TENNESSEE VALLEY AUTHORITY

Multiple Reservoir Land Management Plans

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
Volume I

Chickamauga Reservoir - Fort Loudoun Reservoir - Great Falls Reservoir
Kentucky Reservoir - Nickajack Reservoir - Normandy Reservoir
Wheeler Reservoir - Wilson Reservoir

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TVA

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MULTIPLE RESERVOIR LAND MANAGEMENT PLANS
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Alabama, Kentucky and Tennessee

VOLUME I

December 2016

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COVER SHEET

Multiple Reservoir Land Management Plans

Proposed action: The Tennessee Valley Authority (TVA) has prepared this draft Environmental Impact Statement (EIS) to assess the impacts and address environmental, safety, and socioeconomic concerns associated with the implementation of reservoir land management plans (RLMPs) for public lands surrounding the eight reservoirs located in Alabama, Kentucky, and Tennessee. TVA will decide which of two alternatives will be used to manage TVA public lands surrounding these reservoirs.

Type of document: Draft Environmental Impact Statement

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Comments due date: Comments may be submitted online www.tva.gov/nepa or sent to Mr. Higdon at the above mailing or email address. Comments must be submitted by January 31, 2017.

Abstract:

TVA develops reservoir land management plans (RLMPs) to facilitate the management of reservoir lands in its custody pursuant to the TVA Act of 1933. TVA proposes to develop RLMPs for public lands surrounding the eight reservoirs located in Alabama, Kentucky, and Tennessee shown on Figure 1-1. All lands under TVA management on these eight reservoirs, a total of approximately 138,300 acres, are under consideration in this planning process. The eight RLMPs would be used to guide land use approvals, private water use facility permitting, and resource management decisions on TVA-managed public land around these facilities. TVA developed two alternatives to be evaluated in this EIS: Alternative A – No Action Alternative and Alternative B – Proposed Land Use Plan Alternative.

Alternative B is the preferred alternative and provides advantages relative to Alternative A as it establishes a planning framework for RLMPs that brings consistency to the land planning process across the eight reservoirs. Alternative B also applies a systematic method of evaluating and identifying the most suitable uses of TVA public lands in furtherance of TVA's responsibilities under the TVA Act. Under the preferred alternative, the proposed RLMPs would guide land use approvals, private water use facility permitting, and resource management decisions on the eight reservoirs.

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SUMMARY

Introduction

The Tennessee Valley Authority (TVA) manages 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 Tennessee Valley. As part of the implementation of these goals, TVA proposes to develop reservoir land management plans (RLMP) for eight reservoirs located in Alabama, Kentucky and Tennessee. The eight RLMPs would include all public lands under TVA stewardship around the following reservoirs: Chickamauga, Fort Loudoun, Great Falls, Kentucky, Nickajack, Normandy, Wheeler, and Wilson, a total of approximately 138,300 acres. Six of the eight reservoirs were planned under TVA's old Forecast System or Multiple Use Tract Allocation methodologies. TVA transitioned to a Single Use Parcel methodology in 1999. TVA has never developed a RLMP for Great Falls Reservoir, and only a portion of Wilson Reservoir has been planned. Under the proposed eight RLMPs, land would be allocated into broad categories or "zones" including Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access)[1]. Land use allocations to each of these zones would be determined with consideration of the social, economic, and environmental conditions around the reservoirs.

The eight proposed RLMPs are contained within nine volumes. Volume I is the environmental impact statement which addresses the potential environmental impacts of implementing the eight RLMPs. The eight individual RLMPs are found in Volumes II through IX. The proposed RLMPs contain detailed descriptions of the environment around each reservoir and descriptions of each parcel of land addressed in the plans, as well as their proposed use.

Purpose and Need for Action

The purpose of TVA's RLMP planning process is to apply a systematic method of evaluating and identifying the most suitable uses of TVA public lands in furtherance of TVA's responsibilities under the TVA Act. The planning process uses resource data, staff expertise, stakeholder input, and suitability and capability analyses. The RLMP planning process also supports compliance with applicable state and federal regulations and executive orders, and helps ensure 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 reservoirs. Land use allocations proposed in the eight RLMPs would also be used to update the allocation ranges in the 2011 Comprehensive Valleywide Land Plan (CVLP).

In November 2006, the TVA Board of Directors approved the TVA Land Policy to govern the retention, disposal, and planning of interests in real property. This policy provides for the continued development of RLMPs for reservoir properties with substantial public input and with approval of the TVA Board of Directors. Up-to-date RLMPs are needed to make land planning allocations on reservoirs consistent with the TVA Land Policy and the CVLP and to incorporate TVA's goals for managing natural resources on public lands.

[1] Shoreland that TVA does now own in fee is categorized as Zone 1 (Non-TVA Shoreland). Because TVA does not own or manage these lands, they are not addressed in the RLMP.

TVA's natural resources management strategy promotes the implementation of sustainable, cost-effective practices to balance protection and enhancement of ecological and cultural resources with providing multiple uses of the public lands. Through this approach, TVA ensures that resource stewardship issues and stakeholder interests are considered and conflicts are minimized. Resource management is based on cooperation, communication, coordination, and consideration of stakeholders potentially affected by resource management. TVA recognizes that the management or use of one resource affects the management or use of others; therefore, an integrated approach through the planning process is more effective than considering resources individually.

Alternatives Including the Proposed Action

TVA is considering two alternatives for managing public land under its control around the eight reservoirs. Under the No Action Alternative, TVA would continue to use the previous land use plans, if any, which use an older method of land use planning. Under Alternative B – Proposed Land Use Plan Alternative, TVA would apply the system of land allocation zones that was used in more recent TVA land plans and is consistent with current TVA policies.

Regardless of the alternative selected, the following conditions would apply:

- Any proposed development or activity on public land will be subject to TVA approval pending the completion of a site-specific environmental review to evaluate the potential environmental effects of the proposal. As necessary, TVA would impose any necessary mitigative measures as conditions of approval for the use of public lands to minimize adverse environmental effects.
- Future activities and land uses will be guided by the TVA Act and TVA's Land Policy, Shoreline Management Policy, Natural Resource Plan and CVLP.
- TVA land use allocations are not intended to supersede deeded land rights or land ownership.

Alternative A – No Action Alternative. Under the No Action Alternative, TVA would not take any action to align or complete RLMPs on the TVA managed lands on the eight reservoirs. In the case of the six reservoirs for which RLMPs were previously completed, parcels would continue to be managed in accordance with their existing plan and would continue to be based on different planning methodologies with differing allocations. Great Falls and Wilson reservoirs would continue to be unplanned and current uses of these reservoir parcels would continue. Under this alternative, TVA would not comply with the TVA Board's directive to bring its CVLP allocations up-to-date to reflect the allocations determined under the Single Use Parcel Allocation methodology, and complete alignment with existing policies would not occur.

Proposed land use requests received from external applicants or internal TVA organizations would be evaluated for consistency with the existing land use agreements, TVA policies, and/or the Forecast System or Multiple Use Tract Allocation methodologies, which may not incorporate current data on land conditions, adjacent uses, or other resources. If the request were not consistent with the previously planned land use, formal approval by the TVA Board or its designee, following appropriate review, would be required to change the land use designation.

To facilitate the comparison of alternatives, the existing land use designations for the reservoirs have been converted to the equivalent designation of one of the seven proposed land use zones. The amount of land equivalently allocated under Alternative A is shown on Table S-1.

Alternative B – Proposed Land Use Alternative. Under Alternative B, TVA would implement the RLMPs for each of the eight reservoirs presented in Volumes II through IX. Proposed parcel allocations would be developed to identify land use zones in broad categories. The plans are based on current land usage, existing land rights (i.e., committed lands), public needs, the presence of sensitive resources, and TVA policies. Land currently committed to a specific use would be allocated to that current use unless there is an overriding need to change the use. Proposed allocations are shown on Table S-1.

Table S-1. Proposed Land Allocations for Alternatives A and B

Zone	Alternative A		Alternative B	
	Acres	Percent	Acres	Percent
0[1]	69.4	<0.1	0.0	0
2	9,204.6	6.7	10,826.5	7.8
3	15,579.6	11.3	13,289.9	9.6
4	96,991.0	70.2	93,690.5	67.7
5	2,037.7	1.5	3,341.0	2.4
6	8,064.9	5.8	9,708.8	7.0
7	6,374.3	4.6	7,464.5	5.4
Total	**138,321.4**		**138,321.2**	

[1] Parcels or portions of parcels that were not previously planned.

Note: Percentages do not add to 100 due to rounding.

Land allocations under Alternative B were primarily proposed to reflect existing conditions and identify suitable uses of land utilizing resource data, stakeholder input, suitability and capability analyses, and TVA staff input, and as such the difference between the two alternatives is minor. The total number of acres of TVA lands around the eight reservoirs allocated to Zones 3 and 4 is slightly lower under Alternative B; there would be a reduction of 2,289.8 acres in Zone 3 (Sensitive Resource Management) and 3,300.3 acres in Zone 4 (Natural Resource Conservation). In turn, the amount of land allocated to Zones 2, 5, 6 and 7 (Project Operations, Industrial, Developed Recreation and Shoreline Access, respectively) would be slightly higher under Alternative B; an additional 1,622.1 acres would be allocated to Zone 2 (Project Operations), 1,303.3 acres in Zone 5 (Industrial), 1,644.0 acres in Zone 6 (Developed Recreation), and 1,090.1 acres in Zone 7 (Shoreline Access).

The primary management decisions proposed in the eight RLMPs are summarized in Table S-2.

Table S-2. Summary of Management Decisions by RLMP - Alternative B

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
Chickamauga (16,061.4 acres)	As detailed in Volume II of the EIS, TVA proposes substantive changes to numerous parcels of land currently allocated as Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Fewer Zone 3 (Sensitive Resource Management) parcels would be allocated because new information about the presence/absence of sensitive resources. As a result, more parcels would be allocated for Zone 4 (Natural Resource Conservation) and Zone 6 (Developed Recreation). In addition, minor changes to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 7 (Shoreline Access) are proposed. The proposed RLMP would replace TVA's Chickamauga RLMP, developed in 1989 under the Multiple Use Tract Allocation methodology. Of the 16,061.4 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 5,707.7 acres (35.5 percent). Of those changes, 2,131.1 acres would be changed to reflect existing agreements and commitments and 3,576.6 acres would be changed based on other considerations.
Fort Loudoun (1,513.2 acres)	As detailed in Volume III of the EIS, TVA proposes major changes to Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) allocations. Zone 6 changes are proposed because previous planning efforts underestimated the amount of lands utilized for recreation or under existing recreational agreements. Zone 7 changes are proposed to more accurately reflect the lands encumbered with shoreline access rights. The proposed RLMP would replace allocations made using the Forecast System in the 1970s. Of the 1,513.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 261.9 acres (17.3 percent). Of those changes, 102.6 acres would be changed to reflect existing agreements and commitments and 159.3 acres would be changed based on other considerations.
Great Falls (362.4 acres)	As detailed in Volume IV of the EIS, TVA proposes to use the relatively small area of TVA-managed lands on this reservoir for Zone 6 (Developed Recreation) based on the historical and proposed recreation operations of the State of Tennessee. The proposed RLMP would be the first land use plan developed for TVA public lands on Great Falls Reservoir.
Kentucky (74,713.5 acres)	As detailed in Volume V of the EIS, TVA proposes substantive changes to allocations of Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) based on new information about the presence/absence of sensitive resources. More lands would be allocated to Zone 3 (an increase of 5 percent) and fewer lands would be allocated as Zone 4 (a decrease of almost 10 percent). Minor increases to Zone 2 (Project Operations), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) allocations are also proposed. The proposed RLMP would replace TVA's Kentucky RLMP, developed in 1985 under the Multiple Use Tract Allocation methodology. Of the 74,713.5 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 9,967.9 acres (13.3 percent). Of those changes, 4,057.5 acres would be changed to reflect existing agreements and commitments and 5,910.4 acres would be changed based on other considerations.

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
Nickajack (3,064.7 acres)	As detailed in Volume VI of the EIS, TVA proposes substantive changes to Zone 2, Zone 3 and Zone 4 allocations. The proposed increase in Zone 2 lands is primarily the result of previous underestimations in the amount of lands encumbered by roadways. The allocation change to one large parcel (Marion Memorial Bridge Natural Area) from Zone 4 to Zone 3 would result in the greatest allocation change under the RLMP, resulting in a large increase in Zone 3 (Sensitive Resource Management) lands and fewer lands allocated as Zone 4 (Natural Resource Conservation). Minor changes to Zone 5, Zone 6 and Zone 7 allocations are proposed. The proposed RLMP would replace TVA's Nickajack RLMP, developed in 1990 under the Multiple Use Tract Allocation methodology. Of the 3,064.7 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 1,116.1 acres (31 percent). Of those changes, 664.8 acres would be changed to reflect existing agreements and commitments and 451.3 acres would be changed based on other considerations.
Normandy (4,797.2 acres)	As detailed in Volume VII of the EIS, TVA proposes relatively minor adjustments to parcel allocations across each land use zone. The greatest change would result in a decrease in Zone 3 (Sensitive Resource Management) parcels, largely due to reallocating one tract from Zone 3 to Zone 4 (Natural Resource Conservation) because new information indicates that sensitive resources are not known to be present in the area. The proposed RLMP would replace allocations made using the Forecast System in the 1970s. Of the 4,797.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 1,399.5acres (29.2 percent). Of those changes, 1,006.3 acres would be changed to reflect existing agreements and commitments and 393.2 acres would be changed based on other considerations
Wheeler (36,045.2 acres)	As detailed in Volume VIII of the EIS, TVA proposes substantive changes to Zone 2, Zone 3, Zone 4 and Zone 6 allocations. TVA would increase allocations to Zone 2 to more accurately account for areas encumbered by roadways and road easements (an increase of almost 10 percent). Fewer lands would be allocated to Zone 3 because new information indicates the absence of known sensitive resources on numerous parcels. Some of these parcels would be reallocated for Zone 4 (5 percent). The proposed RLMP would replace TVA's Wheeler RLMP, developed in 1995 under the Multiple Use Tract Allocation methodology. Of the 36,045.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 7,105.2 acres (19.7 percent those changes, 2,009.7 acres would be changed to reflect existing agreements and commitments and 5,095.5 acres would be changed based on other considerations

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
Wilson (1,223.4 acres)	As detailed in Volume IX of the EIS, TVA's proposed RLMP reflects circumstances unique to Wilson Reservoir. The proposed RLMP would be the first land use plan developed for TVA public lands on Wilson Reservoir. Approximately 87 percent of areas would be allocated for Project Operations (Zone 2) to reflect lands encumbered by transmission lines and utility easements and lands set aside to support future power operations of the dam (and potential navigation in and around the Wilson Lock and Fleet Harbor). Almost 13 percent of lands would be allocated as Zone 6 and a small tract would be allocated for Zone 7.

Affected Environment and Environmental Consequences

Land Use

Affected Environment. Existing land use patterns along the shoreline and back-lying land have been influenced by initial TVA land acquisition and subsequent disposition via the sale, transfer of ownership, or retention of properties. TVA originally acquired about 209,500 acres of land on the eight reservoirs, and about 38 percent (79,466 acres) of this land has been sold for private use or transferred to other federal and state agencies for public use. TVA presently manages a total of approximately 138,300 acres of land on these reservoirs, which are the subject of the eight RLMPs. The 4,673 miles of shoreline along these reservoirs is managed by TVA, either as flowage easement (1,285 miles) or shoreline access land (3,388 miles).

The amount of developed residential shoreline ranges from greater than 60 percent of the shoreline on Fort Loudoun Reservoir to approximately 17 percent on Kentucky Reservoir. No residential development is available on TVA parcels on Great Falls Reservoir. In total, approximately 41 percent of the shoreline of these reservoirs is available for residential development, and development has already occurred on about 35 percent of the available shoreline around the reservoirs. TVA's Land Policy does not allow additional land to be provided for residential use; therefore, the amount of shoreline available for residential use will not change as a result of the land planning process.

Land uses around the reservoirs remain primarily rural and natural. Existing land around the reservoirs is predominately undeveloped forested land. Other land uses include TVA project operations, recreation, residential and a small amount of industrial uses.

Many of the TVA-managed parcels on the eight reservoirs have existing land use agreements that commit a parcel to a specific use. The majority of the land use agreements are for uses such as utilities, highways, and other public infrastructure. Most of these public infrastructure uses affect narrow linear tracts with small acreages. A large proportion of the agreements are for public recreation and include such things as boat ramps, campgrounds and parks that are operated by local, county, and state government agencies. Less than 10 percent of the agreements are for commercial recreation and these agreements include docks, marinas, and commercial campgrounds found on several of the reservoirs.

Environmental Consequences. Land use impacts are based upon changes in the amount of land allocated to each zone. In terms of land use, the primary differences between the No Action Alternative (Alternative A) and the Proposed Land Plan Alternative (Alternative B) are associated with the reduction of lands allocated to Zone 3 and Zone 4 (Sensitive Resource Management and Natural Resource Conservation), and an increase in land allocated to Zone 6 (Developed Recreation). The proposed changes in land use allocations on each of the eight reservoirs are relatively minor and generally correspond to a "re-alignment" to reflect current land uses and conditions on each parcel. The primary impacts to land use associated with Alternative A result from the lack of a comprehensive plan to guide consideration of land use requests that would be applied in a consistent manner across all TVA reservoirs. Over the long term, absence of comprehensive reservoir-wide land plans may result in land uses that do not fully optimize the goals of multiple use and stewardship to which TVA strives.

Prime Farmland

Affected Environment. Approximately 35,827 acres of prime farmland occur on the 138,305 acres of lands around the eight reservoirs. The geographic extent of prime farmlands on the reservoirs considered in this EIS includes seven counties in Alabama, three in Kentucky, and 25 in Tennessee. Prime farmland is found in each of these counties, comprising between 6 and 62 percent of the total area in a county. The total area of prime farmland associated with the eight RLMPs is small (about 1.0 percent) relative to the almost 3 million acres of prime farmland occurring in the counties around the eight reservoirs. The majority of the parcels around the eight reservoirs, including those containing prime farmland, are already committed to land uses other than agriculture.

Environmental Consequences. Potential for future ground disturbance and development has the potential to impact prime farmland. A slightly higher amount of land would be allocated to land use zones with a greater potential for future ground disturbance and development, Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation) under Alternative B. However, because the proportion of prime farmland and farmland of statewide importance on reservoir land is small, adverse impacts to prime farmland would be minor under both alternatives.

Recreation

Affected Environment. Recreation facilities and amenities on TVA shoreline properties adjacent to the eight reservoirs include: 74 campgrounds, 79 marinas, 234 developed boat launching ramps, and many day use facilities such as picnic areas, swimming beaches, ball fields, fishing piers, and golf courses. TVA managed lands around the eight reservoirs also offer abundant opportunity for dispersed recreation.

Environmental Consequences. Neither alternative would impact currently developed recreation facilities. The variation in the amount of land available for developed and dispersed recreation opportunities under both alternatives is small and correspond to a "re-alignment" to reflect current land uses and conditions on each parcel. Overall, the management of recreation opportunities would benefit from the development and implementation of Alternative B as each RLMP would follow a consistent, systematic process for identifying developed and dispersed recreational opportunities on individual parcels.

Terrestrial Ecology and Threatened and Endangered Species

Affected Environment. The eight reservoirs are located in five ecoregions: Ridge and Valley, Interior Plateau, Southwestern Appalachians, Southeastern Plains, and Mississippi Loess Plains. Deciduous forests and woodlands cover approximately 38 percent of the landscape and are composed of diverse communities ranging from mesic (moist) cove hardwood forest to xeric (dry) upland oak forests. Mixed evergreen-deciduous forests occupy approximately 20 percent of the land cover and primarily consist of moist mixed-hardwood forests and dry pine and pine-oak forests. Less than 5 percent of the land cover consists of evergreen forests and evergreen woodlands. In addition, approximately 4 percent of the land cover is considered woody wetlands primarily located within floodplain hardwood forests. Herbaceous vegetation in the form of grasslands, hay fields, and pasture make up approximately 19 percent of the land cover around the reservoirs. Transition areas consisting of shrub/scrub habitat makes up 3 percent of the land cover.

The variety of land forms, soils, climate, and geology across these ecoregions support an extremely diverse assemblage of wildlife. The reservoirs provide abundant open water habitats and associated riparian (shoreline) zones that are used by a variety of wildlife including shorebirds, wading birds, waterfowl, amphibians, reptiles, and mammals.

There are 49 records of federally or state-listed threatened or endangered plants and 38 records of terrestrial wildlife species on parcels within the eight RLMPs and 178 aquatic species recorded on TVA parcels and within the reservoirs. Many of the TVA parcels included in the eight RLMPs also contain invasive nonnative species. More information on specific records and habitat requirements of federally and state-listed threatened or endangered species are included in the individual RLMPs (Volumes II through IX).

Caves also provide unique habitat for certain insect and wildlife species. A total of 937 caves occur within 3 miles of the eight reservoirs, and 35 caves occur on TVA parcels. The majority of the parcels containing caves are allocated to Zone 3 (Sensitive Resource Management) as threatened or endangered species have been recorded in several of these caves. Because caves are extremely fragile and biologically significant, TVA typically maintains an undisturbed 200-foot-wide buffer zone around caves.

Environmental Consequences. Under both alternatives, project-specific surveys would be conducted prior to clearing potential wildlife habitats to evaluate the presence of, and potential impacts to uncommon or rare species. Consequently, impacts would be minor under both alternatives because if any listed species are detected in these areas, additional steps would be taken during the planning process to avoid, minimize, and/or mitigate the project impacts. A slightly higher amount of land would be allocated to land use zones with a greater potential for future ground disturbance and development, Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Recreation) under Alternative B. However as proposed allocations generally correspond to a “re-alignment” to reflect current conditions on each parcel, and as the overall proportion of land allocated to Zones 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) would exceed 75 percent, this impact would be minor.

Any future development of lands potentially supporting use by sensitive species would be coordinated with both state and federal agencies, as appropriate. Therefore impacts to threatened and endangered species are not anticipated under either alternative.

Aquatic Ecology

Affected Environment. Biennial Reservoir Fish Assemblage Index (RFAI) and benthic macroinvertebrate scores recorded between 2010 and 2012 indicate that fish assemblage scores are typically fair to good in seven of the reservoirs. Monitoring by TVA under the RFAI program is not conducted on the Great Falls Reservoir. Benthic scores are poor for Normandy Reservoir, fair to poor for Fort Loudoun, and poor to good for Kentucky, Wilson, and Wheeler reservoirs. Only the Chickamauga and Nickajack reservoirs had scores that ranged from fair to good. Detailed results of RFAI and benthic macroinvertebrate sampling are provided in the individual RLMPs (Volumes II through IX).

Environmental Consequences. Compared to Alternative A, Alternative B includes a small reduction in the portion of TVA-managed land allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Accordingly, Alternative B would have an increase in land allocated to Zone 2 (Project Operations), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) and would have a higher potential for future ground disturbance and development that could negatively impact aquatic ecology. Many (approximately 7 percent) of the proposed changes in allocation generally correspond to a “re-alignment” to reflect current land uses and conditions on each parcel. Approximately 11 percent of the changes in allocation of the TVA-managed lands on the eight reservoirs are proposed as a result of the planning process described in Section 2.4.1 of the EIS. This process included an evaluation of known and potential sensitive resources and the capability and suitability for potential uses of each parcel as well as public input. However, any new development would be subject to site-specific environmental review, applicable state and federal regulations, and TVA guidelines for minimizing impacts to aquatic habitat. Therefore, while the potential amount of adverse impacts to aquatic resources under Alternative B could be slightly greater than those under Alternative A, the changes in amount of potentially negative impacts would be relatively minor.

Water Quality

Affected Environment. Water quality of the reservoirs is typical of impoundments with slower-moving water and vertical variations in temperature, dissolved oxygen, and other water quality characteristics. The eight RLMPs encompass a relatively small fraction of the total watershed for each of the reservoirs. Residence times are relatively short, ranging from 3 days to 19 days, with the exception of Normandy Reservoir where residence time is approximately 141 days. Long residence time and high nutrient loading from the surrounding watershed, commonly result in poor water quality conditions.

Water quality conditions within TVA reservoirs are evaluated by several programs designed to monitor the chemical and biological conditions of the aquatic environment. These programs include state monitoring programs designed to evaluate impairment, and TVA’s reservoir health monitoring program. The Tennessee Department of Conservation has identified segments of the Chickamauga, Fort Loudoun, and Nickajack reservoirs as being impaired due to mercury, polychlorinated biphenyl (PCB) and dioxin contaminated sediments. Nine different water body segments within Wheeler Lake encompassing the entire reservoir and McKiernan Creek at Wilson Reservoir are identified by the Alabama Department of Environmental Management (ADEM) as being impaired by nutrients from agricultural sources. At Wilson Reservoir, the McKiernan Creek is identified as being impaired by nutrients from agricultural sources. Additionally, the entire Wilson Reservoir from Wheeler Dam to Wilson Dam, with area of 15,311 acres, has been included ADEM’s 2016 final draft 303(d) list.

Reservoir ecological health scores for dissolved oxygen, chlorophyll and sediment ranged from poor to good for seven of the reservoirs. The Great Falls Reservoir is not part of TVA's Reservoir Ecological Health Monitoring Program. Dissolved oxygen is a common concern in reservoirs, particularly when hydroelectric facilities discharge water through the turbines, limiting re-oxygenation that might otherwise occur at a spillway discharge. Most of the water withdrawals and wastewater discharges within the reservoir system are used as cooling water in power generation.

Environmental Consequences. Compared to Alternative A, Alternative B includes a small reduction in the portion of TVA-managed land allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) and an increase in land allocated to Zone 2 (Project Operations), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) which have a higher potential for future ground disturbance and development that could impact water quality. Although many of the proposed changes in allocation generally correspond to a "re-alignment" to reflect current land uses and conditions on each parcel, new development would be subject to site-specific environmental review, applicable state and federal regulations, and TVA guidelines for minimizing impacts to water quality. Therefore, while the potential amount of adverse impacts to water quality under Alternative B could be slightly greater than those under Alternative A, the changes in amount of potentially negative impacts would be relatively minor.

Wetlands

Affected Environment. Palustrine forested wetlands are the most abundant type of wetland found in the reservoirs and make up approximately 65 percent of the 41,653.3 acres of wetland found on TVA lands on the eight reservoirs. Wetlands tend to be smaller and do not occur as frequently on tributary reservoirs such as Great Falls and Normandy 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.

Environmental Consequences. Under Alternative B, a slightly greater amount of land would be allocated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation) which have a greater potential for future ground disturbance and development that could impact wetlands. However, because most wetlands would be preserved within land use zones not subject to development, and because wetlands are regulated under Executive Order (EO) 11990 and Section 404(b)(1) of the Clean Water Act that require avoidance and minimization measures, impacts to wetlands are expected to be minor and fully mitigated.

Floodplains

Affected Environment. As a federal agency, TVA is subject to the requirements of EO 11988 (Floodplain Management). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances. The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative.

Environmental Consequences. Under either alternative, the development and/or management of properties and evaluations of proposed actions would be done individually to ensure consistency with EO 11988. Potential development would generally consist of

water use facilities and other repetitive actions in the floodplain that would result in minor floodplain impacts, if any. Although there could be impacts to floodplains under either alternative, potential impacts to floodplains and to natural and beneficial floodplain values would be evaluated under EO 11988 on a case-by-case basis, and measures to reduce or eliminate adverse impacts would be determined at that time.

Air Quality and Climate Change

Affected Environment. Most reservoirs are in counties in attainment of the National Ambient Air Quality Standards. Fort Loudoun Reservoir is located in counties that are in nonattainment for particulate matter ($PM_{2.5}$). The State of Tennessee, however, anticipates submitting a re-designation request in October 2106 to the U.S. Environmental Protection Agency to have the designation changed to attainment.

Environmental Consequences. A majority of reservoir lands would remain allocated for conservation or resource protection. Under Alternative B, a slightly higher amount of land would be allocated to land use zones wherein it is more likely that activities resulting in air emissions would occur. These land use zones include Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation). However, under any of the alternatives, an appropriate level of environmental review and permitting pursuant to requirements of the Clean Air Act would be required as appropriate, to assess project-specific air quality impacts or greenhouse gas emissions and ensure that effects on regional air quality and climate change are minor.

Cultural and Historic Resources

Affected Environment. Although the entirety of TVA-managed land surrounding the eight reservoirs has not been completely surveyed, archaeological sites have been identified on each of the reservoirs. Based on limited surveys, approximately 4,003 archaeological sites and 1,443 historic structures have been recorded on or near these reservoirs. Some of these archaeological sites are located below the normal summer pool elevation. Certain sites are eligible or potentially eligible for listing on the National Register of Historic Places.

Environmental Consequences. Under both alternatives, all cultural resources would be subject to the regulatory requirements of the National Historic Preservation Act (NHPA). Under Alternative B, there are commitments for the management of cultural resources within Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) that would effectively preserve resources within the planned parcels. For any proposed undertaking, regardless of the zone allocation, TVA will take necessary steps to ensure compliance with the regulatory requirements under the NHPA and consider the development's effects as they are proposed to known and/or unknown cultural resources. TVA will comply with the Natural Resource Plan (NRP) Programmatic Agreement executed in 2011 in consultation with the State Historic Preservation Officer (SHPO), Advisory Council of Historic Preservation and federally recognized Indian tribes which subsumes and governs all past and future land plans. Impacts to cultural and historic resources from the proposed RLMPs are therefore expected to be minor.

Natural Areas and Ecologically Significant Sites

Affected Environment. Natural areas occurring on TVA lands include both TVA- and non-TVA managed areas. A review of the TVA Natural Heritage database indicated that 46 natural areas managed by the TVA Natural Areas Program are included within six of the eight RLMPs. No TVA-managed natural areas are located in Fort Loudoun or Great Falls

reservoirs. An additional 135 natural areas, either managed by other entities or recognized as ecologically significant, are located within the eight RLMPs.

Environmental Consequences. Natural areas are generally located on committed parcels allocated according to their prescribed land use to one of four land management zones: Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation) and Zone 6 (Developed Recreation). Additionally, committed parcels fronting natural areas that are situated on back-lying public lands are zoned according the use of the back-lying land and are allocated the appropriate land management zone. Natural areas situated on Zones 3 and 4 are managed for the protection and enhancement of resources and are not subject to adverse impacts; therefore properties located within these zones would remain “natural” and not be converted to other land uses, thereby preserving the natural areas. Overall, the efficient management and protection of TVA-designated natural areas and ecologically significant sites will benefit from the development and implementation of Alternative B as each RLMP provides a systematic process for identifying these areas and implementing management objectives for parcels which contain these sites.

Aesthetics and Visual Resources

Affected Environment. The reservoirs within the eight RLMPs include a variety of visual resources. Various combinations of development and land use patterns that are present in the viewed landscapes along the shorelines of the eight reservoirs contribute to the overall visual character of the project area. Among the scenic resources of each of the reservoirs, the water body itself is the most distinct aesthetic feature. Islands, secluded coves, and steep, wooded ridges are other important visual resources that contribute to scenic integrity. Urban, operations-related, and industrial developments generally create a lower level of scenic integrity. The size of the eight reservoirs and the amount of TVA-managed land on each of the reservoirs vary greatly. Where TVA lands represent a small portion of the reservoir’s overall shoreline (e.g., Fort Loudoun and Wilson reservoirs), the effects of TVA management of its lands on the overall visual character of the reservoir is generally very limited. Conversely, where TVA lands make up a large portion of the reservoir’s shoreline (Kentucky and Wheeler reservoirs), TVA land management decisions may greatly influence the scenic character of the reservoir.

Environmental Consequences. Under Alternative A, the allocation of selected lands would continue to be based on the current RLMPs for each reservoir. However, these RLMPs may not fully incorporate the current aesthetic resources within the reservoirs. As a result, long-term negative impacts to visual resources and scenic integrity could include gradual losses of visual quality, scenic attractiveness, and undeveloped areas, as well as negative changes in the aesthetic sense of place.

Under Alternative B, the eight RLMPs would enhance conservation and protection of scenic resources as scenic values were considered during the allocation process. Parcels having distinctive and valuable visual characteristics such as islands, rock bluffs, steep and wooded ridges, wetlands, and flowing shallow water areas were typically allocated to either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation), and thus, are unlikely to be disturbed under Alternative B. These Zone 3 and 4 lands typically provide valuable protective screening and important scenic buffers. Therefore, while activities on parcels allocated to Zones 2, 5, 6, and 7 have the greatest potential to

decrease aesthetics value, these parcels likely have the lowest scenic value. Under both action alternatives, impacts to visual resources would be minor.

Noise

Affected Environment. Sources of noise along each of the eight reservoirs include industrial development, power generation facilities, substations, developed recreation sites, recreational watercraft use, navigation uses and automobile traffic. Lands allocated to Zone 5 (Industrial) have the greatest potential to support uses that produce higher levels of noise.

Environmental Consequences. Although there would be an increase in the overall amount of land allocated to zones which have the potential for notable noise emissions, based on the proportion of land in the eight RLMPs available for development relative to the entire shoreline of the eight reservoirs, there would be only a minor increase in the potential for noise impacts associated with Alternative B relative to Alternative A. Current uses of the great majority of the TVA lands on the eight reservoirs would not change under either of the alternatives.

Socioeconomics and Environmental Justice

Affected Environment. The estimated population of the 36 counties that include the reservoirs is 2,513,709. Projections and current trends suggest that the population of this area will increase by approximately 6.9 percent by the year 2020, which is slightly higher than the projected 5 percent growth rate for the nation. Overall, the rural population share in the area is about the same as state averages, which are somewhat higher than the national average. The population is predominantly white, with the average minority population comparable to the state of Kentucky, but lower than Tennessee and Alabama. Overall, poverty levels are slightly higher than levels across the state of Tennessee and are the same as levels across Kentucky and Alabama. Management, Business Science, and Arts accounts for the largest share of civilian employment at nearly 35 percent within the area counties as well as within each of the states. The unemployment rate for the area counties between 2010 and 2014 was 5.8 percent. The only state with a lower unemployment rate than the area counties was Kentucky, with an unemployment rate of 5.5 percent.

Environmental Consequences. Under Alternative B, changes in land allocations are relatively minor and generally reflect correspond to a “re-alignment” to reflect current land uses and conditions on each parcel. However, implementation of Alternative B would enhance management of public lands, which would have a minor beneficial impact on the local economy in the area through the enhancement and potential future development of developed as well as dispersed recreation opportunities.

No disproportionate impacts to disadvantaged populations are expected to occur under either of the alternatives.

Summary of Impacts

Under the No Action Alternative (Alternative A), the total number of acres of TVA land on the eight reservoirs that would be equivalently designated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation) is less than under Alternative B – Proposed Land Use Alternative. However, proposed land allocations under Alternative B were primarily proposed to reflect existing conditions and suitable uses of land, and as such

the difference between the two alternatives is minor. No significant direct, indirect, or cumulative effects are expected to occur to any resource under either alternative.

In contrast to Alternative B, the No Action Alternative would continue its use of previous land planning methodologies (Forecast System and Multiple Use Tract Allocation) for those reservoirs previously planned. For those reservoirs that were not previously planned, lands would be managed in accordance with existing commitments, agreements and TVA Policy. TVA would not fully implement a systematic and comprehensive planning approach to the management, retention, and disposal of reservoir lands managed by TVA. As such Alternative A would not result in the benefits of comprehensive land planning across the entire range of lands associated with the eight reservoirs.

Preferred Alternative

The preferred alternative is Alternative B – Proposed Land Use Plan Alternative. Alternative B provides advantages relative to Alternative A as it establishes as a planning framework for RLMPs that brings consistency to the land planning process across the eight reservoirs considered in this document. Alternative B also applies a systematic method of evaluating and identifying the most suitable uses of TVA public lands in furtherance of TVA's responsibilities under the TVA Act. Under the preferred alternative the proposed RLMPs would be used to guide land use approvals, private water use facility permitting, and resource management decisions on the eight reservoirs. The planning team would use the proposed RLMPs along with TVA policies and guidelines to manage resources and respond to requests for the use of TVA public land.

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SYMBOLS, ACRONYMS, AND ABBREVIATIONS

§	Section
APE	Area of Potential Effect
BMP	Best Management Practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
cfs/sq mi	Cubic Feet per Second per Square Mile
CVLP	Comprehensive Valleywide Land Plan
CWA	Clean Water Act
dBA	A-Weighted Decibels
DO	Dissolved Oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act of 1973
FH	Floating Houses
HUD	U.S. Department of Housing and Urban Development
Ldn	Day-Night Average Sound Levels
Leq	Sound Level Equivalents
MSC	Maximum Shoreline Contour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NN	Non-Navigable Houseboats
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NRP	Natural Resource Plan
NWI	National Wetland Inventory
PCB	Polychlorinated Biphenyl
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
RFAI	Reservoir Fish Assemblage Index
RLA	Rapid Lands Assessment
RLMP	Reservoir Land Management Plan
RVSMP	Reservoir Vital Signs Monitoring Program
SHPO	State Historic Preservation Officer
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
TMDL	Total Maximum Daily Load
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Background

The Tennessee Valley Authority Act of 1933, as amended, (TVA Act) confers on the Tennessee Valley Authority (TVA) broad authority related to the unified conservation and development of the Tennessee River Valley and surrounding area and directs that property in TVA's custody be used to promote the TVA Act's purposes. Shortly after its creation, TVA began a dam and reservoir construction program that required the purchase of approximately 1.3 million acres of land for the creation of 46 reservoirs within the Tennessee River Valley region (the Valley). Most of these lands are located underneath the water of the reservoir system or have since been sold by TVA or transferred to other state or federal agencies. Today, approximately 293,000 acres of land along TVA reservoirs are managed by TVA pursuant to the TVA Act. TVA manages these public 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. In order to systematically manage these reservoir lands, TVA develops land use plans to integrate land and water program goals, provide for optimum public benefit, and balance competing and sometimes conflicting resource uses. In managing public lands and resources under its authority, TVA also seeks to provide effective and efficient management of natural, cultural, visual, and recreation resources to meet all regulatory requirements and applicable guidelines.

An increasing demand for use of these remaining lands sometimes results in conflicting public opinions regarding the most appropriate use of individual parcels. These competing interests and development pressures, coupled with today's environmental awareness, underscore the necessity for a systematic and comprehensive planning approach to the management, retention, and disposal of reservoir lands managed by TVA. TVA began planning its reservoir lands in the 1940s and has implemented three different land planning methodologies for classifying reservoir lands since that time:

- Forecast System
- Multiple Use Tract Allocations
- Single Use Parcel Allocations

An effort to more clearly define and commit to suitable uses of reservoir lands was undertaken by TVA in 1999 using the Single Use Parcel Allocation method, which is still in use today. Similar to the Multiple Use Tract Allocation methodology, TVA-managed lands are subdivided into manageable parcels; however, under this methodology, each parcel is designated for a single use and allocated to a single zone designation. The seven zone designations under the Single Use Parcel Allocation are defined in Table 1-1.

Table 1-1. Land Use Zone Definitions

Zone	Definition
Zone 1 Non-TVA Shoreland	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. 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. *Note, non-TVA shoreland is not represented in the Reservoir Land Management Plans (RLMP) because the parcels are private land.*
Zone 2 Project Operations	Land currently used or planned for future use, for TVA operations and public works projects, including: • Land adjacent to established navigation operations – Locks, lock operations and maintenance facilities, and the navigation work boat dock and bases. • Land used for TVA power projects operations – Generation facilities, switchyards, and transmission facilities and rights-of-way. • 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. • Navigation safety harbors/landings – Areas used for tying off commercial barge tows and recreational boats during adverse weather conditions or equipment malfunctions. • Navigation dayboards and beacons – Areas with structures placed on the shoreline to facilitate navigation. • Public works projects – Includes rights-of-way for public utility infrastructure, such as sewer lines, water lines, transmission lines, and major highway projects.
Zone 3 Sensitive Resource Management	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. 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: • TVA-designated sites with potentially significant archaeological resources. • TVA public land with sites/structures listed in or eligible for listing in the National Register of Historic Places. • Wetlands – Aquatic bed, emergent, forested, and scrub-shrub wetlands as defined by TVA. • TVA public land under easement, lease, or license to other agencies/individuals for resource protection purposes. • TVA public land fronting land owned by other agencies/individuals for resource protection purposes. • 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 (USFWS), state-listed species, and any unusual or exemplary biological communities/geological features.

Zone	Definition
	• 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. • 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. • 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. • Significant scenic areas – Areas designated for visual protection because of their unique vistas or particularly scenic qualities. • 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. • Other sensitive ecological areas – Examples of these areas include heron rookeries, uncommon plant and animal communities, and unique cave or karst formations.
Zone 4 Natural Resource Conservation	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: • TVA public land managed for wildlife or forest management projects. • TVA public land under easement, lease, or license to other agencies for wildlife or forest management purposes. • TVA public land fronting land owned by other agencies for wildlife or forest management purposes. • Dispersed recreation areas maintained for passive, dispersed recreation activities, such as hunting, hiking, bird watching, photography, primitive camping, bank fishing, and picnicking. • 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. • Wildlife observation areas – TVA natural areas with unique concentrations of easily observed wildlife that are managed as public wildlife observation areas. • 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). • Islands where sensitive resources are not known to be present or that support existing development.

Zone	Definition
Zone 5 Industrial	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: • TVA public land under easement, lease or license to other agencies/individuals/ entities for industrial purposes. • TVA public land fronting land owned by other agencies/individuals/entities for industrial purposes. In some cases, TVA land allocated to industrial use would be declared surplus and sold at public auction. Types of development that can occur on this land are: • 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. • 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. • 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. • Fleeting areas – Sites used by the towing industry to switch barges between tows or barge terminals that have both offshore and onshore facilities. • 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.

Zone	Definition
Zone 6 Developed Recreation	Land currently used, or planned for future use, for concentrated, active recreational activities that require capital improvement and maintenance of developed infrastructure, including: • TVA public land developed for recreational purposes, such as campgrounds, day use areas, etc. • TVA public land under easement, lease, or license to other agencies/individuals/entities for developed recreational purposes. • TVA public land fronting land owned by other agencies/individuals/entities for developed recreational purposes. 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: • 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. 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-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. • 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.
Zone 7 Shoreline Access	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: • Residential water use facilities (e.g., docks, piers, launching ramps/driveways, marine railways, boathouses, enclosed storage space, and nonpotable water intakes). • Shoreline access corridors (e.g., pathways, wooden steps, walkways, or mulched paths that can include portable picnic tables and utility lines). • Shoreline stabilization (e.g., bioengineering, riprap, gabions, and retaining walls). • Shoreline vegetation management.

In order to create a consistent reservoir lands planning methodology across the Valley, TVA evaluated each of the reservoirs that have Forecast System designations or Multiple Use Tract Allocations for conversion to the Single Use Parcel Allocation methodology. In 2006, TVA began using the Rapid Lands Assessment (RLA) tool to preliminarily assess which Single Use Parcel Allocation would be appropriate for each parcel which had previously been given a designation under the Forecast System or an allocation under the Multiple Use Tract Allocation methodology. Although the official designations and allocations of the parcels are not altered by the RLA, the process allows TVA to compare reservoir lands across the Valley under a single allocation model. The information obtained from RLA provides acreage estimates of lands managed in the various zones and allocations, and is used for planning and analysis purposes only as the TVA Board of Directors until the formal land plans were completed.

In 2011, the TVA Board of Directors accepted TVA's Natural Resource Plan (NRP) and authorized the Chief Executive Officer to implement the NRP to guide TVA's natural resource management in the areas of biological, cultural, and water resources management, recreation management, public engagement, and reservoir lands planning. As part of the NRP, TVA adopted the Comprehensive Valleywide Land Plan (CVLP) to guide use of TVA-managed property on 46 reservoirs. In the NRP, TVA established CVLP target ranges for each land use zone based on existing land plans and on RLAs. These ranges are targets within which TVA intends to maintain a desired balance of shoreline development, recreational use, sensitive and natural resource management, and other uses. The CVLP and its targets enable TVA and the public to consider those allocations across the reservoir system and determine whether too much or too little attention is being given to particular land uses on a system-wide basis.

1.2 Description of the Proposed Action

TVA has developed reservoir land management plans (RLMPs) to facilitate the management of TVA-managed public lands surrounding the eight reservoirs located in Alabama, Kentucky, and Tennessee shown on Figure 1-1. All lands under TVA management on these eight reservoirs, a total of approximately 138,300 acres, are under consideration in this planning process. The eight RLMPs would guide land use approvals, private water use facility permitting, and resource management decisions on TVA-managed public land around these facilities.

Land acquisition and disposal information for the eight reservoirs is presented in Table 1-2. The acreages listed in the table were calculated from georeferenced mapping data and aerial photography of the reservoir land parcels and do not completely align with acreage totals in recorded deeds. The acreages also do not include land acquired and retained that is below the full summer pool elevations of the reservoirs. These acreages also do not include other lands located off-reservoir and acquired by TVA for operation of the power system (e.g., transmission line rights-of-way, substations).

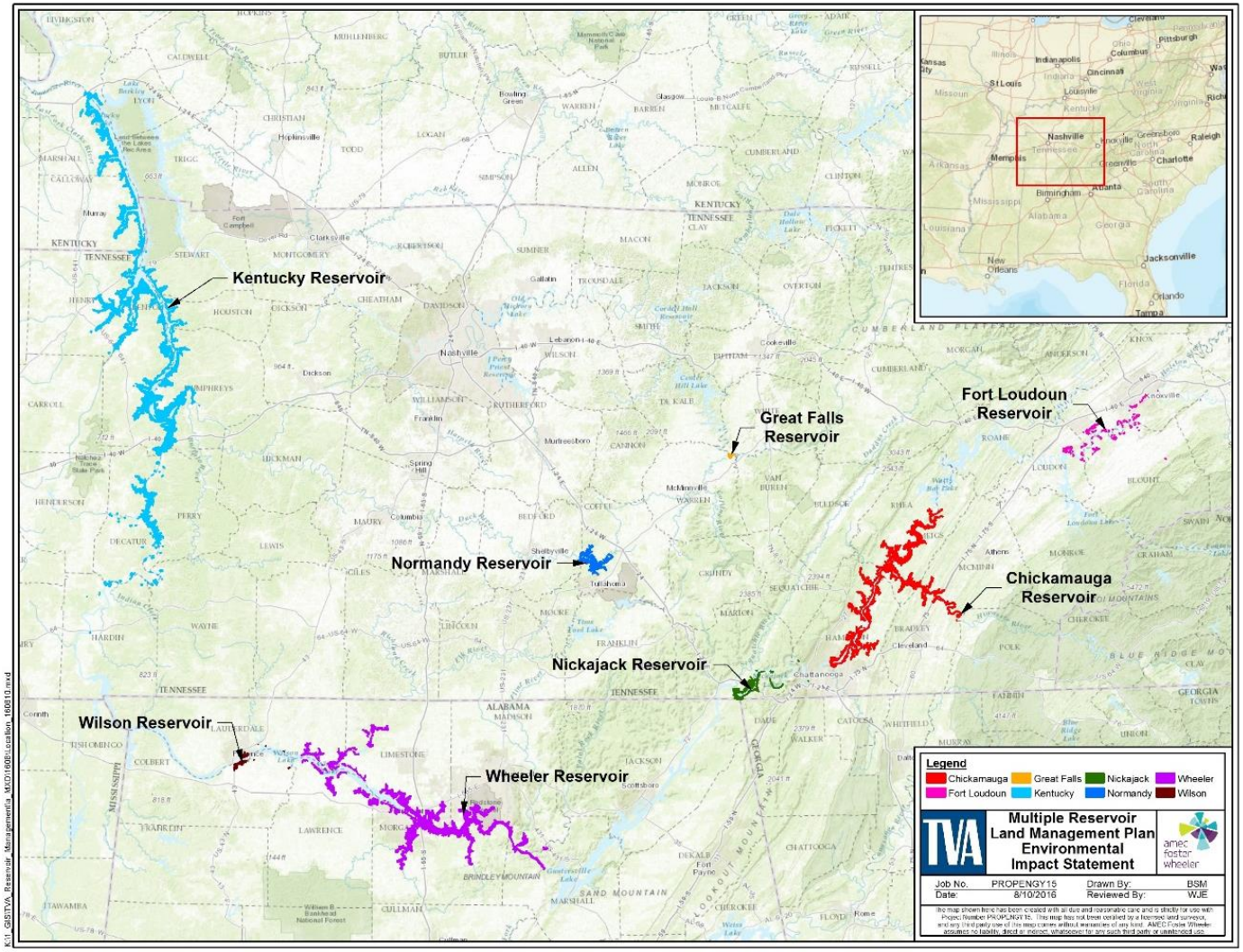

Figure 1-1. Location of Chickamauga, Fort Loudoun, Great Falls, Kentucky, Nickajack, Normandy, Wheeler and Wilson Reservoirs

Table 1-2. Land Acquisition and Disposal Data

Reservoir	Location (County, State)	Total Land Originally Acquired Above Pool Elevation (Acres)	Total Lands Disposed (Transferred or Sold) (Acres)	Percent of Original Acquisition (Above Pool Elevation) Sold or Transferred	TVA- Retained (Acres)
Chickamauga	Bradley, Hamilton, McMinn, Meigs, Polk, and Rhea, Tennessee	33,607	17,545	52	16,061
Fort Loudoun	Loudon, Blount, and Knox, Tennessee	2,789	1,278	46	1,513
Great Falls	Warren and White, Tennessee	8,000	7,638	95	362
Kentucky	Livingston, Lyon, Calloway, and Trigg, Kentucky and Humphreys, Benton, Decatur, Hardin, Wayne, Henry, Henderson, Perry, Stewart, Houston, and Carroll, Tennessee	91,785[1]	25,340	28	74,713[1]
Nickajack	Marion and Hamilton, Tennessee	4,533	928	20	3,605
Normandy	Bedford and Coffee, Tennessee	4798.0	0	0	4,798
Wheeler	Lauderdale, Lawrence, Limestone, Madison, Marshall, and Morgan, Alabama	62,376[1]	26,332	42	36,044[1]
Wilson	Lauderdale and Colbert, Alabama	1,630[2]	407	25	1,223
Total		**209,517**	**79,466**	**38**	**138,321**

Acreages are approximate.
[1] Includes flood prone areas supporting dewatering units.
[2] Designated in the 1996 Muscle Shoals/Wilson Dam Reservation Land Use Plan (TVA 1996).

1.3 Purpose and Need

The purpose of the proposed RLMPs is to bring consistency to the land planning process across the eight reservoirs considered in this Environmental Impact Statement (EIS) and apply a systematic method of evaluating and identifying the most suitable uses of TVA public lands in furtherance of TVA's responsibilities under the TVA Act. The proposed

RLMPs are designed to guide land use approvals, private water use facility permitting, and resource management decisions on the eight reservoirs. The planning team would use the proposed RLMPs along with TVA policies and guidelines to manage resources and respond to requests for the use of TVA public land. In the land planning process, TVA would allocate public lands and land rights to one of seven land use zones (see Table 1-1) established by TVA to allocate each parcel of land to a single zone designation. The RLMPs also support compliance with federal regulations and executive orders, and helps ensure 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 reservoirs.

In November 2006, the TVA Board of Directors approved the TVA Land Policy (Appendix A) to govern the retention, disposal, and planning of interests in real property. This policy provides for the continued development of RLMPs for reservoir properties with substantial public input and with approval of the TVA Board of Directors. An updated RLMP is needed to make land planning on these eight reservoirs consistent with the TVA Land Policy and the CVLP and to incorporate TVA's goals for managing natural resources on public lands. RLMPs are submitted to the TVA Board of Directors for approval and provide a plan for long-term land stewardship and accomplishment of TVA's responsibilities under the TVA Act. Additional information about land planning goals is provided in Chapter 3 for the individual RLMPs that are included in this EIS as Volumes II through IX.

Updated RLMPs are also needed to make land planning on these eight reservoirs consistent with TVA's goals for managing natural resources on public lands. 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. TVA recognizes that the management or use of one resource affects the management or use of others; therefore, an integrated approach is more effective than considering resources individually. In managing public lands and resources under its authority, TVA seeks to:

- Provide effective and efficient management of natural, cultural, visual, and recreation resources to meet all regulatory requirements and applicable guidelines.
- Apply an integrated, proactive approach to natural resource management that balances the competing interests of stakeholders, while conserving and enhancing natural, cultural, visual, and recreation resources.
- Ensure the availability of quality, affordable public outdoor recreation opportunities.
- Manage resources in a cost-effective manner.

1.4 Structure of the Multiple Reservoir Land Management Plan EIS

Volume I of this EIS is the document that demonstrates compliance with the National Environmental Policy Act (NEPA), 42 United States Code (USC) Section (§) 4321 et seq., to address the potential environmental impacts of implementing the eight RLMPs. Volume I of the EIS includes the project purpose and need, description of alternative actions (including a summary of each RLMP), overview of the affected environment, analyses of environmental consequences, and other elements associated with the NEPA process. The eight individual RLMPs are found in Volumes II through IX. The RLMPs contain detailed

descriptions of the environment around each reservoir and descriptions of each parcel of land addressed in the plans. Once TVA finalizes the EIS, these individual volumes will serve as the RLMP for each of the eight reservoirs.

1.5 The Decision

The TVA Board of Directors will decide which of the alternatives to adopt for the planning and management of TVA-controlled public land around the eight reservoirs considered in the document.

1.6 Other Pertinent Environmental Reviews or Documentation

Reservoir Operations Study Final Programmatic Environmental Impact Statement (TVA 2004)

The Reservoir Operations Study evaluated alternative ways to operate the TVA reservoir system to produce greater overall public value. Specific changes in the operation of TVA reservoirs were implemented in 2004 because of this study. Some of these changes apply to the eight reservoirs considered in this document. These operational changes are reflected in the following implemented procedures:

- TVA adheres to the established schedule for filling of the reservoir during the first week in April for Fort Loudoun and Chickamauga reservoirs, then delays the fill to reach summer operating zone by mid-May.
- TVA maintains base case summer operating zones through Labor Day for Chickamauga and Wheeler reservoirs.
- TVA fills the Great Falls Reservoir to summer pool by Memorial Day.
- TVA raised the minimum winter pool elevation by 0.5 foot at Wheeler Reservoir.
- To better ensure an 11-foot minimum depth in the navigation channel, steady water releases are provided as necessary at Kentucky Dam to maintain a tailwater elevation of 301 feet.
- The weekly average system flow requirement from June 1 through Labor Day measured at Chickamauga Dam is determined by the volume of water in storage at 10 upstream tributary reservoirs.

Shoreline Management Initiative (SMI): An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley Final Environmental Impact Statement (TVA 1999)

In 1998, TVA completed the SMI EIS analyzing possible alternatives for managing residential shoreline development throughout the Tennessee River Valley. The selected Shoreline Management Policy (SMP) defines the standards for vegetation management, docks, shoreline stabilization, and other residential shoreline alterations. Across the TVA reservoir system, approximately 38 percent of the total shoreline is available for residential development, and a third of that shoreline had been developed by the mid-1990s.

The eight RLMP EIS tiers from the final SMI EIS concerning the categorization and management of TVA-owned shoreline access land along the eight reservoirs. TVA-owned shoreline access land comprises 630 miles, or approximately 13 percent, of the total 4,676 miles of TVA shoreline on the eight reservoirs. A detailed description of individual reservoirs can be found in Section 3.1. In accordance with TVA's SMP, TVA has traditionally categorized the residential shoreline for previous land plans based on resource

data collected from field surveys. During development of the SMI EIS, a resource inventory was conducted for sensitive species and their potential habitats, archaeological resources, and wetlands along the residential shoreline. The shoreline categorization system established by the SMP was composed of three categories: Shoreline Protection, Residential Mitigation, and Managed Residential. In its RLMPs, TVA identifies which parcels are to be managed for Shoreline Access (Zone 7). However, TVA does not identify in the RLMP whether the shoreline access parcels are to be managed for Shoreline Protection, Residential Mitigation, or Managed Residential.

Floating Houses Policy Review Final Environmental Impact Statement (TVA 2016a)

In 2016, TVA completed an EIS to assess the environmental, safety, and socioeconomic concerns associated with the proliferation of floating houses (FHs) and non-navigable houseboats (NNs) on its reservoirs. Section 26a of the TVA Act provides TVA jurisdiction to regulate obstructions that affect navigation, flood control or public lands across, along, or in the Tennessee River or any of its tributaries. In 1971, TVA amended its 26a regulations to prohibit the mooring or anchoring of new NNs on TVA reservoirs. In 1978, the rules for NNs were clarified to better distinguish between navigable and non-navigable structures, and the prohibition was carried forward. FHs are a modern version of the NNs that TVA addressed in its 1971 and 1978 regulatory actions but do not have permits issued by TVA. Based on the EIS, the TVA Board decided in May 2016 to implement a new policy for managing FHs and NNs that would permit existing structures that meet minimum standards to be moored within permitted marina harbor limits. However, all NNs and FHs must be removed from TVA reservoirs by the end of a 30-year sunset period. The geographic scope of this EIS is the entire Tennessee River Watershed, specifically TVA's reservoir system and adjacent shoreline and land. Particular attention is given to reservoirs with existing commercial marinas and those reservoirs with a reasonable potential to support commercial marinas in the future including Chickamauga, Fort Loudon, Kentucky, Nickajack, Normandy, Wheeler, and Wilson reservoirs.

Natural Resource Plan and Final EIS (TVA 2011a)

TVA developed the NRP (TVA 2011a) to guide its natural resource stewardship efforts. The NRP addresses TVA's management of biological, cultural and water resources, recreation, reservoir lands planning, and public engagement. The NRP's goal is to integrate the objectives of these resource areas, provide for the optimum public benefit, and balance sometimes conflicting resource uses. In developing the NRP, TVA completed an EIS (TVA 2011a), which describes the potential resource management programs and activities; alternative approaches to TVA's resource management efforts; and the environmental impacts of the alternatives, including the alternative comprising the NRP.

As part of the NRP, TVA developed a CVLP with target ranges for each land use zone that TVA uses to guide resource management and administration decisions on the approximately 293,000 acres of TVA-managed property around 46 reservoirs. The eight RLMPs EIS will be used to update the CVLP and inform the next NRP update.

Muscle Shoals/Wilson Dam Reservation Land Use Plan Environmental Assessment (TVA 1996) and Muscle Shoals Reservation Redevelopment Final Environmental Impact Statement (TVA 2011b)

TVA prepared the 1996 Environmental Assessment (EA) to evaluate approximately 3,036 acres of land on the Muscle Shoals and Wilson Dam Reservation to identify areas that would be made available for external uses. Approximately 12 acres were allocated for non-TVA regional economic development opportunities. The remaining acreage was allocated to TVA use, including land allocated to recreational use that is included within the current scope of the Wilson Dam RLMP. Approximately 1.7 acres of land on the reservation were sold consistent with the 1996 Plan.

The 2011 EIS documented the potential environmental effects of the proposed sale of 1,400 acres of land on the reservation. TVA subsequently identified 400 acres of land that should be retained by TVA due to ongoing TVA business needs and limited development opportunities due to prior industrial operations.

As part of the land planning process analyzed in this EIS, TVA evaluated the non-reservoir property designation and allocations from the 1996 Plan for the remaining approximately 1,630 acres of property on the reservation. As a result of this analysis, 1,223 acres of property were considered reservoir property and are included within the scope of the Wilson RLMP. Additional information regarding this process is found in Section 2.2 of the Wilson RLMP.

Kentucky Reservoir Land Management Plan (TVA 1985)

TVA prepared the Kentucky RLMP in 1985 to guide TVA resource management and property administration decisions on 41,686 acres of TVA land on Kentucky Reservoir. The lands were subdivided into 275 parcels and assigned appropriate multiple-use designations from a set of the following categories: wildlife management, forest management, recreation, cultural resources management, agriculture, navigation, visual protection, open space, special management areas and industrial sites. The planned acreage includes all TVA retained land except TVA power properties, Land Between The Lakes, marginal strip lands, and other TVA land affected by permanent or long-term easements. Kentucky RLMP was the third RLMP to be approved by the TVA Board of Directors.

Chickamauga, Kentucky, Nickajack, and Wheeler reservoirs were planned under the Multiple Use Tract Allocation methodology and these RLMPs did not include land committed to a long-term or permanent uses such as tracts encumbered by easements or property used for TVA dam reservations or power plants. Further, the narrow strips of TVA-managed land (known as marginal strips) that fronts property that TVA had previously sold or transferred were not included under this planning methodology in these four RLMPs.

Chickamauga Reservoir Land Management Plan (TVA 1989)

The Chickamauga RLMP was the sixth land management planning project to be initiated by TVA. The 1989 RLMP presented reservoir-specific management objectives including the following: providing for a diversity of quality recreation opportunities; promoting economic development; protecting the amenities and environmental quality of the reservoir and reservoir land; protecting and enhancing the forestry, fisheries, and preserving agricultural resources. The RLMP considered 9,913 acres of TVA land subdivided into 153 parcels and

assigned multiple-use designations. The planned acreage is TVA fee-owned land and accounts for 237 miles (29 percent) of the total 810 miles of reservoir shoreline. As described above, other shoreline is not addressed in the RLMP.

Nickajack Reservoir Land Management Plan (TVA 1990)

TVA prepared the Nickajack RLMP to guide TVA land management decisions on 3,171 acres subdivided into 153 parcels and assigned appropriate multiple-use designations to guide land use on Nickajack. The plan identifies the most suitable use(s) for the land and provides sites for a variety of economic development, recreation development, and resource management purposes. The planned acreage is TVA fee-owned land and accounts for 30 miles (16 percent) of the total 192 miles of reservoir shoreline. As described above, other shoreline is not addressed in the RLMP. The TVA Board of Directors approved the final Nickajack RLMP in January 1990.

Wheeler Reservoir Land Management Plan (TVA 1995)

TVA prepared the Wheeler RLMP to guide TVA land management decisions on 11,284 acres of land around Wheeler Reservoir that are under TVA stewardship and control. It identifies the most suitable uses for 203 parcels of TVA public land, providing sites for recreation, industry, navigation, wildlife and forest management, cultural and environmental preservation, and agriculture. The planned acreage is TVA-retained (fee-owned) land and accounts for 335 miles (31 percent) of the total 1,063 miles of reservoir shoreline. The remaining 69 percent of shoreline is not addressed in the RLMP. The TVA Board of Directors approved the final Wheeler RLMP in 1995.

1.7 The Scoping Process

Scoping, which is integral to the process for implementing NEPA, is a procedure that solicits public input to the NEPA process to ensure that: (1) issues are identified early and properly studied; (2) issues of little significance do not consume substantial time and effort; (3) the NEPA document is thorough and balanced; and (4) delays caused by an inadequate review are avoided. TVA's NEPA procedures require that the scoping process commence soon after a decision has been reached to prepare a NEPA review in order to provide an early and open process for determining the scope and for identifying the significant issues related to a proposed action.

TVA determined that the development of an EIS would allow for a better understanding of the impacts of the proposed land use implementation. Accordingly, on March 3, 2016, TVA published in the Federal Register a notice of intent (NOI) to prepare an EIS and initiated scoping for the proposal.

TVA's action would satisfy the requirements of Executive Order (EO) 11988 (Floodplains), EO 13112 (Invasive Species), and EO 13653 (Preparing the United States for the Impacts of Climate Change), EO 11990 (Protection of Wetlands), EO 12898 (Environmental Justice), and applicable laws including the National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Clean Water Act (CWA), and Clean Air Act (CAA).

1.7.1 Scoping and Public Involvement

In addition to publishing an NOI in the Federal Register, TVA notified the public of the initiation of the planning process in a variety of ways. TVA published information about the review and planning effort on the TVA webpage, notified the media, and sent notices to

numerous individuals, organizations, and intergovernmental partners with information about the review.

TVA established a project website as the primary platform for public outreach. The project Web site (https://www.tva.gov/landplansreview) is intended to serve as the primary hub for distributing information to the public. Visitors to the page can navigate from the project Web site to other web sites for additional information pertaining to the proposed RLMP for each of the eight reservoirs. During the scoping period, the Web page directed the public to submit scoping comments via email or mail.

The NOI initiated a 30-day public scoping period, which concluded on April 4, 2016. TVA prepared a Scoping Report to summarize its outreach efforts and the input that was received from the public and other agencies during the scoping period (the report is available on the project's website).

1.7.2 Scoping Response

TVA received a total of 51 submissions from members of the public and intergovernmental entities (50 email or online comment form submittals and one mailed letter). Among the 51 submissions, 40 were from members of the public and 11 were from state or federal entities. The comments received during the public scoping period are presented in the Scoping Report.

Three predominant themes were identified from the comments provided: protection of natural resources, recreation resources and TVA stewardship. Five individuals identified concerns relating to specific TVA parcels on Fort Loudoun, Kentucky, Nickajack, Normandy and Wheeler reservoirs. Among the 51 submissions, 24 individuals provided comments pertaining to Normandy Reservoir. Of these comments, 19 requested that TVA allow horseback riding on TVA lands on Normandy. Two commenters urged TVA to protect the Short Springs Natural Area and not to consider a proposal by the Tennessee Duck River Development Agency to raise the dam.

TVA received comments from several state entities, including the Tennessee Wildlife Resources Agency (TWRA), the State Historic Preservation Officers (SHPO) of Alabama, Kentucky, Virginia and Georgia, and the Tennessee Duck River Development Agency. Each SHPO expressed interest in the project and a desire to formally consult under the NHPA. The USFWS comments urged TVA to continue to manage lands around several of the eight reservoirs to promote conservation of specific sensitive species and requested that TVA consider migratory bird species during its planning effort and environmental review. The National Park Service expressed interest in the planning effort and concern for the potential impacts on sections of the Trail of Tears National Historic Trail. The Tennessee Duck River Development Agency, a regional development agency established by the state of Tennessee, expressed its interest in long-term water supply needs in the region and operations of Normandy Reservoir.

1.7.3 Issue and Resource Identification

This EIS is a programmatic document that addresses the proposed implementation of eight RLMPs, which would allocate TVA-managed lands to the appropriate land use zone. This EIS also evaluates potential impacts associated with the various types of uses permitted under each zone. The proposed eight RLMPs do not include specific projects, such as developing campgrounds or industrial sites, and effects of such projects are not evaluated in this programmatic review. Whenever such individual projects are proposed in the future,

TVA will determine the need for permits, coordination with other agencies (e.g., SHPO, USFWS and others), and the appropriate level of NEPA review and documentation. Additionally, this programmatic review does not address the operation of existing facilities, such as dams, electrical substations, or visitor centers, nor does it address the management of water levels in the reservoirs, which was evaluated in TVA's Reservoir Operations Study.

TVA internal reviews of current and historical information, reservoir data collected, and public input were used to identify the following resources/issues for evaluation in this EIS. The effects of implementing each alternative were evaluated with respect to the following issues:

Land Use and Prime Farmland – Existing land use patterns along the shoreline and back-lying land have been determined on most parcels by TVA land acquisition, disposals, and land use agreements. About 55 percent of the parcels are committed to existing land uses with little to no potential for change of those land uses. Proposed allocations of the remaining uncommitted parcels were evaluated using the goals of the individual RLMPs and TVA policies and regulations. TVA will comply with the 1981 Farmland Protection Policy Act.

Recreation – Existing developed (public or commercial) recreation facilities available to meet public needs were identified, as were those lands that are important for dispersed recreation (e.g., hunting, bank fishing, bird watching, hiking, etc.). The effects of implementing each alternative on recreation opportunities in the vicinity of the reservoirs included in this plan were evaluated.

Terrestrial Ecology – Terrestrial plant and animal communities found adjacent to the eight reservoirs included in this plan were characterized using existing databases. Issues include the identification and protection of significant natural features, rare species habitat, important wildlife habitat, or locally uncommon natural community types. TVA will be consistent with EO 13186 and EO 13112 on migratory birds and invasive species.

Aquatic Ecology – TVA characterized the aquatic plants and animals found in the waters of the reservoirs. TVA identified habitat for rare species, important aquatic habitat, or locally uncommon aquatic community types. The effect of implementing each alternative on aquatic ecology was evaluated.

Threatened and Endangered Species – TVA identified plants and animals that are state-listed or federally listed, proposed for listing, or candidates for listing as threatened and endangered, and are known to or are likely to exist in the vicinity of the eight reservoirs included in this plan. The presence of potentially suitable habitat within the TVA parcels was discussed for these species. The effect of implementing each alternative on threatened and endangered species was evaluated. TVA will comply with the ESA, the Bald and Golden Eagle Protection Act, and similar state laws.

Water Quality – TVA described water quality conditions within the eight reservoirs, based upon the Reservoir Ecological Heath Monitoring Program or similar indices, as well as state classifications and advisories. The effect of implementing each alternative on water quality in the reservoirs was evaluated.

Wetlands – Wetlands on TVA land along the reservoir shorelines were identified. TVA will comply with EO 11990 on wetlands and the CWA. The effects of implementing each alternative on wetlands on the reservoirs included in this plan was evaluated.

Floodplains – Floodplains on TVA land along the reservoir shorelines were identified. TVA will comply with EO 11988 on floodplains. The effects of implementing each alternative on floodplains on the reservoirs included in this plan was evaluated.

Air Quality and Climate Change – Compliance with National Ambient Air Quality Standards (NAAQS), which establish safe concentration limits of various air pollutants, was evaluated.

Cultural and Historic Resources – Prehistoric or historic districts, known sites, buildings, structures, or objects on or near the TVA lands around the reservoirs were identified. TVA will comply with Section 106 of the NHPA. The effects of implementing each alternative on cultural resources on the reservoirs included in this plan was evaluated.

Natural Areas and Ecologically Significant Sites – TVA identified special and unique natural areas on or in the vicinity of the eight reservoirs. The potential effect of implementing each alternative on these areas was evaluated.

Aesthetics and Visual Resources – The aesthetic settings of the reservoirs were characterized, and scenic and distinctive areas frequently seen by reservoir users and adjacent reservoir residents were identified. The potential effect of implementing each alternative on the natural beauty of the shoreline was evaluated.

Noise – The potential for nuisance noises to be generated under each alternative was examined.

Socioeconomics – The current population, labor force, employment statistics, and income, of the population within the region of the reservoirs were identified. A subset of these issues is environmental justice, the potential for disproportionate impacts to minority and low-income communities. The effect of implementing each alternative on socioeconomics was evaluated.

1.8 Public Review Process

TVA's public and agency involvement for the draft EIS includes publication of a public notice and a 60-day public review of the draft EIS. To solicit public input, the availability of the draft EIS was announced in regional and local newspapers. A news release was issued to the media, and posted to the TVA's Web site. The document was posted on TVA's Web site, and hard copies were made available by request. TVA's agency involvement includes sending notices to local, state and federal agencies and federally recognized tribes to inform them of the availability of the draft EIS. A list of agencies and tribes notified of the availability of the draft EIS is provided in Chapter 6.

Once the public and other agencies have reviewed and provided comments on the document, TVA will make revisions, if necessary, and issue a Final EIS. TVA will not make final decisions any earlier than 30 days after the Notice of Availability of the Final EIS is published in the Federal Register.

1.9 Required Permits and Consultation

No federal permits are required to develop an RLMP. Site-specific information on reservoir resources has been characterized in this EIS, and potential impacts on these resources were considered in making land use allocation recommendations. When specific actions are proposed on TVA parcels addressed in the RLMPs, additional environmental reviews for these actions would be undertaken as necessary to address potential project specific impacts.

Appropriate agencies and offices regulating historic resources and endangered species have been consulted during this planning process. TVA will comply with the NRP Programmatic Agreement executed in 2011 in consultation with the SHPO from the seven states, the Advisory Council of Historic Preservation and federally recognized Indian tribes which subsumes and governs all past and future land plans. TVA will complete necessary consultation with the USFWS under Section 7 of the ESA.

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CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Development of Alternatives

TVA proposes to implement individual RLMPs for public lands surrounding eight reservoirs within the TVA service area. The RLMPs would be used to guide land use approvals, private water use facility permitting, and resource management decisions on TVA-managed public land around these reservoirs. TVA developed two alternatives to be evaluated in this EIS. These are:

- Alternative A – No Action Alternative.
- Alternative B – Proposed Land Use Plan Alternative.

Regardless of the alternative selected, the following conditions would apply:

- Any proposed development or activity on public land will be subject to TVA approval pending the completion of an additional site-specific environmental review to evaluate the potential environmental effects of the proposal. As necessary, TVA would impose any necessary mitigative measures as conditions of approval for the use of public lands to minimize adverse environmental effects.
- Future activities and land uses will be guided by the TVA Act and TVA's Land Policy, SMP, NRP and CVLP.
- TVA land use allocations are not intended to supersede deeded land rights or landownership.

2.2 Property Administration

In the eight proposed RLMPs, each tract of TVA land around the reservoirs is categorized based upon a suitable use that is consistent with TVA policies and guidelines and applicable laws and regulations. Property administration procedures for all TVA lands are generally the same for both alternatives under consideration. As administrators of these public lands, TVA will use the eight RLMPs, along with TVA policies and guidelines, to manage resources and to respond to requests for the use of TVA public land.

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

Additionally, there are some TVA parcels in the Tennessee Valley that have deeded access rights for shoreline access that are currently utilized for uses such as commercial recreation. Should the private back-lying land become residential, a request for a change of allocation of the TVA shoreline parcel to Zone 7 (Shoreline Access) would be subject, with appropriate environmental review, to action by the TVA Board of Directors. There are parcels in the eight RLMPs over which the private back-lying property owners currently have deeded access rights that are not allocated to Zone 7.

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 under certain circumstances. For example, Parcel 249 on Chickamauga Reservoir, which is approximately 2.2 acres in size, is fragmented from the reservoir and has been identified in

the RLMP as a candidate for surplus or easement for interstate expansion. In addition, five parcels on Wheeler Reservoir were recommended for surplus and disposal in the previous RLMP for this reservoir (TVA 1995).

Public works/utility projects such as easements for pipelines, power or communication wires, roads or other public infrastructure proposed on any TVA public land that do not affect the zoned land use or known sensitive resources would not require an allocation change as long as such projects are compatible with the use of the allocated zone. For example, a proposed construction of a water intake structure would be compatible with a reservoir parcel allocated for Zone 4 (Natural Resource Conservation) provided natural resource conservation activities could continue. 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 the approval of the TVA Board of Directors.

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.

2.3 Alternative A – No Action Alternative

Under Alternative A, TVA would not implement new RLMPs for the eight reservoirs. TVA would continue to manage the TVA land on the Fort Loudoun and Normandy reservoirs under allocations made using the Forecast System and would continue to manage the TVA land on Chickamauga, Kentucky, Nickajack, and Wheeler reservoirs in accordance with existing RLMPs, which were developed using the Multiple Use Tract Allocation methodology. Wilson and Great Falls reservoirs were not previously planned, and therefore would be subject to management in accordance with existing commitments and land use agreements as well as the TVA SMP and Land Policy.

Among the eight reservoirs for which TVA is proposing RLMPs, six were planned using different methodology and land use categories than is currently used. Before 1979, when TVA began the comprehensive planning of its reservoir lands in a public forum, the Forecast System methodology was used to guide land use decisions on most TVA reservoir lands. Two reservoirs (Fort Loudoun and Normandy) were planned in the 1960s or 1970s and are still using TVA's Forecast System. The Forecast System was an in-house process that documented actual and prospective uses for all TVA public land around a reservoir using a somewhat variable set of designations. The Forecast System allocated land into 13 categories that among others, included: Dam Reservation, Powerhouse Reservation, Public Recreation, Agricultural Research, Industry, Construction and Maintenance, Reservoir Operations, and Commercial Recreation. The Forecast System designations are described in Appendix B.

In 1979, TVA began using the Multiple Use Tract Allocation method, which was a systematic approach to planning reservoir lands for multiple uses. Four reservoirs (Chickamauga, Kentucky, Nickajack, and Wheeler) were planned in the 1980s and 1990s under the Multiple Use Tract Allocation methodology. Land uses under this planning method are allocated as follows: Wildlife Management, Forest Management, Recreation, Cultural Resources Management, Agriculture, Navigation, Visual Protection, Open Space, and Special Management. TVA has never developed a RLMP for Great Falls Reservoir, and only a portion of Wilson Reservoir has been planned.

Under the No Action Alternative, TVA would not take any action to align or complete plans on the TVA managed lands on the eight reservoirs. In the case of the six reservoirs for which RLMPs were previously completed, parcels would continue to be managed in accordance with their existing plan and would continue to be based on different planning methodologies with differing allocations. Great Falls and Wilson reservoirs would continue to be unplanned. Under this alternative, TVA would not comply with the TVA Board's directive to bring its CVLP allocations up-to-date to reflect the allocations determined under the Single Use Parcel Allocation methodology and complete alignment with existing policies would not occur.

Proposed land use requests received from external applicants or internal TVA organizations would be evaluated for consistency with the existing land use agreements, TVA policies, and/or the Forecast System or Multiple Use Tract Allocation methodologies, which may not incorporate current data on land conditions, adjacent uses, or other resources. If the request were not consistent with the previously planned land use, formal approval by the TVA Board of Directors or its designee, following appropriate review, would be required to change the land use designation.

To facilitate the comparison of alternatives, the existing land use designations for the reservoirs have been converted to the equivalent designation of one of the seven proposed land use zones (Table 2-1). For example, a parcel with a Forecast System designation of Dam Reservation would be converted to Zone 2 (Project Operations). In situations where a parcel contained more than one land use designation the existing land use determined which zone allocation was selected. In some cases, a parcel with multiple land uses was split in order to allocate the varying uses to the compatible zone. The conversions are identified for individual parcels on each reservoir in Appendix C, and the converted designations are used in many of the discussions below.

Table 2-1. Area by Equivalent Current Land Use Designations by Reservoir

Reservoir	Equivalent Allocation Designation (Acres)						
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Total
Chickamauga	1,235.7	5,562.6	6,646.6	178.8	762.6	1,675.3	**16,061.4**
Fort Loudoun[1]	403.4	36.9	237.5	34.6	676.3	61.7	**1,450.4**
Great Falls	19.0	0	0	0	343.4	0	**362.4**
Kentucky	785.6	1,289.2	62,642.7	1,249.9	4,259.9	4,486.2	**74,713.5**
Nickajack[1]	619.8	1,025.3	1,787.0	79.2	89.5	0	**3,600.8**
Normandy[1]	641.6	720.2	3,229.4	0	190.6	13.1	**4,794.9**
Wheeler	4,427.3	6,945.4	22,447.8	495.2	1,594.1	135.2	**36,045.2**
Wilson	1,072.1	0	0	0	148.5	2.8	**1,223.4**
Total	**9,204.6**	**15,579.6**	**96,991.0**	**2,037.6**	**8,064.9**	**6,374.2**	**138,252**

[1] Does not include parcels or a portion of parcels that were not previously planned.

2.4 Alternative B – Proposed Land Use Plan Alternative

Under the Proposed Land Use Plan Alternative, eight RLMPs would be developed to identify land use zones in broad categories. The plans would be based on current land usage, existing land rights (i.e., committed lands), public needs, the presence of known sensitive resources and TVA policies. Land currently committed to a specific use would be allocated to that current use unless there is an overriding need to change the use.

2.4.1 The Planning Process

As part of the process of developing alternatives for the eight RLMPs, TVA reviewed existing and newly collected field data on the condition of and resources on the lands being planned. Each parcel of land was reviewed to determine its physical capability for supporting potential suitable uses. TVA also reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. Based on this information, the TVA planning team “pre-allocated” land parcels to one of the seven allocation zones used in recent TVA reservoir land plans and described in Table 1-1. Information on public concerns obtained during the scoping process described in Section 1.5 was incorporated into the zone allocations proposed in the RLMPs as well as any previous land planning effort such as Forecasting or Multiple Use Tract Allocations (see Appendix B). Approximately 27 percent of the shoreline on the eight reservoirs are lands that TVA does not own in fee. These are typically flowage easement lands that are allocated to Zone 1 (Non-TVA Shoreland). Non-TVA Shoreland is not included in this planning process.

2.4.2 Committed Land

For planning purposes, land is considered committed if it is under lease, easement, license, or contract; is a developed TVA project critical to the operation of the integrated reservoir system such as a dam reservation or power lines; has known sensitive resources present; has a unit plan; fronts land transferred or sold for public recreational use; or is a TVA developed recreation area. Agricultural licenses are not considered committed uses because they are an interim use of TVA public land.

Land currently committed to a specific use would be allocated to a land use zone compatible with the current use unless there is an overriding need to change the use. Possible reasons to change allocations may include ongoing adverse impacts resulting from the actions of a licensee, lessee, or easement holder. If sensitive resources were identified on a committed parcel (with an existing lease, license, easement, etc.) during the allocation process, that parcel would remain allocated to a zone appropriate for that committed use unless an ongoing adverse impact were found. However, TVA approval would be required prior to future activities that could impact the identified sensitive resources.

In the eight RLMPs, TVA does not propose to change any committed land uses. As shown on Table 2-2, approximately 56 percent of the TVA public land surrounding the eight reservoirs were considered committed during the pre-allocation process.

Table 2-2. Committed and Uncommitted Acreage by Reservoir

Reservoir	Committed (acres)	Uncommitted (acres)
Chickamauga	9,633.7	6,427.8
Fort Loudoun	922.8	590.3
Great Falls	362	0
Kentucky	38,983	35,730
Nickajack	1,424.2	2,180.5
Normandy	1,861.9	2,935.4
Wheeler	22,455	13,605
Wilson	1,238.4	7.7
Total	**76,881.3**	**61,476.4**
Percent	**55.6**	**44.4**

2.4.3 Uncommitted Land

The balance of TVA land on eight reservoirs (61,476 acres or 44.4 percent) are not committed to a specific use through an easement, lease, license, or other land use agreement. Field data and existing information in the TVA Natural Heritage database were collected on many uncommitted parcels by technical specialists to identify areas containing sensitive resources. Representatives from different TVA organizations including power generation, land and shoreline management, recreation, and economic development met to allocate the parcels of TVA public land into the seven planning zones. Using maps that identified the location of known and potential sensitive resources (e.g., cultural resources, wetlands, threatened and endangered species, and areas of high scenic quality), the capability and suitability for potential uses of each parcel were considered. The proposed allocations reflect the consensus of the planning team members.

2.4.4 Land Committed to Shoreline Access

Since originally acquiring the land around the eight reservoirs, TVA has sold or transferred over 79,000 acres of land to various public and private parties. TVA typically retained the land lying below the maximum shoreline contour (MSC) elevation of the specific reservoir. The MSC is defined as the contour, usually 5 feet above the top of gates of a TVA dam, which marks the landward limit of permanent flood rights. The bulk of the public land TVA retained below the MSC has deeded rights of ingress and egress for water access from the back-lying property. TVA identified the land remaining in TVA ownership between the maximum shoreline contour and the water as “marginal strip property.” The width of this marginal strip of TVA-retained land varies by reservoir, and the total acreage of this land may be large, especially on those reservoirs having a substantial shoreline. Although TVA has not calculated exact acreages of the marginal strip on some of the reservoirs, planning objectives are not impacted because these lands are committed to the back-lying land use via the transfer agreement covenants and provisions.

2.4.5 Description of Alternative B – Proposed Land Use Plan Alternative

TVA has identified one action alternative, Alternative B – Proposed Land Use Plan Alternative. Under this alternative, TVA would implement eight RLMPs to guide future land use decisions on these reservoirs. Consistent with other TVA RLMP planning efforts, the lands managed by TVA on these reservoirs would be placed into one of the seven land use zones shown on Table 1-1 based on current land usage, existing land rights (i.e.,

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
Fort Loudoun (1,513.2 acres)	As detailed in Volume III of the EIS, TVA proposes major changes to Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) allocations. Zone 6 changes are proposed because previous planning efforts underestimated the amount of lands utilized for recreation or under existing recreational agreements. Zone 7 changes are proposed to more accurately reflect the lands encumbered with shoreline access rights. The proposed RLMP would replace allocations made using the Forecast System in the 1970s. Of the 1,513.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 261.9 acres (17.3 percent). Of those changes, 102.6 acres would be changed to reflect existing agreements and commitments and 159.3 acres would be changed based on other considerations.
Great Falls (362.4 acres)	As detailed in Volume IV of the EIS, TVA proposes to use the relatively small area of TVA-managed lands on this reservoir for Zone 6 (Developed Recreation) based on the historical and proposed recreation operations of the State of Tennessee. The proposed RLMP would be the first land use plan developed for TVA public lands on Great Falls Reservoir.
Kentucky (74,713.5 acres)	As detailed in Volume V of the EIS, TVA proposes substantive changes to allocations of Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) based on new information about the presence/absence of sensitive resources. More lands would be allocated to Zone 3 (an increase of 5 percent) and fewer lands would be allocated as Zone 4 (a decrease of almost 10 percent). Minor increases to Zone 2 (Project Operations), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) allocations are also proposed. The proposed RLMP would replace TVA's Kentucky RLMP, developed in 1985 under the Multiple Use Tract Allocation methodology. Of the 74,713.5 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 9,967.9 acres (13.3 percent). Of those changes, 4,057.5 acres would be changed to reflect existing agreements and commitments and 5,910.4 acres would be changed based on other considerations.
Nickajack (3,064.7 acres)	As detailed in Volume VI of the EIS, TVA proposes substantive changes to Zone 2, Zone 3 and Zone 4 allocations. The proposed increase in Zone 2 lands is primarily the result of previous underestimations in the amount of lands encumbered by roadways. The allocation change to one large parcel (Marion Memorial Bridge Natural Area) from Zone 4 to Zone 3 would result in the greatest allocation change under the RLMP, resulting in a large increase in Zone 3 (Sensitive Resource Management) lands and fewer lands allocated as Zone 4 (Natural Resource Conservation). Minor changes to Zone 5, Zone 6 and Zone 7 allocations are proposed. The proposed RLMP would replace TVA's Nickajack RLMP, developed in 1990 under the Multiple Use Tract Allocation methodology. Of the 3,064.7 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 1,116.1 acres (31%). Of those changes,

committed lands), public needs, the presence of known or potential sensitive resources, and TVA policies as described above in the pre-allocation process. Land currently committed to a specific use would be allocated to that current use unless there is an overriding need to change the use

The land areas for each of the proposed zone allocations are summarized by reservoir in Table 2-3, and the zone allocation for each individual parcel is identified in Appendix C. The allocation ranges of the CVLP would be updated according to the allocations proposed in the eight RLMPs.

Table 2-3. Proposed Area Allocation Zone by Reservoir (Alternative B)

Reservoir	Allocations (Acres)						
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Total
Chickamauga	1,220.3	2,563.6	8,656.5	268.1	1,873.4	1,479.5	**16,061.4**
Fort Loudoun	477.2	59.6	317.4	10.5	590.8	57.8	**1,513.3**
Great Falls	19.0	0.0	0.0	0.0	343.4	0.0	**362.4**
Kentucky	1,254.3	5,282.1	55,319.3	2,081.3	5,006.7	5,769.7	**74,713.4**
Nickajack	1,179.4	1,356.7	807.4	85.5	175.1	0.7	**3,604.8**
Normandy	790.7	371.7	3,365.7	0.0	258.8	10.4	**4,797.3**
Wheeler	4,813.5	3,656.2	25,224.2	895.6	1,312.1	143.6	**36,045.2**
Wilson	1,072.1	0.0	0.0	0.0	148.5	2.8	**1,223.4**
Total	**10,826.5**	**13,289.9**	**93,690.5**	**3,341.0**	**9,708.8**	**7,464.5**	**138,321.2**

Land use allocations proposed in the eight RLMPs are summarized in Table 2-4.

Table 2-4. Summary of Proposed Land Allocations by RLMP - Alternative B

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
Chickamauga (16,061.4 acres)	As detailed in Volume II of the EIS, TVA proposes substantive changes to numerous parcels of land currently allocated as Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Fewer Zone 3 (Sensitive Resource Management) parcels would be allocated because new information about the presence/absence of sensitive resources. As a result, more parcels would be allocated for Zone 4 (Natural Resource Conservation) and Zone 6 (Developed Recreation). In addition, minor changes to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 7 (Shoreline Access) are proposed. The proposed RLMP would replace TVA's Chickamauga RLMP, developed in 1989 under the Multiple Use Tract Allocation methodology. Of the 16,061.4 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 5,707.7 acres (35.5 percent). Of those changes, 2,131.1 acres would be changed to reflect existing agreements and commitments and 3,576.6 acres would be changed based on other considerations.

Reservoir (Acres of TVA Land)	Summary of Major RLMP Decisions
	664.8 acres would be changed to reflect existing agreements and commitments and 451.3 acres would be changed based on other considerations.
Normandy (4,797.2 acres)	As detailed in Volume VII of the EIS, TVA proposes relatively minor adjustments to parcel allocations across each land use zone. The greatest change would result in a decrease in Zone 3 (Sensitive Resource Management) parcels, largely due to reallocating one tract from Zone 3 to Zone 4 (Natural Resource Conservation) because new information indicates that sensitive resources are not known to be present in the area. The proposed RLMP would replace allocations made using the Forecast System in the 1970s. Of the 4,797.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 1,399.5acres (29.2 percent). Of those changes, 1,006.3 acres would be changed to reflect existing agreements and commitments and 393.2 acres would be changed based on other considerations
Wheeler (36,045.2 acres)	As detailed in Volume VIII of the EIS, TVA proposes substantive changes to Zone 2, Zone 3, Zone 4 and Zone 6 allocations. TVA would increase allocations to Zone 2 to more accurately account for areas encumbered by roadways and road easements (an increase of almost 10 percent). Fewer lands would be allocated to Zone 3 because new information indicates the absence of known sensitive resources on numerous parcels. Some of these parcels would be reallocated for Zone 4 (5 percent). The proposed RLMP would replace TVA's Wheeler RLMP, developed in 1995 under the Multiple Use Tract Allocation methodology. Of the 36,045.2 acres of TVA lands on the reservoir, TVA proposes to change the allocation of 7,105.2 acres (19.7 percent). Of those changes, 2,009.7 acres would be changed to reflect existing agreements and commitments and 5,095.5 acres would be changed based on other considerations
Wilson (1,223.4 acres)	As detailed in Volume IX of the EIS, TVA's proposed RLMP reflects circumstances unique to Wilson Reservoir. The proposed RLMP would be the first land use plan developed for TVA public lands on Wilson Reservoir. Approximately 87 percent of areas would be allocated for Project Operations (Zone 2) to reflect lands encumbered by transmission lines and utility easements and lands set aside to support future power operations of the dam (and potential navigation in and around the Wilson Lock and Fleet Harbor). Almost 13 percent of lands would be allocated as Zone 6 and a small tract would be allocated for Zone 7.

2.4.5.1 Land Reserved for Shoreline Access

As part of the current land planning process, TVA reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. Those parcels were allocated to Zone 7 to reflect current conditions. Based on the TVA SMP, these back-lying property owners with access rights may apply to TVA for approval to construct private water use facilities on the TVA-managed shoreline land.

In the proposed RLMPs, TVA proposes to rezone numerous parcels to Zone 7 (Shoreline Access) to accurately reflect the existing rights of private entities to access shoreline. The proposed rezoning of these parcels to Zone 7 does not represent a decision by TVA to increase shoreline access on its reservoirs; rather, these changes are essentially corrections being made to current plans to reflect existing rights. A summary of the number of parcels and corresponding acres of land reallocated to provide shoreline access is shown on Table 2-5. Additional detail is provided in Appendix D, Tables D-1 through D-6.

Table 2-5. Summary of Changes in Zone 7 Allocation – Alternative B

Reservoir	Total Number of Parcels	Number of Parcels with Changed Allocation	Percent of Total Parcels	Acres	Percent of Total TVA Land
Chickamauga	395	18	4.3	34.4	0.21
Fort Loudoun	130	3	2.3	3.3	0.22
Great Falls	2	0	0	0	0
Kentucky	574	133	23.2	1,835.2	2.5
Nickajack	41	2	4.9	0.7	0.02
Normandy	30	1	3.0	1.0	<0.1
Wheeler	207	3	1.4	8.4	0.02
Wilson	14	0	0	0	0

Note: There are no changes in the proposed shoreline allocations for parcels surrounding Wilson and Great Falls reservoirs.

2.4.5.2 Comprehensive Valleywide Land Plan

TVA proposes to update the allocation ranges identified by TVA in the 2011 CVLP to reflect the findings and incorporate the proposed allocations of the eight RLMPs. The proposed allocations ranges are shown in Table 2-6.

Table 2-6. Proposed Update to CVLP Allocations

Allocation Designation		Range of Allocations in 2011 CVLP	Proposed CVLP Allocation Range (2016)
Zone 2	Project Operations	5% to 7%	7% to 10%
Zone 3	Sensitive Resource Management	16% to 18%	14% to 18%
Zone 4	Natural Resource Conservation	58% to 65%	56% to 63%
Zone 5	Industrial	1% to 2%	1% to 3%
Zone 6	Developed Recreation	8% to 10%	8% to 10%
Zone 7	Shoreline Access[1]	5%	5% to 6%

[1] TVA allocates land to Zone 7 (Shoreline Access) in accordance with TVA's Shoreline Management Policy.

The proposed revisions to the CVLP target ranges do not reflect a change to any other decisions made by TVA in its NRP. TVA remains committed to implementing its NRP and meeting the goals and objectives of the CVLP.

An explanation of proposed revisions to the CVLP zone allocation ranges is provided below:

- Zone 2 (Project Operations) – In the eight RLMPs, TVA found that historical planning efforts under-estimated the amount of property encumbered with roads, utilities, and other public works projects. The proposed CVLP Allocation Range would be adjusted (increased) to accommodate similar findings on reservoir property across the Valley.
- Zone 3 (Sensitive Resource Management) – Historically, TVA has made conservative estimates when designating property to support sensitive resources due to lack of site-specific verifiable data. TVA now utilizes a variety of technologies such as comprehensive land condition assessments, time-lapsed aerial photography, the TVA Natural Heritage database, cultural resources databases, and other site-specific data when allocating property for Sensitive Resource Management. The additional reviews taken to verify the presence of known sensitive resources has resulted in a reduction of property allocated to Zone 3. The proposed CVLP Allocation Range has been adjusted to accommodate similar situations should they occur on other reservoirs.
- Zone 4 (Natural Resource Conservation) – TVA proposes to adjust the CVLP Allocation Range to accommodate adjustments for the other land use zones. For example, lands currently allocated to Zone 4 could be allocated to other zones to accommodate encumbrances, support sensitive resources, or to facilitate economic development and recreation.
- Zone 5(Industrial) – TVA proposes to adjust the CVLP Allocation Range by 1 percent to accommodate the potential for future industrial opportunities. For example, the proposed change could accommodate back-lying property owners that have general egress and ingress rights across TVA property, future water-access purposes on privately owned back-lying land, and areas deemed suitable for industrial use by TVA's Economic Development staff. Future development of these properties would be consistent with TVA regulations and policies.
- Zone 6 (Developed Recreation) – No change in the CVLP Allocation Range is proposed.
- Zone 7 (Shoreline Access)– Recent research of deeds shows that on certain RLMP parcels, the current zone allocations have the potential to conflict with egress and ingress rights of the adjacent property owners if the current back-lying land use were to change. Land plans are not intended to supersede TVA's SMP. TVA proposes to adjust the CVLP Allocation Range to accommodate future allocations consistent with SMP and TVA's Land Policy.

2.5 Comparison of Alternatives

The land area within each reservoir that would be allocated differently under the alternatives are summarized in Table 2-7. Implementation of Alternative B would result in changes of zone allocation on a total of 25,558 acres of land, (roughly 18 percent of the 138,321.2 acres of TVA-managed land). Approximately 7 percent of the proposed allocations reflect existing land use agreements and commitments. Reallocations proposed for approximately 11 percent of TVA managed land are not based on existing agreements or commitments. Detailed descriptions of re-allocations by parcel that were not based on existing land use agreements and commitments are identified in Appendix D, Table D-7 through D-11. Only six of the eight reservoirs are represented in the table because there

are no changes in the proposed land use allocations for parcels surrounding Wilson and Great Falls reservoirs.

Table 2-7. Lands Reallocated by Reservoir for Alternatives A and B

Zone	Alternative A		Alternative B	
	Acres	Percent	Acres	Percent
0[1]	69.4	<0.1	0.0	0
2	9,204.6	6.7	10,826.5	7.8
3	15,579.6	11.3	13,289.9	9.6
4	96,991.0	70.2	93,690.5	67.7
5	2,037.7	1.5	3,341.0	2.4
6	8,064.9	5.8	9,708.8	7.0
7	6,374.3	4.6	7,464.5	5.4
Total	**138,321.4**		**138,321.2**	

[1] Parcels or portions of parcels that were not previously planned. Note: Percentages do not add to 100 due to rounding.

Generally, land allocations under Alternative B were proposed to reflect actual uses of parcels, the presence of known sensitive resources, or existing land rights or restrictions for parcels. As such, the proposed changes in allocations are minor and therefore the difference between the two alternatives is minor.

The total number of acres of TVA lands around the eight reservoirs allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) is slightly lower under Alternative B. In turn, the amount of land allocated to Zone 2 (Project Operations), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) is slightly higher under Alternative B.

2.6 Summary of Impacts

The environmental impacts of potentially affected resources associated with Alternatives A and B are summarized in Table 2-8. These summaries are derived from the information and analyses provided in Chapter 3 (Affected Environment and Environmental Consequences).

Section 101 of NEPA declares that it is the policy of the federal government to use all practicable means and measures, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations. TVA believes that the alternatives are consistent with this policy. Because of the environmental safeguards in each alternative, a wide range of beneficial uses of the environment could be obtained without degradation or unintended consequences under each alternative.

Table 2-8. Summary and Comparison of Alternatives by Resource Area

Resource	Potential Impacts	Alternative A - No Action	Alternative B – Proposed Land Use Plan Alternative
Land Use	Changes to Land Use	Minor direct impact. Minor indirect impact due to absence of a comprehensive plan to consider land use requests that would be applied in a consistent manner across all TVA reservoirs. Long-term impact to system-wide planning due to inability to revise CVLP target ranges.	Minor direct impact. Minor beneficial impact due to optimization of land use and stewardship as a result of implementation of a comprehensive plan. In addition, an updated CVLP would achieve the desired overall balance of land uses on a system-wide basis.
Prime Farmland	Conversion of prime farmland; a farmland rating would be required before development.	Smaller acreage potentially affected. Minor adverse impacts.	Slightly greater number of acreage affected. Minor adverse impacts.
Recreation	Availability of Developed (Zone 6) and Dispersed recreational opportunities	Smaller amount of land allocated to Zone 6, resulting in minor adverse impacts. Greater amount of land allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation), minor beneficial impact to dispersed recreation.	Greater amount of land allocated to Zone 6, resulting in minor beneficial impacts. Minor adverse impact to dispersed recreation due to smaller amount of land allocated to Zones 3 and 4. Overall beneficial impact due to development of a consistent, systematic process for identifying developed and dispersed recreational opportunities on individual parcels.
Terrestrial Ecology	Loss and fragmentation of terrestrial vegetation and wildlife habitat from clearing and ground disturbing activities; indirect effects associated with dispersed recreation and spread of invasive plants.	Smaller area potentially affected. Minor impacts to common plant and wildlife communities.	Slightly greater area potentially affected. Minor impacts to common plant and animal species given the relatively large amount of land allocated to Zone 3 and 4.
Aquatic Ecology	Alteration of aquatic species and habitat primarily from shoreline modification.	Slightly lower potential for ground disturbing activities; minor impact due to review of future land use requests and use of best management practices (BMP) as needed to minimize impacts.	Slightly higher potential for ground disturbing activities; minor impact due to review of future land use requests and use of BMPs as needed to minimize impacts.

Resource	Potential Impacts	Alternative A - No Action	Alternative B – Proposed Land Use Plan Alternative
Threatened and Endangered Species	Direct impacts associated with clearing and ground disturbance; indirect impacts from habitat fragmentation, human visitation, spread of invasive species, and displaced effects in time or place from an action.	Slightly greater amount of land allocated to zones protective of threatened and endangered species. Minor impacts as all future development would require site specific review.	Slightly fewer parcels allocated to zones protective of threatened and endangered species. However, parcels with known records of threatened and endangered species are allocated to protective zones. Minor impacts as all future development would require site specific review.
Water Quality	Impacts from runoff of pollutants and soil erosion.	Lower potential for ground disturbing activities and increased water supply and discharge; minor impact due to review of future land use requests and use of BMPs as needed to minimize impacts.	Slightly increased potential for ground disturbing activities and increased water supply and discharge; minor impact due to review of future land use requests and use of BMPs as needed to minimize impacts.
Wetlands	Impact to wetlands from land clearing and ground disturbance.	No direct impacts assuming protection under EO 11990 and Section 404 (b)(1) of the CWA. Minor indirect impacts associated with dispersed recreation and clearing for shoreline access.	No direct impacts assuming protection under EO 11990 and Section 404 (b)(1) of the CWA. Minor indirect impacts associated with dispersed recreation and clearing for shoreline access.
Floodplains	Adverse impacts to floodplains and floodplain values.	Minor impact. Any adverse impacts would be minimized by adherence to EO 11988. Potential projects would be reviewed for consistency with EO 11988 on a case-by-case basis.	Minor impact. Any adverse impacts would be minimized by adherence to EO 11988. Potential projects would be reviewed for consistency with EO 11988 on a case-by-case basis.
Air Quality and Climate Change	Emissions from construction and development activities.	Project level review would be required. Negligible impact.	Project level review would be required. Negligible impact. Alternative B would likely result in greater quantities of greenhouse gas emissions and fewer carbon sinks than Alternative A.
Cultural and Historic Resources	Damage to archaeological and historic properties.	TVA will comply with the NRP Programmatic Agreement executed in 2011 in consultation with the SHPOs, Advisory Council of Historic Preservation and federally recognized Indian tribes which subsumes and governs all past and future land plans. All projects would be	Also under Alternative B, TVA will comply with the NRP Programmatic Agreement executed in 2011. All projects would be subject to the regulatory requirements of the NHPA.

Resource	Potential Impacts	Alternative A - No Action	Alternative B – Proposed Land Use Plan Alternative
		subject to the regulatory requirements of the NHPA.	
Managed Areas and Ecologically Sites	Incompatible land use on adjacent areas. Impacts on sensitive resources.	No direct impact. Minor indirect impact to system-wide planning and management of these areas.	No direct impact. Minor beneficial impact as a result of efficient management of these areas consistent with other reservoirs in the TVA system.
Aesthetic and Visual Resources	Effects on scenic quality. Gradual degradation of visual resources.	Minor impact due to decline in visual resources over time due to lack of consistent planning to protect visual resources.	Long-term beneficial impact due to implementation of protective management of visual resources.
Noise	Noise generated by facilities associated with Zone 5 (Industrial), Zone 2 (Project Operations), or Zone 6 (Developed Recreation).	Minor impact.	Potential for noise generation higher than Alternative A. Minor impact.
Socioeconomic Resources and Environmental Justice	Effects to the local economy and populations	Long-term negligible to minor impact to the local economy and economic development opportunities related to missed opportunities to increase the overall benefit of reservoir land due to the absence of comprehensive planning. No disproportionate impact on disadvantaged populations.	Minor beneficial impact on the local economy and economic development opportunities in the area through the enhancement of management of public lands.
Cumulative Effects	Effects of the proposed action together with the potential future actions by others based on general trends that are anticipated within the reservoirs and the counties where they are located.	Minor cumulative effects as federal and state water quality regulators, municipal/local programs, and others including TVA's own environmental monitoring programs would combine in an effort to offset threats to environmental resources from uncontrolled economic growth and development.	Minor cumulative effects as federal and state water quality regulators, municipal/local programs, and others including TVA's own environmental monitoring programs would combine in an effort to offset threats to environmental resources from uncontrolled economic growth and development.

2.7 Identification of Mitigation Measures

TVA's analysis of the preferred alternative includes mitigation, as required, to reduce or avoid adverse effects. Mitigation measures are actions that could be taken to avoid, minimize, or reduce or compensate for adverse impacts to the environment. In considering requests of TVA lands allocated under the eight RLMPs, TVA would implement the following commitments and mitigation measures.

- Prior to approving any use of land on the eight reservoirs, TVA would conduct an appropriate level of site-specific environmental review to determine the potential environmental effects of the proposed use.
- As necessary, based on the findings of any site-specific environmental review, TVA may require the implementation of appropriate mitigative measures, including BMPs (e.g. Section 26a General and Standard Conditions/BMPs (TVA 2005a) as a condition of approval for land use on the TVA-managed lands on the eight RLMPs.
- In the event that a land use request involves industrial development, the subject environmental review will determine and document the extent of expected air quality impacts. Should the requested parcel be located in or potentially affect a nonattainment area for ozone or $PM_{2.5}$, TVA shall require a conformity applicability determination pursuant to regulations implementing Section 176(c) of the CAA to assure compatibility with measures in local plans for achieving attainment.
- Any future development of lands potentially supporting use by sensitive species will be coordinated with both state and federal agencies, as appropriate.
- Consistent with EO 13112, disturbed areas would be revegetated with native or non-native, non-invasive plant species to avoid the introduction or spread of invasive species.
- TVA will comply with the NRP Programmatic Agreement executed in 2011 in consultation with the SHPOs, Advisory Council of Historic Preservation, and federally recognized Indian tribes which subsumes and governs all past and future land plans.

2.8 Preferred Alternative

The preferred alternative is Alternative B – Proposed Land Use Plan Alternative. Alternative B provides advantages relative to Alternative A as it establishes as a planning framework for RLMPs that brings consistency to the land planning process across the eight reservoirs considered in this document. Alternative B also applies a systematic method of evaluating and identifying the most suitable use of TVA public lands in furtherance of TVA's responsibilities under the TVA Act. In addition, the proposed RLMPs incorporate numerous updates to existing plans to reflect actual uses of parcels, the presence of known or potential sensitive resources, or existing land rights or restrictions for parcels.

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CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter contains a description of the current conditions of various resources in the area of the eight reservoirs included in this analysis that could be affected by implementation of the proposed RLMPs. The description of the affected environment presented in this chapter is based on more detailed resource information on the eight TVA reservoirs that is provided in Volumes II through IX of this EIS.

What are "direct" and "indirect" impacts?

- *Direct impacts* are effects caused by a proposed action that occur at the same time and place (on site).
- *Indirect impacts* are effects caused by a proposed action but are removed in time or space (off site).

Potential direct and indirect effects of Alternatives A and B on each of the identified resources are also analyzed in this chapter. Direct impacts are effects caused by a proposed action that occur at the same time and place (on site), whereas indirect impacts are effects caused by a proposed action but are removed in time or space (off site). Cumulative impacts are addressed at the end of this chapter.

As discussed in Chapter 2 under Alternative A, TVA would not take any action to align or complete plans on the TVA managed lands on the eight reservoirs. As a result, land management and future land use decisions would continue in accordance with existing plans, or in the case of those reservoirs without an existing plan, in accordance with existing commitments, land use agreements, and TVA policies. Under Alternative B, TVA would implement eight RLMPs that would be used to manage existing land uses and guide future land use decisions. TVA's proposed RLMPs would allocate lands into one of the seven land use zones based on current land usage, existing land rights (i.e., committed lands), public needs, the presence of known sensitive resources and TVA policies as described above in the pre-allocation process. Land allocations under Alternative B were primarily proposed to reflect existing conditions and suitable uses of land, and as such the difference in land allocations between the two alternatives is minor.

In order to facilitate the comparison of alternatives, the existing land uses designations for the reservoirs have been converted to the equivalent designation of one of the seven proposed land use zones. The analyses of direct, indirect and cumulative environmental consequences in this chapter were based upon the assumption that any activity allowed under a particular zone would occur at the greatest allowable intensity on the entire extent of the parcel. For example, on a 10-acre parcel allocated to Zone 5 (Industrial), it was assumed the entire 10 acres would be cleared of vegetation and developed to support an industrial facility. Activities on Zone 7 (Shoreline Access), Zone 2 (Project Operations), and Zone 6 (Developed Recreation) may include development, construction, and landscaping, but some areas of a parcel may be left in a relatively natural state. Therefore, the analysis was based upon the assumption that the potential for altering the existing conditions of a parcel are greatest under Zone 5 (Industrial), moderate under Zone 7 (Shoreline Access), Zone 2 (Project Operations), and Zone 6 (Developed Recreation), minor under Zone 4 (Natural Resource Conservation) and least under Zone 3 (Sensitive Resource Management). Future projects, when planned in detail, will be evaluated to determine

site-specific environmental impacts, and potential impacts to sensitive resources would be identified and avoided or minimized as appropriate and in a manner consistent with applicable laws and regulations.

Neither of the alternatives under consideration are expected to be controversial, involve unique or unknown risks, or violate federal, state, or local laws.

3.1 Description of the Reservoirs

The proposed RLMPs and EIS address public lands surrounding eight reservoirs located in Alabama, Kentucky, and Tennessee (see Figure 1-1). Selected characteristics of each reservoir are shown on Table 3-1.

Table 3-1. Selected Characteristics of Reservoirs Included in the Multiple Land Plan EIS

Reservoir	Dam Location[1]	Length of Reservoir (miles)	January 1 Flood Storage (acre-feet)	Shoreline (miles)	Summer Pool Elevation (feet above msl)[2]	Annual Pool Variation (feet)
Chickamauga	TRM 471.0	59	345,300	784	682.5	6
Fort Loudoun	TRM 602.3	50	111,000	379	813	5
Great Falls	CRM 91.1	22	30,500	120	800[3]	25.3[3]
Kentucky	TRM 22.4	184	4,008,000	2,064	359	5
Nickajack	TRM 424.7	46	No flood storage	192	632.5-634.5	NA
Normandy	DRM 248.6	17	48,000	75	875	11
Wheeler	TRM 274.9	74	326,500	1,063	556	5
Wilson	TRM 259.4	15	50,500	166	507.9	NA

[1] TRM = Tennessee River Mile, CRM = Caney River Mile, DRM = Duck River Mile
[2] msl = mean sea level
[3] from the draft 2015 Great Falls RLMP

NA = Run-of-River Projects which are operated based on stream flow with little seasonal change in storage.

Source: TVA 2016a

3.1.1 Chickamauga Reservoir

Chickamauga Dam was the fourth of the main-river projects to be constructed by TVA and was completed in 1940. Chickamauga Dam is 129-feet-high and stretches 5,800 feet across the Tennessee River at TRM 471.0 in Hamilton County, Tennessee. The dam is located 7 miles above Chattanooga and maintains a navigation channel approximately 59 miles up the Tennessee River to Watts Bar Dam and along the Hiwassee River to Charleston, Tennessee. It was constructed to improve navigation and bring flood control and economic development to the Tennessee Valley. Its close proximity to Chattanooga contributes to the reservoir's importance as a destination for a variety of recreational uses. The Chickamauga Dam is a hydroelectric facility equipped with four generating units which can produce up to 119 megawatts of electricity. The Chickamauga Reservoir has a flood storage capacity of 345,300 acre-feet. TVA manages more than 16,000 acres of public lands on the reservoir. A detailed description of Chickamauga Reservoir and surrounding TVA lands is provided in Volume II.

3.1.2 Fort Loudoun Reservoir

Fort Loudoun Dam is 122 feet tall, approximately 4,190 feet long and is located on the Tennessee River at TRM 602.3 in Loudon County, Tennessee. Construction of the dam began in 1940 and was completed in 1943. The reservoir is the uppermost in the chain of nine TVA reservoirs that form a continuous navigable channel from just upstream of Knoxville to Paducah, Kentucky, 652 miles away. The reservoir waters extend from the dam through predominately residential areas of Knox and Blount counties into more urban and industrial areas of downtown Knoxville and East Knox County. Approximately 63 percent of reservoir's shoreline is developed for residential use. In addition to safe navigation travel, Fort Loudoun Reservoir assists in storing flood waters (the reservoir has a flood storage capacity of 345,300 acre-feet). The dam is a hydroelectric facility equipped with four generating units which can produce up to 162 megawatts of electricity. Other benefits of the reservoir include preserving aquatic and wildlife habitats, as well as providing important opportunities for a wide variety of recreational activities for relatively large populations in Knox, Blount, and Loudon counties. There are just over 1,500 acres of TVA-managed lands on the reservoir. A detailed description of the Fort Loudoun Reservoir and surrounding lands is provided in Volume III.

3.1.3 Great Falls Reservoir

Great Falls Dam is 92 feet tall, approximately 800 feet long and is located at Caney Fork River about 75 miles southeast of Nashville, Tennessee. Great Falls Reservoir is contained within Warren and White counties. Acquired by TVA in 1939, the dam is one of seven dams acquired by TVA from private companies, and it is located in the Cumberland River Basin. It is the only TVA dam located outside the Tennessee River watershed. Great Falls Reservoir is a single-purpose power project with a limited amount of flood storage; there are only 362.4 acres of TVA-managed lands on the reservoir. It has two generating units which can produce up to 36 megawatts of electricity. The area surrounding Great Falls Reservoir is scenic with numerous waterfalls and areas that provide opportunities for a wide variety of recreational activities, including the Rock Island State Park. A detailed description of Great Falls Reservoir and surrounding lands is provided in Volume IV.

3.1.4 Kentucky Reservoir

Construction of Kentucky Dam was accomplished in 6 years, from July 1938 to dam enclosure in September 1944. Kentucky Dam is located at on the Tennessee River at TRM 22.4, which is 22 miles upstream from the confluence of the Tennessee River with the Ohio River. The dam is the longest in the TVA system, and Kentucky Reservoir, which stretches for 184 miles across the states of Kentucky and Tennessee, is the largest in the eastern U.S. The reservoir's strategic location and vast storage capacity help reduce flood crests on the Ohio and Mississippi rivers. Kentucky Dam is also a major producer of hydroelectric power, and can produce up to 184 megawatts of electricity. The navigation lock at the dam forms the lower gateway to the Kentucky Reservoir and opens the Tennessee River to year-round navigation and links the Tennessee Valley with the nation's Inland Waterway System. Large expanses of lands surrounding the reservoir are managed for protection and public use; less than 20 percent of shoreline around the reservoir has been developed for residential use. TVA manages almost 75,000 acres of public lands around the reservoir. Public areas surrounding the reservoir include the Land Between the Lakes National Recreation Area, four state parks, the Tennessee National Wildlife Refuge, boat ramps, resorts, campsites and other developed and undeveloped areas provide opportunities for a wide variety of recreational activities. A detailed description of Kentucky Reservoir and surrounding lands is provided in Volume V.

3.1.5 Nickajack Reservoir

Nickajack Dam was completed in 1967 and is located on the Tennessee River at TRM 427.7 in Marion County, Tennessee. It was the eighth dam constructed by TVA along the main Tennessee River. Nickajack Dam is a hydroelectric facility with four generating units which can produce up to 105 megawatts of electricity per day. Nickajack Dam has two parallel navigation locks, one auxiliary lock that is 110 feet wide by 600 feet long, and a partially complete main lock that is 110 feet wide by 800 feet long. TVA manages more than 3,600 acres of land on Nickajack. The area surrounding the reservoir supports recreational activities including boat launching ramps, a fishing pier, and camping and picnicking facilities. A detailed description of Nickajack Reservoir and surrounding lands is provided in Volume VI.

3.1.6 Normandy Reservoir

Construction of Normandy Dam was completed in 1976. The dam is 110 feet high and 2,807 feet long and is located on Duck River at DRM 248.6, approximately 8 miles north of Tullahoma, Tennessee and 1.5 miles upstream from Normandy, Tennessee in Bedford and Coffee counties. Normandy Reservoir was impounded for water supply, flood control, and recreational development of the upper Duck River region. Normandy Dam is not a hydroelectric facility. TVA manages almost 4,800 acres of land on the reservoir. The Duck River watershed is one of the most biologically diverse river systems in the nation. Over 500 species of fish, insects and other aquatic life inhabit the ecosystem, including two species of mussels on the endangered species list. A detailed description of Normandy Reservoir and surrounding lands is provided in Volume VII.

3.1.7 Wheeler Reservoir

Construction of Wheeler Dam began in 1933 and was completed in 1936. Located on the Tennessee River at TRM 274.9, Wheeler Dam is 72 feet high and stretches 6,342 feet across the Tennessee River in Lauderdale and Lawrence counties in Alabama. Wheeler Dam is a hydroelectric facility equipped with 11 generating units capable of producing 361 megawatts of electricity. Wheeler is one of nine reservoirs that create a stairway of navigable water on the Tennessee River from Knoxville, Tennessee to Paducah, Kentucky. Because the reservoir helps maintain the water depth needed to maintain navigation on the Tennessee River, the lake level can vary only by a matter of feet from winter to summer. TVA manages more than 36,000 acres of lands around the reservoir. Barge traffic on the reservoir has made it one of the major centers along the Tennessee waterway for shoreline industrial development. Lands around the reservoir also support various recreational facilities. A detailed description of Wheeler Reservoir and surrounding lands is provided in Volume VIII.

3.1.8 Wilson Reservoir

The construction of Wilson Dam began in 1918 and was completed in 1925 by the U.S. War Department. TVA acquired Wilson Dam in 1933. The dam is 137 feet high and stretches 4,541 feet across the Tennessee River at TRM 259.4 in Colbert and Lauderdale counties in northwest Alabama. Wilson Dam is the largest conventional hydroelectric facility in the TVA system and can produce up to 663 megawatts of electricity. Wilson Reservoir, together with Pickwick and Wheeler reservoirs, covers the Muscle Shoals which once blocked navigation on the Tennessee River. The reservoir and surrounding lands provide navigation, hydropower production, recreation and a range of other benefits. TVA manages more than 1,200 acres on Wilson Reservoir, most of which are for dam operations adjacent to TVA's Muscle Shoals reservation. A detailed description of Wilson Reservoir and surrounding lands is provided in Volume IX.

3.2 Land Use

3.2.1 Affected Environment

Existing land use patterns along the shoreline and back-lying land have been influenced by initial TVA land acquisition and subsequent disposition via the sale, transfer of ownership, or retention of properties. TVA originally acquired about 209,500 acres of land on the eight reservoirs (see Table 1-2). About 38 percent (79,466 acres) of this land has been sold for private use or transferred to other federal and state agencies for public use.

As described in Section 2.4.1, TVA typically retained the land below the MSC fronting the transferred or sold lands. The transfer agreements allow for the management of these retained lands by the agencies consistent with their management of the adjacent back-lying land (see TVA-Owned and Jointly Managed Shoreline in Table 3-2). In cases where TVA sold back-lying land to private persons or entities, the sale deeds typically allow for rights of ingress and egress across the narrow strip of TVA-retained land (also known as the marginal strip); therefore, the back-lying landowners typically have the right to apply to TVA for permission to construct private water use facilities on the TVA-retained land.

Shoreline ownership data as presented in the SMI EIS (TVA 1999) for seven of the eight reservoirs is summarized in Table 3-2. The 4,673 miles of shoreline along these reservoirs is managed by TVA, either as flowage easement or shoreline access land. Great Falls Reservoir is not shown on the table because it was not part of the scope of the SMI EIS (TVA 1999).

Table 3-2. Shoreline Ownership Data

Reservoir	Flowage Easement Shoreline		TVA-Owned Residential Access Shoreline		TVA-Owned and Jointly Managed Shoreline		TVA-Owned and Managed Shoreline		Total Shore-line Miles
	Miles	% of Total Miles	Miles	% of Total Miles	Miles	% of Total Miles	Miles	% of Total Miles	
Chickamauga	7.2	0.9	241.5	30.8	331.5	42.3	203.5	26.0	783.7
Fort Loudoun	304.3	80.5	12.9	3.4	41.4	10.9	19.6	5.2	378.2
Kentucky	710.7	34.4	226.2	11.0	461.9	22.4	665.5	32.2	2,064.3
Nickajack	98.0	54.8	0.0	0.0	35.6	19.9	45.1	25.2	178.7
Normandy	0.0	0.0	11.2	14.9	6.1	8.1	57.8	77.0	75.1
Wheeler	11.3	1.1	154.1	15.0	560.1	54.5	301.7	29.4	1,027.2
Wilson	153.1	92.1	4.7	2.8	1.3	0.8	7.1	4.3	166.2
Total	**1,284.6**	**27.5**	**650.6**	**13.9**	**1,437.9**	**30.8**	**1,300.3**	**27.8**	**4,673.4**

Source: TVA 1999.

Most of the residential development along the reservoirs is on land TVA sold with shoreline access rights across the retained land below the MSC. These areas are allocated as Zone 7 (Shoreline Access) or as private land where TVA only has the right to flood to a certain elevation (i.e., Zone 1 – Non-TVA Shoreline). TVA used aerial photography and Geographic Information System mapping to estimate the amount of shoreline that is

available for residential development that has actually been developed. The amount of developed residential shoreline ranges from approximately 63 percent on Fort Loudoun Reservoir to approximately 18 percent on Kentucky Reservoir (Table 3-3). In total, 41 percent of the combined shoreline (approximately 1,935.2 miles) around the reservoirs shown in Table 3-1 is available for residential development. Development has already occurred on about 35 percent of the shoreline available for residential development (about 684 shoreline miles).

Table 3-3. Percent of Shoreline Available for Residential Development and Percent of Available Shoreline Developed

Reservoir	Percent of Total Shoreline Available for Residential Development[1]	Percent of Available Shoreline Already Developed
Chickamauga	31.7%	44.3%
Fort Loudoun	83.9%	62.6%
Great Falls	NA	NA
Kentucky	45.49%	17.9%
Nickajack	54.8%	25.4%
Normandy	14.9%	40.9%
Wheeler	16.1%	54.5%
Wilson	94.9%	57.1%
Totals	**41.4**%	**35.3%**

[1]Sum of flowage easement and residential access shoreline
NA = Not applicable

The extent to which each of the eight reservoirs has been developed for residential use varies greatly due to differences in the way that TVA originally acquired land and later transferred and/or sold it. For example, most of the property surrounding Wilson Reservoir was secured via flowage easement, and therefore there is more private shoreline available for residential development. Conversely, TVA originally purchased approximately 103,070 acres of land in fee and approximately 827 acres of easements for Wheeler Reservoir and as such, the amount of shoreline available for residential development is smaller. Under TVA's Land Policy, TVA no longer considers new residential land use requests on TVA lands nor will additional TVA land be provided for residential use. Thus, the amount of shoreline available for residential use will not change because of the land planning process.

Many of the TVA-managed parcels on the eight reservoirs have existing land use agreements that commit a parcel to a specific use. Existing land use agreements on all the reservoirs sorted by type and land management zone is shown on Table 3-4. The majority of the land use agreements are for uses such as utilities, highways, and other public infrastructure. Most of these public infrastructure uses affect narrow linear tracts with small acreages. A large proportion of the agreements are for public recreation and include such things as boat ramps, campgrounds and parks that are operated by local, county, and state government agencies. Commercial recreation agreements include docks, marinas, and commercial campgrounds on several of the reservoirs, which are described in more detail in Section 3.4.

Table 3-4. Summary of All Land Use Agreements on the Eight Reservoirs

Land Use Type	Related Allocation Zone	Number of Agreements
Project Operations	Zone 2 (Project Operations)	-
Highways and Roads	Zone 2 (Project Operations)	341
Municipal Uses	Zone 2 (Project Operations)	62
Linear Infrastructure	Based on Adjacent Land Use	325
Industrial	Zone 5 (Industrial)	
Industrial Areas and Sites	Zone 5 (Industrial)	31
Barge Terminals	Zone 5 (Industrial)	13
Railroads	Zone 5 (Industrial)	26
Wildlife Management	Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation)	50
Cultural Resources Management	Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation)	7
Recreation	Zone 6 (Developed Recreation)	-
Commercial	Zone 6 (Developed Recreation)	81
Public	Zone 6 (Developed Recreation)	273
Vegetation Management	Based on Adjacent Land Use	42
Other	Based on Adjacent Land Use	34
Total		**1,285**

3.2.2 Environmental Consequences

The primary change to land use under the proposed action has been the application of the new zone definition (see Table 1-1) to accurately reflect current uses. Allocations of parcels having existing land use agreements (i.e., committed parcels) were not changed under the proposed action and therefore land use did not change on 55.6 percent (see Table 2-2) of the TVA land around the eight reservoirs.

Land use impacts are based upon changes in the amount of land allocated to each zone. In terms of land use, the primary differences between the No Action Alternative and the Proposed Land Plan Alternative (Alternative B) are the reduction of lands allocated to Zone 3 and Zone 4 (Sensitive Resource Management and Natural Resource Conservation) and an increase in land allocated to Zone 6 (Developed Recreation) (see Table 2-7).

The amount of shoreline available for residential development would not change under either alternative, and the existing trends of increasing residential development in areas of the reservoirs currently available for development are more related to broad socioeconomic trends and would be unaffected by the land plan alternatives. Additionally, TVA's Land Policy prohibits allocation of additional lands or land rights for residential use or the disposal of reservoir lands for residential use. Both alternatives are consistent with this policy.

3.2.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not alter its management of TVA lands on the eight reservoirs under consideration.

Using equivalent land use zones, most (81 percent) of TVA lands would be allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation; see Table 2-7), and there would be little change to existing land use. Uncommitted parcels on land allocated to Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 2 (Project Operations) that are not currently developed could be developed in the future. This impact would be minor as only 14 percent of TVA lands are included in these categories, and most of the parcels affected were allocated based on existing land use.

Because the land surrounding the eight reservoirs under consideration would not be allocated to the current seven category land use zones (see Table 1-1), complete alignment with current TVA policies would not occur. In the case of the six reservoirs for which land plans were previously completed, parcels would continue to be managed in accordance with their existing plan and would continue to be based on different planning methodologies with differing allocations. Approximately 56 percent of the land around these six reservoirs is committed and land use on these parcels will not change. However, for the remaining 44 percent of land that is uncommitted, requested land uses that are consistent with Forecast System designation (Fort Loudoun and Normandy) or the Multiple Use Tract Allocation methodology (Chickamauga, Kentucky, Nickajack, and Wheeler) would either be approved or denied based on a review of potential environmental impacts, TVA's Land Policy, SMP and other administrative considerations. Wilson and Great Falls reservoirs were not previously planned; however, 99 percent of lands around Wilson Reservoir is committed and all of the TVA land around Great Falls Reservoir is committed.

The primary impacts to land use associated with Alternative A result from the lack of a comprehensive plan to guide consideration of land use requests that would be applied in a consistent manner across all TVA reservoirs. Over the long term, absence of comprehensive reservoir-wide land plans may result in land uses that do not fully optimize the goals of multiple use and stewardship to which TVA strives. However as any unplanned parcels that are not committed would be managed consistent with current plans for the reservoir as well as TVA's Land Policy, SMP and other administrative regulations, this impact would be minor.

In addition, the CVLP would not be updated to reflect the allocations as proposed under the current Single Use Parcel Allocation methodology. The target ranges for each land use zone established in the CVLP enable TVA and the public to consider future allocations across the reservoir system and determine whether too much or too little attention is being given to particular land uses on a system-wide basis. Therefore, implementation of Alternative A would impact the ability to accurately achieve the desired overall balance of shoreline development, recreational use, sensitive and natural resource management, and other land uses on a system-wide basis.

3.2.2.2 Alternative B – Proposed Land Use Plan Alternative

Under this alternative, lands managed by TVA would be placed into one of the seven land use zones shown on Table 1-1 that best fits the existing land use as determined in the pre-allocation process described in Section 2.4. Implementation of Alternative B would result in changes of zone allocation on a total of 25,558 acres of land, (roughly 18 percent of the 138,321.2 acres of TVA-managed land) on the eight reservoirs evaluated in this EIS.

Approximately 7 percent of the proposed allocations reflect existing land use agreements and commitments. Reallocations proposed for approximately 11 percent of TVA managed land are not based on existing agreements or commitments. These proposed allocations are identified in Appendix D (Tables D-7 through D-11) and additional detail regarding proposed allocations by reservoir is available in Appendix B of Volumes II through IX.

Notable land use changes proposed for each reservoir are summarized below:

- **Chickamauga RLMP** (16,061.4 acres) – TVA proposes changes to numerous parcels currently allocated as Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation). Fewer Zone 3 parcels would be allocated because existing information on resources indicates there are no known sensitive resources present. As a result, more parcels would be allocated for Zone 4 (Conservation) and Zone 6 (Developed Recreation). In addition, minor changes to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 7 (Shoreline Access) are proposed.

- **Fort Loudoun RLMP** (1,513.2 acres) – TVA proposes major changes to Zone 6 and Zone 7 allocations. Zone 6 (Developed Recreation) changes are proposed because previous planning efforts underestimated the amount of lands utilized for recreation or that are covered by existing recreational agreements. Zone 7 (Shoreline Access) changes are proposed to more accurately reflect the lands encumbered with shoreline access rights.

- **Great Falls RLMP** (362.4 acres) – TVA proposes to allocate most of the relatively small area of TVA-managed lands on this reservoir for use as Zone 6 (Developed Recreation), based on historical and proposed recreation operations of the State of Tennessee. Such use would also be consistent with the current management of the adjacent Rock Island State Park.

- **Kentucky RLMP** (74,713.5 acres) – The majority of TVA lands addressed in this planning effort are located on Kentucky Reservoir. TVA proposes substantive changes to allocations of Zone 3 and 4 parcels (Sensitive Resource Management and Natural Resource Conservation) on Kentucky Reservoir based on new information indicating the presence or absence of known sensitive resources. More lands would be allocated to Zone 3 (an increase of 5 percent) and fewer lands would be allocated as Zone 4 (a decrease of almost 10 percent). Minor increases to Zones 2 (Project Operations), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access) allocations are also proposed.

- **Nickajack RLMP** (3,604.7 acres) – TVA proposes changes to Zones 2 (Project Operations), 3 (Sensitive Resource Management) and 4 (Natural Resource Conservation) parcel allocations. The proposed increase in Zone 2 (Project Operations) lands is primarily the result of previous underestimates in the amount of lands encumbered by roadways. The allocation change to one large parcel (Marion Memorial Bridge) from Zone 4 to Zone 3 would result in the greatest allocation change under the RLMP, resulting in a large increase in Zone 3 (Sensitive Resource Management) lands and fewer lands allocated as Zone 4 (Natural Resource Conservation). Minor changes to Zone 5, Zone 6, and Zone 7 (Industrial, Developed Recreation, and Shoreline Access, respectively) allocations are proposed.

- **Normandy RLMP** (4,797.2 acres) – TVA proposes minor adjustments to parcel allocations across each land use zone. The greatest change would result in a decrease in Zone 3 (Sensitive Resource Management) parcels, largely due to reallocating one tract from Zone 3 to Zone 4 (Natural Resource Conservation) because new information indicates that sensitive resources are not known to be present in the area.

- **Wheeler RLMP** (36,045.2 acres) – TVA proposes changes to Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation), and Zone 6 (Developed Recreation) allocations. TVA would increase allocations to Zone 2 (Project Operations) to more accurately account for areas encumbered by roadways and road easements (an increase of almost 10 percent). Fewer lands would be allocated to Zone 3 (Sensitive Resource Management) because new information indicates that sensitive resources are not known to be present on numerous tracts. Some of these parcels would be reallocated for Zone 4 (Natural Resource Conservation) use (5 percent). TVA would slightly decrease Zone 6 (Developed Recreation) allocations based on populations and recreation demand trends in the area.

- **Wilson RLMP** (1,223.4 acres) – TVA's proposed RLMP reflects circumstances unique to Wilson Reservoir. Approximately 87 percent of areas would be allocated for Zone 2 (Project Operations) to reflect lands encumbered by transmission lines and utility easements and lands set aside to support future power operations of the dam (and potential navigation in and around the Wilson Lock and Fleet Harbor). Almost 13 percent of lands would allocated as Zone 6 (Developed Recreation) and a small tract would be allocated for Zone 7 (Shoreline Access).

In total, 93,690.5 acres would be allocated to Zone 4 (Natural Resource Conservation). This represents a decrease of 3,300.5 acres (2.5 percent) relative to the No Action Alternative. The amount of land allocated to Zone 3 (Sensitive Resource Management), 13,289.9 acres would also be slightly lower (2,289.7 acres or 1.7 percent) under Alternative B. However, approximately 77 percent of the total number of acres of TVA land around the eight reservoirs is allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) under Alternative B. In turn, the amount of land allocated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 7 (Shoreline Access) would increase by less than 1 percent, and the land allocated to Zone 6 (Developed Recreation) would increase by 1.4 percent under this alternative.

The proposed changes in land use allocations are minor and generally correspond to a "re-alignment" to reflect current land uses and conditions on each parcel. Consequently, actual direct or indirect adverse impacts to land use are considered to be minor. Implementation of comprehensive, long-term land use plans would beneficially impact land use by providing clear guidance designed to optimize land use and stewardship on these reservoirs. In addition, an updated CVLP would achieve the desired overall balance of shoreline development, recreational use, sensitive and natural resource management, and other uses land uses on a system-wide basis.

3.3 Prime Farmland

3.3.1 Affected Environment

The 1981 Farmland Protection Policy Act and its implementing regulations (7 Code of Federal [CFR] Part 658) require all federal agencies to evaluate impacts to prime and unique farmland prior to permanently converting land to a use incompatible with agriculture. Prime farmland is defined by the U.S. Department of Agriculture (USDA) as land that has the best combination of chemical and soil physical characteristics for meeting the nation's short- and long-range needs for food and fiber. Prime farmland can consist of cultivated land, pastureland, or forestland, but it is not urban, built-up land or covered by water.

The states of Alabama, Kentucky, and Tennessee have designated farmland of statewide importance that is exceptional for the production of food, feed, fiber, forage, and oil seed crops. Generally, state agencies identify farmlands of statewide importance as those areas that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. In some states, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by state law. Consideration for protection under the Farmland Protection Policy Act extends to farmland of statewide importance. To evaluate effects to prime farmland and farmland of state importance, TVA identifies soil classifications using the USDA, Natural Resources Conservation Service (NRCS) Web Soil Survey.

About 35,833.4 acres of prime farmland and 10,866 acres of farmland of statewide importance occur around the eight reservoirs (Table 3-5). All of the reservoirs include soils designated as prime farmland. However, no land of statewide importance designation occurs around Chickamauga, Great Falls, Nickajack, or Normandy reservoirs. Detailed descriptions prime farmland on land allocated to each zone are provided in the individual RLMPs (Volumes II through IX).

Table 3-5. Area and Number of Parcels Having Prime Farmland or Farmland of Statewide Importance on the Eight RLMPs

Reservoir	Prime Farmland		Farmland of Statewide Importance	
	Acres	No. Parcels[1]	Acres	No. Parcels[1]
Chickamauga	6,646.6	2,049.0	0	0
Fort Loudoun	240.0	174.0	1,177.0	58.0
Great Falls	23.2	11.0	0	0
Kentucky	12,824.5	2,906.0	643.0	134.0
Nickajack	739.3	242.0	0	0
Normandy	640.4	225.0	0	0
Wheeler	14,381.3	2,759.0	8,948.8	1,198.0
Wilson	338.1	13.0	97.2	18.0
Total	**35,833.4**	**8,379.0**	**10,866.0**	**1,408.0**

[1] Some parcels may contain both prime farmland and farmland of statewide importance

Source: USDA NRCS 2016b.

The geographic extent of the reservoirs considered in this EIS includes seven counties in Alabama, three in Kentucky, and 25 in Tennessee. Prime farmland is found in each of these counties, comprising between 6 and 62 percent of the total area in a county. The proportion of total prime farmland within these counties which support agriculture uses ranges from 12.8 percent in Polk County, Tennessee to 76.7 percent in Bedford County, Tennessee (Table 3-6).

Table 3-6. Prime Farmland and Farming Trends in the Counties Where the Reservoirs are Located

County	Percent of Total Area in Farms (2012)	Acres Prime Farmland	Percent Prime Farmland	Percent Change from 1992 to 2012		
				Number of Farms	Land in Farms (acres)	Average Size of Farms (acres)
Alabama						
Colbert	40.3	104,533	26.2	40.8	10.6	-21.6
Lauderdale	49.5	194,121	42.2	28.3	4.8	-18.6
Lawrence	55.2	155,615	33.9	69.5	40.6	-17.4
Limestone	68.8	223,955	57.6	35.2	19.0	-11.8
Madison	40.8	270,183	51.9	18.6	-6.7	-21.3
Marshall	45.0	140,584	35.2	10.3	14.1	2.9
Morgan	41.1	156,780	40.9	9.6	-2.1	-10.9
Kentucky						
Livingston	61.5	37,474	17.1	6.6	3.3	-2.9
Lyon	30.4	107,269	22.7	-10.2	-15.9	-6.4
Marshall	49.2	157,484	32.8	26.6	24.6	-1.5
Tennessee						
Bedford	76.7	42,672	14.0	12.1	8.8	-2.9
Benton	34.8	17,503	6.3	30.4	39.6	7.3
Blount	28.2	47,213	17.6	-3.2	4.7	8.4
Bradley	41.2	48,810	23.0	14.6	-5.7	-17.7
Coffee	52.8	173,063	62.1	6.8	9.4	2.5
Decatur	36.2	59,741	27.0	-8.6	-11.0	-2.6
DeKalb	46.0	42,175	20.0	-17.8	-6.5	13.7
Hamilton	15.1	67,148	18.2	0.4	-16.4	-17.0
Hardin	34.1	132,778	34.8	13.9	14.5	0.5
Henry	56.9	50,676	13.3	6.0	6.8	0.8
Houston	39.3	31,195	23.6	40.2	13.3	-19.0
Humphreys	36.3	64,694	18.2	18.4	3.4	-12.3
Knox	20.1	63,246	18.8	-21.2	-30.7	-11.1
Loudon	47.3	21,306	13.5	-4.2	-5.8	-1.9
Marion	15.9	42,471	12.6	0.7	0.0	-1.1
McMinn	44.5	41,172	14.9	7.5	-1.0	-7.9
Meigs	42.3	22,834	16.4	-0.6	-6.0	-5.1
Perry	18.0	25,351	9.4	12.3	-10.1	-19.8
Polk	12.8	21,856	7.7	1.6	13.4	11.2
Putnam	37.3	54,151	21.0	-16.9	-18.0	-0.9

County	Percent of	Acres	Percent	Percent Change from 1992 to 2012		
Rhea	28.6	23,853	11.1	18.8	9.9	-7.9
Stewart	20.6	64,106	20.3	2.3	12.7	10.2
Warren	59.0	107,163	38.5	-14.5	-1.2	15.9
Wayne	28.4	62,231	13.2	7.6	6.7	-1.0
White	50.5	41,140	9.9	-11.1	-1.7	10.1

Source: USDA NRCS 2016b.

Agriculture census data show that during the 20 years between 1992 and 2012, the number of farms in all of the counties in Alabama has increased between approximately 10 and 70 percent (see Table 3-6). During the same time period, the number of acres of land in farms increased in all of the Alabama counties expect for Madison and Morgan, which decreased almost 7 and 2 percent, respectively. While the amount of total land in agricultural use has increased overall, the average size of farms has decreased in every county except Marshall. The largest decrease in farm size was in Colbert County, which went down almost 22 percent.

Over the past 20 years, the number of farms in most of the counties in Kentucky and Tennessee increased. Throughout these counties, there was also an overall increase in the total land in agricultural use. However, just as in Alabama, the average size of farms decreased in most counties within these two states. The county with the largest increase in farm size was Warren County, Tennessee, which went from an average size of 126 acres to 146 acres, a 16 percent increase.

3.3.2 Environmental Consequences

Effects to prime farmlands can occur when actual or designated land uses are changed to other uses or designations, such as industrial or recreational development, which preclude the property being used for agricultural purposes. Generally, prime farmland on properties located in Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) are not subject to adverse impacts because those properties would be retained in a relatively “natural” state and not be converted to other land uses, preserving any prime farmland. However, prime farmland on parcels allocated to Zones 2, 5, 6, or 7 (Project Operations, Industrial, Developed Recreation or Shoreline Access, respectively) is subject to potential conversion because land in these zones could be devoted to nonagricultural uses, such as industrial development, developed recreation, and water access.

Under any of the alternatives, proposed actions involving the transfer of land for development that contains any acreage of soil with prime farmland could require completion of a Farmland Conversion Impact Rating (Form AD 1006) and coordination with the Natural Resource Conservation Service. This impact rating is based on soil characteristics as well as site assessment criteria, such as agriculture and urban infrastructure, support services, farm size, compatibility factors, on-farm investments, and potential farm production loss to the local community and county. Site assessment scores tend to be higher for the more rural locations. Sites receiving scores greater than 160 points (out of a possible 260) are given greater consideration of protection so that agricultural use can be preserved.

Prime farmland allocated to each management zone under both alternatives is shown in Table 3-7. The potential for direct and indirect impacts to prime farmland and farmland of statewide importance under each of the alternatives is discussed below.

Table 3-7. Prime Farmland and Land of Statewide Importance Allocated to Each Land Management Zone Under Alternatives A and B

Zone	Alternative A		Alternative B	
	Prime Farmland[1] (acres)	Land of Statewide Importance (acres)	Prime Farmland (acres)	Land of Statewide Importance (acres)
Zone 2 (Project Operations)	2,439.5	554.4	3,184.4	603.3
Zone 3 (Sensitive Resource Management)	5,891.7	1,561.9	3,952.7	868.6
Zone 4 (Natural Resource Conservation)	23,212.0	7,074.9	23,635.7	7,436.5
Zone 5 (Industrial)	379.3	126.9	539.2	381.4
Zone 6 (Developed Recreation)	2,104.7	310.1	2,529.6	329.5
Zone 7 (Shoreline Access)	1,781.4	60.9	1,991.7	69.7
Total	**35,808.6**	**9,689.1**	**35,833.3**	**9,689.0**

[1] Includes 25 acres on parcels or portions of parcels that were not previously planned

The total area of prime farmland associated with the eight RLMPs is small (about 1.0 percent) relative to the almost 3 million acres of prime farmland occurring in the counties around the reservoirs. The majority of the parcels around the reservoirs, including those containing prime farmland, are already committed to land uses other than agriculture. Regionally, the number of farms and the acres of land in farms are increasing in most counties, although the average size of farms is generally in decline (see Table 3-6).

3.3.2.1 Alternative A – No Action Alternative

Under Alternative A, approximately 6,705 acres of prime farmland and 1,052 acres of farmland of statewide importance occur on parcels allocated to Zones 2, 5, 6, and 7 (Project Operations, Industrial, Developed Recreation, and Shoreline Access, respectively), where disturbance of soils is most likely. Approximately 7 percent of prime farmland around the eight reservoirs occurs on land allocated to Zone 2 (Project Operations) which are associated with TVA operations such as dam reservations and public works projects. Current soil mapping of prime farmland soils does not account for existing developed uses that may have previously disturbed and potentially converted prime farmland. Therefore, in many instances, soil-disturbing impacts to parcels committed to developed uses, including Zone 2 (Project Operations), have already occurred and allocation to these zones would not represent an additional future impact to prime farmland. Approximately 81 percent of prime farmland occur on parcels allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation); impacts to prime farmland are unlikely in these areas.

Under Alternative A, the greatest potential to adversely affect prime farmland and farmland of statewide importance would be on parcels allocated to Zones 2, 5, 6, and 7 (Project

Operations, Industrial, Developed Recreation and Shoreline Access, respectively). As future requests for land uses on these parcels are submitted to TVA, project-specific environmental reviews are expected to identify and minimize adverse impacts to prime farmland and farmland of statewide importance. However, because the proportion of prime farmland and farmland of statewide importance is small, changes this impact would be minor.

3.3.2.2 Alternative B – Action Alternative

Under Alternative B, approximately 8,245 acres of prime farmland and 1,384 acres of farmland of statewide importance occur on parcels allocated to Zones 2, 5, 6, and 7 (Project Operations, Industrial, Developed Recreation and Shoreline Access, respectively), where disturbance of soils is most likely. Approximately 27,439 acres of prime farmland and 8,306 acres of farmland of statewide importance would occur on parcels allocated to Zones 3 and 4. Compared to the No Action Alternative, an additional 1,522 acres of prime farmland and 332 acres of farmland of statewide importance would be allocated to Zones 2, 5, 6, and 7 (Project Operations, Industrial, Developed Recreation and Shoreline Access, respectively), which would make these areas subject to potential future development uses that are incompatible with agriculture. Overall, this reallocation accounts for approximately 4.2 percent of the total land area within the eight RLMPs. The greatest potential impact to prime farmland and farmland of statewide importance is attributed to the reallocation of 2,632 acres of land that is currently zoned for Zone 3 (Sensitive Resource Management). However, under this alternative 424 acres of prime farmland and 362 acres of farmland of statewide importance would be allocated to Zone 4 (Natural Resource Conservation). Additionally, as described in Section 3.2, the proposed changes in land use allocations generally correspond to a “re-alignment” to reflect current land uses and conditions on each parcel.

As described under Alternative A, future requests for land uses would be subject to project-specific environmental review. Adverse impacts to prime farmland are expected due to the increase in acreages within land use zones where disturbance of soils is most likely. However, for the reasons stated above, the impact to prime farmland related to changes in land use under Alternative B would be greater than Alternative A, however still minor.

3.4 Recreation

3.4.1 Affected Environment

TVA-managed lands in the eight RLMPs include approximately 138,321 acres, some of which provide a high-quality and diverse array of developed and dispersed recreation opportunities. Developed recreation includes campgrounds, lodges, marinas, boat ramps, parks, swimming pools and beaches, visitor buildings and other day use facilities and golf courses. Dispersed recreation consists of passive informal activities such as hunting, hiking, nature observation, primitive camping, and bank fishing.

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 2005b). This strategy laid out guiding principles for how to best design and develop recreation opportunities.

The inventory of recreation areas in the eight RLMPs includes public and private recreation areas. Public facilities are owned and/or operated by TVA or other government entities, whereas private facilities are commercial areas operated for profit and occur on private

land, on TVA land with land right agreements, or on combinations of private and public lands under agreement.

Recreation facilities and amenities on TVA shoreline properties adjacent to the eight reservoirs include: 74 campgrounds, 79 marinas, 234 developed boat launching ramps, and many day use facilities such as picnic areas, swimming beaches, ball fields, fishing piers, and golf courses. Detailed descriptions of recreation areas are provided in individual RLMPs (Volumes II through IX).

Approximately 240 parcels in the eight RLMPs contain developed recreation facilities (Table 3-8). These facilities primarily occur on parcels allocated as Zone 6 (Developed Recreation) or Zone 2 (Project Operations).

Table 3-8. Developed and Dispersed Recreation in the Eight RLMPs

Reservoir	Number of Parcels with Developed Recreation Sites	Number of Parcels with Dispersed Recreation Use
Chickamauga	64	124
Fort Loudoun	29	23
Great Falls	2	2
Kentucky	100	191
Nickajack	11	15
Normandy	5	17
Wheeler	26	75
Wilson	4	4
Total	**240**	**451**

TVA-managed lands around the eight reservoirs also offer opportunity for dispersed recreation. Dispersed recreation typically occurs on parcels allocated as Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), or Zone 4 (Natural Resource Conservation, respectively), and on undeveloped land allocated to Zone 6 (Developed Recreation) or areas of Zone 7 (Shoreline Access) where not developed or posted. Based on information included in individual parcel descriptions, 451 parcels in the eight RLMPs currently receive significant levels of dispersed recreation use (see Table 3-8).

3.4.2 Environmental Consequences

Developed recreation occurs on committed parcels allocated to Zone 6 (Developed Recreation). These parcels typically have an existing land use agreement for a park, campground, marina, or other recreation purposes. Additional developed recreation is allowed on lands allocated to Zone 2 (Project Operations), such as where the dam reservation is located. Opportunities for dispersed recreation occur primarily on parcels allocated to Zone 4 (Natural Resource Conservation) and Zone 3 (Sensitive Resource Management). However, dispersed recreation also occurs on some parcels allocated to Zones 2 (Project Operations), Zone 6 (Developed Recreation), and 7 (Shoreline Access).

No existing developed recreation facilities would be negatively affected by either alternative. There may be minimal changes in opportunities for dispersed recreation, which can occur on all land management zones between the alternatives.

3.4.2.1 Alternative A

As summarized in Table 2-1, 5.8 percent (8,064.9 acres) of TVA land on the eight reservoirs are allocated to Zone 6 (Developed Recreation). Unless otherwise posted, approximately, 81.4 percent (112, 570.6 acres) of land would be allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) which could support dispersed recreation. Relative to Alternative B, a higher percentage of land would be available for dispersed recreation.

Alternative A includes a lower percent of land designated for developed recreation than Alternative B. Implementation of this alternative would continue to benefit developed recreation by supporting a diversity of existing sites as well as identifying areas for future opportunities for development.

Alternative A would not affect current developed recreation facilities but would have a minor negative impact to potential future developed recreation because of a lower amount of land allocated to Zones 2 and 6 (Project Operations and Developed Recreation) as compared to Alternative B. For dispersed recreation, Alternative A is anticipated to have a minor beneficial dispersed recreation impact in comparison to Alternative B. Overall, impacts to recreation would be minor due to the relatively small amounts of land affected in comparison to the total TVA lands covered by the eight RMLPs.

3.4.2.2 Alternative B

Under Alternative B, the reallocation of parcels would enhance recreational opportunities as certain parcels would be reallocated based on previous underestimation of amount of land utilized for recreation, verification of recreation areas covered by existing agreements and suitability for recreational activities. As a result, this alternative would have a minor net increase in percentage and acreage of lands allocated to Zone 6 (Developed Recreation) (increase of 1,643.9 acres or 1.4 percent) and to Zone 2 (Project Operations) (increase of 1,621.9 acres or 0.9 percent). Under Alternative B, approximately 7.0 percent or 9,708.8 acres of eight RLMPs would be allocated to Zone 6 (Developed Recreation). The amount of land allocated under Zone 2 (Project Operations) is approximately 7.8 percent or 10,826.5 acres.

Approximately 5,590 acres (4 percent of the eight RLMPs) would be reallocated from Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) and would reduce opportunities for dispersed recreation. Not all lands allocated to Zone 6 (Developed Recreation) would be developed and, therefore, lands allocated to Zone 6 would be available for dispersed recreation.

The proposed changes in land use allocations are relatively minor and correspond to a "re-alignment" to reflect current land uses and conditions on each parcel. Overall, the management of recreation opportunities would benefit from the development and implementation of Alternative B as each RLMP would follow a consistent, systematic process for identifying developed and dispersed recreational opportunities on individual parcels. Due to the small percentage of lands affected, Alternative B would have a minor benefit to developed recreation (increase of 0.8 percent of lands allocated to Zone 6 – Developed Recreation) and a minor negative impact on dispersed recreation opportunities due to a small reduction in lands allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation).

3.5 Terrestrial Ecology

3.5.1 Affected Environment

3.5.1.1 Plant Communities

Vegetation classes commonly found around the reservoirs included in the eight RLMPs include deciduous forest, evergreen forest, mixed evergreen-deciduous forest, shrubland, and herbaceous vegetation.

Deciduous forests and woodlands are the most common and the most diverse vegetation classes found on the parcels surrounding the reservoirs. Deciduous forests and woodlands cover approximately 38 percent of the landscape and are composed of diverse communities ranging from mesic (moist) cove hardwood forest to xeric (dry) upland oak forests. Mixed evergreen-deciduous forests occupy approximately 20 percent of the land cover and primarily consist of moist mixed-hardwood forests and dry pine and pine-oak forests. Less than 5 percent of the land cover is evergreen forests and evergreen woodlands. In addition, approximately 4 percent of the land cover is considered woody wetlands primarily located within floodplain hardwood forests. Herbaceous vegetation in the form of grasslands, hay fields, and pasture make up approximately 19 percent of the land cover. Transition areas consisting of shrub/scrub habitat makes up three percent of the land cover. Land use/land cover information was obtained from the national land cover data (Homer et al. 2015).

Invasive nonnative species of plants occur throughout the area`s surrounding the eight RLMP reservoirs. EO 13112 defines an invasive species as one 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. Invasive nonnative plants affect native terrestrial plant communities by competing for space and resources, which ultimately could degrade botanical diversity and wildlife habitat. Invasive species are typically robust plants that are not subject to natural controls of native insects and diseases. Consequently, invasive species may spread across the landscape beyond the control of reclamation measures applied by landowners and managers on individual parcels.

The Federal Noxious Weed List of 2010 (USDA 2016) lists invasive, nonnative plant species that are regulated by federal law. Many of the TVA parcels included in the eight RLMPs contain a substantial amount of invasive nonnative species. Based on a data search conducted on the USDA NRCS PLANTS Database (USDA NRCS 2016a), hydrilla (*Hydrilla verticillata*) is the only plant contained on the Federal Noxious Weed List of 2010 as reported from the counties encompassing the eight reservoirs.

In addition, Southeastern Exotic Plant Pest Council provides a list of nonnative invasive species that could pose potential threats to native ecosystems and human health for each southeastern state. In reviewing the Tennessee, Kentucky, and Alabama exotic plant pest lists, there were a total of 46 species occurring that pose a severe threat to native ecosystems observed in the region. Table 3-9 contains a listing of invasive plants known to occur within the states containing the eight RLMPs that are considered to pose the highest threat to native eocosystems.

Table 3-9. Invasive Non-Native Species that Pose a Severe Threat Known to Occur in States Containing the Eight RLMPs

State Present[1]	Common Name	Scientific Name
AL	Alligatorweed	*Alternanthera philoxeroides*
AL	Aquarium water-moss	*Salvinia molesta*
TN, KY	Asian bittersweet	*Celastrus orbiculatus*
TN, KY	Autumn olive	*Elaeagnus umbellata var. parviflora*
KY	Bush honeysuckle (amur)	*Lonicera maackii*
KY	Callery pear (Bradford)	*Pyrus calleryana*
TN	Cheat grass	*Bromus tectorum*
KY	Chickweed	*Stellaria media*
TN, KY, AL	Chinese privet	*Ligustrum sinense*
KY	Chinese silver grass	*Miscanthus sinensis*
AL	Chinese wisteria	*Wisteria sinensis*
TN, KY	Chinese yam	*Dioscorea oppositifolia*
AL	Cogongrass	*Imperata cylindrica*
TN	Common privet	*Ligustrum vulgare*
KY	Common reed	*Phragmites australis*
TN	Common St. John's-wort	*Hypericum perforatum*
AL	Common water hyacinth	*Eichhornia crassipes*
KY	Crown vetch	*Coronilla varia*
AL	English ivy	*Hedera helix*
AL	Eurasian water milfoil	*Myriophyllum spicatum*
KY	Barlic mustard	*Alliaria petiolata*
TN, AL	Hydrilla	*Hydrilla verticillata*
AL	Japanese climbing fern	*Lygodium japonicum*
TN, KY, AL	Japanese honeysuckle	*Lonicera japonica*
TN, KY	Japanese knotweed	*Polygonum cuspidatum*
TN, KY, AL	Japanese stiltgrass	*Microstegium vimineum*
TN, KY	Johnson grass	*Sorghum halepense*
KY	Kentucky fescue	*Festuca arundinacea*
TN	Korean clover	*Kummerowia stipulacea*
TN, KY, AL	Kudzu	*Pueraria montana var. lobata*
TN, AL	Mimosa	*Albizia julibrissin*
TN, KY, AL	Multiflora rose	*Rosa multiflora*
KY	Musk thistle	*Carduus nutans*
AL	Parrot feather watermilfoil	*Myriophyllum aquaticum*
KY	Poison hemlock	*Conium maculatum*
TN, KY	Princess tree	*Paulownia tomentosa*
TN, KY	Purple loosestrife	*Lythrum salicaria*
TN, KY, AL	Sericia lespedeza	*Lespedeza cuneata*
TN	Shrubby bushclover	*Lespedeza bicolor*
AL	Tallowtree	*Triadica sebifera*
TN, KY	Tree of heaven	*Ailanthus altissima*
AL	Water lettuce	*Pistia stratiotes*
KY	Winged euonymus (burning	*Euonymus alatus*

State Present[1]	Common Name	Scientific Name
	bush)	
KY	Winter creeper	*Euonymus fortunei*
KY	White sweet clover	*Melilotus alba*
KY	Yellow sweet clover	*Melilotus officinalis*

[1] AL=Alabama, KY=Kentucky, TN=Tennessee; State is listed if this species was contained on the Severe Threat list in Tennessee or Kentucky, or on the Category 1 list for Alabama, The Severe Threat and Category 1 lists contain plants with the highest potential for adverse impacts to native communities.

Sources: Tennessee Exotic Plant Pest Council 2009; Kentucky Exotic Pest Plant Council 2015; Alabama Invasive Plant Pest Council 2012

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 Severe Threat (Tennessee and Kentucky) and Category 1 (Alabama) 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 the eight reservoirs. These insects and diseases can have devastating impacts on native plant communities and human crops/fruits. The insects include: Japanese beetle, (*Popillia japonica*), brown marmorated stink bug (*Halyomorpha halys*), emerald ash borer (*Agrilus planipennis*), hemlock woolly adelgid (A*delges tsugae*), kudzu bug (*Megacopta cribraria*), southern pine beetle (*Dendroctonus frontalis*), spotted wing drosophila (*Drosophila suzukii*), spruce beetle (*Dendroctonus rufipennis*), and sugarcane aphid (*Melanaphis sacchar*i) (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 the eight reservoirs: butternut canker (*Sirococcus clavigignenti-juglandacearum*), dogwood anthracnose (*Discula destructive*), fusiform rust (*Cronartium quercuum* f.sp. *fusiforme*), Heterobasidion root rots (*Heterobasidion* spp.), Neonectria canker (*Neonectria faginata*), oak wilt (*Ceratocystis fagacearum*), thousand cankers disease (*Geosmithia morbida*), and white pine blister rust (*Cronartium ribicola*). Many of these diseases target certain plant species or groups of species, and can have serious impacts to local populations of those plants and trees.

3.5.1.2 Wildlife Communities

The eight reservoirs are located in five ecoregions, Ridge and Valley, Interior Plateau, Southwestern Appalachians, Southeastern Plains, and Mississippi Loess Plains. The variety of land forms, soils, climate, and geology across these ecoregions support an extremely diverse assemblage of animals, including migratory birds of conservation concern. The array of microclimates and diversity of habitats are associated with high levels of species richness and species with limited geographic ranges.

The Ridge and Valley ecoregion contains long stretches of ridges with adjacent valleys that run in a southwestern-to-northeastern direction (USGS 2016). In this ecoregion, deciduous and mixed evergreen- deciduous forests are interspersed with agriculture and urban

dominated areas. Wildlife ranges from forest-dependent species to those that tolerate highly modified habitats.

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. This region contains relatively flat and fertile lowlands, including the Bluegrass area of central Kentucky and the Nashville Basin in central Tennessee. The Pennyroyal Plateau in south-central Kentucky and northern Tennessee is a dense agricultural area that also contains a distinctive “flatwood” ecosystem. The area is characterized by oak forests and wet conditions that are caused by an underlying hard, dense fragipan soil. Rapid subsurface drainage occurs in sinkhole areas such as south-central Kentucky where extensive cave systems wind through the karst limestone landscape (USGS 2016).

The Southwestern Appalachians ecoregion consists of open low mountains, with some areas containing steep slopes. Approximately three-fourths of the ecoregion is covered by forest, primarily mixed oak communities and shortleaf pines. Agricultural lands are found on lower slopes and valley floors (USGS 2016).

The Southeastern Plains ecoregion is the largest ecoregion in the eastern U.S. The irregular, relatively flat plains of the ecoregion are covered by a mosaic of cropland, pasture, forest, and wetland. The ecoregion is characterized by long growing seasons and abundant rainfall, but the relatively poor sandy soils found in much of the ecoregion limit agricultural competitiveness with many other regions. Natural forests of pine, hickory, and oak once covered most of the ecoregion, but much of the natural forest cover has been replaced by heavily managed timberlands (USGS 2016).

The Mississippi Valley Loess Plains extends from western Kentucky south to Louisiana. The topography consists primarily of irregular plains. This region contains a highly erodible, thick layer of loess, a unique geologic deposit consisting almost entirely of wind-transported, silt-sized grains of quartz and other common minerals. Forest, agriculture, and developed land account for more than 90 percent of the land cover in the ecoregion (USGS 2016).

Several forest types are found on TVA public lands within the eight RLMPs. Deciduous forests provide a variety of habitats for wildlife. Oak-hickory forest is the most abundant forest type in the eastern U.S. and is prevalent on much of the land within the eight RLMPs. Numerous bird species nest in deciduous forests including wild turkey, whip-poor-will, ruby-throated hummingbird, red-eyed vireo, wood thrush, gray catbird, black-throated green warbler, black-and-white warbler, ovenbird, hooded warbler, and scarlet tanager. Several additional migratory bird species of concern utilize these habitats in part or all of the region including black-billed cuckoo, cerulean warbler, chuck-will’s widow, Kentucky warbler, peregrine falcon, red-headed woodpecker, wood thrush and worm-eating warbler (USFWS 2016a). Common mammal species found in deciduous forests include black bear, white-tailed deer, eastern red bat, eastern chipmunk, eastern gray squirrel, southern flying squirrel, white-footed mouse, southern red-backed and woodland voles, short-tailed shrew, gray fox, and bobcat.

Evergreen and evergreen-deciduous forests provide nesting habitat for woodland birds including pine and yellow-throated warblers, great crested flycatcher, and chuck-will’s-widow. Birds that winter in this forest type include white-breasted nuthatch, and pine siskin.

Several additional migratory bird species of concern utilize these habitats including black-billed cuckoo, black-capped chickadee, brown-headed nuthatch, Canada warbler, chuck-will's widow, Kentucky warbler, fox sparrow, northern saw-whet owl, olive-sided flycatcher, prairie warbler, and red crossbill (USFWS 2016a). Other animals that inhabit evergreen and evergreen-deciduous forests but are not restricted to them include white-tailed deer, wild turkey, black bear, eastern mole, eastern kingsnake, smooth earth snake, eastern fence lizard, and six-lined racerunner. Additionally, streams, wetlands, and other seasonally wet areas in this forest type provide habitat for a variety of salamanders, frogs, and toads.

Nonforested habitat within the eight RLMPs includes agricultural fields including hay fields and pastures, grasslands, barrens and transmission line rights-of-ways where tree clearing is required. These 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 American kestrel, Bewick's wren, dickcissel, Henslow's sparrow, Le Conte's sparrow, sedge wren, short-eared owl, and willow flycatcher (USFWS 2016a). Amphibians and reptiles that use these habitats include spring peeper, chorus frog, and common garter snake.

Bird and mammal diversity greatly increases at edge habitats, especially 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, blue-winged warbler, prairie warbler, 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 Bachman's sparrow, Bell's vireo, Bewick's wren, blue-winged warbler, dickcissel, loggerhead shrike, Mississippi kite, peregrine falcon, red-headed woodpecker, and willow flycatcher (USFWS 2016a). Mammals expected at edges include eastern cottontail, woodchuck, eastern harvest mouse, red fox, coyote, long-tailed weasel, and striped skunk.

Riparian corridors along streams provide nesting habitat for Acadian flycatcher and northern parula. Many additional migratory bird species of concern utilize these habitats in this area including bald eagle, Bell's vireo, Bewick's wren, least bittern, Louisiana waterthrush, Mississippi kite, prothonotary warbler, and willow flycatcher (USFWS 2016a). Common amphibians found in the riparian zones include green frog, American bullfrog, northern cricket frogs, eastern narrowmouth toad, and eastern red-spotted newt. Reptiles include northern water snake, common snapping turtle, and painted turtles. Common mammals include mink, muskrat, raccoon, and American beaver.

Seepages, streams, and temporary ponds in deciduous forests provide habitat for numerous amphibians including American and Fowler's toads; green, northern cricket, and other frogs; spotted and other salamanders, including several species with limited ranges. 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 reservoirs provide abundant wetlands, including wooded swamps and open water habitats, and associated riparian (shoreline) zones that are used by a variety of wildlife. Common species include great blue heron, green heron, belted kingfisher, common yellowthroat, and northern parula. Many additional migratory bird species of concern utilize these habitats in this area including American bittern, bald eagle, least bittern, Louisiana

waterthrush, Mississippi kite, prothonotary warbler, rusty blackbird, sedge wren, short-eared owl, and willow flycatcher (USFWS 2016a). Over 70 heron colonies occur within the area of the eight RLMPs. Shallow embayments, especially those with emergent vegetation, provide habitat for waterfowl. Common waterfowl include wood ducks, Canada geese, and mallards. Other waterfowl present include American black duck, gadwall, green-winged teal, ring-necked duck, lesser scaup, common goldeneye, bufflehead, hooded merganser, and common merganser.

Shorebird use of the reservoirs is limited to shallow embayments or exposed mud flats that would provide suitable foraging areas. Species such as least sandpiper, which forage along the margins of reservoirs, and killdeer, which are not restricted to foraging on mudflats, are commonly observed on the TVA parcels. Other species observed on area mudflats include pectoral and spotted sandpipers, and uncommon species including ruddy turnstone, dowitchers, wimbrel, black-necked stilt, American avocet, and sanderling. Caves also provide unique habitat for certain insect and wildlife species. A total of 937 caves occur within 3 miles of the eight reservoirs and 35 caves occur on TVA parcels. The majority of the parcels containing caves are allocated to Zone 3 (Sensitive Resource Management) as threatened or endangered species have been recorded in several of these caves. Because caves are extremely fragile and biologically significant, TVA typically maintains an undisturbed 200-foot-wide buffer zone around caves.

In addition to invasive or non-native plant species, and insects and diseases that pose threats to plants and crops discussed in Section 3.5.1.1, there are several exotic, non-native, and/or pest terrestrial wildlife and insect species that are known to occur within the counties encompassing the eight reservoirs. These include Asian tiger mosquito (*Aedes albopictus*), feral cat (*Felis catus*), European starling (*Sturnus vulgaris*), and mute swan (*Cygnus olor*) (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 species, such as mute swans, feral cats, and Asian tiger mosquitoes can pose threats to human health and safety. Asian tiger mosquitoes are known to transmit various diseases to humans and mute swans can be very aggressive, especially near nests, and have been known to attack humans and pets that venture too closely.

3.5.2 Environmental Consequences

This section addresses anticipated effects to terrestrial plant and wildlife communities. Potential effects to threatened and endangered plants and animals are addressed in Section 3.7.

Analysis of the effects to terrestrial plant and wildlife communities is based upon the potential for proposed activities to result in clearing vegetation or ground disturbance (e.g., grading), which would be the primary sources of direct impacts to plant and wildlife communities. Indirect effects to plant and wildlife communities include fragmentation and isolation of suitable habitat and spread of invasive, non-native species that compete with native species. Greater magnitude of site development correlates to a greater potential for adverse impacts to terrestrial plants and wildlife. As such, land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation, respectively) are the most protective of terrestrial habitat. Potential impacts would likely be greater from parcels allocated to Zone 2 (Project Operations) or Zone 6 (Developed Recreation) where more development and intensive land use could occur. Lands allocated to Zone 5 (Industrial) have the greatest potential to involve ground disturbance that may affect terrestrial communities. Development on land allocated to Zone 7 (Shoreline Access) would

require a limited amount of ground disturbance. Furthermore, many wildlife species may become accustomed to facilities developed on these lands, such that long-term effects to common species of wildlife are minor on lands allocated to these zones.

Table 3-10 presents a comparison of land cover types by land management zone under both of the alternatives is presented on Table 3-10. Based upon the proposed changes in allocations relative to existing land cover type, the potential for impacts to common species of plants and wildlife on lands allocated to Zones 2, 6, and 7 (Project Operations, Developed Recreation and Shoreline Access, respectively) would be primarily minor and potential impacts related to lands allocated to Zone 5 (Industrial) would be moderate due to the potential intensity of use on these lands. For Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), where acreages of protected forest and other potential plant and wildlife habitats are reduced through the allocation of these areas to other uses, the overall impacts were considered minor to moderate depending on the overall amount of habitat potentially lost.

Under any of the alternatives, site-specific environmental reviews would be conducted when development projects are proposed in the future. Such reviews would evaluate the potential for project-specific effects to plant and wildlife communities. Additionally, to minimize the potential for introduction of invasive plant species on TVA-owned properties, any proposed development project would implement the following requirements:

- Landscaping activities would not include the use of invasive plants listed on the Tennessee, Kentucky, or Alabama lists of invasive or exotic pest plants (Tennessee Exotic Plant Pest Council 2009; Kentucky Exotic Pest Plant Council 2015; and Alabama Invasive Plant Pest Council 2012).
- Revegetation and erosion-control work would utilize seed mixes comprised of native species or noninvasive, nonnative species.

Table 3-10. Comparison of Land Cover Types by Land Management Zone by Alternative

Land Cover Type	Allocations by Zone and Alternative (Acres)											
	Zone 2 Project Operations		Zone 3 Sensitive Resource Management		Zone 4 Natural Resource Conservation		Zone 5 Industrial		Zone 6 Developed Recreation		Zone 7 Shoreline Access	
	Alternative		Alternative		Alternative		Alternative		Alternative		Alternative	
	A	B	A	B	A	B	A	B	A	B	A	B
Barren Land	68.7	85.0	45.6	22.0	315.4	302.4	12.7	18.2	93.7	112.3	44.1	40.3
Cultivated Crops	131.1	276.9	935.0	558.3	6,785.2	6,961.3	19.7	50.3	98.9	125.5	124.6	122.2
Deciduous Forest	2,570.2	2,909.7	5,571.0	4,958.7	38,040.8	36,387.7	791.2	1,626.2	3,594.2	4,387.9	2,859.6	3,182.3
Developed, High Intensity	71.2	78.8	0.1	0.1	10.6	0.9	30.4	31.6	31.3	34.1	3.8	2.5
Developed, Low Intensity	552.0	712.6	19.6	20.0	325.1	200.8	92.9	66.0	307.5	313.3	38.6	34.4
Developed, Medium Intensity	273.9	345.2	8.6	3.1	102.0	61.2	79.2	58.6	142.8	147.8	10.3	3.5
Developed, Open Space	722.3	1,001.9	194.5	166.9	1,419.3	1,135.1	130.8	120.6	713.7	767.6	261.0	257.2
Emergent Herbaceous Wetlands	50.4	82.4	170.2	133.4	2,384.3	2,367.6	40.3	59.7	46.8	58.4	65.5	56.1
Evergreen Forest Total	554.5	651.0	2,055.4	972.3	6,257.1	6,653.2	330.4	600.2	1,062.2	1,228.9	508.4	666.5
Hay/Pasture	776.9	842.9	1,047.6	512.9	2,286.1	2729.4	22.1	26.1	325.2	341.5	273.9	279.2
Herbaceous	116.4	154.6	311.7	153.2	877.9	993.0	14.0	18.1	114.9	121.6	91.7	87.2
Mixed Forest	541.1	609.0	1,133.5	765.4	2,018.8	2,029.4	55.7	175.9	262.9	451.1	146.9	128.3
Open Water	441.0	538.8	906.2	856.6	6,939.0	6,743.9	157.7	194.4	489.5	636.4	562.9	541.4
Shrub/Scrub	299.1	343.0	450.9	275.2	1,490.3	1,604.7	36.5	38.9	131.4	145.7	70.7	71.3
Woody Wetlands	2,035.7	2,194.8	2,713.7	3,891.7	27,755.4	25,520.5	224.1	256.2	639.2	825.7	1,312.3	1,991.8
Total	**9,204.6**	**10,826.6**	**15,563.5**	**13,289.9**	**97,007.4**	**93,690.9**	**2,037.6**	**3,341.0**	**8,054.0**	**9,697.9**	**6,374.2**	**7,464.3**

Source: Homer et al. 2015

3.5.3 Plant Communities

As the human population and associated commercial and residential development continues to increase, a related trend of increasing removal and fragmentation of natural vegetation is expected. Loss of native vegetation communities may lead to diminished biodiversity and alteration of habitat suitability. Common deciduous and evergreen forests and woodlands are extensive in the region surrounding the eight reservoirs. Under both alternatives, lands for natural resources conservation are identified and measures to minimize impacts would be implemented when projects are planned.

3.5.3.1 Alternative A – No Action Alternative

Under Alternative A, 96,991 acres of TVA land would be allocated to Zone 4 (Natural Resource Conservation). An additional 15,579 acres would be allocated to Zone 3 (Sensitive Resource Management). Therefore, approximately 81 percent of TVA land around the eight reservoirs would be allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), which are the most protective of terrestrial habitat, impacts to plant communities would be minor.

Approximately 23,643 acres would be allocated to Zone 2 (Project Operations), Zone 6 (Developed Recreation), or Zone 7 (Shoreline Access) where there is an increased potential to effect to plant communities. Given the substantial amount of common vegetation types around the reservoirs, and the relatively low amount of land allocated to these zones (approximately 17 percent), selection of Alternative A would not have a major direct or indirect effect to common terrestrial plant communities. Project-specific surveys would be conducted prior to clearing vegetation to evaluate the presence of, and potential impacts to uncommon or rare plant communities. Therefore, activities on TVA land allocated to these land management zones are not expected to affect rare terrestrial plant communities.

Approximately 2,037 acres in the eight RLMPs would be allocated to Zone 5 (Industrial) land under Alternative A. This land use has the greatest potential for impacts to plant communities due to clearing required for construction and/or operation of industrial facilities. However, as land allocated to industrial use only comprises 1.5 percent of the TVA land around the eight reservoirs, impacts to plant communities would be minor.

3.5.3.2 Alternative B – Proposed Land Use Plan Alternative

Under Alternative B, 93,690 acres in the eight RLMPs would be allocated to Zone 4 (Natural Resource Conservation). An additional 13,290 acres would be allocated to Zone 3 (Sensitive Resource Management). This would result in approximately 5,590 fewer acres being allocated to the two land use zones which are the most protective of terrestrial habitat. Therefore, Alternative B would have a slightly higher potential for impacts to plant communities when compared to Alternative A. However, as described in Section 3.2, the proposed changes in land use allocations are relatively minor and generally correspond to a “re-alignment” to reflect current land uses and conditions on each parcel. Consequently, actual direct or indirect adverse impacts to plant communities are considered to be minor.

Approximately 28,000 acres in the eight RLMPs would be allocated to Zone 2 (Project Operations), Zone 6 (Developed Recreation), or Zone 7 (Shoreline Access), where there is an increased potential to effect plant communities. The number of acres allocated to these uses is approximately 3 percent higher than under Alternative A, resulting in Alternative B having a slightly higher potential for impacts to plant communities. Given the substantial amount of common vegetation types around the reservoirs, selection of Alternative B would

not result in major direct or indirect effects to common terrestrial plant communities. Project-specific surveys would be conducted prior to clearing vegetation to evaluate the presence of, and potential impacts to uncommon or rare plant communities. Therefore, activities around the eight reservoirs are not expected to affect rare terrestrial plant communities.

Approximately 3,341 acres would be allocated to Zone 5 (Industrial) under Alternative B, which is an increase of 960 acres, or less than 1 percent more, than under Alternative A. Although there is a greater potential for impacts to plant communities in land allocated to this zone, due to clearing required for construction and/or operation of industrial facilities, given the small amount of land allocated to Zone 5 (Industrial) on the eight RLMPs, this impact is considered minor.

Because the amount of land allocated to zones where development with a greater potential for ground disturbance would be allowed is slightly higher than Alternative A, the potential to promote the spread of invasive exotic plants is also higher than under Alternative A. However, requirements to use noninvasive species for planting or seeding would minimize the potential for spreading invasive species of plants.

3.5.4 Wildlife Communities

Deciduous and evergreen forests and woodlands are extensive in the region surrounding the eight reservoirs (see Table 3-10). Under both alternatives, lands for natural resources conservation are identified and measures to minimize impacts are implemented when projects are planned. Given the proximity and abundance of forested public lands adjacent to the reservoirs, the overall small percentage of land allocated to zones where ground disturbing activated could occur, impacts to wildlife are expected to be minor under both alternatives.

3.5.4.1 Alternative A – No Action Alternative

Proposed land allocations under this alternative would have a minor impact to wildlife communities for the reasons described above for plant communities. Project-specific surveys would be conducted prior to clearing potential wildlife habitats to evaluate the presence of, and potential impacts to uncommon or rare species. Therefore, activities around the eight reservoirs are not expected to affect wildlife communities.

3.5.4.2 Alternative B – Proposed Land Use Plan Alternative

Proposed land allocations under Alternative B would have a minor impact to wildlife communities for the reasons described above for plant communities. Approximately 5,590 fewer acres of land would be allocated to the two land use zones with the least likelihood for adverse impacts to wildlife. Therefore, Alternative B would have a slightly higher potential for impacts to wildlife communities when compared to Alternative A. However, much of the changes in allocation generally correspond to a “re-alignment” to reflect current land uses and conditions on each parcel and as over 77 percent of the land would be allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) under this alternative, impacts would be minor.

Project-specific surveys would be conducted prior to clearing of potential habitats to evaluate the presence of, and potential impacts to uncommon or rare species. Therefore, the eight RLMPs are not expected to substantially affect wildlife communities.

3.6 Aquatic Ecology

3.6.1 Affected Environment

Aquatic life in the eight reservoirs are influenced by some of the same physical and chemical factors that affect water quality, such as adjacent land uses and reservoir operations, which are discussed in Section 3.8 (Water Quality). The Tennessee River and all major tributaries, including rivers and streams, have been affected by impoundments and point and nonpoint sources of pollution. As a result, the fish and other fauna adapted to habitat conditions of free-flowing medium and large rivers in and along the Tennessee River have extremely fragmented distributions, with many species known to have been extirpated from the reservoirs (Etnier and Starnes 1993, Parmalee and Bogan 1998).

Impoundments favor growth of aquatic species that are tolerant of lake-like conditions, and are less suitable for groups of aquatic species adapted to river conditions. Deep tributary reservoirs often undergo thermal stratification (layering) during summer, when the colder, less oxygenated water settles on the bottom. Therefore, bottom (benthic) habitat in reservoirs and in dam tailwaters can be very cold and have low dissolved oxygen (DO) content that impairs water quality and lowers aquatic community diversity. For example, none of the eight reservoirs included in the eight RLMPs support trout fisheries in the tailwaters.

Benthic organisms (e.g., aquatic insects, mussels, crayfish) are a vital part of the food chain of aquatic systems as they transform nutrients and organic materials into food for fish and other vertebrate predators. Benthic communities are extremely limited in the deep portions of tributary and some mainstream reservoirs, due to the lack of DO during summer stratification; and in the shallow areas of tributary reservoirs, due to winter drawdowns that leave these areas dry for extended periods. Low DO, excessive current, and cold water temperatures also limit benthic communities in tailwater areas immediately below the dam in reservoirs with a deepwater release.

Freshwater mussel species occur in stable gravel or cobble substrates which are kept silt-free by flowing water. Native mussels are extremely rare in tributary reservoirs due to the lack of DO during summer stratification. In mainstream reservoirs, the most species-rich mussel communities occur in the original river channel where bottom conditions and currents are much the same as they were before the dams were built.

The dynamics of fish communities shifted as a result of reservoir construction. Prior to impoundment, fish communities in the Tennessee River system were dominated by species which favored riverine conditions with associated periodic flood events. For the most part, reservoirs stabilized the habitat, reduced the flow of water in most sections, and trapped organic material, which increased nutrient availability. Fish species — such as largemouth bass, bluegill, and crappie — that prefer the more stable environments became much more numerous. Fish species — such as lake sturgeon, most sucker species, sauger, walleye, paddlefish, and other stream-spawning species (i.e., darters and many minnows) — that depend more on current and shoal areas were significantly reduced in numbers and diversity.

In reservoirs, aquatic habitat in the littoral (i.e., near shore) zone is greatly influenced by adjacent and upland land use and topography. In areas characterized by residential development, habitat includes man-made features such as riprap banks, seawalls, and docks. Undeveloped shoreline typically is wooded; therefore, trees and brush provide

woody cover in those areas. Shoreline topography varies from moderately deep with stretches of bluff along the main channels to typically shallow in embayments and coves. In reaches with a general lack of woody debris as underwater structure (e.g., submerged trees), rock can be an important component of underwater habitat. Rock habitat includes, but is not limited to, bedrock outcrops, a mixture of rubble and cobble, or even gravel deposits along main channel shorelines. Cove substrate is typically dominated by finer particles (e.g., sand, silt, and clay) with lesser amounts of gravel and cobble particles. Structure provides protection from predators, shade to cool the water temperature in the shallow littoral zone, spawning habitat, and places for food organisms to live and grow. Algae and other organisms (including bacteria, zooplankton, and aquatic insects), which are important fish foods, use physical and biological structure as growth substrates.

Commercial fish species that require suitable habitat in shoreline areas include catfish — which spawn in cavities such as those found in hollow logs or created by groupings of large rocks — and buffalo fish — which broadcast their adhesive eggs over the river bottom or on vegetation. Many nonsport fish species also rely heavily on this productive zone of the reservoir. Minnows such as bluntnose and bullhead; shiners such as golden, spotfin, steelcolor, and emerald; brook silversides; and logperch all require relatively unspoiled shoreline habitat. Up until 2015, TVA conducted a Spring Sport Fish Survey that assessed the number and health of fish in each reservoir. Overall, the Chickamauga Reservoir had the most spotted bass and black crappie, while Fort Loudoun had the most white crappie. Other aquatic species in the reservoirs include popular sporting fish including largemouth bass, smallmouth bass, catfish, walleye, and bluegill.

There are several exotic, non-native, and/or pest aquatic species that are known to occur within Tennessee, Alabama, and/or Kentucky. Although there are many exotic or introduced aquatic species within the region, a few species 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*), silver carp (*Hypophthalmichthys molitrix*) (EDDMapS 2016), and zebra mussel (*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).

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 (RVSMP), which focuses on (1) physical and

chemical characteristics of waters; (2) physical and chemical characteristics of sediments; (3) benthic macroinvertebrate community sampling; and (4) fish assemblage sampling. The RVSMP includes evaluation of the resident fish populations in reservoirs using an analysis tool known as the Reservoir Fish Assemblage Index (RFAI) (McDonough and Hickman 1999). Also considered in the rating is the percentage of the sample represented by omnivores and insectivores, overall number or fish collected, and the occurrence of fish with anomalies such as diseases, lesions, parasites, and deformities. The RVSMP also includes evaluation of benthic macroinvertebrate communities based upon seven parameters that indicate species diversity, abundance of selected species that are indicative of good (or poor) water quality, total abundance of selected species, and proportion of samples with no organisms present. Great Falls Reservoir, located outside of the Tennessee River Watershed, is not include in the various TVA monitoring programs.

Biennial RFAI scores recorded between 2010 and 2012 indicate fish assemblage scores are typically fair to good in the reservoirs where monitoring has been conducted (Table 3-11). Benthic scores are poor on Normandy Reservoir, fair to poor on Fort Loudoun, and poor to good on Kentucky, Wilson, and Wheeler reservoirs. Only the Chickamauga and Nickajack reservoirs had scores other than poor and included fair to good. A good rating for bottom life indicates that there is a healthy population of worms, insects, and snails on the reservoir floor. Monitoring locations within reservoirs typically include tailwater, mid-reservoir, and embayment sites, which are strong influences on the fish and other fauna due to variations in habitat conditions. Detailed results of RFAI and benthic macroinvertebrate sampling are provided in the individual RLMPs (Volumes II through IX).

Table 3-11. Reservoir Health Ratings

Reservoir (Year)	Ecological Health Indicator Score	
	Fish Community	Bottom Life
Chickamauga (2011)	Fair-Good	Fair-Good
Fort Loudoun (2011)	Fair-Good	Poor-Fair
Great Falls	N/A	N/A
Kentucky (2011)	Fair-Good	Poor-Good
Nickajack (2012)	Fair-Good	Good
Normandy (2010)	Good	Poor
Wheeler (2011)	Fair-Good	Poor-Good
Wilson (2012)	Fair-Good	Poor-Good

Source: TVA 2016b

3.6.2 Environmental Consequences

The major source of potential adverse impacts to common aquatic species in the reservoirs would be from land uses that would involve clearing of shoreline vegetation, and result erosion and increased runoff. Shoreline riparian vegetation provides several benefits to aquatic life. Shoreline vegetation can provide shade to help control water temperature, especially in cove areas where the water is usually shallow with little flow. Terrestrial vegetation also provides habitat for insects that are fed upon by carnivorous and insectivorous aquatic species. Tree root wads along the shoreline provide refuge from predation. Submerged trees that have fallen into the water also provide structure in the reservoir. Riparian vegetation also serves to stabilize shoreline soil, thereby reducing the

potential for erosion. Sedimentation associated with erosion can clog voids between rocks in the substrate of streams and reservoirs. These voids are important for fish spawning and habitat for aquatic insects. Clean rocky substrates are also the home of sessile freshwater mussels that can be smothered by sedimentation. Potential impacts to aquatic ecology likely would be greater from development activities on parcels allocated to Project Operations (Zone 2), Industrial (Zone 5) or Developed Recreation (Zone 6), where more development and intensive land use could occur. In addition, uses allowed on parcels allocated to Zone 7 (Shoreline Access) could potentially impact aquatic ecology as these parcels are locate adjacent to the reservoir. However, given the nature of uses allowed in this land management zone, impacts would be minor and localized

3.6.2.1 Alternative A – No Action Alternative

Approximately 97,000 acres on these reservoirs would be managed for Zone 4 (Natural Resource Conservation) and an additional 15,580 acres would be allocated to Zone 3 (Sensitive Resource Management). These two zones comprise approximately 81 percent of the reservoir lands and would be most protective of aquatic ecology.

Under Alternative A, approximately 19,307 acres are allocated to Zones 2, 5, and 6 (Project Operations, Industrial and Developed Recreation), which allow land uses with a higher potential for activities that may affect aquatic ecology (see Table 2-1). Future land use requests can either be approved or denied based on a review of potential environmental impacts, compliance with TVA's Land Policy, and other administrative considerations. Due to the required project-specific environmental review and adherence to regulations application of TVA Section 26a General and Standard Conditions/BMPs (TVA 2005a), impacts to aquatic ecology as a result of future developments would be minor.

3.6.2.2 Alternative B – Action Alternative

Land uses around Wilson and Great Falls reservoirs would not change under this alternative. Therefore, the condition of aquatic communities (fish and benthic organisms) in Wilson Reservoir would most likely remain in poor to good condition under any of the alternatives (there is no monitoring data for Great Falls Reservoir).

Alternative B includes a small reduction in the portion of TVA-managed land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) and an increase in land allocated to Zones 2, 6, and 7 (Project Operations, Developed Recreation, and Shoreline Access, respectively) (see Table 2-7). Although many of the proposed changes in allocation generally correspond to a "re-alignment" to reflect current land uses and conditions on each parcel, new development would be subject to site-specific environmental review, as well as applicable state and TVA guidelines for minimizing impacts to aquatic habitat. In some instances, construction of docks and associated pilings and structures such as rock aggregation can have potential short-term negative impacts during construction, but also enhances shoreline habitat by providing shade and cover for some fish and aquatic invertebrates. Therefore, while potential impacts to aquatic resources under Alternative B would be slightly greater than those under Alternative A, they would still be minor and presumably insignificant in the long-term.

3.7 Threatened and Endangered Species

3.7.1 Affected Environment

The ESA (1973, as amended, 16 USC §§ 1531-1543) was passed to conserve the ecosystems upon which endangered and threatened species depend and to conserve and recover those species. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant part of its range. Critical habitats, essential to the conservation of listed species, also can be designated under the ESA. The ESA establishes programs to conserve and recover endangered and threatened species and makes their conservation a mandate for federal agencies. Under Section 7 of the ESA, federal agencies are required to consider the potential effects of their proposed action on endangered and threatened species and critical habitats. If the proposed action has the potential to affect these resources, the Federal agency is required to consult with the USFWS.

The TVA Natural Heritage database was used to locate records of threatened and endangered species within the parcels included in the eight RLMPs and within the general vicinity of the reservoirs (Table 3-12) (TVA 2016c). Accordingly, plants are assessed within a 5-mile radius, terrestrial species within a 3-mile radius, and aquatic species within a 10-mile radius. More information on specific records and habitat requirements of these species are included in the individual RLMPs (Volumes II through IX).

Table 3-12. Records of Threatened and Endangered Species in the Vicinity of TVA Reservoirs

Reservoir	Plants		Terrestrial Wildlife		Aquatic Species	
	5-mile Radius	Parcels	3-mile Radius	Parcels	10-mile Radius	Parcels
Chickamauga	29	5	21	6	42	0 (12 in reservoir)
Fort Loudoun	17	0	14	1	41	0 (12 in reservoir)
Great Falls	17	2	31	1	13	0 (5 in reservoir)
Kentucky	84	21	36	13	78	3 (40 in reservoir)
Nickajack	53	10	20	7	54	2 (9 in reservoir)
Normandy	50	1	8	3	23	5 (6 in reservoir)
Wheeler	52	9	28	6	95	12 (62 in reservoir)
Wilson	7	1	9	1	101	0 (13 in reservoir)

3.7.2 Environmental Consequences

Impacts on common terrestrial plant and animal species are addressed in Section 3.5 and impacts on common aquatic species are addressed in Section 3.6. Impacts to threatened and endangered species are determined based on known existing populations and historical records within TVA parcels.

Analysis of the effects to threatened and endangered species is based upon the potential for proposed activities to result in development that would clear vegetation or cause ground disturbance, which would be the primary sources of direct impacts to these species. Indirect effects to threatened and endangered species include habitat fragmentation and increased recreational use that may spread of invasive, nonnative species that compete with threatened and endangered species.

Land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) would be the most protective of potential habitat as these areas have little potential for site development. Land allocated to Zone 5 (Industrial) has the greatest potential to involve ground disturbance that may affect threatened and endangered species on land and in adjacent waterbodies. The potential impacts to threatened and endangered species from land allocated to Zone 2 (Project Operations), Zone 6 (Developed Recreation), and Zone 7 (Shoreline Access) are dependent upon the existing condition of the land as well as the proposed future use.

Future actions on lands allocated to these zones may involve substantive development (e.g., new roads, campgrounds, marinas, etc.) and, unlike relatively common plant and animal species, threatened and endangered species do not generally adapt well to development of this nature. Some land uses allowed in land allocated to these zones may not require extensive land disturbance (such as the development of pathways or implementation of shoreline stabilization efforts) which would cause minor changes in overall existing conditions. Moreover, ESA Section 7 requires federal agencies to ensure that its activities do not jeopardize the continued existence of federally listed species or result in destruction or adverse modification of critical habitat. ESA Section 7(a)(2) requires minimization of the level of ‘incidental take’ through the use of reasonable and prudent measures. Table 3-13 provides the number of known records of threatened and endangered species within each land management zone.

Under both alternatives, any future development projects will require site-specific environmental reviews to evaluate the presence of and specific impacts to threatened and endangered species. Therefore direct impacts to these species are not anticipated.

Listed aquatic species are less susceptible to negative impacts by land-based development than terrestrial species, but land-use practices and riparian development can in fact have measurable effects on aquatic habitat adjacent and downstream. Typically, negligible and temporary indirect impacts due to sediment and stormwater runoff from construction sites that enter the reservoirs and their watersheds are the most common type of impact to aquatic species and their habitat. All projects conducted on TVA lands will comply with required environmental permitting and will include best management practices to ensure that runoff from construction sites is controlled in an effort to protect adjacent aquatic resources.

Table 3-13. Known Records of Listed Species by Land Use Allocation Zone

Reservoir	Number of Known Records of Threatened and Endangered Species					
	Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation)		Zones 2, 6, and 7 (Project Operations, Developed Recreation, and Shoreline Access)		Zone 5 (Industrial)	
Alternative:	**A**	**B**	**A**	**B**	**A**	**B**
Chickamauga	47	50	6	3	0	0
Fort Loudon	0	0	2	2	0	0
Great Falls	0	0	2	2	0	0
Kentucky	57	57	13	14	1	0
Nickajack	23	20	1	4	0	0
Normandy	6	6	3	3	0	0
Wheeler	37	37	4	4	0	0
Wilson	0	0	4	4	0	0
Totals	**170**	**170**	**35**	**36**	**1**	**0**

Source: TVA 2016c

3.7.2.1 Alternative A – No Action Alternative

Under this alternative, the majority (83 percent) of TVA records of threatened and endangered species occur on or adjacent to (i.e., aquatic species) parcels zoned for either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation). Because these lands are managed to be protective of potential habitat and have little potential for site development, direct impacts to threatened and endangered species would likely only occur as a result of dispersed recreation, and forest management activities; however project-specific surveys would be conducted prior to any site clearing activities and because TVA discourages dispersed recreation in areas that support threatened and endangered species, these types of impacts would ordinarily be minor.

There are 35 known records of threatened and endangered species occurring on parcels allocated to Zones 2, 6, or 7 (Project Operations, Developed Recreation and Shoreline Access, respectively). There is one record of a listed species on a parcel allocated to Zone 5 (Industrial). Potential impacts to threatened and endangered species on or adjacent to (i.e., aquatic species) land allocated to these zones would be minor for the reasons listed above.

3.7.2.2 Alternative B – Proposed Land Use Plan Alternative

Under this alternative, there would be a slightly smaller percentage of land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) which are protective of threatened and endangered species and their habitats.

There are no known records of threatened and endangered species on parcels proposed to be allocated to Zone 5 (Industrial). There are 36 records of threatened and endangered species in parcels proposed to be zoned as Zone 2 (Project Operations), Zone 6 (Developed Recreation), or Zone 7 (Shoreline Access). The following are some of the

specific instances where listed species are known to occur on parcels or adjacent to (i.e., aquatic species) that would be allocated to Zones 2, 6 or 7:

- A total of 11 parcels on Chickamauga Reservoir are known to contain populations of large-flowered skullcap. One of those parcels is proposed as Zone 2 (Project Operations) and could be impacted by any proposed future development if populations are located within proposed site disturbance areas.
- In addition to the large-flowered skullcap, a total of 28 other state-listed plants have been documented within 5 miles of Chickamauga Reservoir. Four of those plant species, including Alabama snow-wreath, American ginseng, northern bush-honeysuckle, and white prairie-clover, have been recorded on TVA parcels associated with Chickamauga Reservoir.
- A known gray bat and northern long-eared bat hibernacula sits above a parcel zoned for Zone 7 (Shoreline Access) on Chickamauga Reservoir. Depending on how shoreline access is approached in this area, these bats may be impacted by development. Additional studies may be required should any type of development occur in this area.
- Two species have been recorded on Great Falls Reservoir at Rock Island State Park on a parcel proposed to be allocated as Zone 6 (Developed Recreation) under the draft RLMP. Disturbance associated with human activities could result in some minor impacts to these species.
- Populations of bunchflower and swamp wedgescale that occur on parcels allocated to Zone 7 (Shoreline Access) on Kentucky Reservoir may be impacted by future development. There is one record of Lamance iris on a proposed Zone 2 (Project Operations) parcel that may be impacted by future development if the population persists at this location.
- There are records of the helmet rock snail, tan riffleshell mussel, and turgid blossom pearlymussel on a Normandy Reservoir parcel proposed to be allocated to Zone 2 (Project Operations). The records of these three species are historic and they may be extirpated from the region. However, if they still occur on this parcel, they may be impacted by future development.
- There are records of the little brown bat, gray bat, northern long-eared bat, bald eagle, and common barn owl on parcels on Wheeler Reservoir proposed to be allocated to Zone 2 (Project Operations). The bald eagle and common barn owl nests may be active. The records of the bats are from mist nest captures and/or ANABAT systems.
- There is an active gray bat summer roost at Joe Wheeler State Park on Wheeler Reservoir proposed to be allocated to Zone 6 (Developed Recreation).
- In addition to the state-listed Dutchmen's breeches, there are three Alabama champion trees on a parcel on Wilson Reservoir allocated to Zone 2 (Project Operations), the American yellowwood, paper mulberry, and September elm. Additional development could impact these resources. However, it is likely that the champion trees could be avoided. In addition, Dutchman's breeches have not been recorded in this locality since 1978 and may no longer be present.
- A gray bat was caught on a Wilson Reservoir on a parcel allocated to Zone 2 (Project Operations) during previous studies. Two large gray bat maternity roosts occur at least 5 miles from this parcel. However, because there are no known

occupied gray bat hibernacula on that parcel, it is likely that gray bat uses the parcel for foraging habitat only. It is unlikely that future development would adversely impact gray bats with proper use of best management practices around water resources.

- There is an active bald eagle nest within 660 feet of a Wilson Reservoir parcel proposed to be allocated as Zone 2.

Project-specific surveys would be conducted prior to any site clearing activities on these parcels. Consequently, impacts from projects to these species would be minor, because if any listed species are detected in these areas, additional steps would be taken during the planning process to avoid, minimize, and/or mitigate the project impacts.

Because the impacts to threatened and endangered species is relatively similar between alternatives, there is likely very little to no measurable difference in the extent of negative impacts to threatened and endangered species between Alternatives A and B. There would be a slightly smaller percentage of land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) as compared to Alternative A. Additionally, any future development of lands potentially supporting use by sensitive species will be coordinated with both state and federal agencies, as appropriate. Therefore relatively few additional impacts to threatened and endangered species by changes in land allocation are anticipated.

3.8 Water Quality

3.8.1 Affected Environment

Water quality of within the eight reservoirs is influenced by many factors, including the size, geology, and land use conditions in upstream drainage areas, point and nonpoint discharges of pollutants adjacent land use activities and operation of the reservoirs. Both natural and anthropogenic factors, including reservoir operations, have important influences on water quality. Adjacent lands, while only a small fraction of the contributing watershed to the reservoirs, can be a significant factor affecting water quality, especially to local reservoir segments such as embayments. TVA-managed parcels in the eight reservoirs are located in close proximity to the reservoirs, generally along the shorelines or a short distance from the shoreline. Thus, shorelines and contributing surface drainages are also characterized by short lengths of small streams or wet weather conveyances that discharge to the reservoir. Up-slope lands may drain onto these lands via small streams, wet weather conveyances, or diffuse flow. The eight RLMPs encompass a relatively small fraction of the total watershed for each of the reservoirs. As such, potential runoff from adjacent lands is a contributor to water quality, but in proportion to the lands within the total watershed the runoff contribution is very small.

Most of reservoirs have multiple purposes that may include navigation, flood control, hydroelectric power, water supply, and/or recreation. Efforts to optimize the benefits of each reservoir’s purpose while minimizing undesirable effects on other services and conditions, including water quality, is a complex matter. Within the anticipated range of hydrologic conditions, operations determine the water levels in the reservoirs and the flows released to downstream river reaches or reservoirs. Seasonal variations in water levels and water demand play an important role in the operations as well. For example, flood control requires having temporary storage available during the time of the year when floods usually occur, whereas the storage reserved for flood control may be reduced during periods of the year when large floods are less likely to occur. The dams create deep impoundments with

slower-moving water and vertical variations in temperature, dissolved oxygen, and other water quality characteristics. Flow releases from varying depths may have varying water quality. Finally, sediments transported into the reservoirs from tributaries and adjacent land are captured in the reservoirs as a result of the impounding effect of the dams and reduced flow velocities.

An extensive effort to update and optimize system-wide reservoir operations was completed in 2004 under the ROS (TVA 2004). That effort involved a comprehensive consideration of water quality conditions and the effects of reservoir operations on water quality. Some important characteristics affected by reservoir operations include dissolved oxygen conditions associated with impoundment and releases through hydroelectric facilities, and shoreline erosion and other littoral conditions within the reservoir fluctuation zones. The hydraulic residence time, or the average time that water takes to pass through a reservoir, is one of the primary mechanisms influencing water quality. Some of the basic physical characteristics of the eight reservoirs, including residence time, are summarized in Table 3-14.

TVA has improved tailwater water quality below many of its hydroelectric facilities. This has been accomplished by the establishment of the Reservoir Releases Improvement Program, which was begun officially in 1991 when the TVA Board approved a five-year plan to improve water releases from 16 dams by maintaining minimum flows and reaeration of dam discharges. Implementing minimum flows was accomplished via turbine pulses, and dissolved oxygen levels increased in a variety of ways (e.g., turbine venting, oxygen injection, and weir dams) (Higgins and Brock 1999). These techniques helped to mimic more natural riverine conditions in TVA tailwaters. The Reservoir Releases Improvement Program included daily scheduling at the Chickamauga and Kentucky reservoirs to meet minimum flows. Sufficient water, reservoir storage, and operational flexibility exist at this reservoir to maintain flows by appropriately scheduling normal releases. The Reservoir Releases Improvement Program included oxygen injection at the Fort Loudoun Reservoir to help meet the dissolved oxygen target concentration. The basic system consists of an oxygen supply facility and diffuser system for transferring the oxygen to the turbine intake water. As a result, the dissolved oxygen increased approximately 1 milligram per liter (Higgins and Brock 1999).

While short-term flow rates through the reservoirs are controlled by operations, long-term average flows are largely controlled by watershed runoff resulting from precipitation. The long-term average annual flow through the reservoirs varies with drainage area. For the Tennessee River reservoirs, the average annual runoff as determined from 10 long-term USGS streamflow stations (USGS 2016) distributed along the river increases from approximately 1.45 cubic feet per second per square mile (cfs/sq mi) (19.7 inches/year) in upstream reaches with a drainage area of around 10,000 sq mi to approximately 1.72 cfs/sq mi (23.3 inches per year) at a drainage area of 25,000 sq miles. The average annual runoff drops slightly at the downstream end of the Tennessee River with a value of 1.65 cfs/sq mi (22.4 inches per year) downstream of Kentucky Lake.

Great Falls Reservoir is on Caney Fork, a tributary to Cumberland River, and outside of the Tennessee River basin. The drainage area at the Great Falls Dam is approximately 1,680 sq mi. The runoff pattern is similar to the Tennessee River, but the seasonal variation is more pronounced. The runoff as measured at the USGS Station 03422500 Caney Fork near Rock Island, Tennessee, which is downstream of the Great Falls Dam, indicates runoff averaging 1.91 cfs/sq mi of watershed, with monthly long-term averages ranging from

2.19 times the annual average in March and 0.24 times of the annual average for the month of September. Great Falls Reservoir has substantial storage that varies seasonally and the monthly flows are somewhat affected by those historic reservoir operations. However, streamflow observed at a USGS station on Caney Fork upstream of Great Falls indicates a similar pattern as the Rock Island station.

Streamflows have a distinct seasonal pattern throughout the Tennessee River. Average monthly runoff is highest during the months of January through March and lowest during the months of June through October. Average runoff during high flow months is approximately 30 percent to 60 percent above the annual mean runoff and low runoff months average approximately 60 percent to 90 percent of average annual runoff. This pattern has a significant influence on water quality as the residence time is significantly increased during low flow periods and mixing of flow in the reservoirs is reduced, resulting in greater stratification.

Table 3-14. Physical and Operational Characteristics of Reservoirs

Reservoir	River	Type[3]	Minimum Flow[4] (cfs)	Drainage Area (sq mi)	Mean Annual Flow (cfs)	Full Pool		Mean Depth[1] (ft)	Residence Time[1] (days)
						Surface Area (ac)	Full Pool Storage Volume (acre-feet)		
Chickamauga	Tennessee	Storage	3,000 – 13,000 (water supply, water quality)	20,794	33,978	35,404	628,395	17.7	8
Fort Loudoun	Tennessee	Storage	Not available	9,549	16,353	14,603	363,253	24.9	10
Great Falls	Caney Fork	Storage	Not available	1,680	3,130	1,830	17,913[2]	9.8	3
Kentucky	Tennessee	Storage	5,000 – 20,000 (water supply, water quality, navigation)	40,205	61,951	160,320	2,839,533	17.7	19
Nickajack	Tennessee	Run-of-River	Not available	21,871	35,249	10,372	240,817	23.3	3
Normandy	Duck	Storage	40 / 155 (water supply, water quality)	197	353	3,230	116,760	36.1	141
Wheeler	Tennessee	Storage	7,000 – 11,000 (nuclear cooling water)	29,594	50,578	67,078	1,050,027	15.7	9
Wilson	Tennessee	Run-of-River	8,000 (Navigation)	30,752	52,591	15,502	634,071	41.0	6

[1] Residence time calculated from average storage, not full pool storage

[2] Great Falls storage is average storage for past 20 years based on daily reservoir storage data),

[3] Reservoirs are categorized as either storage or run-of-river; storage reservoirs provide a significant storage volume for flow regulation and run-of-river reservoirs generally pass flows through the reservoir with minimal effect on the flow. Storage reservoirs provide flood control, hydroelectric power, and water supply.

[4] TVA ROS Table A-03. These are minimum guideline flows and not the lowest flow that may be discharged

Source: TVA 2004.

3.8.1.1 Water Quality Monitoring

Water quality conditions within TVA reservoirs is evaluated by several programs designed to monitor the chemical and biological conditions of the aquatic environment. These programs include state monitoring programs designed to evaluate impairment, and TVA's reservoir health monitoring program. The following sections provide an overview of these monitoring systems.

3.8.1.1.1 State Impaired Waters

Under the CWA, each state is required to assess surface waters in the state to determine the conditions relative to the intended use of the water body. Waters not meeting intended uses are identified as impaired and included on a listing known as the 303(d) list submitted to the U.S. Environmental Protection Agency (USEPA) every two years. The impaired water body segments from the latest versions of publically available 303(d) lists were reviewed. A total maximum daily load (TMDL) study establishing limits on loading of pollutants identified as contributing to the impairment is completed under the CWA to mitigate conditions.

Tennessee Department of Conservation

TDEC has identified segments of the Chickamauga, Fort Loudoun, and Nickajack reservoirs as being impaired (Table 3-15). Chickamauga Reservoir has one segment listed, the Hiawassee River embayment with an area of 3,130 acres with a Low TMDL priority. The cause of the impairment is identified as mercury contaminated sediment with the source identified as atmospheric deposition. Fort Loudoun Reservoir is a listed impaired water with an impaired area of 14,066 acres (water body ID TN06010201020 – 1000) due to PCB contaminated sediment. A smaller portion of that area also is identified as being impaired by mercury contaminated sediments. A 10,370-acre area of Nickajack Reservoir at Chattanooga is identified as impaired by PCB and dioxin contaminated sediments with a low TMDL priority.

Alabama Department of Environmental Management

Nine different water body segments within Wheeler Lake encompassing the entire reservoir are identified by ADEM as being impaired by nutrients from agricultural sources (Table 3-16). The Limestone Creek embayment area of 1,543 acres (segment ID AL06030002-0906-600) is identified as being impaired by mercury due to atmospheric deposition.

At Wilson Lake, the McKiernan Creek embayment (water body ID AL06030005-0801-201) is identified as being impaired by nutrients from agricultural sources. Additionally, the entire Wilson Lake from Wheeler Dam to Wilson Dam, with area of 15,311 acres, has been included ADEM's 2016 final draft 303(d) list.

Kentucky Energy and Environment Cabinet

While the downstream end of Kentucky Lake is located in Kentucky, the majority of the reservoir is located in Tennessee. The Kentucky Energy and Environment Cabinet, Division of Water has not included any segments of Tennessee River/Kentucky Lake in the 2012 303(d) list as impaired water bodies.

Table 3-15. Tennessee Department of Environment and Conservation 303(d) Listed Water Bodies Associated with the Chickamauga, Fort Loudoun, Great Falls, Kentucky, Nickajack, and Normandy Reservoirs

Waterbody ID	Impacted Waterbody	County	CAUSE / TMDL Priority [L=low]	Pollutant Source	Comments	Miles/Acres Impaired
TN06020002001 - 2000	Hiwassee River embayment of Chickamauga reservoir	Meigs, McMinn, Bradley	Mercury/Low	Atmospheric Deposition Industrial Point Source	Fishing advisory due to mercury in largemouth bass. Category 5. Assistance requested for atmospheric deposition TMDLs.	3,130 acres
TN06020002008 – 1000	Hiwassee River embayment of Chickamauga reservoir	Bradley, McMinn	Escherichia coli/ Not applicable Mercury/Low	Undetermined Source Industrial Point Source Atmospheric Deposition	Fishing advisory due to mercury. Category 5. EPA has approved a pathogen TMDL and should assist on the mercury TMDL.	1,050 acres
TN06010201020 - 1000	Fort Loudoun Reservoir	Knox, Loudon	PCBs/Not applicable	Contaminated Sediment	Fishing advisory due to PCBs. Category 4a. EPA approved a PCB TMDL for the known pollutant	14,066 acres
N06010201020 - 2000	Fort Loudoun Reservoir	Knox	Mercury/Low PCBs/Not applicable	Atmospheric Deposition Contaminated Sediment	Fishing advisory due to mercury and PCBs. Category 5. EPA approved a PCB TMDL for some of the known pollutants.	534 acres
TN05130108025 – 1000	Caney Fork River	DeKalb, White	Habitat loss due to stream flow alteration/Not applicable	Upstream Impoundment	Category 4c. Impacts not caused by a pollutant. Section of Caney Fork de-watered by Great Falls Reservoir.	1.4 miles
TN06020001001 – 1000	Nickajack Reservoir	Marion, Hamilton	PCBs /Low Dioxins/Low	Contaminated Sediment	Precautionary fishing advisory for catfish. The federally listed fish, the snail darter (*Percina tansi*), has been documented. Category 5.	10,370 acres
TN06040005038 - 0100	West Sandy embayment - Kentucky Reservoir	Henry	Nutrients /Low Low dissolved oxygen/Low Loss of biological integrity due to siltation / Low	Septic Tanks; Upstream Impoundment	Stream is Category 5. (One or more uses impaired.)	3.7 acres

Source: TDEC 2014a

Table 3-16. Alabama DEM 303(d) Listed Water Bodies Associated with the Wheeler and Wilson Reservoirs

Assessment Unit ID	Waterbody Name	Type	County	Uses	Causes	Sources	Size (acres)	Downstream / Upstream Locations	Year Listed	Draft TMDL Date
AL06030002-0904-100	Tennessee River (Wheeler)	Lake	Madison, Marshall, Morgan	Public Water Supply, Fish and Wildlife	Nutrients	Agriculture	3,531	Indian Creek /Flint River	2014	2020
AL06030002-0906-102	Tennessee River (Wheeler)	Lake	Madison, Marshall	Public Water Supply, Swimming, Fish and Wildlife	Nutrients	Agriculture	334	Cotaco Creek/ Indian Creek	2014	2020
AL06030002-1102-102	Tennessee River (Wheeler)	Lake	Limestone, Morgan	Public Water Supply, Swimming, Fish and Wildlife	Nutrients	Agriculture	2,587	US Highway 31/ Flint Creek	2014	2020
AL06030002-1102-103	Tennessee River (Wheeler)	Lake	Limestone, Madison, Morgan	Swimming, Fish and Wildlife	Nutrients	Agriculture	7,385	Flint Creek/ Cotaco Creek	2014	2020
AL06030002-1107-102	Tennessee River (Wheeler)	Lake	Lawrence, Limestone, Morgan	Swimming, Fish and Wildlife	Nutrients	Agriculture	20,633	5 miles upstream of Elk River /US Highway 31	2014	2020
AL06030002-1205-100	Tennessee River (Wheeler)	Lake	Lawrence, Limestone, Morgan	Public Water Supply, Swimming, Fish and Wildlife	Nutrients	Agriculture	15,168	Wheeler dam/ 5 miles upstream of Elk River	2014	2020
AL06030002-1107-102	Tennessee River (Wheeler)	Lake	Lawrence, Limestone, Morgan	Swimming, Fish and Wildlife	PFOS	Industrial	20,633	5 miles upstream of Elk River /US Highway 31	2014	2020
AL06030002-0906-600	Limestone Creek (Wheeler)	Lake	Limestone	Swimming, Fish and Wildlife	Metals (Mercury)	Atmospheric deposition	1,543	Embayed portion of Limestone Creek	2012	2020

Assessment Unit ID	Waterbody Name	Type	County	Uses	Causes	Sources	Size (acres)	Downstream / Upstream Locations	Year Listed	Draft TMDL Date
AL06030004-0405-101	Elk River (Wheeler)	Lake	Lauderdale, Limestone	Swimming, Fish and Wildlife	pH	Non-irrigated crop production Pasture grazing	1,569	Tennessee River /Anderson Creek	1996	2018
AL06030004-0405-101	Elk River (Wheeler)	Lake	Lauderdale, Limestone	Swimming, Fish and Wildlife	Nutrients	Non-irrigated crop production Pasture grazing	1,569	Tennessee River /Anderson Creek	2004	2018
AL06030005-0801-201	McKiernan Creek (Wilson)	Lake	Colbert	Public Water Supply, Swimming, Fish and Wildlife	Nutrients; Organic enrichment (CBOD, NBOD); Siltation (habitat alteration)	Agriculture	212	Embayed portion of McKiernan Creek	1998	2015
AL06030005-0801-100	Tennessee River (Wilson)	Lake	Colbert Lauderdale Lawrence	Public Water Supply, Swimming Fish and Wildlife	Nutrients	Agriculture	15,311	Wilson Dam Wheeler Dam	2016	2016
AL06030005-0105-111	Big Nance Creek (Wilson)	River	Lawrence	Fish and Wildlife	Metals (Mercury)	Atmospheric deposition	45	Tennessee River / end of embayment	2016	2016

Source: Roy 2014, ADEM 2016

3.8.1.1.2 Reservoir Ecological Health

In addition to the information from the state water quality assessments, reservoir water quality information is also available from TVA's Reservoir Health Ratings monitoring program. Since 1990, TVA has implemented the Reservoir Ecological Health Monitoring Program to determine reservoir health as compared to other reservoirs in the TVA system, to provide data for comparing future water quality conditions, and as a screening program to target needs for more detailed studies. As a part of this program, TVA developed a reservoir ecological health scoring system to aid in data evaluation and communication of monitoring results to the public. Under this program, TVA collects samples at up to four locations in each reservoir on a two year cycle. Each reservoir receives a score based on five factors: dissolved oxygen, chlorophyll, and sediments characteristics, each utilizing physical or chemical measurements, as well as fish and bottom life. For a discussion of the biological ratings, see Section 3.6 Aquatic Ecology. The Great Falls Reservoir is not part of TVA's Reservoir Ecological Health Monitoring Program.

DO is necessary in respiration of most aquatic organisms. Ideally, a reservoir has enough DO throughout the water column available to fish, insects, and zooplankton (microscopic aquatic animals) for respiration. Concentrations of DO in a reservoir both control and are controlled by many physical, chemical, and biological processes (e.g., photosynthesis, respiration, oxidation-reduction reactions, bacterial decomposition, temperature) that determine the assimilative capacity of a reservoir. Assimilative capacity is a water body's ability to receive wastewaters or other materials requiring oxygen for decomposition without deleterious effects and without damage to aquatic life. If concentrations are low enough and/or low levels are sustained long enough, it can adversely affect the health and diversity of aquatic organisms. DO levels are expressed in terms of milligrams/liter.

DO is a common concern in reservoirs, particularly when hydroelectric facilities discharge water through the turbines, limiting re-oxygenation that might otherwise occur at a spillway discharge. The 2003 Reservoir Operations Study identified DO concerns and approaches to mitigating problems through operations changes. Overall the reservoirs rated from poor to good for DO. The most recent DO scores for each of the reservoirs is listed in Table 3-17.

Table 3-17. Dissolved Oxygen Scores in Reservoirs

	Sample Location		
Reservoir (Year)	**Forebay**	**Mid-reservoir**	**Embayment**
Chickamauga (2011)	Good	Good	Good
Fort Loudoun (2011)	Fair	Good	--
Great Falls	Not monitored	Not monitored	Not monitored
Kentucky (2011)	Fair	Fair	Poor
Nickajack (2012)	Good	--	--
Normandy (2010)	Poor	--	--
Wheeler (2011)	Poor	Good	Poor
Wilson (2012)	Poor	--	--

Source: TVA 2016b

Chlorophyll, a surrogate measure for the amount of algae (phytoplankton) in the water, is important because it provides insights into the level of primary productivity (basic level of the food web) within a water body and can provide a measure of nutrient enrichment. Although some level of phytoplankton production is essential to maintain a healthy aquatic community, as concentrations increase, uses can be affected differently. For example, fisheries such as largemouth bass in southeastern reservoirs can be enhanced as phytoplankton concentrations increase to relatively high levels. However, elevated phytoplankton concentrations are a concern because adverse ecological and use impacts could occur, such as reduced water clarity, more frequent algal blooms, higher oxygen demands and lower DO concentrations, increased periods of anoxic conditions and resultant anoxic byproducts (i.e., ammonia, sulfide, and dissolved manganese), more frequent water treatment problems, and higher water treatment cost. Almost all of the most recent ratings for chlorophyll within the reservoirs were poor, with the exception of the embayment at Chickamauga (good) and the mid-reservoir monitoring location in the Kentucky Reservoir (fair). The most recent chlorophyll scores for each of the reservoirs is listed in Table 3-18.

Table 3-18. Chlorophyll Scores in Reservoirs

Reservoir (Year)	Sample Location		
	Forebay	Mid-reservoir	Embayment
Chickamauga (2011)	Poor	Poor	Good
Fort Loudoun (2011)	Poor	Poor	--
Great Falls	Not monitored	Not monitored	Not monitored
Kentucky (2011)	Poor	Fair	Poor
Nickajack (2012)	Poor	--	--
Normandy (2010)	Poor	--	--
Wheeler (2011)	Poor	Poor	Poor
Wilson (2012)	Poor	--	--

Source: TVA 2016b.

Sediment quality is a measure of the amount of PCBs, pesticides, and metals in sediment on the bottom of the reservoir. Sediments at the bottoms of reservoirs serve as a repository for a variety of materials, especially chemicals that have a low solubility in water. If contaminated, bottom sediments can have adverse impacts on bottom fauna and can often be long-term sources of toxic substances to the aquatic environment. They may impact wildlife and humans through the consumption of contaminated food or water or through direct contact. These impacts may occur even though the water above the sediments meets water quality criteria. Thus, examination of reservoir sediments is useful to determine if toxic chemicals are present and if chemical composition is changing through time. The sediment quality in the reservoirs is generally fair, with the exception of Normandy (good) and the mid-reservoir location of Wheeler (good). The most recent sediment scores for each of the reservoirs is listed in Table 3-19.

Table 3-19. Sediment Scores in Reservoirs

Reservoir (Year)	Sample Location		
	Forebay	Mid-Reservoir	Embayment
Chickamauga (2011)	Fair	Fair	Fair
Fort Loudoun (2011)	Fair	Fair	--
Great Falls	Not monitored	Not monitored	Not monitored
Kentucky (2011)	Fair	Fair	Fair
Nickajack (2012)	Fair	--	--
Normandy (2010)	Good	--	--
Wheeler (2011)	Fair	Good	Fair
Wilson (2012)	Fair	--	--

Source: TVA 2016b

3.8.1.2 Water Supply

Water supply and waste water discharges are important considerations for water quality. The quality of the source water affects the cost and ability to meet local and state water supply criteria. The quality of a receiving water for a waste water discharge contributes to the ability of the water to assimilate the waste water without adverse impacts or the potential cost to provide additional treatment of the waste water prior to discharge to maintain an acceptable range of potential impact.

While water supply intakes and waste water discharges are regulated by the states under the National Pollutant Discharge Elimination System (NPDES), TVA permits the actual intake and outfall structures under Section 26a of the TVA Act. The most recent state permit/water withdrawal registration data for water supply withdrawals and waste water discharges directly from or to the reservoirs is provided in Table 3-20. This information does not include withdrawals or discharges in the watersheds.

Water withdrawals and wastewater discharges within the reservoirs as a whole are dominated by thermoelectric power generation, for which the majority of the volume is used as cooling water. For once-through cooling facilities, the water passes through the plant to absorb excess heat and is discharged at a higher temperature with virtually no consumptive use, or loss, of water. Overall, approximately 95 percent of the water withdrawn from the TVA system is returned to the system (TVA 2004).

Table 3-20. Direct Reservoir Average Daily Water Supply Withdrawals and Wastewater Discharges

Reservoir	2010 Water Withdrawal Volume (MGD)			2010 Wastewater Discharge Volume (MGD)		
	Municipal	Industrial	Thermo-electric	Municipal	Industrial	Thermo-electric
Chickamauga[1]	22.97	65.76	1,591.37	11.20	63.46	1,725.87
Fort Loudoun	52.66	0	0	50.07	0.02	0
Great Falls[2]	N/A	N/A	N/A	N/A	N/A	N/A
Kentucky[3]	5.93	70.87	1,173.75	1.33	89.31	1,198.00
Nickajack	40.78	5.93	0	48.43	7.76	0
Normandy	5.69	0	0	0	0	0
Wheeler[4]	82.01	70.21	2,749.90	35.63	62.66	2,744.09
Wilson	8.95	21.92	0	0	0	0

Source: (Gary Springston, TVA, personal communication, August 2016)

[1] Chickamauga Reservoir
Municipal water withdrawal data includes 10.89 million gallons per day (MGD) in the impounded portion of Hiwassee River.
All of the industrial water withdrawals are in the impounded portion of Hiwassee River.
Municipal wastewater discharge data includes 9.08 MGD in the impounded portion of Hiwassee River.
All of the industrial wastewater discharges are in the impounded portion of Hiwassee River.

[2] Great Falls is not within the Tennessee Valley; TVA's water supply group does not track withdrawals/discharges in the reservoir.

[3] Kentucky Reservoir:
Municipal wastewater discharge data includes 0.24 MGD in the impounded portion of Duck River.
Municipal wastewater discharge data includes 0.15 MGD in the impounded portion of Big Sandy River.
Municipal wastewater discharge data includes 0.30 MGD in the impounded portion of Beech River.
Municipal wastewater discharge data includes 0.03 MGD in the impounded portion of Jonathan Creek.

[4] Wheeler Reservoir:
Municipal water withdrawal data includes 5.16 MGD in the impounded portion of Elk River.
Industrial water withdrawal data includes 60.09 MGD for a facility that is now idle.
Industrial wastewater discharge data includes 57.32 MGD for a facility that is now idle.

3.8.2 Environmental Consequences

The major source of potential adverse impacts to reservoir water quality is from land uses that result in increases in soil erosion and sediment transported into the reservoir, either through construction activities or as an on-going condition due to increases in runoff. Increases in runoff due to land cover changes (e.g., conversion from wooded, dense vegetation to developed land with impervious surfaces and higher runoff areas) can result in on-going erosion of conveyances and streams. Additionally, conversion of natural land cover to a developed condition generally results in a potential for higher loading of pollutants to receiving streams. Nutrients applied for maintenance of landscaping, such as nitrogen and phosphorus, typically produce increases in surface runoff. Higher loadings result from accumulation of various pollutants on impervious surfaces that may then be washed off and conveyed directly to receiving streams or reservoirs by artificial drainage systems without the opportunity for filtering of pollutants or infiltration. Potential impacts to water quality likely would be greater from parcels allocated to Zone 2 (Project Operations), Zone 5 (Industrial) or Zone 6 (Developed Recreation) where more development and intensive land use could occur. In addition, activities allowed in Zone 7 (Shoreline Access)

have the potential to have a direct impact on water quality as these parcels are located on the reservoirs where land slopes tend to be relatively steep, which increases the potential for soil erosion. However given the magnitude of development allowed in these zones, these impacts would be minor and localized.

3.8.2.1 Alternative A – No Action Alternative

Under Alternative A, Approximately 81 percent of the land around the eight reservoirs would be allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) which have the lowest potential to affect water quality. Therefore, under this alternative the majority of the acreage within the reservoirs would be allocated to zones which minimize potential impacts to water quality.

Approximately 14 percent of the land around the reservoirs would be allocated to Zone 2, Zone 5 and Zone 6 (Project Operations, Industrial, and Developed Recreation, respectively). Land uses allowed in these land management zones have the greatest potential for impacting water quality due to runoff and erosion from ground-producing activities, changes to the existing land cover and an increase in impervious surface. In addition, uses allowed in these land management zones also have the greatest potential for increasing water supply demands and wastewater discharges. However, the extent of impacts would be dependent on the specifics of future development. Construction activities, including land disturbing activities of 1.0 acre or more, are regulated under the states' NPDES programs for stormwater discharges from construction activities to control water quality of discharges. New facilities with permitted discharges would be required to meet permit limits specifically designed to prevent degradation of applicable water quality criteria. Further, any proposed land use would be required to protect water quality through either restricted development or the commitment to use BMPs to minimize impacts.

Due to the required project-specific environmental review and application of TVA Section 26a General and Standard Conditions/BMPs (TVA 2005a), and state regulatory programs for water supply withdrawals and wastewater discharges, impacts to water quality as a result of future developments would be minor.

3.8.2.2 Alternative B – Proposed Land Use Plan Alternative

Alternative B includes a small reduction in the portion of TVA-managed land allocated to Zone 3 and Zone 4 (Sensitive Resource Management and Natural Resource Conservation) and an increase in the land area allocated to Zone 2, Zone 6 and Zone 7 (Project Operations, Industrial, and Developed Recreation, respectively)(see Table 2-7). However, as described in Section 3.2, many of the changes in zone reallocation associated with Alternative B generally correspond to a "re-alignment" to reflect current land uses and conditions on each parcel which would not impact water quality. However, the potential for future development to impact water quality would be slightly higher under this alternative as more land on the eight RLMPs would be allocated to zones that would not be protective of water quality. This impact would be minor for reasons identified under Alternative A.

3.9 Wetlands

3.9.1 Affected Environment

The U.S. Army Corps of Engineers (USACE) regulates the discharge of fill material into waters of the United States, including wetlands pursuant to Section 404 of the CWA (33 USC 1344). Additionally, EO 11990 (Protection of Wetlands) requires federal agencies to avoid, to the extent possible, adverse impact to wetlands and to preserve and enhance their natural and beneficial values.

Wetlands are defined by TVA Environmental Review Procedures (TVA 1983) as: "[T]hose areas inundated by surface or ground water 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 seasonally 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." 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.

Land use/ land cover data generated by the National Land Cover Database (Homer et al. 2011) indicates that wetlands comprise between 0.01 to 32.6 percent of land cover in the reservoirs (Section 3.5 Terrestrial Ecology). The reservoir with the highest percentage of wetland land cover is Wheeler (32.6 percent) and the lowest percentage is in the Great Falls Reservoir (0.01 percent).

Large-scale analysis of land cover data over time and by ecoregion provides information on the status and trends of wetland resources. The eight reservoirs are located in five ecoregions, Ridge and Valley, Interior Plateau, Southwestern Appalachians, Southeastern Plains, and Mississippi Loess Plains. The Ridge and Valley and Interior Plateau had a relatively low rate of overall land change when compared to other Eastern ecoregions. The Southwestern Appalachians and Mississippi Loess Plains had a moderately high level of change, while the Southeastern Plains was very These data indicate an overall loss of approximately 203,000 acres of wetland land cover from 1973 to 2000 (Drummond 2014) between these five ecoregions. This trend is in contrast to that seen in the conterminous United States from 1998 to 2004, which saw a minor overall increase (0.2 percent) in freshwater wetlands (Dahl 2006).

For this section, the type and extent of wetlands within the TVA reservoirs are derived from the National Wetland Inventory (NWI) database and supplemented with previous on-the-ground surveys done by TVA where available. Overall, palustrine wetlands are the predominant wetlands in the reservoirs. As described by Cowardin et al. (1979), these are nontidal wetlands dominated by trees, shrubs, persistent emergent vegetation, and emergent mosses or lichens. These wetlands include bottomland hardwood forests and upland swamps (forested wetlands), scrub-shrub wetlands, beaver ponds (aquatic-bed or emergent wetlands), wet meadows and marshes (emergent wetlands), and highland bogs (forested, scrub-shrub, or emergent wetlands that have organic soils). Lacustrine (i.e., related to a lake) and riverine (i.e., related to a river) systems are also wetland types found within the region. These wetlands consist of aquatic beds containing floating or submersed aquatic plants.

Palustrine forested wetlands are the most abundant type of wetland found in the reservoirs and make up approximately 65 percent of all wetland resources (Table 3-21). The least common wetland type along the reservoirs is scrub-shrub. Details on the types of wetlands within each reservoir are discussed in Volumes II-IV.

Small areas of emergent/scrub-shrub wetlands (typically less than 0.10 acre) are associated with reservoir shorelines and coves. Isolated wetlands such as bogs, seeps, and fens are relatively rare considering that most wetlands are located adjacent to the reservoir. Aquatic bed wetlands and mudflats are seasonal habitats; aquatic bed wetlands are associated with the summer growth of aquatic vegetation and are relatively uncommon on the reservoirs. Mudflat habitats are more common as these habitats are associated with reservoir drawdowns. Forested wetlands occur on lower-lying, undisturbed areas and along tributary streams.

Table 3-21. Summary of Wetlands on TVA Reservoirs by Area and Type

Reservoir	Wetland Type[1]				
	Emergent (acres)	Forested (acres)	Open Water (acres)	Scrub-Shrub (acres)	All Types (acres)
Chickamauga	0.03	0.2	104.8	0.08	105.1
Fort Loudoun	1.7	4.6	117.5	--	123.8
Great Falls	2.2	--	5.0	1.1	8.3
Kentucky	2,213.8	15,659.0	3,462.7	2,202.6	23,538.2
Nickajack	22.8	--	79.3	2.8	104.9
Normandy	4.0	109.6	195.8	--	309.4
Wheeler	2,703.4	11,411.2	1,863.3	1,416.1	17,404.1[1]
Wilson	7.9	32.5	19.1	--	59.5
Total	**4,955.8**	**27,217.1**	**5,847.5**	**3,622.7**	**41,653.3**

Source: USFWS 2016b

[1] Includes 10.13 acres of unknown wetland type

Wetlands tend to be smaller and do not occur as frequently on tributary reservoirs such as Great Falls and Normandy 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.

3.9.2 Environmental Consequences

Ground-disturbing activities, including the placement of fill, and vegetation removal would be the primary source of potential impacts to wetlands and wetland functions. The potential for ground disturbing activities would be greatest in land allocated to Zone 5 (Industrial). Impact to wetlands could also occur on land allocated to Zone 2 (Project Operations), or Zone 6 (Developed Recreation) where land uses that would require ground disturbing activities are allowed. Development on land allocated to Zone 7 (Shoreline Access), would require a limited amount of ground disturbance. Minimal ground disturbance would occur on land allocated Zones 3 (Sensitive Resource Management) and 4 (Natural Resource Conservation). Under either of the alternatives, activities in wetlands present on any parcels would be subject to EO 11990 and Section 404(b)(1) of the CWA. Any impacts to wetlands associated with ongoing or future project operations would be evaluated under NEPA and associated permitting requirements and minimized to the extent practicable.

3.9.2.1 Alternative A – No Action Alternative

As demonstrated in Table 3-22, the majority (89.5 percent) of the mapped wetland features under Alternative A are located in land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), which have the smallest potential for activities that would impact wetlands. The likelihood of future development in parcels allocated to these zones is less than those allocated to Zones 2 and 5 (Project Operations and Industrial). However, any future projects proposed for these parcels would be reviewed to assess potential effects to wetlands in accordance with EO 11990 and Section 404(b)(1) of the CWA and impacts would be avoided or mitigated to the extent practicable. Furthermore, on-going land use of parcels with existing committed land uses were previously reviewed and are not adversely affecting any on-site wetlands.

Table 3-22. Wetland Types Based on Land Management Zone Allocation-Alternative A

Zone	Wetland Type				
	Emergent (acres)	Forested (acres)	Scrub Shrub (acres)	Open Water (acres)	Total (acres)
Zone 2 – Project Operations	34.3	2,097.9	245.0	268.6	**2,645.8**
Zone 3 – Sensitive Resource Management	43.0	2,419.5	113.5	442.0	**3,018.1**
Zone 4 – Natural Resource Conservation	4,815.4	21,873.1	3,204.6	4,362.4	**34,255.4**
Zone 5 – Industrial	4.1	103.0	13.5	174.9	**295.4**
Zone 6 – Developed Recreation	19.5	279.9	12.3	328.0	**639.8**
Zone 7 – Shoreline Access	16.7	466.5	33.9	258.7	**775.7**
No current zone designation	--	--	--	13.0	**13.0**

Source: USFWS 2016b

Additionally, there could be some minor and indirect impacts to wetlands associated with dispersed recreation and camping activities on land allocated to Zones 6 and 7 (Developed Recreation and Shoreline Access), where minimal clearing of vegetation occurs on the shoreline and around tent and picnic areas. Overall, indirect impacts associated with this alternative would be minor, as any localized trimming or clearing of wetland vegetation would have a negligible effect on wetland resources within the overall project area. Therefore, impacts to wetlands under Alternative A would be minor since the large majority of wetland are located on parcels allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation).

3.9.2.2 Alternative B – Proposed Land Use Plan Alternative

As shown in Table 3-23, most of the wetland resources (87.2 percent) under Alternative B are located in parcels allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), which have the least potential for ground disturbance.

Table 3-23. Wetland Types Based on Land Management Zone Allocation – Alternative B

Zone	Wetland Type				
	Emergent (acres)	Forested (acres)	Scrub Shrub (acres)	Open Water (acres)	Total
Zone 2 – Project Operations	58.5	2,215.2	212.4	339.7	**2,825.9**
Zone 3 – Sensitive Resource Management	112.3	2,785.5	209.3	480.7	**3,587.7**
Zone 4 – Natural Resource Conservation	4,711.8	20,793.3	3,038.1	4,190.3	**32,733.5**
Zone 5 – Industrial	3.0	140.0	34.7	206.0	**383.7**
Zone 6 – Developed Recreation	25.0	346.1	68.7	373.6	**813.5**
Zone 7 – Shoreline Access	22.2	959.8	59.6	257.3	**1,298.9**

Source: USFWS 2016b

Implementation of Alternative B would result in the reallocation of 268.4 acres of wetlands into land management zones with a greater potential for impact, Zones 2 and 5 (Project Operations and Industrial). Overall, this reallocation is approximately 2.2 percent of the wetlands within the eight RLMPs. The greatest potential impact to wetland resources is attributable to a reallocation of 1,521.0 acres of land that is currently allocated as Zone 4 (Natural Resource Conservation). However, any future projects proposed for these parcels would be reviewed to assess potential effects to wetlands in accordance with EO 11990 and Section 404(b)(1) of the CWA and impacts would be avoided or mitigated to the extent practicable.

As discussed for Alternative A, some minor and indirect impacts to wetlands could occur under this alternative. Informal recreation and camping activities could result in some minimal clearing of vegetation on parcels allocated to Zones 6 and 7 (Developed Recreation and Shoreline Access). Overall, impacts associated with this alternative would be minor.

3.10 Floodplains

3.10.1 Affected Environment

As a federal agency, TVA is subject to the requirements of EO 11988 (Floodplain Management). The objective of EO 11988 is “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative…” (43 Federal Register 6030 [10 February 1978]). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances. It applies to all federal agencies that acquire, manage, or dispose of federal lands and facilities; undertake, finance, or assist construction and improvements; and conduct activities and programs affecting land use, including planning, regulating, and licensing. The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative. The 500-year flood elevation is used to establish the “critical action floodplain.” A “critical action” is defined in the Floodplain Management Guidelines (U.S. Water Resources Council 1978)

as any activity for which even a slight chance of flooding would be too great. The 500-year flood elevation is also used to control flood-damageable development for TVA projects as well as residential and commercial development on TVA lands.

The 100- and 500-year flood elevations for Chickamauga, Fort Loudoun, Great Falls, Kentucky, Nickajack, Normandy, Wheeler and Wilson reservoirs are provided in Appendix D, Tables D-12 through D-18. Descriptions of these floodplains are provided in the eight RLMPs (Volumes II through IX).

As described in Table 3-1, each of the reservoirs vary in shoreline length, variation in pool elevation and flood storage volume. While flood storage volume is not equivalent to floodplain area it does reflect the overall benefit and value of each reservoir in providing flood abatement. Flood storage volumes vary based on elevation and terrain within the reservoir, shoreline length and control pool elevation and range from a low of 30,000 acre-feet at Great Falls Reservoir to 4,008,000 acre-feet at Kentucky Reservoir.

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – No Action Alternative

Under Alternative A, TVA would not take any action to align or complete plans of the TVA managed lands on the eight reservoirs, and floodplain reviews would continue following existing land use designations. Future proposals would be evaluated for consistency with existing land use agreements, EO 11988, and/or current allocations as defined under the Forecast or Multiple Use Tract Allocations. Potential projects affecting floodplains would consist of water-dependent facilities, repetitive actions and non-repetitive actions. Compared to the overall extent of a reservoir, potential impacts are expected to be limited in scope and area; therefore, the potential impacts to reservoir flood storage volumes, floodplains and floodplain values would be minor.

3.10.2.2 Alternative B – Proposed Land Use Plan Alternative

Under Alternative B, a substantial portion (77.3 percent) of the TVA land in the eight RLMPs would be allocated to Zones 3 (Sensitive Resource Management) and 4 (Natural Resource Conservation), in which construction of facilities or structures within the floodplain is not anticipated. Any future projects associated with land allocated to Zones 2 (Project Operations), 5 (Industrial) or 6 (Developed Recreation) would be evaluated in accordance with EO 11988. However, for the reasons stated under Alternative A, the potential for adverse impacts to floodplains and their natural and beneficial floodplain values would be minor.

3.11 Air Quality and Climate Change

3.11.1 Affected Environment

3.11.1.1 Air Quality

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. In accordance with the CAA Amendments of 1990, all counties are designated with respect to compliance, or degree of noncompliance, with NAAQS. These designations are either attainment, nonattainment, or unclassifiable. 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.” Non-attainment areas are further classified as extreme, severe, serious, moderate, and marginal. An area may be designated as unclassifiable when there is a lack of data to form a basis of attainment status. New or expanded emissions sources are carefully controlled in areas designated as nonattainment for a pollutant. All reservoirs are in counties designated as attainment except for Fort Loudoun Reservoir, which is located in counties that are in nonattainment for $PM_{2.5}$ (Table 3-24). The state of Tennessee, however, anticipates submitting a re-designation request in October 2016 to the USEPA to have the designation changed to attainment.

Table 3-24. Air Quality Attainment Status by County

Reservoir	Counties	Air Quality Status
Chickamauga	Bradley, Hamilton, Meigs, McMinn, Rhea (TN)	TN – all counties in attainment
Fort Loudoun	Blount, Knox, Loudon (TN)	TN – Blount, Knox and Loudon counties are moderate nonattainment for $PM_{2.5}$ 2012 annual standards (re-designation request anticipated in October 2016) (USEPA 2016b)
Great Falls	Warren, White (TN)	TN – all counties in attainment
Kentucky	Callow, Livingston, Lyon (KY); Benton, Decatur, Hardin, Henry, Houston, Humphreys, Perry, Stewart, Wayne (TN)	KY – all counties in attainment TN – all counties in attainment
Nickajack	Hamilton, Marion (TN); Dade (GA)	GA – county in attainment TN – all counties in attainment
Normandy	Bedford, Coffee (TN)	TN – all counties in attainment
Wheeler	Lauderdale, Lawrence, Limestone, Madison, Marshall, Morgan (AL)	AL – all counties in attainment
Wilson	Colbert, Lauderdale (AL)	AL – all counties in attainment

Source: USEPA 2016b

Prevention of significant deterioration (PSD) regulations are used to limit air pollutant emissions from new or expanding sources in attainment or unclassifiable areas. Under these regulations, some national parks and wilderness areas are designated PSD Class I air quality areas and are afforded special protection. There are eight Class I areas within approximately 100 miles of the eight RLMPs, including Sipsey Wilderness, Alabama; Mammoth Cave National Park, Kentucky; Mingo Wilderness, Missouri; Linville Gorge Wilderness Area, North Carolina; Joyce Kilmer/Slickrock Wilderness, North Carolina; Shining Rock Wilderness Area, North Carolina; the Great Smoky Mountains National Park,

North Carolina/Tennessee; and Cohutta Wilderness Area, Tennessee/Georgia. The closest Class I area is the Great Smoky Mountains National Park located near the Fort Loudoun Reservoir.

Sources of air emissions within the eight RLMPS include industrial development, public works projects, developed recreation sites (e.g., marinas) motorized watercraft (motor boats, jet skis), and other vehicle traffic. Short-term construction activities generate air emissions from the use of equipment, trucks and personal vehicles as well as fugitive dust or particulate matter from disturbed areas and travel on unpaved roads.

Air emissions would be greatest from uses allowed in lands allocated to Zone 5 (Industrial). Based on the types of activities allowable on lands allocated to Zone 2 (Project Operations) and Zone 6 (Developed Recreation) (boat traffic around locks and dams, operating facilities, construction of public works projects and motor craft and vehicle use) air emissions would be minor. Uses allowed in lands allocated to Zones 3 (Sensitive Resource Management) 4 (Natural Resource Conservation) and 7 (Shoreline Access) generate little or no air emissions.

3.11.1.2 Climate Change

"Climate change" refers to any substantive change in measures of climate, such as temperature, precipitation, or wind (USEPA 2016c). The 2014 National Climate Assessment concluded that global climate is projected to continue to change over this century and beyond. The amount of warming projected beyond the next few decades, by these studies, is directly linked to the cumulative global emissions of greenhouse gasses (e.g., carbon dioxide [CO_2], methane) and particles. By the end of this century, the 2014 National Climate Assessment concluded a 3° Fahrenheit (F) to 5°F rise can be projected under the lower emissions scenario and a 5°F to 10°F rise for a higher emissions scenario (Melillo et al. 2014).

Generally, climate change results in Earth's lower atmosphere becoming warmer and moister, resulting in the potential for more energy for storms and certain severe weather events.

TVA has, in accordance with the requirements of EO 13514 – Federal Leadership in Environmental, Energy, and Economic Performance and EO 13653 – Preparing the United States for the Impacts of Climate Change, adopted a climate adaptation plan that establishes adaptation planning goals and describes the challenges and opportunities a challenging climate may present to its mission and operations. The goal of TVA's adaptation planning process is to ensure that TVA continues to achieve its mission and program goals and to operate in a secure, effective and efficient manner in a changing climate.

TVA manages the effects of climate change on its mission, programs and operations within its environmental management processes. TVA's Environmental Policy includes the specific objective of stopping the growth in volume of emissions and reducing the rate of carbon emissions by 2020 by supporting a full slate of reliable, affordable, lower-CO_2 energy-supply opportunities and energy efficiency.

Activities that contribute CO_2 emissions include industrial activities, manufacturing activities, barge, truck, and personal use: motorized watercraft traffic; and other construction involving the use of fossil-fuel-powered equipment (e.g., bulldozers, loaders, haulers,

trucks, generators, etc.). Reservoir land use that generate CO_2 emissions primarily occur in Zones 2, 5 and 6 (Project Operations, Industrial and Developed Recreation). Activities that decrease CO_2 emissions occur primarily on lands allocated for Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation). For example, protect forested areas that absorb and store $C0_2$ from the atmosphere via a process known as carbon sequestration reduce CO_2 in the atmosphere.

3.11.2 Environmental Consequences

The impacts described below are based on planning level assessments for air emissions to be generated as a result of the land that would be allocated to each of the TVA land management zones. However, because current uses would not change, impacts to ambient air quality would be minor under both alternatives.

3.11.2.1 Alternative A – No Action Alternative

Potential air emission impacts from industrial development would depend on the type of industry that might locate on these parcels. Future projects would be subject to federal, state, and local air quality regulations to help control emissions and avoid impacts to air quality. Only 1.5 percent of the land on the eight reservoirs would be allocated to Zone 5 (Industrial). Given the relatively small acreage allocated to Zone 5 (Industrial) and types of facilities and activities in the eight reservoirs, impacts to air quality are anticipated to be negligible.

The percentage of land allocated to Zone 2 (Project Operations) and Zone 6 (Developed Recreation) accounts for approximately 12 percent of the land area managed on the eight reservoirs. As emissions from developed recreation and dam operation activities are typically very minor and the overall percentage of land allocated to these zones is small, potential impacts to air quality would be negligible. In the event that a development is proposed for an areas located in or with the potential to affect a nonattainment area, such as at the Fort Loudon Reservoir, TVA would require a conformity applicability determination pursuant to regulations implementing Section 176(c) of the CAA to assure compatibility with measures in local plans for achieving attainment.

Under Alternative A, approximately 81.4 percent of TVA lands on the eight reservoirs would remain allocated as Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), which are lands on which activities are unlikely to result in greenhouse gas emissions and highly likely to provide carbon sequestration. Approximately 14 percent of lands are allocated for Zones 2, 5 and 6 (Project Operations, Industrial and Developed Recreation), where greenhouse gas emissions may occur. As noted above, only 1.5 percent of these lands would be allocated for industrial uses, the use most likely to result in future emissions of greenhouse gases.

3.11.2.2 Alternative B – Proposed Land Use Plan Alternative

Land allocations under Alternative B that differ from current allocations or uses under Alternative A were primarily proposed to reflect existing conditions and suitable uses of land. Under this alternative, a slightly higher percent of land would be allocated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation), as compared to Alternative A (see Table 2-7).

Approximately 2 percent of the land in the eight RLMPs is allocated to Zone 5 (Industrial). Potential air emissions from uses would depend on the type of industry that might locate to these three reservoirs in the future. However, an appropriate level of environmental review

would be required to document the extent of expected air quality. Therefore given the relatively small amount of land allocated to Zone 5 (Industrial) and as future development would be subject to federal, state, and local air quality regulations, air quality impacts are anticipated to be negligible.

The amount of land allocated in the eight RLMPs to Zone 2 (Project Operations) and Zone 6 (Developed Recreation) would increase by 1.1 percent and 1.2 percent, respectively. Although activities allowed in these zones would support uses with the potential to impact air quality, air emissions are expected to have a negligible impact for the reasons described under Alternative A.

Under Alternative B, TVA's proposed changes to current allocations and uses would result in a decrease in lands allocated for Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation), from 81.4 percent of all lands to 77.3 percent. Fewer lands would be available for potential carbon sequestration. TVA's proposed changes would also increase areas allocated to Zone 2, Zone 5 and Zone 6 (Project Operations, Industrial and Developed Recreation, respectively), from approximately 14 percent to 17.2 percent. Zone 1 (Industrial) areas would increase by 0.9 percent (or more than 1,300 acres), thereby increasing the potential for greenhouse gas emissions.

Under Alternative B, approximately 5,590 acres of lands that are currently allocated to Zones 3 and 4 (under Alternative A) would be re-allocated to Zones 2, 5, 6, or 7. It is unlikely that all of these lands would be fully developed during the life of the RLMP and the eventual uses of these lands is currently speculative. However, for perspective on the potential impacts of such a conversion on carbon stock, TVA used a quantification tool to estimate the carbon sequestration that may be lost from such a conversion. Such an estimation requires making several conservative analytical assumptions. In addition to assuming that all vegetation is cleared from the 5,590 acres during the life of the RLMP, if TVA assumes that all of the 5,590 acres are currently forested (the land cover with the greatest potential carbon sink) and estimates that the forest composition and age is typical for the region (Alabama, Kentucky, and Tennessee), TVA estimates that the conversion of these lands would result in the loss of carbon stock equivalent to 4,087 metric tons of carbon sequestered in one year (COLE 2016). As noted above, additional air emissions would occur during development activities and an appropriate level of environmental review would be required to document the extent of additional greenhouse gas emissions.

Alternative B would likely result in greater quantities of greenhouse gas emissions and fewer carbon sinks than Alternative A.

3.12 Cultural and Historic Resources

3.12.1 Affected Environment

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events that lack material evidence of those events. Cultural resources that are listed, or considered eligible for listing, on the National Register of Historic Places (NRHP) are called historic properties. To be considered an historic property, a cultural resource must possess both integrity and significance. A historic property's integrity is based on its location, design, setting, materials, workmanship, feeling, and association. The significance is established when historic properties meet at least one of the following criteria: (a) are associated with important historical events or are associated with the lives of significant historic persons;

(b) embody distinctive characteristics of a type, period, or method of construction; (c) represent the work of a master, or have high artistic value; or (d) have yielded or may yield information important in history or prehistory (36 CFR Part 60.4).

Section 106 of the 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 Proposed Action Alternative 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 16427.2-acre area where TVA is proposing a zone change.

Section 106 of the NHPA requires federal agencies to consult with the respective 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.

3.12.1.1 Archaeological Resources

The Tennessee Valley has a rich cultural heritage. The temperate climate and abundant resources attracted nomadic hunters-gatherers into the region by 13,500 years ago. Through centuries of continuity and conflict, a rich diversity of Native American cultures evolved. Human occupation in the Valley includes five broad cultural periods: Paleo-Indian (Older than 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). 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. In the early Historic period, this location was largely populated by members of the Historic Indian tribes. The influx of European settlers into the region forced cession of Indian lands.

The subsequent decades were marked by growth of urban centers, large plantations, and smaller subsistence farming homesteads. The construction of railroads furthered the growth of industry in the valley. The Civil War played a significant role in the development of the region. Archaeological resources associated with the antebellum and post-antebellum periods include remains associated with individual farmsteads or larger scale plantations and civic, ceremonial, and industrial sites.

Archaeological investigations in the TVA region began in the 19th century with the explorations of Cyrus Thomas, C.B. Moore, and the Smithsonian Institute. These early investigations focused on larger sites such as mound complexes. The earliest TVA related archaeological surveys occurred in the 1930s and 1940s prior to inundation of Wheeler, Chickamauga, and Kentucky (Webb 1939; Lewis and Kneberg 1995). These surveys,

staffed by New Deal public works programs, were opportunistic in nature focusing on the excavation of large village sites. Constructed in 1942, Fort Loudoun was not subject to the same level of intensive survey as attention was being diverted to World War II. Archaeological investigations were conducted prior to the impoundment of the Duck River for the Normandy Reservoir (Faulkner and McCollough 1973). TVA acquired Wilson Dam, Great Falls, and Hales Bar Dam (resulting in the Nickajack impoundment) subsequent to inundation.

In recent decades, TVA fee-owned land has been subject to both systematic and opportunistic archaeological surveys for TVA undertakings and land planning actions. Because survey coverage below summer pool elevation is inconsistent and due to the lack of comprehensive data on survey coverage throughout TVA's history, it is difficult to estimate the percentage of TVA lands associated with the RLMP that have been systematically surveyed. Table 3-25 provides estimates regarding the approximate percentage of lands subject to systematic survey for each of the Reservoirs and the number of sites identified. Many additional archaeological sites are likely present that have not been recorded as a result of the limited surveys conducted.

Table 3-25. Approximate Number of Archaeological Sites Identified on TVA Lands and Acres Systematically Surveyed per Reservation

TVA Reservation/Property	% Above Pool Land Systematically Surveyed	Total Number of Sites Recorded*	Sites Located with Parcels Subject to Zone Reallocation
Nickajack	15%	110	13
Normandy	Unknown	43	30
Chickamauga	8%	558	207
Kentucky	1%	1835	257
Wheeler	8%	1331	148
Wilson	80%	30	0
Great Falls	<1%	0	0
Fort Loudon	<1%	96	17

3.12.1.2 Historic Structures

A systematic identification survey for historic structures has not conducted for TVA fee-owned land. Based on limited surveys, approximately 1,536 historic structures have been recorded on or near these Reservoirs (Table 3-26). The acquisition of land for construction of the TVA reservoirs resulted in the removal of many structures and other man-made features. The 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. The formation of reservoirs on the Tennessee River and its tributaries permanently changed the cultural geography of those regions. Due to the historic significance associated with the development of TVA Nickajack, and Chickamauga Dams and contributing structures are considered eligible for listing in the NRHP. Wheeler Dam has recently been listed to the NRHP. Although not constructed by TVA, Great Falls also is considered eligible for the NRHP. Wilson Dam is listed as a National Historic Landmark.

Table 3-26. Number of Historic Structures Surveyed

Project and Location	Recorded Historic Structures	NRHP-Eligible or Potentially Eligible Historic Structures	NRHP-Listed Historic Structures/Districts
Wilson, AL	21	1	4
Wheeler, AL	546	1	7
Nickajack, TN	50	1	0
Chickamauga, TN	138	1	10
Fort Loudoun, TN	139	1	2
Normandy, TN	93	1	4
Great Falls, TN	111	1	0
Kentucky, KY/TN	438	1	12

3.12.2 Environmental Consequences

Federal agencies are required by the NHPA and by the NEPA to consider the possible effects of their undertakings on historic properties. *Undertaking* means any project, activity, or program, and any of its elements that has the potential to have an effect on a historic property and that is under the direct or indirect jurisdiction of a federal agency or is licensed or assisted by a federal agency. Considering an undertaking's possible effects on historic properties is accomplished through a four-step review process outlined in Section 106 of NHPA. These steps are: (1) initiation (defining the undertaking and the area of potential effects, or APE, and identifying the parties who should be consulted in the process); (2) identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties); (3) assessment of adverse effects (determining whether the undertaking would result in damaging the qualities that make the property eligible for the National Register); and (4) resolution of adverse effects (by avoidance, minimization, or mitigation). Throughout the process the agency must consult with the appropriate State Historic Preservation Officer, federally-recognized Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

A project may have effects on a historic property that are not adverse, if those effects do not diminish the qualities of the property that identify it as eligible for listing on the National Register. However, if the agency determines (in consultation) that the undertaking's effect on a historic property within the APE would diminish any of the qualities that make the property eligible for listing on the National Register (based on the criteria for evaluation at 36 CFR Part 60.4), the effect is said to be adverse. Examples of adverse effects would be ground disturbing activity in an archaeological site, or erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting. Adverse effects must be resolved. Resolution may consist of avoidance (such as redesigning a project to avoid impacts or choosing a project alternative that does not result in adverse effects), minimization (such as redesign to lessen the effects, or planting visual screenings), or mitigation. Adverse effects to archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic structures sometimes involves thorough documentation of the structure by compiling historic records, studies, and photographs. Agencies are required to consult with SHPOs, tribes, and others throughout

the process and to document adverse effects to historic properties resulting from agency undertakings.

TVA will continue to conduct project related reviews of proposed activities in TVA controlled areas where such activities could affect historic properties. Historic properties within these areas will be avoided and protected whenever possible. If avoidance is not possible, proper procedures would be implemented to mitigate any potential effects on the historic property. Under either alternative, the adverse effects to significant archaeological resources will be mitigated through data recovery excavations or by other means pursuant to 36 CFR Part 800.

3.12.2.1 Alternative A – No Action Alternative

When developing many of the existing land use plans, TVA reviewed information and records about known cultural resources when determining the appropriate land use allocations, thereby protecting these resources. Those protections would continue under Alternative A on reservoirs for which RLMPs were previously developed. On reservoirs for which no planning has been conducted, the presence of cultural resources has not been considered when determining appropriate uses. However, for all reservoirs, site-specific activities proposed in the future would continue to be subject to review under 36 CFR 800 and approved, approved with conditions, or denied according to the presence/absence of historic properties and the potential of the activity to adversely affect historic properties.

If a historic property cannot be avoided or effects cannot be minimized and mitigation is required, appropriate archaeological investigation would be necessary, and potentially impacted resources would be mitigated in consultation with the applicable SHPO, federally recognized tribes, and other consulting parties. All projects and cultural resources would be subject to the regulatory requirements of the NHPA.

3.12.2.2 Alternative B – Proposed Land Use Plan Alternative

When developing its proposed RLMP for each reservoir, TVA reviewed information and records about known cultural resources on its lands prior to proposing land use zone allocations. Parcels with important cultural resources are proposed for Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation) management, because surface disturbing activities would generally not be permissible in these zones. Under Alternative B, there are commitments for the management of cultural resources within Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation), effectively preserving resources within the planned parcels. The commitments require TVA Cultural Resources staff would review all proposed activities that occur on parcels and that have the potential to impact historic properties.

As under Alternative A, regardless of the zone allocation given to a parcel under the RLMP, TVA Cultural Resources staff would review any proposed site-specific development to determine whether the development would impact known and/or unknown historic properties. If the resources cannot be avoided, then further investigations would be required to determine the resources' eligibility for inclusion in the NRHP. For any proposed undertaking, TVA would take necessary steps to ensure compliance with the regulatory requirements under NHPA and consider the development's effects as they are proposed. TVA will comply with the NRP Programmatic Agreement executed in 2011 in consultation with the SHPOs, Advisory Council of Historic Preservation and federally recognized Indian tribes which subsumes and governs all past and future land plans.

3.13 Natural Areas and Ecologically Significant Sites

3.13.1 Affected Environment

This section addresses natural areas that are on or within TVA lands, and within a 3-mile radius of the eight RLMPs. 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, National Park Service, U.S. Forest Service, state or 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 regulatory 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. Although no management plan is likely to be in place for such sites, there may be an active effort to acquire this land for public ownership or otherwise provide protection for the sensitive resource, such as a conservation easement. 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.

Natural areas occurring on TVA lands include both TVA- and non-TVA managed areas. A review of the TVA Natural Heritage database indicated that 46 natural areas managed by the TVA Natural Areas Program are included within the eight RLMPS (Table 3-27). No TVA-managed natural areas are on Fort Loudoun or Great Falls reservoir. No NRI streams are located within 3 miles of the reservoirs or on or within TVA lands. An additional 135 natural areas either managed by other entities or recognized as ecologically significant are located on or within the eight RLMPs (see Appendix D, Tables D-19 through D-26). Natural areas within 3 miles of each of the eight reservoirs are listed in Table D-27 through D-34 of Appendix D.

Table 3-27. Natural Areas Managed by TVA on Reservoir Lands

Reservoir	Natural Area	Type	Acres
Chickamauga	Armstrong Bend	Habitat Protection Area	30.2
	Big Ridge	Small Wild Area	226.1
	Blythe Ferry	Habitat Protection Area	8.9
	Butcher Bluff	Habitat Protection Area	15.3
	Chickamauga Shoreline	Habitat Protection Area	54.3
	Chigger Point	Habitat Protection Area	15.3
	Eagle Roost	Habitat Protection Area	9.8
	Eaves Bluff	Habitat Protection Area	3.7
	Fairview Slopes	Habitat Protection Area	190.7
	Grasshopper Creek	Small Wild Area	202.1
	Johnson Bottoms	Habitat Protection Area	40.4
	Murphy Hill	Habitat Protection Area	195.6
	Possum Creek	Habitat Protection Area	78.3
	Soddy Creek	Habitat Protection Area	35.8
	Three B	Habitat Protection Area	45.4

Reservoir	Natural Area	Type	Acres
	Ware Branch	Habitat Protection Area	50.2
Kentucky	Alley Bluff	Habitat Protection Area	71
	Blood River	Habitat Protection Area	146.3
	Clendenin Creek	Habitat Protection Area	23.2
	Crooked Creek	Small Wild Area	50.4
	Henson Branch Rare Histosol Wetland	Habitat Protection Area	89.2
	Jennings Bluff Proposed	Habitat Protection Area	88.1
	Lady's Bluff	Small Wild Area	44.7
	Mccuiston Woods	Habitat Protection Area	51.2
	Paint Rock Bluff	Small Wild Area	68.4
	Panther Creek Swamp	Habitat Protection Area	144.2
	Tribble Woods	Habitat Protection Area	33.9
	Tupelo Gum Swamp	Habitat Protection Area	65.3
	Wilkinson Pond Slough	Habitat Protection Area	53.9
Nickajack	Huff Branch	Habitat Protection Area	20.6
	Little Cedar Mountain	Habitat Protection Area	319.2
	Marion Bridge	Habitat Protection Area	111.2
	Nickajack Cave	Habitat Protection Area, Small Wild Area, Wildlife Observation Area	401.9
	Nickajack Oak Wetland	Habitat Protection Area	47.9
	Raccoon Mountain Pump Storage	Wildlife Observation Area	646.8
	Shellmound Road Bluff	Habitat Protection Area	99.3
Normandy	Short Springs	Small Wild Area	71.3
Wheeler	Clark Bluff	Habitat Protection Area	20.4
	Clarksville Mountain	Habitat Protection Area	37.5
	Cotaco Creek	Small Wild Area	44
	English Ivy	Small Wild Area	20.5
	Long Oak Forest	Small Wild Area	100.8
	Muddy Bottoms	Habitat Protection Area	287.5
	Narrow Bluff	Habitat Protection Area	4.2
	Pryor Branch	Habitat Protection Area	7.9
Wilson	Old First Quarters	Small Wild Area	26.2

3.13.2 Environmental Consequences

Natural areas on are generally located on committed parcels allocated according to their prescribed land use to one of four land management zones: Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation) and Zone 6 (Developed Recreation). Additionally committed parcels fronting natural areas that are situated on back-lying public lands are zoned according the use of the back-lying land and are allocated the appropriate land management zone. Natural areas situated on

property proposed for allocation to Zones 3 and 4 are managed for the protection and enhancement of resources and are not subject to adverse impacts; therefore properties located within these zones would remain “natural” and not be converted to other land uses, preserving the natural areas. Under both alternatives, between 77 and 81 percent of TVA land along the reservoirs is proposed for allocation to Zones 3 and 4; therefore, at minimum nearly three-fourths of TVA lands have management objectives that support and enhance the character of natural areas.

3.13.2.1 Alternative A – No Action Alternative

All natural areas are located on parcels that remain committed to their current use. No changes to the size, location, or character of natural areas are expected. However, under this alternative TVA would not take any action to align or complete plans of the TVA managed lands on the eight reservoirs. While natural areas in the vicinity of the eight reservoirs would not be adversely affected, management of these lands would not be consistent with other reservoirs in the TVA system. This would have a minor indirect impact as TVA would not adhere to a systematic process for management of these areas.

3.13.2.2 Alternative B – Proposed Land Use Plan Alternative

As the proposed zone allocations generally reflect the current land use and management practices, no major changes to the size, location, or character of natural areas are expected to result from the selection of Alternative B.

Overall, the efficient management and protection of TVA-designated natural areas and ecologically significant sites will benefit from the development and implementation of Alternative B as each RLMP provides a systematic process for identifying these areas and implementing management objectives for parcels which contain these sites.

3.14 Aesthetics and Visual Resources

3.14.1 Affected Environment

This section provides a review and classification of the visual attributes of existing scenery, along with the anticipated attributes resulting from the proposed action. The classification criteria used in this analysis are adapted from a scenic management system developed by the U.S. Forest Service and integrated with planning methods used by TVA (U.S. Forest Service 1995).

The visual landscape of an area is formed by physical, biological and man-made features that combine to influence both landscape identifiability and uniqueness. Scenic resources within a landscape are evaluated based on a number of factors that include scenic attractiveness, integrity and visibility. Scenic attractiveness is a measure of scenic quality based on human perceptions of intrinsic beauty as expressed in the forms, colors, textures and visual composition of each landscape. Scenic integrity is a measure of scenic importance based on the degree of visual unity and wholeness of the natural landscape character. The varied combinations of natural features and human alterations both shape landscape character and help define their scenic importance. The subjective perceptions of a landscape’s aesthetic quality and sense of place is dependent on where and how it is viewed.

Scenic visibility of a landscape may be described in terms of three distance contexts: (1) foreground, (2) middleground and (3) background. In the foreground, an area within 0.5 mile of the observer, individual details of specific objects are important and easily

distinguished. In the middleground, from 0.5 to 4 miles from the observer, object characteristics are distinguishable but their details are weak and they tend to merge into larger patterns. In the distant part of the landscape, the background, details and colors of objects are not normally discernible unless they are especially large, standing alone, or have a substantial color contrast. In this review, the background is measured as 4 to 10 miles from the observer. Visual and aesthetic impacts associated with a particular action may occur as a result of the introduction of a feature that is not consistent with the existing viewshed. Consequently, the character of an existing site is an important factor in evaluating potential visual impacts.

The reservoirs within the eight RLMPs include a variety of landscapes and natural features, including rivers, floodplains, islands, wetlands, and forests. Since the scenic features of the landscape within the reservoirs are not limited by parcel boundaries, the aesthetics of the landscape extend across public and private land alike and combine with the adjacent land uses including residential development, public parks, and sporadic industrial features. The reservoirs offer abundant water-recreation opportunities, therefore the view of the landscape from on the water is important and can vary widely. Most creek embayments are broadly open at the mouth, while some wind over a mile to their headwaters.

Among the scenic resources of each of the reservoirs, the water body itself is the most distinct and outstanding aesthetic feature. The horizontal surface provides visual balance and contrast to the islands and wooded hillsides. The reservoirs weave around ridges and bends, changing views periodically seen from the water. The reservoirs also link the other landscape features together. To most observers, views across the water are generally satisfying and peaceful.

Islands are other significant features that are common to most of the eight reservoirs. These islands typically provide scenic accents and visual reference points throughout the reservoirs and commonly serve as visual buffers for less desirable views. They may also provide a pleasing foreground frame for the distant shoreline or background.

Other important scenic features include the secluded coves and steep, wooded ridges that occur around the reservoirs. The isolated coves with wooded shoreline provide relatively private locations for dispersed recreation activities. Significant elevation changes along some stretches of shoreline provide a dramatic contrast to the surrounding reservoir and gently sloping countryside, particularly when they are viewed from background distances.

Most shorelines upstream of the dams appear natural. Slopes and ridgelines seen from the reservoirs are generally heavily vegetated with mature hardwood and evergreen trees and provide positive visual contrast to the reservoirs. On most of the eight reservoirs, there is usually little development in the foreground distances.

Various combinations of development and land use patterns that are present in the viewed landscapes along the shorelines of the eight reservoirs contribute to the overall visual character of the project area. These can range from the more urban and industrial developments often associated with the mainstem reservoirs to residential developments that are common to both mainstem and tributary reservoirs. Urban and industrial developments generally create a lower level of scenic integrity. Residential areas and water-related facilities that include docks, boathouses, stairways, and shoreline protection structures are becoming more common. The presence of these facilities in the landscape reduces scenic integrity.

TVA's dam structures contrast visually with the lands that border them. The structures appear predominately industrial near the dams and associated features. Most buildings are broadly horizontal and can be seen in the foreground. Transmission structures, including towers and lines, and fossil and nuclear plant structures generally can be seen up to middle-ground distances, depending on topography and viewer position. Farther away, closer to the borders on all sides, the landscape becomes natural appearing with slight human alterations. Residents and motorists along local roads have views up to middle-ground distances of the dam, depending on seasonal variations of vegetation and atmospheric conditions.

3.14.2 Environmental Consequences

The scenic value or quality of visual resources commonly is based on human perceptions of intrinsic beauty as expressed in the forms, colors, textures, and visual composition seen in each landscape. Human perceptions of shoreline development no doubt varies widely among users and recreationists depending on their preferences and expectations. The assessment of scenic quality is often evaluated using scenic attractiveness (e.g., outstanding natural features, scenic variety, seasonal change, and strategic location), scenic integrity (e.g., visual unity and wholeness of the natural landscape character), human sensitivity (e.g., the expressed concern of people for the scenic qualities of the project area derived or confirmed by public input), and viewing distance (i.e., how far an area can be seen by observers and the degree of visible detail). The impacts of the alternatives on visual resources were qualitatively evaluated considering the scenic quality characteristics described above. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. Scenic Value Class is determined by combining the levels of scenic attractiveness, scenic integrity, and visibility.

The scenic character of wildlife management areas, islands, and wetlands would be preserved under both alternatives. This would preserve the scenic accent, attractive contrast, and visual richness these resources contribute to reservoir vistas. Several areas of the reservoirs would benefit as major sections of the riverine upper reservoirs would be protected or screened from further development. This would preserve the variety of natural features including the river, forest-covered mountainside along the banks, linear channel islands, and ridge landforms. The combined contributions of these attractive features would help sustain the scenic landscape character and aesthetically pleasing sense of place.

The size of the eight reservoirs and the amount of TVA-managed land on each of the reservoirs vary greatly. Where TVA lands represent a small portion of the reservoir's overall shoreline (e.g., Fort Loudoun and Wilson reservoirs), the effects of TVA management of its lands on the overall visual character of the reservoir is generally very limited. Conversely, where TVA lands make up a large portion of the reservoir's shoreline (Kentucky and Wheeler reservoirs), TVA land management decisions may greatly influence the scenic character of the reservoir.

Lands having the greatest scenic qualities are often the most desirable for public preservation. Frequently, however, they are also the most sought-after for commercial and residential development. Under both alternatives, TVA would continue to conduct environmental reviews, including evaluation for potential visual impacts, prior to the approval of any proposed development on public land. These reviews may prevent the most serious scenic disruptions or loss of visual resources by requiring mitigation measures to reduce potentially significant visual impacts.

3.14.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, the allocation of selected lands based upon visual resource conservation concerns would continue to be based on the current RLMPs for each reservoir. However, these RLMPs may not fully incorporate the current aesthetic resources within the reservoirs. Where TVA has custody of the land, actions of TVA and others would be evaluated to determine potential visual effects prior to land use approval, thereby preventing serious visual disruptions or loss of scenic resources. Approval of some activities may also require avoidance or mitigation measures that reduce visual impacts, for example in the case of neighboring historic properties. Activities could also occur on lands adjacent to those owned by TVA that could change the aesthetic quality within the reservoir. There are no known county or local ordinances to protect aesthetics near the reservoirs.

Adoption of Alternative A would likely result in some minor long-term negative impacts, which include gradual losses of visual resources, scenic attractiveness, and undeveloped areas, as well as negative changes in the aesthetic sense of place. As a result, scenic integrity may decrease slightly as patchy development spreads within views from the reservoirs.

3.14.2.2 Alternative B – Proposed Land Use Plan Alternative

Under Alternative B, the eight RLMPs would enhance conservation and protection of scenic resources as scenic values were considered during the allocation process. Parcels having distinctive and valuable visual characteristics such as islands, rock bluffs, steep and wooded ridges, wetlands, and flowing shallow water areas were typically allocated to either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation), and thus, are unlikely to be disturbed under Alternative B. These Zone 3 and 4 lands typically provide valuable protective screening and important scenic buffers.

However, under this alternative, there would be an overall increase in acreage allocated to Zones 2, 5, 6, and 7 (Project Operations, Industrial, Developed Recreation, and Shoreline Access). During the parcel allocation process, the scenic values in each parcel were taken into consideration. Therefore, while activities on parcels allocated to Zones 2, 5, 6, and 7 have the greatest potential to decrease aesthetics value, these parcels likely have the lowest scenic value so any change would be minor. Additionally, the majority (77.3 percent) would still be allocated to Zones 3 and 4 and be protective of aesthetic resources.

Activities that involve minor, temporary visible changes, such as recreational hiking, picnicking, bank fishing, and some selective forest management, could take place on lands allocated to Zone 3 and 4 (Sensitive Resource Management and Natural Resource Conservation). Some development with more visible modifications could take place on land allocated to Zone 4 as long as the location and appearance were subordinate to maintaining the desired visual characteristics. Management and protection of the scenic landscape character would provide direction for any land use decisions affecting these parcels. Visual impacts would also be considered in decisions affecting the use of parcels allocated to one of the other proposed land management zones.

Adoption of Alternative B would likely have an increasingly beneficial impact over time as the scenic values of the parcels were considered during the allocation process. The eight RLMPs would provide for protection of scenic resources and preservation of natural areas, as development grows around the reservoirs. Scenic integrity would remain moderate or higher in selected areas. Consequently, implementation of Alternative B would provide

important protective management of visual resources, which would help preserve the aesthetic sense of place and scenic landscape character of the reservoirs.

3.15 Noise

3.15.1 Affected Environment

Noise is generally defined as unwanted sound that disrupts normal activities or that diminishes the quality of the environment. It is usually caused by human activity that adds to the natural acoustic setting of a locale. Various descriptors are used to describe sound and noise levels. These include the A-weighted decibel scale (dBA); sound level equivalents (Leq), day-night average sound levels (Ldn), and percentile levels.

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. The threshold of human hearing is about 0 dBA; less than 30 dBA is very quiet; 30 to 60 dBA is quiet; 60 to 90 dBA is moderately loud; 90 to 110 dBA is very loud; and 110 to 130 is uncomfortably loud. A 10-decibel increase in sound levels is perceived as a doubling of the loudness.

To account for sound fluctuations, environmental noise is commonly described in terms of the equivalent sound level, or Leq. The Leq value, expressed in dBA, is the energy-averaged, A-weighted sound level for the time period of interest. The day-night sound level (Ldn), is the 24-hr equivalent sound level, which incorporates a 10-dBA correction penalty for the hours between 10 p.m. and 7 a.m., to account for the increased sensitivity of people to sounds that occur at night.

The perceived loudness or intensity between a noise source and a receptor may change as a result of distance, topography, vegetation, water bodies, and structures. The closer a receptor is to a noise source the louder the noise seems; for every doubling of distance from a source the intensity drops by about 6 dBA over land and about 5 dBA over water. Topography, vegetation, and structures can change noise intensity through reflection, absorption, or deflection. Reflection tends to increase the intensity, while absorption and deflection tend to decrease the intensity.

Sources of noise along each of the eight reservoirs include industrial development, power generation facilities, substations, developed recreation sites, recreational watercraft use, navigation uses and automobile traffic. Lands allocated to Zone 5 (Industrial) have the greatest potential to support uses that produce higher levels of noise. Noise emission levels from sources that would be allocated to Zone 2 (Project Operations) can range from 70 dBA to 100 dBA (USDOI 2008). These sources include power generation, navigation locks and associated barge operations. Noise from generators at TVA facilities produce a constant, low frequency drone during generation. However because they are housed in buildings, they are not audible at a distance. Noise that occurs from barge traffic and when water is released would approach 100 dBA, but would be intermittent and would attenuate with distance. Normandy Reservoir was impounded for water supply, flood control, and recreational development and is not a hydroelectric facility. Therefore, noise emissions from land allocated to Zone 2 at this reservoir would be relatively low.

Noise emissions associated with land uses allocated to Zone 6 (Developed Recreation) depend on the location of the facilities and the type and intensity of recreational use. For example, recreational facilities that support low-intensity uses, such as parks or open

spaces, generate less noise than more intensive uses such as marinas and developed recreation areas. Noise levels and patterns at developed recreation areas are typical of campground and day use recreation areas. These developed recreational use areas could be compared to residential areas with an Ldn range of about 50 dBA (quiet suburb, not close to major roads, and little nighttime activity) to about 65 dBA (relatively noisy residential area). The most conspicuous recreational noise producers are power boats and personal water craft (jet skis) on the reservoir. While power boats and jet skis may both have an average sound level of about 90 dBA, noise emissions from these sources can exceed 115 dBA depending on speed and other operational factors. A list of common indoor and outdoor noise levels is presented in Table 3-28.

The Noise Control Act of 1972, along with its subsequent amendments (Quiet Communities Act of 1978, USC 42 4901–4918), delegates authority to the states to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. Many local noise ordinances are qualitative, such as prohibiting excessive noise or noise that results in a public nuisance. Because of the subjective nature of such ordinances, they are often difficult to enforce.

There is considerable variation in individual response to noise. Noise that one person would consider mildly annoying, another person may consider highly annoying or not annoying at all. The USEPA noise guideline recommends an Ldn of 55 dBA, which is sufficient to protect the public from the effect of broadband environmental noise in typical outdoor and residential areas. These levels are not regulatory goals but are “intentionally conservative to protect the most sensitive portion of the American population” with “an additional margin of safety” (USEPA 1974). The U.S. Department of Housing and Urban Development (HUD) considers an Ldn of 65 dBA or less to be compatible with residential areas (HUD 1985).

3.15.2 Environmental Consequences

Noise-related effects of land planning on the eight reservoirs were evaluated qualitatively based on the number of acres allocated to each zone and based on the assumptions that the potential to generate noise emissions is greatest with lands allocated to Zone 5 and Zone 2 (Industrial and Project Operations respectively) and moderate with land allocated to Zone 6 (Developed Recreation). Land allocated to Zone 4 (Natural Resource Conservation) Zone 3 (Sensitive Resource Management) and Zone 7 (Shoreline Access) would have the least potential to generate noise emissions.

Table 3-28. Comparison of Common Sound Levels

Source(s)	Sound Levels[2] (dBA)	Notes
Shotgun, rifle, handgun, fireworks (at 3 feet)	> 160	Impulse sounds
Jet engine (taking off), artillery fire (at 500 ft)	150	
Airplane (taking off)	140	Harmfully loud
Stock car races, jet takeoff (at 100-200 ft)	130	Threshold of pain
Power plant machinery (near source), chainsaw, jet plane (at ramp), Band concert	120	Threshold of sensation or feeling
Car horn, symphony concert, baby crying	110	Regular exposure of more than 1 minute risks permanent hearing loss. Physical discomfort. Maximum vocal effort.
Snowmobile. garbage truck, jet takeoff (at 2,000 feet), school dance	100	> 95 dBA – no more than 15 minutes/day unprotected exposure recommended. 1 hour per day risks hearing loss.
Heavy truck (at 50 feet), motorcycle (operator), power lawnmower, jet ski, pleasure motorboat, shouted conversation	90	Very annoying.
Heavy traffic, many industrial work places, electric razor	85	Level at which hearing damage begins with 8-hour exposure.
Ringing telephone, average city noise, freight train (at 50 feet)	80	Annoying; interferes with conversation
Freeway traffic (at 50 feet), urban housing on major avenue (Ldn), inside a car, TV audio	70	Interferes with telephone conversation. EPA Ldn for lifetime exposure without hearing loss.
Normal conversation, sewing machine	60	Intrusive. Interference with human speech begins at about 60 dBA.
Rainfall, refrigerator, wooded residential (Ldn), light auto traffic (at 100 feet)	50	Quiet. Comfortable. Sleep disturbance may occur at less than 50 dBA.
Quiet office, library, quiet residential area, rural residential (Ldn)	40	
Soft whisper (at 15 feet)	30	Very quiet.
Normal breathing	10	Just audible.
	0	Threshold of hearing.

Source: USDOI 2008

[1] These are typical levels and some may be approximate averages of ranges; actual levels may depend on several factors, including distance from the sound source.

3.15.2.1 Alternative A – No Action Alternative

As shown on Table 2-1, land allocated to Zone 5 (Industrial) ranges from a low of 0 acres to approximately 1,250 acres which represents 0 percent to a high of 2.4 percent of land around each reservoir. Noise emissions from existing industrial sources would not change and potential future industrial development would be limited to the following:

- Two parcels on Chickamauga Reservoir totaling 3.4 acres;
- Two parcels on Fort Loudoun Reservoir totaling 7.1 acres;
- Eleven parcels on Kentucky Reservoir totaling 463.4 acres; and
- One parcel on Wheeler Reservoir totaling 91.3 acres.

Potential noise impacts from industrial development would depend on the type of industry that might locate on these parcels. However, given the relatively small amount of land that would be allocated to Zone 5 (Industrial), this impact would be minor.

The percentage of land allocated to Zone 2 (Project Operations) ranges from a low of 1.1 percent at Kentucky Reservoir to a high of 87.6 percent at Wilson Reservoir. At Fort Loudoun Reservoir, 27.8 percent of the land is allocated to Zone 2. Overall, 6.7 percent of TVA land on the eight reservoirs would be allocated to Zone 2. As these allocations generally reflect the current conditions, there would be no major change to the current noise environment.

The percentage of land allocated to Zone 6 (Developed Recreation), ranges from 2.5 percent at Nickajack to 94.8 percent at Great Falls. Overall, 5.8 percent of the TVA land on the eight reservoirs would be allocated to Zone 6. Given the relatively small percent of land that would be allocated to this zone and the nature of the noise emissions from activities related to developed recreation, this impact would be negligible.

3.15.2.2 Alternative B – Proposed Land Use Plan Alternative

Although the amount of land allocated to Zone 5 under Alternative B would be slightly higher (less than one percent) than Alternative A, the percentage of land designated as Zone 5 (Industrial) is relatively low (2.4 percent). Specifically, industrial land use or potential industrial development on the eight RLMPs is currently limited to the following:

- One parcel on Fort Loudoun Reservoir totaling 3.5 acres;
- Six parcels on Kentucky Reservoir totaling 1,024.9 acres; and
- Four parcels on Wheeler Reservoir totaling 446.2 acres.

At Kentucky Reservoir, there are 1,024.9 acres of land that could be considered for future industrial development. Most of this acreage is made up of two parcels: Parcel 97 and Parcel 139. Parcel 97 is a 571-acre noncontiguous tract of land, of which 191.4 acres could be considered for future industrial development. Parcel 97 consists of a large noncontiguous tract of land lying along the right descending bank between Tennessee River Miles 100.6 and 104.0. Approximately 85 acres of this tract is encumbered with transmission lines or other pipeline rights of way. A portion of this parcel also fronts the Humphrey County, Tennessee, industrial site, and the previous Vanguard Services industrial site. A review of the surrounding land uses indicates that there could be some minor noise impacts to residential receptors just east of Parcel 97. However, given the current industrial use in the vicinity of this parcel, and the attenuating effects of topography, vegetation and structures, the impacts to noise sensitive receptors (residences, etc.) associated with future industrial development on Parcel 97 would be minor.

Parcel 139 is a 701.4-acre tract of land, all of which could be considered for future industrial development. Although the parcel remains in a forested state, the back-lying property has been cleared for timber. A review of the surrounding land uses indicates sparse residential development east of the parcel. There are some residences on the west bank of the Tennessee River (Fishers Landing); however, these residences lie approximately one-half mile from the tract and any noise generated by future industrial development would likely attenuate to acceptable levels for residential land uses. Therefore, there would be a very minor increase in the potential for impacts to noise sensitive receptors (residences, etc.) associated with future industrial development on Parcel 139.

The percentage of land designated Zone 2 ranges from a low of 1.7 percent at Kentucky Reservoir to a high of 87.6 percent at Wilson Reservoir. Overall 7.8 percent of the eight RLMPs would be allocated to Zone 2.

A large percentage of TVA land is allocated to Zone 6 (Developed Recreation) at Great Falls Reservoir, and Fort Loudoun Reservoir which generally reflect existing uses and conditions. Land allocated to developed recreation at the remaining reservoirs are all at or below 12 percent. Overall, only 7 percent of the land would be allocated to Zone 6 in the eight RLMPs.

The amount of land allocated to Zone 2 (Project Operations) and Zone 5 (Industrial) would increase by 1.1 and less than 1 percent respectively under this alternative and the land allocated to Zone 6 (Developed Recreation) would increase by 1.2 percent. Although there would be in increase in the overall amount of land allocated to zones which have the potential for notable noise emissions, based on the proportion of land in the eight RLMPs available for development relative to the entire shoreline of the eight reservoirs, there would be a minor increase in the potential for noise impacts associated with Alternative B relative to Alternative A.

3.16 Socioeconomics and Environmental Justice

The important overall socioeconomic conditions that could potentially be affected by the development of the eight RLMPs include population, size of the labor force, types of jobs, unemployment levels, and income levels. Socioeconomic conditions were analyzed at the county level for the counties in which the reservoirs are located and for the states in which they lie. The purpose of the socioeconomics analysis is to identify the potential effects of the alternatives on the economy and socioeconomic groups. In addition, an environmental justice analysis was performed consistent with EO 12989.

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

3.16.1 Affected Environment

3.16.1.1 Population and Economy

Population varies greatly among the counties in the eight RLMPs. Population in the 36 counties that include the reservoirs is estimated to be about 2,513,709 (Table 3-29). In 10 of the 36 counties in the area, population grew more quickly than in their respective state between 2010 and 2015, while 16 counties decreased in total population. The remaining 10 counties increased in total population, but at rate slower than their respective state. Projections and current trends suggest that the population within the area will increase by 6.9 percent to about 2,687,684 by the year 2020. The area is projected to grow more quickly than the nation, with an estimated growth rate of 5 percent from 2014 to 2020. Overall, the rural population share in the counties where the reservoirs are located far exceeds the Tennessee, Kentucky, and Alabama state averages, which are higher than the national average.

The total employed population between 2010 and 2014 was 1,081,049 in the area counties (Table 3-30). During this period, Management, Business Science, and Arts accounted for the largest share of civilian employment at nearly 35 percent within the area counties as well as within each of the states. The unemployment rate for the area counties during the same years was 5.8 percent. The only state with a lower unemployment rate than the area counties was Kentucky at 5.5 percent. The highest unemployment rate, 8.8 percent, was in Meigs County, followed by Benton County at 7.6 percent. Trigg County had the lowest unemployment rate at 3.9 percent.

The eight reservoirs are located in a relatively low-income area (Table 3-30). During the 2010 to 2014 period, the median household income average for all of the counties was $40,829. Median household income in Alabama, Kentucky, and Tennessee ranges from $43,000 to $45,000, which was lower than the national average of $53,482. Twenty-four of the 36 counties in the area had median household incomes below the state. Wayne County was the poorest county, with a median household income of $31,225.

Providing accessible natural resources and recreational opportunities for the people of the Tennessee Valley is a key component of the TVA stewardship mission. Management of TVA land for recreational use as well as for preservation of cultural and natural resources contributes to the local economy through promotion of tourism. TVA reservoirs and the land surrounding them support a variety of recreational activities including camping, hiking, fishing, swimming and boating. These opportunities attract millions of visitors each year (TVA 2016a) which has positive direct and indirect impact on the local economies around the reservoirs. Positive direct impacts include expenditures at marinas, hotels and other businesses. Indirect impacts of tourism affect most sectors of the economy including secondary sales, income and employment within the region.

3.16.1.2 Environmental Justice

The population of the counties where the reservoirs are located is predominantly white, with a minority population average of 18.6 percent (Table 3-31). The minority population share ranges from 3.6 percent in Livingston County, Kentucky to 33.8 percent in Madison County, Alabama. Madison County, Alabama is the only county within the area that has a higher minority population share than its respective state.

Table 3-29. Population Characteristics

Counties	Population (2015 Estimate)	Population (2014 Estimate)	Population (2010)	Percent Change (2010-2015)	Percent Change (2010-2014)	Population Projection 2020	Projected Growth (2015-2020)	Percent Rural (2010)
Bedford, TN	47,183	45,660	45,058	4.7%	1.3%	49,664	5.3%	55.6%
Benton, TN	16,129	16,345	16,489	-2.2%	-0.9%	20,542	27.4%	78.5%
Blount, TN	127,253	124,435	123,010	3.4%	1.2%	136,357	7.2%	32.6%
Bradley, TN	104,091	101,004	98,963	5.2%	2.1%	121,533	16.8%	33.0%
Calloway, KY	38,343	37,981	37,191	3.1%	2.1%	40,411	5.4%	48.7%
Carroll, TN	27,910	28,511	28,522	-2.1%	0.0%	35,753	28.1%	83.1%
Coffee, TN	54,277	53,151	52,796	2.8%	0.7%	59,888	10.3%	47.3%
Colbert, AL	54,354	54,491	54,428	-0.1%	0.1%	54,021	-0.6%	43.9%
Decatur, TN	11,660	11,675	11,757	-0.8%	-0.7%	14,577	25.0%	100.0%
Hamilton, TN	354,098	344,772	336,463	5.2%	2.5%	344,951	-2.6%	10.0%
Hardin, TN	25,756	25,969	26,026	-1.0%	-0.2%	29,604	14.9%	67.9%
Henderson, TN	28,015	27,963	27,769	0.9%	0.7%	33,034	17.9%	76.4%
Henry, TN	32,147	32,279	32,330	-0.6%	-0.2%	38,947	21.2%	66.9%
Houston, TN	8,149	8,356	8,426	-3.3%	-0.8%	10,563	29.6%	100.0%
Humphreys, TN	18,135	18,322	18,538	-2.2%	-1.2%	20,000	10.3%	82.5%
Knox, TN	451,324	440,732	432,226	4.4%	2.0%	481,842	6.8%	10.9%
Lauderdale, AL	92,596	92,780	92,709	-0.1%	0.1%	92,221	-0.4%	49.3%
Lawrence, AL	33,115	33,835	34,339	-3.6%	-1.5%	32,432	-2.1%	91.3%
Limestone, AL	91,663	87,167	82,782	10.7%	5.3%	99,775	8.8%	57.6%
Livingston, KY	9,316	9,443	9,519	-2.1%	-0.8%	9,438	1.3%	95.4%
Loudon, TN	51,130	49,749	48,556	5.3%	2.5%	58,729	14.9%	40.6%
Lyon, KY	8,306	8,415	8,314	-0.1%	1.2%	8,523	2.6%	100.0%
Madison, AL	353,089	343,229	334,811	5.5%	2.5%	372,447	5.5%	16.4%

Counties	Population (2015 Estimate)	Population (2014 Estimate)	Population (2010)	Percent Change (2010-2015)	Percent Change (2010-2014)	Population Projection 2020	Projected Growth (2015-2020)	Percent Rural (2010)
Marion, TN	28,487	28,261	28,237	0.9%	0.1%	33,845	18.8%	77.0%
Marshall, AL	94,725	94,121	93,019	1.8%	1.2%	95,958	1.3%	53.3%
McMinn, TN	52,639	52,409	52,266	0.7%	0.3%	57,155	8.6%	60.3%
Meigs, TN	11,830	11,694	11,753	0.7%	-0.5%	19,040	60.9%	100.0%
Morgan, AL	119,565	119,744	119,490	0.1%	0.2%	119,233	-0.3%	38.6%
Perry, TN	7,929	7,851	7,915	0.2%	-0.8%	9,260	16.8%	100.0%
Polk, TN	16,773	16,715	16,825	-0.3%	-0.7%	22,086	31.7%	100.0%
Rhea, TN	32,526	32,272	31,809	2.3%	1.5%	37,665	15.8%	68.0%
Stewart, TN	13,259	13,311	13,324	-0.5%	-0.1%	15,659	18.1%	100.0%
Trigg, KY	14,233	14,277	14,339	-0.7%	-0.4%	16,244	14.1%	79.4%
Warren, TN	40,435	39,867	39,839	1.5%	0.1%	50,056	23.8%	61.4%
Wayne, TN	16,748	16,967	17,021	-1.6%	-0.3%	18,046	7.8%	100.0%
White, TN	26,521	26,086	25,841	2.6%	0.9%	28,185	6.3%	78.2%
Total	**2,513,709**	**2,469,839**	**2,432,700**	**1.1%**	**0.5%**	**2,687,684**	**13.3%**	**66.8%**
Tennessee	6,600,299	6,451,365	6,346,105	3.9%	1.6%	7,195,375	8.3%	33.6%
Kentucky	4,425,092	4,383,272	4,339,367	1.9%	1.0%	4,672,754	5.3%	41.6%
Alabama	4,858,979	4,817,678	4,779,736	1.6%	0.8%	4,958,548	2.0%	41.0%
United States	321,418,820	318,907,401	308,758,105	4.1%	3.2%	334,503,000	4.1%	8.9%

Table 3-30. Economic Characteristics

Location	Civilian Employed Population 16 Years and Over	Management and Business Science and Arts	Service Occupations	Sales and Office	Natural Resources, Construction, and Maintenance	Production, Transportation and Material Moving	Population > 16 years Unemployed	Percent of Population > 16 years Unemployed	Median Household Income	Percent of Population Below Poverty Level
Bedford, TN	19,032	4,886	2,776	4,250	2,751	4,369	1,774	5.1%	$40,989	21.1%
Benton, TN	6,068	1,382	1,221	1,254	794	1,417	1,027	7.6%	$34,087	21.8%
Blount, TN	54,795	17,668	9,644	14,009	5,711	7,763	5,450	5.4%	$46,518	14.4%
Bradley, TN	43,193	12,345	7,565	10,966	4,188	8,129	5,453	6.8%	$41,575	19.8%
Calloway, KY	16,855	5,610	3,097	4,168	1,571	2,409	1,989	6.2%	$38,589	21.3%
Carroll, TN	10,984	3,298	1,920	2,407	1,023	2,336	1,404	6.1%	$36,168	19.4%
Coffee, TN	21,217	6,755	3,495	4,979	1,752	4,236	2,599	6.2%	$39,656	21.3%
Colbert, AL	21,271	5,682	3,265	5,481	2,386	4,457	2,356	5.0%	$39,914	18.3%
Decatur, TN	4,569	1,359	896	886	529	899	550	6.0%	$37,219	21.8%
Hamilton, TN	161,007	60,062	27,458	40,843	12,169	20,475	15,737	5.6%	$47,880	16.0%
Hardin, TN	9,216	2,238	1,694	2,127	1,189	1,968	1,817	8.6%	$34,084	22.2%
Henderson, TN	11,119	3,007	1,629	2,499	1,326	2,658	1,379	6.3%	$38,696	20.7%
Henry, TN	12,368	3,191	2,129	3,090	1,315	2,643	1,792	6.9%	$38,694	19.8%
Houston, TN	3,063	635	500	572	667	689	278	4.2%	$38,637	21.8%
Humphreys, TN	7,227	1,980	1,175	1,405	1,055	1,612	899	6.1%	$41,152	16.4%
Knox, TN	211,194	84,478	34,725	56,122	15,523	20,346	15,723	4.4%	$47,543	15.3%
Lauderdale, AL	40,047	11,994	7,795	9,878	4,502	5,878	3,444	4.6%	$42,703	18.7%
Lawrence, AL	12,876	3,124	2,053	2,537	1,910	3,162	1,657	6.1%	$40,356	17.1%
Limestone, AL	36,895	12,831	5,489	8,257	4,223	6,086	3,384	4.9%	$49,461	14.1%
Livingston, KY	3,776	767	742	730	833	704	325	4.2%	$40,580	15.4%
Loudon, TN	19,811	6,162	3,344	4,612	2,233	3,460	2,346	5.7%	$60,062	15.7%

Location	Civilian Employed Population 16 Years and Over	Management and Business Science and Arts	Service Occupations	Sales and Office	Natural Resources, Construction, and Maintenance	Production, Transportation and Material Moving	Population > 16 years Unemployed	Percent of Population > 16 years Unemployed	Median Household Income	Percent of Population Below Poverty Level
Lyon. LU	2,721	684	608	674	282	473	232	3.1%	$43,715	13.9%
Madison, AL	162,126	72,134	24,787	37,642	10,797	16,766	17,171	6.3%	$58,203	13.4%
Marion, TN	11,505	3,056	1,527	2,842	1,442	2,638	1,011	4.4%	$40,998	20.3%
Marshall, AL	37,953	10,733	5,612	8,388	5,222	7,998	3,965	5.4%	$39,473	19.9%
McMinn, TN	20,860	5,545	3,111	4,408	2,346	5,450	2,344	5.5%	$39,644	18.5%
Meigs, TN	3,766	672	591	707	663	1,133	834	8.8%	$33,061	21.9%
Morgan, AL	52,294	14,968	8,548	12,538	6,146	10,094	6,363	7.0%	$45,341	15.1%
Perry, TN	2,764	703	698	418	441	504	385	6.1%	$31,750	23.6%
Polk, TN	6,343	1,512	1,100	1,608	726	1,397	878	6.5%	$39,434	18.9%
Rhea, TN	12,371	3,054	2,045	2,369	1,612	3,291	1,715	6.7%	$37,512	23.0%
Stewart, TN	4,863	1,530	818	994	733	788	727	6.8%	$41,089	19.1%
Trigg, LU	5,461	1,828	719	1,328	437	1,149	444	3.9%	$45,303	15.5%
Warren, TN	15,870	4,130	2,520	3,475	1,897	3,848	1,457	4.6%	$34,592	21.5%
Wayne, TN	5,662	1,334	1,049	1,351	875	1,053	975	6.9%	$31,225	21.3%
White, TN	9,907	2,309	1,861	2,049	1,274	2,414	1,279	6.1%	$33,933	22.1%
Total	**1,081,049**	**373,646**	**178,206**	**261,863**	**102,543**	**164,692**	**111,163**	**5.8%**	**$40,829**	**18.9%**
Tennessee	2,835,895	952,162	482,800	713,960	254,514	432,459	296,819	5.8%	$44,621	17.8%
Kentucky	1,870,879	612,516	313,627	452,063	181,594	311,079	192,877	5.5%	$43,342	18.9%
Alabama	2,010,453	661,335	339,569	489,899	203,989	315,661	228,716	6.0%	$43,511	18.9%
United States	143,435,233	52,234,574	26,053,338	34,935,133	12,875,934	17,336,254	14,504,781	10.1%	$53,482	15.6%

Source: USCB 2010-2014 American Community Survey, 5- year estimates

Table 3-31. Racial Characteristics

Counties	White Alone*	Black or African American Alone*	American Indian and Alaska Native Alone*	Asian Alone*	Native Hawaiian and Other Pacific Islander Alone*	Two or More Races	Hispanic or Latino†	Percent Minority
Bedford, TN	38,954	2,810	366	363	0	1,615	5,234	22.8%
Benton, TN	15,603	581	28	51	0	65	330	6.5%
Blount, TN	117,279	3,658	511	998	8	1,588	3,618	8.3%
Bradley, TN	92,821	4,551	164	993	184	1,716	5,189	12.7%
Calloway. KY	34,755	1,474	120	800	9	683	942	10.6%
Carroll, TN	24,726	2,851	129	52	2	566	644	14.9%
Coffee, TN	48,384	1,151	194	563	3	1,010	2,063	9.4%
Colbert, AL	43,356	8,712	360	190	38	1,091	1,276	21.4%
Decatur, TN	11,002	335	2	28	5	179	335	7.6%
Hamilton, TN	258,373	68,961	639	6,617	151	5,838	4,807	25.2%
Hardin, TN	21,140	1,160	86	100	16	432	236	7.8%
Henderson, TN	24,923	2,154	9	25	20	232	592	10.8%
Henry, TN	28,883	2,774	83	24	0	489	653	12.5%
Houston, TN	7,911	167	16	14	0	231	166	7.1%
Humphreys, TN	17,449	711	20	28	5	61	333	6.3%
Knox, TN	377,816	40,328	1,150	8,868	140	8,489	16,252	17.1%
Lauderdale, AL	80,695	9,228	436	743	194	1,433	2,174	15.3%
Lawrence, AL	26,344	3,751	1,845	40	0	1,802	663	23.9%
Limestone, AL	70,843	11,133	527	1,089	33	1,673	4,934	22.2%
Livingston, KY	9,235	29	18	35	0	121	136	3.6%
Loudon, TN	47,763	617	89	377	23	652	3,712	11.0%
Lyon, KY	7,749	543	0	31	0	80	70	8.6%

Counties	White Alone*	Black or African American Alone*	American Indian and Alaska Native Alone*	Asian Alone*	Native Hawaiian and Other Pacific Islander Alone*	Two or More Races	Hispanic or Latino†	Percent Minority
Madison, AL	236,921	82,307	2,244	8,415	330	9,958	15,984	34.7%
Marion, TN	26,432	458	49	70	0	1,142	417	7.6%
Marshall, AL	87,082	1,703	632	512	7	1,594	11,830	17.3%
McMinn, TN	48,498	2,106	127	266	0	1,086	1,616	9.9%
Meigs, TN	11,400	126	3	0	0	294	144	4.8%
Morgan, AL	99,065	14,413	915	746	83	2,641	9,304	23.5%
Perry, TN	7,474	198	23	0	0	156	152	6.7%
Polk, TN	16,259	30	104	28	0	256	273	4.1%
Rhea, TN	30,485	703	51	23	0	673	1,333	8.6%
Stewart, TN	12,504	257	164	139	0	162	297	7.7%
Trigg, KY	12,819	1,172	0	80	0	206	213	11.7%
Warren, TN	36,539	638	76	224	12	1,315	3,275	13.9%
Wayne, TN	15,633	1,041	36	40	0	141	292	9.1%
White, TN	25,002	469	25	10	0	563	497	6.0%
Total	**2,072,117**	**273,300**	**11,241**	**32,582**	**1263**	**50,233**	**99,986**	**18.6%**
Tennessee	5,029,109	1,082,001	17,656	98,441	3,256	122,662	309,828	25.3%
Kentucky	3,845,535	345,035	9,000	53,448	2,109	86,627	139,636	14.5%
Alabama	3,327,891	1,269,808	25,181	58,322	1,430	76,428	191,838	33.7%

Overall, poverty levels are slightly higher than the Tennessee average and the same as the Kentucky and Alabama averages (see Table 3-30). The average share of persons below poverty level in the area between 2010 and 2014 was 18.9 percent. Rhea County, Tennessee has the highest number of persons below the poverty level at 23.0 percent, followed by Hardin County at 22.2 percent. The remaining levels range from 14.1 percent in Limestone County, Alabama to 22.1 percent in White County, Tennessee.

3.16.2 Environmental Consequences

Potential socioeconomic impacts of the eight RLMPS would be associated with direct effects of jobs created by development on TVA-managed lands which would support future development (e.g., development of industrial facilities, campgrounds, marinas, etc.). Effects to socioeconomics could also occur because of changes in developed and dispersed recreation opportunities, as well as changes in the overall attractiveness of the area as a place to live or visit. Additionally, there could be indirect effects associated with population growth in response to new development and changes in tax revenues, employment and property values.

The TVA Land Policy clarifies the availability of TVA-managed lands for industrial, residential, and recreational uses, which in turn determines the potential for development. However, future industrial, commercial, and residential development is likely to occur in the region on private land, regardless of the uses and availability of TVA public lands.

3.16.2.1 Alternative – No Action Alternative

Under this alternative land use requests would be considered on a case-by-case basis and approved or denied based on their consistency with the current designations (where available) and on a review of potential environmental impacts, the TVA Land Policy, and other relevant considerations. However, the absence of comprehensive reservoir-wide land plans may result in land uses that do not fully optimize TVA's goals of multiple use and stewardship. There may be fewer opportunities to improve quality and availability of recreation opportunities, to improve the stewardship of natural and water resources, and to increase overall benefits of the reservoir lands. The lack of up-to-date plans could have negligible to minor impacts on the local economy over the long-term and limit economic development opportunities in the area.

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3.16.2.2 Alternative B – Proposed Land Use Plan Alternative

Under this Alternative, changes to land planning strategies and land use zone allocations would be implemented, potentially generating greater total benefits from TVA lands. The amount of land allocated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 6 (Developed Recreation) is slightly higher under Alternative B. However, because the proposed changes in land use allocations are relatively minor and generally reflect correspond to a "re-alignment" to reflect current land uses and conditions on each parcel the changes would have no substantive impact on the attractiveness of the area, local economy, or on economic development opportunities in the area. However, implementation of the individual land plans which would enhance management of public lands would have a minor beneficial impact on the local economy and economic development opportunities in the area through the enhancement of dispersed and developed recreation opportunities.

3.16.3 Environmental Justice

TVA's current management of its public lands on these reservoirs has no disproportionate impact to disadvantaged populations. There would be no change in existing conditions under Alternative A and therefore there would be no disproportionate impact to disadvantaged populations would occur.

The minority population in the vicinity of the eight RLMPs is comparable to the state and national levels. Although, poverty levels are higher in some of the counties where these reservoirs are located, the changes that would occur under Alternative B and would have minor beneficial impacts to the region's economy, enhancement of recreation opportunities and preservation of natural resources Therefore, no disproportionate impacts to disadvantaged populations are expected to occur under either of the alternatives.

3.17 Unavoidable Adverse Effects

A decision on the proposed alternatives in this planning document would not in itself result in unavoidable adverse effects. Potential effects may occur later when specific future projects are proposed and implemented. Project-specific NEPA reviews will be conducted for these future proposed projects and unavoidable adverse effects would be determined at that time.

3.18 Irreversible and Irretrievable Commitments

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Irreversible is a term that describes the loss of future options and applies primarily to the effects of the use of nonrenewable resources that are only renewable over long periods of time. Irretrievable is a term that applies to the loss of production of renewable resources such as timber, agricultural land, or wildlife habitat as a result of the proposed action. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume production. A decision on the proposed alternatives in this planning document would not in itself result in irreversible and irretrievable commitments. TVA zone allocations are not irreversible or irretrievable commitments as zone allocations can be changed.

Potential effects may occur later when specific future projects are proposed and implemented. Project-specific NEPA reviews will be conducted for proposed projects and irreversible and irretrievable commitments would be determined at that time. For example, construction of project operation, industrial, and recreational facilities/structures would involve irreversible commitment of fuel, energy, and building material resources. Use of these resources could occur in the future under both alternatives. However, irreversible impacts would be potentially greater under Alternative B due to the larger total number of acres allocated to Zones 2, 5, and 6 (Project Operations, Industrial and Developed Recreation) as compared to the total acres allocated to those zones under Alternative A.

3.19 Energy Resources and Conservation Potential

Developing and implementing land management plans does not involve a substantial use of energy resources. Short-term energy consumption would result from construction activities related to site preparation and development of new facilities, access roads, trails and shoreline stabilization activities.

Energy resources (primarily gasoline and diesel fuels) would be used to fuel machines needed to maintain wildlife habitat areas, fields around recreation facilities, grassy areas

and utility right of way, shoreline stabilization, management of invasive plants and other activities. Energy would also be used to support industrial activities allowed in land allocated to Zone 5 (Industrial).

Energy is consumed by campers, boaters, and other recreation users. TVA is encouraging campers who utilize developed recreation areas to reduce energy consumption. TVA has posted resource conservation tips at many campgrounds located on TVA land as part of its campground conservation program. TVA would encourage energy conservation measures to be utilized at recreation areas that may be developed in the future. These practices could potentially reduce energy usage under all alternatives.

TVA actively promotes public education and outreach to encourage energy efficiency and green energy offerings and promotes the integration of energy efficiency into community planning and building construction. TVA would work with potential users of TVA lands to achieve the greatest energy savings and to implement conservation practices.

These energy resources would be used under both Alternative A and Alternative B. However, under Alternative B, the amount of land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) would decrease by 1.7 and 2.4 percent, the amount of land allocated to Zone 2 (Project Operations), Zone 5 (Industrial) and Zone 7 (Shoreline Access) would increase by less than 1 percent and the land allocated to Zone 6 (Developed Recreation) would increase by 1.4 percent. Therefore Alternative B would likely require greater amounts of energy to maintain these lands and would have greater indirect impacts to energy use as more land is allocated to zones where future development could occur. This potential increase in energy use would be offset by the reduction in land allocated to Zone 4 (Natural Resource Conservation) and the associated reduction in energy needed to maintain these areas.

Under both alternatives, energy use associated with land planning would be minor because more than 75 percent of TVA land around the reservoirs would likely be maintained in a natural condition (Zones 3 and 4, Sensitive Resource Management and Natural Resource Conservation). The small amount of energy used while implementing the eight RLMPs would not impact regional energy use demands.

3.20 Relationship of Short-Term Uses to Long-Term Productivity

NEPA requires consideration of the “relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR § 1502.16). For RLMPs, short-term uses generally are those that occur within a 10-year period, and long-term uses refers to later decades. Productivity is the capability of the land to provide beneficial outputs and values for future generations (e.g., industrial/business, recreational, or natural resource protection opportunities).

Generally, the land planning process results in few actions that adversely affect long-term productivity. Where practicable, TVA manages public lands for multiple uses, including recreation, natural resources, and protection of sensitive resources, for the goal of protecting these values for the public. The primary change under the proposed action has been the allocation of land to the new zone definition to accurately reflect current use.

Commitments of the land for developed uses (e.g., residential, industrial facilities, certain project operations facilities, some types of recreational development) have potential to decrease the productivity of land for agriculture, forestry, wildlife, certain recreational

activities, and other natural resources management actions. Under Alternative A, the percentage of lands allocated to Zones 2 (Project Operations), 5 (Industrial), 6 (Developed Recreation), and 7 (Shoreline Access) is approximately 18.6 percent and under Alternative B, it is approximately 22.7 percent. Therefore, Alternative B may have a minor adverse impact to the productivity of the land.

The allocation to Zone 3 (Sensitive Resource Management) and 4 (Natural Resource Conservation) increases the likelihood of long-term productivity of those lands. The percentage of the eight reservoirs lands allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) is approximately 81.4 percent under Alternative A and approximately 77.3 percent under Alternative B.

The scenic and recreational values of the eight reservoirs are key factors in attracting new residents and visitors to the region. The current regional trends of minor increasing population and residential and commercial development are expected to continue at all reservoirs except for the Wilson Reservoir. New jobs and income would be generated by spending activities of new residents and visitors, which may lead to enhanced long-term socioeconomic productivity. Allocation of lands to zones that enhance scenic and dispersed recreational uses (i.e., Zones 3 and 4) is greatest under Alternative A, while allocation to developed recreational uses is greatest under Alternative B. However, as described in Section 3.2, many of the changes in zone reallocation associated with Alternative B generally correspond to a “re-alignment” to reflect current land uses and conditions on each parcel. Consequently, the long-term productivity of the land is expected to be similar between Alternatives A and B.

3.21 Cumulative Effects

The CEQ regulations (40 CFR 1500-1508) implementing the procedural provisions of the NEPA of 1969, as amended (42 USC 4321 et seq.) define cumulative impact as:

> “…the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR § 1508.7).

Baseline conditions reflect the impacts of past and present actions. The impact analyses summarized in preceding sections are based on baseline conditions and either explicitly or implicitly consider cumulative impacts.

Past, present and reasonably foreseeable future actions that are appropriate for consideration in a cumulative effects analysis are those that which when viewed with the proposed action have cumulatively significant impacts. Due to the geographic scope of the reservoirs considered in this EIS, predicting future resource conditions involves substantial uncertainty. Future cumulative impacts can result not only from possible actions of TVA in accordance with the proposed reallocation of lands under Alternative B, but also from those of other agencies and the public. However, the assessment of potential impacts from land use reallocation is inherent in the analyses performed for each of the resource sections considered in Chapter 3. Therefore, this cumulative effects analysis considers the effects of potential future actions by others based on general trends that are anticipated within the reservoirs and the counties they are located in. These general trends include increasing human population, increasing demand for public recreation opportunities, and increasing development of natural habitat in rural areas. In addition, state and federal agencies would

continue efforts to conserve natural and cultural resources and provide dispersed and developed recreation opportunities. State agency efforts would also include reducing regional impacts to water quality through the total maximum daily load, water quality certifications, and other programs.

Regional resource quality is influenced by the aggregate actions of all landowners within the reservoirs watershed. For example, continued shoreline development spurred by population growth, whether for recreational or industrial purposes, could involve extensive clearing and grading, increased impervious surfaces, and result in possible point source pollution to the adjoining reservoir. Additionally, development or other changes in land use on non-TVA lands within the watershed could impact water quality or other environmental resources in lands surrounding each reservoir. However, the extent of impacts associated with any of these land uses would be dependent on the specifics of future development. New facilities with permitted discharges would be required to meet regulatory guidelines designed to prevent degradation of applicable water quality criteria, protection of endangered species, and preservation of cultural resources, among other factors. Any proposed land use would be required to protect environmental resources through either restricted development or the commitment to use BMPs to minimize impacts. The efforts of federal and state water quality regulators, municipal/local programs, and others including TVA's own environmental monitoring programs would combine in an effort to offset threats to environmental resources from uncontrolled economic growth and development. Further, as land allocated to Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation) would be retained in a relatively “natural” which would have a beneficial impact on environmental protection. Therefore, cumulative impacts to environmental resources are expected to be minor.

In addition, future actions by TVA also include updating the overarching CVLP, as discussed in Subsection 2.4.5.2. The CVLP target ranges for each land use zone are based on existing land plans and on RLAs. Overall, the proposed 2016 CVLP Allocation Range would increase slightly for Zone 2 (Project Operations), Zone 5 (Industrial), and Zone 7 (Shoreline Access). However, up to 81 percent of the lands would still be allocated to sensitive and natural resource management.

Land allocations proposed in the eight RLMPs would be used to update the allocation ranges proposed in the 2016 CVLP and would effect TVA’s management region-wide. Since the updated land allocations were primarily proposed to reflect existing conditions and identify suitable uses of land using resource data, stakeholder input, suitability and capability analyses, and TVA staff input, the updated CVLP ranges would better help TVA meet its purpose of the CVLP of maintaining a desired balance of shoreline development, recreational use, sensitive and natural resource management, and other uses.

CHAPTER 4 – LIST OF PREPARERS

4.1 Project Management

Name:	**Kelly Baxter (TVA)**
Education:	M.S., Plant Science and Landscape Systems and B.S., Botany
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Name:	**Bill Elzinga (Amec Foster Wheeler)**
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Name:	**Matthew Higdon (TVA)**
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4.2 Other Contributors

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Experience:	8 years of experience in ecological restoration, fisheries management, and geographic information systems

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Name	**Elizabeth B. Hamrick (TVA)**
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Name:	**Richard Hart (Amec Foster Wheeler)**
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Experience:	21 years in Health and Safety, Hazard Analysis Assessment and Health and Safety Plan development
Name:	**Irene Weber (Amec Foster Wheeler)**
Education:	M.S., Biology and B.S., Plant Biology
Project Role:	Vegetation, Threatened and Endangered Species
Experience:	5 years of experience in ecology and plant biology.
Name	**Edward W. Wells III (TVA)**
Education:	M.A. and B.S., Anthropology
Project Role:	Cultural resources and archaeology
Experience:	13 years of experience in cultural resource management.
Name	**Doug White (TVA)**
Education:	B.S., Forestry
Project Role:	Environmental compliance
Experience:	2 years of experience in NEPA compliance and 14 years in natural and water resource management.

Name	**Carrie C. Williamson, PE, CFM (TVA)**
Education:	M.S. and B.S., Civil Engineering; Professional Engineer, Certified Floodplain Manager
Project Role:	Floodplains
Experience:	3 years in floodplains and flood risk, 3 years in river forecasting, and 11 years in compliance monitoring.

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CHAPTER 5 – EIS RECIPIENTS

Following is a list of the agencies, tribes, and organizations who received copies of the Draft EIS or notice of its availability with instructions on how to access the EIS on the TVA project webpage.

Federal Agencies	
Coast Guard	Marine Safety Detachment, Nashville, Tennessee
Department of Army, Corps of Engineers	Memphis District, Memphis, Tennessee Mobile District, Mobile, Alabama Nashville District, Nashville, Tennessee Norfolk District, Norfolk, Virginia Regulatory Office, Asheville, North Carolina Regulatory Office, Decatur, Alabama Regulatory Office, Lenoir City, Tennessee Vicksburg District, Vicksburg, Mississippi
Department of the Interior	Office of Environmental Policy and Compliance, Washington, DC
Environmental Protection Agency	EPA Region 4, Atlanta, Georgia
Federal Highway Administration	North Carolina Division, Raleigh, North Carolina
Fish and Wildlife Service	Abingdon, Virginia Asheville, North Carolina Athens, Georgia Cookeville, Tennessee Daphne, Alabama Decatur, Alabama Frankfort, Kentucky Gloucester, Virginia Jackson, Mississippi Southeast Region, Atlanta, Georgia
Forest Service	Chattahoochee/Oconee National Forests, Gainesville, Georgia Cherokee National Forest, Cleveland, Tennessee Forest Service, Land Between the Lakes, Golden Pond, Kentucky Forest Service Region 8, Atlanta, Georgia National Forests in Alabama, Montgomery, Alabama National Forests in North Carolina, Asheville, North Carolina
National Park Service	Great Smoky Mountains National Park, Gatlinburg, Tennessee Southeast Region, Atlanta, Georgia

Natural Resources Conservation Service	State Conservationist, Alabama State Conservationist, Georgia State Conservationist, Kentucky State Conservationist, Mississippi State Conservationist, North Carolina State Conservationist, Tennessee State Conservationist, Virginia
State Agencies	
Alabama	Department of Agriculture and Industries, Montgomery Department of Conservation and Natural Resources, Montgomery Department of Economic and Community Affairs, Montgomery Department of Environmental Management, Montgomery Department of Transportation, Montgomery Forestry Commission, Montgomery Historical Commission, Montgomery
Georgia	Department of Economic Development, Atlanta Department of Natural Resources, Atlanta and Gainesville offices Jewett Center for Historic Preservation, Stockbridge
Kentucky	Department for Natural Resources, Frankfort Department for Environmental Protection, Frankfort Department of Fish and Wildlife, Frankfort Energy and Environment Cabinet, Frankfort Heritage Council and State Historic Preservation Officer, Frankfort State Clearinghouse, Frankfort Tourism, Arts, and Heritage Cabinet, Frankfort
Mississippi	Department of Archives and History, Jackson Department of Environmental Quality, Jackson Department of Finance and Administration, Jackson Department of Wildlife, Fisheries, and Parks, Jackson Mississippi Development Authority, Jackson
North Carolina	Department of Cultural Resources, Raleigh Department of Environment and Natural Resources, Raleigh State Clearinghouse, Raleigh Wildlife Resources Commission, Raleigh
Tennessee	Department of Agriculture, Nashville Department of Economic and Community Development, Nashville Department of Environment and Conservation, Nashville Department of Tourism Development, Nashville Department of Transportation, Nashville Historical Commission, Nashville

	Tennessee Duck River Development Agency Tennessee Wildlife Resources Agency, Nashville
Virginia	Department of Conservation and Recreation, Richmond Department of Environmental Quality, Richmond and Abingdon Department of Game and Inland Fisheries, Richmond Department of Historic Resources, Richmond
Federally Recognized Indian Tribes	
Eastern Band of Cherokee Indians Cherokee Nation Absentee Shawnee Tribe of Oklahoma The Chickasaw Nation Muscogee (Creek) Nation Alabama-Coushatta Tribe of Texas Kialegee Tribal Town Eastern Shawnee Tribe of Oklahoma Shawnee Tribe Coushatta Tribe of Louisiana United Keetoowah Band of Cherokee Indians in Oklahoma Alabama-Quassarte Tribal Town Thlopthlocco Tribal Town Poarch Band of Creek Indians	
Local Agencies, Organizations, and Businesses	
City of Sheffield, Alabama	Sheffield, AL
Alabama Bass Trail Student Angler Conservation Program	Decatur, AL
Alabama Cooperative Extension System	Auburn University, AL
Alabama Cooperative Extension System	Auburn University, AL
Alabama Elk River Development Agency	Elkmont, AL
Alabama Mountain Lakes Tourist Association	Decatur, AL
Alabama Mountains, Rivers and Valleys Resource Conservation and Development	Hartselle, AL
Alabama Scenic River Trails	Madison, AL
Bear Creek Development Authority	Hodges, AL
Brickyard Landing Marina	Decatur, AL
Central High School	Florence, AL
City of Florence, Alabama	Florence, AL
City of Muscle Shoals, Alabama	Muscle Shoals, AL
Colbert County, AL-Colbert County Courthouse	Tuscumbia, AL

Decatur-Morgan County Port Authority	Decatur, AL
Ditto Landing Marina	Huntsville, AL
Emerald Beach Marina	Killen, AL
Flint River Conservation Association	Brownsboro, AL
Franklin County Soil and Water Conservation District	Russelville, AL
Fresh Air Family	Sheffield, AL
Geological Survey of Alabama	Tuscaloosa, AL
Jay Landing	Decatur, AL
Joe Wheeler State Park	Rogersville, Al
Keep Athens-Limestone Beautiful -KALB	Athens, AL
Keep the Shoals Beautiful	Florence, AL
Legacy, Inc.	Montgomery, AL
Lucy's Branch Marina	Athens, AL
Madison Materials, Inc.	Blountsville, AL
Marina Mar	Florence, AL
North-Central Alabama Regional Council of Governments	Decatur, AL
North-Central Alabama Regional Council of Governments	Decatur, AL
Northwest Alabama Council of Local Governments	Muscle Shoals, AL
Northwest Alabama Council of Local Governments	Muscle Shoals, AL
Northwest Shoals Community College	Muscle Shoals, AL
Northwest Shoals Community College	Muscle Shoals, AL
Office for Research and Economic Development (University of Alabama)	Tuscaloosa, AL
Old Railroad Bridge Co., Inc	Sheffield, AL
One World Adventure	Mentone, AL
Poarch Band of Creek Indians	Atmore, AL
Riverwalk Marina	Decatur, AL
Rollison Marina	Florence, AL
Sheffield Kiwanis Club	Sheffield, AL
Shoals Community Clinic	Florence, AL
Shoals Environmental Alliance	Sheffield, AL
Southern Trout Magazine	Montevallo, AL
Shoals Wildflower Society	Killen, AL
Steenson Hollow Marina	Muscle Shoals, AL

The Nature Conservancy (Alabama)	Birmingham, AL
Top of Alabama Regional Council of Governments	Huntsville, AL
Triana Historical Society	Huntsville, AL
University of Alabama Office of Archaeological Research	Moundville, AL
University of North Alabama	Florence, AL
Whitesburg Boat and Yacht Club	Huntsville, AL
DOI Office of Environmental Policy and Compliance	Washington, DC
ARVC	Tallahassee, FL
Stratum Unlimited LLC	Ft. Myers, FL
Blue Ridge EMC	Morganton, GA
City Manager	Hiawassee, GA
City of Hiawassee	Hiawassee, GA
Economic Development Administration	Atlanta, GA
Fannin County Commissioners	Blue Ridge, GA
Fannin County Land Development	Blairsville, GA
Lake Nottely Improvement Association	Blairsville, GA
North Georgia Boatlift	Hiawassee, GA
Towns County	Hiawassee, GA
Union County Commission	Blairsville, GA
Union County Manager	Gainesville, GA
Living Lands & Waters	Atlanta, GA
Friends of Land Between the Lakes	East Moline, IL
Beech River Watershed Development Authority	Golden Pond, KY
Kentucky Association for Environmental Education	Frankfort, KY
Land Between The Lakes	Murray, KY
Navico	Mammoth Cave, KY
Sportsman's Anchor Resort/Marina	Benton, KY
Sugar Creek Bay Marina	Benton, KY
Town and Country Marina	Benton, KY
Whispering Oaks Resort	Frankfort, KY
Water's Edge RV Park and Marina	Minneapolis, MN
Mississippi Band of Choctaw Indians	Jackson, MS
Northeast Mississippi Planning and Development District	Tupelo, MS
Northeast Mississippi Planning and Development District	Booneville, MS
The Southeast Watershed Forum	Choctaw, MS

Tombigbee River Valley Water Management District	Olive Branch, MS
Tombigbee River Valley Water Management District	Tupelo, MS
New South Associates	Bozeman, MT
Blue Ridge Conservancy	Raleigh, NC
Blue Ridge Parkway	Asheville, NC
Cherokee County NC	Murphy, NC
Clay County Communities Revitalization Association CCCRA	Hayesville, NC
Clay County NC	Asheville, NC
Graham County, NC	Franklin, NC
Greg	Cullowhee, NC
Haywood Waterways Association	Swannanoa, NC
Hiwassee River Watershed Coalition	Murphy, NC
Land Trust For The Little Tennessee	Fontana Dam, NC
New South Associates, Inc	Clyde, NC
RiverLink Inc.	Weaverville, NC
Swain County, NC	Asheville, NC
Town of Murphy NC	Murphy, NC
Western Carolina University	Greensboro, NC
Freshwaters Illustrated	Locust Valley, NC
Trails Unlimited	Corvallis, OR
Tennessee Wildlife Resources Agency	Vonore, TN
Agency Creek	Fayetteville, TN
AMBC	Knoxville, TN
Anderson County Mayor	Clinton, TN
Appalachian Chapter of Trout Unlimited	Chattanooga, TN
B & B Marina	Birchwood, TN
Beech River Development Authority	Lexington, TN
Beech River Development Authority	Lexington, TN
Betty Fischer	Lenoir City, TN
Big Ridge Yacht Club	Harrison, TN
Blount County KAB	Unicoi, TN
Blue Water Campground	Dayton, TN
Boone Lake Association	Mountain City, TN
Boone Watershed Partnership	Butler, TN
Camp John Knox	Ten Mile, TN

Campbell County Environmental Officer and Litter Control	Jacksboro, TN
Cherokee Removal Memorial Park	Benton, TN
Chester Mead	Bluff City, TN
Chickamauga Marina	Chattanooga, TN
Choto Marina	Knoxville, TN
City Manager	Norris, TN
City of Loudon Parks and Recreation	Loudon, TN
City of Vonore, TN	Vonore, TN
City of Winchester	Winchester, TN
Cliff Hamblin	Lenoir City, TN
Concord Marina	Knoxville, TN
Conservation Fisheries, INC	Knoxville, TN
Cottonport Fish'N Camp	Decatur, TN
Cumberland River Compact	Nashville, TN
Dayton Boat Dock	Collegedale, TN
Discover Life in America Organization	Gatlinburg, TN
Duncan Boat Dock	Knoxville, TN
East Tennessee Development District	Alcoa, TN
East TN Quality Growth	Knoxville, TN
Emory River Watershed Association	Wartburg, TN
Executive Director, Anderson County Tourism Council	Clinton, TN
First Tennessee Development District	Johnson City, TN
Fort Loudoun Dam Marina	Lenoir City, TN
Fox Road Marina	Knoxville, TN
Friends of Short Springs	Tullahoma, TN
Friends of the Smokies	Kodak, TN
Gaits to Heaven	Culleoka, TN
Great Smoky Mountains Institute at Tremont	Townsend, TN
Greater Nashville Regional Council	Nashville, TN
Hales Bar Resort and Marina	Georgetown, TN
Harbor Lights Yacht Club	Soddy-Daisy, TN
Harpeth River Watershed Association	Brentwood, TN
Harrison Bay State Park	Harrison, TN
Hawkins County Industrial Development Board	Rogersville, TN
Holston Electric Cooperative	Rogersville, TN

Ijams Nature Center	Knoxville, TN
International Harbor Marina	Friendsville, TN
Island Cove Marina and Resort	Guild, TN
Jefferson County TN Chamber of Commerce	Dandridge, TN
Keep Blount Beautiful	Alcoa, TN
Keep Bristol Beautiful	Bristol, TN
LaFollette Utilities Board	LaFollette, TN
Lakeshore Marina	Chattanooga, TN
Larry Collier	Maynardville, TN
Layton Dayton	Knoxville, TN
Legacy Parks Foundation	Knoxville, TN
Lincoln County Soil Conservation District	Estill Springs, TN
Little River Watershed Association	Maryville, TN
Louisville Landing Marina	Knoxville, TN
Loyston Point Campground	Alcoa, TN
McMinnville Breakfast Rotary Foundation	McMinnville, TN
Melton Hill Lake Users Association	Clinton, TN
Memphis Area Association of Governments	Memphis, TN
Middle Nolichucky Watershed Alliance	Greenville, TN
Misty Harbor Marina	Soddy-Daisy, TN
NARVC	Walland, TN
National Parks Conservation Association	Knoxville, TN
National Wild Turkey Federation	Morristown, TN
Norris Lake Marina Association	Andersonville, TN
Northwest Tennessee Development District	Martin, TN
NRCS	Chattanooga, TN
Obed Watershed Community Association	Crossville, TN
Our Community Gives Back	Butler, TN
Paul Hargrove	Chattanooga, TN
Pine Harbor Marina	Soddy-Daisy, TN
PJ's Landing Marina	Dandridge, TN
Powell Valley Electric	New Tazewell, TN
Quail Forever	Lenoir City, TN
Recreation Educational Services Division	Nashville, TN
Rhea County Executive	Dayton, TN
Rhea Economic and Tourism Council	Dayton, TN

Roane Road Supervisor	Harriman, TN
Ross Landing Park	Winchester, TN
Sale Creek Marina	Soddy-Daisy, TN
Shady Grove Harbor	Signal Mountain, TN
SORBA Chattanooga	Chattanooga, TN
South Central Tennessee Development District	Columbia, TN
Southeast Tennessee Development District	Chattanooga, TN
Southern Off-Road Bicycle Association- Chattanooga Group	Chattanooga, TN
Southwest Tennessee Development District	Jackson, TN
Tellico Reservoir Development Agency	Vonore, TN
Tennessee Citizens for Wilderness Planning	Oak Ridge, TN
Tennessee Aquarium/River Rescue Chattanooga	Chattanooga, TN
Tennessee Association of Conservation Districts	Gray, TN
Tennessee Clean Water Network	Knoxville, TN
Tennessee Healthy Watershed Initiative	Humboldt, TN
The Breakers of Swan Bay	Paris, TN
Thompson Engineering	Chattanooga, TN
Tims Ford Council	Winchester, TN
Tims Ford State Park	Spring City, TN
TN Aquarium Conservation Institute	Chattanooga, TN
Toqua Campground	Vonore, TN
Town of Estill Springs	Delano, TN
Tri-County Sportsman's League Highway 58 Boat Dock	Dayton, TN
Trout Unlimited, Clinch River Chapter	Andersonville, TN
Trout Unlimited, Hiwassee Chapter	Nashville, TN
Union County Chamber of Commerce (TN)	Maynardville, TN
Union County Mayor	Maynardville, TN
University of Tennessee McClung Museum of Natural and Cultural History	Knoxville, TN
Upper Cumberland Development District	Cookeville, TN
US Geological Survey	Nashville, TN
Volunteer Landing	Knoxville, TN
Watauga Watershed Alliance	Mountain City, TN
Watershed Association of Tellico Reservoir (WATeR)	Loudon, TN
Watts Bar Lake Association	Soddy-Daisy, TN

Wildlife Cove Village and Marina	Camden, TN
Willow Point Marina	Knoxville, TN
WindRiver	Lenoir City, TN
Wolf River Conservancy	Memphis, TN
Clinch River Valley Initiative	Abingdon, VA
Director of Tourism, Lee County	Jonesville, VA
Director, Upper Tennessee River Roundtable	Abingdon, VA
Holston River Soil & Water Conservation District, VA	Abingdon, VA
Mount Rogers Planning District	Marion, VA
UVa Institute for Environmental Negotiation	Charlottesville, VA
Individuals	
Sharon Allen	
Alicia Avent	
Ross Baker	Sevierville, TN
Carl Barnes	Scottsboro, AL
Rich Belz	Knoxville, TN
Bill Blankenship	Abingdon, VA
Ernie Brewbaker	
Huie Burcham	Memphis, TN
Tammy Burruss	Shelbyville, TN
Bob Bush	Lenoir City, TN
Howard Byers	Memphis, TN
Ben Carr	Langston, AL
Duayne Carter	Bell Buckle, TN
Rhonda Cato	
Jefferson Chapman	Knoxville, TN
Jane Clemons	Nolensville, TN
Diane Cobble	Sevierville, TN
Brian Cole	Memphis, TN
Craig Cornwell	Guntersville, AL
Jennifer Cowher Williams	Guntersville, AL
Frank Dalton	Langston, AL
Martha Frances Dalton	Guntersville, AL
Terry and Tina Davenport	Shelbyville, TN
Dudley Deaton	Elizabethton, TN

Ray Fagg	Ten Mile, TN
Mike Fann	
Guy Foster	
Ralph D. Golden	Memphis, TN
Tracy Greene	Bristol, TN
Denita Guery-Hadziabdic	Knoxville, TN
Kevin Hamed	Abingdon, VA
Tiffany Hartwig	
Mary Ben Heflin	Knoxville, TN
Denise Herbert	Rock Island, TN
Jeffrey Hicks	Shelbyville, TN
Janice Higgins	Bradyville, TN
Joan Hillebrand	Corinth, MS
Danny Hill	Bristol, VA
Martina Hines	Memphis, TN
Earl Hodges	Memphis, TN
Selena Hollaway	Scottsboro, AL
Sally Horn	Knoxville, TN
Sheryl Howell	
Martha Huie	TN
Jim Hutchins	Memphis, TN
Fred Hutchinson	White House, TN
Bill James	Jasper, TN
Richard and Andrea Jameson	Memphis, TN
Mary Jennings	Memphis, TN
Ed Jones	Savannah, TN
Judy Kennamer	Memphis, TN
Jeff and Heather King	Memphis, TN
Bill Kittrell	Bryson City, NC
Andy Klinker	Ten Mile, TN
George Krueger	Grant, AL
Sara Kuebbing	Germantown, TN
Don and Elise Lake	Memphis, TN
Eric Lewis	Langston, AL
Rob Liddon	Memphis, TN
John Lichternman	Memphis, TN

Bridget Lofgren	Decatur, TN
Jonannes Loubser	Johns Creek, SC
Ruth Maddigan	Memphis, TN
Marsha Marascuilo	Booneville, MS
Karen Marcotte	Petersburg, TN
Bill Maury	Memphis, TN
Chris Mayes	Russelville, TN
Karen Mayne	Memphis, TN
Roger McCoy	Jackson, TN
Mike McDonough	Memphis, TN
Sara McMahan	
Randell Meyers	Corinth, MS
Marc Miller	Memphis, TN
John and Sharon Minor	Holly Springs, MS
Jake Mitchell	Memphis, TN
Bobby Mullins	
Caroll and Ed Nenon	Memphis, TN
Charles Netherly	Memphis, TN
Ned Noble	Corinth, MS
Jim Parker	Elizabethton, TN
Bill Pearson	Memphis, TN
Leslie Perry	Bradyville, TN
William Perry	Soddy Daisy, TN
Ann Phillipy	Memphis, TN
Martin Pleasant	Jackson, MS
Neelam Poudyai	Knoxville, TN
Sarah Ramberg	Cordova, TN
Michael and Melissa Reddoch	High Ridge, MO
Michelle Rose	Hixson, TN
Melinda Rosson	
Rosemary Saczawa	Maryville, TN
Royce Sampley	Manchester, TN
Kayla Schlemer	
Jan Simek	Knoxville, TN
Smotherman Family	

Melissa Sterling	
Mary Beth Sutton	TN
Cathy Taupr	Scottsboro, AL
Greg Taylor	Waynesboro
Freda Taylor	Cookeville, TN
Wayne Thomas	Knoxville, TN
Diana Threadgill	Memphis, TN
Ross and Leah Tierney	
Glen Turner	Parsons, TN
Glenda Van Baale	
Jacquelyn Elliott Way	
Allyson Willis	Abingdon, VA

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6.2 Glossary of Terms

100-year floodplain	The area inundated by the 1 percent annual chance (or 100- year) flood.
agricultural licensing	TVA land licensed to a private individual for the production of agricultural crops; the land use is an interim use of TVA land.
attainment areas	Those areas of the U.S. that meet NAAQS as determined by measurements of air pollutant levels.
benthic	Refers to the bottom of a stream, river, or reservoir.
cumulative impacts	Impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such actions (40 CFR § 1508.7).
dam reservation	Lands generally maintained in a parklike setting by TVA to protect the integrity of the dam structure, hydroelectric facilities, and navigation lock. 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.
deciduous	Vegetation that sheds leaves in autumn and produces new leaves in the spring.
direct impacts	Effects that are caused by the action and occur at the same time and place (40 CFR § 1508.8).
dissolved oxygen (DO)	The oxygen dissolved in water, necessary to sustain aquatic life. It is usually measured in milligrams per liter or parts per million.
drawdown	Area of reservoirs exposed between full summer pool and minimum winter pool levels during annual drawdown of the water level for flood control.
ecoregion	A relatively homogeneous area of similar geography, topography, climate, and soils that supports similar plant and animal life.
embayment	A bay or arm of the reservoir.
emergent wetland	Wetlands dominated by erect, rooted herbaceous plants, such as cattails and bulrush.
endangered species	A species in danger of extinction throughout all or a significant portion of its range or territory. Endangered species recognized by the ESA or similar state legislation have special legal status for their protection and recovery.
evergreen	Vegetation with leaves that stay green and persist all year.

evergreen-deciduous	Vegetation consisting of a mixture of plants that are both evergreen and deciduous, often referred to as mixed deciduous.
floodplains	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 a 1 percent or greater chance of flooding (100-year flood) in any given year.
flowage easement tracts	Privately owned lakeshore properties where TVA has (1) the right to flood the land as part of its reservoir operations, (2) no rights for vegetation management, and (3) the authority to control structures, under Section 26a of the *TVA Act*.
forest	Vegetation having tree crowns overlapping, generally forming 60-100 percent cover (Grossman et al. 1998).
fragmentation	The process of breaking up a large area of relatively uniform habitat into smaller disconnected areas.
herbaceous vegetation	Dominated by forbs, generally forming at least 25 percent cover; other life-forms with less than 25 percent cover (Grossman et al 1998).
historic property	Defined in 36 CFR § 800.16(l) as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places.”
indirect impacts	Effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR § 1508.8).
macroinvertebrates	Bottom-dwelling aquatic animals without vertebrae (skeletal spine), such as mollusks and arthropods.
mainstream reservoirs	Impoundments created by dams constructed across the Tennessee River.
marginal strip	The narrow strip of land retained by TVA between the summer operating pool and back-lying tracts that are owned or controlled by private or other public entities.
maximum shoreline contour (MSC)	An elevation typically 5 feet above the top of the gates of a TVA Dam. It is often the property boundary between TVA marginal strip property and adjoining private property.
NatureServe	An international network of biological inventories (natural heritage programs or conservation data centers) that provides information about the location and status of animals, plants, and habitat communities, and establishes a system for ranking the relative rarity of those resources

National Ambient Air Quality Standards (NAAQS)	Uniform national air quality standards established by the USEPA that restrict ambient levels of certain pollutants to protect public health (primary standards) or public welfare (secondary standards). Standards have been set for ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide, and lead.
physiographic provinces	General divisions of land with each area having characteristic combinations of soil materials and topography.
phytoplankton	Aquatic organisms, often microscopic, capable of generating their own food via photosynthesis, e.g., algae.
polychlorinated biphenyls (PCBs)	PCBs are organic compounds historically used for many applications, especially as dielectric fluids in transformers and capacitors and coolants. PCBs are toxic and classified as persistent organic pollutants. PCB production was banned by the U.S. in 1976.
prime farmland	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.
riprap	Stones placed along the shoreline for bank stabilization and other purposes.
riparian zone	An area of land that has vegetation or physical characteristics reflective of permanent water influence. Typically a streamside zone or shoreline edge.
riverine	Having characteristics similar to a river.
row crops	Agricultural crops, such as corn, wheat, beans, cotton, etc., which are most efficiently grown in large quantities by planting and cultivating in lines or rows.
Section 26a review process	Section 26a of the *TVA Act* requires TVA review and approval of plans for obstructions, such as docks, fills, bridges, outfalls, water intakes, and riprap, before they are constructed across, in or along the Tennessee River and its tributaries. Applications for this approval are coordinated appropriately with TVA programs and USACE. USACE issues a joint public notice for those applications that are not covered by a USACE nationwide, general, or regional permit. The appropriate state water pollution control agency must also certify that the effluent from outfalls meets the applicable water quality standards.

scrub-shrub	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.
shoreline	The line where the water of a TVA reservoir meets the shore when the water level is at the normal summer pool elevation.
shrublands	Vegetation consisting of shrubs generally greater than about 1.5 feet tall with individuals or clumps not touching or overlapping, generally forming less than 25 percent cover; tree cover generally less than 25 percent (Grossman et al. 1998).
stratification	The seasonal layering of water within a reservoir due to differences in temperature or chemical characteristics of the layers.
substrates	The base or material to which a plant is attached and from which it receives nutrients.
summer pool elevation	The normal upper level to which the reservoirs may be filled. Where storage space is available above this level, additional filling may be made as needed for flood control.
threatened species	A species threatened with extinction throughout all or a significant portion of its range or territory. Threatened species recognized by the ESA or similar state legislation have special legal status for their protection and recovery.
tributary reservoirs	Impoundments created by dams constructed across streams and rivers that eventually flow into the Tennessee River.
turbidity	All the organic and inorganic living and nonliving materials suspended in a water column. Higher levels of turbidity affect light penetration and typically decrease productivity of water bodies.
upland	The higher parts of a region, not closely associated with streams or lakes.
wetlands	As defined in *TVA Environmental Review Procedures*, wetlands are "those areas inundated by surface or ground water 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 seasonally 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."
Wildlife Management Area	Land and/or water areas designated by state wildlife agencies, such as the Tennessee Wildlife Resources Agency (TWRA), 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.

woodland	Open stands of trees with crowns not usually touching, generally forming 25 to 60 percent cover (Grossman et al. 1998).
zooplankton	Microscopic aquatic organisms that drift in the water column. Unlike phytoplankton, zooplankton are unable to generate food through photosynthesis and must instead consume other organisms.

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Appendix A – TVA Land Policy

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POLICY GOVERNING THE TENNESSEE VALLEY AUTHORITY'S RETENTION, DISPOSAL AND PLANNING OF INTERESTS IN REAL PROPERTY

The Tennessee Valley Authority (TVA) has been charged by Congress with improving navigation, controlling floods, providing for the proper use of marginal lands, providing for industrial development and providing power at rates as low as feasible, all for the general purpose of fostering the physical, economic, and social development of the Tennessee Valley region. The lands which TVA stewards in the name of the United States are some of the most important resources of the region. They have provided the foundation for the great dams and reservoirs that protect the region from flooding and secure for its residents the benefits of a navigable waterway and low-cost hydro-electricity. TVA's lands are the sites for its power generating system and the arteries for delivering power to those that need it. Many of the region's parks, recreation areas, and wildlife refuges that are so important for the region's quality of life grew up from lands that TVA made available. Also, TVA's lands often have been the catalyst for public and private economic development activities that support all of these activities.

TVA originally acquired approximately 1.3 million acres of land in the Tennessee Valley. The construction and operation of the reservoir system inundates approximately 470,000 acres with water. TVA has already transferred or sold approximately 508,000 acres, the majority of which was transferred to other federal and state agencies for public uses. TVA currently owns approximately 293,000 acres which continue to be managed pursuant to the TVA Act.

As stewards of this critically important resource, TVA has a duty to manage its lands wisely for present and future generations. 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. Further, it is TVA's policy to preserve reservoir lands remaining under its control in public ownership except in those rare instances where the benefits to the public will be so significant that transferring lands from TVA control to private ownership or another public entity is justified. This policy is explicated below.

Reservoir Properties

Land Planning- TVA shall continue to develop reservoir land management plans for its reservoir properties with substantial public input and with approval of the TVA Board of Directors. The land use allocations will be determined with consideration of the social, economic and environmental conditions around the reservoir. TVA shall consider changing a land use designation outside of the normal planning process only for water-access purposes for industrial or commercial recreation operations on privately owned back-lying land or to implement TVA's Shoreline Management Policy. Reservoir properties that have become fragmented from the reservoir will be evaluated to determine their public benefit. If it is determined by TVA's Chief Executive Officer that these fragmented properties have little or no public benefit, they shall be declared surplus and sold at public auction to the highest bidder in the same manner as surplus power or commercial properties.

Residential Use- TVA shall not allocate lands or land rights for residential use or dispose of reservoir properties for residential use.

Economic Development- TVA shall consider disposing of reservoir lands or land rights for industrial purposes or other businesses if the TVA property is located in an existing industrial park, or is designated for such purposes in a current reservoir land management plan and verified as suitable for such use by RSO&E and ED staff in a property survey. The TVA Board directs staff to complete this survey within six months of the approval of this policy. The TVA Board recognizes that property with water access, for either navigation or water supply, is a limited resource in the Valley and has preference for businesses that require water access. Future reservoir land management plans will consider industrial development opportunities as land allocations are made. TVA shall consider disposing of non-waterfront reservoir properties in industrial parks for any purpose permitted by the industrial park covenants. TVA shall not allocate lands or land rights for retail use or dispose of reservoir land or land rights for such use.

Recreation- TVA shall consider leasing or granting limited easements over lands for the development of commercial recreation facilities or public recreation purposes if the property is so designated in a reservoir land management plan and a survey conducted by RSO&E determines that the site remains suitable for recreational uses and a continued need exists for such use. The TVA Board directs staff to complete this survey within six months of the approval of this policy. Commercial recreation is defined as recreation with facilities that are provided for a fee to the public intending to produce a profit for the owner/operator. Public recreation is defined as recreation on publicly owned land with facilities developed by a public agency (or their concessionaire) and provides amenities open to the general public.

Commercial Recreation- TVA leases or easements for commercial recreation purposes shall limit the use primarily to water-based recreation designed to enhance the recreation potential of the natural resources of the river and be a stimulus for regional economic development. TVA leases or easements for commercial recreation purposes will contain restrictions against residential use, and no long term accommodations or individually owned units will be permitted.

Public Recreation- TVA leases or easements for public recreation purposes will contain restrictions against residential use, cabins, or other overnight accommodations (other than campgrounds) except if a recreation area is owned by a State or State agency and operated as a component of a State Park system in which case cabins and other overnight accommodations will be permitted.

Deed Restrictions over Private Lands- The TVA Board recognizes that much of TVA's lands were transferred upon specific agreement among the parties to conduct activities that would enhance recreation opportunities in the Valley. TVA will continue to consider the release or modification of flowage rights no longer necessary to TVA to operate the river system. TVA will consider the removal or modification of deed provisions to facilitate industrial development. TVA will also consider the removal or modification of deed restrictions that result in the public having recreational access to the tract, or if the tract is already open to the public, maintains that access. TVA will not remove or modify other deed restrictions for the purpose of facilitating residential development. To the extent permitted by the language of deed or other transfer or contractual instrument, TVA will administer its interest in former TVA land to achieve the goals of this policy.

Operational Uses of TVA Properties- TVA shall continue to utilize reservoir properties to meet the operational needs of the agency and its distributors as well as provide for public infrastructure needs such as roads, water and sewer lines, and other utilities, but will only consider requests for private infrastructure where TVA determines no other practicable alternative exists. Nothing in this policy is intended to prevent the disposal of tracts of land upon the recommendation of the General Counsel to settle claims or litigation or to address issues of contamination or potential contamination. In addition, TVA will continue to work with development agencies (and other partners) throughout the Valley to implement previously executed agreements.

Power & Commercial Properties

TVA's nonreservoir property—primarily power and commercial properties and mineral holdings--shall continue to be managed as power assets. The TVA Board directs staff to undertake a review of TVA mineral holdings for later policy consideration. Retention and disposal decisions will be primarily based on business considerations consistent with the TVA Act and other applicable requirements. TVA may enter into special arrangements with the distributors of TVA power. In addition, TVA may relinquish transmission line rights, if they are determined to be unnecessary for present or future operations and the current owner agrees to pay the enhanced fair market value of the property. In all other instances, TVA shall emphasize sales that generate the maximum competition among bidders at public auction and where possible shall not include use restrictions other than those designed to protect TVA's program interests or to meet legal or environmental requirements.

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Appendix B – Forecast System Definitions

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Forecast Designation	Definition
Dam Reservation	Land managed to protect the integrity of the dam and associated switchyards and power lines. Most TVA dam reservations provide a visitor reception building that overlooks the facilities. Day use recreational activities such as picnicking, fishing, hiking, and bird watching are encouraged. Campgrounds and boat launching facilities are often available. Generally speaking, maintenance levels and care of the facilities are higher on dam reservation land than on other areas of the reservoir. Hunting and unregulated camping are generally prohibited on the reservation.
Public Recreation	Land set aside for use by the public for recreational activities. This includes informal, dispersed activities such as hunting, hiking, fishing, and primitive camping, as well as more formal activities in developed areas such as parks, boat launching areas, and campgrounds.
Reservoir Operations (Islands)	Islands in the mainstream or tributaries used for informal, dispersed recreation and natural resource management projects.
Reservoir Operations (Mainland)	Generally narrow bands of shoreland retained by TVA for flood control and other reservoir operations purposes. Although there are no outstanding rights to construct water use facilities, TVA allowed back-lying residential property owners to construct facilities on these lands until 1992. Since 1992, facilities have only been allowed on reservoir operations land in those areas where existing facilities have been permitted.
Power Transmission and Power Needs	Land reserved for future power development or to maintain the integrity of existing power lines. Interim wildlife enhancement projects are often implemented on these lands.
Commercial Recreation	Land that TVA has reserved primarily for commercial use. This use includes, but is not limited to marinas, commercial boat docks, and campgrounds. Informal, dispersed recreational activities often occur on this land as an interim use.
Minor Commercial Landings	Tracts allocated for minor commercial landings available for public or private development of small-scale barge facilities. These are sites that can be used for transferring pulpwood, sand, gravel, and other natural resource commodities between barges and trucks. Since this use is intermittent and usually not a major activity, there would generally be no significant impact on adjacent land uses.
Industrial	Land that TVA identified as having potential for future industrial development. Informal, dispersed recreational activities often occur on this land as an interim use.
Navigation Safety Harbors	Sites used for tying off commercial barge tows and recreational boats during adverse weather conditions. Safety landings are straight stretches of shoreline fronting the commercial channel, and safety harbors are

Forecast Designation	Definition
Landings	shoreline areas recessed into coves or creeks off the commercial channel.
Forestry Research	Tracts used as ongoing sites for monitoring tree growth and stress. In addition, trees are used in these areas to produce reliable seed sources.
Steam Plant Study	Tracts set aside to potentially serve as a future steam plant location. The actual construction of a steam plant would depend on energy demands and cost-benefit considerations.
Wildlife Management	Land managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this designation. Management strategies include planting food plots, selective timber harvesting, and other forms of manipulating habitat to attract certain wildlife species. Appropriate activities in this zone include hunting, wildlife observation, and camping on undeveloped sites.
Small Wild Areas	These TVA natural areas are areas managed by TVA or in cooperation with other public agencies or private conservation organizations to protect exceptional natural or aesthetic qualities that can also support dispersed, low-impact types of outdoor recreation. Where appropriate, development could include foot trails, signs, parking areas, and primitive camping. Efforts can be undertaken to encourage public use and interpretation for visitors.

Appendix C – Conversion Tables

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Table C-1. Chickamauga Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
2	2	Project Operations	3	Sensitive Resource Management	226.3
3	6	Developed Recreation	6	Shoreline Access	16.8
3	7	Shoreline Access	6	Shoreline Access	1.7
4	4	Natural Resource Conservation	2	Project Operations	3.4
5	7	Shoreline Access	7	Shoreline Access	2.6
6	6	Developed Recreation	6	Shoreline Access	3.2
7	3	Sensitive Resource Management	4	Natural Resource Conservation	7.4
8	3	Sensitive Resource Management	3	Sensitive Resource Management	178.0
9	2	Project Operations	2	Project Operations	5.6
10	7	Shoreline Access	7	Shoreline Access	8.3
11	6	Developed Recreation	6	Shoreline Access	6.0
12	7	Shoreline Access	7	Shoreline Access	1.3
13	2	Project Operations	2	Project Operations	5.9
14	4	Natural Resource Conservation	4	Natural Resource Conservation	55.4
15	4	Natural Resource Conservation	4	Natural Resource Conservation	2.5
16	4	Natural Resource Conservation	7	Shoreline Access	0.3
17	4	Natural Resource Conservation	3	Sensitive Resource Management	0.6
18	4	Natural Resource Conservation	6	Shoreline Access	213.9
19	4	Natural Resource Conservation	4	Natural Resource Conservation	2.0
20	2	Project Operations	2	Project Operations	1.3
21	7	Shoreline Access	7	Shoreline Access	6.5
22	4	Natural Resource Conservation	6	Shoreline Access	2.4
23	4	Natural Resource Conservation	6	Shoreline Access	25.8
23	6	Developed	6	Shoreline Access	93.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Recreation			
23	7	Shoreline Access	6	Shoreline Access	0.6
24	7	Shoreline Access	7	Shoreline Access	59.0
25	7	Shoreline Access	6	Shoreline Access	25.2
26	4	Natural Resource Conservation	4	Natural Resource Conservation	1.3
27	7	Shoreline Access	7	Shoreline Access	15.6
28	4	Natural Resource Conservation	6	Shoreline Access	47.0
29	4	Natural Resource Conservation	2	Project Operations	2.9
30	4	Natural Resource Conservation	5	Industrial	0.1
31a	7	Shoreline Access	4	Natural Resource Conservation	0.1
31	7	Shoreline Access	7	Shoreline Access	13.7
32	6	Developed Recreation	6	Shoreline Access	1.4
32	7	Shoreline Access	6	Shoreline Access	0.3
33	7	Shoreline Access	7	Shoreline Access	12.7
34	4	Natural Resource Conservation	4	Natural Resource Conservation	6.2
35	4	Natural Resource Conservation	6	Shoreline Access	0.8
35	6	Developed Recreation	6	Shoreline Access	5.6
36	4	Natural Resource Conservation	2	Project Operations	1.2
36	6	Developed Recreation	2	Project Operations	0.2
37	3	Sensitive Resource Management	7	Shoreline Access	1.1
37	7	Shoreline Access	7	Shoreline Access	0.5
38	3	Sensitive Resource Management	4	Natural Resource Conservation	9.3
39	6	Developed Recreation	7	Shoreline Access	0.2
39	7	Shoreline Access	7	Shoreline Access	6.6
40	4	Natural Resource Conservation	4	Natural Resource Conservation	3.0
41a	7	Shoreline Access	4	Natural Resource Conservation	0.4
41	7	Shoreline Access	7	Shoreline Access	39.1
42	4	Natural Resource Conservation	4	Natural Resource Conservation	10.3
43	3	Sensitive	3	Sensitive	35.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Resource Management		Resource Management	
44	6	Developed Recreation	6	Shoreline Access	4.2
45	4	Natural Resource Conservation	2	Project Operations	6.7
45	6	Developed Recreation	2	Project Operations	1.4
46	4	Natural Resource Conservation	4	Natural Resource Conservation	90.6
47	4	Natural Resource Conservation	5	Industrial	2.3
48	4	Natural Resource Conservation	6	Shoreline Access	2.4
49a	7	Shoreline Access	4	Natural Resource Conservation	0.5
49	6	Developed Recreation	7	Shoreline Access	1.3
49	7	Shoreline Access	7	Shoreline Access	9.1
50	6	Developed Recreation	6	Shoreline Access	0.8
51	4	Natural Resource Conservation	6	Shoreline Access	3.6
52	7	Shoreline Access	7	Shoreline Access	1.1
53	3	Sensitive Resource Management	4	Natural Resource Conservation	6.3
54	6	Developed Recreation	6	Shoreline Access	20.4
55	7	Shoreline Access	7	Shoreline Access	3.1
56	7	Shoreline Access	2	Project Operations	2.9
57	7	Shoreline Access	5	Industrial	0.9
58	4	Natural Resource Conservation	6	Shoreline Access	4.6
58	6	Developed Recreation	6	Shoreline Access	46.6
59	2	Project Operations	2	Project Operations	8.2
59	4	Natural Resource Conservation	2	Project Operations	4.0
59	6	Developed Recreation	2	Project Operations	3.9
60	4	Natural Resource Conservation	4	Natural Resource Conservation	47.3
61	4	Natural Resource Conservation	4	Natural Resource Conservation	0.3
61	7	Shoreline Access	4	Natural Resource Conservation	2.4
62	4	Natural Resource	6	Shoreline Access	11.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation			
63	7	Shoreline Access	7	Shoreline Access	6.6
64	4	Natural Resource Conservation	6	Shoreline Access	5.1
64	6	Developed Recreation	6	Shoreline Access	0.4
65	5	Industrial	3	Sensitive Resource Management	1.2
66	5	Industrial	7	Shoreline Access	2.2
67	4	Natural Resource Conservation	4	Natural Resource Conservation	31.6
68a	7	Shoreline Access	4	Natural Resource Conservation	0.2
68	7	Shoreline Access	7	Shoreline Access	16.4
69	3	Sensitive Resource Management	3	Sensitive Resource Management	19.3
70	7	Shoreline Access	7	Shoreline Access	7.7
71	4	Natural Resource Conservation	6	Shoreline Access	2.7
71	6	Developed Recreation	6	Shoreline Access	49.4
71	7	Shoreline Access	6	Shoreline Access	2.5
72	4	Natural Resource Conservation	2	Project Operations	0.2
72	6	Developed Recreation	2	Project Operations	3.9
73a	7	Shoreline Access	4	Natural Resource Conservation	0.1
73	7	Shoreline Access	7	Shoreline Access	15.9
74	4	Natural Resource Conservation	6	Shoreline Access	49.7
75	3	Sensitive Resource Management	4	Natural Resource Conservation	12.2
76	7	Shoreline Access	7	Shoreline Access	11.2
77	3	Sensitive Resource Management	3	Sensitive Resource Management	75.3
77	4	Natural Resource Conservation	3	Sensitive Resource Management	0.8
78	4	Natural Resource Conservation	6	Shoreline Access	13.1
78	7	Shoreline Access	6	Shoreline Access	1.8
79	7	Shoreline Access	7	Shoreline Access	1.0
80	4	Natural Resource Conservation	4	Natural Resource Conservation	13.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
80	7	Shoreline Access	4	Natural Resource Conservation	1.5
81a	7	Shoreline Access	4	Natural Resource Conservation	0.03
81	7	Shoreline Access	7	Shoreline Access	28.7
82	4	Natural Resource Conservation	4	Natural Resource Conservation	4.2
83	3	Sensitive Resource Management	3	Sensitive Resource Management	9.6
84	4	Natural Resource Conservation	4	Natural Resource Conservation	1.9
85a	7	Shoreline Access	4	Natural Resource Conservation	0.1
85	7	Shoreline Access	7	Shoreline Access	14.2
86	6	Developed Recreation	6	Shoreline Access	4.9
86	7	Shoreline Access	6	Shoreline Access	0.4
87	6	Developed Recreation	2	Project Operations	0.2
88	7	Shoreline Access	7	Shoreline Access	0.8
89	4	Natural Resource Conservation	4	Natural Resource Conservation	47.5
90	4	Natural Resource Conservation	2	Project Operations	1.3
90	6	Developed Recreation	2	Project Operations	3.3
91	4	Natural Resource Conservation	6	Shoreline Access	99.2
91	6	Developed Recreation	6	Shoreline Access	1.0
92	4	Natural Resource Conservation	4	Natural Resource Conservation	121.5
93	4	Natural Resource Conservation	2	Project Operations	2.3
94	4	Natural Resource Conservation	2	Project Operations	13.7
95	4	Natural Resource Conservation	4	Natural Resource Conservation	109.0
96	7	Shoreline Access	7	Shoreline Access	5.9
97	4	Natural Resource Conservation	4	Natural Resource Conservation	55.0
98	4	Natural Resource Conservation	6	Shoreline Access	15.4
98	6	Developed Recreation	6	Shoreline Access	31.9
99a	7	Shoreline Access	4	Natural Resource Conservation	0.2
99	4	Natural Resource Conservation	7	Shoreline Access	0.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
99	7	Shoreline Access	7	Shoreline Access	25.2
100	4	Natural Resource Conservation	6	Shoreline Access	0.8
101	4	Natural Resource Conservation	4	Natural Resource Conservation	5.8
102a	7	Shoreline Access	4	Natural Resource Conservation	0.1
102	7	Shoreline Access	7	Shoreline Access	26.5
103	3	Sensitive Resource Management	4	Natural Resource Conservation	35.3
103	4	Natural Resource Conservation	4	Natural Resource Conservation	72.9
104	2	Project Operations	2	Project Operations	11.4
105	4	Natural Resource Conservation	6	Shoreline Access	1.1
106	7	Shoreline Access	7	Shoreline Access	18.7
107	3	Sensitive Resource Management	3	Sensitive Resource Management	3.4
108	3	Sensitive Resource Management	3	Sensitive Resource Management	273.9
108	4	Natural Resource Conservation	3	Sensitive Resource Management	1.8
109	4	Natural Resource Conservation	4	Natural Resource Conservation	7.2
110	7	Shoreline Access	7	Shoreline Access	21.8
111	4	Natural Resource Conservation	3	Sensitive Resource Management	4.1
112	4	Natural Resource Conservation	6	Shoreline Access	8.5
113	7	Shoreline Access	4	Natural Resource Conservation	6.0
114	4	Natural Resource Conservation	6	Shoreline Access	0.8
115	7	Shoreline Access	2	Project Operations	0.3
116	7	Shoreline Access	7	Shoreline Access	3.0
117	4	Natural Resource Conservation	4	Natural Resource Conservation	7.0
117	7	Shoreline Access	4	Natural Resource Conservation	6.3
118	7	Shoreline Access	7	Shoreline Access	7.3
119	2	Project Operations	4	Natural Resource Conservation	6.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
119	4	Natural Resource Conservation	4	Natural Resource Conservation	23.3
119	6	Developed Recreation	4	Natural Resource Conservation	2.3
119	7	Shoreline Access	4	Natural Resource Conservation	4.6
120	2	Project Operations	2	Project Operations	39.7
120	4	Natural Resource Conservation	2	Project Operations	2.0
120	6	Developed Recreation	2	Project Operations	10.0
120	7	Shoreline Access	2	Project Operations	0.1
121	6	Developed Recreation	6	Shoreline Access	92.5
122	7	Shoreline Access	7	Shoreline Access	9.5
123	3	Sensitive Resource Management	4	Natural Resource Conservation	2.5
123	7	Shoreline Access	4	Natural Resource Conservation	1.1
124	6	Developed Recreation	6	Shoreline Access	2.0
125a	4	Natural Resource Conservation	4	Natural Resource Conservation	0.3
125a	7	Shoreline Access	4	Natural Resource Conservation	3.2
125	6	Developed Recreation	7	Shoreline Access	4.2
125	7	Shoreline Access	7	Shoreline Access	14.6
126	3	Sensitive Resource Management	4	Natural Resource Conservation	59.5
127	3	Sensitive Resource Management	3	Sensitive Resource Management	3.7
128	3	Sensitive Resource Management	4	Natural Resource Conservation	53.6
128	4	Natural Resource Conservation	4	Natural Resource Conservation	0.1
129	7	Shoreline Access	7	Shoreline Access	4.5
130	4	Natural Resource Conservation	6	Shoreline Access	5.6
130	6	Developed Recreation	6	Shoreline Access	3.7
131	2	Project Operations	2	Project Operations	1.9
131	4	Natural Resource	2	Project	0.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Operations	
131	6	Developed Recreation	2	Project Operations	0.8
131	7	Shoreline Access	2	Project Operations	0.6
132	4	Natural Resource Conservation	3	Sensitive Resource Management	54.8
133	4	Natural Resource Conservation	7	Shoreline Access	0.03
133	7	Shoreline Access	7	Shoreline Access	67.6
134	4	Natural Resource Conservation	4	Natural Resource Conservation	11.3
135	4	Natural Resource Conservation	6	Shoreline Access	5.4
136	4	Natural Resource Conservation	4	Natural Resource Conservation	6.3
137	3	Sensitive Resource Management	4	Natural Resource Conservation	206.2
138	7	Shoreline Access	7	Shoreline Access	7.8
139	3	Sensitive Resource Management	7	Shoreline Access	1.1
139	7	Shoreline Access	7	Shoreline Access	7.8
140	3	Sensitive Resource Management	4	Natural Resource Conservation	150.7
141	7	Shoreline Access	7	Shoreline Access	6.5
142	4	Natural Resource Conservation	4	Natural Resource Conservation	27.2
143	7	Shoreline Access	2	Project Operations	1.1
144	7	Shoreline Access	7	Shoreline Access	5.8
145	4	Natural Resource Conservation	4	Natural Resource Conservation	61.6
146	4	Natural Resource Conservation	7	Shoreline Access	0.4
146	7	Shoreline Access	7	Shoreline Access	33.5
147	4	Natural Resource Conservation	4	Natural Resource Conservation	150.6
148	7	Shoreline Access	7	Shoreline Access	21.6
149	4	Natural Resource Conservation	2	Project Operations	0.4
149	7	Shoreline Access	2	Project Operations	0.04
150	4	Natural Resource Conservation	4	Natural Resource Conservation	0.2
151	4	Natural Resource	6	Shoreline Access	6.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation			
152	7	Shoreline Access	7	Shoreline Access	23.7
153	3	Sensitive Resource Management	4	Natural Resource Conservation	232.1
153	7	Shoreline Access	4	Natural Resource Conservation	0.1
154	3	Sensitive Resource Management	2	Project Operations	4.3
155	7	Shoreline Access	7	Shoreline Access	10.1
156	3	Sensitive Resource Management	3	Sensitive Resource Management	262.6
157	2	Project Operations	2	Project Operations	2.9
158	3	Sensitive Resource Management	3	Sensitive Resource Management	34.4
159	7	Shoreline Access	7	Shoreline Access	35.4
160	4	Natural Resource Conservation	4	Natural Resource Conservation	66.2
161	6	Developed Recreation	6	Shoreline Access	6.2
162	4	Natural Resource Conservation	4	Natural Resource Conservation	62.9
163a	2	Project Operations	6	Shoreline Access	3.2
163	2	Project Operations	2	Project Operations	19.4
163	3	Sensitive Resource Management	2	Project Operations	0.2
163	4	Natural Resource Conservation	2	Project Operations	0.2
164	7	Shoreline Access	5	Industrial	8.8
165	4	Natural Resource Conservation	4	Natural Resource Conservation	277.2
165	7	Shoreline Access	4	Natural Resource Conservation	0.7
166	4	Natural Resource Conservation	4	Natural Resource Conservation	469.3
167	4	Natural Resource Conservation	7	Shoreline Access	4.6
167	7	Shoreline Access	7	Shoreline Access	34.2
168	3	Sensitive Resource Management	3	Sensitive Resource Management	92.1
168	4	Natural Resource	3	Sensitive	3.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Resource Management	
168	7	Shoreline Access	3	Sensitive Resource Management	22.3
169	4	Natural Resource Conservation	4	Natural Resource Conservation	163.7
170	4	Natural Resource Conservation	2	Project Operations	0.9
171	4	Natural Resource Conservation	2	Project Operations	52.2
172	3	Sensitive Resource Management	3	Sensitive Resource Management	63.1
173	7	Shoreline Access	7	Shoreline Access	20.3
174	7	Shoreline Access	2	Project Operations	1.3
175	7	Shoreline Access	6	Shoreline Access	3.0
176	3	Sensitive Resource Management	7	Shoreline Access	0.02
176	7	Shoreline Access	7	Shoreline Access	0.5
177	7	Shoreline Access	7	Shoreline Access	37.8
178	6	Developed Recreation	6	Shoreline Access	1.1
178	7	Shoreline Access	6	Shoreline Access	0.3
179	3	Sensitive Resource Management	2	Project Operations	0.8
179	6	Developed Recreation	2	Project Operations	0.1
180	7	Shoreline Access	4	Natural Resource Conservation	4.9
181	4	Natural Resource Conservation	4	Natural Resource Conservation	0.2
182	3	Sensitive Resource Management	4	Natural Resource Conservation	6.4
183	7	Shoreline Access	7	Shoreline Access	2.1
184	2	Project Operations	3	Sensitive Resource Management	0.9
184	3	Sensitive Resource Management	3	Sensitive Resource Management	17.8
185	6	Developed Recreation	6	Shoreline Access	3.8
186	6	Developed Recreation	2	Project Operations	0.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
187	3	Sensitive Resource Management	3	Sensitive Resource Management	47.3
188	3	Sensitive Resource Management	7	Shoreline Access	0.01
188	7	Shoreline Access	7	Shoreline Access	12.8
189	7	Shoreline Access	4	Natural Resource Conservation	1.0
190	3	Sensitive Resource Management	4	Natural Resource Conservation	21.7
190	4	Natural Resource Conservation	4	Natural Resource Conservation	29.7
191	7	Shoreline Access	7	Shoreline Access	3.6
192	2	Project Operations	6	Shoreline Access	0.2
192	4	Natural Resource Conservation	6	Shoreline Access	1.1
193	3	Sensitive Resource Management	4	Natural Resource Conservation	380.0
193	4	Natural Resource Conservation	4	Natural Resource Conservation	49.2
194	7	Shoreline Access	7	Shoreline Access	21.8
195	4	Natural Resource Conservation	6	Shoreline Access	8.1
195	6	Developed Recreation	6	Shoreline Access	0.8
196	4	Natural Resource Conservation	2	Project Operations	1.6
196	7	Shoreline Access	2	Project Operations	0.1
197	4	Natural Resource Conservation	3	Sensitive Resource Management	30.9
198	7	Shoreline Access	7	Shoreline Access	13.3
199	3	Sensitive Resource Management	4	Natural Resource Conservation	39.0
199	4	Natural Resource Conservation	4	Natural Resource Conservation	0.1
200	7	Shoreline Access	7	Shoreline Access	10.2
201	4	Natural Resource Conservation	4	Natural Resource Conservation	4.1
201	7	Shoreline Access	4	Natural Resource Conservation	0.8
202	6	Developed Recreation	6	Shoreline Access	14.6

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
203	7	Shoreline Access	7	Shoreline Access	15.6
204	3	Sensitive Resource Management	4	Natural Resource Conservation	232.4
204	4	Natural Resource Conservation	4	Natural Resource Conservation	0.5
205	3	Sensitive Resource Management	7	Shoreline Access	0.7
205	7	Shoreline Access	7	Shoreline Access	30.7
206	3	Sensitive Resource Management	3	Sensitive Resource Management	17.4
206	4	Natural Resource Conservation	3	Sensitive Resource Management	0.3
207	7	Shoreline Access	7	Shoreline Access	17.9
208	3	Sensitive Resource Management	4	Natural Resource Conservation	1.0
208	4	Natural Resource Conservation	4	Natural Resource Conservation	158.7
209	7	Shoreline Access	7	Shoreline Access	67.9
210	6	Developed Recreation	6	Shoreline Access	10.9
211	6	Developed Recreation	2	Project Operations	0.9
212	3	Sensitive Resource Management	4	Natural Resource Conservation	13.9
212	4	Natural Resource Conservation	4	Natural Resource Conservation	0.3
212	7	Shoreline Access	4	Natural Resource Conservation	27.7
213	3	Sensitive Resource Management	3	Sensitive Resource Management	29.9
214	3	Sensitive Resource Management	4	Natural Resource Conservation	810.4
215	3	Sensitive Resource Management	4	Natural Resource Conservation	38.4
216	3	Sensitive Resource Management	2	Project Operations	2.2
217	3	Sensitive Resource Management	4	Natural Resource Conservation	20.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
218	3	Sensitive Resource Management	2	Project Operations	5.3
219	3	Sensitive Resource Management	6	Shoreline Access	3.1
219	6	Developed Recreation	6	Shoreline Access	30.9
219	7	Shoreline Access	6	Shoreline Access	0.5
220	2	Project Operations	2	Project Operations	5.5
221	6	Developed Recreation	4	Natural Resource Conservation	29.5
222	7	Shoreline Access	7	Shoreline Access	2.3
223	7	Shoreline Access	6	Shoreline Access	0.5
224	4	Natural Resource Conservation	4	Natural Resource Conservation	110.1
225	2	Project Operations	2	Project Operations	4.6
225	4	Natural Resource Conservation	2	Project Operations	3.0
226	7	Shoreline Access	7	Shoreline Access	25.3
227	4	Natural Resource Conservation	4	Natural Resource Conservation	1.8
228	4	Natural Resource Conservation	4	Natural Resource Conservation	155.7
229	4	Natural Resource Conservation	6	Shoreline Access	2.9
229	6	Developed Recreation	6	Shoreline Access	1.0
230	7	Shoreline Access	7	Shoreline Access	7.4
231	4	Natural Resource Conservation	4	Natural Resource Conservation	0.4
231	7	Shoreline Access	4	Natural Resource Conservation	1.2
232	4	Natural Resource Conservation	7	Shoreline Access	3.6
232	7	Shoreline Access	7	Shoreline Access	4.6
233	4	Natural Resource Conservation	3	Sensitive Resource Management	9.1
234	4	Natural Resource Conservation	6	Shoreline Access	10.1
235	7	Shoreline Access	7	Shoreline Access	10.9
236	4	Natural Resource Conservation	4	Natural Resource Conservation	75.6
237	4	Natural Resource Conservation	6	Shoreline Access	48.9
238	4	Natural Resource	7	Shoreline Access	3.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation			
239	4	Natural Resource Conservation	4	Natural Resource Conservation	192.4
240	7	Shoreline Access	7	Shoreline Access	7.0
241	7	Shoreline Access	7	Shoreline Access	4.6
242	4	Natural Resource Conservation	4	Natural Resource Conservation	25.4
243	7	Shoreline Access	7	Shoreline Access	4.3
244	7	Shoreline Access	6	Shoreline Access	6.7
245	4	Natural Resource Conservation	4	Natural Resource Conservation	268.2
246	2	Project Operations	2	Project Operations	12.6
246	4	Natural Resource Conservation	2	Project Operations	7.4
246	7	Shoreline Access	2	Project Operations	0.5
247	4	Natural Resource Conservation	7	Shoreline Access	4.6
248	4	Natural Resource Conservation	2	Project Operations	1.3
249	5	Industrial	5	Industrial	2.2
250	5	Industrial	5	Industrial	129.9
251	2	Project Operations	2	Project Operations	0.3
251	3	Sensitive Resource Management	2	Project Operations	1.5
251	4	Natural Resource Conservation	2	Project Operations	0.2
251	6	Developed Recreation	2	Project Operations	0.4
252	3	Sensitive Resource Management	5	Industrial	26.5
252	4	Natural Resource Conservation	5	Industrial	8.2
252	5	Industrial	5	Industrial	12.9
252	6	Developed Recreation	5	Industrial	2.1
252	7	Shoreline Access	5	Industrial	1.0
253	6	Developed Recreation	6	Shoreline Access	1.7
254	3	Sensitive Resource Management	3	Sensitive Resource Management	277.1
254	4	Natural Resource Conservation	3	Sensitive Resource Management	0.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
254	6	Developed Recreation	3	Sensitive Resource Management	9.2
255	7	Shoreline Access	7	Shoreline Access	5.2
256	7	Shoreline Access	7	Shoreline Access	12.0
257	7	Shoreline Access	7	Shoreline Access	0.9
258	3	Sensitive Resource Management	2	Project Operations	12.0
259	3	Sensitive Resource Management	2	Project Operations	0.2
260	2	Project Operations	2	Project Operations	0.1
261	5	Industrial	5	Industrial	0.3
262	4	Natural Resource Conservation	6	Shoreline Access	0.9
262	6	Developed Recreation	6	Shoreline Access	14.2
263	4	Natural Resource Conservation	5	Industrial	1.1
263	5	Industrial	5	Industrial	30.2
263	7	Shoreline Access	5	Industrial	41.6
264	4	Natural Resource Conservation	3	Sensitive Resource Management	0.9
265	3	Sensitive Resource Management	3	Sensitive Resource Management	7.8
266	3	Sensitive Resource Management	4	Natural Resource Conservation	12.8
267	2	Project Operations	2	Project Operations	3.6
267	7	Shoreline Access	2	Project Operations	0.03
268	4	Natural Resource Conservation	6	Shoreline Access	15.3
269	4	Natural Resource Conservation	4	Natural Resource Conservation	65.2
270	2	Project Operations	2	Project Operations	6.7
271	3	Sensitive Resource Management	3	Sensitive Resource Management	41.0
272	7	Shoreline Access	7	Shoreline Access	17.8
273	7	Shoreline Access	6	Shoreline Access	3.4
274	4	Natural Resource Conservation	4	Natural Resource Conservation	425.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
275	2	Project Operations	2	Project Operations	6.3
275	4	Natural Resource Conservation	2	Project Operations	0.1
276	7	Shoreline Access	7	Shoreline Access	7.1
277	4	Natural Resource Conservation	6	Shoreline Access	6.2
278	7	Shoreline Access	7	Shoreline Access	15.4
279	4	Natural Resource Conservation	3	Sensitive Resource Management	102.2
280	4	Natural Resource Conservation	4	Natural Resource Conservation	36.8
281	4	Natural Resource Conservation	6	Shoreline Access	0.9
282	4	Natural Resource Conservation	7	Shoreline Access	7.0
282	7	Shoreline Access	7	Shoreline Access	10.9
283	4	Natural Resource Conservation	4	Natural Resource Conservation	104.5
284	4	Natural Resource Conservation	6	Shoreline Access	3.8
285	2	Project Operations	2	Project Operations	4.6
285	7	Shoreline Access	2	Project Operations	0.03
286	4	Natural Resource Conservation	4	Natural Resource Conservation	101.6
287	7	Shoreline Access	7	Shoreline Access	16.0
288	4	Natural Resource Conservation	4	Natural Resource Conservation	48.1
289	6	Developed Recreation	6	Shoreline Access	3.3
290	7	Shoreline Access	7	Shoreline Access	14.8
291	4	Natural Resource Conservation	4	Natural Resource Conservation	5.3
292	3	Sensitive Resource Management	4	Natural Resource Conservation	238.3
293	3	Sensitive Resource Management	4	Natural Resource Conservation	735.9
294	3	Sensitive Resource Management	2	Project Operations	4.4
295	6	Developed Recreation	6	Shoreline Access	36.2
296	3	Sensitive Resource Management	3	Sensitive Resource Management	13.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
297	2	Project Operations	2	Project Operations	0.4
298	7	Shoreline Access	7	Shoreline Access	12.7
299	4	Natural Resource Conservation	6	Shoreline Access	2.6
299	6	Developed Recreation	6	Shoreline Access	1.4
300	4	Natural Resource Conservation	2	Project Operations	0.1
301	7	Shoreline Access	7	Shoreline Access	2.9
302	7	Shoreline Access	7	Shoreline Access	25.3
303	4	Natural Resource Conservation	3	Sensitive Resource Management	3.1
304	4	Natural Resource Conservation	6	Shoreline Access	8.3
305	4	Natural Resource Conservation	4	Natural Resource Conservation	259.3
306	4	Natural Resource Conservation	6	Shoreline Access	2.2
306	6	Developed Recreation	6	Shoreline Access	44.7
307	7	Shoreline Access	7	Shoreline Access	13.3
308	3	Sensitive Resource Management	3	Sensitive Resource Management	202.1
309	7	Shoreline Access	7	Shoreline Access	14.6
310	4	Natural Resource Conservation	4	Natural Resource Conservation	150.4
311	4	Natural Resource Conservation	2	Project Operations	6.4
312	3	Sensitive Resource Management	3	Sensitive Resource Management	197.2
312	4	Natural Resource Conservation	3	Sensitive Resource Management	1.6
313	6	Developed Recreation	6	Shoreline Access	3.9
314	7	Shoreline Access	7	Shoreline Access	16.3
315	4	Natural Resource Conservation	4	Natural Resource Conservation	2.3
315	7	Shoreline Access	4	Natural Resource Conservation	22.1
316	7	Shoreline Access	7	Shoreline Access	4.8
317	3	Sensitive Resource Management	3	Sensitive Resource Management	49.2
318	7	Shoreline Access	7	Shoreline Access	16.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
319	4	Natural Resource Conservation	4	Natural Resource Conservation	435.0
320	3	Sensitive Resource Management	2	Project Operations	8.8
320	4	Natural Resource Conservation	2	Project Operations	7.8
321	4	Natural Resource Conservation	6	Shoreline Access	1.2
321	6	Developed Recreation	6	Shoreline Access	0.9
322	4	Natural Resource Conservation	3	Sensitive Resource Management	6.6
323	7	Shoreline Access	7	Shoreline Access	11.1
324	2	Project Operations	2	Project Operations	22.0
325	3	Sensitive Resource Management	4	Natural Resource Conservation	151.3
325	4	Natural Resource Conservation	4	Natural Resource Conservation	3.7
326	3	Sensitive Resource Management	6	Shoreline Access	0.6
326	6	Developed Recreation	6	Shoreline Access	17.7
327	3	Sensitive Resource Management	3	Sensitive Resource Management	0.9
328	4	Natural Resource Conservation	3	Sensitive Resource Management	1.5
329	4	Natural Resource Conservation	6	Shoreline Access	12.4
330	7	Shoreline Access	7	Shoreline Access	5.2
331	3	Sensitive Resource Management	3	Sensitive Resource Management	15.3
332	7	Shoreline Access	7	Shoreline Access	14.5
333	7	Shoreline Access	2	Project Operations	0.6
334	7	Shoreline Access	7	Shoreline Access	9.6
335	4	Natural Resource Conservation	2	Project Operations	0.9
336	4	Natural Resource Conservation	4	Natural Resource Conservation	8.8
337	2	Project Operations	2	Project Operations	32.1
337	4	Natural Resource	2	Project	2.9

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Operations	
337	7	Shoreline Access	2	Project Operations	0.2
338	4	Natural Resource Conservation	4	Natural Resource Conservation	4.3
339	6	Developed Recreation	6	Shoreline Access	2.7
340	4	Natural Resource Conservation	6	Shoreline Access	439.6
340	6	Developed Recreation	6	Shoreline Access	50.7
341a	7	Shoreline Access	4	Natural Resource Conservation	0.2
341	7	Shoreline Access	7	Shoreline Access	25.5
342	4	Natural Resource Conservation	6	Shoreline Access	4.0
343	4	Natural Resource Conservation	6	Shoreline Access	0.8
343	6	Developed Recreation	6	Shoreline Access	0.5
344	4	Natural Resource Conservation	2	Project Operations	1.2
344	6	Developed Recreation	2	Project Operations	0.1
345	7	Shoreline Access	7	Shoreline Access	91.1
346	3	Sensitive Resource Management	3	Sensitive Resource Management	0.7
346	4	Natural Resource Conservation	3	Sensitive Resource Management	0.8
347	7	Shoreline Access	2	Project Operations	0.1
348	4	Natural Resource Conservation	4	Natural Resource Conservation	5.0
349	7	Shoreline Access	7	Shoreline Access	1.8
350	7	Shoreline Access	7	Shoreline Access	31.5
351	4	Natural Resource Conservation	6	Shoreline Access	6.3
352	4	Natural Resource Conservation	2	Project Operations	0.1
353	4	Natural Resource Conservation	3	Sensitive Resource Management	65.7
353	7	Shoreline Access	3	Sensitive Resource Management	1.2
354	7	Shoreline Access	4	Natural Resource Conservation	0.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
35	4	Natural Resource Conservation	4	Natural Resource Conservation	197.7
356	4	Natural Resource Conservation	2	Project Operations	30.8
356	6	Developed Recreation	2	Project Operations	0.8
357	4	Natural Resource Conservation	3	Sensitive Resource Management	3.3
358	4	Natural Resource Conservation	6	Shoreline Access	0.7
358	6	Developed Recreation	6	Shoreline Access	5.3
359	4	Natural Resource Conservation	4	Natural Resource Conservation	19.6
360	7	Shoreline Access	7	Shoreline Access	26.2
361	6	Developed Recreation	6	Shoreline Access	1.1
362	4	Natural Resource Conservation	4	Natural Resource Conservation	5.6
363	4	Natural Resource Conservation	2	Project Operations	0.9
364	7	Shoreline Access	7	Shoreline Access	8.6
365	4	Natural Resource Conservation	4	Natural Resource Conservation	10.2
366	7	Shoreline Access	6	Shoreline Access	9.7
367	7	Shoreline Access	2	Project Operations	0.4
368	7	Shoreline Access	7	Shoreline Access	2.4
369	6	Developed Recreation	6	Shoreline Access	8.1
369	7	Shoreline Access	6	Shoreline Access	2.7
370	7	Shoreline Access	7	Shoreline Access	4.5
371	4	Natural Resource Conservation	6	Shoreline Access	1.2
372	4	Natural Resource Conservation	4	Natural Resource Conservation	77.3
373	4	Natural Resource Conservation	2	Project Operations	5.4
374	6	Developed Recreation	6	Shoreline Access	4.4
375	7	Shoreline Access	7	Shoreline Access	1.2
376	3	Sensitive Resource Management	3	Sensitive Resource Management	43.0
377	3	Sensitive Resource Management	2	Project Operations	2.5
378	6	Developed	6	Shoreline Access	36.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Recreation			
379	2	Project Operations	2	Project Operations	2.0
380	6	Developed Recreation	2	Project Operations	1.2
381a	4	Natural Resource Conservation	4	Natural Resource Conservation	0.1
381	7	Shoreline Access	7	Shoreline Access	12.7
382	2	Project Operations	6	Shoreline Access	17.5

Table C-2. Fort Loudoun Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	6	Developed Recreation	2	Project Operations	0.8
2	6	Developed Recreation	6	Developed Recreation	1.4
3	2	Project Operations	2	Project Operations	386.1
4	Not Planned		2	Project Operations	7.8
5	6	Developed Recreation	6	Developed Recreation	49.6
6	6	Developed Recreation	6	Developed Recreation	38.2
7	Not Planned		6	Developed Recreation	0.3
8	7	Shoreline Access	7	Shoreline Access	2.1
9	Not Planned		6	Developed Recreation	0.2
10	4	Natural Resource Conservation	4	Natural Resource Conservation	35.7
11	2	Project Operations	2	Project Operations	2.6
12	6	Developed Recreation	6	Developed Recreation	1.5
13	6	Developed Recreation	6	Developed Recreation	10.3
14	6	Developed Recreation	6	Developed Recreation	1.1
15	4	Natural Resource Conservation	4	Natural Resource Conservation	2.4
16	4	Natural Resource Conservation	2	Project Operations	0.5
17	7	Shoreline Access	7	Shoreline Access	3.0
18	2	Project Operations	2	Project Operations	2.8
19	3	Sensitive Resource Management	3	Sensitive Resource Management	36.9
20	Not Planned		4	Natural Resource Conservation	0.5
20	4	Natural Resource Conservation	4	Natural Resource Conservation	7.8
21	Not Planned		6	Developed Recreation	7.4
21	6	Developed Recreation	6	Developed Recreation	58.1
22	6	Developed Recreation	2	Project Operations	0.7
23	Not Planned		4	Natural Resource Conservation	0.8
23	4	Natural Resource	4	Natural Resource	4.9

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
24	6	Developed Recreation	6	Developed Recreation	4.9
25	Not Planned		2	Project Operations	1.0
26	Not Planned		5	Industrial	0.3
26	5	Industrial	5	Industrial	3.6
26	7	Shoreline Access	5	Industrial	0.4
27	Not Planned		2	Project Operations	0.6
28	5	Industrial	4	Natural Resource Conservation	1.2
28	7	Shoreline Access	4	Natural Resource Conservation	1.3
29	5	Industrial	2	Project Operations	0.3
30	7	Shoreline Access	7	Shoreline Access	0.9
31	7	Shoreline Access	2	Project Operations	0.3
32	6	Developed Recreation	6	Developed Recreation	1.9
33	6	Developed Recreation	6	Developed Recreation	10.5
34	7	Shoreline Access	7	Shoreline Access	2.4
35	Not Planned		6	Developed Recreation	2.5
35	6	Developed Recreation	6	Developed Recreation	1.3
36	Not Planned		6	Developed Recreation	5.0
37	Not Planned		2	Project Operations	3.1
38	Not Planned		4	Natural Resource Conservation	0.5
39	Not Planned		2	Project Operations	0.1
40	Not Planned		6	Developed Recreation	6.8
41	Not Planned		6	Developed Recreation	1.8
42	Not Planned		2	Project Operations	2.4
43	Not Planned		6	Developed Recreation	1.7
44	4	Natural Resource Conservation	3	Sensitive Resource Management	2.7
45	2	Project Operations	2	Project Operations	2.0
46	6	Developed Recreation	6	Developed Recreation	4.7
47	4	Natural Resource Conservation	3	Sensitive Resource Management	1.7
48	6	Developed	6	Developed	69.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Recreation		Recreation	
49	4	Natural Resource Conservation	3	Sensitive Resource Management	8.7
50	Not Planned		2	Project Operations	3.5
50	2	Project Operations	2	Project Operations	0.1
51	5	Industrial	5	Industrial	0.7
52	6	Developed Recreation	6	Developed Recreation	0.2
53	5	Industrial	2	Project Operations	5.9
53	6	Developed Recreation	2	Project Operations	7.4
54	6	Developed Recreation	5	Industrial	3.5
55	6	Developed Recreation	6	Developed Recreation	9.9
56	6	Developed Recreation	6	Developed Recreation	0.6
57	4	Natural Resource Conservation	6	Developed Recreation	4.1
58	4	Natural Resource Conservation	2	Project Operations	1.9
58	6	Developed Recreation	2	Project Operations	0.5
59	6	Developed Recreation	6	Developed Recreation	1.1
60	6	Developed Recreation	6	Developed Recreation	2.5
61	6	Developed Recreation	7	Shoreline Access	2.3
62	4	Natural Resource Conservation	4	Natural Resource Conservation	1.6
62	6	Developed Recreation	4	Natural Resource Conservation	0.2
63	4	Natural Resource Conservation	3	Sensitive Resource Management	5.3
64	4	Natural Resource Conservation	4	Natural Resource Conservation	4.9
65	6	Developed Recreation	6	Developed Recreation	23.8
66	6	Developed Recreation	2	Project Operations	1.3
67	7	Shoreline Access	7	Shoreline Access	1.0
68	6	Developed Recreation	6	Developed Recreation	19.6
69	6	Developed Recreation	2	Project Operations	1.3
70	6	Developed	6	Developed	1.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Recreation		Recreation	
71	7	Shoreline Access	4	Natural Resource Conservation	0.3
72	6	Developed Recreation	6	Developed Recreation	9.1
73	6	Developed Recreation	2	Project Operations	2.5
74	7	Shoreline Access	7	Shoreline Access	0.8
75	5	Industrial	2	Project Operations	23.0
76	6	Developed Recreation	6	Developed Recreation	4.3
77	Not Planned		2	Project Operations	0.03
77	6	Developed Recreation	2	Project Operations	0.6
78	Not Planned		5	Industrial	0.4
78	6	Developed Recreation	5	Industrial	0.004
79	6	Developed Recreation	4	Natural Resource Conservation	19.0
80	6	Developed Recreation	3	Sensitive Resource Management	1.5
81	7	Shoreline Access	7	Shoreline Access	9.0
82	4	Natural Resource Conservation	4	Natural Resource Conservation	21.7
83	4	Natural Resource Conservation	7	Shoreline Access	0.2
84	4	Natural Resource Conservation	4	Natural Resource Conservation	9.9
85	6	Developed Recreation	6	Developed Recreation	3.7
86	6	Developed Recreation	2	Project Operations	1.3
87	7	Shoreline Access	7	Shoreline Access	0.6
88	2	Project Operations	2	Project Operations	1.9
89	4	Natural Resource Conservation	6	Developed Recreation	2.0
90	7	Shoreline Access	7	Shoreline Access	2.4
91	7	Shoreline Access	7	Shoreline Access	7.0
92	4	Natural Resource Conservation	4	Natural Resource Conservation	24.3
93	7	Shoreline Access	6	Developed Recreation	0.1
94	Not Planned		4	Natural Resource Conservation	0.02
94	Not Planned		4	Natural Resource Conservation	1.9
94	4	Natural Resource	4	Natural Resource	0.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
94	7	Shoreline Access	4	Natural Resource Conservation	2.0
95	Not Planned		2	Project Operations	0.3
95	7	Shoreline Access	2	Project Operations	0.1
96	7	Shoreline Access	7	Shoreline Access	1.4
97	7	Shoreline Access	5	Industrial	1.6
98	7	Shoreline Access	7	Shoreline Access	9.2
99	6	Developed Recreation	6	Developed Recreation	18.6
100	7	Shoreline Access	7	Shoreline Access	0.5
101	Not Planned		6	Developed Recreation	11.7
102	Not Planned		2	Project Operations	0.4
102	4	Natural Resource Conservation	2	Project Operations	0.3
102	6	Developed Recreation	2	Project Operations	2.1
103	6	Developed Recreation	6	Developed Recreation	13.2
104	4	Natural Resource Conservation	4	Natural Resource Conservation	3.8
105	7	Shoreline Access	7	Shoreline Access	5.2
106	4	Natural Resource Conservation	4	Natural Resource Conservation	17.2
107	6	Developed Recreation	6	Developed Recreation	29.1
108	4	Natural Resource Conservation	4	Natural Resource Conservation	17.9
109	7	Shoreline Access	7	Shoreline Access	1.7
110	4	Natural Resource Conservation	3	Sensitive Resource Management	2.8
111	6	Developed Recreation	6	Developed Recreation	76.8
112	4	Natural Resource Conservation	4	Natural Resource Conservation	53.2
112	6	Developed Recreation	4	Natural Resource Conservation	81.4
113	6	Developed Recreation	6	Developed Recreation	2.4
114	6	Developed Recreation	6	Developed Recreation	4.1
115	4	Natural Resource Conservation	6	Developed Recreation	1.2
116	2	Project Operations	2	Project Operations	5.1
117	7	Shoreline Access	7	Shoreline Access	0.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
118	6	Developed Recreation	6	Developed Recreation	0.6
119	6	Developed Recreation	2	Project Operations	0.2
120	6	Developed Recreation	6	Developed Recreation	33.5
121	2	Project Operations	2	Project Operations	2.9
121	6	Developed Recreation	2	Project Operations	3.7
122	6	Developed Recreation	6	Developed Recreation	28.6
123	7	Shoreline Access	4	Natural Resource Conservation	0.7
124	6	Developed Recreation	6	Developed Recreation	10.9
124	7	Shoreline Access	7	Shoreline Access	7.3
34a	7	Shoreline Access	4	Natural Resource Conservation	0.5
35a	Not Planned		4	Natural Resource Conservation	0.8
41a	Not Planned		7	Shoreline Access	0.7
41b	Not Planned		4	Natural Resource Conservation	0.3
90a	4	Natural Resource Conservation	4	Natural Resource Conservation	0.3

Table C-3. Great Falls Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	2	Project Operations	2	Projection Operations	19.0
2	6	Developed Recreation	6	Developed Recreation	343.4

Table C-4. Kentucky Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	4	Natural Resource Conservation	4	Natural Resource Conservation	129.7
2	2	Project Operations	2	Project Operations	559.7
3	2	Project Operations	2	Project Operations	111.7
3	5	Industrial	2	Project Operations	10.0
4	4	Natural Resource Conservation	5	Industrial	258.2
4	5	Industrial	5	Industrial	170.2
5	2	Project Operations	6	Developed Recreation	2.5
5	5	Industrial	6	Developed Recreation	3.1
5	6	Developed Recreation	6	Developed Recreation	14.3
6	4	Natural Resource Conservation	4	Natural Resource Conservation	21.4
7	5	Industrial	2	Project Operations	15.9
8	4	Natural Resource Conservation	4	Natural Resource Conservation	150.4
9	4	Natural Resource Conservation	2	Project Operations	3.6
10	4	Natural Resource Conservation	7	Shoreline Access	0.1
10	7	Shoreline Access	7	Shoreline Access	49.6
11	4	Natural Resource Conservation	4	Natural Resource Conservation	53.9
12	4	Natural Resource Conservation	7	Shoreline Access	3.7
12	7	Shoreline Access	7	Shoreline Access	23.6
13	4	Natural Resource Conservation	6	Developed Recreation	3.6
14	4	Natural Resource Conservation	7	Shoreline Access	6.7
14	7	Shoreline Access	7	Shoreline Access	146.4
15	7	Shoreline Access	6	Developed Recreation	4.4
16	4	Natural Resource Conservation	7	Shoreline Access	0.2
16	7	Shoreline Access	7	Shoreline Access	70.6
17	3	Sensitive Resource Management	3	Sensitive Resource Management	21.3
18	7	Shoreline Access	6	Developed Recreation	1.4
19	4	Natural Resource Conservation	4	Natural Resource Conservation	3.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
20	4	Natural Resource Conservation	7	Shoreline Access	0.1
20	7	Shoreline Access	7	Shoreline Access	52.0
21	4	Natural Resource Conservation	4	Natural Resource Conservation	7.3
22	7	Shoreline Access	7	Shoreline Access	0.8
23	4	Natural Resource Conservation	6	Developed Recreation	0.8
23	7	Shoreline Access	6	Developed Recreation	1.2
24	4	Natural Resource Conservation	7	Shoreline Access	8.6
24	7	Shoreline Access	7	Shoreline Access	14.3
25	4	Natural Resource Conservation	4	Natural Resource Conservation	25.4
26	4	Natural Resource Conservation	7	Shoreline Access	24.9
26	7	Shoreline Access	7	Shoreline Access	4.2
27	4	Natural Resource Conservation	4	Natural Resource Conservation	4.4
28	4	Natural Resource Conservation	7	Shoreline Access	0.2
28	7	Shoreline Access	7	Shoreline Access	12.8
29	4	Natural Resource Conservation	4	Natural Resource Conservation	65.2
30	4	Natural Resource Conservation	7	Shoreline Access	1.8
30	7	Shoreline Access	7	Shoreline Access	16.9
31	4	Natural Resource Conservation	4	Natural Resource Conservation	4.1
32	4	Natural Resource Conservation	7	Shoreline Access	1.3
32	7	Shoreline Access	7	Shoreline Access	35.7
33	4	Natural Resource Conservation	4	Natural Resource Conservation	2.7
34	4	Natural Resource Conservation	7	Shoreline Access	21.8
34	7	Shoreline Access	7	Shoreline Access	7.2
35	4	Natural Resource Conservation	3	Sensitive Resource Management	43.2
36	4	Natural Resource Conservation	4	Natural Resource Conservation	143.7
36	5	Industrial	4	Natural Resource Conservation	17.0
37	4	Natural Resource Conservation	5	Industrial	44.3
38	4	Natural Resource	4	Natural Resource	83.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
39	4	Natural Resource Conservation	6	Developed Recreation	71.4
40	4	Natural Resource Conservation	7	Shoreline Access	0.4
40	7	Shoreline Access	7	Shoreline Access	11.1
41	4	Natural Resource Conservation	2	Project Operations	1.1
41	5	Industrial	2	Project Operations	3.0
42	4	Natural Resource Conservation	4	Natural Resource Conservation	5.5
42	7	Shoreline Access	4	Natural Resource Conservation	7.2
43	7	Shoreline Access	6	Developed Recreation	5.9
44	6	Developed Recreation	2	Project Operations	61.4
45	7	Shoreline Access	7	Shoreline Access	12.3
46	4	Natural Resource Conservation	4	Natural Resource Conservation	59.4
46	7	Shoreline Access	4	Natural Resource Conservation	1.3
47	6	Developed Recreation	6	Developed Recreation	54.5
48	4	Natural Resource Conservation	4	Natural Resource Conservation	82.0
49	4	Natural Resource Conservation	3	Sensitive Resource Management	21.9
50	4	Natural Resource Conservation	4	Natural Resource Conservation	304.5
51	4	Natural Resource Conservation	7	Shoreline Access	3.4
51	7	Shoreline Access	7	Shoreline Access	22.0
52	4	Natural Resource Conservation	4	Natural Resource Conservation	6.2
53	4	Natural Resource Conservation	6	Developed Recreation	7.2
54	4	Natural Resource Conservation	7	Shoreline Access	4.6
54	7	Shoreline Access	7	Shoreline Access	30.7
55	4	Natural Resource Conservation	4	Natural Resource Conservation	6.7
56	4	Natural Resource Conservation	3	Sensitive Resource Management	72.0
56	7	Shoreline Access	3	Sensitive Resource Management	31.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
57	4	Natural Resource Conservation	4	Natural Resource Conservation	40.7
58	4	Natural Resource Conservation	7	Shoreline Access	30.9
58	7	Shoreline Access	7	Shoreline Access	5.2
59	4	Natural Resource Conservation	3	Sensitive Resource Management	8.0
60	4	Natural Resource Conservation	7	Shoreline Access	2.0
60	7	Shoreline Access	7	Shoreline Access	69.9
61	4	Natural Resource Conservation	4	Natural Resource Conservation	16.6
61	7	Shoreline Access	4	Natural Resource Conservation	0.2
62	4	Natural Resource Conservation	7	Shoreline Access	3.8
62	7	Shoreline Access	7	Shoreline Access	3.5
63	4	Natural Resource Conservation	4	Natural Resource Conservation	11.6
64	4	Natural Resource Conservation	7	Shoreline Access	3.2
64	7	Shoreline Access	7	Shoreline Access	75.3
65	4	Natural Resource Conservation	3	Sensitive Resource Management	19.5
66	4	Natural Resource Conservation	4	Natural Resource Conservation	24.9
67	7	Shoreline Access	7	Shoreline Access	3.1
68	4	Natural Resource Conservation	7	Shoreline Access	0.5
68	7	Shoreline Access	7	Shoreline Access	102.8
69	4	Natural Resource Conservation	4	Natural Resource Conservation	1.6
70	4	Natural Resource Conservation	4	Natural Resource Conservation	13.7
71	7	Shoreline Access	7	Shoreline Access	13.3
72	6	Developed Recreation	6	Developed Recreation	21.0
73	6	Developed Recreation	7	Shoreline Access	1.7
73	7	Shoreline Access	7	Shoreline Access	68.0
74	7	Shoreline Access	6	Developed Recreation	11.2
75	4	Natural Resource Conservation	7	Shoreline Access	76.2
75	7	Shoreline Access	7	Shoreline Access	18.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
76	4	Natural Resource Conservation	4	Natural Resource Conservation	11.5
77	4	Natural Resource Conservation	4	Natural Resource Conservation	31.1
77	7	Shoreline Access	4	Natural Resource Conservation	1.5
78	4	Natural Resource Conservation	7	Shoreline Access	0.9
78	7	Shoreline Access	7	Shoreline Access	104.5
79	4	Natural Resource Conservation	4	Natural Resource Conservation	28.2
80	4	Natural Resource Conservation	7	Shoreline Access	0.4
80	7	Shoreline Access	7	Shoreline Access	65.6
81	4	Natural Resource Conservation	4	Natural Resource Conservation	915.4
81	6	Developed Recreation	4	Natural Resource Conservation	117.8
82	4	Natural Resource Conservation	6	Developed Recreation	0.2
82	6	Developed Recreation	6	Developed Recreation	27.0
83	4	Natural Resource Conservation	3	Sensitive Resource Management	10.0
84	4	Natural Resource Conservation	7	Shoreline Access	51.4
84	7	Shoreline Access	7	Shoreline Access	89.7
85	4	Natural Resource Conservation	4	Natural Resource Conservation	31.1
86	4	Natural Resource Conservation	4	Natural Resource Conservation	0.5
87	4	Natural Resource Conservation	5	Industrial	5.0
87	5	Industrial	5	Industrial	42.9
87	7	Shoreline Access	5	Industrial	107.6
88	4	Natural Resource Conservation	4	Natural Resource Conservation	175.7
89	4	Natural Resource Conservation	3	Sensitive Resource Management	409.3
90	3	Sensitive Resource Management	6	Developed Recreation	251.1
90	4	Natural Resource Conservation	6	Developed Recreation	247.5
90	6	Developed Recreation	6	Developed Recreation	27.3
91	4	Natural Resource	4	Natural Resource	0.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
92	5	Industrial	2	Project Operations	4.7
93	6	Developed Recreation	6	Developed Recreation	3.5
94	7	Shoreline Access	7	Shoreline Access	18.7
95	4	Natural Resource Conservation	6	Developed Recreation	0.2
95	6	Developed Recreation	6	Developed Recreation	35.7
96	4	Natural Resource Conservation	4	Natural Resource Conservation	43.0
97	4	Natural Resource Conservation	5	Industrial	191.4
97	5	Industrial	5	Industrial	379.6
98	2	Project Operations	2	Project Operations	42.9
99	3	Sensitive Resource Management	3	Sensitive Resource Management	33.4
99	5	Industrial	3	Sensitive Resource Management	0.8
100	4	Natural Resource Conservation	2	Project Operations	92.4
101	4	Natural Resource Conservation	4	Natural Resource Conservation	23758.3
102	3	Sensitive Resource Management	3	Sensitive Resource Management	486.8
103	6	Developed Recreation	6	Developed Recreation	5.5
104	3	Sensitive Resource Management	2	Project Operations	0.6
105	3	Sensitive Resource Management	7	Shoreline Access	12.7
106	4	Natural Resource Conservation	7	Shoreline Access	2.1
107	3	Sensitive Resource Management	7	Shoreline Access	25.7
108	3	Sensitive Resource Management	7	Shoreline Access	11.9
109	4	Natural Resource Conservation	4	Natural Resource Conservation	129.1
110	2	Project Operations	2	Project Operations	2.9
111	2	Project Operations	4	Natural Resource Conservation	9.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
111	4	Natural Resource Conservation	4	Natural Resource Conservation	18.3
112	4	Natural Resource Conservation	4	Natural Resource Conservation	11.4
113	4	Natural Resource Conservation	4	Natural Resource Conservation	27.6
114	2	Project Operations	2	Project Operations	1.3
115	4	Natural Resource Conservation	3	Sensitive Resource Management	48.0
116	4	Natural Resource Conservation	4	Natural Resource Conservation	27.1
117	6	Developed Recreation	6	Developed Recreation	5.1
118	4	Natural Resource Conservation	4	Natural Resource Conservation	84.7
119	4	Natural Resource Conservation	7	Shoreline Access	10.4
120	4	Natural Resource Conservation	4	Natural Resource Conservation	2.5
121	4	Natural Resource Conservation	6	Developed Recreation	4.3
121	6	Developed Recreation	6	Developed Recreation	1186.8
122	4	Natural Resource Conservation	4	Natural Resource Conservation	23.1
123	4	Natural Resource Conservation	3	Sensitive Resource Management	0.4
124	4	Natural Resource Conservation	2	Project Operations	0.4
125	4	Natural Resource Conservation	7	Shoreline Access	5.2
125	7	Shoreline Access	7	Shoreline Access	10.5
126	4	Natural Resource Conservation	6	Developed Recreation	0.6
126	6	Developed Recreation	6	Developed Recreation	38.2
127	4	Natural Resource Conservation	2	Project Operations	0.5
128	4	Natural Resource Conservation	3	Sensitive Resource Management	732.7
129	4	Natural Resource Conservation	2	Project Operations	7.6
129	5	Industrial	2	Project Operations	5.5
130	4	Natural Resource Conservation	5	Industrial	0.8
130	5	Industrial	5	Industrial	19.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
131	4	Natural Resource Conservation	3	Sensitive Resource Management	99.5
132	4	Natural Resource Conservation	4	Natural Resource Conservation	29.4
133	2	Project Operations	2	Project Operations	33.1
133	4	Natural Resource Conservation	2	Project Operations	8.6
134	4	Natural Resource Conservation	6	Developed Recreation	5.3
134	5	Industrial	6	Developed Recreation	6.4
134	6	Developed Recreation	6	Developed Recreation	2.1
135	5	Industrial	4	Natural Resource Conservation	10.4
136	5	Industrial	3	Sensitive Resource Management	87.4
137	5	Industrial	2	Project Operations	0.7
138	4	Natural Resource Conservation	4	Natural Resource Conservation	64.9
138	5	Industrial	4	Natural Resource Conservation	181.8
139	4	Natural Resource Conservation	5	Industrial	701.4
140	4	Natural Resource Conservation	3	Sensitive Resource Management	264.4
141	4	Natural Resource Conservation	4	Natural Resource Conservation	415.6
142	6	Developed Recreation	6	Developed Recreation	6.3
143	6	Developed Recreation	6	Developed Recreation	24.0
144	4	Natural Resource Conservation	4	Natural Resource Conservation	453.9
145	4	Natural Resource Conservation	7	Shoreline Access	15.6
146	4	Natural Resource Conservation	4	Natural Resource Conservation	11.7
147	2	Project Operations	2	Project Operations	1.7
148	4	Natural Resource Conservation	4	Natural Resource Conservation	11.6
148	5	Industrial	4	Natural Resource Conservation	1.9
149	5	Industrial	2	Project Operations	1.1
150	4	Natural Resource Conservation	4	Natural Resource Conservation	62.9

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
151	4	Natural Resource Conservation	4	Natural Resource Conservation	7.2
152	4	Natural Resource Conservation	4	Natural Resource Conservation	62.2
153	5	Industrial	2	Project Operations	7.1
154	4	Natural Resource Conservation	4	Natural Resource Conservation	3.7
155	4	Natural Resource Conservation	4	Natural Resource Conservation	8.7
156	6	Developed Recreation	6	Developed Recreation	22.6
157	4	Natural Resource Conservation	4	Natural Resource Conservation	9.0
158	6	Developed Recreation	6	Developed Recreation	1.9
159	6	Developed Recreation	6	Developed Recreation	39.2
160	4	Natural Resource Conservation	4	Natural Resource Conservation	16.2
161	4	Natural Resource Conservation	4	Natural Resource Conservation	2.2
162	4	Natural Resource Conservation	4	Natural Resource Conservation	46.8
163	5	Industrial	2	Project Operations	4.6
164	4	Natural Resource Conservation	3	Sensitive Resource Management	53.5
165	4	Natural Resource Conservation	4	Natural Resource Conservation	12.2
166	4	Natural Resource Conservation	2	Project Operations	2.5
167	6	Developed Recreation	6	Developed Recreation	7.4
168	4	Natural Resource Conservation	4	Natural Resource Conservation	14.5
169	5	Industrial	2	Project Operations	1.2
170	4	Natural Resource Conservation	4	Natural Resource Conservation	0.7
171	4	Natural Resource Conservation	4	Natural Resource Conservation	35.8
172	4	Natural Resource Conservation	2	Project Operations	1.8
173	4	Natural Resource Conservation	6	Developed Recreation	8.3
174	4	Natural Resource Conservation	4	Natural Resource Conservation	26.2
175	5	Industrial	4	Natural Resource Conservation	3.1
176	5	Industrial	5	Industrial	3.6

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
177	5	Industrial	4	Natural Resource Conservation	19.8
178	5	Industrial	2	Project Operations	0.6
179	3	Sensitive Resource Management	3	Sensitive Resource Management	21.2
180	4	Natural Resource Conservation	6	Developed Recreation	15.4
181	4	Natural Resource Conservation	2	Project Operations	0.6
182	4	Natural Resource Conservation	4	Natural Resource Conservation	11.8
183	4	Natural Resource Conservation	4	Natural Resource Conservation	22.5
184	4	Natural Resource Conservation	7	Shoreline Access	2.1
185	4	Natural Resource Conservation	4	Natural Resource Conservation	7.7
186	4	Natural Resource Conservation	3	Sensitive Resource Management	6.1
187	4	Natural Resource Conservation	2	Project Operations	0.7
188	4	Natural Resource Conservation	4	Natural Resource Conservation	44.5
189	4	Natural Resource Conservation	7	Shoreline Access	7.9
190	5	Industrial	3	Sensitive Resource Management	2.6
191	4	Natural Resource Conservation	4	Natural Resource Conservation	4.3
192	4	Natural Resource Conservation	4	Natural Resource Conservation	164.3
193	4	Natural Resource Conservation	6	Developed Recreation	2.5
194	4	Natural Resource Conservation	4	Natural Resource Conservation	44.5
195	4	Natural Resource Conservation	4	Natural Resource Conservation	0.9
196	6	Developed Recreation	4	Natural Resource Conservation	3.4
197	4	Natural Resource Conservation	4	Natural Resource Conservation	29.9
198	2	Project Operations	2	Project Operations	0.8
199	6	Developed Recreation	4	Natural Resource Conservation	2.6
200	4	Natural Resource Conservation	4	Natural Resource Conservation	22.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
201	4	Natural Resource Conservation	4	Natural Resource Conservation	2.0
202	4	Natural Resource Conservation	3	Sensitive Resource Management	218.4
203	4	Natural Resource Conservation	4	Natural Resource Conservation	17.5
204	5	Industrial	4	Natural Resource Conservation	39.6
205	5	Industrial	2	Project Operations	4.6
206	4	Natural Resource Conservation	4	Natural Resource Conservation	668.8
207	4	Natural Resource Conservation	2	Project Operations	1.4
208	4	Natural Resource Conservation	6	Developed Recreation	25.8
209	4	Natural Resource Conservation	4	Natural Resource Conservation	16.9
210	4	Natural Resource Conservation	4	Natural Resource Conservation	23.7
211	4	Natural Resource Conservation	2	Project Operations	2.4
212	4	Natural Resource Conservation	4	Natural Resource Conservation	52.4
213	5	Industrial	2	Project Operations	3.9
214	4	Natural Resource Conservation	4	Natural Resource Conservation	2.0
215	4	Natural Resource Conservation	4	Natural Resource Conservation	21.6
216	4	Natural Resource Conservation	4	Natural Resource Conservation	33.5
217	4	Natural Resource Conservation	2	Project Operations	1.6
218	4	Natural Resource Conservation	4	Natural Resource Conservation	77.9
219	4	Natural Resource Conservation	2	Project Operations	2.9
220	4	Natural Resource Conservation	4	Natural Resource Conservation	19.6
221	4	Natural Resource Conservation	2	Project Operations	0.9
222	4	Natural Resource Conservation	6	Developed Recreation	1.9
223	4	Natural Resource Conservation	5	Industrial	5.5
224	4	Natural Resource Conservation	4	Natural Resource Conservation	135.5
225	6	Developed Recreation	6	Developed Recreation	13.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
226	3	Sensitive Resource Management	3	Sensitive Resource Management	12.0
226	5	Industrial	3	Sensitive Resource Management	1.9
226	6	Developed Recreation	3	Sensitive Resource Management	2.3
227	3	Sensitive Resource Management	2	Project Operations	0.8
228	5	Industrial	5	Industrial	4.6
229	4	Natural Resource Conservation	4	Natural Resource Conservation	0.1
229	6	Developed Recreation	4	Natural Resource Conservation	2.4
230	5	Industrial	6	Developed Recreation	2.1
230	6	Developed Recreation	6	Developed Recreation	29.6
231	4	Natural Resource Conservation	4	Natural Resource Conservation	35.4
232	5	Industrial	5	Industrial	1.6
233	7	Shoreline Access	7	Shoreline Access	1.9
234	4	Natural Resource Conservation	3	Sensitive Resource Management	54.5
235	4	Natural Resource Conservation	6	Developed Recreation	18.1
236	4	Natural Resource Conservation	2	Project Operations	1.7
237	4	Natural Resource Conservation	4	Natural Resource Conservation	133.4
238	4	Natural Resource Conservation	7	Shoreline Access	24.8
238	7	Shoreline Access	7	Shoreline Access	24.0
239	4	Natural Resource Conservation	7	Shoreline Access	11.1
240	4	Natural Resource Conservation	4	Natural Resource Conservation	82.3
241	4	Natural Resource Conservation	7	Shoreline Access	39.2
241	7	Shoreline Access	7	Shoreline Access	51.8
242	6	Developed Recreation	6	Developed Recreation	4.7
243	4	Natural Resource Conservation	7	Shoreline Access	0.2
243	7	Shoreline Access	7	Shoreline Access	6.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
244	4	Natural Resource Conservation	4	Natural Resource Conservation	6.3
245	4	Natural Resource Conservation	4	Natural Resource Conservation	53.5
246	4	Natural Resource Conservation	3	Sensitive Resource Management	6.0
247	4	Natural Resource Conservation	4	Natural Resource Conservation	133.8
248	4	Natural Resource Conservation	4	Natural Resource Conservation	2.9
249	4	Natural Resource Conservation	6	Developed Recreation	20.8
249	6	Developed Recreation	6	Developed Recreation	35.6
250	5	Industrial	2	Project Operations	3.9
251	4	Natural Resource Conservation	7	Shoreline Access	42.8
251	7	Shoreline Access	7	Shoreline Access	22.3
252	4	Natural Resource Conservation	4	Natural Resource Conservation	54.0
253	4	Natural Resource Conservation	3	Sensitive Resource Management	225.4
254	4	Natural Resource Conservation	7	Shoreline Access	11.6
255	4	Natural Resource Conservation	4	Natural Resource Conservation	112.5
256	4	Natural Resource Conservation	7	Shoreline Access	108.9
257	4	Natural Resource Conservation	7	Shoreline Access	7.9
257	7	Shoreline Access	7	Shoreline Access	24.6
258	4	Natural Resource Conservation	4	Natural Resource Conservation	7.6
259	4	Natural Resource Conservation	6	Developed Recreation	9.2
259	7	Shoreline Access	6	Developed Recreation	52.0
260	4	Natural Resource Conservation	7	Shoreline Access	2.4
260	7	Shoreline Access	7	Shoreline Access	25.6
261	4	Natural Resource Conservation	4	Natural Resource Conservation	0.04
262	7	Shoreline Access	6	Developed Recreation	3.5
263	4	Natural Resource Conservation	7	Shoreline Access	0.1
263	7	Shoreline Access	7	Shoreline Access	11.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
264	4	Natural Resource Conservation	3	Sensitive Resource Management	9.3
265	4	Natural Resource Conservation	3	Sensitive Resource Management	3.7
266	4	Natural Resource Conservation	4	Natural Resource Conservation	3633.3
267	2	Project Operations	2	Project Operations	3.9
267	4	Natural Resource Conservation	2	Project Operations	67.0
268	4	Natural Resource Conservation	6	Developed Recreation	2.2
269	4	Natural Resource Conservation	7	Shoreline Access	7.1
270	4	Natural Resource Conservation	7	Shoreline Access	25.8
271	4	Natural Resource Conservation	5	Industrial	4.3
271	5	Industrial	5	Industrial	83.1
271	6	Developed Recreation	5	Industrial	0.5
272	4	Natural Resource Conservation	7	Shoreline Access	32.3
273	4	Natural Resource Conservation	4	Natural Resource Conservation	447.7
273	7	Shoreline Access	4	Natural Resource Conservation	0.7
274	5	Industrial	2	Project Operations	9.2
275	4	Natural Resource Conservation	7	Shoreline Access	2.0
276	4	Natural Resource Conservation	3	Sensitive Resource Management	119.8
277	4	Natural Resource Conservation	7	Shoreline Access	4.7
277	7	Shoreline Access	7	Shoreline Access	79.5
278	4	Natural Resource Conservation	4	Natural Resource Conservation	18.5
279	4	Natural Resource Conservation	6	Developed Recreation	2.3
280	4	Natural Resource Conservation	4	Natural Resource Conservation	214.0
281	5	Industrial	2	Project Operations	5.0
282	7	Shoreline Access	7	Shoreline Access	7.5
283	4	Natural Resource Conservation	4	Natural Resource Conservation	8.9
284	7	Shoreline Access	7	Shoreline Access	23.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
285	7	Shoreline Access	6	Developed Recreation	0.8
286	6	Developed Recreation	6	Developed Recreation	2.2
287	4	Natural Resource Conservation	4	Natural Resource Conservation	24.9
288	4	Natural Resource Conservation	7	Shoreline Access	17.9
288	7	Shoreline Access	7	Shoreline Access	69.4
289	4	Natural Resource Conservation	4	Natural Resource Conservation	11.9
289	7	Shoreline Access	4	Natural Resource Conservation	5.1
290	4	Natural Resource Conservation	6	Developed Recreation	0.1
290	6	Developed Recreation	6	Developed Recreation	48.6
291	4	Natural Resource Conservation	4	Natural Resource Conservation	0.9
292	4	Natural Resource Conservation	3	Sensitive Resource Management	0.3
293	4	Natural Resource Conservation	4	Natural Resource Conservation	4.8
294	6	Developed Recreation	6	Developed Recreation	4.4
295	4	Natural Resource Conservation	7	Shoreline Access	55.2
295	7	Shoreline Access	7	Shoreline Access	24.6
296	4	Natural Resource Conservation	6	Developed Recreation	2.6
296	7	Shoreline Access	6	Developed Recreation	67.8
297	7	Shoreline Access	7	Shoreline Access	97.0
298	4	Natural Resource Conservation	4	Natural Resource Conservation	331.6
299	4	Natural Resource Conservation	3	Sensitive Resource Management	122.4
300	7	Shoreline Access	7	Shoreline Access	12.0
301	4	Natural Resource Conservation	4	Natural Resource Conservation	2601.8
301	6	Developed Recreation	4	Natural Resource Conservation	15.5
302	4	Natural Resource Conservation	6	Developed Recreation	16.7
302	6	Developed Recreation	6	Developed Recreation	14.7
303	4	Natural Resource	7	Shoreline Access	0.3

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation			
303	7	Shoreline Access	7	Shoreline Access	63.9
304	4	Natural Resource Conservation	4	Natural Resource Conservation	10.0
305	4	Natural Resource Conservation	6	Developed Recreation	15.1
305	6	Developed Recreation	6	Developed Recreation	5.9
306	7	Shoreline Access	7	Shoreline Access	26.9
307	4	Natural Resource Conservation	4	Natural Resource Conservation	0.7
308	4	Natural Resource Conservation	2	Project Operations	7.9
309	7	Shoreline Access	7	Shoreline Access	25.4
310	4	Natural Resource Conservation	3	Sensitive Resource Management	8.9
311	4	Natural Resource Conservation	4	Natural Resource Conservation	475.6
312	4	Natural Resource Conservation	7	Shoreline Access	3.8
313	4	Natural Resource Conservation	3	Sensitive Resource Management	69.9
314	4	Natural Resource Conservation	4	Natural Resource Conservation	47.3
315	6	Developed Recreation	6	Developed Recreation	11.0
316	4	Natural Resource Conservation	7	Shoreline Access	9.4
317	4	Natural Resource Conservation	6	Developed Recreation	6.0
317	6	Developed Recreation	6	Developed Recreation	9.1
318	4	Natural Resource Conservation	4	Natural Resource Conservation	185.4
319	4	Natural Resource Conservation	6	Developed Recreation	2.9
319	6	Developed Recreation	6	Developed Recreation	8.7
320	7	Shoreline Access	7	Shoreline Access	10.8
321	4	Natural Resource Conservation	4	Natural Resource Conservation	2.9
322	4	Natural Resource Conservation	7	Shoreline Access	0.7
322	7	Shoreline Access	7	Shoreline Access	11.1
323	4	Natural Resource Conservation	3	Sensitive Resource Management	25.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
324	4	Natural Resource Conservation	3	Sensitive Resource Management	12.5
325	4	Natural Resource Conservation	7	Shoreline Access	0.1
325	7	Shoreline Access	7	Shoreline Access	60.1
326	4	Natural Resource Conservation	6	Developed Recreation	15.5
326	7	Shoreline Access	6	Developed Recreation	8.0
327	4	Natural Resource Conservation	3	Sensitive Resource Management	23.2
328	4	Natural Resource Conservation	7	Shoreline Access	5.4
328	7	Shoreline Access	7	Shoreline Access	10.9
329	4	Natural Resource Conservation	4	Natural Resource Conservation	48.8
330	4	Natural Resource Conservation	7	Shoreline Access	52.4
331	6	Developed Recreation	6	Developed Recreation	4.4
332	4	Natural Resource Conservation	4	Natural Resource Conservation	203.1
333	4	Natural Resource Conservation	7	Shoreline Access	0.3
333	7	Shoreline Access	7	Shoreline Access	39.8
334	4	Natural Resource Conservation	4	Natural Resource Conservation	3.3
335	4	Natural Resource Conservation	3	Sensitive Resource Management	1.7
336	7	Shoreline Access	6	Developed Recreation	3.0
337	4	Natural Resource Conservation	7	Shoreline Access	19.5
337	7	Shoreline Access	7	Shoreline Access	39.2
338	6	Developed Recreation	6	Developed Recreation	8.8
339	4	Natural Resource Conservation	4	Natural Resource Conservation	113.5
340	4	Natural Resource Conservation	4	Natural Resource Conservation	4.9
341	4	Natural Resource Conservation	7	Shoreline Access	27.8
341	7	Shoreline Access	7	Shoreline Access	23.3
342	4	Natural Resource Conservation	4	Natural Resource Conservation	1.2
343	4	Natural Resource	4	Natural Resource	14.3

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
344	7	Shoreline Access	7	Shoreline Access	17.8
345	4	Natural Resource Conservation	4	Natural Resource Conservation	99.1
346	4	Natural Resource Conservation	7	Shoreline Access	11.7
347	4	Natural Resource Conservation	6	Developed Recreation	36.9
348	2	Project Operations	2	Project Operations	3.3
349	4	Natural Resource Conservation	4	Natural Resource Conservation	10.8
350	4	Natural Resource Conservation	4	Natural Resource Conservation	13.0
351	4	Natural Resource Conservation	2	Project Operations	35.2
352	4	Natural Resource Conservation	6	Developed Recreation	1.2
353	4	Natural Resource Conservation	2	Project Operations	10.9
354	4	Natural Resource Conservation	4	Natural Resource Conservation	3023.8
355	4	Natural Resource Conservation	7	Shoreline Access	22.0
356	4	Natural Resource Conservation	7	Shoreline Access	11.7
357	4	Natural Resource Conservation	3	Sensitive Resource Management	23.6
358	4	Natural Resource Conservation	4	Natural Resource Conservation	40.6
359	4	Natural Resource Conservation	3	Sensitive Resource Management	14.5
360	4	Natural Resource Conservation	7	Shoreline Access	5.9
361	4	Natural Resource Conservation	4	Natural Resource Conservation	17.8
362	6	Developed Recreation	6	Developed Recreation	15.3
363	4	Natural Resource Conservation	4	Natural Resource Conservation	21.9
364	4	Natural Resource Conservation	3	Sensitive Resource Management	85.0
365	4	Natural Resource Conservation	4	Natural Resource Conservation	46.2
366	7	Shoreline Access	7	Shoreline Access	0.3
367	6	Developed Recreation	6	Developed Recreation	5.6

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
368	4	Natural Resource Conservation	7	Shoreline Access	16.3
368	7	Shoreline Access	7	Shoreline Access	35.5
369	4	Natural Resource Conservation	4	Natural Resource Conservation	14.5
370	4	Natural Resource Conservation	7	Shoreline Access	3.2
371	4	Natural Resource Conservation	4	Natural Resource Conservation	24.0
371	6	Developed Recreation	4	Natural Resource Conservation	12.4
372	6	Developed Recreation	7	Shoreline Access	1.4
373	6	Developed Recreation	6	Developed Recreation	4.4
374	4	Natural Resource Conservation	2	Project Operations	6.0
375	4	Natural Resource Conservation	4	Natural Resource Conservation	6360.6
375	5	Industrial	4	Natural Resource Conservation	24.2
375	6	Developed Recreation	4	Natural Resource Conservation	0.1
376	4	Natural Resource Conservation	2	Project Operations	26.2
377	2	Project Operations	2	Project Operations	1.8
378	4	Natural Resource Conservation	7	Shoreline Access	11.4
379	4	Natural Resource Conservation	3	Sensitive Resource Management	67.8
380	4	Natural Resource Conservation	2	Project Operations	16.1
381	4	Natural Resource Conservation	7	Shoreline Access	8.7
382	4	Natural Resource Conservation	4	Natural Resource Conservation	26.2
383	6	Developed Recreation	5	Industrial	28.3
384	4	Natural Resource Conservation	6	Developed Recreation	48.6
385	4	Natural Resource Conservation	4	Natural Resource Conservation	56.5
386	6	Developed Recreation	6	Developed Recreation	39.0
387	4	Natural Resource Conservation	7	Shoreline Access	1.9
387	7	Shoreline Access	7	Shoreline Access	6.0
388	4	Natural Resource	4	Natural Resource	243.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Conservation		Conservation	
389	5	Industrial	2	Project Operations	24.4
390	4	Natural Resource Conservation	7	Shoreline Access	3.7
391	4	Natural Resource Conservation	7	Shoreline Access	39.2
392	4	Natural Resource Conservation	7	Shoreline Access	45.5
392	6	Developed Recreation	7	Shoreline Access	4.1
393	6	Developed Recreation	6	Developed Recreation	2.6
394	6	Developed Recreation	7	Shoreline Access	0.4
394	7	Shoreline Access	7	Shoreline Access	24.1
395	6	Developed Recreation	6	Developed Recreation	3.4
396	6	Developed Recreation	6	Developed Recreation	1.4
397	6	Developed Recreation	6	Developed Recreation	14.1
398	4	Natural Resource Conservation	4	Natural Resource Conservation	77.8
398	5	Industrial	4	Natural Resource Conservation	5.2
399	4	Natural Resource Conservation	7	Shoreline Access	14.4
399	5	Industrial	7	Shoreline Access	1.6
400	2	Project Operations	6	Developed Recreation	10.4
400	6	Developed Recreation	6	Developed Recreation	282.3
401	6	Developed Recreation	2	Project Operations	4.4
402	4	Natural Resource Conservation	7	Shoreline Access	0.8
402	7	Shoreline Access	7	Shoreline Access	17.1
403	4	Natural Resource Conservation	6	Developed Recreation	1.2
404	4	Natural Resource Conservation	4	Natural Resource Conservation	34.3
405	6	Developed Recreation	6	Developed Recreation	14.1
406	4	Natural Resource Conservation	4	Natural Resource Conservation	162.1
407	7	Shoreline Access	7	Shoreline Access	14.5
408	4	Natural Resource Conservation	4	Natural Resource Conservation	10.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
409	4	Natural Resource Conservation	7	Shoreline Access	8.0
409	7	Shoreline Access	7	Shoreline Access	32.6
410	4	Natural Resource Conservation	6	Developed Recreation	0.8
410	6	Developed Recreation	6	Developed Recreation	8.3
411	4	Natural Resource Conservation	4	Natural Resource Conservation	18.5
412	4	Natural Resource Conservation	7	Shoreline Access	5.3
412	7	Shoreline Access	7	Shoreline Access	34.7
413	6	Developed Recreation	6	Developed Recreation	2.2
414	4	Natural Resource Conservation	4	Natural Resource Conservation	10.2
415	4	Natural Resource Conservation	7	Shoreline Access	23.4
416	5	Industrial	2	Project Operations	1.0
417	4	Natural Resource Conservation	4	Natural Resource Conservation	31.1
418	4	Natural Resource Conservation	7	Shoreline Access	8.4
418	7	Shoreline Access	7	Shoreline Access	12.9
419	4	Natural Resource Conservation	4	Natural Resource Conservation	6.4
420	6	Developed Recreation	6	Developed Recreation	7.6
421	4	Natural Resource Conservation	7	Shoreline Access	1.5
421	7	Shoreline Access	7	Shoreline Access	10.7
422	6	Developed Recreation	6	Developed Recreation	3.0
422	7	Shoreline Access	6	Developed Recreation	15.5
423	6	Developed Recreation	4	Natural Resource Conservation	14.2
424	6	Developed Recreation	6	Developed Recreation	15.3
425	4	Natural Resource Conservation	4	Natural Resource Conservation	120.1
426	3	Sensitive Resource Management	3	Sensitive Resource Management	28.1
427	4	Natural Resource Conservation	4	Natural Resource Conservation	4.6
428	4	Natural Resource Conservation	4	Natural Resource Conservation	476.6

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
429	4	Natural Resource Conservation	6	Developed Recreation	3.2
430	4	Natural Resource Conservation	4	Natural Resource Conservation	46.7
431	4	Natural Resource Conservation	7	Shoreline Access	0.5
431	7	Shoreline Access	7	Shoreline Access	74.2
432	4	Natural Resource Conservation	4	Natural Resource Conservation	17.7
433	4	Natural Resource Conservation	7	Shoreline Access	3.7
433	7	Shoreline Access	7	Shoreline Access	27.0
434	4	Natural Resource Conservation	4	Natural Resource Conservation	51.7
434	7	Shoreline Access	4	Natural Resource Conservation	1.1
435	4	Natural Resource Conservation	7	Shoreline Access	3.2
435	7	Shoreline Access	7	Shoreline Access	32.3
436	4	Natural Resource Conservation	7	Shoreline Access	0.5
436	7	Shoreline Access	7	Shoreline Access	46.7
437	4	Natural Resource Conservation	6	Developed Recreation	6.2
438	4	Natural Resource Conservation	7	Shoreline Access	0.5
438	7	Shoreline Access	7	Shoreline Access	37.7
439	4	Natural Resource Conservation	4	Natural Resource Conservation	25.1
440	4	Natural Resource Conservation	7	Shoreline Access	56.1
441	4	Natural Resource Conservation	4	Natural Resource Conservation	17.2
442	4	Natural Resource Conservation	4	Natural Resource Conservation	851.4
443	4	Natural Resource Conservation	7	Shoreline Access	1.5
443	7	Shoreline Access	7	Shoreline Access	57.5
444	4	Natural Resource Conservation	4	Natural Resource Conservation	50.5
445	4	Natural Resource Conservation	7	Shoreline Access	14.7
445	7	Shoreline Access	7	Shoreline Access	13.2
446	3	Sensitive Resource Management	3	Sensitive Resource Management	189.9
446	4	Natural Resource Conservation	3	Sensitive Resource	881.8

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
				Management	
447	3	Sensitive Resource Management	7	Shoreline Access	6.3
447	4	Natural Resource Conservation	7	Shoreline Access	67.0
448	4	Natural Resource Conservation	7	Shoreline Access	13.2
448	7	Shoreline Access	7	Shoreline Access	66.7
449	4	Natural Resource Conservation	4	Natural Resource Conservation	5.0
450	4	Natural Resource Conservation	7	Shoreline Access	1.0
450	7	Shoreline Access	7	Shoreline Access	32.4
451	4	Natural Resource Conservation	4	Natural Resource Conservation	26.8
452	4	Natural Resource Conservation	7	Shoreline Access	0.8
452	7	Shoreline Access	7	Shoreline Access	79.3
453	7	Shoreline Access	6	Developed Recreation	5.7
454	4	Natural Resource Conservation	4	Natural Resource Conservation	1145.8
455	6	Developed Recreation	6	Developed Recreation	98.6
456	4	Natural Resource Conservation	7	Shoreline Access	5.3
456	7	Shoreline Access	7	Shoreline Access	10.7
457	4	Natural Resource Conservation	4	Natural Resource Conservation	75.8
458	4	Natural Resource Conservation	7	Shoreline Access	14.3
458	7	Shoreline Access	7	Shoreline Access	15.3
459	4	Natural Resource Conservation	4	Natural Resource Conservation	2.8
460	4	Natural Resource Conservation	6	Developed Recreation	3.1
460	7	Shoreline Access	6	Developed Recreation	1.5
461	4	Natural Resource Conservation	4	Natural Resource Conservation	356.3
461	6	Developed Recreation	4	Natural Resource Conservation	138.5
462	6	Developed Recreation	6	Developed Recreation	4.8
463	4	Natural Resource Conservation	7	Shoreline Access	5.3
464	7	Shoreline Access	6	Developed Recreation	10.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
465	4	Natural Resource Conservation	7	Shoreline Access	1.0
465	7	Shoreline Access	7	Shoreline Access	27.8
466	4	Natural Resource Conservation	4	Natural Resource Conservation	161.5
467	7	Shoreline Access	7	Shoreline Access	29.5
468	6	Developed Recreation	6	Developed Recreation	1.7
469	4	Natural Resource Conservation	4	Natural Resource Conservation	28.6
470	4	Natural Resource Conservation	7	Shoreline Access	0.7
470	7	Shoreline Access	7	Shoreline Access	10.6
471	4	Natural Resource Conservation	4	Natural Resource Conservation	11.8
472	4	Natural Resource Conservation	7	Shoreline Access	1.4
472	7	Shoreline Access	7	Shoreline Access	15.4
473	4	Natural Resource Conservation	4	Natural Resource Conservation	3.8
474	4	Natural Resource Conservation	4	Natural Resource Conservation	24.9
474	7	Shoreline Access	4	Natural Resource Conservation	0.6
475	4	Natural Resource Conservation	7	Shoreline Access	4.8
475	7	Shoreline Access	7	Shoreline Access	83.7
476	4	Natural Resource Conservation	4	Natural Resource Conservation	36.5
477	4	Natural Resource Conservation	7	Shoreline Access	30.4
477	7	Shoreline Access	7	Shoreline Access	10.2
478	4	Natural Resource Conservation	4	Natural Resource Conservation	33.6
479	5	Industrial	5	Industrial	24.0
479	7	Shoreline Access	5	Industrial	4.9
480	4	Natural Resource Conservation	4	Natural Resource Conservation	24.5
480	6	Developed Recreation	4	Natural Resource Conservation	47.0
481	6	Developed Recreation	6	Developed Recreation	1.3
482	6	Developed Recreation	6	Developed Recreation	287.5
483	4	Natural Resource Conservation	4	Natural Resource Conservation	38.2
484	4	Natural Resource Conservation	3	Sensitive Resource	23.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
				Management	
485	4	Natural Resource Conservation	7	Shoreline Access	23.2
485	6	Developed Recreation	7	Shoreline Access	11.9
485	7	Shoreline Access	7	Shoreline Access	10.7
486	4	Natural Resource Conservation	4	Natural Resource Conservation	34.5
487	7	Shoreline Access	6	Developed Recreation	13.2
488	4	Natural Resource Conservation	7	Shoreline Access	0.4
488	7	Shoreline Access	7	Shoreline Access	16.2
489	4	Natural Resource Conservation	4	Natural Resource Conservation	0.7
490	4	Natural Resource Conservation	7	Shoreline Access	0.2
490	7	Shoreline Access	7	Shoreline Access	4.4
491	6	Developed Recreation	6	Developed Recreation	6.0
492	5	Industrial	2	Project Operations	5.4
493	7	Shoreline Access	7	Shoreline Access	25.0
494	7	Shoreline Access	6	Developed Recreation	30.3
495	4	Natural Resource Conservation	7	Shoreline Access	5.4
496	4	Natural Resource Conservation	3	Sensitive Resource Management	30.0
497	4	Natural Resource Conservation	7	Shoreline Access	17.6
498	6	Developed Recreation	6	Developed Recreation	67.8
499	4	Natural Resource Conservation	4	Natural Resource Conservation	2.7
500	4	Natural Resource Conservation	7	Shoreline Access	1.3
500	7	Shoreline Access	7	Shoreline Access	32.1
501	4	Natural Resource Conservation	4	Natural Resource Conservation	55.0
502	4	Natural Resource Conservation	2	Project Operations	12.3
503	4	Natural Resource Conservation	3	Sensitive Resource Management	237.9
504	4	Natural Resource Conservation	6	Developed Recreation	0.8
505	4	Natural Resource Conservation	7	Shoreline Access	91.3

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
506	4	Natural Resource Conservation	7	Shoreline Access	46.5
507	4	Natural Resource Conservation	4	Natural Resource Conservation	31.9
508	4	Natural Resource Conservation	4	Natural Resource Conservation	43.1
509	4	Natural Resource Conservation	7	Shoreline Access	4.8
509	7	Shoreline Access	7	Shoreline Access	47.9
510	4	Natural Resource Conservation	4	Natural Resource Conservation	28.2
511	4	Natural Resource Conservation	7	Shoreline Access	1.8
511	7	Shoreline Access	7	Shoreline Access	44.4
512	7	Shoreline Access	6	Developed Recreation	3.6
513	4	Natural Resource Conservation	4	Natural Resource Conservation	95.1
513	7	Shoreline Access	4	Natural Resource Conservation	2.5
514	4	Natural Resource Conservation	7	Shoreline Access	11.7
515	4	Natural Resource Conservation	7	Shoreline Access	0.5
515	7	Shoreline Access	7	Shoreline Access	33.1
516	4	Natural Resource Conservation	4	Natural Resource Conservation	15.1
517	4	Natural Resource Conservation	4	Natural Resource Conservation	77.8
518	6	Developed Recreation	6	Developed Recreation	26.4
519	4	Natural Resource Conservation	7	Shoreline Access	18.8
519	7	Shoreline Access	7	Shoreline Access	68.2
520	4	Natural Resource Conservation	4	Natural Resource Conservation	45.4
521	6	Developed Recreation	6	Developed Recreation	27.2
522	4	Natural Resource Conservation	4	Natural Resource Conservation	212.3
523	6	Developed Recreation	6	Developed Recreation	346.8
524	3	Sensitive Resource Management	3	Sensitive Resource Management	39.0
525	4	Natural Resource Conservation	4	Natural Resource Conservation	97.5
526	4	Natural Resource Conservation	7	Shoreline Access	17.0

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
526	7	Shoreline Access	7	Shoreline Access	170.3
527	7	Shoreline Access	6	Developed Recreation	1.8
528	7	Shoreline Access	6	Developed Recreation	9.1
529	7	Shoreline Access	7	Shoreline Access	104.4
530	4	Natural Resource Conservation	3	Sensitive Resource Management	30.2
531	7	Shoreline Access	6	Developed Recreation	2.6
532	7	Shoreline Access	7	Shoreline Access	7.5
533	7	Shoreline Access	6	Developed Recreation	29.1
534	7	Shoreline Access	6	Developed Recreation	19.4
535	7	Shoreline Access	7	Shoreline Access	30.6
536	4	Natural Resource Conservation	4	Natural Resource Conservation	101.3
537	6	Developed Recreation	6	Developed Recreation	36.4
537	7	Shoreline Access	6	Developed Recreation	45.3
538	4	Natural Resource Conservation	3	Sensitive Resource Management	14.3
539	7	Shoreline Access	7	Shoreline Access	21.0
540	6	Developed Recreation	6	Developed Recreation	299.3
541	4	Natural Resource Conservation	7	Shoreline Access	3.3
541	7	Shoreline Access	7	Shoreline Access	21.9
542	4	Natural Resource Conservation	4	Natural Resource Conservation	85.8
542	7	Shoreline Access	4	Natural Resource Conservation	0.02
543	4	Natural Resource Conservation	7	Shoreline Access	6.6
543	7	Shoreline Access	7	Shoreline Access	31.5
544	4	Natural Resource Conservation	7	Shoreline Access	0.6
544	7	Shoreline Access	7	Shoreline Access	63.0
545	7	Shoreline Access	6	Developed Recreation	3.9
546	7	Shoreline Access	7	Shoreline Access	30.9
547	4	Natural Resource Conservation	4	Natural Resource Conservation	71.0
547	7	Shoreline Access	4	Natural Resource	7.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
				Conservation	
548	7	Shoreline Access	7	Shoreline Access	55.1
549	6	Developed Recreation	6	Developed Recreation	6.2
550	7	Shoreline Access	6	Developed Recreation	17.1
551	7	Shoreline Access	6	Developed Recreation	7.0
552	7	Shoreline Access	7	Shoreline Access	27.2
553	4	Natural Resource Conservation	7	Shoreline Access	19.4
553	7	Shoreline Access	7	Shoreline Access	5.6
554	4	Natural Resource Conservation	7	Shoreline Access	2.0
554	7	Shoreline Access	7	Shoreline Access	51.6
555	4	Natural Resource Conservation	4	Natural Resource Conservation	85.2
556	6	Developed Recreation	6	Developed Recreation	27.6
557	6	Developed Recreation	7	Shoreline Access	0.4
557	7	Shoreline Access	7	Shoreline Access	19.2
558	6	Developed Recreation	6	Developed Recreation	24.6
559	4	Natural Resource Conservation	7	Shoreline Access	1.3
559	7	Shoreline Access	7	Shoreline Access	184.6
560	4	Natural Resource Conservation	4	Natural Resource Conservation	1.7
561	4	Natural Resource Conservation	4	Natural Resource Conservation	201.0
562	4	Natural Resource Conservation	7	Shoreline Access	97.8
563	4	Natural Resource Conservation	6	Developed Recreation	1.5
564	4	Natural Resource Conservation	4	Natural Resource Conservation	934.8
564	7	Shoreline Access	4	Natural Resource Conservation	5.6
565	4	Natural Resource Conservation	7	Shoreline Access	26.6
566	4	Natural Resource Conservation	6	Developed Recreation	24.6
567	4	Natural Resource Conservation	7	Shoreline Access	1.4
567	6	Developed Recreation	7	Shoreline Access	78.0
568	6	Developed Recreation	6	Developed Recreation	157.1

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
569	6	Developed Recreation	6	Developed Recreation	146.7
570	4	Natural Resource Conservation	4	Natural Resource Conservation	75.8
571	4	Natural Resource Conservation	3	Sensitive Resource Management	76.7
572	3	Sensitive Resource Management	3	Sensitive Resource Management	148.4
101a	4	Natural Resource Conservation	6	Developed Recreation	13.7
101b	4	Natural Resource Conservation	7	Shoreline Access	1.1
468a	4	Natural Resource Conservation	7	Shoreline Access	2.9
468a	6	Developed Recreation	7	Shoreline Access	2.9

Table C-5. Nickajack Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	2	Project Operations	2	Project Operations	404.4
1	3	Sensitive Resource Management	2	Project Operations	49.9
1	4	Natural Resource Conservation	2	Project Operations	441.3
2a	4	Natural Resource Conservation	6	Developed Recreation	5.6
2	4	Natural Resource Conservation	6	Developed Recreation	3.3
3	4	Natural Resource Conservation	6	Developed Recreation	46.0
4	3	Sensitive Resource Management	3	Sensitive Resource Management	329.0
4	4	Natural Resource Conservation	3	Sensitive Resource Management	6.3
5	2	Project Operations	2	Project Operations	131.5
5	3	Sensitive Resource Management	2	Project Operations	5.7
5	4	Natural Resource Conservation	2	Project Operations	37.7
6	4	Natural Resource Conservation	4	Natural Resource Conservation	66.5
7	2	Project Operations	4	Natural Resource Conservation	24.2
7	4	Natural Resource Conservation	4	Natural Resource Conservation	382.1
8	6	Developed Recreation	6	Developed Recreation	43.0
9	3	Sensitive Resource Management	3	Sensitive Resource Management	85.2
9	4	Natural Resource Conservation	3	Sensitive Resource Management	372.8
10	5	Industrial	5	Industrial	48.2
11	2	Project Operations	2	Project Operations	25.3
12	6	Developed Recreation	6	Developed Recreation	3.5
13	6	Developed Recreation	6	Developed Recreation	8.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
14	6	Developed Recreation	6	Developed Recreation	2.2
15	5	Industrial	5	Industrial	1.2
16	3	Sensitive Resource Management	3	Sensitive Resource Management	18.8
16	4	Natural Resource Conservation	3	Sensitive Resource Management	19.5
17	3	Sensitive Resource Management	2	Project Operations	1.7
17	4	Natural Resource Conservation	2	Project Operations	10.3
17	6	Developed Recreation	2	Project Operations	0.7
18a	4	Natural Resource Conservation	7	Shoreline Access	0.4
18	4	Natural Resource Conservation	4	Natural Resource Conservation	73.9
18	6	Developed Recreation	4	Natural Resource Conservation	0.1
19	6	Developed Recreation	6	Developed Recreation	4.2
20	6	Developed Recreation	6	Developed Recreation	0.2
21	6	Developed Recreation	7	Shoreline Access	0.3
22	4	Natural Resource Conservation	4	Natural Resource Conservation	30.7
23	4	Natural Resource Conservation	4	Natural Resource Conservation	37.6
24	2	Project Operations	6	Developed Recreation	2.1
24	5	Industrial	6	Developed Recreation	5.9
24	6	Developed Recreation	6	Developed Recreation	11.8
25	2	Project Operations	2	Project Operations	22.6
25	5	Industrial	2	Project Operations	3.0
26	5	Industrial	5	Industrial	19.9
27	4	Natural Resource Conservation	4	Natural Resource Conservation	22.3
28	2	Project Operations	2	Project Operations	0.7
29	4	Natural Resource Conservation	6	Developed Recreation	2.6

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
29	6	Developed Recreation	6	Developed Recreation	1.0
30	3	Sensitive Resource Management	4	Natural Resource Conservation	2.8
30	4	Natural Resource Conservation	4	Natural Resource Conservation	44.1
31	4	Natural Resource Conservation	6	Developed Recreation	23.0
32	0		5	Industrial	4.1
32	4	Natural Resource Conservation	5	Industrial	11.1
33	3	Sensitive Resource Management	3	Sensitive Resource Management	110.3
34	4	Natural Resource Conservation	4	Natural Resource Conservation	123.2
35	2	Project Operations	2	Project Operations	9.0
35	3	Sensitive Resource Management	2	Project Operations	7.1
35	4	Natural Resource Conservation	2	Project Operations	26.8
35	6	Developed Recreation	2	Project Operations	1.8
36	3	Sensitive Resource Management	3	Sensitive Resource Management	411.7
37	6	Developed Recreation	6	Developed Recreation	12.4
38	5	Industrial	5	Industrial	1.0
39	3	Sensitive Resource Management	3	Sensitive Resource Management	3.1

Table C-6. Normandy Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	2	Project Operations	2	Project Operations	641.6
2	4	Natural Resource Conservation	4	Natural Resource Conservation	856.1
3	4	Natural Resource Conservation	2	Project Operations	1.1
4	4	Natural Resource Conservation	6	Developed Recreation	10.0
5	6	Developed Recreation	6	Developed Recreation	27.7
6	4	Natural Resource Conservation	4	Natural Resource Conservation	238.7
6	7	Shoreline Access	4	Natural Resource Conservation	3.7
7	7	Shoreline Access	7	Shoreline Access	9.4
8	4	Natural Resource Conservation	2	Project Operations	10.8
9	4	Natural Resource Conservation	7	Shoreline Access	1.0
10	4	Natural Resource Conservation	4	Natural Resource Conservation	304.5
11	4	Natural Resource Conservation	2	Project Operations	36.6
12	4	Natural Resource Conservation	4	Natural Resource Conservation	253.6
13	3	Sensitive Resource Management	4	Natural Resource Conservation	56.2
13	4	Natural Resource Conservation	4	Natural Resource Conservation	179.8
14	6	Developed Recreation	6	Developed Recreation	19.8
15	3	Sensitive Resource Management	2	Project Operations	9.8
15	4	Natural Resource Conservation	2	Project Operations	85.4
16	4	Natural Resource Conservation	2	Project Operations	4.1
17	Not Planned		4	Natural Resource Conservation	0.5
17	4	Natural Resource Conservation	4	Natural Resource Conservation	187.4
18	Not Planned		3	Sensitive Resource Management	1.1
18	3	Sensitive Resource Management	3	Sensitive Resource Management	175.9

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
19	3	Sensitive Resource Management	6	Developed Recreation	15.9
20	3	Sensitive Resource Management	2	Project Operations	1.5
21	Not Planned		3	Sensitive Resource Management	0.2
21	3	Sensitive Resource Management	3	Sensitive Resource Management	41.9
22	4	Natural Resource Conservation	4	Natural Resource Conservation	70.6
23	4	Natural Resource Conservation	6	Developed Recreation	42.3
24	4	Natural Resource Conservation	4	Natural Resource Conservation	186.9
25	Not Planned		4	Natural Resource Conservation	0.7
25	4	Natural Resource Conservation	4	Natural Resource Conservation	471.1
26	3	Sensitive Resource Management	3	Sensitive Resource Management	152.6
27	3	Sensitive Resource Management	4	Natural Resource Conservation	266.4
27	4	Natural Resource Conservation	4	Natural Resource Conservation	26.9
28	4	Natural Resource Conservation	4	Natural Resource Conservation	126.8
29	6	Developed Recreation	6	Developed Recreation	143.1
30	4	Natural Resource Conservation	4	Natural Resource Conservation	135.7

Table C-7. Wheeler Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	2	Project Operations	2	Project Operations	128.6
2	2	Project Operations	6	Developed Recreation	22.7
3	6	Developed Recreation	6	Developed Recreation	174.8
4	2	Project Operations	2	Project Operations	8.9
5	4	Natural Resource Conservation	3	Sensitive Resource Management	11.2
6	6	Developed Recreation	4	Natural Resource Conservation	8.3
7	3	Sensitive Resource Management	3	Sensitive Resource Management	21.5
8	3	Sensitive Resource Management	3	Sensitive Resource Management	4.4
9	6	Developed Recreation	6	Developed Recreation	1.2
10	7	Shoreline Access	7	Shoreline Access	9.2
11	5	Industrial	6	Developed Recreation	91.3
12	5	Industrial	5	Industrial	38.7
13	7	Shoreline Access	7	Shoreline Access	11.1
14	6	Developed Recreation	6	Developed Recreation	5.3
15	7	Shoreline Access	7	Shoreline Access	10.5
16	6	Developed Recreation	6	Developed Recreation	20.8
17	6	Developed Recreation	2	Project Operations	1.1
18	3	Sensitive Resource Management	4	Natural Resource Conservation	0.9
19	7	Shoreline Access	7	Shoreline Access	1.8
20	4	Natural Resource Conservation	4	Natural Resource Conservation	23.1
21	4	Natural Resource Conservation	2	Project Operations	1.6
22	6	Developed Recreation	6	Developed Recreation	3.9
23	7	Shoreline Access	7	Shoreline Access	29.5
24	3	Sensitive Resource Management	3	Sensitive Resource Management	30.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
25	4	Natural Resource Conservation	2	Project Operations	3.7
26	4	Natural Resource Conservation	4	Natural Resource Conservation	8.4
27	4	Natural Resource Conservation	2	Project Operations	11.7
28	4	Natural Resource Conservation	3	Sensitive Resource Management	10.0
29	6	Developed Recreation	6	Developed Recreation	26.8
30	3	Sensitive Resource Management	3	Sensitive Resource Management	15.1
31	3	Sensitive Resource Management	3	Sensitive Resource Management	16.4
32	4	Natural Resource Conservation	4	Natural Resource Conservation	42.5
33	4	Natural Resource Conservation	3	Sensitive Resource Management	7.6
34	4	Natural Resource Conservation	4	Natural Resource Conservation	114.0
35	4	Natural Resource Conservation	3	Sensitive Resource Management	195.4
36	3	Sensitive Resource Management	2	Project Operations	2.7
37	4	Natural Resource Conservation	4	Natural Resource Conservation	30.5
38	3	Sensitive Resource Management	4	Natural Resource Conservation	4.5
39	4	Natural Resource Conservation	2	Project Operations	4.4
40	6	Developed Recreation	6	Developed Recreation	6.5
41	3	Sensitive Resource Management	4	Natural Resource Conservation	7.3
42	4	Natural Resource Conservation	4	Natural Resource Conservation	84.0
43	4	Natural Resource Conservation	4	Natural Resource Conservation	206.5
44	4	Natural Resource Conservation	4	Natural Resource Conservation	70.8
45	3	Sensitive Resource Management	4	Natural Resource Conservation	52.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
46	4	Natural Resource Conservation	4	Natural Resource Conservation	117.2
47	3	Sensitive Resource Management	3	Sensitive Resource Management	317.2
48	4	Natural Resource Conservation	6	Developed Recreation	5.3
49	6	Developed Recreation	6	Developed Recreation	3.7
50	3	Sensitive Resource Management	4	Natural Resource Conservation	137.6
51	7	Shoreline Access	7	Shoreline Access	13.3
52	4	Natural Resource Conservation	4	Natural Resource Conservation	5.7
53	7	Shoreline Access	7	Shoreline Access	7.5
54	4	Natural Resource Conservation	4	Natural Resource Conservation	0.8
55	6	Developed Recreation	6	Developed Recreation	5.9
56	6	Developed Recreation	5	Industrial	44.6
57	6	Developed Recreation	4	Natural Resource Conservation	136.2
58	6	Developed Recreation	3	Sensitive Resource Management	100.7
59	7	Shoreline Access	7	Shoreline Access	18.4
60	4	Natural Resource Conservation	4	Natural Resource Conservation	100.8
61	4	Natural Resource Conservation	7	Shoreline Access	4.8
62	4	Natural Resource Conservation	3	Sensitive Resource Management	68.3
63	6	Developed Recreation	6	Developed Recreation	32.6
64	4	Natural Resource Conservation	4	Natural Resource Conservation	2.9
65	7	Shoreline Access	7	Shoreline Access	8.7
66	4	Natural Resource Conservation	4	Natural Resource Conservation	9.1
67	4	Natural Resource Conservation	3	Sensitive Resource Management	7.6
68	7	Shoreline Access	7	Shoreline Access	14.3
69	3	Sensitive Resource Management	4	Natural Resource Conservation	8.8
70	3	Sensitive	4	Natural Resource	8.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Resource Management		Conservation	
71	3	Sensitive Resource Management	4	Natural Resource Conservation	9.0
72	4	Natural Resource Conservation	4	Natural Resource Conservation	6.3
73	7	Shoreline Access	7	Shoreline Access	10.3
74	6	Developed Recreation	6	Developed Recreation	60.2
75	6	Developed Recreation	2	Project Operations	20.0
76	3	Sensitive Resource Management	3	Sensitive Resource Management	35.3
77	4	Natural Resource Conservation	4	Natural Resource Conservation	332.1
78	4	Natural Resource Conservation	2	Project Operations	35.1
79	4	Natural Resource Conservation	3	Sensitive Resource Management	56.9
80	4	Natural Resource Conservation	2	Project Operations	1.2
81	4	Natural Resource Conservation	4	Natural Resource Conservation	4145.4
82	2	Project Operations	2	Project Operations	0.04
82	4	Natural Resource Conservation	2	Project Operations	22.9
83	4	Natural Resource Conservation	2	Project Operations	19.7
84	2	Project Operations	5	Industrial	31.7
85	2	Project Operations	6	Developed Recreation	58.6
86	2	Project Operations	2	Project Operations	2.3
86	4	Natural Resource Conservation	2	Project Operations	66.8
87	2	Project Operations	2	Project Operations	81.3
87	4	Natural Resource Conservation	2	Project Operations	0.3
88	4	Natural Resource Conservation	4	Natural Resource Conservation	13313.3
89	4	Natural Resource Conservation	2	Project Operations	5.2
90	4	Natural Resource Conservation	4	Natural Resource Conservation	39.3
91	5	Industrial	5	Industrial	17.2

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
92	5	Industrial	5	Industrial	17.6
93	4	Natural Resource Conservation	2	Project Operations	107.9
94	4	Natural Resource Conservation	6	Developed Recreation	6.4
95	4	Natural Resource Conservation	6	Developed Recreation	1.7
96	5	Industrial	2	Project Operations	4.3
97	2	Project Operations	2	Project Operations	4066.9
98	3	Sensitive Resource Management	3	Sensitive Resource Management	70.3
99	6	Developed Recreation	6	Developed Recreation	74.1
100	6	Developed Recreation	5	Industrial	4.2
101	4	Natural Resource Conservation	6	Developed Recreation	0.8
101	6	Developed Recreation	6	Developed Recreation	10.9
102	4	Natural Resource Conservation	4	Natural Resource Conservation	55.7
103	4	Natural Resource Conservation	2	Project Operations	1.8
103	6	Developed Recreation	2	Project Operations	0.7
104	5	Industrial	5	Industrial	0.3
105	4	Natural Resource Conservation	4	Natural Resource Conservation	6.9
106	3	Sensitive Resource Management	4	Natural Resource Conservation	42.4
107	3	Sensitive Resource Management	3	Sensitive Resource Management	6.6
108	4	Natural Resource Conservation	4	Natural Resource Conservation	3.7
109	4	Natural Resource Conservation	4	Natural Resource Conservation	279.3
110	4	Natural Resource Conservation	3	Sensitive Resource Management	275.3
111	4	Natural Resource Conservation	4	Natural Resource Conservation	7.5
112	6	Developed Recreation	6	Developed Recreation	14.9
113	6	Developed Recreation	2	Project Operations	2.3
114	3	Sensitive	4	Natural Resource	40.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
		Resource Management		Conservation	
115	4	Natural Resource Conservation	4	Natural Resource Conservation	434.0
116	4	Natural Resource Conservation	4	Natural Resource Conservation	174.3
117	3	Sensitive Resource Management	3	Sensitive Resource Management	20.3
118	3	Sensitive Resource Management	2	Project Operations	3.6
119	3	Sensitive Resource Management	3	Sensitive Resource Management	51.7
120	3	Sensitive Resource Management	3	Sensitive Resource Management	20.0
121	4	Natural Resource Conservation	4	Natural Resource Conservation	148.8
122	4	Natural Resource Conservation	3	Sensitive Resource Management	16.8
123	3	Sensitive Resource Management	3	Sensitive Resource Management	49.9
124	3	Sensitive Resource Management	2	Project Operations	5.9
125	3	Sensitive Resource Management	3	Sensitive Resource Management	49.2
126	3	Sensitive Resource Management	3	Sensitive Resource Management	62.2
127	3	Sensitive Resource Management	4	Natural Resource Conservation	3.2
128	3	Sensitive Resource Management	2	Project Operations	1.1
129	3	Sensitive Resource Management	3	Sensitive Resource Management	103.1
130	3	Sensitive Resource Management	3	Sensitive Resource Management	291.6
131	3	Sensitive Resource Management	3	Sensitive Resource Management	59.9

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
132	3	Sensitive Resource Management	3	Sensitive Resource Management	73.3
133	3	Sensitive Resource Management	5	Industrial	4.0
134	3	Sensitive Resource Management	3	Sensitive Resource Management	6.3
135	2	Project Operations	2	Project Operations	1.2
136	3	Sensitive Resource Management	3	Sensitive Resource Management	62.7
137	3	Sensitive Resource Management	3	Sensitive Resource Management	342.6
138	3	Sensitive Resource Management	3	Sensitive Resource Management	122.8
139	3	Sensitive Resource Management	4	Natural Resource Conservation	3.3
140	4	Natural Resource Conservation	2	Project Operations	3.8
141a	3	Sensitive Resource Management	7	Shoreline Access	0.5
141	3	Sensitive Resource Management	4	Natural Resource Conservation	46.7
142	4	Natural Resource Conservation	3	Sensitive Resource Management	15.0
143	3	Sensitive Resource Management	5	Industrial	1.1
144	3	Sensitive Resource Management	4	Natural Resource Conservation	724.3
145	6	Developed Recreation	6	Developed Recreation	59.9
146	3	Sensitive Resource Management	3	Sensitive Resource Management	91.6
147	4	Natural Resource Conservation	2	Project Operations	4.5
148	4	Natural Resource Conservation	4	Natural Resource Conservation	425.8
149	4	Natural Resource Conservation	2	Project Operations	4.5

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
150	6	Developed Recreation	6	Developed Recreation	4.5
151	3	Sensitive Resource Management	3	Sensitive Resource Management	165.7
152	4	Natural Resource Conservation	4	Natural Resource Conservation	182.2
153	3	Sensitive Resource Management	4	Natural Resource Conservation	6.3
154	3	Sensitive Resource Management	4	Natural Resource Conservation	2.2
154	4	Natural Resource Conservation	4	Natural Resource Conservation	0.6
155	4	Natural Resource Conservation	4	Natural Resource Conservation	14.9
156	3	Sensitive Resource Management	2	Project Operations	7.0
156	4	Natural Resource Conservation	2	Project Operations	18.6
157	4	Natural Resource Conservation	6	Developed Recreation	4.7
158	3	Sensitive Resource Management	3	Sensitive Resource Management	132.8
159	4	Natural Resource Conservation	4	Natural Resource Conservation	39.5
160	4	Natural Resource Conservation	2	Project Operations	9.5
160	6	Developed Recreation	2	Project Operations	1.4
161	4	Natural Resource Conservation	3	Sensitive Resource Management	614.9
162	4	Natural Resource Conservation	6	Developed Recreation	3.4
162	6	Developed Recreation	6	Developed Recreation	9.4
163	4	Natural Resource Conservation	6	Developed Recreation	7.9
164	4	Natural Resource Conservation	4	Natural Resource Conservation	39.7
165	3	Sensitive Resource Management	3	Sensitive Resource Management	27.2
166	4	Natural Resource Conservation	4	Natural Resource Conservation	119.4
167	4	Natural Resource Conservation	6	Developed Recreation	4.7

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
168	3	Sensitive Resource Management	4	Natural Resource Conservation	717.2
169	5	Industrial	5	Industrial	3.6
170	2	Project Operations	2	Project Operations	2.7
171	6	Developed Recreation	6	Developed Recreation	420.7
172	3	Sensitive Resource Management	3	Sensitive Resource Management	7.8
173	6	Developed Recreation	6	Developed Recreation	10.0
174	3	Sensitive Resource Management	3	Sensitive Resource Management	15.5
175	2	Project Operations	2	Project Operations	16.7
176	6	Developed Recreation	6	Developed Recreation	3.5
177	5	Industrial	5	Industrial	17.0
178	6	Developed Recreation	6	Developed Recreation	4.1
179	6	Developed Recreation	2	Project Operations	7.8
180	4	Natural Resource Conservation	5	Industrial	14.0
181	6	Developed Recreation	6	Developed Recreation	5.2
182	5	Industrial	5	Industrial	222.5
183	3	Sensitive Resource Management	4	Natural Resource Conservation	2.0
184	3	Sensitive Resource Management	4	Natural Resource Conservation	1391.8
185	4	Natural Resource Conservation	2	Project Operations	8.4
186	4	Natural Resource Conservation	7	Shoreline Access	3.1
187	3	Sensitive Resource Management	4	Natural Resource Conservation	209.2
188	6	Developed Recreation	6	Developed Recreation	108.6
189	6	Developed Recreation	3	Sensitive Resource Management	3.1
190	3	Sensitive Resource Management	2	Project Operations	9.4

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
191	3	Sensitive Resource Management	4	Natural Resource Conservation	21.2
192	4	Natural Resource Conservation	2	Project Operations	56.2
193	4	Natural Resource Conservation	4	Natural Resource Conservation	122.9
194	6	Developed Recreation	2	Project Operations	9.1
195	6	Developed Recreation	6	Developed Recreation	4.9
196	7	Shoreline Access	7	Shoreline Access	0.7
198	6	Developed Recreation	2	Project Operations	34.7
199	6	Developed Recreation	4	Natural Resource Conservation	121.2
200	6	Developed Recreation	6	Developed Recreation	26.8
201	3	Sensitive Resource Management	4	Natural Resource Conservation	794.9
202	3	Sensitive Resource Management	2	Project Operations	6.2
203	5	Industrial	5	Industrial	82.8
204	3	Sensitive Resource Management	5	Industrial	396.3
205	4	Natural Resource Conservation	4	Natural Resource Conservation	16.1
206	2	Project Operations	6	Developed Recreation	4.0
207	2	Project Operations	6	Developed Recreation	1.8

Table C-8. Wilson Reservoir Land Allocations

Parcel	Alternative A No Action Alternative	Zone Description	Alternative B Proposed Alternative	Zone Description	Acres per Allocation
1	2	Project Operations	2	Project Operations	42.5
2	6	Developed Recreation	6	Developed Recreation	41.0
3	2	Project Operations	2	Project Operations	48.5
4	6	Developed Recreation	6	Developed Recreation	85.4
5	2	Project Operations	2	Project Operations	7.7
6	6	Developed Recreation	6	Developed Recreation	0.02
7	6	Developed Recreation	6	Developed Recreation	4.9
8	2	Project Operations	2	Project Operations	2.6
9	6	Developed Recreation	6	Developed Recreation	17.2
10	7	Shoreline Access	7	Shoreline Access	2.8
11	2	Project Operations	2	Project Operations	5.6
12	2	Project Operations	2	Project Operations	15.3
13	2	Project Operations	2	Project Operations	930.8
14	2	Project Operations	2	Project Operations	19.2

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Table D-32. Parcels Reallocated to Provide Shoreline Areas – Chickamauga Reservoir

Parcel Number	Zone by Alternative		Acres
	A	B	
16	4	7	0.3
37	3	7	1.1
39	6	7	0.2
49	6	7	1.3
66	5	7	2.2
99	4	7	0.1
125	6	7	4.2
133	4	7	0.0
139	3	7	1.1
146	4	7	0.4
167	4	7	4.6
176	3	7	0.0
188	3	7	0.0
205	3	7	0.7
232	4	7	3.6
238	4	7	3.0
247	4	7	4.6
282	4	7	7.0

Table D-33. Parcels Reallocated to Provide Shoreline Areas – Fort Loudoun Reservoir

Parcel Number	Zone by Alternative		Acres
	A	B	
61	6	7	2.3
83	4	7	0.2
41a	Not Planned	7	0.7

Table D-34. Parcels Reallocated to Provide Shoreline Areas – Kentucky Reservoir

Parcel Number	Zone by Alternative		Acres
	A	B	
10	4	7	0.1
12	4	7	3.7
14	4	7	6.7
16	4	7	0.2
20	4	7	0.1
24	4	7	8.6
26	4	7	24.9
28	4	7	0.2
30	4	7	1.8
32	4	7	1.3
34	4	7	21.8
40	4	7	0.4
51	4	7	3.4
54	4	7	4.6
58	4	7	30.9
60	4	7	2.0
62	4	7	3.8
64	4	7	3.2
68	4	7	0.5
73	6	7	1.7
75	4	7	76.2
78	4	7	0.9
80	4	7	0.4
84	4	7	51.4
105	3	7	12.7
106	4	7	2.1
107	3	7	25.7
108	3	7	11.9
119	4	7	10.4
125	4	7	5.2
145	4	7	15.6
184	4	7	2.1
189	4	7	7.9
238	4	7	24.8
239	4	7	11.1
241	4	7	39.2
243	4	7	0.2
251	4	7	42.8
254	4	7	11.6
256	4	7	108.9
257	4	7	7.9
260	4	7	2.4
263	4	7	0.1
269	4	7	7.1
270	4	7	25.8

Parcel Number	Zone by Alternative		Acres
	A	B	
272	4	7	32.3
275	4	7	2.0
277	4	7	4.7
288	4	7	17.9
295	4	7	55.2
303	4	7	0.3
312	4	7	3.8
316	4	7	9.4
322	4	7	0.7
325	4	7	0.1
328	4	7	5.4
330	4	7	52.4
333	4	7	0.3
337	4	7	19.5
341	4	7	27.8
346	4	7	11.7
355	4	7	22.0
356	4	7	11.7
360	4	7	5.9
368	4	7	16.3
370	4	7	3.2
372	6	7	1.4
378	4	7	11.4
381	4	7	8.7
387	4	7	1.9
390	4	7	3.7
391	4	7	39.2
392	4	7	45.5
392	6	7	4.1
394	6	7	0.4
399	4	7	14.4
399	5	7	1.6
402	4	7	0.8
409	4	7	8.0
412	4	7	5.3
415	4	7	23.4
418	4	7	8.4
421	4	7	1.5
431	4	7	0.5
433	4	7	3.7
435	4	7	3.2
436	4	7	0.5
438	4	7	0.5
440	4	7	56.1
443	4	7	1.5
445	4	7	14.7

Parcel Number	Zone by Alternative		Acres
	A	B	
447	3	7	6.3
447	4	7	67.0
448	4	7	13.2
450	4	7	1.0
452	4	7	0.8
456	4	7	5.3
458	4	7	14.3
463	4	7	5.3
465	4	7	1.0
470	4	7	0.7
472	4	7	1.4
475	4	7	4.8
477	4	7	30.4
485	4	7	23.2
485	6	7	11.9
488	4	7	0.4
490	4	7	0.2
495	4	7	5.4
497	4	7	17.6
500	4	7	1.3
505	4	7	91.3
506	4	7	46.5
509	4	7	4.8
511	4	7	1.8
514	4	7	11.7
515	4	7	0.5
519	4	7	18.8
526	4	7	17.0
541	4	7	3.3
543	4	7	6.6
544	4	7	0.6
553	4	7	19.4
554	4	7	2.0
557	6	7	0.4
559	4	7	1.3
562	4	7	97.8
565	4	7	26.6
567	4	7	1.4
567	6	7	78.0
101b	4	7	1.1
468a	4	7	2.9
468a	6	7	2.9

Table D-35. Parcels Reallocated to Provide Shoreline Areas – Nickajack Reservoir

Parcel Number	Zone by Alternative		Acres
	A	B	
18a	4	7	0.4
21	6	7	0.3

Table D-36. Parcels Reallocated to Provide Shoreline Areas – Normandy Reservoir

Parcel Number	Zone by Alternative		Acres
	A	B	
9	4	7	1.0

Table D-37. Parcels Reallocated to Provide Shoreline Areas – Wheeler Reservoir

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Parcel Number	Zone by Alternative		Acres
	A	B	
61	4	7	4.8
186	4	7	3.1
141a	3	7	0.5

Table D-38. Allocations by Parcel that are not Based on Existing Land Use Agreements and Commitments – Chickamauga Reservoir

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
2	2	3	226.3	Contains sensitive resources
7	3	4	7.4	Contains no known sensitive resources; good wildlife habitat
17	4	3	0.6	Contains sensitive resources.
38	3	4	9.3	Contains no known sensitive resources; good wildlife habitat
53	3	4	6.3	Contains no known sensitive resources; good wildlife habitat
65	5	3	1.2	Shoreline buffer with high probability for cultural resources
77	4	3	0.8	Sensitive resources are present
103	3	4	35.3	Contains no known sensitive resources; good wildlife habitat
108	4	3	1.8	Sensitive resources are present
111	4	3	4.1	Contains good wildlife habitat to support Hiwassee Refuge
113	7	4	6.0	Adjacent to former TVA property that does not have the necessary rights for water use facilities
114	4	6	0.8	Adjacent to land transferred to the state of Tennessee for public recreation
119	2	4	6.8	Consists of many small tracts in and around the Town of Dayton. Supports bank fishing
119	6	4	2.3	
123	3	4	2.5	Adjacent to former TVA property that does not have the necessary rights for water use facilities.
123	7	4	1.1	Adjacent to former TVA property that does not have the necessary rights for water use facilities.
132	4	3	54.8	High quality wetlands
135	4	6	5.4	Could support developed recreation
137	3	4	206.2	Excellent wildlife habitat.
140	3	4	150.7	Contains no known sensitive resources; good wildlife habitat
153	3	4	232.1	Contains no known sensitive resources; good wildlife habitat
163a	2	6	3.2	Has potential for commercial recreation purposes
168	4	3	3.5	Contains sensitive resources
168	7	3	22.3	Contains sensitive resources
182	3	4	6.4	Borders an area with sensitive resources; good wildlife habitat
184	2	3	0.9	Contains sensitive habitat
190	3	4	21.7	Managed via a term agricultural license for hay production
192	2	6	0.2	Shoreline parcel could be used for developed recreation
192	4	6	1.1	Shoreline parcel could be used for developed recreation
193	3	4	380.0	Managed to maximize wildlife habitat and public use enhancements.
197	4	3	30.9	Managed to maximize wildlife habitat and public use enhancements
199	3	4	39.0	Supports high quality wildlife habitat. A portion of

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
				the parcel is used for hay production.
204	3	4	232.4	Contains high quality habitat. A portion of the parcel is used for hay production
206	4	3	0.3	Provides high quality nesting habitat for waterfowl and other wildlife
208	3	4	1.0	Contains diverse land cover is valuable wildlife habitat for many species, both mammal and bird. Under easement to TWRA for the Chickamauga WMA
212	3	4	13.9	Parcel is owned and managed by TWRA as part of the Hiwassee Refuge
214	3	4	810.4	Managed by TWRA as part of the Hiwassee Refuge
215	3	4	38.4	Managed by TWRA as part of the Hiwassee Refuge
217	3	4	20.0	Managed by TWRA as part of the Hiwassee Refuge
221	6	4	29.5	Managed by TVA for forest resources
233	4	3	9.1	Good waterfowl nesting habitat and shorebird habitat
254	4	3	0.1	Good riparian habitat. River section supports sensitive species
254	6	3	9.2	
262	4	6	0.9	Potential for development as part of the Charleston Greenway
264	4	3	0.9	Sensitive resources are present
266	3	4	12.8	Contains no known sensitive resources; good wildlife habitat
279	4	3	102.2	Contains sensitive resources
293	3	4	735.9	Managed by TWRA as part of the Hiwassee Refuge
303	4	3	3.1	Limited amounts of wildlife habitat. A narrow band of aquatic bed and emergent wetlands are located along the shoreline
312	4	3	1.6	Contains sensitive resources
322	4	3	6.6	Contains sensitive resources
328	4	3	1.5	Provides a visual buffer, and important nesting/wading habitat for waterfowl and shorebirds
346	4	3	0.8	Has high quality wetlands and excellent wildlife habitat
351	4	6	6.3	Potential for development of developed recreation
353	4	3	65.7	Unique habitat to both upland and wetland species
357	4	3	3.3	Provides a visual buffer, and important nesting/shallow water habitat for waterfowl and shorebirds

Table D-39. Allocations by Parcel that are not Based on Existing Land Use Agreements and Commitments – Kentucky Reservoir

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
35	4	3	43.2	Provides beneficial habitat for several bottomland forest game animals, as well as a diversity of wetland wildlife species
36	5	4	17.0	Contains no known sensitive resources; good wildlife habitat
37	4	5	44.3	Could be considered for future industrial development
49	4	3	21.9	provides beneficial habitat for several upland game animals, as well as a diversity of wetland wildlife species
56	4	3	72.0	Wetland Mitigation Site
56	7	3	31.7	Wetland Mitigation Site
59	4	3	8.0	Contains wetlands and wildlife habitat, sensitive species are present
65	4	3	19.5	Contains predominantly forested wetlands and provides habitat for a variety of wetland wildlife species
81	6	4	117.8	Provides beneficial habitat for upland game species. No known sensitive species present
83	4	3	10.0	Contains high quality wetlands. Provides habitat and nesting opportunities for waterfowl, wading birds, shorebirds and raptors
89	4	3	409.3	Contains high quality wetlands. Provides habitat for game species. Contains sensitive resources
97	4	5	191.4	Potential for future industrial development
99	5	3	0.8	Contains the Tribble Woods Habitat Protection Area. Sensitivity resources are present
111	2	4	9.8	Contains deciduous forest and forested wetlands. Potential for research on historic bottomland hardwood plantings
115	4	3	48.0	Supports the Lady's Bluff Small Wild Area. The parcel is managed to preserve unique natural features such as waterfalls, caves, ravines, scenic views, and plant life
128	4	3	732.7	Contains high quality wetlands and excellent habitat and nesting sites for a variety of waterfowl and other wetland wildlife species. Used as foraging habitat by the federally endangered Gray bats (*Myotis grisescens*)
131	4	3	99.5	Supports deciduous forest, forested wetlands, and scrub–shrub wetlands. High probability for cultural resources
136	5	3	87.4	Proposed for inclusion in the Jennings Bluff Habitat Protection Area. Contains sensitive species
138	5	4	181.8	Contains deciduous forest, forested wetlands, and scrub–shrub wetlands. Sensitive species are not present
139	4	5	701.4	Potential for industrial development
140	4	3	264.4	Supports deciduous forest and limited shoreline wetlands. Contains sensitive resources
164	4	3	53.5	Includes a proposed habitat area and contains a wetland complex and old growth bottomland hardwoods with rare histosol soils

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
177	5	4	19.8	Serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions. Sensitive species are not known to be present
186	4	3	6.1	Serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions. High probability for presence of sensitive resources
190	5	3	2.6	Serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions. High probability for presence of sensitive resources
202	4	3	218.4	Contains high quality wetlands. Sensitive species are adjacent to the parcels
204	5	4	39.6	Contains significant high quality forested wetlands. Sensitive species not known to be present
226	5	3	1.9	Parcel has historic significance
226	6	3	2.3	
234	4	3	54.5	Contains sensitive species
246	4	3	6.0	Contains high quality wetlands
253	4	3	225.4	Contains high quality wetlands and serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions
264	4	3	9.3	Contains high quality forested, scrub-shrub, and emergent wetlands. This area serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions
265	4	3	3.7	Contains high quality wetlands
271	4	5	4.3	Potential for industrial development
271	6	5	83.1	
276	4	3	119.8	Serves as a visual buffer from nearby shoreline development in addition to providing numerous riparian habitat functions
292	4	3	0.3	Contains wetlands and potential sensitive resources
299	4	3	122.4	A portion of the parcel is within the Harmon Creek WMA and includes high quality wetlands
310	4	3	8.9	Contains wetlands
313	4	3	69.9	Contains the Crooked Creek HPA
323	4	3	25.5	Contains wetlands and potential sensitive resources
324	4	3	12.5	Contains wetlands and potential sensitive resources
326	4	6	15.5	Potential for developed recreation
327	4	3	23.2	Contains the TWRA Lick Creek WMA. Contains high quality wetlands and potential for sensitive resources
357	4	3	23.6	Designated as Clendenin Creek HPA and was established in 1985 for protection of a state–listed non–flowering plant related to ferns
359	4	3	14.5	Contains riparian forests and shoreline fringe emergent wetlands. Potential for sensitive resources
364	4	3	85.0	Contains wetlands along the shoreline and a cemetery is located on the parcel. Potential for sensitive resources
371	6	4	12.4	Contains wetlands and supports agricultural use. Potential for sensitive resources

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
375	5	4	24.2	Encompasses the West Sandy Wildlife Management Area. Potential for sensitive resources. Potential for sensitive resources
375	6	4	0.1	
379	4	3	67.8	Proposed as the Henson Branch Histosol TVA HPA. Contains unique plant assemblages
398	5	4	5.2	Contains wetlands, loblolly pine plantations; and historic hardwood tree plantings. Potential for management of forest to enhance wildlife management
423	6	4	14.2	A majority of this parcel features bottomland forests and high quality forested, scrub–shrub, and fringe emergent wetlands that serve as riparian habitats. Sensitive resources are not present
446	4	3	881.8	Contains high quality wetlands and three natural areas
461	6	4	138.5	Contains high quality wetlands and sensitive species. Potential for development of timber management to enhance wildlife habitat diversity
480	6	4	47.0	Contains wetlands and four dispersed recreation sites that are considered as candidates for management actions. Sensitive species are not known to be present
484	4	3	24.3	This parcel features mostly upland hardwoods And is located adjacent to substantial development, and disperse recreational use is limited. Potential for sensitive resources
496	4	3	30.0	Contains wetlands. Potential for sensitive species
503	4	3	237.9	Contains high quality wetlands which provide fish spawning and nursery habitat. Potential for sensitive resources
530	4	3	30.2	Serves as a visual buffer from nearby shoreline development. Potential for sensitive resources
538	4	3	14.3	A cemetery is located on the parcel and there is a potential for sensitive resources
566	4	6	24.6	Potential for developed recreation
571	4	3	76.7	Proposed as the Tupelo–Cypress Swamp HPA and SWA

Table D-40. Allocation Differences Among Alternatives – Nickajack Reservoir

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
4	4	3	6.3	Contains the Little Cedar Mountain SWA and HPA
7	2	4	24.2	This parcel provides a unique habitat for plants and animals. It contains a series of old logging roads which facilitates hiking and hunting access throughout the tract. No known sensitive resources are present
9	4	3	372.8	Parcel contains the Marion Bridge HPA and contains sensitive plant species
16	4	3	19.5	Parcel contains the Huff Branch HPA. Sensitive species are present
18	6	4	0.1	This parcel consists of eight non-contagious tracts of land: four shoreline tracts and four adjacent islands. The current land cover is upland hardwoods with areas of open shoreline. However, aquatic wetlands, scrub-shrub, and emergent wetlands can be found along the shoreline of this tract
29	4	6	2.6	Potential for developed recreation
30	3	4	2.8	Contains wetlands that provide excellent habitat for wading birds and migratory waterfowl. No known sensitive resources are known to be present
31	4	6	23.0	Potential for developed recreation

Table D-41. Allocations by Parcel that are not Based on Existing Land Use Agreements and Commitments – Normandy Reservoir

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
4	4	6	10.0	Potential for developed recreation
13	3	4	56.1	Contains upland hardwood, red cedar and agricultural fields. Sensitive ecological resources are not present
17	Not Planned	4	0.5	Contains upland hardwoods. Sensitive ecological resources are not present
18	Not Planned	3	1.1	Contains a valuable river corridor that is largely undisturbed. Potential for sensitive resources
19	3	6	15.9	Potential for developed recreation
21	Not Planned	3	0.2	Contains a valuable river corridor that is largely undisturbed. Potential for sensitive resources
23	4	6	42.3	Potential for developed recreation
25	Not Planned	4	0.7	Contains upland hardwoods and red cedar. Sensitive ecological resources are not present
27	3	4	266.4	Contains upland hardwoods. Sensitive resources are not present

Table D-42. Allocations by Parcel that are not Based on Existing Land Use Agreements and Commitments – Wheeler Reservoir

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
5	4	3	11.2	The parcel is covered by a loblolly pine plantation, and scrub−shrub wetlands are located within the small inlet. Because of the shallow nature of the lake fronting this parcel, submersed aquatic plant beds are present during some years
11	5	6	91.3	Potential for developed recreation
18	3	4	0.9	Island tract which provides wetland habitat for both waterfowl and wetland furbearers. Sensitive species are not present
28	4	3	10.0	Mixed hardwood and pine forest with scrub−shrub wetlands along the shoreline. Potential for sensitive resources
33	4	3	7.6	Consists of riparian zone forest with some wetland characteristics. Potential for sensitive ecological species
35	4	3	195.4	Most of this parcel is being managed for perennial hay production and wildlife management while preserving its cultural resources. Forested riparian buffers have also been created. There is also an abundance of wetlands. Potential for sensitive ecological species
38	3	4	4.5	Contains wetlands and susceptible to flooding. Sensitive resources or not known to be present
41	3	4	7.3	Comprised of 3 small islands which support wetlands. Sensitive species are not known to be present
45	3	4	52.2	Contains forested and scrub-shrub wetlands. Sensitive species are not known to be present
48	4	6	5.3	Potential for developed recreation
50	3	4	137.6	Contains scrub-shrub wetlands. Sensitive species are not known to be present
56	6	5	44.6	Potential for industrial development
57	6	4	136.2	Contains wetlands and wildlife habitat, sensitive species are not known to be present
58	6	3	100.7	Long Oak Forest TVA SWA. Sensitive resources are present
62	4	3	68.3	Upland and bottomland forest with dispersed planted loblolly pines. Potential for sensitive resources
67	4	3	7.6	Forested limestone bluff
69	3	4	8.8	Forested limestone bluff
70	3	4	8.7	Forested limestone bluff
71	3	4	9.0	Forested limestone bluff
79	4	3	56.9	Bottomland hardwood forest with planted loblolly pine and dense privet understory. Contains sensitive resources
85	2	6	58.6	Potential for developed recreation
100	6	5	4.2	Potential for industrial development
106	3	4	42.4	Located on the perimeter of Hobbs Island. A mussel sanctuary is located upstream. Sensitive resources are not known to be present
110	4	3	275.3	Muddy Bottoms HPA and contains bottom land hardwood with scrub-shrub wetlands
114	3	4	40.7	Contains bottomland forest and wetlands. Sensitive species are not known to be present
122	4	3	16.8	Contains bottomland hardwood forest adjacent to forested limestone bluffs. Potential for sensitive resources
127	3	4	3.2	Supports hardwood forest. Sensitive species are not known to be

Parcel Number	Zone by Alternative		Acres	Description
	A	B		
				present.
139	3	4	3.3	The land cover is scrub hardwood and planted loblolly pine forest along an eroding riverbank. Sensitive species are not known to be present
141	3	4	46.7	The land cover is scrub hardwood and planted loblolly pine forest along an eroding riverbank. Also included scrub-shrub wetlands. Sensitive species are not known to be present
142	4	3	15.0	Limestone bluff with mixed hardwood and loblolly pine forest. Supports a variety of small game and nongame species, Including birds and reptiles. Sensitive species are not known to be present
143	3	5	1.1	Potential for industrial development
144	3	4	724.3	Supports diverse wildlife habitat. The state−listed species bald eagle (*Haliaeetus leucocephalus*) actively nests on this parcel
153	3	4	6.3	Contains good−to−excellent habitat for a variety of species, including wood ducks and other waterfowl, wading birds, and wetland furbearers. Sensitive species are not known to be present
154	3	4	2.2	Supports mixed pine and hardwood forest with unauthorized vegetation management. Sensitive species are not known to be present
161	4	3	614.9	Contains diverse forest types and wetlands which provides excellent wildlife habitat
162	4	6	3.4	Potential for developed recreation
163	4	6	7.9	Potential for developed recreation
168	3	4	717.2	Contains excellent habitat for a variety of species, Sensitive species are not known to be present
183	3	4	2.0	Comprised of a series of small sand and gravel islands located on the Tennessee River. The land cover consists of scattered scrub hardwoods and scrub−shrub wetlands. Sensitive species are not known to be present
187	3	4	209.2	Consists of forested wetlands, hardwood forest, internal sinkholes and springs, and scattered loblolly pine. Sensitive species are not known to be present
189	6	3	3.1	Contains sensitive resources
191	3	4	21.2	Contains hardwood forest with rock bluff. Sensitive species are not known to occur
199	6	4	121.2	Predominately comprised of a mature loblolly pine forest with mixed hardwoods and one small agricultural field near the southern end of the parcel. Sensitive resources are not known to be present
201	3	4	794.9	The land cover is a patchwork of pine and hardwood stands with intervening open pastureland and pockets of shrub and brush. The diversity of habitat supports a good small game population, and there are opportunities for further wildlife benefits through cooperative efforts in the management of the agricultural land. Sensitive species are not known to be present
204	3	5	396.3	Potential for industrial development

Table D-43. Flood Profiles – Chickamauga Reservoir Flood Profiles

Tennessee River - Chickamauga Reservoir, Flood Profiles.

River Mile	100-Year Flood	Flood Risk Profile*	Landmark
471.00	686.0	689.0	Chickamauga Dam
472.00	686.1	689.0	
473.00	686.1	689.0	
473.10	686.1	689.0	
474.00	686.2	689.0	
475.00	686.3	689.0	
475.21	686.3	689.0	
476.00	686.3	689.0	
477.00	686.4	689.0	
477.31	686.4	689.0	
478.00	686.4	689.0	
478.58	686.5	689.0	Wolftever Creek
479.00	686.5	689.0	
480.00	686.6	689.0	
480.45	686.6	689.0	Dallas Branch
481.00	686.6	689.0	
481.52	686.6	689.0	
482.00	686.7	689.0	
483.00	686.8	689.0	
483.62	686.9	689.0	
484.00	686.9	689.0	
485.00	687.0	689.0	
485.72	687.1	689.0	
486.00	687.1	689.0	
487.00	687.2	689.0	
487.50	687.2	689.0	Soddy Creek
487.83	687.2	689.0	
488.00	687.3	689.0	
489.00	687.3	689.0	
489.63	687.4	689.1	Possum Creek
489.93	687.4	689.2	
490.00	687.4	689.2	
491.00	687.5	689.3	
492.00	687.6	689.4	
492.04	687.6	689.4	
493.00	687.7	689.5	
494.00	687.7	689.6	
494.14	687.8	689.6	
494.25	687.8	689.6	Grasshopper Creek
495.00	687.8	689.7	Sale Creek
496.00	687.9	689.8	
496.24	687.9	689.9	
497.00	688.0	690.0	
498.00	688.1	690.1	
498.35	688.2	690.2	

Tennessee River - Chickamauga Reservoir, Flood Profiles.

River Mile	100-Year Flood	Flood Risk Profile*	Landmark
499.00	688.3	690.3	
499.02	688.3	690.4	Tennessee Highway 60
499.43	688.4	690.4	Hiwassee River
499.52	688.4	690.5	Blythe Ferry
500.00	688.5	690.6	
500.45	688.6	690.7	
501.00	688.7	690.8	
502.00	688.8	691.0	
502.55	688.9	691.1	
503.00	689.0	691.3	
504.00	689.2	691.5	
504.41	689.3	691.7	Richland Creek
504.66	689.4	691.7	
505.00	689.5	691.8	
505.27	689.6	691.9	Mud Creek
506.00	689.7	692.2	
506.76	689.9	692.4	
507.00	690.0	692.5	
508.00	690.3	692.8	
508.86	690.5	693.1	
509.00	690.5	693.1	
510.00	690.8	693.5	
510.97	691.1	693.8	
511.00	691.1	693.8	
512.00	691.4	694.2	
513.00	691.7	694.5	
513.07	691.7	694.6	
514.00	692.0	694.9	
514.65	692.2	695.2	Goodfield Creek
515.00	692.3	695.3	
515.18	692.4	695.4	
516.00	692.7	695.7	
517.00	693.0	696.1	
517.28	693.1	696.2	
517.90	693.3	696.4	Tennessee Highway 30
517.97	693.3	696.4	Washington Ferry
518.00	693.3	696.4	
519.00	693.6	696.7	
519.38	693.7	696.8	
519.44	693.7	696.8	Clear Creek
520.00	693.9	697.1	
521.00	694.2	697.5	
521.49	694.4	697.6	
522.00	694.6	697.8	
523.00	695.0	698.2	
523.59	695.2	698.5	
524.00	695.4	698.8	

Tennessee River - Chickamauga Reservoir, Flood Profiles.

River Mile	100-Year Flood	Flood Risk Profile*	Landmark
524.56	695.7	699.1	Sewee Creek
525.00	695.9	699.4	
525.69	696.3	699.9	
526.00	696.4	700.0	
526.78	696.7	700.4	Yellow Creek
527.00	696.7	700.5	
527.80	697.0	700.8	
528.00	697.1	700.9	
529.00	697.6	701.4	
529.90	698.0	701.8	Watts Bar Dam

Notes:

1. All Elevations are NGVD 1929
2. River miles in bold indicate surveyed cross sections
3. *The Flood Risk Profile is Equal to the 500-Year Flood From Mile 489.0 Upstream to Watts Bar Dam
4. Computed by TVA in 1980

source file: chickamauga_profiles_for_Land_Plan_2016_final.xlsx
source file: Work\Flood Risk\Reservoir Flood Risk\Reservoir Profiles\Tennessee River Flood Risk Profiles\ chickamauga frp.xls

Table D-44. Flood Profiles – Fort Loudoun Reservoir

Tennessee River – Fort Loudoun Flood Profiles				
River Mile	**100-Year Flood**		**Flood Risk Profile****	**Landmark**
602.30	816.0		817.0	Fort Loudoun Dam
602.96	816.0		817.0	Fork Creek
603.00	816.0		817.0	
604.00	816.0		817.0	
604.36	816.0		817.0	
605.00	816.0		817.0	
606.00	816.0		817.1	
606.43	816.0		817.1	
606.60	816.0		817.1	Cloyd Creek
607.00	816.0		817.2	
608.00	816.1		817.3	
608.54	816.1		817.3	
609.00	816.1		817.3	
610.00	816.1		817.4	
610.63	816.1		817.4	
611.00	816.1		817.5	
612.00	816.2		817.6	
612.10	816.2		817.6	Gallagher Creek
612.68	816.3		817.7	
613.00	816.3		817.8	
614.00	816.3		817.9	
614.75	816.3		818.0	
615.00	816.3		818.1	
616.00	816.4		818.2	
616.45	816.5		818.3	Turkey Creek
616.86	816.5		818.4	
617.00	816.5		818.4	
617.18	816.5		818.4	Sinking Creek
618.00	816.5		818.5	
618.94	816.5		818.5	
619.00	816.5		818.5	
620.00	816.7		818.9	
621.00	816.8		819.2	
621.02	816.8		819.2	
622.00	816.9		819.3	
623.00	816.9		819.5	
623.10	816.9		819.5	
624.00	816.9		819.6	
625.00	817.0		819.8	
625.28	817.0		819.8	
625.40	817.0		819.8	Lackey Creek
626.00	817.1		819.9	
626.85	817.2		820.0	Sinking Creek

Tennessee River – Fort Loudoun Flood Profiles				
River Mile	**100-Year Flood**		**Flood Risk Profile****	**Landmark**
627.00	817.2		820.0	
627.16	817.2		820.0	
628.00	817.3		820.3	
629.00	817.5		820.6	
629.31	817.5		820.7	
630.00	817.6		820.9	
630.10	817.6		821.0	Pellissippi Parkway
631.00	817.7		821.3	
631.42	817.8		821.4	
632.00	817.8		821.5	
633.00	817.9		821.6	
633.50	817.9		821.7	
634.00	818.0		821.8	
635.00	818.1		822.1	
635.54	818.2		822.3	Little River
635.60	818.2		822.3	
636.00	818.2		822.3	
637.00	818.3		822.4	
637.56	818.3		822.5	Knob Creek
637.67	818.3		822.5	
638.00	818.4		822.6	
639.00	818.5		822.8	
639.74	818.6		822.9	
639.88	818.6		823.0	Fourth Creek
640.00	818.7		823.0	
641.00	818.9		823.3	
641.77	819.1		823.6	
642.00	819.2		823.7	
643.00	819.5		824.2	
643.89	819.7		824.6	
644.00	819.8		824.7	
645.00	820.3		825.3	
645.10	820.3		825.4	U. S. Highway 129
645.10	820.3		825.5	
645.88	820.4		825.6	Third Creek
645.89	820.4		825.6	
646.00	820.5		825.8	
646.60	821.0		826.6	L & N Railroad
646.60	821.0		826.6	
646.66	821.1		826.7	Goose Creek
647.00	821.3		827.1	
647.22	821.5		827.4	Second Creek
647.24	821.5		827.4	Southern Railroad
647.24	821.5		827.4	

Tennessee River – Fort Loudoun Flood Profiles				
River Mile	**100-Year Flood**		**Flood Risk Profile****	**Landmark**
647.40	821.5		827.5	Henley Street
647.40	821.5		827.5	
647.70	821.6		827.7	Gay Street
647.70	821.7		827.7	
647.80	821.7		827.7	First Creek
648.00	821.7		827.7	
648.06	821.7		827.7	
648.70	822.3		828.6	South Knoxville Bridge
649.00	822.6		829.0	
649.13	822.7		829.1	Williams Creek
650.00	823.6		830.3	
650.14	823.7		830.5	
651.00	824.5		831.4	
652.02	825.4		832.4	

Notes:

All Elevations are NGVD 1929

River miles in bold indicate surveyed cross sections

*Downstream and Upstream at Bridges

**The Flood Risk Profile is Equal to the 500-Year Flood

Computed by TVA in 1997

source file:
Fort_Loudoun_profiles_for_Land_Plan_2016_final.xlsx

Table D-45. Flood Profiles – Great Falls Reservoir

Caney Fork River – Great Falls Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**500-Year Flood**	**Landmark**
91.1	815.5	820.0	Great Falls Dam
91.2	815.5	820.0	Collins River
91.6	815.7	820.2	
92.0	815.7	820.3	
92.1	815.7	820.3	
92.4	815.8	820.4	
92.7	815.8	820.4	Rocky River
93.0	815.9	820.5	
93.4	815.9	820.6	
93.9	816.0	820.7	
94.0	816.0	820.7	
94.4	816.1	820.8	
94.9	816.2	820.9	
95.0	816.2	820.9	
95.5	816.4	821.1	
96.0	816.5	821.3	
96.6	816.6	821.4	
96.9	816.7	821.5	
97.0	816.7	821.5	
97.4	816.8	821.7	
97.9	817.0	821.8	
98.0	817.0	821.8	
98.3	817.1	822.0	
98.8	817.3	822.2	
99.0	817.4	822.3	
99.4	817.5	822.4	
99.9	817.8	822.7	
100.0	817.8	822.8	
100.3	817.9	822.9	
100.7	818.1	823.2	
101.0	818.2	823.2	
101.1	818.2	823.3	
101.6	818.4	823.4	
101.8	818.4	823.5	
102.0	818.5	823.6	
102.5	818.7	823.8	
102.8	818.8	823.9	
103.0	818.8	824.0	
103.5	819.0	824.1	
104.0	819.3	824.4	
104.5	819.5	824.7	
104.6	819.5	824.7	Calfkiller River
104.9	819.9	825.1	

Caney Fork River – Great Falls Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**500-Year Flood**	**Landmark**
105.0	819.9	825.2	
105.8	820.2	825.5	
106.0	820.3	825.6	
106.1	820.3	825.6	
106.5	820.5	825.8	
106.9	820.6	826.0	
107.0	820.7	826.0	
107.7	821.0	826.4	
107.9	821.1	826.5	Cane Creek
108.0	821.2	826.6	
108.1	821.2	826.7	
108.3	821.2	826.7	
108.9	821.5	826.9	
109.0	821.6	827.0	
109.4	821.8	827.2	
109.6	821.9	827.4	Hickory Valley Branch
109.9	822.2	827.7	Limit of study

Notes:

All Elevations are NGVD 1929

River miles in bold indicate surveyed cross sections

*Downstream and Upstream at Bridges

**The Flood Risk Profile is Equal to the 500-Year Flood

Computed by TVA in 2011

source file:
great_falls_profiles_for_Land_Plan_2016_final.xlsx

Table D-46. Flood Profiles –Kentucky Reservoir

Tennessee River – Kentucky Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
22.40	375.0	375.0	Kentucky Dam
25.30	375.0	375.0	Barkley Canal
30.62	375.0	375.0	Bear Creek
38.48	375.0	375.0	Jonathan Creek
41.74	375.0	375.0	U.S. Highway 68
42.30	375.0	375.0	Ledbetter Creek
45.40	375.0	375.0	Anderson Creek
52.00	375.0	375.0	Blood River
54.30	375.0	375.0	Boyds Branch
62.70	375.0	375.0	Cypress Creek
66.30	375.0	375.0	U.S. Highway 79
67.03	375.0	375.0	Big Sandy River
68.50	375.0	375.0	Standing Rock Creek
73.60	375.0	375.0	Leatherwood Creek
75.20	375.0	375.0	Lick Creek
76.20	375.0	375.0	Hurricane Creek
78.29	375.0	375.0	Railroad (formerly L&N Railroad)
78.50	375.0	375.0	Cane Creek
79.80	375.0	375.0	Crooked Creek
81.50	375.0	375.0	Whiteoak Creek
83.75	375.0	375.0	Little Crooked Creek
85.75	375.0	375.0	Turkey Creek
86.40	375.0	375.0	Sulphur Creek
88.60	375.0	375.0	Big Richland Creek
94.00	375.0	375.0	Little Dry Creek
96.07	375.0	375.0	Trace Creek
100.50	375.0	375.0	U.S. Highway 70
100.80	375.0	375.0	Indian Creek
103.50	375.0	375.0	Birdsong Creek
110.77	375.0	375.0	Duck River
112.69	375.0	375.0	Eagle Creek
115.44	375.0	375.0	Blue Creek
116.07	375.0	375.0	Interstate 40
117.14	375.0	375.0	
118.00	375.0	375.2	
118.71	375.0	375.3	
119.00	375.0	375.4	
119.27	375.0	375.4	Morgan Creek
120.00	375.0	375.4	
120.03	375.0	375.6	
121.00	375.0	375.9	
121.54	375.0	376.0	Crooked Creek
121.90	375.0	376.1	

Tennessee River – Kentucky Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
122.00	375.0	376.2	
122.39	375.0	376.5	
122.75	375.3	376.8	
123.00	375.4	376.9	
124.00	375.7	377.2	
124.32	375.8	377.3	Toms Creek
124.87	376.0	377.5	Deer Creek
124.99	376.0	377.5	
125.00	376.0	377.5	
126.00	376.2	377.7	
127.00	376.4	378.0	
127.09	376.4	378.0	
127.68	376.7	378.3	Lick Creek
128.00	376.8	378.4	
129.00	377.3	378.9	
129.50	377.5	379.1	Cub Creek
129.75	377.6	379.2	
130.00	377.7	379.3	
130.90	378.0	379.6	Lick Creek
131.00	378.0	379.6	
131.17	378.1	379.7	
132.00	378.4	380.0	
132.04	378.4	380.0	Parrish Branch
132.95	378.7	380.4	Spring Creek
133.00	378.7	380.4	
133.37	378.8	380.5	
134.00	379.0	380.6	
134.82	379.2	380.8	
134.93	379.2	380.9	State Routes 100 and 20
134.93	379.3	380.9	State Routes 100 and 20
135.00	379.3	380.9	
135.02	379.3	380.9	
135.25	379.5	381.2	
135.74	379.7	381.4	Beech River
136.00	379.8	381.5	
136.53	380.0	381.7	Cypress Creek
137.00	380.2	381.9	
137.56	380.4	382.1	
138.00	380.6	382.3	
138.33	380.7	382.4	Marsh Creek
139.00	380.9	382.6	
139.17	381.0	382.7	
139.96	381.3	383.0	Dry Branch
140.00	381.3	383.0	
141.00	381.6	383.4	

Tennessee River – Kentucky Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
141.40	381.8	383.6	Cedar Creek
141.75	381.9	383.7	
142.00	382.0	383.8	
143.00	382.4	384.2	
143.70	382.6	384.5	
144.00	382.7	384.6	
145.00	382.9	384.8	
145.94	383.1	385.0	
146.00	383.1	385.0	
147.00	383.6	385.5	
148.00	384.1	386.0	
148.04	384.1	386.0	
149.00	384.5	386.4	
150.00	384.9	386.9	
150.46	385.1	387.1	
151.00	385.3	387.3	
152.00	385.6	387.5	
152.23	385.7	387.6	
153.00	386.0	388.0	
154.00	386.5	388.5	
154.32	386.6	388.6	
155.00	386.8	388.8	
156.00	387.1	389.1	
156.46	387.2	389.2	
157.00	387.3	389.3	
157.86	387.5	389.5	
158.00	387.6	389.6	
158.51	387.9	389.9	
158.54	387.9	389.9	Roach Creek
159.00	388.1	390.1	
160.00	388.5	390.5	
160.30	388.6	390.6	
161.00	388.8	390.9	
162.00	389.2	391.2	
162.70	389.4	391.5	
163.00	389.5	391.6	
164.00	390.0	392.1	
164.80	390.3	392.4	Hardin Creek
165.00	390.4	392.5	
165.40	390.5	392.6	Turnbo Creek
166.00	390.6	392.7	
166.89	390.9	393.0	
167.00	391.0	393.1	
167.94	391.4	393.5	Stewman Creek
168.00	391.4	393.5	

Tennessee River – Kentucky Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
168.35	391.6	393.7	
168.36	391.6	393.7	Indian Creek
169.00	391.8	393.9	
170.00	392.2	394.3	
171.00	392.5	394.6	
171.06	392.5	394.6	
171.85	392.8	394.9	Doe Creek
172.00	392.8	395.0	
173.00	393.1	395.4	
173.18	393.2	395.5	
173.54	393.3	395.6	White Oak Creek
174.00	393.5	395.7	
175.00	393.8	396.0	
175.27	393.9	396.1	
176.00	394.0	396.2	
177.00	394.2	396.4	
177.37	394.3	396.4	
178.00	394.7	396.8	
178.26	394.8	397.0	Horse Creek
179.00	395.3	397.5	
179.94	395.8	398.1	
180.00	395.8	398.1	
181.00	396.0	398.2	
181.56	396.1	398.3	
182.00	396.2	398.4	
183.00	396.3	398.6	
184.00	396.5	398.8	
184.08	396.5	398.8	
185.00	396.7	399.0	
185.25	396.7	399.0	
185.87	396.8	399.1	Beason Creek
186.00	396.8	399.1	
187.00	397.0	399.2	
187.84	397.1	399.3	
188.00	397.1	399.3	
189.00	397.3	399.5	
189.90	397.4	399.6	
189.94	397.4	399.6	U.S. Route 64 - State Route 69
189.94	397.7	400.0	U.S. Route 64 - State Route 69
190.00	397.7	400.0	
191.00	397.9	400.2	
191.52	398.0	400.3	Mud Creek
191.97	398.1	400.4	
192.00	398.1	400.4	
193.00	398.2	400.5	

Tennessee River – Kentucky Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
193.73	398.3	400.5	
194.00	398.3	400.5	
195.00	398.4	400.7	
195.38	398.4	400.7	
196.00	398.5	400.8	
197.00	398.6	400.9	
197.40	398.6	400.9	Snake Creek
198.00	398.7	401.0	
198.02	398.7	401.0	
199.00	398.9	401.2	
200.00	399.1	401.4	
200.42	399.2	401.5	
200.50	399.2	401.5	Lick Creek
201.00	399.4	401.7	
202.00	399.8	402.0	
202.33	399.9	402.1	
203.00	400.1	402.3	
204.00	400.4	402.6	
204.03	400.4	402.6	
205.00	400.7	402.9	
205.35	400.9	403.1	Chambers Creek
205.47	400.9	403.1	
206.00	401.1	403.3	
206.72	401.4	403.6	Pickwick Dam

Notes:

All Elevations are NGVD 1929
River miles in bold indicate surveyed cross sections
*Downstream and Upstream at Bridges
**The Flood Risk Profile is Equal to the 500-Year Flood

Computed by TVA in 1994
source file:
kentucky_profiles_for_Land_Plan_2016_final.xlsx

Table D-47. Flood Profiles –Nickajack Reservoir

Tennessee River – Nickajack Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile***	**Landmark**
424.70	635.0	639.0	Nickajack Dam
425.00	635.0	639.0	
426.00	635.0	639.0	
426.80	635.0	639.0	
427.00	635.0	639.0	
428.00	635.0	639.0	
428.91	635.0	639.0	
429.00	635.0	639.0	
429.16	635.0	639.0	Interstate 24 Bridge
429.68	635.0	639.0	Running Water Creek
429.71	635.0	639.0	Tennessee State Route 2 Bridge
430.00	635.0	639.0	
431.00	635.0	639.0	
431.01	635.0	639.0	
432.00	635.0	639.0	
433.00	635.0	639.0	
433.12	635.0	639.0	
434.00	635.0	639.0	
435.00	635.0	639.0	
435.22	635.0	639.0	
436.00	635.0	639.0	
437.00	635.0	639.0	
437.33	635.0	639.0	
438.00	635.0	639.0	
438.38	635.0	639.0	
439.00	635.3	639.0	
439.43	635.5	639.0	
440.00	635.8	639.0	
440.48	636.1	639.0	
441.00	636.3	639.0	
441.54	636.6	639.2	
442.00	636.9	639.5	
442.59	637.2	639.9	
443.00	637.4	640.3	
443.64	637.8	640.8	
444.00	637.9	641.0	
444.62	638.2	641.4	Main Outlet - Raccoon Mountain
444.70	638.3	641.4	
445.00	638.7	642.1	
445.75	639.9	643.8	
446.00	640.1	644.0	
446.80	640.7	644.8	

Tennessee River – Nickajack Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile***	**Landmark**
447.00	640.9	645.0	
447.85	641.7	646.0	
448.00	641.9	646.3	
448.90	643.3	647.9	
449.00	643.4	648.1	
449.95	644.9	650.0	
450.00	645.0	650.1	
451.00	647.0	652.5	
451.71	648.6	654.3	Suck Creek
452.00	649.2	655.1	
452.06	649.3	655.3	
453.00	650.4	656.5	
453.11	650.5	656.6	
454.00	651.3	657.6	
454.16	651.4	657.7	
455.00	651.8	658.2	
455.21	651.9	658.3	
455.35	652.0	658.4	Mountain Creek
456.00	652.4	658.8	
456.27	652.6	659.0	
457.00	652.9	659.3	
458.00	653.4	659.8	
458.37	653.6	660.0	
459.00	654.0	660.4	
459.85	654.5	661.0	Lookout Creek
460.00	654.6	661.1	
460.48	655.0	661.4	
460.63	655.0	661.5	Chattanooga Creek
461.00	655.2	661.7	
462.00	655.8	662.3	
462.58	656.1	662.6	
463.00	656.3	662.9	
463.75	656.8	663.3	P.R. Olgiati Bridge
464.00	656.9	663.5	
464.15	657.0	663.5	Market Street Bridge
464.20	657.0	663.6	Walnut Street Bridge
464.69	657.3	663.9	
465.00	657.5	664.0	
465.30	657.6	664.2	Citico Creek
466.00	658.0	664.5	
466.79	658.5	665.0	
467.00	658.6	665.1	
468.00	659.0	665.5	
468.22	659.1	665.6	South Chickamauga Creek

Tennessee River – Nickajack Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile***	**Landmark**
468.90	659.4	665.8	
469.00	659.4	665.9	
470.00	659.7	666.1	
470.60	659.8	666.2	Southern Railway Bridge
470.85	659.9	666.3	North Chickamauga Creek
471.00	659.9	666.3	Chickamauga Dam

Notes:

All Elevations are NGVD 1929

River miles in bold indicate surveyed cross sections

*Downstream and Upstream at Bridges

*The Flood Risk Profile is Equal to the 500-Year Flood Elevation

Computed by TVA in 2001
source file:
nickajack_profiles_for_Land_Plan_2016_final.xlsx

Table D-48. Flood Profiles – Wheeler Reservoir

Tennessee River – Wheeler Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
274.90	557.3	557.3	Wheeler Dam
275.00	557.3	557.3	
275.42	557.3	557.3	Second Creek
276.00	557.3	557.3	
276.96	557.3	557.3	
277.00	557.3	557.3	
277.17	557.3	557.3	First Creek
278.00	557.3	557.3	
279.00	557.3	557.3	
279.02	557.3	557.3	
280.00	557.3	557.3	
281.00	557.3	557.3	
281.08	557.3	557.3	
282.00	557.3	557.3	
283.00	557.3	557.3	Spring Creek
283.13	557.3	557.3	
284.00	557.3	557.3	
284.28	557.3	557.3	Elk River
285.00	557.3	557.3	
285.05	557.3	557.3	Goldfield Creek
285.19	557.3	557.3	
286.00	557.3	557.3	
287.00	557.3	557.3	
287.25	557.3	557.3	
288.00	557.3	557.3	
289.00	557.3	557.3	
289.30	557.3	557.3	Coxey Creek
289.31	557.3	557.3	
290.00	557.3	557.3	
291.00	557.3	557.3	
291.37	557.3	557.3	
292.00	557.3	557.3	
293.00	557.3	557.3	
293.43	557.3	557.3	
293.60	557.3	557.3	Mallard Creek
294.00	557.3	557.3	BFN Site
294.46	557.3	557.3	
295.00	557.3	557.4	
295.48	557.3	557.5	
296.00	557.3	557.7	
296.25	557.3	557.7	Fox Creek
297.00	557.3	557.9	

Tennessee River – Wheeler Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
297.54	557.3	558.0	
298.00	557.4	558.2	
298.10	557.4	558.2	Round Island Creek
299.00	557.6	558.4	
299.60	557.8	558.6	
300.00	557.9	558.7	
301.00	558.1	558.9	
301.14	558.1	558.9	Swan Creek
301.48	558.1	559.0	Bakers Creek
301.66	558.2	559.0	
302.00	558.3	559.1	
302.88	558.5	559.3	Dry Branch
303.00	558.5	559.4	
303.72	558.7	559.6	
304.00	558.9	559.7	
305.00	559.3	560.2	
305.78	559.6	560.6	
306.00	559.8	560.7	
307.00	560.3	561.3	
307.83	560.8	561.8	
308.00	560.9	561.9	
308.40	561.1	562.1	Flint Creek
309.00	561.5	562.5	
309.53	561.8	562.9	Interstate 65
309.55	561.8	562.9	Interstate 65
309.89	562.1	563.1	
310.00	562.1	563.2	
310.67	562.6	563.7	Limestone Creek
311.00	562.8	563.9	
311.95	563.4	564.6	
312.00	563.5	564.7	
313.00	564.2	565.5	
314.00	564.8	566.2	
314.01	564.9	566.2	
315.00	565.7	567.2	
316.00	566.5	568.1	
316.07	566.5	568.1	
317.00	567.0	568.6	
317.28	567.1	568.8	Blackwell Run
318.00	567.5	569.2	
318.13	567.6	569.3	
319.00	568.0	569.8	
319.13	568.1	569.8	Cotaco Creek
320.00	568.5	570.3	
320.18	568.6	570.4	

Tennessee River – Wheeler Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
320.91	568.9	570.8	Indian Creek
321.00	569.0	570.8	
322.00	569.4	571.3	
322.24	569.5	571.4	
323.00	569.9	571.8	
324.00	570.4	572.4	
324.30	570.5	572.5	
325.00	570.9	572.9	
326.00	571.5	573.5	
326.36	571.7	573.7	
327.00	572.0	574.1	
328.00	572.5	574.6	
328.42	572.7	574.8	
329.00	573.1	575.3	
330.00	573.9	576.2	
330.48	574.2	576.6	
331.00	574.5	576.8	
332.00	574.9	577.3	
332.53	575.2	577.6	
332.89	575.3	577.7	
333.00	575.3	577.7	
333.30	575.4	577.8	US Highway 231
333.30	575.4	577.8	
333.32	575.5	577.8	
333.47	575.5	577.9	Aldridge Creek
333.87	575.6	578.0	
334.00	575.7	578.2	
334.59	576.2	578.6	
335.00	576.4	578.8	
336.00	576.7	579.1	
336.65	577.0	579.4	
337.00	577.1	579.5	
338.00	577.5	579.9	
338.71	577.8	580.2	
339.00	577.9	580.3	
339.04	577.9	580.3	Flint River
340.00	578.2	580.6	
340.77	578.4	580.9	
341.00	578.5	581.0	
342.00	579.0	581.5	
342.83	579.4	581.9	
343.00	579.4	582.0	
343.23	579.5	582.0	Paint Rock River
344.00	579.6	582.2	
344.88	579.8	582.5	

Tennessee River – Wheeler Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile****	**Landmark**
345.00	579.9	582.5	
346.00	580.1	582.8	
346.94	580.4	583.1	
347.00	580.4	583.1	
347.20	580.5	583.2	Shoal Creek
348.00	580.8	583.5	
349.00	581.1	583.9	Guntersville Dam

Notes:

All Elevations are NGVD 1929
River miles in bold indicate surveyed cross sections
*Downstream and Upstream at Bridges
**The Flood Risk Profile is Equal to the 500-Year Flood
Computed by TVA in 2004
source file:
Wheeler_profiles_for_Land_Plan_2016_final.xlsx

Table D-49. Flood Profiles – Wilson Reservoir

Tennessee River – Wilson Reservoir Flood Profiles			
River Mile	**100-Year Flood**	**Flood Risk Profile***	**Landmark**
259.40	508.0	508.0	Wilson Dam
259.97	508.0	508.0	
260.00	508.0	508.0	
261.00	508.0	508.0	
261.12	508.0	508.0	
262.00	508.0	508.0	
262.23	508.0	508.0	
262.85	508.0	508.0	McKiernan Creek
263.00	508.0	508.0	
264.00	508.0	508.0	
264.04	508.0	508.0	
264.37	508.0	508.0	Shoal Creek
265.00	508.0	508.1	
265.32	508.0	508.1	
266.00	508.0	508.1	
266.33	508.0	508.1	Sixmile Creek
267.00	508.1	508.1	
267.40	508.1	508.1	
268.00	508.1	508.1	
269.00	508.1	508.1	
269.09	508.1	508.1	
270.00	508.1	508.2	
271.00	508.2	508.2	
271.02	508.2	508.2	
272.00	508.4	508.5	
272.20	508.4	508.5	Town Creek
272.96	508.6	508.7	
273.00	508.6	508.8	
273.10	508.7	508.9	Bluewater Creek
274.00	509.6	510.1	
274.10	509.7	510.2	Big Nance Creek
274.90	510.6	511.2	Wheeler Dam

Notes:

All Elevations are NGVD 1929

River miles in bold indicate surveyed cross sections

*The Flood Risk Profile is Equal to the 500-Year Flood

Computed by TVA in 1984

source file:
Wilson_profiles_for_Land_Plan_2016_final.xlsx

Table D-50. Natural Areas Managed by All Entities – Chickamauga Reservoir

Natural Area	Acres
TVA Natural Areas	
Armstrong Bend TVA Habitat Protection Area	30.2
Big Ridge TVA Small Wild Area	226.1
Blythe Ferry TVA Habitat Protection Area	8.9
Butcher Bluff TVA Habitat Protection Area	15.3
Chickamauga Shoreline TVA Habitat Protection Area	54.4
Chigger Point TVA Habitat Protection Area	15.3
Eagle Roost TVA Habitat Protection Area	9.8
Eaves Bluff TVA Habitat Protection Area	3.7
Fairview Slopes TVA Habitat Protection Area	191.7
Grasshopper Creek TVA Habitat Protection Area	202.1
Johnson Bottoms TVA Habitat Protection Area	40.4
Murphy Hill TVA Habitat Protection Area	195.6
Possum Creek TVA Habitat Protection Area	78.3
Soddy Creek TVA Habitat Protection Area	35.8
Three B TVA Habitat Protection Area	45.4
Ware Branch Bend TVA Habitat Protection Area	50.2
Other Managed Areas on TVA Lands	
Big Ridge Registered State Natural Area	202.4
Blythe Ferry - Land Trust Of TN Conservation Easement	69.1
Blythe Ferry State Wildlife Observation Area	416.1
Blythe Ferry Wildlife Management Area	356.9
Booker T Washington State Park	357.6
Buckner 1936/Raht Ferry Road Cave	6.5
Chickamauga Reservoir State Mussel Sanctuary	1374.1
Chickamauga Wildlife Management Area	3489.2
Goose Club	90.3
Hamilton County Park	322
Harrison Bay State Park	1844.4
Hiwassee Refuge State Wildlife Management Area	8054
Ledford Island Wildlife Management Area	99.3
Murphy Slough Protection Planning Site	190.8
Nickajack Reservoir State Mussel Sanctuary	777.1
North Chickamauga Creek Greenway	140.3
River Ridge Farms Conservation Easement - Land Trust For TN	154.1

Soddy Municipal Park	62.7
Sugar Creek State Wildlife Observation Area	239.1
Trail Of Tears (Section)	5
University Of Tennessee Friendship Forest	600
Yuchi Wildlife Management Area	2364.5

Table D-51. Natural Areas Managed by All Entities – Fort Loudoun Reservoir

Natural Area	Acres
Other Managed Areas on TVA Lands	
Admiral Farragut Park	68.0
Anchor Park	11.0
Carl Cowan Park	30.5
Concord Cove Park	29.5
Concord Park	570.0
Concord Point Park	11.9
Farragut Park	37.0
Fort Loudoun State Wildlife Management Area	1242.7
Ft. Loudoun Reservoir Reservation	14005.2
Holston River Park	44.0
I.C. King County Park	189.8
Keller Bend	18.4
Lake Front Rd Park	8.3
Lenoir City Park	47.6
Louisville Park	20.1
Lyons Bend Rd Park	46.3
Maloney Rd Park	15.7
Marine Park	2.8
Rogers Island Rd Park	19.1
Sequoyah Hills Park	75.1
Volunteer Landing Park	11.1
Watts Bar Reservoir Reservation	43561.5
Wrights Ferry Rd Park	16.2

Table D-52. Natural Areas Managed by All Entities – Great Falls Reservoir

Natural Area	Acres
Other Managed Areas on TVA Lands	
Center Hill Lake - Us Army Corps Of Engineers	39704.2
Great Falls Reservoir Reservation	1300.9
Rock Island State Park	1208.9

Table D-53. Natural Areas Managed by All Entities – Kentucky Reservoir

Natural Area	Acres
TVA Natural Areas	
Alley Bluff TVA Habitat Protection Area	71.0
Blood River TVA Habitat Protection Area	146.3
Clendenin Creek TVA Habitat Protection Area	23.2
Crooked Creek Cemetery TVA Small Wild Area	50.4
Henson Branch Rare Histosol Wetland TVA Habitat Protection Area	89.9
Jennings Bluff Proposed TVA Habitat Protection Area	88.1
Lady's Bluff TVA Small Wild Area	44.7
Mccuiston Woods TVA Habitat Protection Area	51.3
Paint Rock Bluff TVA Small Wild Area	69.7
Panther Creek Swamp TVA Habitat Protection Area	144.2
Tribble Woods TVA Habitat Protection Area	33.9
Tupelo Gum Swamp TVA Habitat Protection Area	65.3
Wilkinson Pond Slough Proposed TVA Habitat Protection Area	53.9
Other Managed Areas on TVA Lands	
Bailey Fork Wetland - TWRA	158.5
Bear Creek Rookery State Natural Area	76.4
Beechy Creek Wildlife Management Area	97.0
Big Sandy Municipal Park	20.3
Britton Ford Natural Area	574.9
Calloway County Seep Swamp Potential National Natural Landmark	254.5
Camden State Wildlife Management Area	3721.7
Camp Mack Morris Boy Scout Camp	214.9
Cypress Creek Swamp (Marshall County)	1221.3
Cypress Creek Swamp	148.1
Cypress Creek Swamp Fee - The Nature Conservancy - Fee Ownership	424.1
Cypress Pond Refuge - TWRA	585.5
Devil's Backbone Biosphere Reserve Core Area	11021.1
Duck River Bottoms State Wildlife Observation Area	4655.2
Eva Park	23.5
Fluted Kidneyshell Designated Critical Habitat	28571.2
Hancock Biological Station	9.0
Harmon Creek Wildlife Management Area	934.6
Holly Fork Wildlife Management Area	173.5
Hugh Link Farm Site State Archaeological Area	530.0
Johnsonville State Historic Area	544.0

Natural Area	Acres
Kenlake Resort State Park	1195.0
Kentucky Dam State Nongame Wildlife Natural Area	95.1
Kentucky Dam Village State Resort Park	1365.9
Kentucky Lake Wildlife Management Area (Ky)	4131.8
Kentucky Reservoir Mussel Management Study Area	1703.5
Kentucky Reservoir No. 1 State Mussel Sanctuary	186.6
Kentucky Reservoir Reservation	135395.6
Land Between The Lakes National Recreation Area - Ownership Boundaries	0.0
Land Between The Lakes Wildlife Management Area - TWRA	64028.6
Lick Creek Wildlife Management Area	88.7
Link Farm	530.0
Mousetail Landing State Park	1306.0
Nathan Bedford Forrest State Historical Area/Park/Wildlife Management Area	2720.4
New Hope State Wildlife Management Area	91.9
Paint Rock Bluff	68.4
Paris Landing State Park	789.2
Perryville Wildlife Management Area	148.9
Rabbitsfoot Designated Critical Habitat	11948.6
Slabside Pearlymussel Designated Critical Habitat	23519.0
Tennessee National Migratory Wildlife Refuge/Big Sandy Unit	21546.5
Tennessee National Migratory Wildlife Refuge/Busseltown Unit	3426.1
Tennessee National Migratory Wildlife Refuge/Duck River Unit	26765.5
Tennessee National Wildlife Refuge	51918.2
Tennessee River Outstanding State Resource Water	1659.2
West Sandy State Wildlife Management Area	4520.7
White Oak Wildlife Management Area	6542.9

Table D-54. Natural Areas Managed by All Entities – Nickajack Reservoir

Natural Area	Acres
TVA Natural Areas	
Huff Branch TVA Habitat Protection Area	20.7
Little Cedar Mountain TVA Habitat Protection Area	319.2
Marion Bridge TVA Habitat Protection Area	111.2
Nickajack Cave TVA Habitat Protection Area/Small Wild Area	401.9
Nickajack Oak Wetland TVA Habitat Protection Area	47.9
Raccoon Mountain Pump Storage TVA Wildlife Observation Area	646.8
Shellmound Road Bluff TVA Habitat Protection Area*	99.3
Other Managed Areas on TVA Lands	
Aetna Slopes East Tenn. River Gorge Trust Tract	563.3
Aetna Slopes North Tenn. River Gorge Trust Tract	750.7
Bowater Property Conservation Easement	1398.9
Cummings Lake, Tenn. River Gorge Trust	277.2
Grant Tract Tenn. River Gorge Trust	912.6
Guntersville Reservoir State Mussel Sanctuary	2789
Little Cedar Mountain Tenn. River Gorge Trust Tract	806.9
Marion County Park	23.6
Nickajack Cave State Wildlife Observation Area	401.9
Pryor Property - Tennessee River Gorge Trust	266.5
Renfro Property Conservation Easement	103.4
Tennessee River Gorge	29407.8
Tennessee River Gorge Trust Easement	228.8

Table D-55. Natural Areas Managed by All Entities – Normandy Reservoir

Natural Area	Acres
TVA Natural Areas	
Short Springs TVA Small Wild Area	71.3
Other Managed Areas on TVA Lands	
Duck River State Mussel Sanctuary	6338.5
Jennings Farm - Conservation Easement Land Trust Of TN	277.3
Normandy Dam Wildlife Management Area	779.4
Normandy Reservoir Reservation	7890.1
Normandy Wildlife Management Area	779.4

Table D-56. Natural Areas Managed by Other Entities – Wheeler Reservoir

Natural Area	Acres
TVA Natural Areas	
Clark Bluff TVA Habitat Protection Area	20.4
Clarksville Mountain TVA Habitat Protection Area	37.5
Cotaco Creek TVA Small Wild Area	44.0
English Ivy TVA Small Wild Area	20.5
Long Oak Forest TVA Small Wild Area	100.8
Muddy Bottoms TVA Habitat Protection Area	287.5
Narrow Bluff TVA Habitat Protection Area	4.2
Pryor Branch TVA Habitat Protection Area	7.9
Other Managed Areas on TVA Lands	
Beaverdam Creek Swamp National Natural Landmark	588.2
Bluff City FCER Research Natural Area	11.0
Decatur Municipal Boat Harbor	10.5
Fluted Kidneyshell Designated Critical Habitat	28571.2
Guntersville Dam Tailwater Restricted Mussel Harvest Area	257.7
Hobbs Island Restricted Mussel Harvest Area	362.5
Joe Wheeler State Park	2441.4
Limestone County Park	102.3
Madison County Boat And Harbor Park	384.8
Mallard-Fox Creek Wildlife Management Area Alabama	3909.0
Marshall Space Flight Center (NASA)	1876.9
Point Mallard Park	409.0
Redstone Arsenal Military Reservation	38385.2
Slabside Pearlymussel Designated Critical Habitat	23519.0
Swan Creek State Wildlife Management Area	9515.9
Wheeler Dam Tailwater Restricted Mussel Harvest Area	2028.6
Wheeler National Wildlife Refuge	37553.9
Wheeler Reservoir Reservation	95205.6

Table D-57. Natural Areas Managed by Other Entities – Wilson Reservoir

Natural Area	Acres
TVA Natural Areas	
Old First Quarters TVA Small Wild Area	26.2
Other Managed Areas on TVA Lands	
Muscle Shoals National Recreation Trail	48.6
Muscle Shoals Reservation	2427.5
Veterans Park	95.7
Wilson Dam Tailwater Restricted Mussel Harvest Area	1365.5

Table D-58. Natural Areas within 3 Miles of Chickamauga Reservoir

Natural Areas
Amnicola Marsh State Wildlife Refuge
Big Soddy Creek Gulf
Calvert Property – Land Trust Of TN Conservation Easement
Chickamauga And Chattanooga National Military Park
Circle G Conservation Easement – Land Trust For TN
Circle V Farm Conservation Easement - Land Trust For TN
City Of Chattanooga – Blueway/Trail Easement
Cumberland Trail
Cumberland Trail State Park
Grassy Creek Cave
Grassy Creek Cave Protection Planning Site
Greenway Farm City Park Chattanooga
Gunstocker Glade
Houston Donation Conservation Easement – Land Trust For TN
Icses TVA Project (Carbon Offset Sites)
Kinzalow Property – Conservation Easement Land Trust Of TN
Kinzlow Property- Conservation Easement
Laurel Snow Class State Natural Area
North Chickamauga Creek Oak Forest
North Chickamauga Creek Wildlife Management Area
Poe Branch Wetland – TWRA
Standifer Gap Marsh Conservation Easement – Land Trust For TN
Volunteer Army Ammunition Plant
Watts Bar Reservoir Reservation
Watts Bar State Wildlife Management Area

Table D-59. Natural Areas within 3 Miles of Fort Loudoun Reservoir

Natural Areas – Fort Loudoun Reservoir
Alcoa Marsh- Registered State Natural Area
Browder Woods Registered State Natural Area
Cruze Farm Conservation Easement – Land Trust For Tennessee
Dean's Woods
Farragut Wetland Registered State Natural Area
Fluted Kidneyshell Designated Critical Habitat
Forks Of The River Wildlife Management Area
French Broad River
Hall Bend TVA Habitat Protection Area
Holston River
Ijams Nature Center
Little Tennessee River
Luxmore Drive Natural Area
Marble Springs Creek Stream Mitigation Site
Marble Springs State Historic Site & Arboretum
Meads Quarry – Ijams Nature Center
River Bluff Wildlife Area
Tellico Reservoir Reservation
Turkey Creek
Turkey Creek Wetland Park
University Of Tennessee Farm Woodlot
University Of Tennessee Gardens
Ut Organic Farms Unit

Table D-60. Natural Areas within 3 Miles of Great Falls Reservoir

Natural Areas – Great Falls Reservoir
Big Bone Cave Designated State Natural Area
Bridgestone - Firestone Centennial Wilderness Wildlife Management Area
Calfkiller River
Cane Creek
Caney Fork
Centennial Wilderness
Center Hill Reservoir Reservation
Charles Creek
Collins River
Fall Creek Falls State Park
Hickory Valley Wetlands
Mountain Creek
Mud Creek Swamp
Rocky River
Scotts Gulf
White County Lumber Company Conservation Easement - Land Trust For TN

Table D-61. Natural Areas within 3 Miles of Kentucky Reservoir

Natural Areas – Kentucky Reservoir
Ashworth Property – Land Trust Of TN Conservation Easement
Barkley Lake Wildlife Management Area
Barkley Reservoir Reservation
Baugus Cave Protection Planning Site
Beason Creek Wetland – TWRA
Beech River Wildlife Management Area
Blockhouse Hollow Biosphere Reserve Core Area
Blood River Seeps KY State Nature Preserve
Carroll Cabin Barrens Designated State Natural Area
Chambers Creek Wetland – TWRA
Crab Creek Biosphere Reserve Core Area
Crooked Creek Stream Mitigation Site
Cumberland River
Devil's Backbone Registered State Natural Area
Dividing Ridge Saf/Fcer Research Natural Area
Eagle Creek State Wildlife Management Area
Environmental Education Biosphere Reserve Core Area
Grasslands Reserve Program
Gumdale Silurian Glade Site
Higgins Bay Biosphere Reserve Core Area
Hurricane Creek Farms – Conservation Easement Land Trust Of TN
Johnsonville Coal Generating Facility
Kentucky Reservoir No. 2 State Mussel Sanctuary
Land Between The Lakes Area Biosphere Reserve
Land Between The Lakes Environmental Education Area
Land Between The Lakes Potential National Natural Landmark
Land Between The Lakes/KY State Wildlife Management Area
Nine Acre Glade Protection Planning Site
Nine-Acre Glade Complex
Pickwick Landing State Park
Pilot Knob Potential National Natural Landmark
Pond Hollow Biosphere Reserve Core Area
Saltillo Boat Ramp To Tennessee River – TWRA
Savannah Bridge Boat Access – TWRA
Shiloh National Battlefield
Walker Branch Hills Designated State Natural Area

Table D-62. Natural Areas within 3 Miles of Nickajack Reservoir

Natural Areas – Nickajack Reservoir
Alexander Property
Amnicola Marsh State Wildlife Refuge
Baxtor Property
Big Forks Tree Farm Conservation Easement – State Of TN
Big Ridge Registered State Natural Area
Big Ridge TVA Small Wild Area
Bill Mcnabb Gulf (In Prentice Cooper St. Forest)
Blowing Springs Branch/Chestnut Bridge Hollow Woods Protection Planning Site
Bluff Point/Hicks Mountain
Booker T Washington State Park
Boyd Farm – TVA Property
Burns Island – TVA
Cash Property – TN River Gorge Conservation Easement
Chattanooga Arboretum And Nature Center At Reflection Riding
Chickamauga And Chattanooga National Military Park
City Of Chattanooga – Blueway/Trail Easement
Cummings Lake
Cummins Cove Wildlife Management Area
Dry Creek Ravine
Edwards Point
Edwards Point Sandstone Outcrops
Ellis Spring-Shakerag
Fairview Slopes TVA Habitat Protection Area
Greenway Farm City Park Chattanooga
Hicks Gap Designated State Natural Area
Kelly's Ferry Slopes Tenn. River Gorge Trust
Little Sequatchie River
Lovell Field Wildlife Management Area
Maclellan Island Audubon Society Wildlife Refuge
Mullens Cove Slopes
Nickajack Reservoir State Mussel Sanctuary
North Chickamauga Creek Greenway
North Chickamauga Creek Oak Forest
North Chickamauga Creek Wildlife Management Area
Pan Gap Slopes
Parker Gap Cove
Piney Branch Bottomland
Pot Point Tenn. River Gorge Trust Tract
Prentice Cooper State Forest & Wildlife Management Area

Natural Areas – Nickajack Reservoir
Rutledge Property
Rymer Property
Sequatchie River
Short Leaf Pine Flat
Shortleaf Pine Flat Protection Planning Site
Signal Point State Wildlife Observation Area
Slabside Pearlymussel Designated Critical Habitat
Smith Property Conservation Easement–Tennessee River Gorge
Standifer Gap Marsh Conservation Easement - Land Trust For TN
Sulphur Branch Protection Planning Site
Tennessee Wildlife Center
Three B TVA Habitat Protection Area
TVA Mcnab Slopes (Mou With Tenn. River Gorge Trust)
University Of Tennessee Chattanooga Campus/Arboretum
Volunteer Army Ammunition Plant
Williams Island State Archaeological Area

Table D-63. Natural Areas within 3 Miles of Normandy Reservoir

Natural Areas – Normandy Reservoir
AEDC And Woods State Wildlife Management Area
AEDC Highway 55 Oak Barren
AEDC Military Reservation
AEDC West Fork Huckleberry Creek Barrens
Arnold Engineering Development Center (AEDC)
Bedford State Fishing Lake
Old Stone Fort State Park/Ppnl/State Archaeological Area
Rutledge Falls

Table D-64. Natural Areas within 3 Miles of Wheeler Reservoir

Natural Areas – Wheeler Reservoir
Bell Mountain Bell Road Property North Al Land Trust
Bell Mountain Hobbs Road North Al Land Trust Property Floodway
Blowing Springs Cave Tract – Forever Wild Alabama
Cave Mountain TVA Small Wild Area
Echota Cherokee
Elk River
Green Mountain–- North Alabama Land Trust
Hambrick Hollow TVA Habitat Protection Area
Honey Bluff TVA Habitat Protection Area
Honeycomb Creek TVA Small Wild Area
Mathis Mountain Conservation Easement - North Alabama Land Trust
North Alabama Land Trust – 32 Percent Reserved Land
North Alabama Land Trust – Clark Property
North Alabama Land Trust – Conservation Easement
North Alabama Land Trust – Grand Lake Property
North Alabama Land Trust – Monte Vedra Road Property
North Alabama Land Trust – Tract 1
Paint Rock River Project
Rabbitsfoot Designated Critical Habitat
Southeastern Cave Conservancy – Glove Pit Cave Preserve

Table D-65. Natural Areas within 3 Miles of Wilson Reservoir

Natural Areas – Wilson Reservoir
Billingsley-Mcclure Shoal Creek Preserve –Forever Wild Alabama
Joe Wheeler State Park
Shoal Creek Nonessential Experimental Population
Wheeler Dam Tailwater Restricted Mussel Harvest Area
Wheeler Reservoir Reservation