup>	Likely
Grassleaf arrowhead	Pond and stream margins <sup>2</sup>	Likely
Large cranberry	Bogs, swamps, mires, wet shores and headlands <sup>5</sup>	Likely
Large-leaved grass-of-parnassus	Calcareous seeps <sup>2</sup>	Somewhat likely
Leggett's pinweed	Barrens <sup>2</sup>	Limited habitat
Limestone fame-flower	Glades <sup>2</sup>	Somewhat likely
Liverwort ( <i>Frullania obcordata</i> )	Swamps, on tree bark <sup>2</sup>	Likely

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Common Name	Habitat Requirements	Suitable Habitat Present
Liverwort ( <i>Radula voluta</i> )	Damp shaded rocks along streams; 1772-3609-foot elevation <sup>1</sup>	Somewhat unlikely due to elevation
Loesel's twayblade	Calcareous seeps <sup>2</sup>	Somewhat likely
Low frostweed	Barrens <sup>2</sup>	Limited habitat
Maidencane	Ponds in barrens <sup>2</sup>	Limited habitat
Narrow blue flag	Wet barrens, wetlands <sup>2</sup>	Likely
Narrowleaf bushclover	Barrens <sup>2</sup>	Limited habitat
Nestronia ( <i>Nestronia umbellula</i> )	Upland woods <sup>2</sup>	Likely
Ovate catchfly	Open oak woods <sup>2</sup>	Likely
Pale green orchid	Swamps, wetlands and floodplains <sup>2</sup>	Likely
Pale-purple coneflower	Rocky prairies, open wooded hillsides and glades <sup>5</sup>	Likely
Panic-grass ( <i>Dichanthelium acuminatum</i> ssp. <i>leucothrix</i> )	Moist pine barrens <sup>2</sup>	Somewhat likely
Ridge-stem false-foxglove	Barrens <sup>2</sup>	Limited habitat
Rose pogonia	Sphagnum bogs, poor fens, acidic sandy meadows, prairies, open wet woods, pine flatwoods, pine savannahs, cypress swamps, streambanks, seepage slopes, ditches, roadcuts <sup>5</sup>	Likely
Rough rattlesnake-root	Barrens and roadsides <sup>2</sup>	Somewhat likely
Sand cherry	Barrens <sup>2</sup>	Limited habitat
Sedge ( <i>Carex hirtifolia</i> )	Lowland forests <sup>2</sup>	Likely
Sharp's lejeunea	Rocks, boulders, bluffs, cliff faces. Usually limestone, sometimes sandstone or dolomite. <sup>1</sup>	Likely
Southern twayblade	Wet mesic woods <sup>2</sup>	Likely
Spreading false-foxglove	Limestone bluffs shaded by oaks. Oak root parasite. <sup>1</sup>	Likely
Water-milfoil	Acidic wetland and ponds <sup>2</sup>	Likely
White-bract thoroughwort	Wet barrens <sup>2</sup>	Limited habitat
Wolf spikerush	Ephemeral pools in grasslands, oak woodlands on river terraces, limestone barrens <sup>5</sup>	Likely
Yellow-eyed-grass	Pond margins and marshes <sup>2</sup>	Likely

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

<sup>2</sup> Source: TDEC 2014

<sup>3</sup> Source: Lady Bird Johnson Wildflower Center 2013

<sup>4</sup> Source: Hilty 2015

<sup>5</sup> Source: Flora of North America 1993

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 16 state-listed species in the counties surrounding Normandy Reservoir (see Table 2-8). Within 3 miles of the reservoir, eight listed species have been recorded (Table 2-10). Three of these species have been recorded on TVA parcels. These species and their habitat requirements are described in Table 2-10.

**Table 2-10. Habitat Requirements for Terrestrial Wildlife Species of Conservation Concern within 3 Miles of Normandy Reservoir**

Common Name	Habitat Requirements	Suitable Habitat Present
<b>Amphibians</b>		
Hellbender	Creeks and rivers <sup>1</sup>	Likely
Tennessee cave salamander	Aquatic, cave obligate <sup>1</sup>	Likely
<b>Birds</b>		
Bald eagle	Forested areas near open water <sup>1</sup> . In Tennessee, overwintering on reservoirs and large rivers <sup>2</sup>	Yes Recorded in a TVA Zone 4 parcel
<b>Insects</b>		
Duck River cave beetle	Terrestrial cave obligate; Central Basin; Duck River drainage. <sup>2</sup>	Yes Recorded in TVA Zone 3 and 4 parcels
<b>Mammals</b>		
Allegheny woodrat	Rocky outcrops, cliffs. Usually at higher elevations <sup>1</sup>	Likely
Gray bat	Caves <sup>1</sup>	Yes Recorded in a TVA Zone 4 parcel
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>	Likely
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>	Likely

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

<sup>2</sup> Source: TDEC 2016a

#### 2.2.5.2.1 Amphibians

Neither of the two listed amphibian species have known records within TVA parcels, however suitable habitat is likely present. There are 12 caves on TVA parcels that may provide habitat for the Tennessee cave salamander.

#### 2.2.5.2.2 Birds

A pair of bald eagles were observed nesting within TVA parcels in 1985. Potentially suitable habitat for future nesting pairs and migrating birds is present within the reservoir, including on TVA parcels.

#### 2.2.5.2.3 Insects

The Duck River cave beetle has not been observed since 1981 and is presumed extirpated. While habitat is present, it is unlikely that this species would be found in other caves on TVA parcels that surround Normandy Reservoir.

#### 2.2.5.2.4 Mammals

There are no known records of the Allegheny woodrat on TVA parcels surrounding Normandy Reservoir, however there is one record within 3 miles of the reservoir. This species has frequently been observed in the vicinity of caves. It is possible that it may be observed nesting or foraging near one of the three caves within TVA property. One gray bat summer roosting cave occurs on a TVA parcel on this reservoir. It is possible that bats may use any of the other 11 caves around the reservoir. Northern long-eared bat and Indiana bat summer habitat is known from Coffee County. Several of the northern long-eared bat records are within 5 miles of Normandy Reservoir. The extensive forested habitat and caves around Normandy may be used by Indiana bat or northern long-eared bat for foraging or roosting.

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

#### **2.2.5.3 Aquatic Species**

In the counties surrounding Normandy Reservoir, there are eight federally listed aquatic animal species and 28 state-listed aquatic animal species (see Table 2-8). Within 10 miles of the reservoir, there are four federally listed species and an additional 19 state-listed species (Table 2-11). There are five listed species recorded on TVA parcels and six listed species have been recorded within the reservoir.

Records of the helmet rocksnail, tan riffleshell mussel, and turgid blossom pearlymussel are located on a parcel that would be allocated as Zone 2 (Project Operations). The records of these three species are historic and they may be extirpated from the region.

**Table 2-11. Habitat Requirements for Aquatic Species of Conservation Concern within 10 Miles of Normandy Reservoir**

Common Name	Habitat Requirement	Suitable Habitat Present
<b>Fish</b>		
Ashy darter <sup>3</sup>	Medium rivers, slow moving pools with gravel substrates <sup>1</sup>	Yes
Barrens darter	Headwaters of the Barren Fork and Hickory Creek drainages; Cumberland River watershed <sup>2</sup>	Unlikely
Barrens topminnow	Springs, spring runs, and first- and second-order headwaters and creeks in the Barrens of Cannon, Coffee, and Warren counties <sup>2</sup>	Unlikely
Bedrock shiner	Bedrock pools of headwaters and streams. Tolerates stagnant conditions <sup>1</sup>	Unlikely
Blotchside logperch <sup>3</sup>	Riffles and gravel runs of clear, small to medium rivers <sup>1</sup>	Yes
Coppercheek darter	Primarily in deep riffles, runs, and flowing pools; Duck and Buffalo River watersheds <sup>2</sup>	Likely
Flame chub	Springs and spring fed streams <sup>1</sup>	Somewhat likely
Longhead darter	Boulder and cobble strewn flowing pools of large creeks and small to medium rivers <sup>1</sup>	Likely
Redband darter	Limestone streams; Nashville Basin and portions of Highland Rim <sup>2</sup>	Likely
Rosyside dace	Upland tributaries of Little Tennessee River; east Tennessee. <sup>2</sup> Small clear streams <sup>1</sup>	Somewhat likely
Slenderhead darter	Small-large rivers with moderate gradient in shoal areas with moderate-swift currents; portions of Tennessee & Cumberland river watersheds <sup>2</sup>	Likely
Southern cavefish	Aquatic cave obligate; cave streams, karst waters, and water supply wells; reported from all karst regions <sup>2</sup>	Yes. Possibly extirpated. Recorded on a TVA Zone 4 parcel
Striated darter	Bedrock pools of headwaters and creeks with large slabrock cover; upper Duck River watershed <sup>2</sup>	Unlikely
<b>Gastropods</b>		
Helmet rocksnail <sup>3</sup>	Rocky substrates in riffle systems; bedrock in flowing water below main section of riffles; Duck River (Tennessee River system) <sup>2</sup>	Historic, possibly extirpated Recorded on a TVA Zone 2 parcel
Ornate rocksnail	Large rivers, does not readily adapt to reservoirs <sup>1</sup>	Unlikely
Rugose rocksnail <sup>3</sup>	Probably in the vicinity of riffles in medium rivers <sup>1</sup>	Yes. possibly extirpated, Historic record on a TVA Zone 4 parcel
Warty rocksnail	Rocky substrates in riffle systems; Elk River & larger tributaries (Tennessee River watershed) <sup>2</sup>	Somewhat likely
<b>Mussels</b>		
Pale lilliput <sup>3</sup>	Small tributary rivers & streams, in firm rubble, gravel, and sand substrates in shallow riffles and shoals; lower Tenn. River system <sup>2</sup>	Yes
Rockpile liptooth	Wet, grassy habitats, generally in full sun; barrens & remnant prairies; Coffee and Warren counties; disjunct from central Alabama <sup>2</sup>	Habitat limited

Common Name	Habitat Requirement	Suitable Habitat Present
Round hickorynut	Medium-large rivers in sand and gravel substrate with moderate flow; Tennessee and Cumberland rivers; also Red River in Robertson Co., W Highland Rim <sup>2</sup>	Likely
Slabside pearlymussel	Large creeks to medium rivers, in riffles/shoals of sand, fine gravel, and cobble substrates with medium current; Tennessee River watershed <sup>2</sup>	Likely
Tan riffleshell	Headwaters. Riffle sand shoals in gravel substrate <sup>1</sup>	Yes. possibly extirpated, Historic record on a TVA Zone 2 parcel
Turgid blossom pearlymussel*	Clear unpolluted water of fast flowing streams <sup>1</sup>	Yes. possibly extirpated, Historic record on a TVA Zone 2 parcel

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

<sup>2</sup> Source: TDEC 2014

<sup>3</sup> Records within the 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.

Normandy Reservoir is a tributary storage reservoir for flood control, water supply, and recreation purposes. It has a longer average hydraulic residence time (141 days) and a relatively large average depth of 36 feet. It has been assessed by TDEC as a fully supporting water body (TDEC 2016b). A segment of Duck River just upstream of the reservoir and a segment of Little Duck River have been listed as impaired due to sanitary sewer overflows, which could impact the water quality within the reservoir.

The most recent ratings for Normandy Reservoir from TVA's Reservoir Ecological Health Ratings program indicate that dissolved oxygen and chlorophyll are considered poor, and

sediment was considered good. Dissolved oxygen concentrations have been found to be poor in the deeper water near the dam. As in previous years, dissolved oxygen rated poor due to low concentrations in the lower water column near Normandy Dam. A poor chlorophyll rating has been found at Normandy in recent years whereas it had been good prior to 1998. TVA has identified a possible cause of this change to be associated with an upwelling of nutrients from the lower water column caused by the aeration system. Sediment quality at Normandy has been rated good during all monitoring periods except in 2002, when sediment samples contained low levels of chlordane, and when arsenic concentrations were reported to be slightly higher than the expected background concentration.

TVA does not regulate or permit water supply intakes or waste water discharges concerning the water quality but TVA does have Section 26a permitting authority for physical intake or discharge structures and for water supply requests on Normandy. Water quality impacts associated with water supply intakes or waste water discharges are regulated by the states under the National Pollutant Discharge Elimination System. The most recent state permit/water withdrawal registration data for water supply withdrawals and waste water discharges directly from or to Normandy Reservoir indicates that the 2010 municipal water withdrawal volume was 5.69 million gallons per day. This information does not include withdrawals or discharges in the watersheds.

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 Normandy. 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 (<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 Normandy Reservoir. Most of the non-open water wetlands within the Normandy Reservoir are forested with only a small amount of emergent wetlands (Table 2-12).

**Table 2-12. Wetland Types within the Normandy Reservoir**

<b>Wetland Type</b>	<b>Acres</b>
Emergent	4.0
Forested	109.6
Open Water	195.8
<b>Total</b>	<b>309.4</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 (WMA), national

forests, parks, and recreation areas—and TVA-designated sites, including small wild areas, habitat protection areas (HPA), and ecological study areas (Section 2.2.11).

For 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, below the Normandy Dam at approximate Duck River mile 246.6, upstream to about Duck River mile 266.7. Normandy Dam is located at Duck River mile 248.6. The 100-year floodplain is the area that would be inundated by the 100-year flood (base flood).

Flood elevations have not been computed for the Normandy reservoir. For 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 Normandy 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.” Bedford and Coffee counties are considered in attainment for all NAAQS. No wilderness areas or parks designated Prevention of Significant Deterioration Class I air quality area occur near the Normandy Reservoir. General information about air emissions and climate change are identified in Volume I.

Sources of air emissions within TVA lands along the Normandy Reservoir occur at the campground and dam facilities and from truck and vehicle transportation. Within Normandy Reservoir, lands that would be allocated to Zone 2 (Project Operations) have the greatest potential to support uses that produce higher levels of air emissions.

Air emissions generated within Normandy Reservoir vary with type of activity/development. Currently, air emissions from uses on TVA lands on the Normandy 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 Code of Federal Regulations [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 approximately 1,034.9-acre area where TVA is proposing in its draft RLMP (Alternative B) to change the current Zone allocations (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 Normandy Reservoir region has been an area of human occupation for the last 13,500 years. This includes five broad cultural periods: Paleo-Indian (>9,200 BC), Archaic (9,200-1,000 BC), Woodland (1,000 BC-AD 900), Mississippian (AD 900-1,500), and Historic (AD 1,500-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 region has been in use by Euro-Americans since the late eighteenth century (Haskell and Smith 2912). To protect travelers and encourage permanent settlement, Fort Nash was established in 1793 near Beech Grove. Coffee County was created from parts of Bedford, Warren, and Franklin counties in 1836 and named for General John Coffee, a political ally of Andrew Jackson (West 2009). Coffee County's economic development followed a general farming mode of agriculture, historically oriented toward the self-sufficient individual farmer (Riedl et al. 1976). Corn was the most important crop from early settlement in the 1790s until cotton became the most important cash crop in the early 1800s (Riedl et al. 1976).

Archaeological investigations were conducted prior to the impoundment of the Duck River for the Normandy Reservoir. The Normandy Archaeological Project was a series of rescue excavations designed to document the archaeological history of the area before it was submerged (Faulkner and McCollough 1973). Salvage efforts were conducted in the Duck River Valley area from 1971 until the summer of 1975, prior to the completion of the dam in 1976. Fieldwork on the Normandy project began by investigation of surface collections to determine the intensity of prehistoric occupation in this portion of the Valley. Cultural phases from the Middle Archaic to the Late Mississippian were identified as a result of the project. Due to the fact that the Normandy excavations was salvage project based on opportunistic identification, it is difficult to discern what percentage of land on Normandy has been subject to systematic archaeological testing. Thus, archaeological surveys have not been conducted on all of the lands involved in this land planning process. Moreover, many of the previously reported archaeological sites have not been assessed for their NRHP eligibility. Within the 1034.9 acres

subject to TVA's zone reallocation, these limited archaeological surveys resulted in the identification of 30 archaeological sites.

#### **2.2.10.2 Historic Structures**

The acquisition of land for Normandy Reservoir resulted in the removal of many structures and other man-made features. The few structures that remain represent all historical periods including individual farmsteads or larger scale plantations, civic or religious sites such as churches, cemeteries or schools, and industrial sites such as mills. TVA has conducted a survey of all of the major dams that TVA built. Normandy, while TVA's largest non-power dam, was included in this survey and TVA is currently in the process of nominating Normandy Dam and its associated facilities to the NRHP. The presence of other historic structures on Normandy 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 process). All projects occurring on TVA land receive project-specific reviews as part of compliance with NEPA and NHPA.

For more information on cultural resources and the potential impacts of the draft RLMP, see Volume I, Section 3.12.

#### **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., TVA, State of Tennessee, Coffee County) 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 either that are 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 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 six natural areas on or within TVA parcels along Normandy Reservoir; one of which is managed by the TVA Natural Areas Program. An additional eight natural areas lie within 3-miles of Normandy Reservoir. The natural areas along Normandy Reservoir include TWRA and TVA lands. For more information on managed areas and sensitive ecological sites, see Volume I, Section 3.13 or Appendix D.

### **2.2.12 Aesthetics and Visual Resources**

The visual character of the Normandy Reservoir is typical of many central Tennessee River valleys. Much of the river corridor is bordered by tall bluffs and steep, rocky forested banks with less than 5 percent of the land sloping gently enough for comfortable human use. The land away from the river consists primarily of gently rolling topography and relatively shallow, gently flowing tributary streams. The countryside is a varied mix of woodland, open pastures, crop land, and mostly small communities. The natural and cultural elements come together to provide variety, scenic attractiveness, and visual harmony around the mostly rural reservoir.

Views of the reservoir are limited due to the topography. Residential growth is occurring along the ridgetops and back-lying slopes near the shoreline to provide residents with views of the reservoir. The reservoir is also visible to visitors and other members of the public at TVA facilities at the dam reservation and other recreational areas on and near the reservoir.

For information on visual 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 Normandy Reservoir include those associated with developed recreation sites, and uses related to TVA project operations and various public works projects. Characteristics of noise emissions associated with common land uses are identified in Volume I of the EIS, Section 3.15.

Lands allocated to Zone 5 (Industrial) have the greatest potential to support uses that produce high levels of noise. The most common measurement of sound and environmental noise is the A-weighted decibel scale (dBA). This is a logarithmic scale that ranges from 0 dBA to about 140 dBA and approximates the range of human hearing. Common sources of noise from industrial uses include: heavy trucks; rail and barge operations; and industrial workplaces. Noise emission levels for these sources can range from 85 dBA to 100 dBA (U.S. Department of the Interior [USDOI] 2008) and are dependent on the distance from the noise source. Lands allocated to Zone 2 (Project Operations) and Zone 6 (Developed Recreation) also have the potential to generate noise, but typically to a lesser degree than industrial development. The primary sources of noise from land allocated to Zone 2 are the Normandy Dam Reservation, access roads, boat-launching ramp, and parking area. Noise emission levels for these sources can range from 70 dBA to 85 dBA (USDOI 2008) and are also dependent on the distance from the noise source. The primary source of noise from land allocated to Zone 6 would be commercial marinas and motorized watercraft (motor boats, jet skis), and road traffic. Noise

emission levels for land uses allocated to this zone can range from 40 dBA (very quiet) to 90 dBA (jet ski). Noise levels for motor boats and jet skis may also exhibit short elevated bursts of noise as a result of speed of the watercraft and other operational factors.

TVA land that would be allocated to Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation) and Zone 7 (Shoreline Access) account for the majority (78 percent) of land uses at Normandy Reservoir. Such land uses generally would not create noise emissions that would have an effect on the ambient noise environment and reflect a general environment consisting of low noise levels.

Approximately 22 percent of land along the reservoir would be allocated to zones that would support land uses with the potential for noise emissions (Zones 2 and 6 – Project Operations and Developed Recreation).

Noise from land uses varies with the type of development and would attenuate with distance from the source and as such, the noise level around the reservoir is relatively low. Any future projects on parcels that have the potential to affect noise emissions would be planned in detail and may be expected to consist of both water-dependent facilities and other common actions as well as new developments as allowed per each land use zone.

## **2.2.14 Socioeconomics and Environmental Justice**

### **2.2.14.1 Population and Economy**

The population of the Normandy Reservoir area, which contains only two counties, Bedford County and Coffee County is described in Table 2-13. As of 2015, Bedford County had an estimated population of 47,183 and Coffee County had a population of 54,277. From 2010 to 2015, the counties in the area increased in size by 4.7 and 2.8 percent, respectively. Both of the counties are also projected to grow from 2015 to 2020; however Coffee County is projected to grow at nearly two times the rate of Bedford County at 10.3 percent. Compared to the state of Tennessee, the Normandy Reservoir area counties are significantly more rural in distribution of population. Bedford County is 55.6 percent rural and 47.3 percent of the Coffee County population is rural.

As presented in Table 2-14, from 2010 to 2014, an average of 5.5 percent of the population within the Normandy Reservoir area was unemployed. Neither of the two counties within the area exceeded the state unemployment rate of 6 percent during that period. Similar to the state of Tennessee, Management, Business Science, and Arts and Sales and Office are the two largest employment categories for the counties in the area. Neither Bedford County nor Coffee County has a household median income equal to or greater than the state of Tennessee's,

which is \$44,621. The median household income for 2010 to 2014 for Bedford County was \$40,989 and \$39,656 for Coffee County.

**Table 2-13. Population and Percent Growth – Normandy Reservoir**

Population	County		State
	Bedford	Coffee	Tennessee
Population (2020 - Projection)	49,664	59,888	7,195,375
Population (2015 - Estimate)	47,183	54,277	6,600,299
Population (2014 - Estimate)	45,660	53,151	6,451,365
Population (2010)	45,058	52,796	6,346,105
Projected Growth (2015-2020)	5.3%	10.3%	8.3%
Percent Change (2010-2015)	4.7%	2.8%	3.9%
Percent Change (2010-2014)	1.3%	0.7%	1.6%
Percent Rural (2010)	55.6%	47.3%	33.6%

Sources: USCB 2015 and USCB 2010a.

**Table 2-14. Employment and Income, 2010-2014 – Normandy Reservoir**

Employment and Income	County		State
	Bedford	Coffee	Tennessee
Civilian Employed Population 16 Years and Over	19,032	21,217	2,835,895
Management and Business Science and Arts	26%	32%	34%
Service Occupations	15%	17%	17%
Sales and Office	22%	24%	25%
Natural Resources, Construction, and Maintenance	15%	8%	9%
Production, Transportation and Material Moving	23%	20%	15%
Percent of Population > 16 years Unemployed	5%	6%	6%
Median Household Income	\$40,989	\$39,656	\$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. 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 in the Normandy Reservoir area varies substantially from one county to the other; however minority populations in both of these counties is smaller than the minority population of the state of Tennessee (Table 2-15). In 2010, minorities comprised 22.8 percent of the population of Bedford County, and 11.1 percent of the population of Coffee County. The percent of the population below the poverty level from 2010 to 2014 only varied 0.2 percent from Bedford County to Coffee County; however both county poverty rates were higher than the state’s 17.8 percent.

**Table 2-15. Minority Population and Poverty, 2010-2014 – Normandy Reservoir**

Minority Population and Poverty	County		State
	Bedford	Coffee	Tennessee
Total Population	45,660	53,151	6,451,365
White Alone <sup>1</sup>	38,954	48,384	5,029,109
Black or African American Alone <sup>1</sup>	2,810	1,151	1,082,001
American Indian and Alaska Native Alone <sup>1</sup>	366	194	17,656
Asian Alone <sup>1</sup>	363	563	98,441
Native Hawaiian and Other Pacific Islander Alone <sup>1</sup>	0	3	3,256
Two or More Races	1,615	1,010	122,662
Hispanic or Latino <sup>2</sup>	5,234	2,063	309,828
Percent Minority	22.8%	11.1%	25.4%
Percent of Population Below Poverty Level	21.1%	21.3%	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 more information about socioeconomics and the potential impacts of the draft RLMP, please see Volume I, Section 3.16 of the EIS.

## 2.3 Major Features of Normandy Reservoir

### 2.3.1 Natural Resource Management

Through implementation of the NRP, TVA’s natural resource management programs focus on protecting and enhancing the biological resources of the Valley. This is accomplished through the continued evaluation of biological resources, which allows TVA to preserve sensitive resources (e.g., threatened and endangered species) and unique resources (e.g., old growth bottomland hardwood stands), as well as conserve renewable resources (e.g., forests and native warm season grasses) in a sustainable manner to support diverse habitats for wildlife populations.

The NRP programs promote environmentally sustainable recreational use on TVA-managed lands. Dispersed recreation, such as camping, bank fishing, and hiking, can create both positive and negative impacts on natural resources. TVA strives to reduce negative impacts to habitats or species while providing users with sustained, high-quality recreational experiences.

Finally, partnerships and cooperative projects with state and other federal agencies and nongovernmental organizations have been developed in an effort to support current biological resources management efforts.

### **2.3.2 Normandy Fish Hatchery**

Normandy Fish Hatchery is a 205-acre facility managed by TWRA and used primarily for the propagation of warm water game fish. This facility produces fish that are stocked to support the increasingly-important sport fishing industry in Tennessee. The Normandy Fish Hatchery is located just downstream from Normandy Dam on the Normandy Dam Reservation. TWRA owns and operates ten hatcheries throughout the state of Tennessee (TWRA 2016). More information about TWRA fish hatcheries can be found at <http://www.tn.gov/twra/>.

### **2.3.3 Short Springs Natural Area**

The Short Springs area lies on Carroll Creek and Bobo Creek at Duck RM 253.6 on Normandy Reservoir. The site marks the edge of the eastern highland rim escarpment from which Bobo descends into the Central Basin. Spring wildflowers, cascades, waterfalls and a 1.5-mile trail system make this area a popular destination. Rare plant species present include nestronia (*Nestronia umbellula*), broadleaf bunchflower (*Melanthuim latifolium*), ginseng (*Panax quinquefolius*), goldenseal (*Hydrastil canadensis*) and Barbara buttons (*Marshallia trinervia*). The biological diversity is related to the rich forest slopes and ravines, low cascades, springs, and waterfalls. Short Springs encompasses 420 acres including the state-managed Short Springs Designated State Natural Area (DSNA) and the Short Springs TVA Small Wild Area. The DSNA is owned in part by the State of Tennessee and the rest is under a conservation easement with the City of Tullahoma, owned by the Tullahoma Utilities Board. The Tennessee Department of Environment and Conservation's Department of Natural Heritage manages the DSNA in cooperation with the Friends of Short Springs, a local support group.

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

Varying types of land management or conservation techniques coupled with development could occur along Normandy Reservoir. The implementation of the NRP would drive the types of programs conducted on TVA lands set aside due to natural or sensitive resources. 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.

Residential development is often times opportunistic; however, the lands set aside for such use are based on the types of property rights conveyed by TVA upon sale of the property or established via TVA policy. The TVA lands managed by other federal, state, or local agencies would most likely continue to do so in a similar manner.

## 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. 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 Normandy 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 meets the objections of the CVLP. Furthermore, the categorization and management of TVA-owned shoreline access land along Normandy 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. 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 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. 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> <li>• TVA public land fronting land owned by other agencies/individuals/entities for industrial purposes.</li> </ul>

Zone	Definition
	<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 Developed 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 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-</li> </ul>

Zone	Definition
	<p>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). TVA also reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. In addition, the planning team honored all existing commitments—that is, existing leases, licenses, and easements. No sensitive resources surveys were conducted on committed land. The need for field reviews for uncommitted parcels was determined based on data from the TVA Natural Heritage database. Land with sensitive resources known to be present was proposed to be placed in Zone 3 (Sensitive Resource Management). 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 draft RLMPs, the planning team identified proposed allocations of reservoir parcels to one of seven planning zones using the zone definitions listed above.

In developing draft RLMPs, TVA 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. 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 WMAs. 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.

TVA does not consider which specific activity would be permitted on each parcel as part of its land use planning process. As explained in Volume 1 of the EIS (Section 1.7), many individuals provided input to TVA during the EIS scoping period and requested that TVA permit horseback riding on its public lands on Normandy Reservoir. Because such considerations are outside of the scope of this planning effort, TVA is not specifically addressing the issue of horseback riding in the draft RLMP for Normandy Reservoir.

Approximately 1,861 acres (38.8 percent) of the TVA land surrounding Normandy Reservoir are committed due to existing agreements, TVA operations, or other public infrastructure projects. Agricultural licenses are not considered as committed uses because they are an interim use of TVA land.

Approximately 2,935 acres (61.2 percent) of the TVA land surrounding Normandy Reservoir are uncommitted. Technical specialists collected field data on portions of some uncommitted parcels to identify areas containing sensitive resources. Representatives from various TVA organizations met to propose how these uncommitted lands should be allocated into the seven planning zones. The location of known and potentially sensitive resources was used in determining the capability and suitability of potential uses for each parcel of land.

### **3.2 Normandy 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, 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.

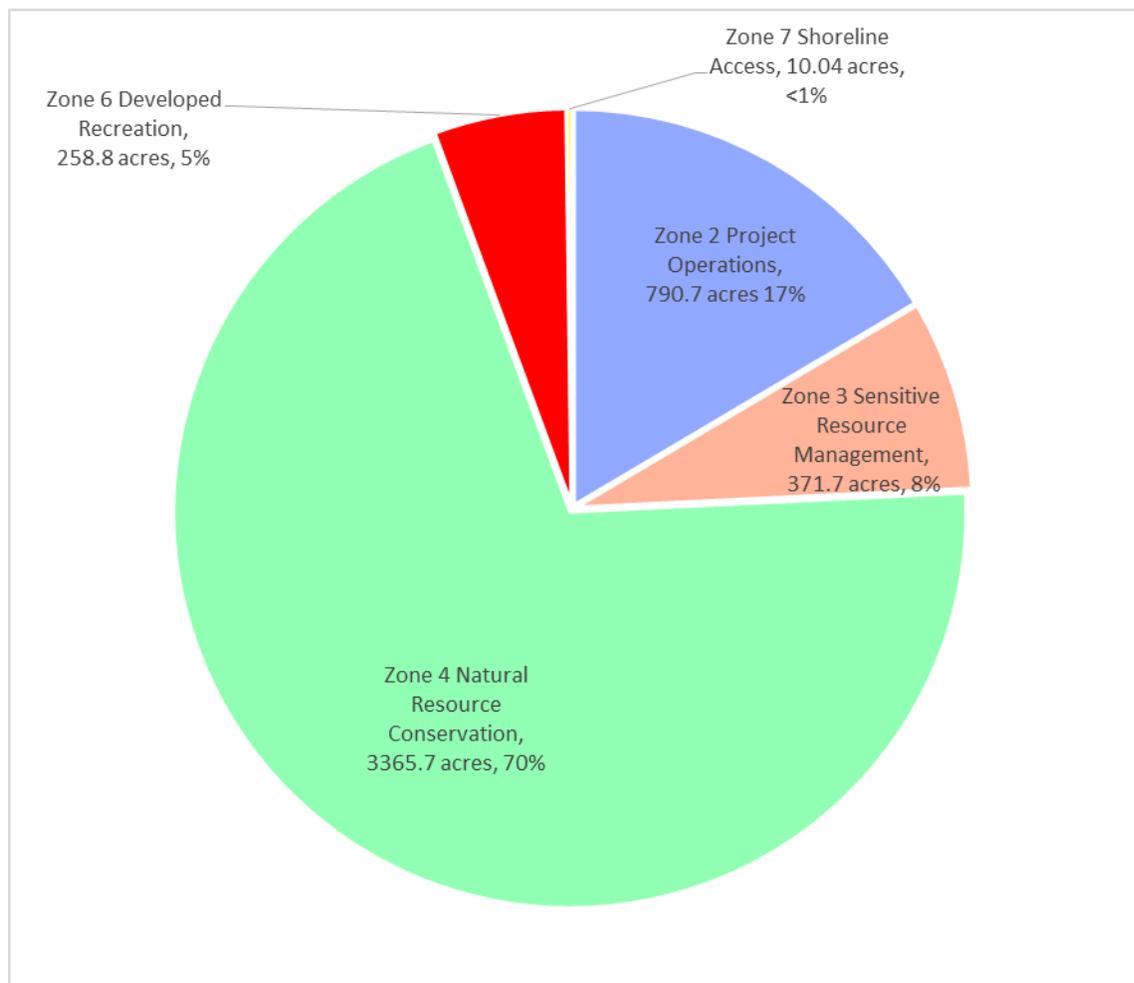
### **3.3 Parcel Allocations**

TVA's land planning process (Section 3.1) along with the goals and objectives specific to Normandy Reservoir (Section 3.2) were used to develop this draft RLMP. Through this process, TVA proposes allocations of 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 the Draft Normandy Reservoir Land Management Plan (Alternative B)**

Allocation Designation		Number of Parcels	Acres
Zone 2	Project Operations	7	790.7
Zone 3	Sensitive Resource Management	3	371.7
Zone 4	Natural Resource Conservation	12	3,365.7
Zone 5	Industrial	0	0
Zone 6	Developed Recreation	6	258.8
Zone 7	Shoreline Access	2	10.4
<b>Total</b>		<b>30</b>	<b>4,797.3</b>

Figure 3-1 represents the percent of land acreage on Normandy Reservoir that would be allocated to each land use zone under the draft RLMP (Alternative B). A detailed description of each zone and the identification of the land zoned by each category is presented below.



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

- Zone 2 (Project Operations). Zone 2 encompasses all TVA land currently used for TVA operations and public works projects. There are 790.7 acres that would be allocated to Zone 2 (Project Operations). The largest parcel to be allocated as Zone 2 is the Normandy Dam Reservation. Normandy Dam is managed by TWRA under a license agreement. Existing development includes the TWRA fish hatchery, roadways, canoe launch site, and boat-launching ramp.

- **Zone 3 (Sensitive Resource Management).** Zone 3 lands are 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. Approximately 8 percent (371.7 acres) of the TVA land on Normandy reservoir would be allocated to Zone 3 under the proposed RLMP (Alternative B). The parcels included in this allocation represent areas where high-quality wetland habitat, wildlife habitat, scenic buffers, or cultural and historic resources are present. The largest parcels that would be allocated to Zone 3 are Parcels 18 and 26. Parcel 18 is a valuable river corridor that is largely undisturbed and Parcel 26 consists of steep topography along the shoreline and contains trails that lead to this parcel from the nearby Short Springs Natural Area.
- **Zone 4 (Natural Resource Conservation).** Zone 4 lands are 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. Under the proposed draft RLMP (Alternative B), approximately 70 percent of the TVA owned land on Normandy Reservoir would be allocated to Zone 4 (3,365.7 acres). The largest parcel that would be allocated to Zone 4 is Parcel 2, which is the Normandy WMA and consists of three non-contiguous tracts of land that are managed by TWRA.
- **Zone 5 (Industrial).** Zone 5 lands are managed for economic development including businesses in distribution/processing/assembly and light manufacturing. No land around this reservoir is allocated to Zone 5.
- **Zone 6 (Developed Recreation).** Lands that would be allocated to Zone 6 are currently used or planned for recreational purposes, such as public launching ramps or parks. For example, Parcel 29 comprises the 143 acres Barton Springs Campground. This area was developed by TVA, but is managed by a private entity. Approximately 5 percent (258.8 acres) of TVA-owned land around Normandy Reservoir would be allocated to Developed Recreation.
- **Zone 7 (Shoreline Access).** Only two parcels would be allocated to Zone 7, which are TVA-owned lands where Section 26a applications and other land use approvals for residential shoreline access would be considered. Requests for residential shoreline

access are considered on parcels identified in this zone where such use was previously considered, and/or where the back-lying landowner possesses deeded rights of access, and where the proposed use would not conflict with the interests of the public.

These proposed allocations vary somewhat from the estimates for Normandy Reservoir contained in the 2011 CVLP. In 2011, TVA anticipated that some parcels of land may be better allocated to different land use zones than those initially identified. As discussed in Volume I of the EIS, TVA proposes to update the target allocations of the CVLP based on the eight proposed RLMPs and to recalibrate the CVLP with the periodic updates to the NRP. Table 3-3 compares the proposed RLMP and the 2011 CVLP estimates for Normandy Reservoir.

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

Allocation Designation		Draft Normandy Reservoir Land Management Plan	2011 Comprehensive Valleywide Land Plan
Zone 2	Project Operations	17%	13%
Zone 3	Sensitive Resource Management	8%	15%
Zone 4	Natural Resource Conservation	70%	67%
Zone 5	Industrial	0%	0%
Zone 6	Developed Recreation	5%	4%
Zone 7	Shoreline Access	<1%	1%

For the following reasons, this draft RLMP allocates a greater number of lands to all land use zones except Zone 3 (Sensitive Resource Management) and Zone 7 (Shoreline Access). A fewer number of acres would be allocated to Zone 3 (Sensitive Resource Management) and Zone 7 (Shoreline Access) than estimated in the 2011 CVLP. These lands would be placed into the more appropriate designations, as discussed below:

**Zone 2 (Project Operations)**

TVA has a number of transmission lines that cross TVA lands surrounding Normandy Reservoir. In addition, there are roads located on TVA lands with easements to the appropriate managing agency. The 2011 CVLP underestimated the amount of lands encumbered with transmission lines and roadways resulting in an increase of lands allocated to Zone 2 (Project Operations) during development of the RLMP.

**Zone 3 (Sensitive Resource Management)**

The greatest change from the 2011 CVLP and this draft RLMP occurs within the Zone 3 (Sensitive Resource Management) designation. A large tract located on the left descending

bank of Carroll Creek would be allocated for Zone 4 (Natural Resource Management) due to the absence of known sensitive resources. Additional areas would be allocated for Zone 2 due to transmission line and road rights-of-way (ROWs). During the planning effort, these changes resulted in less lands being placed in the Zone 3 category.

**Zone 4 (Natural Resource Management)**

Under the proposed RLMP, TVA proposes to allocate numerous parcels that were allocated in the 2011 CVLP to Zone 3 (Sensitive Resource Management) to Zone 4 (Natural Resource Management) because there are no known records of sensitive resources on the parcels.

**Zone 5 (Industrial)**

After reviewing the availability of public infrastructure and the presence of sensitive resources, TVA proposes to place no lands in the Zone 5 (Industrial) category. This is consistent with the 2011 CVLP.

**Zone 6 (Developed Recreation)**

The 2011 CVLP underestimated the amount of land designated for Zone 6 (Developed Recreation) on Normandy Reservoir. The planning team reviewed recreational trends and the possibility of creating new recreation sites. This analysis resulted in slightly more lands being proposed for the Zone 6 category.

**Zone 7 (Shoreline Access)**

The 2011 CVLP correctly estimated the amount of former TVA property encumbered with shoreline access rights.

Of the 4,797.3 acres on Normandy Reservoir, there are no proposed allocation changes to 3,397.8 acres (70.8 percent); all proposed allocation changes involve 1,399.5 acres (29.2 percent). Of the 1,399.5 acres, TVA would allocate 1,006.3 acres (71.9 percent) to reflect existing land use agreements or commitments. The remaining 393.2 acres (28.1 percent) involve proposed parcel allocations that are not based on existing land use agreements or commitments. 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 land that would not substantially change the zoned land use or adversely impact 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

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, Panels 1-2). The parcel descriptions include the acreage rounded to the nearest tenth and the planned land use. Relevant data regarding the proposed land 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. All existing private water use facilities with TVA permits are grandfathered, provided they are constructed in accordance with the plans approved by TVA.

### Parcel 1 – (641.6 acres)

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel is the Normandy Dam Reservation and receives heavy public use. Existing facility development includes TWRA fish hatchery, roadways, canoe launch site, and boat launching-ramp. The boat launching-ramp located above Normandy Dam is managed by TWRA under a license agreement. There is currently a term agricultural license below Normandy Dam for hay production. Historic records of listed species, helmet rocksnail (*Lithasia duttoniana*), tan riffleshell (*Epioblasma florentina walkerii*), and turgid blossom pearl mussel (*Epioblasma turgidula*) have been recorded on this parcel in the Duck River. This parcel has a high probability for the presence of cultural resources, but it has not been adequately surveyed. Requests for private water use facilities would not be considered.

**Table 4-1. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Bedford and Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	79-NE and 86-NW
TVA D-Stage Map Numbers	2
Stream Mile and Bank	Duck River Mile 246.5 to 248.5B
Land Use / Land Cover	Upland hardwood forest and open fields
Known Dispersed Recreation Opportunities	Bank fishing

Location Component and Public Involvement Opportunities	Parcel Specific Information
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Permanent easement to South Central Bell for telephone utilities</li> <li>• Permanent easement to the Town of Normandy, Tennessee and Coffee County, Tennessee for roadway</li> <li>• Permanent easement to Tennessee Wildlife Resource Agency for a fish hatchery</li> <li>• Revocable license to City of Wartrace, Tennessee for water utilities</li> <li>• Revocable license to Tullahoma Airport Authority for a radio beacon tower</li> <li>• Term agricultural license for hay production</li> </ul>
Potential Projects	None identified
Potential Partners	<ul style="list-style-type: none"> <li>• Tennessee Wildlife Resources Agency</li> <li>• Town of Normandy, Tennessee</li> <li>• Bedford County, Tennessee</li> <li>• Coffee County, Tennessee</li> </ul>

**Parcel 2 – (856.1 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large parcel is the Normandy WMA. It consists of 3 non-contiguous tracts of land that are managed by TWRA. The most westerly tract is adjacent to the Normandy Dam Reservation, and the other two tracts are divided by the Cedar Point Public Use Area. This parcel stretches 5 shoreline miles along the right descending banks of the Duck River and Riley Creek. The current land cover is mixed upland hardwoods with pockets of cedar in various locations. This tract has steep and variable topography and is mainly accessible by boat; however, there are two adjacent roadways, Roberts Ridge Road and Cedar Point Road. Two caves are known on this parcel. This parcel has a medium probability for the presence of cultural resources. There are known archaeological sites and at least one historic cemetery, but this parcel has not been adequately surveyed. No existing shoreline improvements are currently present and requests for private water use facilities would not be considered.

**Table 4-2. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Bedford and Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	79-NE and 86-NW
TVA D-Stage Map Numbers	1, 2 & 9
Stream Mile and Bank	Duck River Miles 249 to 251R and Riley Creek Mile 0 to 1.5R
Land Use / Land Cover	Mixed upland hardwoods and pines

Location Component and Public Involvement Opportunities	Parcel Specific Information
Known Dispersed Recreation Opportunities	Hunting, hiking, fishing, and primitive camping
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Permanent easement to Coffee County for roadway</li> <li>• Revocable land use permit to Tennessee Wildlife Resource Agency for a WMA</li> <li>• Permanent easement to a private land owner for a driveway</li> <li>• Permanent easement to South Central Bell for telephone utilities</li> </ul>
Potential Projects	<ul style="list-style-type: none"> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	Tennessee Wildlife Resource Agency

**Parcel 3 – (1.1 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This small parcel is located at the headwaters of Boyd’s Branch and contains a portion of the ROW for Roberts Ridge Road. The intent of this parcel is to support the road ROWs. In locations where the ROWs and wildlife management are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered. This parcel has a low probability for the presence of cultural resources, but has not been adequately surveyed.

**Table 4-3. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	1
Stream Mile and Bank	Boyd Branch Mile 1B
Land Use / Land Cover	Road right-of-way
Known Dispersed Recreation Opportunities	None
Current Agreements/Commitments	Permanent easement to Coffee County, Tennessee for a roadway
Potential Projects	None identified
Potential Partners	Coffee County, Tennessee

**Parcel 4 – (10.0 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

This parcel is the Boyd’s Branch Boat Ramp and is located along the left descending bank of the Boyd’s Branch. This parcel is accessible via Roberts Ridge Road. TVA constructed this boat launching-ramp and parking area, but the facility is currently managed by TWRA under a license agreement. This parcel has a medium probability for the presence of cultural resources but has not been adequately surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation would be considered.

**Table 4-4. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	1
Stream Mile and Bank	Duck River Mile 249.5R

**Parcel 5 – (27.7 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

This parcel is the Cedar Point Campground and is located on the right descending bank of the Duck River. This parcel was originally developed by TVA, but the area is currently managed by Recreation Resource Management under a 30-year easement. Facilities include a campground, picnic facilities, swimming beach, and a boat launching-ramp. This parcel is accessible via Cedar Point Road. This parcel received a Phase 1 Cultural Resource survey in 2012; however, no new archaeological sites were identified. This parcel has a low probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation would be considered.

**Table 4-5. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	9
Stream Mile and Bank	Duck River Mile 250.5R

**Parcel 6 – (242.5 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large non-contiguous narrow parcel is located along both banks of Riley Creek and the right descending bank of Fuller Branch. The headwaters of Riley Creek provide a small wetlands area and dispersed recreation, namely bank fishing. This parcel provides a visual buffer between private land owners and Normandy Reservoir. The majority of this parcel is steep terrain that is covered with upland hardwoods. Two caves are known on this parcel. One known population of American ginseng, a state-listed species of concern is known to occur on this parcel. Additionally, there are historic records of two listed species, southern cavefish (*Typhlichthys subterraneus*), and the Duck River cave beetle (*Psuedanophthalmus tullahoma*). This parcel has a medium probability for the presence of cultural resources. There are known archaeological sites, but this parcel has not been adequately surveyed. Historically, unauthorized vegetation management has occurred on this parcel and will continue to be addressed. Existing previously approved private water use facilities would be allowed to remain; however, requests for new private water use facilities would not be considered.

**Table 4-6. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	85–SW and 86–NW
TVA D-Stage Map Numbers	9 and 10
Stream Mile and Bank	Riley Creek Miles 1.4 to 3.4B
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Bank Fishing
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 7 – (9.4 acres)**

*Proposed RLMP Allocation: Zone 7, Shoreline Access*

This parcel consists of one contiguous tract of land located along the right descending bank of Riley Creek. The parcel begins north of TVA monument 11-24 and extends downstream to monument 11-45. Riley’s Creek and Lake Hills Subdivisions are located on the backlying private property. The current land cover is primarily hardwood forest with some maintained lawns. This parcel has a medium probability for the presence of cultural resources, but it has not been

adequately surveyed. Two caves are known to occur on this parcel. This parcel should be evaluated for the presence of additional caves and rock shelters. Water use facilities have been constructed along the shoreline, and future requests for private water use facilities would be considered.

**Table 4-7. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	85–SW and 86–NW
TVA D-Stage Map Numbers	10
Stream Mile and Bank	Riley Creek Miles 2 to 2.5R
Land Use / Land Cover	Upland hardwoods
Fronts Former TVA Tract (s)	None identified
Structure Profile	None identified
Current Agreements/Commitments	Approved water use facilities

**Parcel 8 – (10.4 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel is located at the headwaters of Riley Creek and contains apportion of the ROWs for Cathey Ridge Road, Lake Hills Road, and Walden Ridge Road. The intent of this parcel is support the road ROWs. This parcel has a low probability for the presence of cultural resources; however, this parcel has not been adequately surveyed. In locations where the ROWs and wildlife management are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered.

**Table 4-8. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	85–SW
TVA D-Stage Map Numbers	10
Stream Mile and Bank	Riley Creek Mile 2.8B
Land Use / Land Cover	Road right-of-way
Known Dispersed Recreation Opportunities	None
Current Agreements/Commitments	Permanent easement to Coffee County, Tennessee for a road right-of-way
Potential Projects	None identified
Potential Partners	Coffee County, Tennessee

**Parcel 9 – (1.0 acre)**

*Proposed RLMP Allocation: Zone 7, Shoreline Access*

This parcel consists of one tract of land located along the left descending bank of Riley Creek. The Riley Creek portion of this parcel lies between TVA monuments 10-40 and 10-41. Daniel and Edna Ruth Shelton Subdivision is located on the back-lying private property. The current land cover is primarily hardwood forest. Water use facilities have been constructed along the shoreline, and future requests for private water use facilities would be considered. There are known archaeological sites near the vicinity of this parcel. This parcel has a medium probability of the presence of cultural resources, but it has not been adequately surveyed.

**Table 4-9. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	8 and 9
Stream Mile and Bank	Riley Creek Mile 0.9L and Fuller Branch Mile 0.7R
Land Use / Land Cover	Upland hardwoods
Fronts Former TVA Tract (s)	None identified
Structure Profile	None identified
Current Agreements/Commitments	Approved water use facilities

**Parcel 10 – (304.5 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large contiguous tract of land is located along the right descending of the Duck River. This tract is situated between Haley Branch and Fuller Branch and accessible via Barnett Road. The current land cover consists of upland hardwoods with a mixture of cedar along the shoreline. Features of this tract include steep topography with rocky slopes that have historically provided habitat for bald eagles. This tract has received unauthorized horse trail abuse that will continue to be addressed by TVA. The northern portion of this tract has an agricultural license to a private individual for hay production. This parcel is a popular dispersed recreation area, namely hunting and hiking. This parcel has a medium probability of the presence of cultural resource but has not been adequately surveyed. Severe erosion has occurred on this parcel, and there are known archaeological sites. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-10. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	8
Stream Mile and Bank	Duck River Mile 251.2 to 251.9R
Land Use / Land Cover	Upland hardwoods with a mixture of cedar
Known Dispersed Recreation Opportunities	Hunting, hiking, bank fishing, primitive camping
Current Agreements/Commitments	Term agricultural license for hay production
Potential Projects	<ul style="list-style-type: none"> <li>• Systematic survey for historic properties</li> <li>• Continue efforts to control unauthorized horse trail construction and use</li> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> </ul>
Potential Partners	Normandy horse-back riding enthusiasts

**Parcel 11 – (36.6 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel contains a portion of the ROWs for Lyndell Bell Road and Barnett Road. The intent of this parcel is support the road ROWs. In locations where the ROWs and wildlife management or public recreation are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered. This parcel has a low probability for the presence of cultural resources.

**Table 4-11. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	3 and 8
Stream Mile and Bank	Duck River Mile 252B
Land Use / Land Cover	Maintain lawn and road right-of-way
Known Dispersed Recreation Opportunities	Bank fishing
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Permanent easement to Coffee County, Tennessee for a roadway</li> <li>• Permanent easement to South Central Bell for telephone utilities</li> <li>• Revocable license to Duck River Electric Membership Corporation for utilities</li> </ul>
Potential Projects	None identified

Location Component and Public Involvement Opportunities	Parcel Specific Information
Potential Partners	<ul style="list-style-type: none"> <li>• Coffee County, Tennessee</li> <li>• South Central Bell</li> <li>• Duck River Electric Membership Corporation</li> </ul>

**Parcel 12 – (253.6 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large parcel is located along the right descending bank of the Duck River. The parcel is adjacent to Lyndell Bell Road and is mainly accessible by boat. The current land cover is upland hardwoods with a mixture of cedars and reverting agricultural fields. This tract has old agricultural fields that have been reverting to early successional cover since the mid 1990’s. Currently, there is an agricultural license to a private individual for hay production. Disperse recreational opportunities include hunting, hiking, and primitive camping. This parcel has not been adequately surveyed for the presence of cultural resources; however, there are known archaeological sites nearby. This parcel has a medium probability for the presents of cultural resources. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-12. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	8
Stream Mile and Bank	Duck River Mile 252 to 253.1R
Land Use / Land Cover	Upland hardwoods, cedar, and agricultural fields
Known Dispersed Recreation Opportunities	Hunting, hiking, and camping
Current Agreements/Commitments	Term agricultural license for hay production
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA’s property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 13 – (236.1 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This parcel consists of three non-contiguous tracts of lands located along the right descending bank of the Duck River. This parcel is divided by the Wards Chapel Boat Ramp and a transmission line. The tract of land located north of the Wards Chapel Ramp is a steep and narrow parcel with upland hard woods. This tract is adjacent to Fire Lake Subdivision and Lakeview Subdivision. Two caves are known on this parcel.

The tracts southeast of Wards Chapel Ramp are locally known as Devils Backbone and provide disperse recreational opportunities, namely hunting. This tract is also adjacent to Mt. View Road and receives informal bank fishing. There is currently an agricultural license for hay production adjacent to Devils Backbone Lane. The current land cover of this tract is upland hardwoods, eastern red cedar, and agricultural fields.

This parcel has not been adequately surveyed, but there are known archaeological sites present. This parcel has a high probability for the presence of cultural resources. Existing previously approved water use facilities would be allowed to remain; however, request for new or expansions to existing private water use facilities would not be considered.

**Table 4-13. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	7 and 11
Stream Mile and Bank	Duck River Mile 253.1 to 255R
Land Use / Land Cover	Upland hardwoods, red cedar, and agricultural fields
Known Dispersed Recreation Opportunities	Hunting, hiking, and bank fishing
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Term agricultural license for hay production</li> <li>• Revocable license to Fire Lake Homeowners Association for recreation use</li> </ul>
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA’s property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 14 – (19.8 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

This parcel is the Wards Chapel Boat Ramp and is located along the right descending bank of the Duck River. This parcel includes a boat launching-ramp, courtesy pier, and parking area. This facility was developed by TVA and is currently managed by TWRA under a license agreement. This parcel is accessible via River Forge Road. This parcel has not been adequately surveyed for the presence of cultural resources; however, there are known archeological sites nearby. This parcel has a medium probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

**Table 4-14. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D–Stage Map Numbers	7
Stream Mile and Bank	Duck River Mile 255.3R

**Parcel 15 – (95.2 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel contains a portion of a transmission line that stretches across the Duck River, through Neil Peninsula, and across Carrol Creek. The City of Tullahoma waste water treatment plant and water intake station are also located on this parcel. This parcel has a medium probability of the presence of cultural resources, but it has not adequately been surveyed. In locations where the transmission line and wildlife management are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered.

**Table 4-15. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D–Stage Map Numbers	3, 4, and 7
Stream Mile and Bank	Duck River Mile 255B
Land Use / Land Cover	Upland hardwood forest
Known Dispersed Recreation Opportunities	None

Location Component and Public Involvement Opportunities	Parcel Specific Information
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Permanent easement to the City of Tullahoma, Tennessee for a waste water treatment plant and water intake station.</li> <li>• Permanent easement to the City of Tullahoma, Tennessee, for underground water utilities</li> </ul>
Potential Projects	None identified
Potential Partners	City of Tullahoma, Tennessee

**Parcel 16 – (4.1 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel contains a portion of the ROW for Mt View Road. The intent of this parcel is to support the road ROWs. This parcel has a low probability for the presence of cultural resource; however, it has not been adequately surveyed. In locations where the ROWs and wildlife management or public recreation are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered.

**Table 4-16. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	7 and 11
Stream Mile and Bank	Duck River Mile 259.5B
Land Use / Land Cover	Road right-of-way
Known Dispersed Recreation Opportunities	None
Current Agreements/Commitments	Permanent easement to Coffee County, Tennessee for a roadway
Potential Projects	None identified
Potential Partners	Coffee County, Tennessee

**Parcel 17 – (187.9 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This long narrow strip of land stretches 3 shoreline miles along the shoreline on the right descending bank of the Duck River. This tract is covered with upland hardwoods and has steep topography along the shoreline. This parcel is accessible by boat which allows for hunting along the shoreline. This parcel has not been adequately surveyed for cultural resources; however, there are known archaeological sites present, including one historic cemetery. Two areas of this

parcel have a high probability for the presence of cultural resources, but the remainder has a low to medium probability for the presence of cultural resources. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-17. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	11 and 12
Stream Mile and Bank	Duck River Miles 259.5 to 263.4R
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Bank fishing, hunting
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 18 – (177.0 acres)***Proposed RLMP Allocation: Zone 3, Sensitive Resource Management*

This parcel consists of two non-contiguous tracts of land along both banks of the Duck River. This current land cover is upland hardwoods. The northern tract has a mixture of gentle terrain while the southern parcel has steep terrain. Dispersed recreation opportunities include hunting, and fishing by boat access only. This is a valuable river corridor that is largely undisturbed. This parcel has a high probability for the presence of cultural resources, but it has not been adequately surveyed. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-18. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW, 86-NE
TVA D-Stage Map Numbers	12, 13, and 14
Stream Mile and Bank	Duck River Miles 262.5 to 265.1B
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting and fishing

Location Component and Public Involvement Opportunities	Parcel Specific Information
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 19 – (15.9 acres)**

*Proposed RLMP Allocation: Zone 6 – Developed Recreation*

This parcel is adjacent to Powers Bridge Road and is located along both banks of the Duck River. The tract lies along the upper end of the reservoir where the narrow, scenic character of the reservoir makes it attractive to boat fishing and paddle sports activities. The Old Stone Fort State Archaeological Area is situated approximately 2 river miles upstream from this parcel. The parcel is currently undeveloped but receives some informal recreation use such as bank fishing. Future development could include paddle sport boat access accommodations and shoreline fishing facilities. This parcel has a high probability for the presence of cultural resources; however, it has not been adequately surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation would be considered.

**Table 4-19. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	13
Stream Mile and Bank	Duck River Mile 265.5B

**Parcel 20 – (1.5 acres)**

*Proposed RLMP Allocation: Zone 2, Project Operations*

This parcel contains a portion of the ROW for Powers Bridge Road. The intent of this parcel is to support the road ROWs. In locations where the ROWs and wildlife management or public recreation are complementary, requests to support the adjacent land use would be considered. However, requests for private water use facilities would not be considered. This parcel has a low probability for the presence of cultural resources.

**Table 4-20. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	7 and 11
Stream Mile and Bank	Duck River Mile 259.5B
Land Use / Land Cover	Road right-of-way
Known Dispersed Recreation Opportunities	None
Current Agreements/Commitments	Permanent easement to Coffee County, Tennessee for a roadway
Potential Projects	None identified
Potential Partners	Coffee County, Tennessee

**Parcel 21 – (42.1 acres)**

*Proposed RLMP Allocation: Zone 3, Sensitive Resource Management*

This parcel consists of two non-contiguous tracts of land along both banks of the Duck River. This current land cover is upland hardwoods. This parcel is a valuable river corridor that is largely undisturbed. This parcel has a high probability for the presence of cultural resources, but it has not been adequately surveyed. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-21. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW and 86–NE
TVA D-Stage Map Numbers	13
Stream Mile and Bank	Duck River Miles 265.5 to 266.7B
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA’s property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 22 – (70.6 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This narrow parcel stretches 2 miles along the left descending bank of the Duck River. The land cover is mostly upland hardwoods with steep terrain along the shoreline. This parcel is only accessible by boat and provides limited disperse recreation opportunities. This parcel has a low probability for the presence of cultural resources, but it has not been adequately surveyed. Requests for private water use facilities would not be considered.

**Table 4-22. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	11 and 14
Stream Mile and Bank	Duck River Mile 260.7 to 262.5L
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA’s property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 23 – (42.3 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

This parcel is adjacent to Mt. View Road and is currently undeveloped. This tract is located approximately five miles downstream from Parcel 19 and could serve as an access point for paddle sports. Portions of this parcel could also be developed for primitive camping and shoreline fishing. There are known archaeological sites within this parcel; however, it has not been adequately surveyed. This parcel has high probability of the presence of cultural resources. Requests for use of TVA lands and associated water based structures to support developed recreation would be considered.

**Table 4-23. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	11
Stream Mile and Bank	Duck River Mile 260.5L

**Parcel 24 – (186.9 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This long and narrow contiguous tract of land stretches over seven miles along the left descending bank of the Duck River and both descending banks of Crumpton Creek. This parcel is accessible by boat only and provides limited dispersed recreation opportunities. The current land cover is upland hardwoods, and this parcel has steep terrain along the shoreline. There is one historical record of the state listed species, the rugose rock snail (*Lithasia jayana*) in the Duck River at Crumpton Creek. There are two caves on this parcel, one of which is a known gray bat summer roost. This parcel has not been adequately surveyed for cultural resources, but there is at least one historic cemetery present. This parcel has a medium probability for the presence of cultural resources. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-24. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86-NW
TVA D-Stage Map Numbers	6
Stream Mile and Bank	Duck River Mile 256.3 to 259.3L
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 25 – (471.8 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large tract of land is known as Neil Peninsula and is located along the left descending banks of Carroll Creek and the Duck River. The majority of this parcel is covered with upland hardwoods and small scattered pockets of eastern red cedar. This parcel has steep terrain along the shoreline and is relatively flats along the ridge top. This parcel is accessible via JD Neil Road and is a popular area for hunting, hiking, and primitive camping. This parcel has a history of unauthorized ATV abuse, and TVA will continue efforts to stop unauthorized use. This parcel is surrounded by numerous utility easements including transmission line and water utilities. One cave is within this parcel. This parcel has a high probability for the presence of cultural resources with at least two known cemeteries; however, this parcel has not been adequately surveyed. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-25. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	4 and 7
Stream Mile and Bank	Duck River Mile 253.7 to 256.3L
Land Use / Land Cover	Upland hardwoods and red cedar
Known Dispersed Recreation Opportunities	Hunting, hiking, and primitive camping
Current Agreements/Commitments	<ul style="list-style-type: none"> <li>• Permanent easement to the City of Tullahoma for a waste water utility plant</li> <li>• Permanent easement to the City of Tullahoma for underground utilities</li> </ul>
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> <li>• Continue efforts to eliminate unauthorized use</li> </ul>
Potential Partners	None identified

**Parcel 26 – (152.6 acres)**

*Proposed RLMP Allocation: Zone 3, Sensitive Resource Management*

This large narrow parcel is located along both descending banks of Carrol Creek and Bobo Creek. Short Springs Natural Area is located at the headwaters of Bobo creek. This parcel is accessible by boat, but there are also trails that lead to this parcel from the Short Springs Natural Area. One cave is also located on this tract. A historic record of the state-tracked species the Duck River cave beetle (*Pseudanophthalmus tullahoma*) is known from within this cave. The current land cover is upland hardwoods with steep topography along the shoreline. Portions of this parcel have a high probability of the present of cultural resources, but the majority of the parcel has a medium probability. This parcel has not been adequately surveyed for historical properties. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-26. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	4 and 5
Stream Mile and Bank	Carroll Creek Miles 1.6 to 3.3B
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hiking
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	City of Tullahoma

**Parcel 27 – (293.3 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This large contiguous tract of land is located along the left descending bank of Carroll Creek. This parcel is covered with upland hardwoods and has steep terrain located near the shoreline. Disperse recreational opportunities include hunting, hiking, and primitive camping with boat access only. This parcel has a medium probability for the presence of cultural resources but has not been adequately surveyed. There are known archaeological sites nearby. No existing

shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-27. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	3 and 4
Stream Mile and Bank	Carroll Creek Miles 0.3 to 1.8L
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting, primitive camping, and hiking
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 28 – (126.8 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This parcel is located along the left descending banks of Carroll Creek and the Duck River. The current land cover is upland hardwoods with steep topography near the shoreline. This parcel is accessible by boat only and known disperse recreation opportunities include hunting and primitive camping. Portions of this parcel have a medium probability for the presence of cultural resources and other areas have a low probability. There are known archaeological sites nearby, but this parcel has not been adequately surveyed. Requests for private water use facilities would not be considered.

**Table 4-28. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	3 and 8
Stream Mile and Bank	Duck River Miles 252.1 to 253.7L
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting and primitive camping
Current Agreements/Commitments	None identified.

Location Component and Public Involvement Opportunities	Parcel Specific Information
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

**Parcel 29 – (143.1 acres)**

*Proposed RLMP Allocation: Zone 6, Developed Recreation*

This parcel is the Barton Springs Campground and boat launching-ramp. It is located along the left descending bank of the Duck River and was developed by TVA. The campground is currently operated by Recreation Resource Management under a 30-year commercial recreation easement, and the boat launching-ramp is currently managed by TWRA under a license agreement. Existing amenities include a campground, picnic area, and swimming beach. The campground is accessible via Barton Springs Road, and the boat launching-ramp is accessible via Lyndell Bell Road. Future expansion of both commercial and public recreation facilities could be accommodated on undeveloped portions of this tract.

Most of this parcel was surveyed for cultural resources in 2012; however, no new archaeological sites were identified. Probable grave depressions and field stone markers were recognized on that portion of the parcel labeled “Negro Hill” during this survey. The boundaries of a possible cemetery have not been defined, although an area has been designated as a non-development zone because of these grave depressions. There is one part of this parcel adjacent to a bridge over the original Duck River that was not part of the 2012 survey. This un-surveyed area has a medium probability for the presence of cultural resources.

Requests for use of TVA lands and associated water based structures to support developed recreation would be considered.

**Table 4-29. Parcel Information**

Location Component	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	2, 3, and 8
Stream Mile and Bank	Duck River Mile 252.0L

**Parcel 30 – (135.7 acres)**

*Proposed RLMP Allocation: Zone 4, Natural Resource Conservation*

This non-contiguous tract of land is located along Frank Hiles Road and Lyndell Bell Road. The current land cover is upland hardwoods with steep topography. Known dispersed recreational opportunities include bank fishing and hunting. This parcel has a medium probability for the presence of cultural resources. There are known archaeological site nearby but this parcel has not been adequately surveyed for cultural resources. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

**Table 4-30. Parcel Information**

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Coffee, Tennessee
Topographic Map (Sheet No. and Quadrant)	86–NW
TVA D-Stage Map Numbers	2 and 3
Stream Mile and Bank	Duck River Miles 250.4 to 251.4L
Land Use / Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Hunting and bank fishing
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> <li>• Placement of TVA property and public lands signs along the parcel boundary and shoreline</li> <li>• Refresh the existing paint denoting TVA's property boundary</li> <li>• Systematic survey for historic properties</li> </ul>
Potential Partners	None identified

## CHAPTER 5. PLANNING TEAM

### **Benjamin J. Bean**

Position: Program Manager, Reservoir Land Use and Permitting  
Education: M.S. Environmental Policy and Management; B.A. Biology  
Experience: 10 years in Public Land Management and Permitting, 4 years in water quality, 2 years in environmental compliance monitoring  
Involvement: Planning Team and deed interpretation

### **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

### **Jerry G. Fouse**

Position: Recreation Specialist  
Education: M.B.A., B.S., Forestry and Wildlife  
Experience: 39 years in Natural Resources – Recreation Planning and Economic Development  
Involvement: Planning Team and Recreation Management

### **Martin B. High**

Position: Program Manager, Natural Resource Management  
Education: B.S., Forest Management  
Experience: 27 years in Natural Resource Management, Land Management, and Permitting  
Involvement: Planning Team and Natural Resource Management

### **Thomas O. Maher**

Position: Senior Archaeologist  
Education: Ph.D., Anthropology  
Experience: 33 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: J.D., Law; B.S., Environmental Studies - Chemistry  
Experience: 26 years in the field of Law including 19 years in TVA real property rights  
Involvement: Deed interpretation and Land Policy guidance

### **Heather L. Montgomery**

Position: Senior Program Manager, Reservoir Land Planning  
Education: B.S., Environmental Biology  
Experience: 14 years in Planning and Managing Land and Environmental Impacts Evaluation  
Involvement: Program Manager

*Draft Normandy Reservoir Land Management Plan*

**Mark T. Morrissey**

Position: Geographic Analyst  
Education: B.S., Geography  
Experience: 2 year in Planning and Managing Land; 5 years in Industrial Safety and Compliance  
Involvement: Document Preparation; Planning Team; and Preparation of Geographic Information Systems

**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

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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, 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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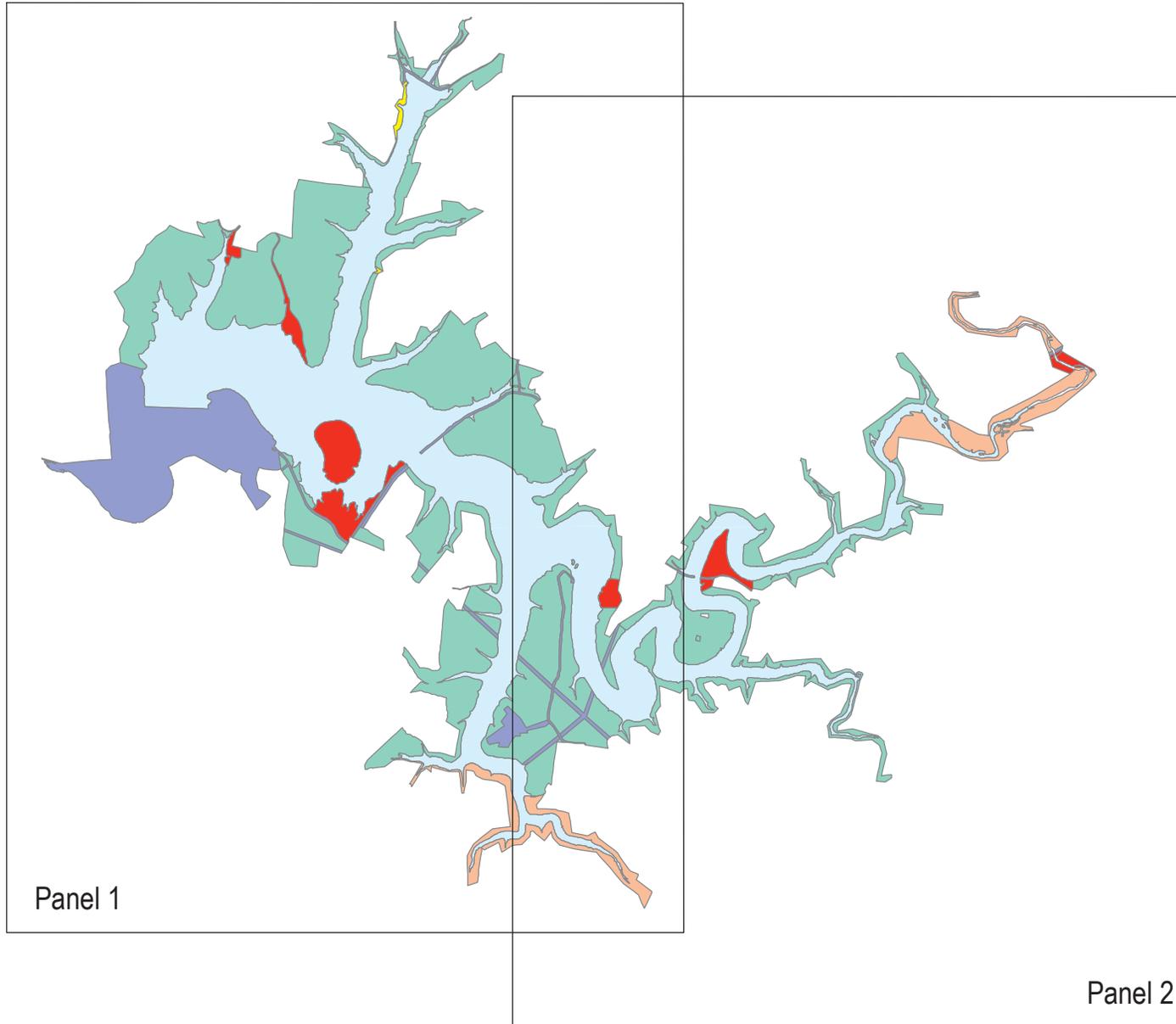
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**Appendix A – Draft Land Management Plan Maps – Panels 1 and 2**

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# Normandy Reservoir



[Click Panel to View PDF Map](#)



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

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## APPENDIX B

### Comparison of Parcel Allocations by Alternative

#### NORMANDY RESERVOIR

Of the 4,797.3 acres on Normandy Reservoir, there are no proposed allocation changes to 3,397.8 acres (70.8 percent); all proposed allocation changes involve 1,399.5 acres (29.2 percent). Of the 1,399.5 acres, TVA would allocate 1,006.3 acres (71.9 percent) to reflect existing land use agreements or commitments. The remaining 393.2 acres (28.1 percent) involve proposed parcel allocations that are not based on existing land use agreements or commitments.

<sup>1</sup>Some parcels are separated into smaller portions to show comprehensive consideration of some parcels. Portions of parcels are in bold text with a footnote.

See Tables below:

**Table 1** = No Proposed Allocation Changes;

**Table 2** = Changes Based on Existing Agreements or Commitments;

**Table 3** = Changes NOT based on Existing Agreements or Commitments

<b>Table 1. No Proposed Allocation Changes</b>			
<b>Number of Parcels Per Zone Allocation</b>			
Zone 2	1	Zone 5	0
Zone 3	3	Zone 6	3
Zone 4	11	Zone 7	1
<b>Parcel</b>	<b>No Action Allocation</b>	<b>Proposed Allocation</b>	<b>Acres per Allocation</b>
1	2	2	641.6
5	6	6	27.7
6	4	4	242.5
7	7	7	9.4
10	4	4	304.5
12	4	4	253.6
<b>13<sup>1</sup></b>	4	4	179.8
14	6	6	19.8
<b>17<sup>1</sup></b>	4	4	187.4
<b>18<sup>1</sup></b>	3	3	175.9
<b>21<sup>1</sup></b>	3	3	41.9
22	4	4	70.6
24	4	4	186.9
<b>25<sup>1</sup></b>	4	4	471.1
26	3	3	152.6
27	4	4	26.9
28	4	4	126.8
29	6	6	143.1
30	4	4	135.7
<b>Total = 18 Parcels</b>		<b>Total = 3,397.8 Acres</b>	

<sup>1</sup>Denotes a portion of the parcel

<b>Table 2. Changes Based on Existing Agreements or Commitments</b>			
	No Action <sup>1</sup> Parcels	Proposed Allocation Parcels	
Zone 2	0	7	<i>20.9 Percent of Normandy Lands</i>
Zone 3	2	0	
Zone 4	7	1	
Zone 5	0	0	9 parcels
Zone 6	0	0	1,006.3 acres
Zone 7	0	1	
<b>Parcel</b>	<b>No Action Allocation</b>	<b>Proposed Allocation</b>	<b>Acres per Allocation</b>
2	4	4	856.1
3	4	2	1.1

Appendix B – Comparison of Parcel Allocations by Alternative

8	4	2	10.8
9	4	7	1.0
11	4	2	36.6
<b>15<sup>1</sup></b>	3	2	9.8
<b>15<sup>1</sup></b>	4	2	85.4
16	4	2	4.1
20	3	2	1.5
<b>Total = 9 Parcels</b>		<b>Total = 1,006.3 Acres</b>	

<sup>1</sup>Denotes a portion of the parcel

<b>Table 3. Changes NOT Based on Existing Agreements or Commitments</b>			
	No Action <sup>2</sup> Parcels	Proposed Allocation Parcels	
Zone 2	0	0	<i>8.2 Percent of Normandy Lands</i>
Zone 3	3	2	
Zone 4	2	4	
Zone 5	0	0	9 parcels
Zone 6	0	3	393.2 acres
Zone 7	0	0	
<b>Parcel</b>	<b>No Action Allocation</b>	<b>Proposed Allocation</b>	<b>Acres per Allocation</b>
4	4	6	10.0
<b>13<sup>1</sup></b>	3	4	56.1
<b>17<sup>1</sup></b>	Not Planned <sup>2</sup>	4	0.5
<b>18<sup>1</sup></b>	Not Planned <sup>2</sup>	3	1.1
19	3	6	15.9
<b>21<sup>1</sup></b>	Not Planned <sup>2</sup>	3	0.2
23	4	6	42.3
<b>25<sup>1</sup></b>	Not Planned <sup>2</sup>	4	0.7
27	3	4	266.4
<b>Total – 9 Parcels</b>		<b>Total = 393.2 Acres</b>	

<sup>1</sup>Denotes a portion of the parcel

<sup>2</sup>There are four parcels “Not Planned”