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FINAL ENVIRONMENTAL IMPACT STATEMENT

DOUGLAS AND NOLICHUCKY TRIBUTARY RESERVOIRS LAND MANAGEMENT PLAN

Cocke, Greene, Hamblen, Jefferson, and Sevier Counties
Tennessee

VOLUME I

PREPARED BY:
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Final Environmental Impact Statement **August 2010**

Proposed project: Douglas and Nolichucky Tributary Reservoirs Land Management Plan
Cocke, Greene, Hamblen, Jefferson, and Sevier counties, Tennessee

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Abstract: The Tennessee Valley Authority (TVA) is developing a Douglas and Nolichucky Tributary Reservoirs Land Management Plan to guide land use decisions on TVA reservoir lands located along two tributary reservoirs in the northeast Tennessee Valley region (approximately 3,191 acres). The goal for the reservoir planning effort is to provide a clear vision of how TVA will manage TVA public lands surrounding these reservoirs and identify lands for specific uses. This process relies heavily on public input regarding land uses and on how these lands should be managed for future uses. As part of the National Environmental Policy Act (NEPA) process, TVA issued a draft environmental impact statement in March 2010 and held a public meeting on April 6, 2010, in Newport, Tennessee. TVA is considering three alternatives for managing public land under its control around Douglas and Nolichucky reservoirs. The No Action Alternative would continue the existing method of land use planning, while the two action alternatives would apply a system of allocation zones that is based upon other recent TVA land plans and is consistent with current TVA policies. The Modified Land Use Alternative is TVA's preferred alternative and the environmentally preferred alternative. The preferred alternative provides suitable opportunities for developed recreation, conservation of natural resources, and management of sensitive resources. Further, all parcels with identified sensitive resources would be allocated to the most protective land use zone, whereas only some of those parcels would be zoned for sensitive resource management under the other alternatives.

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SUMMARY

PURPOSE OF AND NEED FOR ACTION

The Tennessee Valley Authority (TVA) manages its 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 Tennessee Valley. TVA is proposing to prepare a reservoir land management plan (RLMP) for Douglas and Nolichucky tributary reservoirs located in northeast Tennessee. The Douglas and Nolichucky Tributary Reservoirs Land Management Plan (DNTRLMP) would include plans for all public lands under TVA stewardship around these two reservoirs, which totals about 3,191 acres.

The DNTRLMP would be designed to guide land use approvals, private water use facility permitting, and resource management decisions. The Holston-Cherokee-Douglas Watershed Team would use the DNTRLMP, along with TVA policies and guidelines, to manage resources and to respond to requests for the use of TVA public land. Proposed RLMP alternatives allocate land into broad categories or “zones” including Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial, Developed Recreation, and Shoreline Access. In the DNTRLMP, land use allocations would be determined with consideration of the social, economic, and environmental conditions around the reservoirs.

The DNTRLMP consists of three volumes. Volume I is the environmental impact statement, which addresses the environmental impacts of implementing the DNTRLMP. Volumes II and III contain individual RLMPs for Douglas and Nolichucky reservoirs, respectively. The RLMPs contain detailed descriptions of the environment around each reservoir, as well as descriptions of each parcel of land addressed in the plans.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

TVA is considering three alternatives for managing public land under its control around Douglas and Nolichucky reservoirs. The No Action Alternative would continue the existing method of land use planning, while the two action alternatives would apply a system of allocation zones similar to other recent TVA land plans and consistent with current TVA policies. Alternatives were developed using information from multidisciplinary TVA technical and advisory teams, as well as comments from the public obtained during the scoping process described in Volume I, Chapter 2.

Under each of the alternatives, the following conditions would apply:

TVA would continue to conduct environmental reviews to address site-specific issues prior to the approval of any proposed development or activity on public land. Future activities and land uses will be guided by the TVA Land Policy. TVA land use allocations are not intended to supersede deeded landrights or land ownership.

Parcels allocated to Industrial (Zone 5) and Shoreline Access (Zone 7) uses remain the same under all alternatives.

Alternative A - No Action Alternative. Under the No Action Alternative, TVA would not implement an RLMP. Douglas Reservoir would continue using the Forecast System

developed in 1965, which allocated parcels to 13 land use categories, and Nolichucky Reservoir would remain unplanned.

Approximately 408 acres around the two reservoirs are uncommitted parcels (i.e., parcels having no easement, lease, or other land use agreement) that would not be planned but would be managed in accordance with the TVA Land Policy, the Shoreline Management Policy, and other administrative considerations. About 34 percent of reservoir lands would remain allocated to the equivalent of Project Operations, about 43 percent to the equivalent of Natural Resource Conservation, and 23 percent to the equivalent of Developed Recreation (Table S-1). No parcels would be allocated to Sensitive Resource Management.

Table S-1. Total Number of Acres Proposed in Each Allocation Zone Under Alternatives A, B, and C

Zone	Alternative					
	A		B		C	
	Acres	%	Acres	%	Acres	%
2 - Project Operations	1,078	33.8	1,078	33.8	1,078	33.8
3 - Sensitive Resource Management	0	0	621	19.5	713	22.3
4 - Natural Resource Conservation	1,359	42.6	980	30.7	971	30.4
5 - Industrial	3	0.1	3	0.1	3	0.1
6 - Developed Recreation	738	23.1	496	15.5	413	13.0
7 - Shoreline Access	13	0.4	13	0.4	13	0.4
Total	**3,191**	**100.0**	**3,191**	**100.0**	**3,191**	**100.0**

Alternative B - Proposed Land Use Alternative. Under Alternative B, TVA would prepare RLMPs for Douglas and Nolichucky reservoirs. To develop proposed parcel allocations, TVA reviewed existing and newly collected field data on the lands being planned. The physical capability of each parcel for supporting potential suitable uses was assessed. TVA also reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. The planning team honored all existing commitments (i.e., existing leases, licenses, and easements).

Under Alternative B, the 2,783 acres previously committed to a specific use would be allocated to land use zones consistent with that specific land use. The remaining uncommitted 408 acres (26 parcels) are proposed to be allocated to Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation), or Zone 6 (Developed Recreation). Overall, about 50 percent of reservoir land would be allocated to Natural Resource Conservation or Sensitive Resource Management. About 34 percent of reservoir land would be allocated to Project Operations, about 16 percent would be allocated to Developed Recreation, and the remainder (less than 1 percent) would be allocated to Zone 7 (Shoreline Access) or Zone 5 (Industrial).

Alternative C - Modified Land Use Alternative. Under Alternative C, TVA would prepare RLMPs for Douglas and Nolichucky reservoirs. To develop proposed parcel allocations, TVA implemented the planning process described above under Alternative B and incorporated public comments, additional field inspections and staff recommendations, and other information obtained during the scoping process. Under Alternative C, the 2,783 acres of committed lands would be allocated to land use zones consistent with the existing land use. Similar to Alternative B, the remaining uncommitted 408 acres (26 parcels) are proposed to be allocated to Project Operations, Sensitive Resource Management, Natural Resource Conservation, or Developed Recreation. Alternative C, as compared to Alternative B, represents changes in land use zones for 16 parcels. With these refinements, about 53 percent of reservoir land would be allocated to Sensitive Resource Management and Natural Resource Conservation, and about 13 percent would be allocated to Developed Recreation. The amount of land allocated to Project Operations, Industrial, or Shoreline Access would remain the same as under Alternative B. Under Alternative C, seven parcels that contain high-quality wetlands and sensitive natural resources would be allocated to Zone 3, which provides more protection than the allocation to Zones 4 or 6 under Alternative B.

AFFECTED ENVIRONMENT

Douglas and Nolichucky reservoirs are located in the northeast corner of Tennessee on the French Broad and Nolichucky rivers in Greene, Hamblen, Sevier, Jefferson, and Cocke counties in Tennessee. A total of 597 miles of shoreline surrounds these reservoirs, but the amount of shoreline directly owned and managed by TVA differs greatly between the two reservoirs, with 19 of the 36 miles of Nolichucky Reservoir shoreline being owned and managed by TVA, while only 69 of the 561 miles of Douglas Reservoir shoreline are owned and managed by TVA.

Existing land uses around the reservoirs include TVA project operations, recreation, residential, and undeveloped areas. Fifteen high-quality developed recreation facilities such as Kinser Park, Sevier County Park, and Douglas Dam Reservation are provided on TVA-managed lands, which include campgrounds, marinas, developed boat launches/ramps, picnic areas, swimming beaches, a fishing pier, and two golf courses. TVA-managed lands around the reservoirs also offer abundant opportunity for dispersed recreation.

Deciduous forests and woodlands cover approximately 35 percent of the landscape in the lower French Broad River watershed. About 8 percent of the land cover is evergreen forests and woodlands. Wetlands comprise about 2 percent of land cover, and about 29 percent is herbaceous and agricultural. In the Nolichucky River watershed, about 25 percent of the landscape is deciduous forests, and about 4 percent of the land cover is evergreen forests and woodlands. Wetlands comprise about 1 percent of land cover, and about 59 percent is herbaceous and agricultural, which is the largest segment. Wetlands on and near Douglas Reservoir are primarily riverine/floodplain forests located in the floodplains of rivers and streams. Small areas of emergent/scrub-shrub wetlands (typically less than 0.10 acre) are associated with reservoir shorelines and coves. Douglas Reservoir has extensive areas of mudflats in Rankin Bottoms and in the main stem of the reservoir near the Interstate-40 bridge. Though the Nolichucky Reservoir is much smaller in area than Douglas Reservoir, it contains wetland habitats that are larger in size and more ecologically diverse. Siltation associated with historical upstream mining activities has created extensive and unique wetland types as sediment has filled in the reservoir.

Wetlands below Nolichucky Dam are typically more riverine and associated with islands and floodplains.

No federally listed as threatened or endangered plant species, or critical habitat designated for plant species, have been recorded within 5 miles of Douglas or Nolichucky reservoirs. One federally listed species is known from the surrounding counties, but neither individuals nor habitat suitable for that species was observed during field surveys. Four plant species listed by the State of Tennessee are known to occur within 5 miles of the reservoirs, including three state-listed species identified on Nolichucky parcels during field surveys.

The variety of landforms, soils, climate, and geology across the Ridge and Valley ecoregion support an extremely diverse assemblage of terrestrial animals. 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. Although three federally listed terrestrial animal species and a federally protected terrestrial animal species are known from the Douglas and Nolichucky reservoirs area, there are no known occurrences of those species on reservoir parcels. The federally listed as threatened piping plover has been observed as a casual visitor at Rankin Bottoms Wildlife Management Area (WMA) on Douglas Reservoir during the shorebird fall migration season. The gray bat, a species federally listed as endangered, potentially forages over the reservoirs, but no roost habitat (caves) suitable for the gray bat is known on reservoir parcels. The federally listed as endangered Indiana bat also roosts in caves during the winter and typically forms summer roosts under the bark of dead or dying trees. Although suitable summer roosting habitat exists throughout the study area, Indiana bats have not been found in any known area caves. Federally protected bald eagles build nests on Douglas Reservoir and downstream of the dam, but no nests are currently known on TVA lands. Two terrestrial animal species listed by the State of Tennessee occur within 3 miles of the reservoirs.

Two federally listed as endangered, one federally listed as threatened, and three candidates for federal listing aquatic species are known to occur near Douglas and Nolichucky reservoirs. There are historic records of four other federally listed mussels near the reservoirs. In addition to the federally listed species, five state-listed fish have been recorded within the watersheds of the reservoirs.

TVA conducted surveys for archaeological sites along portions of the Nolichucky River. Additionally, TVA evaluated results of previous surveys conducted along Douglas and Nolichucky reservoirs. TVA-managed land around the reservoirs has not been systematically and completely surveyed for cultural resources. However, a number of archaeological sites have been identified on both the Douglas and Nolichucky reservoirs. Some sites are located below the full summer pool elevation. Certain sites are eligible or potentially eligible for listing in the National Register of Historic Places. Results of field surveys indicated no historic structures are located on uncommitted parcels.

Only one natural area is managed by the TVA Natural Areas Program on either Douglas or Nolichucky reservoirs. Seven managed areas are on or immediately adjacent to Douglas Reservoir and include Trotter Bluff TVA Small Wild Area, the Lower French Broad and Lower Holston River Nonessential Experimental Population Status Area, the French Broad River (one segment Nationwide River Inventory-listed and one segment designated a State Scenic River), Rankin Bottom State WMA, Henderson Island Refuge, Dandridge Municipal Park, and Sevier County Park.

The visual resources of Douglas and Nolichucky reservoirs include islands, floodplains, secluded coves, and wetlands that are framed by high wooded ridges. Since the scenic features of the landscape are not limited by land boundaries, the attractive landscape character extends across TVA public and private land alike. The natural elements together with the communities and other cultural development provide a scenic, rural countryside.

Water quality in Douglas Reservoir is typical of impoundments, which convert typical riverine environments into lakelike conditions, thereby effecting change to many aspects of the aquatic environment, such as water temperature, dissolved oxygen (DO), nutrient dynamics, algal productivity, and aquatic life, in the reservoirs themselves and the rivers downstream. The length of time water is retained in a reservoir (residence time) is about 45 days, which is one of the primary mechanisms influencing these changes. Reservoir ecological health ratings for Douglas are typically “poor” for DO because of low concentrations, chlorophyll concentrations are “good to fair” in the forebay to “poor” in midreservoir, and the sediment is rated “good to fair.”

Nolichucky Reservoir extends about 6 miles upstream from the dam. Because siltation associated with historical upstream mining activities has filled in the reservoir, creating sediment-related problems, power production has stopped. In 1995, the gates were permanently closed, and water now flows unregulated over the spillway at elevation 1,240.9 feet. The water volume in the remaining reservoir pool is estimated to be about 1,716 acre-feet below elevation 1,240.9 feet, which is probably maintained by continued scouring in the active river channel. The average residence time in Nolichucky Reservoir is less than one day. Because it is not an active reservoir, no reservoir ecological health ratings are taken for Nolichucky; however, basic water quality information is routinely collected at intervals on the Nolichucky River downstream.

Aquatic monitoring in the Nolichucky River indicates primarily fair ecological conditions, ranging from poor to good. Results of TVA’s Reservoir Vital Signs Monitoring Program in Douglas Reservoir indicate fair to poor conditions. Sport Fishing Indexes (SFI) typically indicate fair to good ratings on Douglas Reservoir. Nolichucky Reservoir is not sampled for an SFI score, but the Nolichucky River is reported to support one of the best warm water sport fisheries in the area.

Several segments of the French Broad and Nolichucky rivers systems are listed by the States of Tennessee and North Carolina as water-quality impaired under Section 303(d) of the Clean Water Act. The state-designated impaired waters include the Nolichucky and Douglas reservoirs and their tailwaters due to a loss of biological integrity from siltation. Also included are other segments of the Nolichucky River, streams or segments of streams flowing into the Nolichucky River, and streams flowing into Douglas and its tailwater. The most common sources of stream impairment are nonpoint source pollution from agriculture and some urban runoff. Reasons for the impaired designation in the Douglas tailwater include flow alteration, low DO concentrations, and thermal modification, with the source being the releases from Douglas Dam.

The State of Tennessee has issued a precautionary advisory for the consumption of largemouth bass from the upper reach of Douglas Reservoir because of elevated mercury concentrations. There is no State of Tennessee fish consumption advisory for the Nolichucky watershed. There is a statewide fish consumption advisory in North Carolina due to mercury concentrations, which includes the part of the Nolichucky River watershed

in North Carolina. There are no state advisories against swimming in either Douglas or Nolichucky reservoirs.

All of the counties containing Douglas and Nolichucky reservoirs are currently in attainment of each of the National Ambient Air Quality Standards. Under ozone standards expected to be updated in the future, some of these counties are likely to be designated nonattainment for ozone. There are four Class I areas (specially protected) within 100 kilometers (62 miles) of the reservoirs, including the Great Smoky Mountains National Park, Shining Rock Wilderness, Joyce Kilmer/Slickrock Wilderness, and Linville Gorge.

The 2000 census population of the five counties containing Douglas and Nolichucky reservoirs is estimated to be about 300,000. Between 1980 and 2008, Jefferson and Sevier counties grew much more rapidly than either the state or the nation, while the other counties have grown more slowly. Sevier County is projected to continue to grow much faster than the nation and the state between now and 2020. Except for Hamblen County, the rural population share in the area is well above the Tennessee average, which is somewhat higher than the national average. The population is predominantly non-Hispanic white, with a low average minority population compared to state and national averages.

The reservoirs are located in a relatively low-income area. Except for Sevier County, which is at the national average, the poverty levels are slightly higher than the state of Tennessee average and well above the national average. In 2008, the unemployment rate in the area was higher than the national and Tennessee rates.

ENVIRONMENTAL CONSEQUENCES

Under any of the alternatives, potential impacts to sensitive resources such as federally listed species, cultural resources, and wetlands would be identified during project-specific evaluations.

None of the three alternatives involve changes in existing land use commitments (e.g., easements, leases). About 13 percent of Douglas and Nolichucky reservoir lands are uncommitted. The primary difference between the No Action Alternative and Action Alternatives B and C are the reduction of lands allocated to Zone 6 (Developed Recreation) and the increase in lands allocated to the combination of Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). These changes reflect application of a land use zone that is more consistent with current uses. The primary impact of the No Action Alternative is the absence of a comprehensive plan to guide consideration of land use requests. Under Alternative A, TVA parcels would not be allocated to a current land use zone; therefore, complete alignment with current TVA policies would not occur. Over the long term, absence of comprehensive reservoir land management plans may result in land uses that do not fully optimize the goals of multiple use and stewardship to which TVA strives. Under the action alternatives, there would be no adverse effects to land use. However, there would be minor beneficial effects of long-term, comprehensive land plans.

Among all three alternatives, the variation in the combined amount of land available for developed and dispersed recreation opportunities is small. Although the No Action Alternative (Alternative A) includes the greatest amount of land designated for developed recreation (23 percent), the action alternatives contain more acres available for dispersed recreation. Adoption of Alternative A would result in minor negative effects to dispersed recreation. Under Alternative A, parcels were placed in the equivalent land use zone for

comparison with the action alternatives. Several parcels were forecasted as public recreation and were therefore placed in the equivalent land use zone as Zone 6 (Developed Recreation). Compared to Alternative A, the amount of land designated for developed recreation under Alternative B decreases due to further evaluation of those parcels placed into an equivalency zone. However, between the action alternatives, Alternative B would have slightly more land available for Zone 6 (Developed Recreation) and slightly less for dispersed recreation. Alternative C has the least amount of land designated for developed recreation due to conclusions based on field assessments that indicate the parcel is either unsuitable for developed recreation or sensitive natural resources occur on the parcel. Selection of Alternative B or C would not directly affect developed recreation because there is land designated for recreation in Alternative A that is unsuited for developed recreation. However, selection of Alternative B or C would result in minor effects to developed recreation due to lost opportunity for future development of recreational facilities. Conversely, selection of either action alternative would beneficially affect dispersed recreation.

Under any of the alternatives, potential future ground disturbance and development has potential for impacts to floodplain values, wetlands, and prime farmland. Alternative A involves the greatest potential for future ground disturbance and development. Although both action alternatives allocate substantially more land to conservation than Alternative A, there is potential for ground disturbance under the action alternatives. However, under any alternative, any development proposed in the 100-year floodplain would be subject to the requirements of Executive Order (EO) 11988 (Floodplain Management), and impacts to floodplain values would be insignificant. Adverse effects to wetlands from ground disturbance would be mitigated under EO 11990 (Protection of Wetlands) and would be insignificant. Likewise, proposed actions involving the transfer of land for development could require project-specific evaluation of impacts to prime farmland. Under any of the alternatives, adverse impacts to prime farmland would be minor.

Because the potential for ground disturbance is greatest under Alternative A, the potential for adverse impacts to archaeological sites and historic structures is greatest under that alternative. Because the amount of land allocated to natural resource conservation and sensitive resource protection would be greatest under Alternative C, the potential for impacts to archaeological sites and historic structures is slightly lower than under Alternative B. Prior to implementing any future projects on Douglas or Nolichucky reservoirs lands, TVA would comply with established procedures for identifying, evaluating, and avoiding or mitigating impacts to archaeological resources and historic structures. Specific procedures for addressing these cultural resources are described in a programmatic agreement (PA) between the Tennessee State Historic Preservation Officer, TVA, and the Advisory Council on Historic Preservation.

Under all three alternatives, the proposed DNTRLMP identifies lands for natural resource conservation and implements measures to mitigate impacts when projects are planned. Given the substantial amount of deciduous and evergreen forest around the reservoirs, none of the three alternatives would result in significant impacts to common terrestrial vegetation or common terrestrial wildlife. Both action alternatives would increase the amount of reservoir lands allocated to sensitive resource management and natural resource conservation, which would promote conservation of terrestrial plants and wildlife. Over the long term, allocation of lands to sensitive resource management and natural resource conservation, which limits ground disturbance, vegetation removal, and other development,

is likely to benefit terrestrial wildlife communities in the Nolichucky River and French Broad River watersheds.

Four federally listed as endangered, one federally listed as threatened, three candidates for federal listing, one federally protected, and five additional state-listed species are known to occur near Douglas and Nolichucky reservoirs. Potential impacts to listed terrestrial plants, terrestrial wildlife, or aquatic animal species include direct impacts associated with clearing and ground disturbance and indirect impacts from altering or fragmenting habitats, human visitation, spread of invasive species, and pollution and siltation of streams from erosion and ground disturbance activities. However, project-specific environmental reviews on any parcel would be preformed, and mitigation would be required when warranted.

No federally listed plants would be affected under any of the alternatives, and there would be no significant impacts to known state-listed terrestrial plant or animal species. However, the potential for impacts to state-listed plants known on Nolichucky parcels is greatest under Alternative A and lowest under Alternative C. Adoption of Alternative A may, but would not be likely to, impact gray and Indiana bats or listed aquatic species. Under the action alternatives, no federally listed terrestrial animals would be affected, and federally listed aquatic species would not likely be affected. In general, effects to listed species would be insignificant under all alternatives. However, Alternative A would have the greatest impact to listed species. Alternative B would have lesser impacts and Alternative C the least impacts.

The major source of potential adverse impacts to water quality and aquatic life are ground disturbance and associated erosion, clearing of shoreline vegetation, and storm water runoff. Based upon land use allocations, adoption of the No Action Alternative would result in the greatest potential for future development and associated ground disturbance. Conversely, under both action alternatives, a greater amount of reservoir land is allocated to sensitive resource management and natural resource conservation uses, which have low potential for ground disturbance. Consequently, the potential for impacts to water quality and aquatic life is greatest under Alternative A. The extent of impacts would be dependent on the specifics of future development. New facilities with permitted discharges would be required to meet permit limits specifically designed to protect water quality. Further, any proposed land use would be required to protect water quality through either restricted development or the commitment to use best management practices. Therefore, selection of any of the alternatives would result in insignificant impacts to water quality and aquatic life.

Existing managed areas such as natural areas and ecologically significant sites were considered during the parcel allocation process. No changes to the size, location, or character of natural areas would result under any alternative. Therefore, no adverse direct or indirect impacts to natural areas are expected under any of the alternatives. Under all three alternatives, preservation of managed areas on TVA-managed lands would beneficially contribute to the cumulative regional efforts to conserve natural habitats for the long term.

Adoption of Alternative A would likely result in some long-term negative impacts to visual resources and scenic integrity, which include gradual losses of visual resources, scenic attractiveness, and undeveloped natural areas, as well as negative changes in the aesthetic sense of place. Implementation of the proposed DNTRLMP under Alternative B or C would be protective of scenic areas and would reduce shoreline development, which would be

beneficial to visual resources. Under both action alternatives, impacts to visual resources would be minor.

Under any of the alternatives, there would be very low potential for impacts to air quality. An appropriate level of environmental review would be required to document the extent of expected air quality impacts from projects proposed in the future. Future projects would be subject to federal, state, and local air quality regulations. Therefore, adoption of any of the three alternatives would not result in significant impacts to air quality.

Based on the small proportion of TVA-managed public land available for development relative to the entire shoreline of the Douglas and Nolichucky reservoirs, there would be an insignificant increase in the potential for noise impacts under all three alternatives, with the lowest potential for noise expected under Alternative C.

The majority of TVA-managed shoreline on Nolichucky Reservoir is designated for recreation or sensitive resource management, whereas the majority of shoreline on Douglas Reservoir is privately owned. The availability of TVA-managed lands that are suitable for industry, TVA project operations, and developed recreation is minimal. TVA-managed lands that are suitable for TVA project operations, industry, and developed recreation are being utilized as such. None of the alternatives would be likely to have any noticeable effect on the local economy or on economic development opportunities in the area. No disproportionate impacts to disadvantaged populations are expected to occur under any of the alternatives.

Implementing any of the three alternatives would have few, if any, unavoidable adverse environmental effects. The potential to negatively affect long-term productivity of the land, as well as potential irretrievable commitments of resources, would be greater under the No Action Alternative than under either of the action alternatives. Each of the three alternatives involves use of minor amounts of energy to maintain project operations and developed recreation lands. Although the total amount of energy is small and unlikely to influence regional energy demand, the potential to consume energy is slightly greater under Alternative A compared to the two action alternatives. TVA would implement energy conservation efforts under all three alternatives.

SUMMARY OF IMPACTS

Under the No Action Alternative, the total number of acres of Douglas and Nolichucky reservoir lands designated to developed recreation uses is greater than under either of the action alternatives. Under the No Action Alternative, sensitive resource management would not be designated for any TVA-managed land.

Compared to Alternative A, the action alternatives allocate fewer total acres to developed recreation and a greater number of acres to natural resource conservation and sensitive resource management combined. Generally, the No Action Alternative has greater potential for environmental impacts than does either of the action alternatives. Because it contains slightly less land allocated to developed recreation, Alternative C has slightly less potential for impacts than Alternative B and has the lowest potential for environmental impacts overall.

No significant direct, indirect, or cumulative effects are expected to occur to any resource under any of the alternatives.

PREFERRED ALTERNATIVE

The preferred alternative is Alternative C, the Modified Land Use Alternative, which provides suitable opportunities for developed recreation, conservation of natural resources, and management of sensitive resources. The environmentally preferred alternative is also Alternative C, under which all parcels with identified sensitive resources would be allocated to the most protective land use zone; only some of those parcels would be zoned for sensitive resource management under Alternative B and none under Alternative A.

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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

§	Section
<	Less than
>	Greater than
APE	Area of potential effect
ARPA	Archaeological Resources Protection Act
BMPs	Best management practices
CFR	Code of Federal Regulations
CWA	Clean Water Act
DNTRLMP	Douglas and Nolichucky Tributary Reservoirs Land Management Plan
DCH	Designated critical habitat
DEIS	Draft environmental impact statement
DO	Dissolved oxygen
DOI	U.S. Department of the Interior
EA	Environmental assessment
EO(s)	Executive Order(s)
EIS	Environmental impact statement
ESA	Endangered Species Act
FPPA	Farmland Protection Policy Act
FBRM	French Broad River Mile
HUC	Hydrologic Unit Code
IBI	Index of Biotic Integrity
MGD	Millions of gallons per day
mg/L	Milligrams per liter
MSC	Maximum shoreline contour
msl	Mean sea level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCDENR	North Carolina Department of Environment and Natural Resources
NEP	Nonessential Experimental Population Status
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of intent
NRM	Nolichucky River Mile
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
PA	Programmatic agreement
PCBs	Polychlorinated biphenyls
PNNL	Potential National Natural Landmark
ppm	Parts per million
PSD	Prevention of significant deterioration
RFAI	Reservoir Fish Assemblage Index
RLMP	Reservoir land management plan
SFI	Sport Fishing Index
SHPO	State Historic Preservation Officer
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
SWA	Small wild area
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TN-EPPC	Tennessee Exotic Plant Pest Council
TWRA	Tennessee Wildlife Resources Agency

TVA	Tennessee Valley Authority
TVA Board	TVA Board of Directors
TVARAM	TVA Rapid Assessment Method
U.S.	United States
USA	United States of America
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USOSM	U.S. Office of Surface Mining
UT	University of Tennessee
WMA	Wildlife management area

CHAPTER 1

1.0 PURPOSE OF AND NEED FOR ACTION

The Tennessee Valley Authority (TVA) proposes to implement a Douglas and Nolichucky Tributary Reservoirs Land Management Plan (DNTRLMP) for TVA-managed lands surrounding those two reservoirs along the French Broad and Nolichucky rivers in east Tennessee. TVA owns and manages approximately 3,191 acres around Douglas and Nolichucky reservoirs (Figure 1.0-1). The DNTRLMP is designed to guide land use approvals, private water use facility permitting, and resource management decisions on TVA public land around these reservoirs until the DNTRLMP is revised in the future.

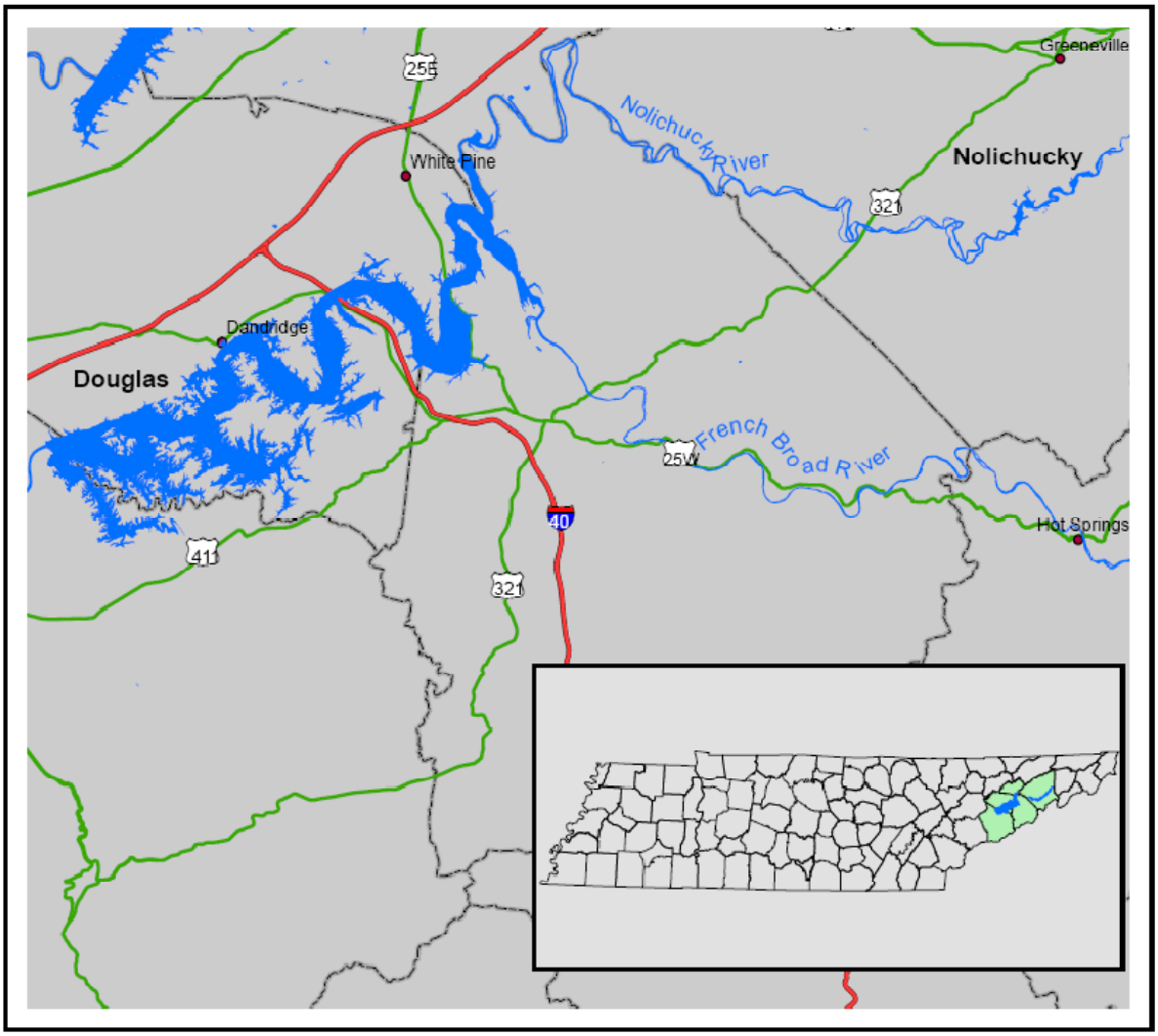

Figure 1.0-1. Douglas and Nolichucky Reservoirs Vicinity Map

The DNTRLMP consists of three volumes. Volume I is the environmental impact statement (EIS) developed in accordance with the National Environmental Policy Act (NEPA), Title 42 U.S. Code §§ 4321-4347, to address the environmental impacts of implementing the DNTRLMP. The EIS includes the project purpose and need, description of alternative

actions, overview of the affected environment, analyses of environmental consequences, and other elements associated with the NEPA process. This EIS also examines the impacts of alternative actions, described in Chapter 2 of this volume. Two reservoir land management plans (RLMPs) are found in Volumes II and III of this document. The RLMPs contain detailed descriptions of the environment around each reservoir, as well as descriptions of each parcel of land addressed in the plans.

This EIS is a programmatic document that addresses the implementation of the RLMPs, which allocate TVA-managed public lands to one of seven land use zones. This EIS assesses potential impacts associated with the various types of uses permitted under each zone. Therefore, effects of specific projects are not evaluated in this programmatic EIS. When such projects are planned in detail in the future, TVA will determine the need for permits, coordination with other agencies (e.g., State Historic Preservation Officer (SHPO), U.S. Fish and Wildlife Service [USFWS]), and the level of review and documentation appropriate to comply with the requirements of NEPA. Additionally, this programmatic EIS does not address the operation of existing facilities, such as dams or visitors centers, the effects of which are addressed under separate NEPA documents.

1.1. Background

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 is feasible, all for the general purpose of fostering the physical, economic, and social development of the Tennessee Valley region. The lands that TVA holds as steward in the name of the United States of America (USA) 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 hydroelectricity.

TVA's public lands are the sites for its power generating system and 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 are on lands TVA made available. TVA's public lands often have been the catalyst for public and private economic development that supports all of these activities.

The USA, through TVA, originally acquired approximately 1.3 million acres of land in the Tennessee River Valley. The construction and operation of the reservoir system inundated approximately 470,000 acres with water. TVA, as agent of the USA, has transferred to other federal and state agencies for public uses or sold for private (primarily residential) development approximately 508,000 acres. The USA owns approximately 293,000 acres that TVA manages pursuant to the TVA Act.

As stewards of this important resource, TVA's policy is to manage its 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 Tennessee Valley region. TVA recognizes that historical land transfers have contributed substantially to meeting these multipurpose objectives, and it is TVA's policy to preserve reservoir lands remaining under its control in public ownership except where different ownership would result in significant benefits to the public.

1.2. Purpose and Need

TVA develops RLMPs to facilitate the management of reservoir lands in its custody. In general, TVA manages public land to protect and enhance natural resources, generate prosperity, and improve the quality of life in the Tennessee Valley region (see Appendix A, TVA Land Policy). RLMPs, which are submitted to the TVA Board of Directors (TVA Board) for approval, provide a plan for long-term land stewardship and accomplishment of TVA's responsibilities under the TVA Act. The Holston-Cherokee-Douglas Watershed Team would use the proposed DNTRLMP along with TVA policies and guidelines to manage resources and to respond to requests for the use of TVA public land. All lands under TVA ownership on these two reservoirs, a total of 3,191 acres, are under consideration in this planning process. The goals of the RLMPs include:

- Apply a systematic method of evaluating and identifying the most suitable uses of TVA public lands using resource data, stakeholder input, suitability and capability analyses, and TVA staff input.
- Identify land use zone allocations to optimize public benefit and balance competing demands for the use of public lands.
- Identify land use zone allocations to support TVA's broad regional resource development mission; TVA reservoir properties are managed to provide multiple public benefits including recreation, conservation, and economic development.
- Provide a clear process by which TVA will respond to requests for use of TVA public land.
- Comply with federal regulations and executive orders (EOs).
- 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 reservoir.
- Provide a mechanism that allows local, state, and federal infrastructure projects when the use is compatible with the zone allocation.

Alternative approaches to allocating the TVA-managed lands are analyzed in this EIS. Throughout the planning process, TVA has also sought to address issues and concerns raised by the public regarding management of the TVA parcels. These issues are addressed in the environmental analyses of the various alternatives.

Land acquisition and disposal information for the Douglas and Nolichucky reservoirs is shown in Table 1.2-1. The acreages listed in Table 1.2-1 were calculated from geo-referenced mapping data and aerial photography of the reservoir land parcels and may not completely align with acreage totals in recorded deeds. The acreages also do not account for land acquired and retained below the full summer pool elevations of the reservoirs. In addition, these acreages do not include other lands located off-reservoir and acquired by TVA for power property, rather than resource property.

Table 1.2-1. Douglas-Nolichucky Tributary Reservoirs Land Acquisition and Disposal Data

Reservoir	Location (County, State)	Total Land Originally Acquired Above Pool Elevation (Acres)	Transferred Lands (Acres)	Sold Lands (Acres)	Total Lands Disposed (Acres)	Percent of Original Acquisition (Above Pool Elevation) Sold or Transferred	TVA-Retained Acres
Douglas	Hamblen, Jefferson, Cocke, and Sevier, Tenn.	2,612	232	325	557	21	2,055
Nolichucky	Greene, Tenn.	1,136*	0	0	0	0	1,136*

* Minus 12 acres as a result of title searches for Nolichucky land ownership.

TVA Land Policy

In November 2006, the TVA Board instituted a TVA Land Policy (see Appendix A) governing TVA's retention, disposal, and planning of its lands. This policy describes residential, economic development, recreation, and other uses for TVA's reservoir lands; provides specific definitions of these uses; and requires a suitability assessment of all TVA land allocated for recreation and economic development use. This directive from the TVA Board has been incorporated into the DNTRLMP.

TVA Environmental Policy

On May 19, 2008, the TVA Board approved the TVA Environmental Policy (http://www.tva.gov/environment/policy.htm). The policy is intended to provide guidance for TVA's business decisions as the agency provides electric energy, sustainable economic development, and environmental stewardship for the Tennessee Valley. As a regional development agency and the nation's largest public power provider, TVA is committed to protecting and sustaining the environmental resources of the Tennessee Valley for future generations through leadership in clean energy innovation and environmental management.

TVA Natural Resource Management Goals

In managing its public lands and resources, TVA seeks to provide proactive 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. 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 is more effective than considering resources individually.

In managing public lands and resources under its authority, TVA seeks to:

- Provide proactive 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.

TVA is currently developing a new Natural Resource Strategic Plan that would promote better integration of TVA's management of recreational, cultural and natural resources, and public use on parcels allocated for recreation, resource protection, and conservation.

1.3. The Decision

The TVA Board will decide which of the alternatives to adopt for the management of TVA-controlled public land on Douglas and Nolichucky reservoirs.

1.4. Other Pertinent Environmental Reviews or Documentation

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

This 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, such as:

- TVA uses weekly average-flow requirements to limit the drawdown of Douglas Reservoir June 1 through Labor Day to increase recreation opportunities.
- Based on results of the flood risk analysis, TVA decided to raise winter flood guides and winter operating ranges on Douglas Reservoir.
- TVA formally schedules water releases to increase tailwater recreation opportunities below specific reservoirs. With variation in the amounts of flow and days of release, water releases depend on specific situations.

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 alternative selected determined TVA's current Shoreline Management Policy (SMP), which 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 SMI EIS is available on TVA's Web site, and information on the SMP may be found at http://www.tva.gov/river/landandshore/pdfs/shorelnk.pdf.

The DNTRLMP EIS tiers from the final SMI EIS concerning the categorization and management of residential shoreline along TVA reservoirs. The residential shoreline on Douglas and Nolichucky reservoirs comprises 4 miles, or less than 1 percent, of the total 580 miles of TVA shoreline on Douglas and Nolichucky reservoirs. A detailed description of individual reservoirs can be found in Section 3.2, Tables 3.2-1 and 3.2-2. 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 SMP was composed of three categories: Shoreline Protection, Residential Mitigation, and Managed Residential.

As new data were collected on the spatial location and significance of endangered species, wetlands, cultural resources, or navigation restrictions, adjustments to category boundaries have been necessary. Through experience with the shoreline categorization process set up in 1999 by the SMI EIS, TVA believes that the value of advance categorization is less than when SMP was implemented. Today's technology provides the ability to identify sensitive resources during permitting evaluations. Today's resource databases are interactive and are updated continually to allow ease of use of the latest information in permitting decisions. Furthermore, TVA's experience in permitting suggests that the Shoreline Protection category is not a prohibition on permitting because mitigation techniques are often available. Because resource data are continually updated, shoreline categorized as Managed Residential may change as updated resource surveys are conducted. Based on these considerations, TVA is not providing a complete categorization of residential shoreline in the DNTRLMP.

TVA has categorized shoreline in areas undergoing high development pressure as indicated by the volume of Section 26a and land use requests in the last few years. In the future, the shoreline will be gradually categorized in response to permit requests. Because the permit reviews provide current real-time information, over time this would result in more accurate shoreline resource inventories, thus meeting the intent of the SMP shoreline categorization system.

Regulations Under Section 26a of the TVA Act for Nonnavigable Houseboats, Storage Tanks, Marina Sewage Pump-Out Stations, Wastewater Outfalls and Septic Systems, and Development Within Flood Control Storage Zones Environmental Assessment (TVA 2001)

In 2001, TVA completed an environmental assessment (EA) for its issuance of regulations for nonnavigable houseboats, storage tanks, marina sewage pump-out stations, wastewater outfalls, septic systems, and development within flood control storage zones of TVA reservoirs. The complete update of the 1971 Section 26a regulations, incorporating the standards for residential development in the SMI EIS and the miscellaneous updates above, became final on September 8, 2003. Taken together, these regulations comprehensively updated the TVA requirements for development along the shoreline of TVA reservoirs, including Douglas and Nolichucky. The regulations for marina sewage pump-out stations and holding tanks, fuel storage tanks and handling facilities, and development within the flood control storage zones were new. Actions requiring Section

26a approval by TVA frequently are requested and occur on TVA reservoir lands and consequently are governed by TVA Section 26a regulations.

Complete details on the Section 26a regulations may be obtained from TVA watershed teams or by viewing the regulations at http://www.tva.gov/river/26apermits/index.htm.

Nolichucky Reservoir Flood Remediation Final Environmental Impact Statement (TVA 2006a)

TVA evaluated alternative ways to address flooding effects of Nolichucky Dam and the accumulated sediment in Nolichucky Reservoir on land and property not owned by the federal government. TVA selected the No Action Alternative, which leaves the dam in place. This alternative alleviates both sediment accumulation and flooding while protecting water quality, wetlands, and associated aquatic life and habitat. TVA will continue to provide updated flood information to Greene County officials to help ensure compliance with applicable local floodplain regulations, and existing recreational uses on the reservoir would continue. The selection of the No Action Alternative would not preclude TVA working with individual landowners to address flood problems in the future. The record of decision was published in the *Federal Register* on April 19, 2007.

Nolichucky Sand Company Bird Bridge Dredge Final Supplemental Environmental Assessment (TVA 2004b)

TVA, the U.S. Army Corps of Engineers (USACE), and the Tennessee Department of Environment and Conservation (TDEC) authorized a dredge operation following the completion of an EA in August 1999. In June 2003, the new owner, Vulcan Materials Inc., proposed to expand its existing commercial sand dredging operation upstream for nearly an additional mile above Bird Bridge. TVA and USACE jointly prepared this supplemental EA to analyze the environmental impacts of the additional dredging and the renewal of land use; Section 26a and Section 10 permit approvals were issued in September 1999.

1.5. 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 May 30, 2009, TVA published a notice of intent (NOI) to prepare an EIS in the *Federal Register* to implement scoping for the proposal. Over 2,500 informational packages were sent to stakeholder groups and individuals in the reservoirs area. TVA staff met with stakeholder groups and individuals in the reservoirs area to brief them on the planning effort. On June 12, 2009, a public scoping meeting was held at Walters State Community College in Morristown, Tennessee.

In addition, several newspaper articles were published and television news reports were aired during the comment period by the local news media. During the 46-day public

comment period, a toll-free phone line was established for people to make verbal comments. Information about the proposed RLMPs, including maps and an interactive comment form, was available on the TVA Web site. Copies of the NOI were sent to interested federal, state, and regional agencies.

1.5.1. Scoping Response

During the scoping period, a total of 30 participants attended the public scoping meeting, and TVA received a total of 118 comments on the planning effort through various channels, including at the public scoping meeting, via the TVA Web site, and by e-mail and letters. The comments received during the public scoping period are summarized in Appendix B (*Summary of Public Participation Report,* December 2008). The results of the public scoping provided recommendations on land use allocations for individual reservoirs and their parcels and on the environmental issues to be addressed in the draft environmental impact statement (DEIS), as well as a characterization of respondents' use of the two reservoirs.

1.5.2. Nolichucky Reservoir Landrights Issues

During the scoping process, the proposed zoning allocations prompted several landowners on Nolichucky Reservoir to question TVA ownership of certain properties along the reservoir. Some of these private property owners believed TVA was planning privately owned land to which they had title. TVA had acquired the vast majority of the Nolichucky Reservoir property via a 1945 deed from East Tennessee Light and Power. However, in these cases the title chain had become unclear because title research during the landowners' transactions had not considered the 1945 TVA deed.

TVA held several individual meetings with approximately 20 stakeholders and property owners, following which TVA investigated the title issues raised by the property owners for 13 parcels. After its investigations, TVA communicated the resulting information, along with the public documentation (deeds) TVA found to support its claims of ownership. TVA's investigations resulted in the discovery that TVA had either a minority interest or no interest in three Nolichucky parcels, and these parcels were removed from the planning process.

1.5.3. Issue and Resource Identification

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 the DNTRLMP. The effects of each alternative on these issues are evaluated:

Land Use and Prime Farmland - Existing land use patterns along the shoreline and back-lying land have been largely determined by TVA land acquisitions, disposals, and land use agreements. Many of the parcels are committed to existing land uses with little to no potential for change in the planning horizon. Proposed allocations of the remaining uncommitted parcels were evaluated using the goals of the DNTRLMP and TVA policies and regulations. TVA will comply with the Farmland Protection Policy Act (FPPA).

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 each alternative on recreation opportunities in the vicinity of the Douglas and Nolichucky tributary reservoirs were evaluated.

Terrestrial Ecology - The review evaluated the plants and animals comprising the terrestrial ecosystems and natural community types found adjacent to the two tributary reservoirs. Included in the evaluation were the identification and protection of significant natural features, rare species' habitat, important wildlife habitat, or locally uncommon natural community types. TVA will comply with EO 13186 on migratory birds and EO 13112 on invasive species.

Endangered and Threatened Species - State- or federally listed as threatened and endangered plants and animals, known or likely to exist in the vicinity of the two tributary reservoirs, were identified, including the occurrence and habitats on TVA lands and waters. TVA will comply with the Endangered Species Act (ESA) and similar state laws.

Wetlands - Wetlands and floodplains found on TVA land and along the reservoir shoreline were identified as part of the shoreline categorization effort required by SMP. TVA will comply with EO 11990 on wetlands and the Clean Water Act (CWA).

Floodplains - Floodplains are considered important to flood control and water quality issues and are productive natural areas. TVA will comply with EO 11988 on floodplains.

Cultural and Historic Resources - Archaeological sites, historic buildings, and cultural landscapes and properties on or near the two tributary reservoirs lands including sites listed in the National Register of Historic Places (NRHP) were identified. TVA will comply with the National Historic Preservation Act (NHPA).

Managed Areas and Sensitive Ecological Sites - TVA identified special and unique natural areas on or in the vicinity of the two tributary reservoirs set aside for a particular management objective or lands that are known to contain sensitive biological, cultural, or scenic resources.

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

Water Quality - Water quality conditions affect the overall ecological conditions of the two tributary reservoirs. Water quality is influenced by activities causing shoreline erosion as well as pollution, litter, and debris control. The effect of each alternative on water quality was evaluated.

Aquatic Ecology - Aquatic ecology includes the plants and animals found in the waters of the two tributary reservoirs and their tributaries. Included in the evaluation were the identification and protection of rare species' habitat, important aquatic habitat, or locally uncommon aquatic community types. The effect of each alternative on aquatic ecology was evaluated.

Air Quality and Noise - Both resources are important for public health and welfare. Compliance with National Ambient Air Quality Standards (NAAQS), which establish safe concentration limits of various air pollutants, is an important issue that was identified and discussed.

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

1.6. Public Review Process

The notice of availability of the DEIS was published in the *Federal Register* on March 12, 2010. Copies of the DEIS were mailed to government agencies as well as individuals who requested copies. TVA notified interested federally recognized Indian tribes, elected officials, and other stakeholders that the DEIS was available for review and comment. Public notices appeared in local newspapers, and over 1,800 postcards were sent to stakeholders in the vicinity of the reservoirs announcing the public meeting and the availability of the DEIS. Printed copies of the DEIS were made available to the public at local libraries and at the Holston-Cherokee-Douglas Watershed Team Office in Morristown, Tennessee. Electronic versions of the document were posted on the TVA Web site, where comments could be provided electronically. TVA also accepted comments by regular mail, e-mail, telephone, and facsimile. On April 6, 2010, TVA held an open house from 4 p.m. to 8 p.m. in Newport, Tennessee, to answer questions and collect comments from the public. Forty-one people attended the public open house. TVA accepted comments on the DNTRLMP DEIS until April 26, 2010.

Thirty-eight written and oral comments were received from 22 commenters (some commenters submitted more than one comment), including 17 citizens and five interested agencies. The U.S. Department of the Interior (DOI) submitted comments on behalf of the USFWS's Ecological Services office in Tennessee. Copies of letters are provided in Appendix F. TVA reviewed and prepared responses to all of these comments (Appendix F). In some instances, the EIS was changed because of the information or issues presented. All original comments and letters are part of the official record and are available upon request.

1.6.1. Public Comments

The largest grouping of the public responses to the DEIS focused on the types of use allocation for specific parcels of TVA-managed land, in particular on the Nolichucky Reservoir. There were also comments about the NEPA process and alternative selection, and stewardship of public lands. There was interest in how TVA's Land Policy is applied and in the management of various types of recreation on public lands. Several individuals made comments addressing recreation opportunities, land use, and ownership. Several commenters expressed support for the preferred alternative (Alternative C) although there was at least one who supported the No Action Alternative.

The remainder of comments on the DEIS raised questions and provided comments on the identified environmental issues such as water quality and litter. Two individuals supported the use of the Rankin Bottoms Wildlife Management Area (WMA) including changing the allocation of TVA land to more protective management zones and preservation of an abandoned coal tipple on TVA land. There were several comments on the pros and cons of hunting on TVA-managed public land including concern about the individual safety of hunters and adjacent landowners.

1.6.2. Agency Comments

The Tennessee Department of Transportation reviewed the DNTRLMP but had no comment to make at this time.

The Tennessee Wildlife Resources Agency (TWRA) supported TVA's preferred alternative, Alternative C, and noted that the commitments and agreements it has with TVA on lands adjacent to these reservoirs would be honored no matter which alternative is chosen.

The Tennessee Historical Commission (THC) found that the current programmatic agreement (PA) between TVA and THC satisfied TVA's responsibilities under Section 106 of the National Historic Preservation Act.

The U.S. Environmental Protection Agency (USEPA) agreed with and encouraged the continued identification of Alternative C as the preferred alternative in the final EIS. USEPA expressed that its primary concern with the DNTRLMP was the uncertainty whether or not allocated lands could be reallocated by TVA to management zones with a greater potential for adverse impacts (e.g., from Sensitive Resource Management [Zone 3] to Industrial [Zone 5]) during site-specific reviews or public requests to the TVA Board. However, assuming that Alternative C is selected and the proposed allocations are finalized, USEPA rated the DEIS as "LO" (Lack of Objection).

DOI recommended that TVA contact the DOI during future site-specific reviews to evaluate the potential for future proposed projects to impact federally listed species. In the opinion of DOI, reaching a determination of "likely to adversely affect" federally listed species would be unlikely. DOI stated that the requirements of Section 7 of the ESA of 1973, as they apply to DNTRLMP, have been fulfilled. However, obligations under Section 7 of the act must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities that were not considered, or (3) new species are listed or critical habitat designated that might be affected by the proposed action. The DOI expressed support for Alternative C.

1.7. Necessary Federal Permits, Licenses, and Consultations

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. Appropriate agencies regulating wetlands, endangered species, and historic resources have been consulted during this planning process. When specific actions are proposed, additional environmental reviews for these actions would be undertaken as necessary to address site-specific impacts.

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CHAPTER 2

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. The Allocation Process

As part of the process of developing alternatives for the DNTRLMP, 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 "preallocated" land parcels to one of the seven allocation zones used in recent TVA reservoir land plans and described in Table 2.1-1. Information on public concerns obtained during the scoping process described in Section 1.5 and the scoping document (Appendix B) was incorporated into the zone allocations proposed in the RLMPs as well as any previous land planning effort such as forecasting (see Appendix C).

Table 2.1-1. Land Use Zone Definitions

Zone		Definition
1	**Non-TVA Shoreland**	Shoreland that TVA does not own in fee or land never purchased by TVA. Non-TVA Shoreland allocations are based on deeded rights and, therefore, will not change as a result of the land planning process. This category is provided to assist in comprehensive evaluation of potential environmental impacts of TVA's allocation decision. Non-TVA shoreland includes: • ***Flowage easement land***—Privately or publicly owned land where TVA has purchased the right to flood and/or limit structures. Flowage easement rights are generally purchased to a contour elevation. Since construction on flowage easement land is subject to TVA's Section 26a permitting requirements, the SMP guidelines discussed in the definition of Zone 7 would apply to the construction of residential water use facilities fronting flowage easement land. SMP guidelines addressing land-based structures and vegetation management do not apply. • ***Privately owned reservoir land***—This was land never purchased by TVA and may include, but is not limited to, residential, industrial, commercial, or agricultural land. This land, lying below the 500-year flood elevation, is subject to TVA's Section 26a approvals for structures.
2	**Project Operations**	All TVA reservoir land currently used 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

Zone		Definition
		include developed and dispersed recreation, maintenance facilities, watershed team 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 public utility infrastructure, such as substations and rights-of-way for sewer lines, water lines, transmission lines, and major highway projects. • ***Land planned for any of the above uses in the future.***
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, state-listed species, and any unusual or exemplary biological communities/geological features. • ***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***—A River Corridor is a segment of a river and the adjacent land along the banks. River

Zone		Definition
		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. • ***Land planned for any of the above uses in the future.***
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 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. • ***TVA public land*** managed for wildlife or forest management projects. • ***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 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 present (see Zone 3). • ***Islands of 10 acres or less.*** • ***Land planned for any of the above uses in the future.***

Zone		Definition
5	**Industrial**	Land managed for economic development, including businesses in distribution/processing/assembly and light 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*** for purposes described above. • ***TVA public land fronting land owned by other agencies/individuals*** for industrial purposes described above. • ***Land planned for any of the above uses in the future.*** 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: • **Light Industrial**—TVA waterfront land that would support businesses and light manufacturing activities. Industrial parks should not include retail, service-based businesses like assisted living, retirement centers, or walk-in-type businesses (excluding retail use). • **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.
6	**Developed Recreation**	The designations below are based on levels of development and the facilities available to the public. Parcel descriptions should describe the primary type of use and identify access potential for infrastructure and potential for development: **Water Access**—Small parcels of land, generally less than 10 acres, and typically shoreline areas conveyed to public agencies for public access. **Public**—More recreational opportunities, some facilities, more than a parking lot and boat ramp. This includes areas conveyed for public recreation.

Zone		Definition
		Commercial—Property suitable and capable to support commercial water-based operations. This includes areas conveyed for commercial recreation. Land managed for concentrated, active recreational activities that require capital improvement and maintenance, including: • ***TVA public land under easement, lease, or license to other agencies/individuals*** for recreational purposes. • ***TVA public land fronting land owned by other agencies/individuals*** for recreational purposes. • ***TVA public land*** developed for recreational purposes, such as campgrounds, day use areas, etc. • ***Land planned for any of the above uses in the future.*** Types of development that can occur on this land are: • ***Water access***, e.g., areas that tend to have limited development and can include a launching ramp, courtesy piers, canoe access, parking areas, picnic areas, trails, etc. • ***Public Recreation***—recreation on publicly owned land. These areas typically have facilities or uses developed by a public agency and provide amenities open to the general public. Facilities at "public recreation" areas could include playgrounds/play structures, picnic facilities, tennis courts, horseshoe areas, play courts, recreation centers, athletic fields, trails, natural areas, amphitheaters, food concessions (vending, snack bar), access to water for fishing and boating, swimming areas and swimming pools, marina facilities owned by the public entity, parking, and campgrounds. Public recreation, time-forward, will not include 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. Public recreation uses typically include areas and facilities owned and operated by the federal, state, county, or local government (municipalities/communities). However, private entities may operate recreation facilities on public property as concessionaires under agreement with the public entity controlling the property. The use of the facilities may be offered free or for a fee. This does not allow for public-private partnership where facilities are owned by private investors. All structures and facilities should be owned by the agreement holder. • ***Commercial Recreation***—is defined as recreation amenities that are provided for a fee to the public intending to produce a profit for the owner/operator. These primarily water-based facilities typically include marinas and affiliated support facilities like restaurants and lodges; campgrounds; cabins; military vessel attractions; and excursion tour vessels (restaurant on the water). These uses and activities can be accommodated through changes in existing conveyance agreements. These areas do not include residential

Zone		Definition
		use, long-term accommodations or individually owned units. Where applicable, TVA will request appropriate compensation for the use of the property. • ***Greenways***—Linear parks or developed trails located along natural features, such as lakes or ridges, or along man-made features, including abandoned railways or utility rights-of-way, which link people and resources together.
7	**Shoreline Access**	TVA-owned land where Section 26a applications and other land use approvals for residential shoreline alterations are considered. Requests for residential shoreline alterations are considered on parcels identified in this zone where such use was previously considered and where the proposed use would not conflict with the interests of the general public. 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 and gabions, and retaining walls. • ***Shoreline vegetation management.***

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. It is anticipated that land currently committed to a specific use would be allocated to a land use zone compatible with that current use unless there is an overriding need to change the use. Possible reasons to change allocations would be ongoing adverse impacts resulting from the actions of a licensee, lessee, or easement holder. The DNTRLMP does not propose to change any committed land uses. Approximately 2,783 acres (87 percent) of the TVA public land surrounding the Douglas and Nolichucky tributary reservoirs are committed. Table 2.1-2 summarizes the committed and uncommitted lands on the Douglas and Nolichucky reservoirs. The individual RLMPs (Volumes II and III) describe the committed parcels reasoning in more detail. The conversion tables (Appendix D) summarize these allocations by alternative.

Table 2.1-2. Committed and Uncommitted Parcels on the Douglas-Nolichucky Tributary Reservoirs

Reservoir	Committed		Uncommitted	
	Parcels	Acres	Parcels	Acres
Douglas	49	1,740	14	315
Nolichucky	27	1,043	12	93
Total	**76**	**2,783**	**26**	**408**

If sensitive resources were identified on a committed parcel (with an existing lease, license, easement, etc.), that parcel would remain allocated to a zone appropriate for that committed use unless an ongoing adverse impact is found. However, TVA approval would be required prior to future activities that could impact the identified sensitive resources.

On Douglas Reservoir, TVA transferred several hundred acres of land to other federal and state agencies, primarily to TWRA. TVA typically retained the fee interest of the land below the maximum shoreline contour (MSC) elevation on Douglas Reservoir. However, the transfer agreements allowed other agencies to manage TVA-retained land below the transfer contour in a manner consistent with the objectives exercised on the back-lying public land. The width of this strip of TVA-retained land located between summer operating pool and the transfer tracts varies for Douglas Reservoir, and it is only about 1 percent of the total acreage. Although TVA does not have exact acreages for Douglas Reservoir, planning objectives are not impacted because these lands are committed to the back-lying land use via the transfer agreement covenants and provisions. The committed use is either Zone 4 (Natural Resource Conservation) or Zone 6 (Developed Recreation) and is primarily dependent on the level of recreation use of the marginal strip in association with the back-lying land (i.e., developed or dispersed recreation).

Uncommitted Land

The balance of TVA land on the Douglas and Nolichucky tributary reservoirs (408 acres or 13 percent) is not committed to a specific use through an easement, lease, license, or other legal documentation. Field data 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.

Property Administration

The proposed DNTRLMP identifies the suitable uses for each tract of TVA-managed land around Douglas and Nolichucky reservoirs, consistent with TVA policy and guidelines and applicable laws and regulations. As administrators of the public land entrusted to it, the Holston-Cherokee-Douglas Watershed Team will use the DNTRLMP along with TVA policies and guidelines to manage resources and to respond to requests for the use of TVA public land. All inquiries about or requests for the use of TVA public land on either reservoir should be made to TVA's Environmental Information Center at 1-800-882-5263.

Pursuant to the TVA Land Policy (Appendix A), TVA would 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 SMP.

There are no non-Zone 7 parcels in the DNTRLMP over which the private back-lying property owners currently have deeded access rights. Under the planning process, if parcels of this kind did exist, they would be allocated consistent with the current back-lying land use. If the private back-lying land were to 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 or its designee or to Board-approved policy.

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 sensitive resources would not require an allocation change so 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 site-specific environmental review. Any other requests involving a departure from the planned uses would require the approval of the TVA Board or its designee.

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.

2.2. Alternatives

TVA proposes to develop individual RLMPs to guide land use approvals, private water use facility permitting, and resource management decisions on the Douglas and Nolichucky tributary reservoirs. This EIS examines the effects of the No Action Alternative (Alternative A), under which TVA would continue to use the Forecast System to manage Douglas Reservoir. The Nolichucky Reservoir, which has not been planned, would continue to be subject to management in accordance with existing commitments and land use agreements as well as the TVA SMP and Land Policy.

TVA has decided to develop two action alternatives: Alternative B – Proposed Land Use Alternative and Alternative C – Modified Land Use Alternative. Alternative B is based on the management of natural resources as proposed during scoping. Alternative C is a result of the public comments and other opportunities identified during scoping and would lead to slightly increased natural resource conservation and sensitive resource protection opportunities on public lands. The amount of land allocated for TVA Project Operations (Zone 2) and Shoreline Access (Zone 7) would likely remain the same under each action alternative. While Alternative A – No Action Alternative would provide a baseline for the analysis of likely environmental impacts, Alternatives B and C would frame the environmental issues identified during scoping.

Under each of the action alternatives, the plans would identify land use zones in broad categories. As explained above, land currently committed to a specific use would be allocated to that current use unless there is an overriding need to change the use. These commitments include transfers, leases, licenses, contracts, power lines, outstanding landrights, and TVA-developed recreation areas.

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 Land Policy.
- TVA land use allocations are not intended to supersede deeded landrights or land ownership (see Section 2.1, the Allocation Process, for more information).

2.2.1. Alternative A – No Action Alternative

Douglas Reservoir was previously planned utilizing a Forecast System developed in 1965. Before 1979, when TVA began the comprehensive planning of its reservoir lands in a public forum, the Forecast System was used to guide land use decisions on most TVA reservoir lands. 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 Forecast System designations (see Appendix C). The Forecast System allocated land into 13 categories. Of these 13 categories, the following four were used to classify TVA land surrounding Douglas Reservoir: dam reservation, public recreation, reservoir operations for mainland, and reservoir operations for islands. Under the Forecast System, 33 of the 63 parcels on Douglas Reservoir were designated as “unplanned” rather than identified as one of the categories above (Appendix D, Table D-4). The Nolichucky Reservoir has never been forecasted or planned. TVA presently manages 2,055 acres on the Douglas Reservoir utilizing the Forecast System and 1,136 acres on the Nolichucky Reservoir that are unplanned.

Under Alternative A – the No Action Alternative, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage Douglas Reservoir, and the Nolichucky Reservoir would remain unplanned and without forecast designations. The Nolichucky Reservoir would continue to be subject to management in accordance with existing commitments and land use agreements as well as the TVA SMP and Land Policy. There are approximately 408 acres of uncommitted lands surrounding these reservoirs that would be managed under the Forecast System and TVA’s SMP and Land Policy. There are 2,783 acres of committed lands that would continue to be managed according to existing land use agreements. Approximately 1,740 acres on Douglas Reservoir would be managed according to existing land use agreements. The 1,043 acres surrounding the Nolichucky Reservoir that are committed lands would be managed according to existing land use agreements. However, the committed lands surrounding the two tributary reservoirs would not be allocated to a current land use zone (see Table 2.1-1); therefore, 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 agreement, TVA policies, and/or the Forecast allocation defined in 1965, which may not incorporate current data on land conditions, adjacent uses, etc. 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 in this EIS, the Forecast System designations for Douglas Reservoir have been converted to the equivalent designation in one of the seven proposed land use zones (see Table 2.2-1). For example, a parcel with a Forecast

System designation of Dam Reservation would be converted to Project Operations, a Zone 2 allocation. In situations where a Forecast System designation could be converted to more than one zone allocation, 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 zones. Additionally, some adjacent parcels with similar land uses were combined and allocated to the compatible zone. When parcels were designated unplanned under the Forecast System (Appendix D, Tables D-4 and 5), the nature of the existing land use agreement was used to determine the compatible zone. When parcels were unplanned under the Forecast System and were also uncommitted (i.e., no land use agreement exists), the equivalent zones were based upon the primary function or current use of the parcel and adjacent land (saddle dams became Project Operations, public recreation areas became Developed Recreation, etc.). The conversions are identified for individual parcels on each reservoir in Appendix D, and the converted designations are used in many of the discussions below.

Zone 1 – Non-TVA Shoreland is not represented in the following tables because the parcels are private land (in which TVA holds certain rights) and will not change as a result of the land planning process.

Table 2.2-1. Alternative A – Area by Equivalent Current Land Use Designations by Reservoir

Equivalent Allocation Designation	Land Area in Acres by Reservoir		
	Douglas	Nolichucky	Total
Project Operations	1,022	56	1,078
Sensitive Resource Management	0	0	0
Natural Resource Conservation	646	713	1,359
Industrial	0	3	3
Developed Recreation	375	363	738
Shoreline Access	13	0	13
TOTAL	**2,055**	**1,136**	**3,191**

2.2.2. Alternative B – Proposed Land Use Alternative

TVA's recent comprehensive reservoir land planning efforts allocate land to seven land use zones (Table 2.1-1). Under this alternative, TVA would create and implement individual RLMPs for the Douglas and Nolichucky tributary reservoirs to guide future land use decisions over at least the next decade. The lands managed by TVA would be placed into one of the seven land use zones that best fits the existing land use. TVA would promote conservation of natural resources and developed recreation by allocating about 621 acres of the land surrounding the two reservoirs to Sensitive Resource Management (Zone 3), 980 acres to Natural Resource Conservation (Zone 4), and 496 acres to Developed Recreation (Zone 6). The land areas for each of the proposed zone allocations are summarized by reservoir in Table 2.2-2, and the zone allocation for each individual parcel is identified in Appendix D.

Table 2.2-2. Alternative B – Area by Allocation Zone by Reservoir

Allocation Designation	Land Area in Acres by Reservoir		
	Douglas	Nolichucky	Total
Zone 2	1,022	56	1,078
Zone 3	1	620	621
Zone 4	869	110	980
Zone 5	0	3	3
Zone 6	150	346	496
Zone 7	13	0	13
TOTAL	**2,055**	**1,136**	**3,191**

Under Alternative B, new allocations for the 2,055 acres (63 parcels) on Douglas Reservoir that were previously forecasted would reflect the existing land uses. A majority of the TVA-managed land on Douglas and Nolichucky, 2,783 acres (76 parcels), is committed due to land use agreements or deeded rights. Committed lands are not expected to be subject to potential changes in land use due to the existing agreements or deeded rights. In addition to the 2,783 acres previously committed to a specific use, this alternative plans the remaining 408 acres or 26 parcels that have not been committed to a specific use. The proposed allocations are the result of the allocation process described above in Section 2-1.

2.2.3. Alternative C – Modified Land Use Alternative

This alternative would provide additional opportunities for the conservation of natural resources with an emphasis on the management of sensitive resources. Under this alternative, TVA would create and implement individual RLMPs for the Douglas and Nolichucky tributary reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use and reflect public comments and other opportunities identified during scoping. As a result of the scoping process, Alternative C, as compared to Alternative B, represents changes in land use zones for 16 parcels of TVA-managed land. Specifically, seven additional parcels would be placed into Sensitive Resource Management (Zone 3). The other eight parcels would be placed in either Natural Resource Conservation (Zone 4) or Developed Recreation (Zone 6). The land areas for each of the proposed zone allocations are summarized by reservoir in Table 2.2-3, and the zone allocation for each individual parcel is identified in Appendix D.

Similar to Alternative B, this alternative plans the remaining 408 acres or 26 parcels that have not been committed to a specific use. The proposed allocations are the result of the allocation process described above in Section 2-1.

Table 2.2-3. Alternative C – Area by Allocation Zone by Reservoir

Allocation Designation	Land Area in Acres by Reservoir		
	Douglas	Nolichucky	Total
Zone 2	1,022	56	1,078
Zone 3	65	648	713
Zone 4	828	143	971
Zone 5	0	3	3
Zone 6	127	286	413
Zone 7	13	0	13
TOTAL	**2,055**	**1,136**	**3,191**

2.3. Comparison of Alternatives

This section compares the environmental impacts of the three alternatives based on the information and analyses provided in Chapters 3 and 4, 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 all alternatives would be consistent with this policy, and TVA has interpreted the regulations and laws governing it so as to be consistent with this policy, as required by Section 102(1). 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.

The parcels that would be allocated differently under the three alternatives are identified in Table 2.3-1. While Alternative A – No Action Alternative provides a baseline for the analysis of likely environmental impacts, Alternatives B and C frame the environmental issues identified during scoping.

Compared to the No Action Alternative, the two action alternatives (B and C) allocate more Douglas and Nolichucky reservoir lands to Zone 4 (Natural Resource Conservation) and Zone 3 (Sensitive Resource Management) combined (Table 2.3-2). The amount of land allocated to Developed Recreation (Zone 6) under the action alternatives would be about a third less than under the No Action Alternative. The parcels designated for Industrial (Zone 5) and Shoreline Access (Zone 7) are the same under all three alternatives and amount to less than 1 percent of the total land. Therefore, under the assumption that potential future development is more likely on Zones 2 and 6 than Zones 3 and 4, there is greater potential for future land development under the No Action Alternative than under the action alternatives.

Compared to Alternative B, Alternative C includes slightly less land in Zone 6 and slightly more in Zones 3 and 4. Therefore, under the assumption that development would be more likely to occur in Zone 6 than in Zones 3 and 4, Alternative C would result in slightly fewer opportunities for development than Alternative B. However, as stated above, the differences between Alternatives B and C affect only 16 parcels totaling 149 acres. Therefore, the difference between the two action alternatives is minor.

Table 2.3-1. Allocation Differences Between Alternatives A, B, and C

Parcel Number	Acres	Alternative A*	Alternative B	Alternative C	Description
Douglas					
2	0.01	Zone 4	Zone 6	Zone 6	Improve recreation opportunities
12	2.6	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; provides good quality riparian buffer for river corridor and shoreline management
21	1.2	Zone 4	Zone 3	Zone 3	Sensitive resource
22	5.4	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; provides good quality riparian buffer for river corridor and shoreline management
25	1.0	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; provides good quality riparian buffer for river corridor and shoreline management
26	1.7	Zone 6	Zone 2	Zone 2	Easements for highway and railroad
28	10.2	Zone 4	Zone 4	Zone 3	High-quality wetlands
33	16.7	Zone 4	Zone 4	Zone 3	High-quality wetlands
37	0.1	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; provides good quality riparian buffer for river corridor and shoreline management
39	2.3	Zone 6	Zone 2	Zone 2	Highway easement and fronting land transferred for the highway
45	30.8	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; moderate-quality wildlife habitat and moderate-quality pocket wetlands
46	4.0	Zone 2	Zone 4	Zone 4	Islands, better suited for Zone 4
47	36.3	Zone 4	Zone 4	Zone 3	High-quality wetlands
48	20.0	Zone 6	Zone 6	Zone 4	No developed recreation facilities exist; better suited for dispersed recreational opportunities
49	0.3	Zone 6	Zone 3	Zone 3	Sensitive resource
51	29.8	Zone 6	Zone 4	Zone 4	No developed recreation facilities exist; scattered wetlands present
52	111.7	Zone 6	Zone 4	Zone 4	Presence of quality wetland pockets in coves and excellent wildlife habitat
53	2.5	Zone 4	Zone 6	Zone 4	Some limited developed recreational facilities possible; better use for riparian buffer to back-lying development in Alternative C
55	3.0	Zone 6	Zone 4	Zone 4	Provides good quality riparian buffer to back-lying development
62	2.2	Zone 6	Zone 4	Zone 4	Consists of two islands that are beneficial for wildlife and water quality; better suited for dispersed recreational opportunities; no developed recreation facilities exist
Nolichucky					
5	22.5	Zone 4	Zone 3	Zone 3	Sensitive wetlands
6	42.51	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
8	62.00	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
9	63.50	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
11	43.3	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities

Parcel Number	Acres	Alternative A*	Alternative B	Alternative C	Description
12a	2.8	Zone 4	Zone 4	Zone 3	New parcel; sensitive resource
18	33.5	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
19	102.2	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
20	64.8	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
22	80.7	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
23	94.7	Zone 4	Zone 3	Zone 3	Sensitive river corridor and wetland species, as well as unique scenic qualities
25	15.3	Zone 6	Zone 6	Zone 3	Sensitive resource
26	7.6	Zone 6	Zone 6	Zone 4	Better suited for dispersed recreational opportunities
27	3.6	Zone 6	Zone 6	Zone 3	Sensitive resource
28	7.3	Zone 6	Zone 3	Zone 3	New parcel; sensitive resource
29	3.1	Zone 6	Zone 3	Zone 3	Sensitive resource
30	6.9	Zone 6	Zone 4	Zone 4	Provides quality wildlife habitat and riparian buffer
31	1.3	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer
32	6.7	Zone 6	Zone 6	Zone 3	Wetlands
33	4.2	Zone 6	Zone 6	Zone 6	New parcel; potential future use as a developed water-based recreation site
34	1.8	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer
35	5.7	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer
36	12.3	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer
37	1.9	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer
38	4.5	Zone 6	Zone 6	Zone 4	Provides quality wildlife habitat and riparian buffer

*Land use zone equivalent to the allocation in the Forecast System or original use

Table 2.3-2. Allocation of Acres by Zone Under Alternatives A, B, and C

Zone	Alternative					
	A		B		C	
	Acres	Percent	Acres	Percent	Acres	Percent
2	1,078	33.8	1,078	33.8	1,078	33.8
3	0	0.0	621	19.5	713	22.3
4	1,359	42.6	980	30.7	971	30.4
5	3	0.1	3	0.1	3	0.1
6	738	23.1	496	15.5	413	12.9
7	13	0.4	13	0.4	13	0.4

2.4. Summary of Impacts

Under the No Action Alternative, the total number of acres of Douglas and Nolichucky reservoirs land collectively designated to Industrial, Developed Recreation, and Project

Operations uses (which have the greatest potential for impacts) is greater than under either of the action alternatives. Under the No Action Alternative, no land is allocated to Sensitive Resource Management. Compared to Alternative A, the action alternatives allocate fewer acres to Developed Recreation and greater acreage to the combination of Natural Resource Conservation and Sensitive Resource Management. Generally, the No Action Alternative has greater potential for environmental impacts than does either of the action alternatives. Alternative C has slightly less potential for adverse impacts than Alternative B.

Impacts to each resource under each of the three alternatives are summarized in Table 2.3-3 below. Mitigation measures designed to avoid or minimize impacts are included in Section 4.20.

Table 2.3-3. Summary of the Environmental Impacts of the Three Alternatives

Resource	Potential Impacts	Alternative		
		A – No Action	B – Proposed	C – Modified
Land Use	Changes to land uses	Minor direct adverse effects. Minor indirect effects due to absence of comprehensive land plans.	No adverse direct or indirect effects. Minor beneficial effects of long-term, comprehensive land plans.	
Recreation	Availability of developed (Zone 6) and dispersed recreational opportunities.	Overall insignificant Impacts. Greatest Zone 6 land – beneficial to developed recreation. Least land available for dispersed recreation.	Overall insignificant Impacts. Minor indirect impacts from loss of 242 acres of Zone 6 land. Minor beneficial effects from increase in dispersed recreation opportunities.	Overall insignificant Impacts. Minor indirect impacts from loss of 325 acres of Zone 6 land. Greatest but still minor beneficial effects from increase in dispersed recreation opportunities.
Prime Farmland	Conversion of prime farmland. A farmland rating required before development.	Greatest number of acres potentially affected, adverse impacts minor.	Slightly less acres potentially affected than under Alternative A; adverse impacts minor.	Lowest number of acres potentially affected; adverse impacts minor.
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.	Greatest area potentially affected; minor potential impacts to common plant species. Minor adverse impacts by spread of invasive species. Insignificant impacts to terrestrial wildlife.	Smallest area potentially affected; minor potential impacts to common plant species. Lesser but minor adverse impacts by spread of invasive species. Insignificant impacts to terrestrial wildlife.	Area potentially affected smaller than under Alternative A; minor potential impacts to common plant species. Lesser but minor adverse impacts by spread of invasive species. Least impacts to terrestrial wildlife.

Resource	Potential Impacts	Alternative		
		A – No Action	B – Proposed	C – Modified
Threatened and Endangered Plants	Direct impacts associated with clearing and ground disturbance; indirect impacts from habitat fragmentation, human visitation, spread of invasive species.	No federally listed plants affected. No significant direct or indirect impacts to known state-listed species.	No federally listed plants affected. Lower potential for effects to state-listed plants. No significant impacts to known state-listed species.	No federally listed plants affected. Most protective of state-listed plants. No significant impacts to known state-listed species.
Threatened and Endangered Terrestrial Animals	Clearing and ground disturbance affecting individual animals or altering habitat suitability.	May, but not likely to, impact gray or Indiana bats. No negative impacts to state-listed species.	No federally listed terrestrial animals affected. More protective of the state-listed species. No negative impacts.	No federally listed terrestrial animals affected. Slightly more protective of state-listed species. No negative impacts.
Wetlands	Adverse effects to or destruction of wetlands from land clearing and ground disturbance.	No direct impacts with protection under EO 11990; minor indirect impacts associated with dispersed recreation.	No adverse impacts with protection under EO 11990. Greater preservation of natural habitat including wetlands; minor indirect impacts associated with dispersed recreation.	No adverse impacts with protection under EO 11990. Greatest preservation of natural habitat including wetlands; minor indirect impacts associated with dispersed recreation.
Floodplains	Adverse impacts to floodplain values.	Minor impacts.	Lowest potential for impacts due to increase in conservation lands	
Cultural Resources	Damage to archaeological and historic properties.	Greatest potential for impacts; effects avoided or mitigated through compliance with the programmatic agreement (PA) and Section 106 of the NHPA.	Lesser potential for impacts; effects avoided or mitigated through compliance with the PA and Section 106 of the NHPA.	Lowest potential for impacts, effects avoided or mitigated through compliance with the PA and Section 106 of the NHPA.
Managed Areas and Sensitive Ecological Sites	Incompatible land use on adjacent areas. Impacts on sensitive resources.	No direct or indirect adverse effects.		

Resource	Potential Impacts	Alternative		
		A – No Action	B – Proposed	C – Modified
Visual Resources	Effects on scenic quality. Gradual degradation of visual resources.	Decline in visual resources on uncommitted lands over the long term.	Lower potential for adverse effects to visual resources; long-term beneficial effect of greater percentage of acres in Zones 3 and 4.	Lowest potential for adverse effects to visual resources; long-term beneficial effect of greatest percentage of acres in Zones 3 and 4.
Water Quality	Impacts from runoff of pollutants and soil erosion.	Greatest potential for adverse effects; minor impacts.	Lower potential for ground disturbance; minor impacts.	Lowest potential for ground disturbance; minor impacts.
Aquatic Ecology	Alteration of aquatic habitat primarily from shoreline modification.	Greatest potential for ground disturbance; minor impacts.	Lower potential for ground disturbance; no impact. Beneficial cumulative effects.	Lowest potential for ground disturbance; no impact. Beneficial cumulative effects.
Air Quality	Emissions from construction and development activities.	Very low potential for impacts; minor effects.		
Noise	Noise generated by facilities associated with Industrial, Project Operations, or Developed Recreation.	Greatest potential for noise generation; insignificant impacts.	Lower potential for noise generation; insignificant impacts.	Lower potential for noise generation; insignificant impacts.
Socioeconomic Impacts and Environmental Justice	Effects to the local economy and populations.	Little impact. No noticeable effect on local economy. No disproportionate impacts to disadvantaged populations.		

2.5. The Preferred Alternative

The preferred alternative is Alternative C, the Modified Land Use Alternative, which provides suitable opportunities for developed recreation, conservation of natural resources, and management of sensitive resources. The environmentally preferred alternative is also Alternative C, under which all parcels with identified sensitive resources would be allocated to the most protective land use zone; only some of those parcels would be zoned for sensitive resource management under Alternatives A and B.

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CHAPTER 3

3.0 AFFECTED ENVIRONMENT

This chapter describes the current conditions of various resources in the area of Douglas and Nolichucky tributary reservoirs that could be affected by implementation of the proposed land plans.

3.1. The Reservoirs

The DNTRLMP addresses two TVA tributary reservoir projects in the northeast corner of Tennessee (Figure 1.0-1). Several characteristics of these reservoirs are listed in Table 3.1-1.

Table 3.1-1. Characteristics of Douglas and Nolichucky Reservoirs

Reservoir	Dam Location	Length of Reservoir (miles)	Flood Storage (acre-feet)	Shoreline (miles)	Summer Pool Elevation (feet above msl*)	Annual Pool Variation (feet)
Douglas	French Broad River Mile (FBRM) 32.2	43.1	1,081,880	561.0	994	40
Nolichucky	Nolichucky River Mile (NRM) 46.0	6.0	N/A	35.8	N/A	N/A

*mean sea level (msl)

Both Douglas and Nolichucky reservoirs are located in the Ridge and Valley ecoregion of Tennessee. This region occurs between the Blue Ridge Mountains on the east to the Cumberland Plateau on the west and is a relatively low-lying area made up of roughly parallel ridges and valleys that were formed through extreme folding and faulting events in past geologic time (Griffith et al. 1998). Deciduous forests dominate the plant community with a mixture of evergreen and mixed evergreen-deciduous forests. These communities provide a variety of wildlife habitat interspersed with intense agriculture, urban sprawl, and industrial properties.

A majority of the lands in and around the reservoirs are contained in the Southern Shale Valleys subregion, which consists of lowlands, rolling valleys, slopes, and hilly areas dominated by shale materials. Small farms and rural residences occur throughout where land is used for grazing or farming tobacco, corn, or hay. The remaining area around Douglas Reservoir is within the Southern Limestone/Dolomite Valleys and the Rolling Hills subregion, which is a heterogeneous region, composed predominantly of limestone and cherty dolomite. Landforms are mostly undulating valleys and rounded ridges and hills, with many caves and springs. Soils vary in their productivity, and land cover includes oak-hickory and oak-pine forests, pasture, intensive agriculture, and urban and industrial (Griffith et al. 1998).

3.1.1. Douglas Reservoir

Douglas Reservoir is a multipurpose tributary storage project located in Hamblen, Sevier, Jefferson, and Cocke counties in Tennessee and is the only TVA project on the French Broad River. Like similar projects on other major Tennessee River tributaries, Douglas is operated for multiple purposes including flood control, augmentation of flows for navigation, hydropower production, water supply, recreation, and aquatic ecology. Douglas Dam is a concrete gravity structure that was completed in 1943. It is 202 feet high and stretches 1,705 feet across the French Broad River. Its current generating capacity is 165,600 kilowatts with four generating units. Initially, the power plant had two generating units with an installed capacity of 30,000 kilowatts. Douglas Reservoir, at the top of the dam gates, has an area of more than 31,000 acres. The reservoir has 561 miles of shoreline with a surface area of 28,420 acres. It has a flood storage capacity of over 1 million acre-feet. A more detailed description of the reservoir and surrounding lands is provided in Volume II.

3.1.2. Nolichucky Reservoir

Nolichucky Reservoir is located entirely in Greene County, Tennessee, on the Nolichucky River. Tennessee Eastern Electric Company built the Nolichucky Dam and Powerhouse as a single-purpose hydropower production project. All of the Nolichucky Project facilities and rights were acquired by the East Tennessee Light and Power Company in 1929 and were acquired by TVA in 1945 (TVA 1972). The Nolichucky Dam is located about 7.5 miles south of Greeneville, in Greene County, Tennessee, on the Nolichucky River. The Nolichucky River, also known as Davy Crockett Lake, extends about 6 miles upstream. Nolichucky Dam is a concrete, gravity overflow structure, 482 feet long and (now) 94 feet high. The powerhouse measures 59 feet by 104 feet and is located on the right bank of the river just downstream from the intake structures in the dam. A more detailed description of the reservoir and surrounding lands is provided in Volume III.

3.2. Land Use

Existing land use patterns along the shoreline and on back-lying land have been influenced by whether TVA acquired the land and whether TVA has subsequently sold, transferred, or retained the land. TVA originally acquired 3,760 acres of land on the two tributary reservoirs (Table 1.2-1). About 15 percent (557 acres) of this land has been transferred for public recreation or natural resource conservation purposes. TVA presently manages a total of 3,191 acres of land on these reservoirs, which are the subject of the DNTRLMP.

On Douglas Reservoir, TVA acquired the right to flood below the 1,007-foot elevation (flowage easement rights) over 22,993 acres of privately held land to allow flexibility of reservoir operations. In a few cases on Douglas Reservoir where TVA originally acquired land, TVA retained the land below the MSC when the back-lying parcels were sold, and the sale deeds granted rights of ingress and egress across the TVA-retained strip of land. In these instances, and in some other instances where TVA acknowledges rights by policy, the back-lying landowners typically have the right to apply to TVA for permits to construct private water use facilities on the TVA-retained land. However, in most cases where TVA sold land and retained property in fee below the 1,007-foot MSC, private water use facilities will not be considered.

Most of the residential development along Douglas is on private land over which TVA purchased the right to flood to the 1,007-foot elevation (Zone 1). 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 (see Section 1.4).

TVA owns approximately 1,136 acres along the Nolichucky River with the majority of this land being on the reservoir. TVA holds flowage easements on an additional 370 acres of land adjacent to the reservoir. At the time TVA acquired these landrights in 1945, the landrights did not include all of the affected area by the Nolichucky Dam during flood events. Since then, silt and sediment accumulations in the reservoir have raised the 100-year flood elevation up to 10 feet above what it likely was when TVA acquired the project in 1945. The federal landrights include about 51 percent of the area within the present 500-year floodplain and about 60 percent of the area within the 100-year floodplain.

In the mid-1970s, when the purpose of the project was modified to be a waterfowl sanctuary and environmental education area, TVA purchased fee title to approximately 330 acres of previous flowage easement land and fee title to approximately 163 acres of additional land adjacent to the reservoir. By 1980, the Nolichucky Project included 901 acres in fee and approximately 178 acres of flowage easements (TVA 1980).

Upstream from the Nolichucky Dam, the present 100-year flood elevation along the river varies from the 1,260.3-foot elevation at the dam site (Nolichucky River Mile [NRM] 46) to the 1,317.3-foot elevation at NRM 62.06, which is the upper limit of the floodplain study conducted by TVA in 2006 for the *Nolichucky Flood Remediation Final Environmental Impact Statement* (TVA 2006a). The 500-year flood elevation varies from the 1,266.3-foot elevation at the dam site to the 1,329.2-foot elevation at NRM 62.06.

In order to better understand shoreline development trends on the Douglas and Nolichucky reservoirs, TVA used aerial photography and Geographic Information System mapping to estimate the amount of shoreline that is available for residential development (Table 3.2-1). The percent of the available residential shoreline that has already been developed is approximately 75 percent on Douglas and 12 percent on the Nolichucky Reservoir (Table 3.2-2). In addition to the Zone 1 property along the Nolichucky Reservoir, TVA has fragments of Zone 1 property further upstream and ending at approximately NRM 63. Development around these two reservoirs over the last 15 years has been steady, as many farms have been turned into residential developments, primarily single-family homes, which is the case on the Nolichucky Reservoir. However, in recent years, multifamily developments have become more prevalent.

The amount of undeveloped shoreline on all reservoirs with open shoreline available has decreased. This decrease is due, in part, to the availability of flowage easement land for residential development. TVA's Land Policy does not allow for additional TVA-managed 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.

Table 3.2-1. Douglas and Nolichucky Reservoirs Shoreline Ownership Data

Reservoir	Flowage Easement Shoreline		TVA-Owned Residential Access Shoreline		TVA-Owned and Jointly Managed Shoreline		TVA-Owned and -Managed Shoreline		TVA Shoreline Miles
	Miles	% of Total Miles	Miles	% of Total Miles	Miles	% of Total Miles	Miles	% of Total Miles	Miles
Douglas	493	88	3	<1	49	9	16	3	561
Nolichucky	2	12	0	0	15	79	1	5	19*

*TVA owns additional shoreline below the dam as well as upstream of the reservoir.

Table 3.2-2. Percent of Shoreline Open for Residential Development and Percent of Open Shoreline Developed

Reservoir	Percent of Total Shoreline Open for Residential Development*	Percent of Open Shoreline Developed
Douglas	88	75
Nolichucky	12	12

*Sum of flowage easement and shoreline access zones

TVA retained a total of 3,191 acres of land on the Douglas and Nolichucky reservoirs. As noted above, many of the parcels have existing land use agreements, which 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.

Many of the land use agreements permit recreational use of TVA land, and the majority of those are for public recreation (Table 3.2-3). A large proportion of the 304 acres associated with the public recreation agreements are for boat ramps and municipal parks that are operated by local, county, and state government agencies. These include Kinser Park and Joe Johnson TWRA boat ramp on the Nolichucky Reservoir and the Point Resort and Marina (Dandridge City Park), Mountain Cove Marina (Sevier County Park), and the following TWRA boat ramps on Douglas Reservoir: Shady Grove, Walter's Bridge, Spring Creek, Nina, Leadvale, Providence Road, Rankin Access, and the Dandridge Ramp. Rankin Bottoms and Henderson Island were transferred to TWRA for wildlife management; however, they also provide opportunities for recreational use.

Table 3.2-3. Douglas-Nolichucky Reservoir Land Use Agreements by Category

Douglas-Nolichucky Reservoirs Land Use Agreement Categories	2008	
	Number of Agreements	Acres (approximate)
Recreation		
Public Recreation	12	304.4
Wildlife Management Areas	4	1,899.6
Project Operations		
Highways/Roads	2	1.1
Municipal Uses (office buildings, parking lots, industrial park, etc.)	3	0.43*
Utilities		
Sewer Lines	1	1.4
Septic Systems/Field Lines	1	<0.0
Electric Lines	11	19.4
Telephone Lines	3	4.0
Water Lines	2	2.3
Total	**38**	**2,232.8**

* Two of the agreements are for channel excavation on the Nolichucky River, and no acreage was available.

3.3. Recreation

The northeastern Tennessee Valley region of which the Douglas and Nolichucky reservoirs are part provides numerous opportunities for outdoor recreation within a one-day drive of nearly one-third of the nation's population. Four Tennessee state parks, two Virginia state parks, one national park, three national forests, 10 TVA reservoirs, and countless smaller parks and nature centers make up the recreation fabric of the region. Recreational opportunities provide a variety of individual and social benefits including personal development (e.g., improved physical fitness); social bonding (e.g., higher quality of family life); therapeutic and healing benefits (e.g., restored mental health); and social benefits (e.g., increased cultural identity).

The Nolichucky River is a popular local recreation resource both upstream and downstream from Nolichucky Reservoir. TVA has developed boat access sites at NRMs 46 and 106.5 and owns potential access sites at NRMs 28, 54.1, 60.4, 70.5, and 86.6. TWRA maintains developed access sites at NRM 32.1 (Easterly Bridge) and at NRM 68.6 (Davy Crockett Birthplace State Park). The river provides anglers with the opportunity to catch all species of black bass, rock bass, and muskellunge.

TWRA considers the Nolichucky River to support one of east Tennessee's better warm water sports fisheries (Samsel 2005), and several local fishermen consider the Nolichucky to be one of the best smallmouth bass streams in the country. Far upstream from Nolichucky Reservoir, the river is stocked with rainbow trout, which provides additional fishing opportunities. The Nolichucky Gorge, an upstream reach of the Nolichucky River near Erwin, Tennessee, is used by several commercial rafting companies and many recreational boaters. In 1994, the U.S. Forest Service (USFS) found part of the river in the gorge eligible for Wild and Scenic River designation.

Hunting in the vicinity of the Nolichucky River and the two reservoirs is a popular outdoor activity. Two WMAs on the reservoirs support a variety of game species, including white-tailed deer, gray squirrel, eastern cottontail rabbit, raccoon, eastern wild turkey, northern bobwhite, mourning dove, and other waterfowl (TVA and USACE 1999).

TVA-managed lands in the Douglas-Nolichucky region include about 3,191 acres along the reservoirs, some of which provide a high-quality and diverse array of recreation opportunities. Recreation facilities on TVA-managed lands include campgrounds, marinas, swimming beaches, picnic facilities, fishing piers, boat ramps, visitors' buildings, and other day use facilities.

The inventory of recreation areas on the Douglas and Nolichucky reservoirs 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 landrights agreements, or on combinations of private and public lands under agreement. Modern recreation facilities and amenities on shoreline properties adjacent to the reservoirs include 15 campgrounds, five marinas, 26 developed boat launches/ramps, and a myriad of day use facilities including five picnic areas, two swimming beaches, one fishing pier, and two golf courses. Detailed descriptions of recreation areas are provided in the individual RLMPs (Volumes II-III).

From a recreation perspective, Douglas and Nolichucky reservoirs are somewhat different. Douglas is a large, open reservoir with developed recreation resources; the reservoir attracts and supports most of the typical water recreation activities in upper east Tennessee (boating, skiing, personal watercraft). Nolichucky Reservoir offers a relatively unique recreation resource in this area because its small size and narrow width do not attract the water recreation activities common on the larger reservoirs. Nolichucky Reservoir is one of the few reservoirs in east Tennessee where a small boat or canoe can be on the water and not be affected by the waves and noise of bigger, more powerful boats or craft. The majority of the reservoir has little development along the immediate shoreline and provides a quiet, almost solitary recreation experience.

Fifteen high-quality developed recreation facilities are provided at several TVA-managed facilities on Douglas and Nolichucky reservoirs such as Kinser Park, Sevier County Park, and Douglas Dam Reservation (see Recreation section of Volumes II and III). These facilities primarily occur on parcels allocated as Zone 6 (Developed Recreation) or Zone 2 (Project Operations, i.e., Dam Reservation). In general, TVA-managed developed recreation facilities prohibit hunting, possession and use of firearms, use and consumption of alcohol, and camping other than in designated campsites. Recreational use of motorized vehicles is restricted to roadways and is otherwise prohibited on TVA lands and in the reservoir drawdown zones. Fishing is permissible in accordance with applicable state regulations.

TVA-managed lands around the Douglas and Nolichucky reservoirs also offer opportunities for dispersed recreation, which consists of passive, informal opportunities that are predominantly nature-based or water-based. Dispersed recreation typically occurs on parcels allocated as Zone 2 (substations and dam reservations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation), and undeveloped Zone 6 parcels. Generally, dispersed recreation amenities include rustic trails for fishing access/walking/hiking/horseback riding, primitive campsites, unimproved swimming and launching sites, and hunting and fishing areas. As of 2008, eight areas were identified and

assessed on Douglas Reservoir. Because of its riverine nature and size, no assessment has been done for dispersed recreation on Nolichucky Reservoir. Nonetheless, opportunities for dispersed recreation exist, such as activities associated with bank fishing, fishing from small boats, canoeing, and waterfowl hunting.

Use regulations associated with dispersed recreation lands prohibit motorized vehicle use except where permissible for fishing access and primitive boat launching ramps during winter drawdown season. Hunting and fishing are permissible, unless otherwise posted, consistent with statewide regulations. Likewise, possession and use of firearms and other weapons are permitted subject to all applicable state regulations. Camping stays are limited to a maximum of 14 days within any 30-day period. After 14 days, campers must move at least 1 river mile before reestablishing a campsite. Consumption of alcohol is governed by local ordinances, unless otherwise posted at the area that provides dispersed recreation opportunities.

Some improvements may be made to dispersed recreation areas when necessary to provide access for the user (e.g., parking lot), improve health and safety of the user (e.g., installation of seasonal port-a-potties), or mitigate damage to natural resources (e.g., hardening of recreation sites to reduce severity of impacts).

3.4. Prime Farmland

The FPPA requires that all federal agencies evaluate impacts to farmland prior to converting such land permanently to nonagricultural land use. 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.

To evaluate effects to prime farmland and farmland of state importance, TVA identifies soil classifications using the USDA, Natural Resources Conservation Service Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

About 438 acres of prime farmland occur around the Douglas and Nolichucky reservoirs (Table 3.4-1). A detailed description of the location of prime farmland parcels is provided in the individual RLMPs and in Appendix E.

Table 3.4-1 Approximate Number of Acres and Parcels Having Prime Farmland Around the Douglas-Nolichucky Tributary Reservoirs

Reservoir	Prime Farmland	
	Acres	Number of Parcels
Douglas	245.0	9
Nolichucky	193.4	16
Total	**438.4**	**25**

The geographic extent of Douglas and Nolichucky reservoirs reaches five counties in Tennessee. The proportion of total county area in farms ranges from 15 percent in Sevier County to 67 percent in Hamblen County (Table 3.4-2). Prime farmland is found in each of

the five counties, comprising between 7 and 20 percent of the total area in a county (Table 3.4-2).

Table 3.4-2. Acreage of Prime Farmland and Farming Trends in the Counties Adjacent to Douglas-Nolichucky Tributary Reservoirs

County	Percent of Total Area in Farms*	Acres Prime Farmland	Percent Prime Farmland	Percent Change From 1987 to 2007*		
				Number of Farms	Land in Farms (Acres)	Average Size of Farms (Acres)
Cocke	23	26,959	10	-34.7	-28.1	9.6
Greene	58	81,476	20	-17.0	-15.2	1.3
Hamblen	67	7,830	7	-17.9	15.8	28.9
Jefferson	58	21,035	10	-9.5	-7.9	1.2
Sevier	15	38,757	15	-34.8	-38.5	-2.5
Total		**176,057**				

*USDA, Agriculture Census, http://agcensus.mannlib.cornell.edu/

Agriculture census data show that during a recent 20-year period, the number of farms has decreased between 9.5 and 34.8 percent (Table 3.4-2). However, during the same period, the proportion of land in farms increased in Hamblen County, and decreased between 7.9 and 38.5 percent in the other counties. In 2007, the average size of farms ranged from 80 acres in Sevier County to 97 acres in Hamblen County. Between 1987 and 2007, the average size of farms has increased in all counties except Sevier County.

3.5. Terrestrial Ecology

3.5.1. Plant Communities

Vegetation classes commonly found around the reservoirs include Forests, Woodlands, Shrublands, and Herbaceous Vegetation. Descriptions of vegetation classes are adapted from Grossman et al. (1998) and are found in the Glossary of this EIS (Section 7.2).

The Ridge and Valley ecoregion is composed of long stretches of parallel ridges and valleys that contain a variety of landforms and geologic materials. Deciduous forests dominate the plant community with a mixture of evergreen and mixed evergreen-deciduous forests. These communities provide a variety of wildlife habitat interspersed with intense agriculture, urban sprawl, and industrial properties.

Several forest types are found on TVA-owned lands around Douglas Reservoir and along the Nolichucky River. Oak-hickory forest is the most abundant forest type in the eastern U.S. (Flather et al. 1999) and in the project area. Locally, mesic cove hardwood forests and forested wetlands are also common. The numerous bird species that nest in these forest types include 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. Riparian corridors within deciduous forests in the area provide nesting habitat for Acadian flycatcher, northern parula, and Louisiana waterthrush. Many additional bird species migrate through and winter in the area. Common mammal species of deciduous forests include white-tailed deer, eastern red bat, eastern chipmunk, eastern gray and southern flying squirrels, white-footed mouse, woodland vole, short-tailed shrew, raccoon, opossum, striped skunk, gray fox, and bobcat.

Douglas Reservoir
Douglas Reservoir is part of the Lower French Broad watershed and comprises three subwatersheds (Upper, Middle, and Lower Douglas Lake) of Hydrologic Unit Code (HUC) 12 covering approximately 137,647 acres (TDEC 2008a). Vegetation classes commonly found on lands within and around Douglas Reservoir are classified as Evergreen Forest, Evergreen-Deciduous Forest, Deciduous Forest, Shrublands, and Herbaceous Vegetation.

Based on land use/land cover data obtained from TDEC (2008a), approximately 5 percent of the land cover is in the form of Evergreen Forests. These forests are mostly found on undeveloped lands surrounding the reservoirs. Evergreen-Deciduous (mixed) forests occupy approximately 3 percent of the land cover and consist of various community types such as dry and dry mesic oak-pine forests, mixed mesophytic hardwood forests, and xeric pine and pine-oak forests. Mixed mesophytic forests and xeric pine and pine-oak forests are the most common types of Evergreen-Deciduous forests in the region. The most common vegetation classes and the most diverse are the Deciduous Forests and Woodlands (approximately 35 percent). They cover large areas of the landscape and are composed of diverse communities ranging from mesic cove hardwood forests to dry to mesic oak forests and dry to xeric oak forests. These dry to xeric oak forests tend to occupy dry ridges or southwest-facing slopes. In addition, small areas (less than 1 percent) of floodplain hardwood forests along with scrub-shrub wetland communities (2.2 percent) occur along the backs of coves along Douglas Reservoir. The Herbaceous Vegetation class, in the form of row crops, grass fields, agricultural areas, and cleared areas, within transmission line rights-of-way and along roadsides is abundant where approximately 29 percent of the land use is in this form of vegetation (Table 3.5-1).

Table 3.5-1. Douglas Reservoir Land Use/Land Cover

Land Use/Land Cover Type	Percentage Based on 137,645 Acres
Evergreen Forest	5.1
Evergreen-Deciduous Forest (Mixed)	2.8
Deciduous Forest	35.4
Herbaceous Vegetation/Agricultural Areas	29.1
Woody Wetlands/Scrub-Shrub	2.4
Bare Rock/Sand/Clay	4.0
Developed Areas	6.7
Open Water	14.5

Source: TDEC 2008a

Evergreen Forests are in the form of Virginia pine, which showed evidence of harvesting due to pine bark beetle infestation and were in the process of regenerating with young trees.

Evergreen-Deciduous Forests are dominated by stands of mixed pine-hardwoods or hardwoods mixed with pines and eastern red cedar. Several types of evergreen-deciduous forests occur on lands surrounding the Douglas Reservoir such as dry and dry mesic oak-pine forests, mixed mesophytic hardwood forests, and xeric pine and pine-oak forests. Dry and dry to mesic oak-pine forests tend to be located on tops of ridges where Virginia pine, pitch pine, chestnut oak, post oak, white oak, and black gum are found in the canopy with eastern red cedar and eastern redbud present in the understory or along the shoreline. American chestnut stump sprouts were found on dry ridges. According to Murphy and

Nowacki (1997), xeric pine and pine-oak woodlands are usually found as small inclusions on ridgetops and south-facing slopes in the mountains. Historically, this community type has been maintained by frequent fires. The overstory is rather open and dominated by oaks (black, chestnut, northern red, southern red, white) and pines. The understory is predominately composed of ericaceous shrubs, such as deer-berry, low bush blueberry, mountain laurel, wintergreen, and wooly blueberry.

Mixed mesophytic forests are composed of pine (Virginia along with scattered white pine) and oak species (black, chestnut, northern red, southern red, and white). Other common trees observed were mockernut hickory, pignut hickory, shagbark hickory, tulip poplar, and sweetgum. The understory and shrub layer was composed of American holly, eastern redbud, eastern red cedar, flowering dogwood, red maple, sassafras, serviceberry, sourwood, and wild black cherry. Woody vines include Japanese honeysuckle, muscadine grape, poison ivy, and Virginia creeper. The herb layer contained many fern species and several species of wildflowers and ferns, such as bellwort, Christmas fern, ebony spleenwort, little brown jug, mayapple, and toothwort.

Deciduous Forests, the most common type of forests found in this region, occur mainly as oak-hickory forests (mesic to xeric), mesic cove hardwood forests on slopes and forested wetlands near the reservoir edges grading into scrub-shrub wetlands. More xeric oak-hickory forests are dominated by oaks (black, chestnut, northern red, southern red, and white) and hickories (mockernut, pignut, and shagbark). Black gum, muscle wood, and sourwood are common understory species.

The cove hardwood forests are scattered around Douglas Reservoir, and found on mesic slopes. These forests have a rich herbaceous layer with bloodroot, Catesby's trillium, crane fly orchid, dwarf larkspur, mayapple, Jack-in-the-pulpit, sweet Betsy, Solomon's plume, and Solomon's seal and twin-leaf, to name just a few. The forest is dominated by tulip poplar with American beech, white oak, and yellow buckeye. The understory is also diverse with black locust, flame azalea, flowering dogwood, hazelnut, redbud, sourwood, silverbell, and spicebush. Eastern hemlock is found along the streams that traverse the cove hardwood forest.

Forested wetlands are found in the back of most coves along Douglas Reservoir and grade into scrub-shrub wetlands (Shrublands). These areas are dominated by black willow, buttonbush, silky dogwood, and tag alder. In addition, persimmon is common around the shoreline, along with American sycamore, river birch, and silver maple.

Herbaceous Vegetation is commonly found in agricultural areas, within transmission line rights-of-way, along roadsides, and in grassy areas associated with the dam reservation and TVA campgrounds. Nonnative plants commonly encountered in these areas are weedy species such as fescues, hop clovers, Queen Anne's lace, yellow sweet clover, white sweet clover, white clover, and wild pansy, to name a few.

No designated critical habitat (DCH) for rare plants is present on or around Douglas Reservoir.

Nolichucky Reservoir

Nolichucky Reservoir is part of the Nolichucky watershed, and the committed and uncommitted parcels reviewed for the Nolichucky RLMP are located within two subwatersheds (Richland Creek-Nolichucky River and Pigeon Creek-Nolichucky River) of

HUC 12. These two areas comprise approximately 81,811 acres (TDEC 2008b). Vegetation classes commonly found on lands within and around Nolichucky Reservoir are classified as Evergreen Forest, Evergreen-Deciduous Forest, Deciduous Forest, Shrublands, and Herbaceous Vegetation.

Based on land use/land cover data obtained from TDEC (2008b), approximately 3 percent of the land cover is in the form of Evergreen Forests, which are most likely associated with pine plantations. No evergreen forests were observed during field reviews of the unplanned parcels along the reservoir. Evergreen-Deciduous (mixed) Forests occupy approximately 1.4 percent of the land cover and consist of various community types such as dry and dry mesic oak-pine forests, mixed mesophytic hardwood forests, and xeric pine and pine-oak forests. Mixed mesophytic forests and xeric pine and pine-oak forests are the most common types of Evergreen-Deciduous Forests in the region. Areas of Deciduous Forests and Woodlands occupy approximately 25 percent of the land cover. They are diverse communities ranging from mesic cove hardwood forests to dry to mesic oak-hickory forests. In addition, small areas (less than 1 percent) of floodplain hardwood forests and scrub-shrub wetland communities occur as riparian corridors along the river and on islands found within the river. The most abundant vegetative class found within the watershed was the Herbaceous Vegetation class (59.4 percent). This vegetation type can be found in the form of row crops, grass/hayfields, and other agricultural areas, along with cleared areas along roadsides (Table 3.5-2).

Table 3.5-2. Nolichucky Reservoir Land Use/Land Cover

Land Use/Land Cover Type	Percentage Based on 81,811 Acres
Evergreen Forest	2.7
Evergreen-Deciduous Forest (Mixed)	1.4
Deciduous Forest	25.0
Herbaceous Vegetation/Agricultural Areas	59.4
Woody Wetlands/Scrub-Shrub	0.7
Bare Rock/Sand/Clay	0.1
Developed Areas	10.0
Open Water	0.7

Source: TDEC 2008b

Evergreen Forests, in the form of pine plantations, are not common around Nolichucky Reservoir. None were observed on uncommitted parcels during field reviews.

Evergreen-Deciduous Forests occur intermittently along the ridges and bluffs and are dominated by stands of mixed pine-hardwoods or hardwoods mixed with pines and eastern red cedar. Mixed mesophytic forests are composed of pine (Virginia along with scattered white pine) and oak species (black, chestnut, northern red, southern red, and white). Other common trees observed were mockernut hickory, pignut hickory, shagbark hickory, tulip poplar, and sweetgum. The understory and shrub layer was composed of American holly, eastern redbud, eastern red cedar, flowering dogwood, red maple, sassafras, serviceberry, sourwood, and wild black cherry. Woody vines include Japanese honeysuckle, muscadine grape, poison ivy, and Virginia creeper. The herb layer contained many fern species and several species of wildflowers and ferns such as bellwort, Christmas fern, ebony spleenwort, little brown jug, mayapple, and toothwort.

Deciduous Forests, the most common type of forests found in this region, occur mainly as oak-hickory forests, mesic cove hardwood forests, and forested wetlands within riparian areas along the river grading into scrub-shrub wetlands. Oak-hickory forests are dominated by oaks (black, chestnut, northern red, southern red, and white) and hickories (mockernut, pignut, and shagbark). Black gum, muscle wood, and sourwood are common understory species. The exotic invasive species mimosa, Princess tree, and tree-of-heaven were encountered on bluffs along the Nolichucky and its tributaries.

The cove hardwood forests were found on mesic slopes and in areas where creeks entered the river. These forests have a rich herbaceous layer with alum-root, bloodroot, black cohosh, little-brown jug, mayapple, Jack-in-the-pulpit, maidenhair fern, bulbous bladder fern, sweet Betsy, Solomon's plume, and Solomon's seal, to name just a few. Japanese stilt grass and garlic mustard, two exotic invasive species, were also found in the herbaceous layer. The forest canopy is dominated by tulip poplar with American beech, white oak, and yellow buckeye. The understory is also diverse with black locust, flame azalea, flowering dogwood, redbud, sourwood, silverbell, and spicebush. Two unusual shrubs (bladdernut and leatherwood) were found in coves on parcels below Nolichucky Dam.

Riparian areas along the river are common and associated with American sycamore, box elder, eastern cottonwood, river birch, and silver maple. Scrub-shrub wetlands (**Shrublands**) are found on islands within the river. These areas are dominated by black willow, buttonbush, river cane, silky dogwood, spicebush, tag alder, and Virginia willow. Herbaceous vegetation associated with the riparian areas includes cut-leaf coneflower, water willow, scouring rush, cutgrass, touch-me-not, sensitive fern, and various rushes and sedges.

Herbaceous Vegetation is commonly found in agricultural areas, along roadsides, and in grassy areas associated with developed areas. Nonnative plants commonly encountered in these areas are weedy species such as fescues, hop clovers, Queen Anne's lace, yellow sweet clover, white sweet clover, white clover, and wild pansy.

No DCH for rare plants is present on or around Nolichucky Reservoir.

3.5.2. Invasive Plant Species

Invasive, nonnative species of plants occur on most of the committed TVA parcels around the Douglas and Nolichucky reservoirs. EO 13112 defines an invasive nonnative 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 (USDA 2007). Invasive nonnative plants infest under and beside forest canopies and occupy small forest openings, increasingly eroding forest productivity, hindering forest use and management activities, and degrading diversity and wildlife habitat. They occur as trees, shrubs, vines, grasses, ferns, and forbs. Invasive species are typically robust plants without natural controls of insects and diseases and therefore are able to spread across the landscape beyond the control and reclamation measures applied by landowners and managers on individual land holdings (Miller 2003).

The Federal Noxious Weed List (USDA 2007) provides a list of invasive, nonnative plant species that are controlled by federal law. Fieldwork conducted in 2004 indicated populations of the purple loosestrife (*Lythrum salicaria*) occurred in many of the wetlands around Nolichucky Reservoir and along the reservoir shoreline (TVA 2006a); see Section

3.7 on wetlands for details. No other plants listed on the Federal Noxious Weed List of 2006 are reported from the lands around the Douglas and Nolichucky reservoirs. However, 15 species listed by the Tennessee Exotic Plant Pest Council (TN-EPPC 2001) as a severe threat to native ecosystems (Rank 1) were observed along Douglas and Nolichucky Reservoirs: autumn olive, bush honeysuckle, Chinese lespedeza, Chinese privet, English ivy, garlic mustard, Japanese honeysuckle, Japanese stilt grass, Johnson grass, kudzu, mimosa, multiflora rose, oriental bittersweet, princess tree, and tree-of-heaven. Other nonnative species such as crown vetch, tall fescue, shrubby bushclover, Queen Anne's lace, periwinkle, and small carpet grass were also encountered. 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. All of the TN-EPPC Rank 1 (severe threat) species are considered high priority when TVA plans management of invasive plants (James 2002).

3.5.3. Wildlife Communities

The variety of landforms, soils, climate, and geology across the Ridge and Valley ecoregion has allowed for an extremely diverse assemblage of animals. This ecoregion contains long stretches of ridges with adjacent valleys that run in a southwestern-to-northeastern direction. Deciduous forests and mixed evergreen-deciduous forests provide wildlife habitat among the intense agriculture and urban sprawl.

Seepages, streams, temporary ponds, and forested wetlands in deciduous forests provide habitat for numerous amphibians including American and Fowler's toads, green and northern cricket frogs, and a variety of salamanders including spotted, red, mud, eastern zigzag, northern slimy, and dusky salamanders. Reptiles commonly found in deciduous forests especially near water include the following: eastern fence lizard, ground skink, five-lined skink, eastern box turtle, eastern worm snake, black racer, and ring-necked snake.

Evergreen and Evergreen/Deciduous Forests account for less than 10 percent of the land cover on each reservoir. These habitats provide nesting habitat for woodland birds including pine, yellow-throated warblers, and great crested flycatcher. Birds that winter in this forest type include red-breasted and white-breasted nuthatches and dark-eyed junco. 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, southern bog lemmings, northern fence lizard, and six-lined racerunner.

Herbaceous vegetation found in early successional habitats including old fields, agricultural lands, and transmission line rights-of-way accounts for almost a third of the land surrounding Douglas Reservoir and almost 60 percent of the land surrounding the Nolichucky River. Early successional habitats provide habitat for a variety of bird species including eastern bluebird, northern mockingbird, eastern meadowlark, American crow, American kestrel, and red-tailed hawk. 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 those between forested areas bordered by early successional habitats. Birds commonly found at these edge habitats include wild turkey, great crested flycatcher, white-eyed vireo, Carolina wren, blue-gray gnatcatcher, brown thrasher, blue-winged warbler, prairie warbler, common yellowthroat, yellow-breasted chat, indigo bunting, eastern towhee, field and song sparrow, and orchard oriole. Mammals expected at edges include eastern cottontail, woodchuck, eastern harvest mouse, red fox, coyote, long-tailed weasel, and striped skunk.

Both reservoirs provide abundant open water habitats, extensive mud flats (during drawdown), and associated riparian zones that are used by a variety of wildlife. Several great blue heron colonies exist on the reservoirs as well as a number of nesting osprey. Double-crested cormorant and ring-billed and herring gulls are common throughout the reservoirs. The reservoirs are used extensively by waterfowl; mallard, wood duck, and Canada geese can be found year-round. Diversity of waterfowl species greatly increases in the fall as other species migrate into the region. The riparian corridor along the Nolichucky provides excellent habitat with a diverse array of wildlife species.

Rankin Bottoms WMA, located at the junction of the Nolichucky and French Broad rivers, provides habitat for a variety of wildlife including great blue heron, great egret, green heron, belted kingfisher, common yellowthroat, northern parula, prothonotary warbler, eastern kingbird, American goldfinch, northern rough-winged swallows, and song sparrows. Shallow embayments, especially those with emergent vegetation, provide foraging habitat for a variety of waterfowl including Canada goose, wood duck, mallard, gadwall, green-winged teal, ring-necked duck, scaup, common goldeneye, bufflehead, and hooded merganser. This area is well known for its fall aggregations of waterfowl and shorebirds including pectoral, least, spotted, stilt, semipalmated, and solitary sandpipers; killdeer; Wilson's snipe; dunlin; and greater and lesser yellowlegs. Uncommon species such as dowitchers, sanderlings, ruddy turnstone, western sandpiper, Baird's, and buff-breasted sandpipers are also attracted to the area. Local and regional birding groups regularly visit Rankin Bottoms to view the variety of birds that congregate in this area.

3.6. Endangered and Threatened Species

TVA biologists and natural resource specialists used the TVA Natural Heritage database to assess the endangered and threatened species within and around Douglas and Nolichucky reservoirs. The TVA Natural Heritage database was created to ensure that environmental compliance activities are conducted in a consistent manner across the TVA region and that these activities meet the requirements of NEPA and the ESA. Database searches are based on the following criteria: (1) distance, (2) presence/absence of suitable habitats, (3) element occurrence rank values, and (4) species or type of element present. Accordingly, plants are assessed within a 5-mile radius, aquatic species within 10 miles, and terrestrial species within 3 miles. Field surveys were conducted on tracts where impacts were likely to occur or that had not had prior planning. Records that are ranked "extirpated," or which no longer occur at the particular location of the record, were not included in this review.

Table 3.6-1 contains a list of 32 federally and state-listed species that records show could occur in the vicinity of or in the counties adjacent to Douglas and Nolichucky reservoirs. After consideration of the above criteria and evaluation of the likelihood of their occurrence, four federally listed as endangered, one federally listed as threatened, three candidates for federal listing, one federally protected, and five additional state-listed species are known to occur in the vicinity of Douglas and Nolichucky reservoirs (see Table 3.6-1).

Table 3.6-1. Federally and State-Listed Species Known to Occur Within the Douglas and Nolichucky Reservoirs Watersheds

Common Name	Scientific Name	Status		Reservoir	
		State	Federal	Douglas	Noli-chucky
Plants					
Appalachian cliff fern*	*Woodsia appalachiana*	SPCO/S1,S2	--	--	X
Ash-leaved bush-pea*	*Thermopsis fraxinifolia*	THR/S3	--	--	X
Branching whitlow-wort*	*Draba ramosissima*	END/S1	--	--	X
Spreading avens	*Geum radiatum*	END/S1	END	--	--
Spreading rockcress	*Arabis patens*	THR/S1	--	X	--
Invertebrate					
Spruce-fir Moss Spider	*Microhexura montivaga*	END/S1	END	--	--
Birds					
Bald Eagle*	*Haliaeetus leucocephalus*	NMGT/S3	PROT	X	--
Piping Plover*	*Charadrius melodus*	THR/S2	THR	X	--
Swainson's Warbler*	*Limnothlypis swainsonii*	NMGT/S3	--	X	--
Mammals					
Indiana Bat*	*Myotis sodalis*	END/S1	END	X	--
Gray Bat*	*Myotis grisescens*	END/S2	END	X	X
Carolina Northern Flying Squirrel*	*Glaucomys sabrinus coloratus*	END/S1	END	--	--
Southern Bog Lemming	*Synaptomys cooperi*	NMGT/S4	--	X	X
Fish					
Blue sucker	*Cycleptus elongates*	THR/S2	--	X	X
Chucky Madtom	*Noturus crypticus*	END/S2	CAND	X	X
Highfin carpsucker	*Carpiodes velifer*	NMGT/S2,S3	--	X	X
Lake Sturgeon	*Acipenser fulvescens*	END/S1	--	X	--
Rosyface Shiner	*Notropis rubellus*	TRKD/S2	--	--	X
Snail darter	*Percina tanasi*	THR/S2,S3	THR	X	X
Tangerine darter	*Percina aurantiaca*	NMGT/S3	--	X	X
Mussels					
Birdwing pearlymussel**	*Lemiox rimosus*	END/S1	END	--	X
Cumberland Bean #	*Villosa trabalis*	END/S1	END	--	X
Fluted Kidneyshell	*Ptychobranchus subtentum*	TRKD/S2,S3	CAND	--	X
Oyster mussel	*Epioblasma capsaeformis*	END/S1	END	X	X
Pink Mucket # *	*Lampsilis abrupta*	END/S2	END	--	X
Rayed Bean #	*Villosa fabalis*	TRKD/S1	CAND	--	X
Rough Rabbitsfoot #	*Quadrula cylindrica strigillata*	END/S2	END	--	X
Slabside Pearlymussel #	*Lexingtonia dolabelloides*	TRKD/S2	CAND	--	X
Spectaclecase	*Cumberlandia monodonta*	NOST/S2,S3	CAND	X	X
Tennessee Clubshell #	*Pleurobema oviforme*	TRKD/S2,S3	--	--	X
Cumberlandian combshell #	*Epioblasma brevidens*	END/S1	END	--	--
Snail					
Spiny riversnail #	*Io fluvialis*	NOST/S2	--	X	X

= Historical record, * = Species occurs near a TVA land tract, ** = Species is believed to occur in the Nolichucky River
Federal rank abbreviations: END = Endangered; THR = Threatened; PROT = Protected; NMGT = In need of management; CAND = Candidate for listing
State status abbreviations: END = Endangered; THR = Threatened; SPCO = Special concern; TRKD = Tracked
State rank abbreviations: S1 = Critically imperiled often with five or fewer occurrences; S2 = Imperiled often with <20 occurrences; S3 = Rare or uncommon often with <80 occurrences; S4 = Uncommon but not rare

3.6.1. Plants

Field surveys and reviews of the TVA Natural Heritage database showed that no federally listed species are known to occur within 5 miles of the Douglas or Nolichucky reservoirs (Table 3.6-1). The federally listed as endangered species spreading avens is known from the Great Smoky Mountains National Park in Sevier County. However, this species is restricted to high-elevation rocky summits of the Southern Appalachians, and neither plants nor suitable habitat for this species were observed during rare plant surveys conducted in the study area during 2008. No federally listed plant species are known to occur within any of the other counties adjoining the reservoirs.

Four plant species listed in the state of Tennessee are known to occur within 5 miles of the Douglas and Nolichucky reservoirs. One state-listed as threatened species, the spreading rockcress, occurs near Douglas Reservoir. Previously undocumented populations of the state-listed as endangered branching whitlow-wort, the state-listed species of special concern Appalachian cliff fern, and the state-listed as threatened species ash-leaved bush-pea were observed on Nolichucky parcels.

3.6.2. Terrestrial Animals

Results of field surveys and reviews of the TVA Natural Heritage database indicated that three federally listed and a federally protected terrestrial animal species occur within 3 miles of the Douglas and Nolichucky reservoirs or are known from the surrounding counties (Table 3.6-1).

The federally listed as threatened piping plover has been observed at Rankin Bottoms WMA on Douglas Reservoir during the shorebird fall migration season. Observations of an individual were reported in two of the past five years. These recent observations were in September when adult males or young of the year typically migrate through this region. The piping plover is considered a casual (e.g., not regularly occurring but four or more observations in past 10 years) migrant in Tennessee by the Tennessee Ornithological Society.

The federally listed as endangered gray bat roosts in caves year-round and typically forages over open water habitats including streams, rivers, and reservoirs. One cave known to support gray bats is located approximately 5 miles east of Douglas Reservoir. A colony with more than 8,000 individuals was discovered on the Nolichucky River downstream of the impoundment in 2000. A banded gray bat was captured in the cave, and data recovered from the band indicated that the individual was originally captured in the Cherokee National Forest. A second gray bat maternity colony was found in a cave upstream of the impoundment in 2008. The presence of these colonies suggests that gray bats forage throughout the study area.

The federally listed as endangered Indiana bat roosts in caves during the winter and typically forms summer roosts under the bark of dead or dying trees (Menzel et al. 2001; Miller et al. 2002). Optimal summer roosts occur in forests with an open understory and usually near water (Romme et al. 1995). Indiana bats forage primarily in forested areas along streams or other corridors. Several caves occur near Douglas and Nolichucky reservoirs. However, Indiana bats have not been found in these caves. Suitable summer roosting habitat (e.g., trees with exfoliating bark) exists throughout the study area.

Bald eagles build nests on Douglas Reservoir and downstream of the dam. No nests are currently known on TVA lands; however, this species has nested on TVA parcels in

previous years. Bald eagles are occasionally observed along the Nolichucky River, but no nests are known in the area or near TVA-managed lands. Bald eagle numbers are increasing in east Tennessee, and several TVA parcels on Douglas Reservoir and Nolichucky River provide suitable habitat for this species. Although no longer protected by the ESA, the bald eagle is protected by the Bald and Golden Eagle Protection Act.

Two terrestrial animal species listed by the State of Tennessee are known to occur within 3 miles of the Douglas and Nolichucky reservoirs. The southern bog lemming, state-listed as in need of management, can be found in variable habitats from moist, early successional to forested sites. The species prefers habitats with a prevalence of monocots and sedges (Whitaker and Hamilton 1998). Suitable habitat for this species occurs throughout the project area, especially along the riparian corridor along the Nolichucky River. The Swainson's warbler, state-listed as in need of management, was recently identified on a Nolichucky Reservoir parcel. Habitat for this species exists throughout much of this stretch of the Nolichucky River.

The federally listed as endangered spruce-fir moss spiders and Carolina northern flying squirrels are known from the counties surrounding the reservoirs; however, they are primarily found in high elevations (greater than 5,000 feet) within spruce-fir forests and in mixed conifer-northern hardwood forests of the Blue Ridge Physiographic region. The distribution of spruce-fir moss spiders is restricted to five mountaintops. Carolina northern flying squirrels can occur in forests of varying age and understory density, though most records show a preference for old-growth forest with widely spaced, mature trees (USFWS 1990). These species do not occur on TVA lands surrounding Douglas Reservoir and the Nolichucky River.

3.6.3. Aquatic Animals

Potentially affected sensitive aquatic animals were examined using a “watershed approach.” Sensitive species were selected based upon location within the reservoir watershed and location relative to parcels on the reservoir. Additionally, barriers to aquatic animal passage such as dams and, for certain species, impounded habitat were taken into account.

A review of the TVA Natural Heritage database indicated that a total of 19 federally listed aquatic species have been reported within the watersheds of Douglas and Nolichucky reservoirs. After consideration of the above criteria and evaluation of the likelihood of their occurrence, two federally listed as endangered, one federally listed as threatened, three candidates for federal listing, and five state-listed aquatic species are known to occur near Douglas and Nolichucky reservoirs. A list of these sensitive aquatic species and the associated reservoir is located in Table 3.6-1.

Federally Listed Aquatic Species Near Douglas and Nolichucky Reservoirs

The snail darter is restricted to the upper Tennessee River system, where it occurs in parts of the main river channel and in the lower reaches of some tributaries (Etnier and Starnes 1993). In 1975, TVA transplanted 61 snail darters into a site on the Nolichucky River (River Mile 17.8) as part of the snail darter recovery effort (Biggins and Eager 1983). Recent surveys have failed to encounter any snail darters on the Nolichucky River, and they most likely no longer occur within the area. However, this species has been collected in the French Broad River, downstream from Douglas Dam, and could potentially occur near Douglas Parcel 1.

The oyster mussel is found throughout the Tennessee and Cumberland rivers systems. It prefers shallow riffles in fast current. Adults can reach 70 millimeters in length. The oyster mussel is bradytictic (females retain parasitic larval mussels or glochidia over the winter) with several darters and the banded sculpin being identified as glochidia host (Parmalee and Bogan 1998). This species has been collected in the Nolichucky River, but not near any TVA land parcels.

The birdwing pearlymussel inhabits riffle areas of small to medium-sized rivers, with sand and gravel substrate in moderate to swift currents. The species is currently restricted to several small populations in the upper Powell and Clinch rivers in Tennessee and Virginia and in the Duck River in middle Tennessee (Parmalee and Bogan 1998). In 1982, TVA transplanted 1,000 individuals of this species into the Nolichucky River approximately 20 miles downstream from Nolichucky Dam (Jenkinson 1983). In 1995, a small birdwing pearlymussel was found at the transplant site, suggesting some reproduction. Although the mussel was not found in a 2000 mussel survey, there is good reason to believe that it still exists in the Nolichucky River below the dam (TVA 2006b).

Federally Listed Candidate Aquatic Species Near Douglas and Nolichucky Reservoirs
The spectaclecase is known to persist in the Clinch and Powell rivers, in a few scattered locations on the Tennessee River, and in other scattered locations from Minnesota and western Pennsylvania south to the Gulf of Mexico (Parmalee and Bogan 1998). This species was collected in the Nolichucky River, near Nolichucky Parcels 25 and 26 during a 1986 TVA mussel survey.

The slabside pearlymussel is known to persist in strong current with sand, fine gravel, and cobble substrate (Parmalee and Bogan 1998). This species was last collected in the Nolichucky River during a mussel survey in 1964, approximately 2 river miles downstream from Nolichucky Parcels 25 and 26.

The fluted kidneyshell inhabits sand and gravel substrate in riffles with swift current (Parmalee and Bogan 1998). This species has been collected in the Nolichucky River approximately 2 river miles downstream from Nolichucky Parcels 25 and 26.

State-Listed Aquatic Species Near Douglas and Nolichucky Reservoirs
The blue sucker inhabits relatively deep, swift waters over firm substrates in larger rivers (Etnier and Starnes 1993). Blue suckers have been collected near Nolichucky Parcels 25 and 26. Both of these sites are located downstream from Nolichucky Dam. They have been collected near Douglas Parcel 1 located downstream from Douglas Dam and above Douglas Dam in the Nolichucky River. Therefore, the species could potentially occur anywhere within the Nolichucky River below Nolichucky Dam downstream to Douglas Reservoir and below Douglas Dam.

The highfin carpsucker prefers a habitat of gravel substrate in relatively clear, medium to large rivers (Etnier and Starnes 1993). This species has been collected near Nolichucky Parcel 23, approximately 1 river mile upstream from Nolichucky Dam. However, this species has been collected in the Nolichucky River and could occur anywhere within Douglas Reservoir.

The lake sturgeon prefers large lakes and rivers, migrating up rivers to spawn over rocky reefs. This benthic species feeds primarily on crayfishes, mollusks, and insect larvae (Etnier and Starnes 1993). This species has been collected in the tailwater of Douglas Reservoir near Douglas Parcel 1.

The tangerine darter is restricted to clearer portions of large to moderate-sized headwater tributaries in the upper Tennessee River system, upstream from the Hiwassee River system (Etnier and Starnes 1993). The habitat typically occupied by this fish is deeper riffles, runs, and pools with large rubble, boulder, and bedrock substrates. Tangerine darters have been collected near Nolichucky Parcel 1, downstream from Nolichucky Dam, and likely occur near Nolichucky Parcels 25-38. In addition, they have been collected in the French Broad River and could potentially occur near Douglas Parcel 1.

The rosyface shiner commonly occurs in all upland physiographic provinces in Tennessee (Etnier and Starnes 1993). This fish prefers large creeks and small rivers with clear water and rubble, boulder, and bedrock substrates with considerable current. The rosyface shiner has been collected downstream of Nolichucky Dam and could potentially occur near Nolichucky Parcels 25 to 38 and Douglas Parcel 1.

Federally Listed Aquatic Species Historically Near Douglas and Nolichucky Reservoirs

The Cumberland bean occurs in small rivers and streams in gravel or sand substrate with fast current in riffle areas (Parmalee and Bogan 1998). It is restricted to a very few streams and rivers in the upper Cumberland River and its tributaries in Kentucky (Bogan and Parmalee 1983). This species is represented only by long-dead (relict) shells found in Lick Creek during a survey in 1967. The available information suggests that this species no longer occurs in the Nolichucky River watershed.

The pink mucket is typically a big river species, but occasionally individuals become established in small to medium-sized tributaries of large rivers. The species inhabits rocky bottoms with swift current usually in less than 3 feet of water (Parmalee and Bogan 1998). One female was collected near Nolichucky Parcels 32 and 34 in 1964. Since the pink mucket has not been collected in the area in decades (the most recent record is almost 50 years old), it is assumed that the species no longer occurs in the area.

The rough rabbitsfoot (*Quadrula cylindrica strigillata*) is known to persist in small to medium-sized rivers with clear, shallow water in sand and gravel substrate (Parmalee and Bogan 1998). This species is represented only by a subfossil shell found in Lick Creek during a survey in 1967. The available information suggests that this species no longer occurs in the Nolichucky River watershed.

Nolichucky River Unit 6 DCH for the federally listed as endangered oyster mussel and Cumberlandian combshell extends from NRM 9 (approximately 4 miles upstream of Enka Dam) to Susong Bridge in Hamblen and Cocke counties in Tennessee. The Nolichucky River currently supports a small population of oyster mussels and was historically occupied by Cumberlandian combshell.

Federally Listed Candidate Aquatic Species Historically Near Douglas and Nolichucky Reservoirs

The chucky madtom is a recently described species that is apparently closely related to members of the elegant madtom species group (*Noturus elegans*). The range of this madtom is uncertain. Within the Nolichucky River watershed, the chucky madtom is known only from Little Chucky Creek, a tributary that flows into the river at NRM 23.5. This rare madtom is unlikely to occur in habitats that could be affected by this land planning process.

The rayed bean is known to persist in sand substrate among rooted aquatic vegetation in shallow water with current (Parmalee and Bogan 1998). This species was last observed in

the Nolichucky River in 1964, approximately 2 river miles downstream from Nolichucky Parcels 25 and 26.

State-Listed Aquatic Species Historically Near Douglas and Nolichucky Reservoirs
The Tennessee clubshell occurs in the Tennessee and Cumberland rivers drainages. It prefers substrate of coarse gravel and sand in small shallow creeks and rivers with good current. It is thought to be tachytictic (parasitic larval mussels or glochidia are only found in the gills of females during the summer). Several fish species have been shown to serve as glochidia hosts (Parmalee and Bogan 1998). This species is represented only by a long-dead (relict) shell found in Little Chucky Creek in 1991. The available information suggests that this species no longer occurs in the Nolichucky River watershed.

The spiny riversnail is found in rapid, well-oxygenated waters of shoals and riffles of rivers, but not in slack water below shoals. The reservoir habitat associated with the land parcels under consideration in the DNTRLMP would not support the spiny riversnail.

3.7. Wetlands

Wetlands are defined by TVA Environmental Review Procedures (TVA 1983) as: "[T]hose areas inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetation or aquatic life that requires saturated or 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.

For the purposes of this EIS, broad estimates of wetland type and extent for each reservoir were determined using USFWS National Wetlands Inventory maps combined with data sets developed for TVA's 2004 *Reservoir Operations Study*. These data sources are based primarily on interpretation of aerial photographs. The wetland area of each reservoir includes wetlands located along the entire reservoir shoreline as well as wetlands located adjacent to the reservoir shoreline that are within the groundwater influence area of the reservoir (TVA 2004a). The National Wetlands Inventory data include wetlands located on all land adjacent to each reservoir regardless of ownership. Wetlands associated with TVA parcels on Douglas and Nolichucky reservoirs are summarized by area and type in Table 3.7-1.

Table 3.7-1. Summary of Wetlands on Douglas and Nolichucky Reservoirs by Area and Type

Reservoir	Combined Aquatic Beds and Mud Flats (acres)	Emergent (acres)	Forested (acres)	Scrub-Shrub (acres)	All Types (acres)
Douglas	3,656	281	270	477	4,684
Nolichucky	<10	30	276	18	334
Totals	**3,666**	**311**	**546**	**495**	**5,018**

General data regarding wetland type, rarity, and importance can be analyzed both by ecoregion and by watershed. Both Douglas and Nolichucky reservoirs are in the Ridge and Valley ecoregion as described by Griffith et al. (1998) and are located within the French Broad River watershed. Land use/land cover data generated by USEPA in 1999 indicated wetlands comprise less than 0.2 percent of overall land use types in this region (TDEC 2008a; 2008b).

The relatively steep and rolling topography of the region affects the type, location, and extent of wetlands. In general, low-lying, poorly drained areas are confined to floodplains, and large (>10 acres) wetlands are uncommon. Wetlands on and near Douglas Reservoir are primarily riverine/floodplain forests located in the floodplains of rivers and streams. 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. 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 Douglas and Nolichucky reservoirs. Mudflat habitats are more common as these habitats are associated with reservoir drawdowns. Douglas Reservoir has extensive areas of mudflats in Rankin Bottoms and in the main stem of the reservoir near the Interstate-40 bridge. The data presented in Table 3.7-1 reflects this seasonality, where the large amount of aquatic bed and mudflat habitat shown for Douglas Reservoir is a function of the time of year when aerial photography was processed.

Though the Nolichucky Reservoir is much smaller in area than Douglas Reservoir, it contains wetland habitats that are larger in size and more ecologically diverse. Siltation associated with historical upstream mining activities has created extensive and unique wetland types as sediment has filled in the reservoir. These wetlands include mixes of forested areas, scrub-shrub wetlands, and emergent/herbaceous wetlands. Wetlands below Nolichucky Dam are typically more riverine and associated with islands and floodplains.

Although a few of the floodplain wetlands in the Nolichucky Reservoir area have been impacted by cattle, many of the areas are relatively undisturbed by human activity. Ecologically, these undisturbed areas represent some of the best examples of wetland communities that exist in the Tennessee River Valley (TVA 2006a).

As noted in Section 3.5.2 on invasive species, populations of the purple loosestrife have been observed in many of the wetlands around Nolichucky Reservoir and along the reservoir shoreline (TVA 2006a). This invasive plant was found in highest densities in the island and sandbar wetlands close to the dam, on tree stumps and stationary logs all around the reservoir shoreline, and in many of the floodplain wetlands. Individual plants also were seen in at least one location downstream from Nolichucky Dam. Each purple loosestrife plant produces hundreds of thousands of seeds, and the species can spread rapidly throughout a wetland or a river system. Since it arrived in North America in the early 1800s, purple loosestrife has become widespread, including many locations in the Tennessee River Valley. Once it becomes established, this plant dominates formerly diverse emergent wetlands, excluding other plant species and the variety of animal species that depend upon them (USDA 2009).

Trends for Douglas and Nolichucky Reservoirs

Large-scale analysis of land cover data and changes over time by ecoregion indicate an overall loss of forested wetland habitat in the Ridge and Valley ecoregion (Loveland and Acevedo 2006). This loss is associated primarily with urbanization and agriculture.

Emergent and scrub-shrub wetland acreage has remained relatively stable in the last 20 years, with some gain in open water/pond habitats (Dahl 2006).

Field surveys were conducted to determine types and locations of wetlands on uncommitted parcels on each reservoir. Wetland determinations were performed according to the USACE standards, which require documentation of hydrophytic (i.e., wet-site) vegetation, hydric soil, and wetland hydrology (Environmental Laboratory 1987; Reed 1997; U.S. Department of Defense and USEPA 2003). Broader definitions of wetlands, such as that used by the USFWS (Cowardin et al. 1979), and the TVA Environmental Review Procedures definition (TVA 1983) were also considered in this review. Wetlands on uncommitted parcels were also categorized according to their ecological condition. Using a TVA-developed modification of the Ohio Rapid Assessment Method (Mack 2001), known as the TVA Rapid Assessment Method (TVARAM), specific to the TVA region, selected wetlands were categorized by their functions, sensitivity to disturbance, rarity, and irreplaceability.

According to TVARAM methodology, wetlands may be classified into three categories. Category 1 wetlands are considered “limited quality waters” and represent degraded aquatic resources. Category 2 includes wetlands of moderate quality and wetlands that are degraded but have reasonable potential for restoration. Category 3 generally includes wetlands of very high quality or of regional/statewide concern, such as wetlands that provide habitat for threatened or endangered species.

On Douglas, 15 uncommitted parcels were field surveyed for wetlands. Of these 15 parcels, only three did not contain wetlands due to the steep topography or lack of hydrology. Shorelines on virtually all the parcels contain a scattered mix of scrub-shrub and emergent vegetation. High-quality Category 3 forested wetlands are present on Parcels 28 and 47; these parcels were ranked as high quality due to a mix of forested/scrub-shrub/emergent habitats and the diversity of the plant communities. Common vegetation associated with forested wetlands on Douglas Reservoir includes box elder, sycamore, silver maple, persimmon, silky dogwood, and black willow. Vegetation representative of scrub-shrub and emergent wetlands on Douglas Reservoir includes spicebush, buttonbush, rice cutgrass, soft rush, swamp rosemallow, false nettle, smartweed, and sedges. With the exception of Parcels 28 and 47 described above, the smaller, shoreline wetlands on Parcels 2, 10, 25, 37, 45, 51, and 52 were all Category 2, moderate-quality wetlands due to their small size and relative lack of habitat diversity.

Nolichucky Reservoir has 12 uncommitted parcels. Three of these parcels are above Nolichucky Dam. Field surveys indicate scattered, small Category 2 (moderate quality) emergent and scrub-shrub wetlands are present along the shoreline of Parcel 12. Nine uncommitted parcels are located below Nolichucky Dam. This section is more riverine in nature; Parcels 26, 31, 33, and 34 have a mix of Category 3 (high quality) scrub-shrub, emergent, and forested wetland habitats associated with islands and lower-lying floodplain areas. Parcels 30, 35, 36, 37, and 38 do not contain wetlands due to the steep topography. Common wetland vegetation includes sycamore, soft rush, black willow, slippery elm, cattail, silky dogwood, smartweed, river birch, jewelweed, river cane, waterwillow, and spikerush.

3.8. Floodplains

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 or indirect support of floodplain development wherever there is a practicable alternative." As part of the *Nolichucky Reservoir Flood Remediation Final Environmental Impact Statement* (TVA 2006a), TVA identified the boundaries of the 100-year and 500-year floodplains around Nolichucky Reservoir. The floodplain boundaries for Douglas Reservoir have not been identified. Descriptions of these floodplains are provided in the RLMPs (Volumes II-III).

3.9. Cultural Resources

The Appalachian Highland region has been inhabited for at least 12,000 years. The areas around the major waterways of the region were the focus of prehistoric habitation, resource acquisition, and ceremonial activity for all of this time. Intensification of prehistoric occupation of the Appalachian Highlands is indicated by the frequency of archaeological sites attributable to the succeeding series of temporal/cultural traditions beginning with the Paleo-Indian Stage (ca. 12000-8000 B.C.) and continuing through the Archaic (8000-1200 B.C.), the Woodland (1200 B.C.-1000 A.D.), and the Mississippian (1000-1500 A.D.) stages. Following European contact, drastic cultural changes occurred, which for explanatory purposes, have been divided into the Protohistoric-Contact Stage (1500-1750 A.D.) and the subsequent Historic era, which includes the Cherokee (1700 A.D.-present) and European- and African-American (1750 A.D.-present) occupations. The sustained presence of Native American groups in the Appalachian Highlands and their continuation of traditional religious and cultural practices are of great importance to communities of the region.

TVA is mandated under the NHPA of 1966 and the Archaeological Resources Protection Act (ARPA) of 1979, as well as other legislation, to protect historic properties located on TVA land or affected by TVA undertakings. A historic property is defined in 36 CFR § 800.16(*l*)(1) as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places." In response to this mandate, TVA conducts inventories of its land to identify historic properties.

Prior to an undertaking, TVA must conduct the phased identification and evaluation procedure set forth in the 36 CFR § 800.4(b)(2) regulations of the Advisory Council on Historic Preservation and comply with Section 106 of the NHPA in order to identify, evaluate, and assess effects on historic properties and to determine the appropriate course of action. An undertaking is defined under 36 CFR § 800.16(y) as:

> [A] project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval.

The area of potential effect (APE), as defined in 36 CFR § 800.16(d), is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." For the DNTRLMP, TVA has identified the APE as the 2,055 acres of TVA-managed land on Douglas Reservoir and the 1,136 acres of TVA-managed land on Nolichucky Reservoir, a total of 3,191 acres.

3.9.1. Archaeological Resources

To support characterization of TVA-managed lands around the Douglas and Nolichucky reservoirs, TVA conducted surveys for archaeological sites along portions of the Nolichucky

River. Additionally, TVA evaluated results of previous surveys conducted along Douglas and Nolichucky reservoirs. The TVA-managed land around the reservoirs has not been systematically and completely surveyed for cultural resources. However, a number of archaeological sites have been identified on both the Douglas and Nolichucky reservoirs. Some sites are located below the full summer pool elevation. Certain sites are eligible or potentially eligible for listing in the NRHP. Descriptions of known archaeological resources are provided in the RLMPs (Volumes II-III). As projects are proposed for the Douglas and Nolichucky reservoirs lands, TVA will consider and address the effects to archaeological sites through compliance with Section 106 of the NHPA.

3.9.2. Historic Structures

Pursuant to Section 106 of the NHPA, TVA protects important historic structures located on TVA lands or affected by its undertakings. Such structures over 50 years old (including farmhouses, communities, resorts, fortifications, churches, and cemeteries) occur on or near TVA land on the Douglas and Nolichucky reservoirs.

Initially, European settlement in the early 19th century developed into an agricultural economy with farmsteads and small towns. Transportation networks evolved along the Tennessee River and its tributaries. Towns grew and prospered, and a plantation economy developed. Towns became river ports, and many ferry crossings were established. The later development of the railroad resulted in rail lines following the river valley. The Civil War brought destruction and economic devastation to the Valley. Following this war, development was slow. Agriculture, commerce, industry, and the river and rail systems gradually expanded.

The creation of TVA and the development of the Nolichucky and Douglas reservoirs resulted in further important changes to the region. The acquisition of land for the reservoirs resulted in the removal of many structures and other man-made features on these TVA lands. Very few structures remained, though many historic structures do remain on adjacent non-TVA lands. Historic structures (and other man-made features) remain from all of these historical periods. The earliest settlements tended to be on the waterways, and many of these were lost to TVA's reservoir development. In addition, the richest farmlands and the most prosperous farms and plantations were located on the river bottoms. Many of these were also lost.

A major historical structures survey has not been conducted for Nolichucky and Douglas reservoirs. However, to the extent practicable, structures over 50 years old were identified utilizing planimetric map data. Additionally, a windshield survey was conducted for those parcels that were deemed uncommitted during the scoping and preallocation process. Results of the survey indicated no historic structures are located on uncommitted parcels. However, presence of historic structures on all Douglas-Nolichucky lands cannot be ruled out until a site visit has been conducted.

3.10. Managed Areas and Ecologically Significant Sites

This section addresses natural areas that are on, immediately adjacent to, or within 3 miles of both the Douglas and Nolichucky reservoirs. 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, USDA, USFS, State of Tennessee, Greene 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 either tracts of privately owned land that are recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant but not specifically managed by TVA's Natural Areas Program.

NRI streams are free-flowing segments of rivers recognized by the National Park Service (NPS) as possessing remarkable natural or cultural values.

3.10.1. Natural Areas on TVA Lands

A review of the TVA Natural Heritage database indicated one natural area managed by the TVA Natural Areas Program is on the Douglas and Nolichucky reservoirs, and 11 managed areas are located on or immediately adjacent to Douglas and Nolichucky reservoirs (see Table 3.10-1), including the mapped study areas outside the boundaries of the reservoirs' proper. Descriptions of these natural areas are found in parcel descriptions in the accompanying RLMPs.

Table 3.10-1. Natural Areas on TVA Douglas and Nolichucky Reservoirs Lands

Reservoir	Natural Area	Steward	Location
Douglas	Trotter Bluff Small Wild Area	TVA-managed	Douglas Tailwater Parcel 1
	Lower French Broad and Lower Holston Rivers Nonessential Experimental Population Status	USFWS	Douglas and Cherokee Dam Tailwater, in Holston and French Broad Rivers, Parcel 1
	French Broad River Nationwide Rivers Inventory	NPS	FBRMs 0.0 to 32.0 below Douglas Dam
	Rankin Bottom State WMA	TWRA	Parcel 33
	Henderson Island Refuge	TWRA	Parcel 13
	Dandridge Municipal Park	City of Dandridge	Parcel 14
	Sevier County Park	Sevier County	Parcel 61
Nolichucky	Kinser Park	Greene County	Parcel 4
	Davy Crockett Lake Potential National Natural Landmark	NPS	Nolichucky Parcels from NRM 46.0 to Bird Bridge, NRM 50.5
	Nolichucky State WMA	TWRA	Nolichucky Parcels from NRM 46.0 to Bird Bridge, NRM 50.5
	Davy Crockett Birthplace State Park	TDEC	NRM 68.5

Douglas Reservoir

Seven managed areas are on or immediately adjacent to Douglas Reservoir and include Trotter Bluff TVA Small Wild Area (SWA), the Lower French Broad and Lower Holston River Nonessential Experimental Population Status (NEP) area, the French Broad River (one segment NRI-listed and one segment designated a State Scenic River), Rankin Bottom State WMA, Henderson Island Refuge, Dandridge Municipal Park, and Sevier County Park.

Trotter Bluff TVA SWA is the only TVA-managed natural area on Douglas and Nolichucky reservoirs lands. It is located on a portion of Parcel 1 of Douglas Reservoir and is described in Volume II, Section 4.0.

The Lower French Broad and Lower Holston Rivers NEP area extends from the base of Douglas Dam (FBRM 32.3) downstream into Knox and Sevier counties, Tennessee, to its confluence with the Holston River and then upstream as the Holston River flows through Knox, Grainger, and Jefferson counties, Tennessee, to the base of Cherokee Dam (Holston River Mile 52.3) and includes the lower 5 river miles of all tributaries that enter these river reaches. Since these river reaches are historic ranges for federally listed species (15 endangered mussels, one endangered snail, and two endangered fish species, as well as three threatened fish species), the NEP designation allows USFWS to reintroduce these species at some point in the future. To date, none of these species have been reintroduced. This area is located on Parcel 1 of Douglas Reservoir and is described in Volume II, Section 4.0.

The French Broad River, from River Mile 0.0 at the confluence with the Tennessee River to River Mile 32.0 below Douglas Dam, is NRI-listed. The NPS recognizes this stream segment for the following Outstanding Resource Values: scenic, recreational, geologic, fish, wildlife, historic, and cultural. Another approximate 30-mile segment of the French Broad, from the North Carolina state line to its confluence with Douglas Reservoir (south of Parcel 33), is designated by the State of Tennessee as a Class III (Developed River Area) State Scenic River. The Tennessee Scenic Rivers Program was established to preserve rivers or segments of rivers in their free-flowing natural or scenic conditions and to protect their water quality and adjacent lands.

The Rankin Bottom State WMA is a 1,255-acre area in Cocke County that extends north and south of Rankin Bridge; Parcel 33 is included in this WMA. It is managed by TWRA for small and large game hunting. Waterfowl hunting is allowed during deer season. Over half of this area, approximately 740 acres, is recognized by TWRA as a State Wildlife Observation Area. The mudflats, marshes, and sloughs in the area offer opportunities to view shorebirds, primarily during the fall migration from nearby roadsides, the shoreline, or on the water. No observation facilities are available.

Henderson Island Refuge, a 300-acre area in Jefferson County, is managed by TWRA. Listed as Parcel 13 in the Douglas RLMP, it is described in Volume II, Section 4.0.

Dandridge Municipal Park is listed as Parcel 14 in the Douglas RLMP and is described in Volume II, Section 4.0.

Sevier County Park is listed as Parcel 61 in the Douglas RLMP and is described in Volume II, Section 4.0.

Nolichucky Reservoir

Four managed areas are on or immediately adjacent to Nolichucky Reservoir and include Kinser Park, Davy Crockett Lake Potential National Natural Landmark (PNNL), Nolichucky State WMA, and Davy Crockett Birthplace State Park. No TVA-managed areas are located on this reservoir, and no NRI streams or Wild and Scenic Rivers are in the vicinity of Nolichucky Reservoir. Additionally, no natural areas were indicated in the vicinity of Parcels 25-38.

Kinser Park, Parcel 4 in the Nolichucky RLMP, is described in Volume III, Section 4.0.

Davy Crockett Lake PNNL, an approximate 1,000-acre area extending from Nolichucky Dam (NRM 46.0) upstream to Bird Bridge (NRM 50.5), was proposed in the mid-1980s as a

PNNL. The area was noted for the combination of wetland and floodplain communities that occur around the reservoir and the migrating waterfowl these habitats attract. The National Natural Landmark Program was established in the 1970s by the NPS to identify nationally significant examples of ecologically pristine or near-pristine landscapes. Davy Crockett Lake, while considered to meet the listing criteria, has not been registered as a National Natural Landmark.

The **Nolichucky State WMA**, with the same approximate acreage and extent as the Davy Crockett Lake PNNL described above, is managed for small game, waterfowl, and big game hunting by TWRA under a license agreement with TVA. To allow the area to function as a waterfowl refuge for a portion of the year, the area is closed to all hunting and access one week before and during the late duck season; see description of Parcel 24 in the Nolichucky RLMP, Volume III, Section 4.0.

Davy Crockett Birthplace State Park, located at approximately NRM 68.5, is a 105-acre area in Greene County that is preserved by TDEC as a historic site. The park features a museum, a cabin replica, a natural stone Crockett monument wall, recreational-vehicle and tent campground sites near the Nolichucky with water, electricity, and sewer hookups, a swimming pool, a playground, and a large picnic pavilion.

3.10.2. Additional Natural Areas Within a 3-Mile Radius of Douglas-Nolichucky Lands

No additional natural areas are within a 3-mile radius of Douglas Reservoir.

Three additional natural areas are within a 3-mile radius of Nolichucky Reservoir. These include the Tobacco University of Tennessee (UT) Agricultural Experiment Station (approximately 0.7 mile northeast of Parcel 5), the Unicoi State Bear Reserve/Cherokee (North) WMA (approximately 2.5 miles south of the Nolichucky River at NRM 70.0), and the Cherokee National Forest (approximately 2.5 miles east of the Nolichucky River at NRM 61.0).

The **Tobacco UT Agricultural Experiment Station** is a 500-acre area owned by UT. Research in burley tobacco production and beef cow and calf production is conducted on the property.

The **Unicoi State Bear Reserve** is managed by TWRA and is within that part of the North Cherokee WMA that is lying west of U.S. Highway 23 and Devils Fork Road, north of the Tennessee/North Carolina state line, east of Horse Creek Road to Highway 107 and south of Highway 107 to Erwin. Wild boar hunting with dogs and bear hunting are not permitted in this area unless a special exception is provided by proclamation.

Cherokee National Forest, a 640,000-acre forest located in eastern Tennessee along the North Carolina border, is managed by the USFS for outdoor recreation, wildlife and fish habitat, wilderness, water quality, minerals, wood products, and other uses.

3.11. Visual Resources

The physical, biological, and cultural features seen in the landscape give reservoir land its distinct visual character and sense of place. Varied combinations of these elements make the scenic resources of any portion identifiable and unique. Areas with the greatest scenic value such as islands, bluffs, wetlands, or steep forested ridges generally have the least capacity to absorb visual change without substantial devaluation. In the planning process,

comparative scenic values of reservoir land were assessed to help identify areas for scenic conservation and scenic protection. Four broad visual characteristics were evaluated. Two of these distinct but interrelated characteristics—viewing distance and human sensitivity—are commonly considered together as scenic visibility:

Scenic attractiveness is the measure of outstanding or unique natural features, scenic variety, seasonal change, and strategic location.

Scenic integrity is the measure of human modification and disturbance of the natural landscape.

Viewing distance indicates scenic importance based on how far an area can be seen by observers and the degree of visible detail.

The foreground distance is within 0.5 mile of the observer where details of objects are easily distinguished. Details are most significant in the immediate foreground from 0 to 300 feet.

Middleground is normally between 0.5 mile and 4 miles from the observer where objects may be distinguishable, but their details are weak and tend to merge into larger patterns.

Background is the landscape seen beyond 4 miles where object details and colors are not normally discernible unless they are especially large, standing alone, or provide strong contrast. Figure 3.11-1 illustrates the viewing distance parameters.

Human sensitivity is the expressed concern of people for the scenic value of the land under study. Concerns are derived or confirmed by public meetings and surveys. Sensitivity also includes considerations such as the number of viewers, frequency, and duration of views.

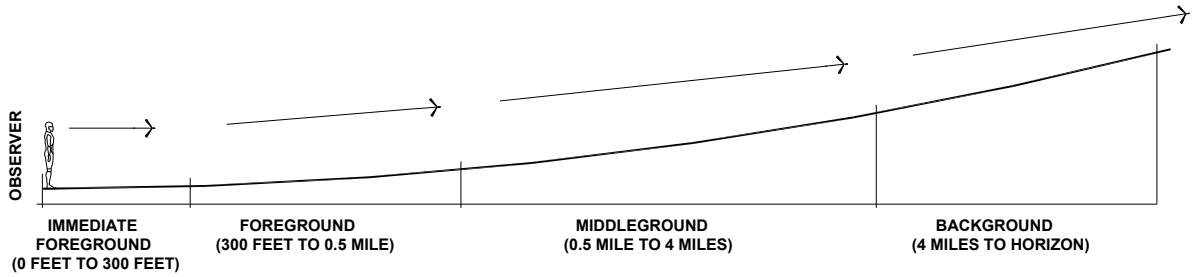

Figure 3.11-1. Viewing Distance

Where and how the reservoir landscape is viewed affects human perceptions of its aesthetic quality and sense of place. These impressions of the visual character can significantly influence how the scenic resources of public lands are appreciated, protected, and used.

Douglas and Nolichucky reservoirs include islands, secluded coves, and wetlands that are framed by high wooded ridges. Since the scenic features of the landscape are not limited by land boundaries, the attractive landscape character extends across TVA public and private land alike. The natural elements together with the communities and other cultural development provide a scenic, rural countryside.

Land uses adjacent to the reservoirs include residential development, public parks, and sporadic industrial features. The reservoirs offer abundant water-recreation opportunities along with a variety of scenery. Most creek embayments are broadly open at the mouth, and 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 water body also links the other landscape features together. Views across the water are satisfying and peaceful to most observers.

Islands are another significant feature. The islands provide scenic accents and visual reference points throughout the reservoirs and serve as visual buffers for less desirable views. They 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. There is usually little development in the foreground distances.

3.12. Water Quality

3.12.1. General Water Quality Characteristics

Water quality in the Douglas and Nolichucky reservoirs and their tailwaters is influenced by numerous factors including the size, geology, and land use conditions in upstream drainage areas, point and nonpoint discharges of pollutants, adjacent land use activities, and the operation of the reservoir. The reservoirs are in the French Broad River watershed, which lies within two distinct ecoregions (Blue Ridge Mountains and Ridge and Valley) with different geological characteristics and land use patterns that affect water quality.

The French Broad River watershed is one of the largest watersheds in the Tennessee Valley, and about half of its watershed is in Tennessee and half is in North Carolina. The French Broad River and its two large tributaries (Nolichucky and Pigeon rivers) originate in the Blue Ridge Mountains. The Nolichucky River originates in the highlands of the Blue Ridge ecoregion in North Carolina and flows for 110 miles westward across part of the Ridge and Valley ecoregion in Tennessee to where it empties into the French Broad River. All three of these rivers merge at the upper end of Douglas Reservoir, the only sizable reservoir in the watershed.

- The Ridge and Valley ecoregion is characterized by numerous ridges and valleys underlain by sedimentary rocks. The dissolution of the limestone and dolomite that underlie much of the valleys results in naturally high concentrations of dissolved minerals in the streams. The area has a relatively large population with substantial

industrial development. The water in the French Broad River is moderately hard and generally contains high nutrients concentrations.

- The Blue Ridge ecoregion is mostly forested because of the mountainous terrain and a large proportion of land within the national forest. The geology is primarily metamorphic and igneous rocks with minor areas of sedimentary geology. Because much of the ecoregion is underlain by rocks that are relatively insoluble and surface water drainage is rapid, streams draining this area generally contain relatively low concentrations of nutrients and dissolved minerals.

Impoundments like Douglas Reservoir convert typical riverine environments into lakelike conditions, thereby effecting change to many aspects of the aquatic environment, such as water temperature, dissolved oxygen (DO), nutrient dynamics, algal productivity, and aquatic life, in the reservoirs themselves and the rivers downstream. The length of time water is retained in a reservoir (residence time) is one of the primary mechanisms influencing these changes. Table 3.12-1 gives the average annual residence time and other physical characteristics of Douglas Reservoir.

Nolichucky Dam is located at NRM 46.0, and the reservoir extends about 6 miles upstream. Nolichucky Dam was built in 1913. Because of sediment-related problems, power production has stopped, and the project does not have a flood protection purpose. The project has been used for wildlife management, recreation, and environmental education since 1972. In 1995, the gates were concreted shut and water flows unregulated over the spillway at elevation 1,240.9 feet. In 1999, when the sediment volume was last evaluated, the remaining water volume in the reservoir pool was estimated to be about 1,716 acre-feet below elevation 1,240.9 feet. This open water volume is probably maintained by continued scouring in the active river channel. The average residence time in Nolichucky Reservoir is less than one day. Table 3.12-1 gives the average annual residence time and other physical characteristics of Nolichucky Reservoir.

Table 3.12-1. Physical and Operational Characteristics of Douglas and Nolichucky Reservoirs

Reservoir	River Basin	Drainage Area (square miles)	Length of Reservoir (miles)	Mean Annual Flow (cubic feet per second)[1]	Full Pool		Mean Depth (feet)[4]	Residence Time (days)[4]
					Area[2] (acres)	Volume[3] (10^3 acre-feet)		
Douglas	French Broad	4,541	43.1	6,495	30,401	1,408	14.1	49
Nolichucky	Nolichucky	1,183	6.0	1,838	383	1.706	X	1

1. Mean annual flow 1990-2008 for Douglas and 1990-2007 for Nolichucky
2. Nolichucky Reservoir area at spillway elevation 1,240.9 feet
3. Nolichucky Reservoir volume below elevation 1,240.9 feet
4. Mean depth and residence time are based on average for Douglas and at elevation 1,240.9 feet for Nolichucky

Relatively little sedimentation data have been collected for the Nolichucky Reservoir over the years, but enough information is available to show that the large volume and long duration of the sediment load in the Nolichucky watershed is unique in the Tennessee River system. In recent decades, regulations affecting the sediment sources have resulted in declining sedimentation rates and improvements to water quality; however, so much sediment remains in the river channel that high sedimentation rates in parts of the Nolichucky River are likely to continue for many more years (TVA 2006a).

In 2000, the physical and chemical characteristics of the sediments in Nolichucky Reservoir were determined by analyzing core samples collected at five land-accessible sites (NRMs 46.0, 46.6, 47.7, 56.6, and 60.4). No polychlorinated biphenyls (PCBs) or pesticides were detected, and all metals concentrations were within expected background levels (TVA 2006a).

Basic water quality information was collected at NRMs 20.8, 38.5, 39.3, 41.8, 57.2, 63.0 and 66.8 by TDEC (STORET data 1999-2008) and at NRM 10.3 by TVA (TVA data 1989-2008). The maximum temperature measurement was 28.5 degrees Celsius. The pH ranged from 6.5 to 8.7, and DO concentrations ranged from 2.6 to 17.3 milligrams per liter (mg/L). DO was below 5 mg/L at NRM 20.8 during two sampling events. The water in the Nolichucky River is moderately hard, averaging about 70 mg/L, with moderate alkalinity (average total alkalinity of 68 mg/L). Average organic nitrogen (0.276 mg/L), nitrate+nitrite nitrogen (0.59 mg/L), and total phosphorus (0.070 mg/L) concentrations were in the midrange of average concentrations found at 12 TVA stream monitoring sites across the Tennessee Valley.

3.12.2. Water Quality Monitoring

Water quality in TVA reservoirs is evaluated by several programs designed to monitor the chemical and biological conditions of the aquatic environment.

State-Designated Impaired Waters

The States of Tennessee and North Carolina conduct water quality testing in accordance with requirements of the CWA. State assessment results are compiled biennially and reported to the public. The principal vehicles for this water quality assessment reporting are the state 305(b) Report and 303(d) List (North Carolina Department of Environment and Natural Resources [NCDENR] 2008; TDEC 2008c). These reports present how well waters support designated uses as well as likely causes and potential sources of impairment.

Many segments of the French Broad and Nolichucky rivers systems are listed by the States of Tennessee and North Carolina as water-quality impaired under Section 303(d) of the CWA. Impaired waters have one or more properties that violate state water quality standards. They are considered impaired by pollution and not fully meeting designated uses, such as recreation (e.g., swimming and fishing), propagation of aquatic life, or water supply. The Tennessee state-designated impaired waters include the Nolichucky Reservoir. The reason for the impaired designation is a loss of biological integrity due to siltation.

State-designated impaired waters also include other segments of the Nolichucky River and streams or segments of streams flowing into Nolichucky River. Tennessee lists 94 stream segments or about 712 stream miles in the Tennessee portion of the Nolichucky watershed as impaired or partially impaired. North Carolina lists five stream segments or approximately 43 stream miles as impaired in the Nolichucky River system. The most common reasons for a stream to be impaired are the loss of biological integrity due to siltation, followed by the presence of elevated levels of bacteria. The most common sources of stream impairment are nonpoint source pollution from agriculture (e.g., pasture grazing).

State-designated impaired waters also include streams flowing into Douglas and its tailwater. The Tennessee water quality assessment reports list about 210 stream miles as impaired or partially impaired within this watershed (i.e., Lower French Broad River Basin;

HUC 06010107). The most common reasons for a stream to be impaired are the presence of elevated levels of bacteria and loss of biological integrity due to siltation and habitat loss, followed by low pH. The most common sources of stream impairment are nonpoint source pollution from agriculture and urban runoff.

The state-designated impaired waters include the reservoir tailwater below Douglas. Reasons for the impaired designation in the tailwater include flow alteration, low DO concentrations, and thermal modification, with the source being the releases from Douglas Dam. In the reservoir, the reason for impairment is accumulated mercury in fish tissue. The fish consumption advisories issued for Douglas Reservoir are discussed below.

Fish Consumption Advisories

TVA maintains a program to examine contaminants in fish fillets from TVA reservoirs and their major tributary streams. TVA coordinates fish tissue studies in the Tennessee Valley with state agencies that are responsible for protecting public health and issuing a fish consumption advisory if warranted. TVA assists the states by collecting fish from TVA reservoirs and checking the tissue for metals, pesticides, PCBs, and other chemicals that could affect human health. Typically, channel catfish and largemouth bass are monitored.

The State of Tennessee has issued a precautionary advisory for the consumption of largemouth bass from the upper reach of Douglas Reservoir from Rankin Bridge (FBRM 71.4) to Highway 321 (FBRM 77.5) because of elevated mercury concentrations. A precautionary advisory means that pregnant women, nursing mothers, and children should not eat the fish species named. All others should limit consumption of the named species to one meal per month.

There is no State of Tennessee fish consumption advisory for the Nolichucky watershed. There is a statewide fish consumption advisory in North Carolina due to mercury concentrations. The state advises women of childbearing age (15 to 44 years), pregnant women, nursing mothers, and children under age 15 against eating largemouth bass. All others should eat no more than one meal per week of largemouth bass.

Swimming Advisories

The states evaluate water quality by performing and evaluating bacteriological (*Escherichia coli*) monitoring. When test results warrant, the states issue water contact advisories. Currently, there are no state advisories against swimming in Douglas or Nolichucky reservoirs. An advisory has been issued for Leadvale Creek in Jefferson County, which flows directly into Douglas Reservoir, and the Little Pigeon River, which is located in Sevier County and flows into the French Broad River downstream of Douglas Dam.

Reservoir Ecological Health

Since 1990, TVA has implemented the Reservoir Ecological Health Monitoring Program to determine a particular reservoir's 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 (TVA 2006b). 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. The ecological health scoring system is based upon the following five indicators, which are typically measured in the reservoir forebay area (a short distance upstream of the dam) and one or more areas farther upstream:

1. 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 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 mg/L.

2. 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 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 differentially affected. 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 by-products (i.e., ammonia, sulfide, and dissolved manganese), more frequent water treatment problems, and higher water treatment cost.

3. 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.

4. Benthic macroinvertebrates (large bottom-dwelling invertebrates such as worms, snails, mussels, and crayfish) are included in aquatic monitoring programs because of their importance to the aquatic food chain, and because they have limited capability of movement, thereby preventing them from avoiding undesirable conditions. Data analyses that are indicative of good (and poor) water quality include the following: taxa richness, relative abundance of organisms tolerant or intolerant of poor water quality, and proportions of samples with no organisms present.

5. Fish are included because they are important to the aquatic food chain and because they have a long life cycle that allows them to reflect water quality conditions over time. Fish are also important to the public for aesthetic, recreational, and commercial reasons. Ratings are based primarily on fish community structure and function using a metric known as the Reservoir Fish Assemblage Index (RFAI). Also considered in the rating is the percentage of the sample represented by

omnivore and insectivores, overall number of fish collected, and the occurrence of fish with anomalies such as diseases, lesions, parasites, deformities, etc.

Each indicator is evaluated separately and assigned a rating of “good,” “fair,” or “poor.” Individual ratings are combined into a single, composite score for each reservoir, termed the Reservoir Ecological Health Rating.

Reservoir Ecological Health Ratings reported between 1994 and 2007 are summarized in Table 3.12-2 and provided in detail in Appendix E, Table E-5, for Douglas Reservoir; Nolichucky Reservoir was not monitored. Detailed results of ecological health monitoring for Douglas Reservoir are provided in the Douglas RLMP (Volume II).

Table 3.12-2. Typical Ratings for Dissolved Oxygen, Chlorophyll, and Sediment in Douglas Reservoir Monitored as Part of the Reservoir Ecological Health Monitoring Program, 1991-2007

Indicator	Douglas	
	Forebay	***Midreservoir***
Dissolved Oxygen	P	P
Chlorophyll	G/F	P
Sediment	G	G/F

Rating codes: G = Good; F = Fair; P = Poor; more than one rating code (e.g., G/F) for an indicator means that ratings have fluctuated generally between the rating categories shown.

3.12.3. Water Supply

The quality of the source water can have a direct impact on water treatment cost and how the water ultimately is used. Quality of source water may also determine the maximum amount of pollution from both point and nonpoint sources that a water body can assimilate without violating state water quality standards.

Douglas Reservoir

Numerous municipal water suppliers and industries utilize surface water from the Douglas Reservoir and its supporting watershed as their primary source of raw water. In 2005, the average daily surface water demand among these users was 99.56 millions of gallons per day (MGD) (Table 3.12-3).

Wastewater permits are issued by the states under the National Pollutant Discharge Elimination (NPDES) Program. Based on these permits, the 2005 average daily wastewater discharge was about 81.04 MGD.

Table 3.12-3. Average Daily Municipal and Industrial Water Intake From, and Wastewater Discharge to, Northeastern Tributary Reservoirs in 2005

Reservoir*	Municipal Water Intake (MGD)	Industrial Water Intake (MGD)	NPDES-Permitted Wastewater Discharge (MGD)
Douglas	47.16	52.4	81.04
Nolichucky	10.9	1.75	11.05

*includes intake from watersheds supporting each reservoir
Source: TVA’s 2005 Water Use Database

Nolichucky Reservoir
No municipal water suppliers currently withdraw water from Nolichucky Reservoir. Greeneville Water and Light Commission and Jonesborough Water Department withdraw water from Nolichucky Reservoir's supporting watershed. The 2005 average daily water demand for these intakes combined was about 10.9 MGD. There are no industrial withdraws from Nolichucky Reservoir. There is one industrial withdrawal in Nolichucky Reservoir's supporting watershed. The 2005 average daily water demand for this withdrawal was 1.75 MGD (Table 3.12-3).

Wastewater permits are issued by the states under the NPDES Program. Based on these permits, the 2005 average daily wastewater discharge was about 11.05 MGD.

3.13. Aquatic Ecology

As previously mentioned, the Douglas and Nolichucky reservoirs are located in the Ridge and Valley ecoregion. Reservoir parcels lay within impounded sections of the French Broad and Nolichucky rivers in Tennessee.

The Tennessee River and all major tributaries, including the French Broad and Nolichucky rivers, have been affected by impoundments and other sources of pollution. At times, serious pollutants such as mercury and PCBs have become significant fish contaminants in some regional reservoirs (Etnier and Starnes 1993). As a result, the larger river fish faunas have fragmented distributions with several known elements to have disappeared (Etnier and Starnes 1993).

Aquatic habitat in the littoral (near-shore) zone is greatly influenced by underwater features, topography, and back-lying land use. Underwater features include the presence of woody stumps, debris, rocks, logs, or other structures. Undeveloped shoreline is mostly wooded; therefore, fallen trees and brush provide woody cover in those areas. Woody habitat is usually reduced on land where back-lying property is largely residential or agricultural. Use of the TVA-managed public land below the 1,007-foot MSC on Douglas by third parties with access rights has historically negatively influenced the amount of vegetation on some shoreline. As a result, residential development on private land adjoining TVA shoreland has resulted in a loss of riparian woody vegetation. In some cases, clearing of trees and brush may have accelerated shoreline erosion, resulting in the placement of seawalls or other shoreline stabilization. Shorelines lacking woody vegetation (where habitat would have been poor prior to development) still can provide suitable habitat; in fact, aquatic habitat can actually be improved by placement of riprap or construction of fixed docks on some of these sites. Rock is an important constituent of littoral aquatic habitat over much of the reservoir, in either the form of bedrock outcrops or a mixture of rubble and cobble on steeper shorelines or gravel along shallower shorelines. Substrate and available aquatic habitat in coves and embayments also typically correspond to shoreline topography and vegetation.

TVA developed the Ecological Health Monitoring Program to determine a particular reservoir's health as compared to other reservoirs in the TVA system, to provide data for comparing future water quality conditions, and to be a screening program for targeting more detailed studies if the need arises. As explained above, the ecological health scoring system is based on five indicators (1) DO; (2) chlorophyll, a measure of the amount of algae in the water; (3) sediment contaminants—PCBs, pesticides, and metals; (4) benthic macroinvertebrates, and (5) fish assemblage. Each indicator is evaluated separately, and then, individual ratings are combined into a single, composite score for each reservoir.

Reservoir Ecological Health Monitoring is one of five components of TVA's overall river and reservoir monitoring effort, termed Vital Signs Monitoring. Other components of the monitoring program include: (1) examination of ecological conditions in tributary streams to the Tennessee River; (2) monitoring of toxic contaminants in fish flesh to determine their suitability for consumption; (3) evaluating the number and size of important game fish species to help ensure their populations remain abundant and robust; and (4) sampling of bacteriological concentrations at recreational areas to evaluate their suitability for water contact recreation. Douglas Reservoir was monitored on an annual basis until 1995. After 1995, TVA went to a two-year monitoring cycle. Figure 3.13-1 shows the reservoir ecological health scores for Douglas Reservoir from 1994 through 2005. Because collection methods and rating criteria for the fish and benthic communities were different prior to 1994, those results cannot be compared directly to samples taken using current methods and therefore are not presented in this document. For the past seven years, Douglas Reservoir has rated poor every year with the exception of 1994 and 2005. Sampling on Nolichucky Reservoir has not been done for Reservoir Ecological Health Ratings.

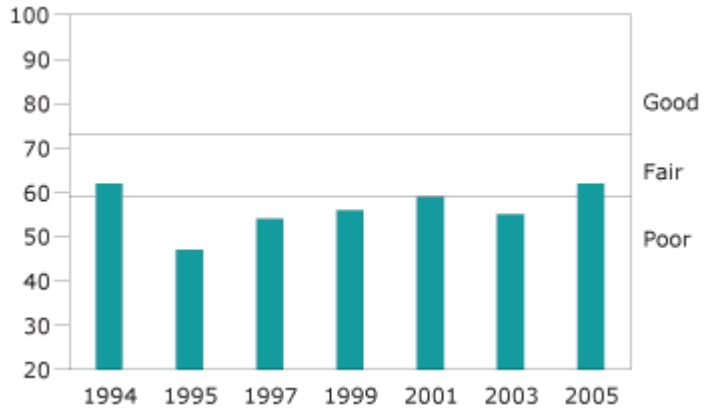

Figure 3.13-1. Douglas Reservoir Ecological Health Ratings, 1994-2005

Benthic Monitoring

Benthic macroinvertebrates include bottom-dwelling animals including readily visible insect larvae, aquatic worms, snails, crayfish, and mussels. A technique called the Benthic Index of Biotic Integrity compares specific parts of the results from a sampled site to what a site on that type of stream might produce if it were in excellent condition (Kerans and Karr 1994). Modern biologists use details in the results from studies such as this to learn more about the bottom-dwelling animal communities at different locations. Benthic macroinvertebrates are included in aquatic monitoring programs because of their importance to the aquatic food chain and because they have limited capability of movement, thereby preventing them from avoiding undesirable conditions. Sampling and data analysis that are indicative of good (and poor) water quality include total abundance of all species, except those indicative of poor water quality, and proportions of samples with no organisms present. Areas sampled on Douglas Reservoir include the forebay and midreservoir site. Benthic community scores ranged from "poor" to "fair" over the seven years sampled, most recently scoring "fair" at both sampling sites (Table 3.13-1). Benthic samples were only taken in five areas of the Nolichucky River in 2000, as part of TVA's *Nolichucky Flood Remediation Environmental Impact Statement* (TVA 2006a). As shown in

Table 3.13-2, the bottom-dwelling community at the site in Nolichucky Reservoir (NRM 50.6) was rated "poor" while all four of the other sites were rated "fair."

Table 3.13-1. Recent (1995-2007) Benthic Community Ratings Collected as Part of the Vital Signs Monitoring Program in Douglas Reservoir

Station	Rating
Forebay - French Broad River	P/F
Midreservoir - French Broad River	P/F

Rating codes: P = Poor (7-16); F = Fair (17-26); more than one rating code (e.g., P/F) for an indicator means that ratings have fluctuated between the rating categories shown

Table 3.13-2. Listing of Benthic Index of Biotic Integrity Ratings for Benthic Invertebrate Community Surveys in the Nolichucky River, 2000

Sample Site	Score
NRM 8.5	F
NRM 27.9	F
NRM 42.1	F
NRM 50.6	P
NRM 60.6	F

Rating codes: P = Poor (7-16); F = Fair (17-26)

Fisheries Monitoring

The Reservoir Vital Signs Monitoring Program included semiannual fish sampling on Douglas Reservoir from 1999 to 2007. A list of fish species commonly found in Douglas Reservoir can be found in Appendix E. Fish are included because they are important to the aquatic food chain and because they have a long life cycle that allows them to reflect water quality conditions over time. Fish are also important to the public for aesthetic, recreational, and commercial reasons. Ratings are based primarily on fish community structure and function using a metric known as the RFAI. Also considered in the rating is the percentage of the sample represented by omnivore and insectivores, overall number of fish collected, and the occurrence of fish with anomalies such as diseases, lesions, parasites, deformities, etc. (McDonough and Hickman 1999). Recent (1999-2007) RFAI ratings collected as part of the Vital Signs Monitoring Program indicate the fish community in Douglas Reservoir indicates a trend of improvement from "fair" to "fair/good" at the forebay site and a fluctuating score of "fair" and "good" at the midreservoir site.

Nolichucky Reservoir is not currently sampled for RFAI scores. However, samples were collected from 1990 to 2000 for Index of Biotic Integrity (IBI) scores. Under IBI protocols, all discernible habitats at a given site are sampled until no previously uncollected species are found, thus assuring a permissible sample. IBI metrics address 12 community characteristics, which are summed to produce an overall site score. Scores of 58-60 are rated excellent, 53-57 are considered good/excellent, 48-52 are considered good, 45-47 are considered fair/good, 40-44 are rated fair, 35-39 are rated fair/poor, 28-34 are poor, 23-27 are rated very poor/poor, and 12-22 are considered very poor. A backpack-electrofishing unit, a 20-foot seine, and dip nets were used to collect fish in wadable habitats, while a boat-mounted electrofishing unit was used to sample deep runs and pool

areas. IBI scores and ratings for fish community samples collected in the Nolichucky River from 1990-2000 are listed in Table 3.13.-4. Overall results indicate that the Nolichucky fish assemblage has been consistently in the "good" range throughout the river.

Table 3.13-4. Index of Biotic Integrity Ratings for Fish Community Samples Collected in the Nolichucky River, 1990-2000

Sample Site	1990	1991	1992	1993	1994	1996	1997	1998	2000
NRM 8.5	F	G	F	G	G	G	G	G	G
NRM 27.9	-	-	-	-	-	-	-	-	G
NRM 42.1	-	-	-	-	-	-	-	-	G
NRM 50.6	-	-	-	-	-	-	-	-	F/P
NRM 60.5	-	-	-	-	-	-	G	-	G
NRM 89.0	-	-	-	-	-	-	F	-	G/E
NRM 97.5	G	-	-	-	-	-	-	-	-
NRM 106.8	-	-	-	-	-	-	G	-	-

IBI rating codes: F = Fair; P = Poor; G = Good; E = Excellent; more than one rating code (e.g., F/P) for an indicator means that ratings have fluctuated between the rating categories shown

12-22	23-27	28-34	35-39	40-44	45-47	48-52	53-57	58-60
Very Poor	Very Poor/ Poor	Poor	Poor/Fair	Fair	Fair/Good	Good	Good/ Excellent	Excellent

A Sport Fishing Index (SFI) has been developed to measure sport fishing quality for various species in Tennessee and Cumberland Valley reservoirs. The SFI is based on the results of fish population sampling by TVA and state resources agencies and, when available, results of angler success as measured by state resource agencies (i.e., bass tournament results and creel surveys). The SFI is calculated by comparing values for selected quantity and quality parameters from creel and population samples to expected values that would occur in a good or high-quality fishery. Point values are assigned to the parameters with higher points for higher-quality fisheries. An overall SFI is obtained by summing the point values (60 possible) that were assigned to each of the quantity and quality parameters (Hickman 2000). In 2006, Douglas Reservoir rated above the Valleywide average for black bass and smallmouth bass. It rated below the Valleywide average for largemouth bass, black crappie, crappie, walleye, and white crappie (Table 3.13-5).

Table 3.13-5. Sport Fishing Index Scores for Selected Sport Fish Species in Douglas Reservoir, 2006

Fish Species	2006 Score	2006 Valleywide Average
Black Basses	38	36
Black Crappie	28	31
Crappie	28	36
Largemouth Bass	26	33
Smallmouth Bass	32	30
Walleye	26	33
White Crappie	28	41

Nolichucky Reservoir is not sampled for an SFI score, but according to a 2007 TWRA fisheries report of the Nolichucky River between the North Carolina state line and the French Broad River, the Nolichucky River supports one of the best warm water sport fisheries in the area (Carter et al. 2007). Anglers have the opportunity to catch

muskellunge, flathead catfish, channel catfish, all species of black bass, and rock bass. In the winter when water temperatures permit, rainbow trout are stocked from the USFWS hatchery in Erwin, Tennessee. The TWRA report concluded that muskellunge should continue to be stocked as fish become available.

3.14. Air Quality

NAAQS have been established to protect the public health and welfare with respect to six pollutants: particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead. An area where any air quality standard is violated may be designated as a nonattainment area for that pollutant, and emissions of that pollutant from new or expanding sources are carefully controlled.

On March 12, 2008, the USEPA significantly strengthened its NAAQS for ground-level ozone. USEPA is revising the 8-hour primary ozone standard designed to protect public health to a level of 0.075 parts per million (ppm). The previous standard set in 1997 was 0.084 ppm. In addition to tightening the primary standard, USEPA is also strengthening the secondary 8-hour standard for ozone to the level of 0.075 ppm. The secondary standard is designed specifically to protect sensitive plants from damage caused by ozone exposure throughout the growing season. States must have made recommendations to USEPA no later than March 2009 for areas to be designated attainment, nonattainment, and unclassifiable. USEPA is expected to issue final designations in the near future unless there is insufficient information to make these designation decisions.

It is likely that, under these tightened ozone standards, some of the counties in which the Douglas and Nolichucky reservoirs are located may be designated nonattainment for ozone. USEPA tightened the primary fine particle standard in December 2006 and designated additional nonattainment areas in December 2008, though none of the counties covered by this DNTRLMP were designated as nonattainment for fine particulate matter. All of the counties containing the Douglas and Nolichucky reservoirs are currently in attainment of each of the NAAQS.

Prevention of significant deterioration (PSD) regulations are used to limit air pollutant emissions from new or expanding sources. Under these regulations, some national parks and wilderness areas are designated PSD Class I air quality areas and are specially protected. There are four Class I areas within 100 kilometers (62 miles) of the reservoirs, including Linville Gorge Wilderness, the Great Smoky Mountains National Park, Shining Rock Wilderness, and Joyce Kilmer/Slickrock Wilderness.

3.15. Noise

Along the Douglas and Nolichucky reservoirs, sources of noise include industrial development, project operation facilities, substations, developed recreation sites, and traffic. Noise-related effects of lands planning in the Douglas and Nolichucky reservoirs were evaluated qualitatively based upon the number of acres allocated to each zone, based upon the assumption that the potential to generate noise is greatest with industrial land uses and project operations, is moderate with developed recreation uses and shoreline access, and is least with conservation land uses.

3.16. Socioeconomics

Socioeconomics is important for understanding the relationship between economic activity and social life. It focuses on the social impact of economic change, such as might occur with a commercial or public concern (business, infrastructure, recreation), such as the

availability of employment, resources, or agreements and regulations. Social effects can be wide-ranging in their impacts to people in a small community to an entire society or one of its segments.

3.16.1. Population and Economy

The Douglas and Nolichucky reservoirs are located in northeast Tennessee. Population in the counties where these tributaries are located is estimated to be about 300,000, as of 2008 (Table 3.16-1). In three of these counties (Cocke, Greene, and Hamblen), population grew more slowly than in the nation and the state between 1980 and 2008. However, both Jefferson and Sevier counties grew much more rapidly than either the state or the nation. Projections suggest that the population of this area will reach about 376,000 by the year 2020. Sevier County is projected to continue to grow much faster than the nation and the state between now and 2020.

Overall, the rural population share in the area is well above the Tennessee average, which is somewhat higher than the national average. However, in Hamblen County, only about 25 percent of the population is considered rural, well below the state average of 36 percent but still higher than the national average of 21 percent.

Table 3.16-1. Population

Area	1980	2000	Estimate 2008	Projection 2020	Percent Increase, 1980-2008	Projected Percent Increase, 2008-2020	Percent Rural, 2000
Cocke, Tenn.	28,792	33,565	35,688	44,030	24.0	23.4	67.0
Greene, Tenn.	54,422	62,909	66,157	74,935	21.6	13.3	68.8
Hamblen, Tenn.	49,300	58,128	62,132	73,315	26.0	18.0	25.4
Jefferson, Tenn.	31,284	44,294	51,074	61,318	63.3	20.1	75.0
Sevier, Tenn.	41,418	71,170	84,835	122,526	104.8	44.4	64.9
County Total	205,216	270,066	299,886	376,124	46.1	25.4	59.2
Tennessee	4,591,023	5,689,283	6,214,888	7,195,375	35.4	15.8	36.4
U.S. (000)	226,545.8	281,421.9	304,059.7	341,387.0	34.2	12.3	21.0

Sources: Historical data and U.S. projection from U.S. Census Bureau, http://www.census.gov
Projections for Tennessee: The University of Tennessee-Knoxville (Undated)

Total employment in 2007 was almost 167,000 in the area counties (Table 3.16-2). Both farming and manufacturing account for a larger share of jobs than in the state and the nation. Farming is especially important to the economies of Cocke, Greene, and Jefferson counties. Manufacturing is especially important in Hamblen County and to a lesser extent in Cocke, Greene, and Jefferson counties. Retail trade is slightly more important to the region than it is statewide and nationally. This is especially true in Sevier County, due to its heavy dependence on tourism.

Table 3.16-2. Employment, 2007

Area	Total Employment	Percent of Total Employment				
		Farm	Manufac -turing	Retail Trade	Govern-ment	Other
Cocke, Tenn.	13,179	7.8	15.4	14.3	14.6	47.9
Greene, Tenn.	38,252	9.5	19.4	12.9	11.5	46.7
Hamblen, Tenn.	41,579	1.8	25.4	11.7	9.6	51.5
Jefferson, Tenn.	20,405	6.5	14.4	10.8	12.4	55.9
Sevier, Tenn.	53,330	1.7	2.8	17.4	9.0	69.0
County Total	166,745	4.6	14.7	13.9	10.6	56.3
Tennessee	3,746,010	2.5	10.5	11.2	12.0	63.8
U.S. (000)	180,943.8	1.6	8.0	10.7	13.4	66.3

Source: U.S. Bureau of Economic Analysis, Regional Economic Accounts, http://www.bea.gov/regional/reis/.

The unemployment rate in the area in 2008 was 7.6 percent, higher than the national and Tennessee rates (Table 3.16-3). The highest rate, 9.1 percent, was in Greene County, followed by Cocke County at 8.5. Rates in the other counties were slightly higher than the state and national levels.

The Douglas and Nolichucky Reservoirs are located in a relatively low-income area (Table 3.16-3). All of the counties in the area have per capita personal income levels below the state and national averages. Cocke County is the poorest county, with per capita income only 55 percent of the national average. Jefferson County, the second lowest, is 65 percent of the national average. The remaining counties have average income between 70 and 82 percent of the national average, still below, but much closer to, the Tennessee average.

Table 3.16-3. Unemployment and Income

Area	Unemployment Rate, 2008	Per Capita Personal Income, 2007	
		Dollars	Percent of U.S.
Cocke, Tenn.	8.5	21,414	55
Greene, Tenn.	9.1	31,490	82
Hamblen, Tenn.	7.0	27,007	70
Jefferson, Tenn.	7.0	25,200	65
Sevier, Tenn.	6.9	30,276	78
County Total	7.6	27,952	72
Tennessee	6.4	33,395	86
U.S. (000)	5.8	38,615	100

Sources: Tennessee Department of Labor and Workforce Development, Division of Employment Security; U.S. Department of Labor, Bureau of Labor Statistics; U.S. Bureau of Economic Analysis, Regional Economic Accounts, http://www.bea.gov/regional/reis/

3.16.2. Environmental Justice

The population of the area is predominantly non-Hispanic white, with a minority population of 8.0 percent (Table 3.16-4). The minority population share ranges from 5.3 percent in Cocke County to 17.0 percent in Hamblen County. The minority population in Hamblen County is largely white Hispanic; in the other counties, most of the minority population is nonwhite.

Table 3.16-4. Minority Population, 2008

Area	Total Population	Nonwhite Population	White Hispanic Population	Total Minority Population	Percent Minority Population
Cocke	35,688	1,424	458	1,882	5.3
Greene	66,157	2,335	1,361	3,696	5.6
Hamblen	62,132	4,098	6,455	10,553	17.0
Jefferson	51,074	2,138	1,211	3,349	6.6
Sevier	84,835	2,633	1,977	4,610	5.4
County Total	299,886	12,628	11,462	24,090	8.0
Tennessee	6,214,888	1,219,860	204,512	1,424,372	22.9
U.S. (000)	304,059.7	61,420.5	43,147.8	104,568.3	34.4

Source: U.S. Census Bureau, http://www.census.gov/popest/race.html

Overall, poverty levels are slightly higher than the state average (Table 3.16-5). In 2007, the poverty level in the area was 17.6 percent, while the state average was 15.8 percent and the national average was 13.0 percent. Cocke County had the highest poverty level, at 26.6 percent. The remaining counties had poverty levels ranging from 12.7 percent in Sevier County to 26.6 percent in Cocke County.

Table 3.16-5. Persons Below Poverty Level, 2007

Area	Persons Below Poverty Level (Number)	Persons Below Poverty Level (Percent)
Cocke	9,282	26.6
Greene	12,681	19.7
Hamblen	10,270	16.9
Jefferson	8,427	17.4
Sevier	10,495	12.7
County Total	51,155	17.6
Tennessee	945,263	15.8
U.S.	38,052,247	13.0

Source: U.S. Census Bureau, http://www.census.gov/hhes/www/poverty/poverty.html

CHAPTER 4

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter addresses direct, indirect, and cumulative effects of Alternatives A, B, and C on the identified resources. A direct impact is an effect caused by the action and occurring at the same time and place. An indirect impact is an effect caused by the action but removed in time or space. A cumulative impact results from the incremental or collective impact by the action when combined with other past, present, and reasonably foreseeable future actions. Cumulative effects were examined within the French Broad River and Nolichucky River watersheds, in the context of gradually increasing population and land development in that area.

Analysis of environmental consequences was 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 Zones 7 (Shoreline Access), 2 (Project Operations), and 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, moderate under Zones 7, 2, and 6, slight under Zone 4, and least under Zone 3. 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 consistent with applicable laws and regulations.

None of the three alternatives is expected to be controversial, involve unique or unknown risks, or violate federal, state, or local laws.

4.1. Land Use

Under any of the alternatives, no significant direct or indirect impacts to land use are expected. The amount of shoreline available for residential development would not change, 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 landrights for residential use or the disposal of reservoir lands for residential use. All alternatives are consistent with this policy.

Under Action Alternatives B and C, TVA would update the allocations originally designated for Douglas Reservoir in the 1965 Forecast System to reflect the land use zones defined in Table 2.3-2.

Alternative A – No Action

Under the No Action Alternative, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage the lands surrounding Douglas Reservoir. Nolichucky Reservoir would remain unplanned and without forecast designations. The lands with existing TVA projects and existing land use agreements surrounding the two reservoirs would not be allocated to a land use zone; therefore, complete alignment with existing TVA policies would not occur. Requested land uses on

Douglas Reservoir that are consistent with the Forecast System designation, and all requested land uses on Nolichucky Reservoir, could either be approved or denied based on a review of potential environmental impacts, TVA's Land Policy, and other administrative considerations. Under Alternative A, there would be minor direct adverse effects and minor indirect effects due to the absence of comprehensive land plans.

Alternative B – Proposed Land Use Alternative
Under this alternative, TVA would create and implement individual RLMPs for the Douglas and Nolichucky reservoirs. The lands managed by TVA would be placed into one of the seven land use zones that best fits the existing land use (see Table 2.1-1). TVA would promote conservation of natural resources and developed recreation by allocating the land surrounding the two reservoirs as follows: 621 acres (19.5 percent) to Zone 3 (Sensitive Resource Management), 980 acres (30.7 percent) to Zone 4 (Natural Resource Conservation), and 496 acres (15.5 percent) to Zone 6 (Developed Recreation).

Under Alternative B as compared to Alternative A, 621 acres would be allocated to Zone 3 (Sensitive Resource Management). The amount of land allocated to Zones 4 (Natural Resource Conservation) and 6 (Developed Recreation) would correspondingly decrease 379 acres and 242 acres, respectively, under Alternative B as compared to Alternative A. Under this alternative, there would be no adverse direct or indirect effects to land use. However, there would be minor beneficial effects of long-term, comprehensive land plans.

Alternative C – Modified Land Use Alternative
Under this alternative, TVA would create and implement individual RLMPs for the Douglas and Nolichucky reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use, public comments, and other opportunities identified during scoping.

Selection of Alternative C, as compared to Alternative B, would result in changes in land use zones for 16 parcels of TVA-managed land. TVA would promote conservation of natural resources with an emphasis on the management of sensitive resources by allocating the land surrounding the two reservoirs as follows: 713 acres (22.3 percent) of the land surrounding the two reservoirs would be allocated to Zone 3 (Sensitive Resource Management), 971 acres (30.4 percent) to Zone 4 (Natural Resource Conservation), and 413 acres (13.0 percent) to Zone 6 (Developed Recreation).

Under Alternative C as compared to Alternative B, an additional 92 acres would be allocated to Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation) would decrease by 8 acres , and Zone 6 (Developed Recreation) would decrease by 83 acres.

Under Alternative C as compared to Alternative A, land allocated to Zone 3 (Sensitive Resource Management) would increase by 713 acres, Zone 4 (Natural Resource Conservation) would decrease by 388 acres, and Zone 6 (Developed Recreation) would decrease by 325 acres. Under this alternative, there would be no adverse direct or indirect effects to land use. However, there would be minor beneficial effects of long-term, comprehensive land plans.

4.2. Recreation

Developed recreation occurs on committed parcels allocated to Zone 6 (or the equivalent under Alternative A). These parcels typically have an existing land use agreement for a

park, campground, marina, or other recreation purposes. Dispersed recreation opportunities occur primarily on parcels allocated as Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), and Zone 4 (Natural Resource Conservation), and on uncommitted (undeveloped) Zone 6 lands.

Under all three alternatives, developed recreation uses and opportunities would remain available in nearly the same proportions as currently established, even though land use designations (zones) may change. Similarly, the availability of lands offering dispersed recreation opportunities would remain relatively constant among all three alternatives. The alternatives differ in the allocation of individual parcels to developed recreation. As discussed below, Alternatives B and C differ in the allocations of certain parcels based upon suitability for recreational activities and requests for future recreational uses.

Among all three alternatives, no developed facilities currently used would be affected. In the context of the French Broad River and Nolichucky River watersheds, federal land available to the public for developed and dispersed recreation is abundant. TVA-managed recreational facilities provide river and reservoir access that is unique but abundant in the region. Given the abundant and diverse opportunities, none of the three alternatives involve impacts that would result in significant cumulative effects to developed or dispersed recreation in the region.

Under a former TVA license agreement with Greene County Board of Education, Cedar Creek Learning Center used and maintained facilities adjacent to Nolichucky Dam (Nolichucky Parcel 2) as an environmental education center. This center provided continuing education services to about 2,200 children per year. However, loss of funding resulted in the closure of the center in 2006. Since then the facilities have not been maintained. Greene County is currently considering options for its future use.

Alternative A – No Action Alternative

Under Alternative A, 738 acres (23.1 percent) of TVA-managed land on Douglas and Nolichucky reservoirs were originally forecast for public recreation or were unplanned and were placed in the equivalent land use zone as developed recreation for comparison with the other alternatives. Much of the remaining land would also support dispersed recreation, such as Zone 4 (Natural Resource Conservation) and Zone 3 (Sensitive Resource Management). Part of the land allocated to Zones 2 (Project Operations) and 6 (Developed Recreation) could be available for dispersed recreation unless occupied by development or otherwise posted.

Alternative A includes the greatest number of acres of land designated for developed recreation under all the alternatives. Some lands categorized for developed recreation have been improved with facilities, while other parcels are not currently developed but may have potential for future development. This alternative would beneficially affect developed recreation by providing a diversity of existing sites as well as future opportunities for new facilities.

Alternative A includes the least amount of land available for dispersed recreation. However, there are some recreation lands TVA would not likely develop. These parcels have limited potential for developed recreation development, but can readily support dispersed recreation. Therefore, the overall impacts to dispersed and developed recreation under Alternative A would be insignificant.

Alternative B – Proposed Land Use Alternative
Under the action alternatives, lands managed by TVA that provide recreation opportunities associated with developed public and/or commercial facilities would be placed into Zone 6 (Developed Recreation) or Zone 2 (Project Operations) when the facilities occur on TVA dam reservations. Lands managed by TVA that provide dispersed recreation opportunities would be placed into Zone 2, Zone 3 (Sensitive Resource Management), or Zone 4 (Natural Resource Conservation), depending upon other compatible uses occurring on the parcel. Dispersed recreation could occur on any TVA parcels that are not otherwise posted or developed.

Implementation of Alternative B, as compared to equivalent zoning under Alternative A, would result in a net reduction of land allocated to Zone 6 by 242 acres, which is about 7.5 percent of the total TVA-managed land on the reservoirs. The reduction of land designated for Zone 6 is the result of further evaluation of the equivalency zoning under Alternative A. Evaluation has shown that some parcels are small, fragmented, and unsuitable for developed recreation. Additionally, some parcels would be allocated to other zones (see Table 2.3-1) to support protection of sensitive resources. About 496 acres (15.5 percent) of Douglas and Nolichucky reservoirs lands would be allocated to Zone 6.

The primary changes from Alternative A would be 621 acres allocated to Zone 3, and land allocated to Zone 4 (Natural Resource Conservation) would be decreased by 379 acres. None of the parcels allocated to a zone other than Developed Recreation currently have developed recreational facilities. Adoption of Alternative B would indirectly impact developed recreation by changing the amount and location of lands available for future development of recreational facilities. However, because there are recreation lands that are unsuited for developed recreation, the actual reduction in future development opportunities would be minor, and impacts under Alternative B would be insignificant.

Alternative C – Modified Land Use Alternative
Implementation of Alternative C, as compared to equivalent zoning under Alternative A, would result in a net reduction of land allocated to Zone 6 by 325 acres, which is about 10.1 percent of the total TVA-managed land on Douglas and Nolichucky reservoirs. About 413 acres (13.0 percent) of Douglas and Nolichucky reservoirs lands would be allocated to Zone 6.

The primary changes from Alternative B would be a net increase of 83 acres of land being allocated to Zone 3 or 4. Compared to Alternative B, Alternative C would result in different allocations for 16 parcels. Two of these parcels are on Douglas Reservoir and are considered better suited for dispersed recreation use, and one Douglas parcel was allocated to Zone 3 because it contains high quality wetlands. The remaining 10 parcels on Nolichucky Reservoir include two parcels being allocated to Zone 3 to protect sensitive resources, and eight parcels allocated to Zone 4 because they are isolated on the shores of the Nolichucky tailwater and better suited for dispersed recreation.

Under Alternative C as compared to Alternative A, the primary changes would be 713 acres allocated to Zone 3, land allocated to Zone 4 (Natural Resource Conservation) would be decreased by 388 acres, and Zone 6 (Developed Recreation) would decrease by 325 acres. None of the parcels allocated to a zone other than Developed Recreation currently have developed recreational facilities. Adoption of Alternative C would indirectly impact developed recreation by changing the amount and location of lands available for future development of recreational facilities. However, because there are recreation lands that

are unsuited for developed recreation, the actual reduction in future development opportunities would be minor, and impacts under Alternative C would be insignificant.

Under Alternative C, as with Alternative B, much of the land previously forecast for recreation is allocated to zones that allow for dispersed recreation. On this basis, selection of Alternative C would beneficially affect dispersed recreation. Further, opportunities for dispersed recreation may be slightly greater under Alternative C as compared to Alternative B. Again, because the overall number of acres is small, effects throughout the Douglas and Nolichucky reservoirs region are minor.

4.3. Prime Farmland

Effects to prime farmland 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 since those properties would be retained in a relatively natural state and not be converted to other land uses, preserving any occurring prime farmland. However, prime farmland on parcels allocated to Zone 2, 5, 6, or 7 is subject to potential adverse effects because land in these zones could be devoted to nonagricultural uses, such as industrial development, developed recreation, and water access.

Major soil disturbance could occur on Zone 2 (Project Operations) when TVA or other public facilities are constructed. However, once these facilities are established, they often remain intact for long periods, and large tracts of land remain without adverse impacts to prime farmland. The greatest adverse impacts to prime farmland would occur with Zone 5 (Industrial), where major soil disturbances would be likely to occur. Major soil disturbances could occur on Zone 6 (Developed Recreation), in specific locations, if recreation facilities are constructed. Conversely, large areas could be left unaffected for more dispersed recreation management. In most situations, allocation to Zone 7 (Shoreline Access) would result in minor soil disturbances to narrow corridors providing access to private water use facilities or by construction of shoreline erosion-control structures.

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 Form AD 1006, *Farmland Conversion Impact Rating*. 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 for protection so that agricultural use can be preserved.

About 438 acres of prime farmland occur on 25 of the 102 parcels addressed in the DNTRLMP (see Table 4.3-1 and parcel descriptions in Volumes II and III). The potential for direct and indirect impacts to prime farmland under each of the alternatives is discussed below.

Table 4.3-1. Number of Acres of Prime Farmland Allocated to Each Zone Under Alternatives A, B, and C

Zone	Alternative A	Alternative B	Alternative C
2	188.5	188.8	188.8
3	0	155.8	155.8
4	217.4	65.0	66.1
5	0.2	0.2	0.2
6	31.4	27.7	26.6
7	0.9	0.9	0.9
Total	**438.4**	**438.4**	**438.4**

The total acreage of prime farmland associated with parcels addressed in the DNTRLMP is small (less than 0.25 percent) relative to the greater than 176,000 acres of prime farmland occurring in the five counties adjacent to Douglas and Nolichucky reservoirs. The majority of DNTRLMP parcels, including parcels containing prime farmland, are already committed to land uses other than agriculture. Regionally, the number of farms is declining in all of the five counties, although the average size of farms is increasing. However, because any future negative impacts on Douglas or Nolichucky reservoirs lands would occur on a relatively small proportion of existing prime farmland, none of the three alternatives would result in significant cumulative effects to prime farmland.

Alternative A – No Action Alternative
Under Alternative A, about 221 acres of prime farmland occur on parcels allocated to Zones 2, 5, 6, and 7, where disturbance of soils is likely. Approximately 43 percent of prime farmland around the two reservoirs occurs on Project Operations lands associated with dam reservations and tailwaters. Prime farmland also occurs on parcels designated for recreation use, such as community parks and boat ramps. In many instances, soil-disturbing impacts to parcels committed to Project Operations or those developed uses have already occurred, so allocation to these zones would not represent a future impact to prime farmland. Approximately 50 percent of prime farmland occurs on parcels allocated to Zone 4, where impacts are unlikely.

Adoption of Alternative A would have the greatest potential for adverse effects to prime farmland because the greatest proportions of these lands are allocated to Zones 2, 5, 6, and 7 (50 percent). As future requests for land uses on these parcels are submitted to TVA, project-specific environmental reviews are expected to minimize negative impacts to prime farmland. Some minor adverse impacts are expected as parcels are converted to uses incompatible with agriculture. However, because the proportion of prime farmland on these reservoirs is small in comparison to the region, implementing Alternative A would result in insignificant impacts.

Alternative B – Proposed Land Use Alternative
Under Alternative B, about 218 (50 percent) acres of prime farmland occur on parcels allocated to Zones 2, 5, 6, and 7, where impacts are likely. Approximately 221 acres (50 percent) of prime farmland would be allocated to Zones 3 and 4, where impacts are unlikely. Compared to the No Action Alternative, about 3 fewer acres of prime farmland would be subject to potential future development uses incompatible with agriculture.

As future requests for land uses are submitted to TVA, project-specific environmental reviews are expected to minimize negative impacts to prime farmland. However, minor adverse impacts are expected as parcels are converted to uses incompatible with agriculture. Because the proportion of prime farmland is small, changes in land use allocation would result in insignificant impacts.

Alternative C – Modified Land Use Alternative
Under Alternative C, 217 acres (49 percent) of prime farmland occur on parcels allocated to Zones 2, 5, 6, and 7, where impacts are likely. Approximately 222 acres (51 percent) of prime farmland would be allocated to Zones 3 and 4. Compared to the No Action Alternative, about 4 fewer acres of prime farmland would be subject to potential future development uses incompatible with agriculture. There are very small differences in the amount of prime farmland impacted between the alternatives, especially with Alternatives B and C, where only 1 acre would be allocated to zones with fewer potential impacts. Consequently, Alternative C would have slightly fewer impacts to prime farmland than Alternative B.

As future requests for land uses are submitted to TVA, project-specific environmental reviews are expected to minimize negative impacts to prime farmland. However, minor adverse impacts are expected as parcels are converted to uses incompatible with agriculture. Because the proportion of prime farmland is small, changes in land use allocation would result in insignificant impacts.

4.4. Terrestrial Ecology

This section addresses anticipated effects to terrestrial plant and wildlife communities. Effects to threatened and endangered plants and terrestrial and aquatic animals are addressed in the sections below.

4.4.1. Plant Communities

Alternative A – No Action Alternative
Under Alternative A, Douglas Reservoir would continue to be managed under the 1965 Forecast System, and Nolichucky Reservoir would remain unplanned and without forecast designations. Since the terrestrial plant communities on and around Douglas and Nolichucky reservoirs are common and representative of the region, there would be no significant impacts to the terrestrial ecology surrounding these reservoirs as a result of the adoption of Alternative A.

Under Alternative A, cumulative impacts could occur as commercial and residential development continues to increase in the region due to population growth. If terrestrial plant communities are not protected from deforestation due to development activities and population growth, a reduction in forested lands would result in reduced biodiversity of plants and animals due to habitat loss. In addition, increasing commercial and residential development would create landscape disturbances that would assist in the introduction and spread of invasive nonnative plant species along roadsides, in recreation areas, and in remaining forested lands.

Alternative B – Proposed Land Use Alternative
Under Alternative B, new allocations on Douglas Reservoir for 2,055 acres and on Nolichucky for 1,136 acres would reflect the existing land uses. Since the terrestrial plant communities surrounding both reservoirs are common and representative of the region,

there would be no significant impacts to these resources as a result of these new allocation proposals under Alternative B.

Under Alternative B, no significant impacts are expected to the terrestrial ecology of the region due to the spread of invasive species if conditions are met to revegetate disturbed areas with native or noninvasive nonnative plant species and to ensure that all equipment is clean and weed free prior to any work being done in or around the reservoirs.

Under Alternative B, no significant cumulative impacts are expected to the terrestrial plant communities of the Douglas and Nolichucky reservoirs. More lands would be allocated to zones protecting or conserving plants from commercial and residential development, keeping biodiversity reduction and habitat losses at a minimum, which would aid in preventing the introduction and spread of exotic invasive plant species.

Alternative C – Modified Land Use Alternative
Under Alternative C as compared to Alternative B, seven additional parcels would be placed in Zone 3 (Sensitive Resource Management) increasing that zone acreage from one to 65 on Douglas and from 620 to 648 on Nolichucky. In creating more protection of sensitive resources, the acreage allocated to Zone 4 (Natural Resource Conservation) on Douglas would have a net decreased of 41 acres. Conversely, Zone 4 would have a net gain of 32 acres on the Nolichucky Reservoir, and a net amount of 61 acres would be removed from Zone 6 (Developed Recreation). Since the terrestrial plant communities surrounding both reservoirs are common and representative of the region, there would be no significant impacts to these resources as a result of the allocation changes under Alternative C.

Under Alternative C, no significant impacts are expected to the terrestrial ecology of the region due to the spread of invasive species if conditions are met to revegetate disturbed areas with native or noninvasive nonnative plant species and to ensure that all equipment is clean and weed free prior to any work being done in or around the reservoirs.

Under Alternative C, no significant cumulative impacts are expected to the terrestrial plant communities of the Douglas and Nolichucky reservoirs. More lands would be allocated to zones protecting or conserving plants from commercial and residential development, keeping biodiversity and habitat losses at a minimum, which would aid in preventing the introduction and spread of exotic invasive plant species.

4.4.2. Invasive Plant Species

Under all alternatives, best management practices (BMPs) developed to prevent the spread and introduction of exotic invasive plant species would be followed. These practices would prevent a decrease in forest productivity, as well as protect native plant diversity and wildlife habitat.

Alternative A – No Action Alternative
Under Alternative A, invasive species in general would continue to proliferate, which would result in a decrease in forest productivity and forest use and management activities and would contribute to the degradation of plant diversity and wildlife habitat. Under Alternative A, negative impacts are anticipated to the terrestrial ecology of the region from the continued introduction and spread of nonnative invasive species.

Alternative B – Proposed Land Use Alternative
Under Alternative B, about 8 percent more lands than Alternative A would be allocated to zones protecting or conserving native vegetation from development, keeping biodiversity reduction and habitat losses at a minimum, which would aid in preventing the introduction and spread of exotic invasive plant species. This would result in beneficially insignificant impacts to the terrestrial ecology of the region from the spread of exotic invasive species.

Alternative C – Modified Land Use Alternative
Under Alternative C, about 10 percent more lands than Alternative A would be allocated to zones protecting or conserving native vegetation from development, keeping biodiversity and habitat losses at a minimum, which would aid in preventing the introduction and spread of exotic invasive plant species. This would result in slightly more (2 percent) beneficially insignificant impacts to the terrestrial ecology of the region from the spread of exotic invasive species than Alternative B.

4.4.3. Wildlife Communities

Analysis of the effects to terrestrial 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 wildlife communities. Indirect effects to wildlife communities include fragmentation and isolation of suitable habitat. Greater potential for site development correlates with a greater potential for adverse impacts to terrestrial wildlife. As such, Zones 3 and 4 are the most protective of terrestrial wildlife habitat. Zone 5 has the greatest potential to involve ground disturbance that may affect wildlife communities. The impacts to wildlife communities on Zones 2, 6, and 7 are dependent upon the existing condition of the parcel and on the proposed future uses. Lands allocated to these zones may involve substantive development (e.g., new substation, road, campground, marina, etc.) or may be left relatively natural. 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. Therefore, for the purposes of this programmatic analysis, we assume the potential for impacts on Zones 2, 6, and 7 is moderate.

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 effects to wildlife communities.

Alternative A – No Action Alternative
Under Alternative A, 2,055 acres on Douglas Reservoir would be managed according to the 1965 forecast or existing land use. Approximately 1,136 acres on Nolichucky would remain unplanned, and current land uses would continue.

The largest percentages of lands would continue to be used for Developed Recreation (23.1 percent), Natural Resource Conservation (42.6 percent), and Project Operations (33.8 percent). Under Alternative A, no parcels would be placed in Sensitive Resource Management (the equivalent of Zone 3). Therefore, this alternative would provide less protection to sensitive resources than Alternatives B and C. Despite impacts from formal and informal recreation observed on certain parcels, given the amount of quality habitat observed on TVA and adjacent lands, direct, indirect, and cumulative impacts of Alternative A to terrestrial animal resources would be insignificant.

Alternative B – Proposed Land Use Alternative
Under Alternative B, 1,601 acres on Douglas and Nolichucky reservoirs would be allocated to Zones 3 and 4. These allocations would comprise 50 percent of allocated lands. Approximately 1,590 acres (50 percent) would be allocated to Zones 2, 5, 6, and 7.

As compared to Alternative A, allocation changes proposed under Alternative B include:

- Douglas Reservoir – 186.9 acres of recreation land going to either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation). Only 150 acres would remain in Zone 6 (Developed Recreation).

- Nolichucky Reservoir – 609.7 acres of equivalent natural resource conservation land and 10.4 acres of recreation land going to Zone 3 (Sensitive Resource Management).

Alternative B results in a net gain, compared to Alternative A, in the combined number of acres allocated to Zones 3 and 4, although this increase is less than under Alternative C. Changes in allocation of specific parcels would not result in significant adverse impacts. Therefore, Alternative B is not expected to result in negative direct, indirect, or cumulative impacts to terrestrial wildlife communities. Over the long term, allocation of lands to Zones 3 and 4, which limits ground disturbance, vegetation removal, and other development, is likely to beneficially influence the cumulative impacts on migratory birds and other terrestrial wildlife communities in the Nolichucky and French Broad watersheds.

Alternative C – Modified Land Use Alternative
Under Alternative C, 1,684 acres on Douglas and Nolichucky reservoirs would be allocated to Zones 3 and 4. These allocations would comprise 53 percent of allocated lands. Approximately 1,507 acres (47 percent) would be allocated to Zones 2, 5, 6, and 7.

As compared to Alternative A, allocation changes proposed under this alternative include:

- Douglas Reservoir – 206.9 acres of recreation land going to Zone 4 (Natural Resource Conservation) or Zone 3 (Sensitive Resource Management). Only 127.5 acres would remain in Zone 6 (Developed Recreation).

- Nolichucky Reservoir – 612.5 acres of equivalent natural resource conservation land and 36 acres of recreation land going to Zone 3 (Sensitive Resource Management) primarily to protect wetlands.

Alternative C results in a greater level of protection of wildlife communities for Douglas and Nolichucky reservoirs. The habitats along the Nolichucky River provide a narrow yet long linear corridor of riparian zone habitat that is used by a diverse array of local and migratory wildlife species. Changes in allocation of specific parcels would not result in significant adverse impacts. Therefore, Alternative C is not expected to result in negative direct, indirect, or cumulative impacts to terrestrial wildlife communities. Over the long term, allocation of lands to Zones 3 and 4 would benefit migratory birds and other terrestrial wildlife communities in the Nolichucky and French Broad watersheds.

4.5. Endangered and Threatened Species

Four federally listed as endangered, one federally listed as threatened, three candidates for federal listing, one federally protected, and five additional state-listed species are known to occur near Douglas and Nolichucky reservoirs (see Table 3.6-1).

4.5.1. Plants

No federally listed plant species or habitat suitable for supporting these species was identified on or within 5 miles of the parcels addressed in the Douglas and Nolichucky land plans. Therefore, there would be no effects to federally listed plant species as a result of adopting any of the alternatives identified by the land plans. The following discussion addresses potential impacts to state-listed plant species.

Under all alternatives, due to the increase of commercial and residential development in the region, cumulative impacts could occur to rare plant species known or yet to be discovered in the area. Increased habitat destruction due to development activities and population growth could result in the decrease of rare plant populations and their habitats, which could alter the genetic diversity of the affected species. However, the impacts of implementing the alternatives would be minor as the portion of land managed by TVA in the region is minor.

Alternative A – No Action Alternative
Under Alternative A, Douglas Reservoir would continue to be managed under the 1965 Forecast System. Since no state-listed species are reported on or within 5 miles of Douglas Reservoir, the No Action Alternative would have no impact to state-listed species.

Under Alternative A, Nolichucky Reservoir would remain unplanned and without forecast designations. Of the three state-listed plant species known to occur within 5 miles of the Nolichucky Reservoir, only one (Appalachian cliff fern) was found growing on rock walls on Parcel 12. Under the No Action Alternative, the population of Appalachian cliff fern could be impacted by habitat loss from future activities.

Alternative B – Proposed Land Use Alternative
Under Alternative B, new allocations on Douglas Reservoir for the 2,055 acres and on Nolichucky for 1,136 acres would reflect the existing land uses. Since no state-listed species are reported on or within 5 miles of Douglas Reservoir, there would be no impacts to state-listed species as a result of adopting Alternative B.

Of the three state-listed plant species known to occur within 5 miles of Nolichucky Reservoirs, only one (Appalachian cliff fern) was found growing on rock walls on Nolichucky Parcel 12. Under Alternative B, the parcel would be allocated as Zone 4 (Natural Resource Conservation), which would provide some protection for this species.

Alternative C – Modified Land Use Alternative
Under Alternative C, additional acreage would be set aside for Sensitive Resource Management. Since no state-listed species are reported on or within 5 miles of Douglas Reservoir, there would be no impacts to state-listed plant species as a result of adopting Alternative C.

Of the three state-listed plant species known to occur within 5 miles of the Nolichucky Reservoir, only one (Appalachian cliff fern) was found growing on rock walls on Parcel 12, which was subdivided into two parcels where Parcel 12a (2.76 acres) was designated as

Zone 3. Under Alternative C, no significant impacts are expected to this rare plant population due to the level of protection given to the species within the Zone 3 designation.

4.5.2. Terrestrial Animals

Under all three alternatives, land planning on Douglas and Nolichucky reservoirs would have no potential to affect any federally listed or state-listed terrestrial species, except for the gray bat, Indiana bat, bald eagle, and southern bog lemming. The spruce-fir moss spider and Carolina northern flying squirrel are restricted to higher elevations and are not found on TVA properties on either reservoir. Piping plovers are occasional migrants through the area and would not be impacted by proposed allocations. Potential impacts to the remaining species could occur through loss or conversion of habitat or by not protecting potential habitat for these species.

Alternative A – No Action Alternative

Under Alternative A, parcels would be managed to promote their current land uses. Populations of listed and protected species are known to occur near several TVA parcels. Current activities do not appear to be resulting in impacts to known populations. Because some parcels would remain uncommitted under Alternative A and future projects could alter habitat on these parcels, this alternative does have the potential to result in a reduction or modification of suitable habitat for listed species. However, known populations of species such as the gray bat and bald eagle are stable and increasing in the case of the bald eagle. Adoption of Alternative A might, but likely would not, adversely impact gray and Indiana bats and would result in no impacts to remaining species.

Alternative B – Proposed Land Use Alternative and Alternative C – Modified Land Use Alternative

Under Alternative B, many of the parcels with suitable habitat for listed and protected species would be placed in Zones 4 and 3, providing protection for these resources. Alternative C would provide further protection for suitable habitat for these species by allocating additional acreage to Zone 3. Protective buffer zones would be placed around and near gray bat caves in the area under these alternatives. Under both alternatives, TVA placed forested riparian zones that front gray bat caves at or near TVA boundaries in Zone 3. These forested corridors between caves and the river provide important travel corridors for gray bats as they move from their roosts to their foraging areas. The protection of the riparian corridor along the Nolichucky River would also protect suitable habitat for bald eagles and southern bog lemmings. With these beneficial measures, the adoption of Alternative B or C would not result in adverse impacts to listed or protected terrestrial animals.

4.5.3. Aquatic Animals

The primary source of potential impacts to listed aquatic species is ground disturbance and construction in riparian areas, which could directly affect aquatic species by introducing structures, riprap, or other materials into the water. Such activities may also indirectly affect aquatic species by degrading water quality through inputs of pollutants, sediment, or excess nutrients. Soil disturbance is associated with potential for runoff and sedimentation, which may impact water quality and listed aquatic species. Therefore, activities in Zones 2, 5, 6, and 7 have the greatest potential to affect aquatic species, with Zone 5 activities having the greatest likelihood of adverse effects due to clearing and grading, development of impervious surfaces, and the potential for point-source discharges to the reservoir. Actions in Zones 3 and 4 have the lowest potential to affect aquatic species.

Prior to specific actions taken on any parcels in the future, TVA would conduct additional site-specific environmental reviews on a case-by-case basis and require appropriate site design and management practices using TVA's *General and Standard Conditions/Best Management Practices* (TVA 2005) to minimize negative environmental impacts and help ensure that the proposals best serve the needs and interest of the public. Further, any actual development of TVA and non-TVA lands must comply with state and federal environmental regulations, and applicants must often obtain permits specifically designed to prevent adverse impacts and violation of applicable water quality criteria. Potential impacts to water quality, discussed in Section 4.11 below, are directly related to the consequences to aquatic species.

Two federally listed as endangered, one federally listed as threatened, five candidates for federal listing, and seven state-listed aquatic animals are known to occur in Douglas and Nolichucky reservoirs (See Table 3.6-1). Under all of the alternatives, the potential impacts to listed aquatic species derive from pollution and siltation from erosion and ground disturbance activities.

Douglas Reservoir
The state-listed lake sturgeon, blue sucker, and tangerine darter and the federally listed threatened snail darter are known to occur in the French Broad River below Douglas Dam near Douglas Parcel 1. Because Douglas Parcel 1 would not change from Zone 2 (Project Operations), adoption of any of the alternatives would not impact known individuals or populations of these species. Nolichucky River Unit 6 DCH for the federally listed as endangered oyster mussel occurs 9 river miles up from the mouth of the Nolichucky River and not in the vicinity of the reservoir or TVA lands. Known occurrences of the federally listed as endangered oyster mussel, the state-listed highfin carpsucker, and the candidate for federal listing spectaclecase are within this DCH. However, the highfin carpsucker could potentially occur anywhere within Douglas Reservoir but prefers fast-moving water.

Nolichucky Reservoir
The federally listed as endangered Cumberland bean, pink mucket, Cumberlandian combshell, and rough rabbitsfoot are historical records (20 years or greater since last verified existence) and likely no longer occur within the area. The rayed bean and slabside pearlymussel, candidates for federal listing, and the state-listed Tennessee clubshell are also historical records and likely no longer occur within the project area. Within the Nolichucky River watershed, the Chucky madtom, candidate for federal listing, is known only from Little Chucky Creek, a tributary that flows into the Nolichucky River at NRM 23.5. This rare madtom is unlikely to occur in habitats that could be affected by the DNTRLMP.

The state-listed blue sucker and tangerine darter and the federally listed as threatened snail darter are known to occur in the Nolichucky River below Nolichucky Dam near TVA land Parcels 1 and 25-38. TVA transplanted 1,000 individuals of the federally listed as endangered birdwing pearlymussel into the Nolichucky River approximately 20 miles downstream from Nolichucky Dam in 1982 (Jenkinson 1983). In 1995, a juvenile birdwing pearlymussel was found at the transplant site, suggesting some reproduction. Although the birdwing pearlymussel was not found in a 2000 mussel survey, there is good reason to believe that this species still exists in the Nolichucky River below the dam (TVA 2006b).

Alternative A – No Action Alternative
Under the No Action Alternative, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage the lands surrounding Douglas

Reservoir. Nolichucky Reservoir has never been forecasted or planned; TVA would continue to use existing land use agreements to manage the lands surrounding Nolichucky Reservoir under the No Action Alternative. Approximately 2,055 acres on Douglas Reservoir and 1,043 acres of committed land on Nolichucky Reservoir would be managed according to these agreements. On Nolichucky Reservoir, 93 acres of TVA land would remain unplanned and without forecast designations and would be managed according to current TVA policy.

The approximately 3,191 acres of public land managed by TVA on Douglas and Nolichucky reservoirs would continue to be managed similar to the proposed land use zones. Therefore, 42.6 percent of the land would continue to be managed for Natural Resource Conservation, 33.8 percent for Project Operations, no land for Sensitive Resource Management, 23.1 percent for Developed Recreation, and less than 1 percent for Shoreline Access and Industrial.

Under Alternative A, TVA land parcels would continue to be managed under the current Forecast System designations, existing land use agreements, or would remain unplanned; therefore, environmental conditions would likely remain the same. Furthermore, future land use proposals would comply with state and federal environmental regulations, and TVA's *General and Standard Conditions/Best Management Practices* (TVA 2005) would be required for projects on TVA lands. Further, there is only a small amount of TVA land surrounding the reservoirs in comparison to the overall land base in the reservoir watersheds. Therefore, selection of Alternative A would not likely adversely affect listed aquatic animals or their habitats directly, indirectly, or cumulatively.

Alternative B – Proposed Land Use Alternative

Adoption of this alternative would promote conservation of natural resources. Under this alternative, TVA would create and implement individual land plans for Douglas and Nolichucky reservoirs. The approximately 3,191 acres of public land managed by TVA on Douglas and Nolichucky reservoirs would be placed into one of the seven land use zones that best fits the existing land use. TVA would allocate 30.7 percent of the land surrounding the reservoirs to Zone 4 (Natural Resource Conservation), 33.8 percent to Zone 2 (Project Operations), 19.5 percent to Zone 3 (Sensitive Resource Management), 15.5 percent to Zone 6 (Developed Recreation) and less than 1 percent to Zone 7 (Shoreline Access) and Zone 5 (Industrial). Under this alternative, 242 acres currently being used for Zone 6 (Developed Recreation) would change to Zone 4 (Natural Resource Conservation) or Zone 3 (Sensitive Resource Management), which would improve the conservation of natural resources.

Nolichucky River Unit 6 DCH for the federally listed as endangered oyster mussel occurs 16 river miles downstream from Nolichucky Parcel 25. Known occurrences of the federally listed as endangered oyster mussel, spectaclecase (candidate for federal listing), and the state-listed highfin carpsucker, spiny riversnail, rosyface shiner, and fluted kidneyshell are within this DCH. The highfin carpsucker is also known to occur above the Nolichucky Dam and could occur anywhere within the Nolichucky Reservoir system.

Under Alternative B, Nolichucky Parcels 1 and 25-38 would remain in the same zone allocation as under Alternative A with the exception of Parcel 29 being allocated to Zone 3 (Sensitive Resource Management) and Parcel 30 being allocated to Zone 4 (Natural Resource Conservation). However, no TVA land parcels occur near enough to the Nolichucky River Unit 6 DCH to adversely impact the listed aquatic species or habitats

directly or indirectly. Therefore, adoption of Alternative B would not likely adversely affect listed aquatic animals or their habitats.

Implementation of the proposed alternative would not result in any negative cumulative effects from these proposed actions. Over the long-term, allocation of lands to Zones 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation), which limit ground disturbance, vegetation removal, and other development, is likely to benefit aquatic species. In fact, implementation of Alternative B could lead to a slightly improved riparian buffer and a small improvement to water quality and aquatic habitats downstream of the project areas, including areas where sensitive aquatic species are known to occur.

Alternative C – Modified Land Use Alternative

Adoption of this alternative would provide additional opportunities for the conservation of natural resources with an emphasis on the management of sensitive resources. Under this alternative, TVA would create and implement individual land plans for Douglas and Nolichucky reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use, public comments, and other opportunities identified during scoping. TVA would allocate approximately 30.4 percent of the land surrounding the reservoirs to Zone 4 (Natural Resource Conservation), 33.8 percent to Zone 2 (Project Operations), 22.3 percent to Zone 3 (Sensitive Resource Management), 12.9 percent to Zone 6 (Developed Recreation), and less than 1 percent to Zone 7 (Shoreline Access) and Zone 5 (Industrial).

As compared to Alternative B, implementation of Alternative C would result in more land being allocated to Zone 3 (Sensitive Resource Management). This increase in allocated protection would benefit sensitive aquatic species known to occur in Douglas Reservoir. Furthermore, for any proposed use of land, TVA would require the protection of water quality through either restricted development or the assurance to utilize BMPs, along with compliance with state and federal regulations that would eliminate any negative impacts to natural resources associated with the proposed action. As a result, no direct or indirect impacts to any sensitive aquatic species would occur from adoption of Alternative C.

As compared to Alternative B, implementation of Alternative C would allocate more land to Zones 3 and 4. Nolichucky Parcel 12a would be allocated to Zone 3 rather than the current allocation of Zone 4, and Nolichucky Parcels 25, 26, 27, and 31-38 would be allocated to either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation) rather than Zone 6 (Developed Recreation). This conservation and protection of land would benefit sensitive aquatic species known to occur in the reservoirs and their tailwater. Furthermore, future proposals for the use of land would require the use of BMPs that would minimize or eliminate any negative impacts to any natural resources associated with the proposed action. As a result, no direct or indirect impacts to any sensitive aquatic species would occur from adoption of Alternative C. Therefore, adoption of this alternative would not likely adversely affect listed aquatic animals or their habitats. In fact, some beneficial effects to these species may be recognized as a result of the increased proposed allocations to zones that conserve and protect natural resources.

Under Alternative C, zone allocations to Zones 3 and 4 would change for almost 83 acres as compared to Alternative B. Also under Alternative C, Douglas Parcel 28 (10 acres), Parcel 33 (17 acres), and Parcel 47 (36 acres) would change from Zone 4 (Natural Resource Conservation) to Zone 3 (Sensitive Resource Management). The proposed alternative would not result in any negative cumulative effects from these proposed actions.

In fact, they could lead to slightly improved riparian buffer zones and a small improvement to water quality and aquatic habitats downstream of the project areas, including areas where sensitive aquatic species are known to occur. Because this alternative allocates the largest amount of acreage to either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation), it would provide the greatest degree of protection to sensitive aquatic species within the reservoirs and their tailwaters.

4.6. Wetlands

Ground disturbance activities and vegetation removal would be the primary source of potential impacts to wetlands in wetland areas. The greater the ground disturbance from an activity on a wetland, the greater would be the potential for adverse impacts to wetlands and wetland functions.

Analysis of the environmental consequences for the three alternatives will focus on uncommitted parcels that contain wetlands. Of the 26 uncommitted parcels on Douglas and Nolichucky reservoirs, 13 parcels have wetlands present (Table 4.6-1). Under any of the alternatives, wetlands present on any parcels would be protected under EO 11990. Any impacts to wetlands associated with ongoing or future projects would be evaluated under future environmental reviews. Wetlands on the reservoirs are generally very small in size; thus, any impacts associated with future projects would have a negligible effect on overall wetland resources in the project area.

Table 4.6-1. Summary of Wetlands on Uncommitted Parcels for Douglas and Nolichucky Reservoirs

Parcel Number	Wetland Type	TVARAM Category	Zone Under Alternative A	Zone Under Alternative B	Zone Under Alternative C
Nolichucky Reservoir					
12a	emergent/scrub-shrub	2	4	4	3
26	emergent/scrub-shrub/forested	3	6	6	4
31	emergent/scrub-shrub/forested	3	6	6	4
33	emergent/scrub-shrub/forested	3	6	6	6
34	emergent/scrub-shrub/forested	3	6	6	4
Douglas Reservoir					
2	emergent/scrub-shrub	2	2	6	6
25	emergent/scrub-shrub	2	6	4	4
28	forested/scrub-shrub	3	4	4	3
37	emergent/scrub-shrub	2	4	4	4
45	emergent/scrub-shrub	2	4	4	4
47	forested/scrub-shrub	3	4	4	3
51	emergent/scrub-shrub	2	6	4	4
52	emergent/scrub-shrub	2	6	4	4

Alternative A – No Action Alternative

Under Alternative A, uncommitted parcels with wetlands would have one parcel as equivalent Zone 2 (Project Operations), seven parcels as equivalent to Zone 6 (Developed Recreation), and the remainder as equivalent to Zone 4 (Natural Resource Conservation). Ground disturbance activities and vegetation removal would be the primary source of potential impacts to wetlands in wetland areas, which would be expected to have the greatest occurrence on Zone 2 (Project Operations) and Zone 6 (Developed Recreation)

lands. The least ground disturbance would occur on Zone 4 (Natural Resource Conservation) where dispersed recreation and some minor and indirect impacts to wetlands could occur with this alternative.

Wetlands are generally very small in size; thus, any direct impacts associated with future projects would have a negligible effect on overall wetland resources in the project area. Although Alternative A has the greatest potential for impacts to wetlands, overall impacts associated with this alternative would still be considered minor, as any localized trimming or clearing of wetland vegetation would have a negligible effect on wetland resources within the overall project area.

Cumulative impacts to wetlands would be likewise minor as the result of Alternative A. Informal recreation may result in very minor impacts to wetland vegetation, but these impacts would be expected to be very small and localized and would recover with no lasting effects. In addition, wetlands present on any parcels would be protected under EO 11990, and any future impacts to wetlands associated with ongoing or future projects would be evaluated under a site-specific environmental review.

Alternative B – Proposed Land Use Alternative
Under Alternative B, impacts to wetlands on Nolichucky Reservoir would be the same as under Alternative A, since the allocations of the parcels on Nolichucky with wetlands would not change. However, wetland impacts would be reduced on Douglas Reservoir where three uncommitted parcels containing wetlands would be allocated to zones with lesser impacts. Three would be allocated to Zone 4 (Natural Resource Conservation) and managed to protect and enhance habitat, rather than Zone 6 (Developed Recreation), which could have ground disturbances, and one would change from Zone 2 (Project Operations) to Zone 6, which could have slighter lesser impacts to wetlands. Therefore, Alternative B affords greater protection to wetlands than Alternative A.

Under Alternative B, direct impacts to wetlands are associated with Douglas Parcel 2 and Nolichucky Parcels 26, 31, 33, and 34, which would be allocated to Zone 6 (Developed Recreation).

Some minor and indirect impacts to wetlands could occur with this alternative. Dispersed recreation and camping activities could result in some minimal clearing of vegetation. Overall impacts associated with this alternative would still be considered minor, as any localized trimming or clearing of wetland vegetation would have a negligible effect on wetland resources within the overall project area.

Cumulative impacts to wetlands would be likewise minor as the result of Alternative B. Informal recreation may result in very minor impacts to wetland vegetation, but these impacts would be expected to be very small and localized and would recover with no lasting effects. In addition, wetlands present on any parcels would be protected under EO 11990, and any future impacts to wetlands associated with ongoing or future projects would be evaluated under a site-specific environmental review.

Alternative C – Modified Land Use Alternative
Under Alternative C as compared to Alternative A, TVA would allocate six parcels containing wetlands to Zone 4 (Natural Resource Conservation) rather than Zone 6 (Developed Recreation), and one would be a Zone 6 rather than Zone 2. In addition, four parcels would be allocated to Zone 3 (Sensitive Resource Management) rather than Zone 4

under Alternative A. Specifically managed for protection and enhancement of sensitive resources, this allocation would afford a slightly greater level of protection to wetlands present on these parcels. The rest of the unplanned parcels would remain in Zone 4 or 6.

As compared to Alternative B, TVA would allocate three additional parcels containing wetlands to Zone 4 (Natural Resource Conservation) rather than Zone 6 (Developed Recreation), and four parcels would be allocated to Zone 3 (Sensitive Resource Management) rather than Zone 4.

Under Alternative C, direct impacts to wetlands would be associated only with Douglas Parcel 2 and Nolichucky Parcel 33, which would be allocated to Zone 6 (Developed Recreation). This alternative is expected to have the least amount of adverse effects to wetlands.

As described under Alternative B, there could be some very negligible impacts to wetlands associated with informal recreation, but these impacts are expected to be very minor. As with both previous alternatives, cumulative impacts to wetlands would be negligible.

4.7. Floodplains

Alternative A – No Action Alternative
Under Alternative A, the development and/or management of properties would proceed under the 1965 Forecast System for Douglas Reservoir. For both Douglas and Nolichucky reservoirs, individual site-specific evaluations would be performed 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.

Alternative B – Proposed Land Use Alternative
Under Alternative B, the potential adverse impacts to natural and beneficial floodplain values would be less than those under Alternative A because a substantial portion of the available land would be allocated for resource management and conservation activities.

Alternative C – Modified Land Use Alternative
The potential adverse impacts to natural and beneficial floodplain values under Alternative C would be less than those expected under Alternative A and the same as those under Alternative B because more parcels of the available land would be allocated for sensitive resource management and natural resource conservation. Although there is a potential for impacts to floodplains of varying degrees under all alternatives, potential impacts to floodplain values would be insignificant.

4.8. Cultural Resources

Under all the alternatives, the preservation and treatment of historic properties, which includes cultural resources, are addressed by the NHPA. Cultural resources include archaeological sites and historic sites/structures. In addition, archaeological resources located on federal lands are afforded protection under the ARPA. Similarly, the Native American Graves Protection and Repatriation Act (NAGPRA) provides protection to Native American artifacts and human remains.

A PA was executed in October 2005 between TVA, the Advisory Council on Historic Preservation, and the Tennessee SHPO regarding the implementation of TVA RLMPs for identification, evaluation, and treatment of historic properties that are eligible for inclusion in

the National Register of Historic Places (NRHP) (see Appendix E). This PA applies to all TVA land considered within the three alternatives. NRHP eligibility will be evaluated in consultation with the Tennessee SHPO according to stipulations of the PA. Furthermore, mitigation of adverse effects to any historic property will be conducted according to the stipulations in the PA.

4.8.1. Archaeological Resources

Under all alternatives, TVA will take necessary steps to ensure compliance with regulatory requirements of NHPA, NAGPRA, ARPA, and other federal legislation pertinent to archaeological resources. Under all alternatives, the cumulative impacts to significant archaeological sites would be minimized by avoidance of the site or by mitigation through data recovery excavation pursuant to 36 CFR Part 800.

Alternative A – No Action Alternative

Under Alternative A, 1,081 acres on Douglas and Nolichucky reservoirs would be forecast or planned to Project Operations and Industrial uses, which have the greatest potential for ground-disturbing activities. Additionally, 751 acres would be forecast or planned to Developed Recreation and Shoreline Access uses, which have moderate potential for ground-disturbing activities. Each of those land uses has moderate potential to indirectly impact archaeological sites.

Approximately 1,359 acres on Douglas and Nolichucky reservoirs would be managed for Natural Resource Conservation and none for Sensitive Resource Management. These land uses have the lowest potential for ground-disturbing activities, and consequently the lowest potential to affect archaeological sites that may be present. The potential for indirect effects to archaeological sites also is low on land used for these purposes.

Site-specific activities proposed in the future would be analyzed to determine their effect on significant archaeological sites. In cases where archaeological resources would be affected, mitigation may be required. Such mitigation typically calls for additional archaeological investigation and may require data recovery of potentially impacted archaeological resources in the form of removal, cataloging, and archiving of these resources as defined in the PA. Thus, under Alternative A, archaeological resources could be affected, but adverse effects would be mitigated. Under Alternative A, preservation or protection of archaeological resources would be achieved through compliance with NHPA and ARPA requirements. Because of the executed PA and because appropriate mitigation would be performed as necessary, potential effects to archaeological resources would be insignificant.

Compared to Alternatives B and C, Alternative A contains the greatest potential to affect archaeological sites due to the greater percentage of Zone 2 (34 percent) and Zone 6 (23 percent) parcels and the lower percentage of Zone 4 and Zone 3 (43 percent) parcels.

Alternative B – Proposed Land Use Alternative

Under Alternative B, 1,081 acres on Douglas and Nolichucky reservoirs would be allocated to Zones 2 and 5, while 509 acres would be allocated to Zones 6 and 7. Each of those land uses has moderate potential to indirectly impact archaeological sites.

Under Alternative B, 1,601 acres on the Douglas and Nolichucky reservoirs would be allocated to Zones 3 and 4. These land uses have the lowest potential for ground-disturbing activities and consequently the lowest potential to affect archaeological sites that

may be present. The potential for indirect effects to archaeological sites also is low on land used for these purposes. Because less land is allocated to zones on which ground-disturbing activities are likely to occur, potential impacts to archaeological resources are less under Alternative B than under Alternative A. In any event, because appropriate mitigation would be implemented under the stipulations of the PA, potential effects would be insignificant.

Alternative C – Modified Land Use Alternative
At the programmatic scale, the potential for impacts to archaeological resources under Alternative C is nearly identical to potential impacts under Alternative B. Under Alternative C, 1,081 acres would be allocated to Zones 2 and 5, while 426 acres would be allocated to Zones 6 and 7. Moderate potential for indirect adverse impacts would occur on all four of those zones. Alternative C has slightly less potential to affect archaeological sites than Alternative B due to a slightly less allocation of land to Zone 6.

Under Alternative C, 1,684 acres on the Douglas and Nolichucky reservoirs would be allocated to Zones 3 and 4. These land uses have the lowest potential for ground-disturbing activities and low potential for indirect effects to archaeological sites. Therefore less land is allocated to zones on which ground-disturbing activities are likely to occur, potential impacts to archaeological resources are less under Alternative C than under Alternative A or B. Because any potential adverse effects to archaeological resources would require appropriate mitigation under the PA, any potential effects would be insignificant.

Compared to Alternative A, Alternative C has slightly less potential to affect archaeological sites than Alternative B due to the lesser percentage of Zone 6 (13 percent) parcels and greater percentage (53 percent combined) of Zones 3 and 4. The remaining parcel zone allocations under Alternatives B and C are the same.

4.8.2. Historic Structures

The historic structures data used for this study was derived mainly from planimetric map data and a windshield survey of the parcels that were deemed uncommitted during the scoping and preallocation process. For any proposal on a given parcel (regardless of zone allocation), a field check of the current status of these historical structures would be accomplished to determine the significance of the structure, and the parties would abide by the stipulations set forth in the PA. As noted above, under each alternative, review for applicability of the NHPA would take place for any proposed activity that has the potential to affect historical structures identified on or adjacent to TVA land. Nearly all these historical structures are located on property adjacent to TVA land, not on TVA tracts. Historic structures located off site would be considered because they may be subject to indirect effects such as changes in the visual character or setting from actions on TVA property.

Regardless of the alternative, proposed site-specific activities would be subjected to the PA to determine what historic structures exist on TVA public land and on adjacent tracts within the APE. In addition, the significance of any historic structures would be determined under each of the alternatives.

Alternative A – No Action Alternative
Under this alternative, the Forecast System would continue to be administered on Douglas Reservoir, and Nolichucky Reservoir would remain unplanned. Under Alternative A, 1,359 acres would be allocated to equivalent Zone 4 (Natural Resource Conservation), and 1,832

acres would be allocated to zones allowing some form of development. Because they could change the visual character of the surrounding area, activities on equivalent Zone 6 (Developed Recreation) parcels, particularly those developed for commercial recreation, Zone 5 (Industrial), and Zone 7 (Shoreline Access) have the potential to impact adjacent historic structures. Thus, potential effects, especially indirect visual effects, are possible under Alternative A. However, management of historic structures and potential effects as a result of proposed development would continue to be evaluated on a case-by-case basis. Because these potential effects would be identified, along with possible mitigation measures, and because TVA would reserve the option to refuse land use requests that would have unavoidable adverse effects, potential effects to historic structures would be insignificant.

Alternative B – Proposed Land Use Alternative
Under Alternative B, the RMLPs would enhance conservation and protect historic structures. The plan would provide for preservation and would protect shoreline from development. Lands with distinctive visual character would be placed in Zone 3 or 4, Sensitive Resource Management and Natural Resource Conservation, respectively. About 621 acres would be allocated to Zone 3; 486 acres on the Nolichucky River corridor were judged to have unique scenic qualities. Another 980 acres would be allocated to Zone 4, which includes lands with attractive but less unique scenic qualities and little visible alteration. Activities that involve little visible change, such as recreational hiking, picnicking, bank fishing, and some selective forest management (e.g., pine beetle salvage) could take place in both Zones 3 and 4. Some development with more visible modifications could take place in Zone 4 areas, as long as the location and appearance remained subordinate to the desired visual characteristics. A total of 1,601 acres of publicly held reservoir acreage would be allocated to Zones 3 and 4, while 1,590 acres would be allocated to zones (2, 5, 6, and 7) that would allow some form of development. Implementation of this alternative would provide enhanced management and protection of historic structures as compared to Alternative A.

For any proposal on a given parcel (regardless of zone allocation), a field check of the current status of historic structures would be accomplished to determine the significance of the resource, and the stipulations set forth in the PA would be followed. Under each alternative, review for applicability of the NHPA would take place on a case-by-case basis for any proposed activity that has the potential to affect historic structures identified on or adjacent to TVA land. Since potential effects to historic structures would be identified and mitigated appropriately under the PA, these effects would not be significant.

Alternative C – Modified Land Use Alternative
Under this alternative, effects to historic structures would be similar to those described under Alternative B. Approximately 713 acres would be allocated to Zone 3 and approximately 971 to Zone 4, for a total of 1,684 acres; 1,507 acres would be allocated to zones (2, 5, 6, and 7) on which some development could occur. Like Alternative B, Alternative C provides for better protection of historic structures and preservation of natural areas around the reservoir than does Alternative A. Since potential effects to historic structures would be identified and mitigated appropriately under the PA, these effects would not be significant.

4.9. Managed Areas and Ecologically Significant Sites

Thirteen TVA natural areas occur on Douglas and Nolichucky reservoirs. Nine managed areas are on or immediately adjacent to Douglas Reservoir and include Trotter Bluff TVA

SWA, the Lower French Broad and Lower Holston River NEP area, the French Broad River (one segment NRI-listed and one segment designated a State Scenic River), Rankin Bottom State WMA, Henderson Island Refuge, Dandridge Municipal Park, and Sevier County Park.

Three managed areas are on or immediately adjacent to Nolichucky Reservoir and include Kinser Park, Davy Crockett Lake PNNL, and Nolichucky WMA. No TVA-managed areas are located on this reservoir, and no NRI streams or Wild and Scenic Rivers are in the vicinity of Nolichucky Reservoir.

Nolichucky Reservoir is situated near areas managed by other federal and state entities (e.g., USFS, TWRA, and UT) and contains ecologically significant areas. These include the Tobacco UT Agricultural Experiment Station, the Unicoi State Bear Reserve/Cherokee (North) WMA, and the Cherokee National Forest.

Alternative A – No Action Alternative
Under Alternative A, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage the lands surrounding Douglas Reservoir. Nolichucky Reservoir would remain without a forecast and unplanned. While natural areas in the vicinity of the Douglas and Nolichucky reservoirs would not be adversely affected under this alternative, the Forecast System would not provide a systematic method of evaluating and identifying the most suitable uses of TVA public lands.

Alternative B – Proposed Land Use Alternative
Overall, the efficient management and protection of natural areas and ecologically significant sites have benefited from the development and implementation of TVA RLMPs. Under Alternative B, TVA would create and implement individual land plans for the two tributary reservoirs to guide future land use decisions. Allocations made under Alternative B would be beneficial to the protection of surrounding natural areas. TVA lands in Zone 2 are managed for informal recreation and, as is the case on Douglas Reservoir, may contain TVA-designated natural areas. TVA lands in Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) would increase to 50 percent of the total TVA-managed land on the reservoirs for Alternative B as compared to 43 percent for Alternative A. Because the implementation of the proposed Alternative B would not affect management objectives, recreational activities, or sensitive resources or result in visual changes to natural areas, no direct or indirect impacts to natural areas are anticipated. No cumulative impacts to natural areas are foreseeable as a result of the proposed action within the time and geographic bounds of this project.

Alternative C – Modified Land Use Alternative
Under Alternative C, TVA would create and implement individual land plans for the Douglas and Nolichucky reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use, public comments, and other opportunities identified during scoping. This alternative would provide additional opportunities for the conservation of natural resources with an emphasis on the management of sensitive resources. Allocations made under Alternative C would be beneficial to the protection of surrounding natural areas. TVA lands in Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation) would increase to 53 percent of the total TVA-managed land on the reservoirs as compared to 43 percent for Alternative A. Because the implementation of the proposed Alternative C would not affect management objectives, recreational activities, or sensitive resources or result in visual changes to natural areas, no

direct or indirect impacts to natural areas are anticipated. No cumulative impacts to natural areas are foreseeable as a result of the proposed action within the time and geographic bounds of this project.

Douglas Reservoir Summary
Parcel 2 is located approximately 1.7 miles east of Trotter Bluff SWA, Lower French Broad and Lower Holston Rivers NEP, and the French Broad NRI stream. It is 2.0 miles northeast of Sevier County Park and over 3.0 miles from other natural areas in the vicinity of Douglas Reservoir. Because of the small size of Parcel 2 (0.01 acre), the increased activity associated with a developed recreation area would be minimal; therefore, the proposed allocation change from Zone 4 under Alternative A to Zone 6 under Alternatives B and C would not adversely affect managed areas, ecologically significant sites, or NRI streams.

Parcel 12 is located approximately 1.6 miles southwest of Henderson Island Refuge, 2.9 miles southwest of Dandridge Municipal Park, and over 3.0 miles from other natural areas in the vicinity of Douglas Reservoir. The proposed allocation change of Parcel 12 from Zone 6 under Alternative A to Zone 4 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 28 is located approximately 1.15 miles northwest of Rankin Bottoms WMA and over 3.0 miles from other natural areas in the vicinity of Douglas Reservoir. The allocation of Parcel 28 would be Zone 4 under Alternatives A and B and would change to Zone 3 under Alternative C. These allocations would not adversely affect managed areas or ecologically significant sites.

Parcel 33 is located within the southern corner of Rankin Bottoms WMA of Douglas Reservoir. The allocation of Parcel 33 would be Zone 4 under Alternatives A and B and would change to Zone 3 under Alternative C. These allocations would not adversely affect managed areas or ecologically significant sites.

Parcel 47 is located over 3.0 miles from any natural area in the vicinity of Douglas Reservoir. The allocation of Parcel 47 would be Zone 4 under Alternatives A and B and would change to Zone 3 under Alternative C. These allocations would not adversely affect managed areas or ecologically significant sites.

Parcel 53 is located over 3.0 miles from any natural area in the vicinity of Douglas Reservoir. The reallocation of Parcel 53 from Zone 4 under Alternative A to Zone 6 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Nolichucky Reservoir Summary
Parcel 5 is located north of and immediately adjacent to Kinser Park, 0.5 mile north of Davy Crockett Lake PNNL, within the boundaries of Nolichucky State WMA, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 5 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 6 is located east of and immediately adjacent to Kinser Park, immediately adjacent on the western shore of Davy Crockett Lake PNNL, within the boundaries of Nolichucky State WMA, and 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 6 from Zone 4 under Alternative A to Zone 3

under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 8 is located approximately 1.8 miles northeast of Kinser Park, immediately adjacent to the northeast of Davy Crockett Lake PNNL and Nolichucky WMA, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 8 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 9 is located approximately 2.4 miles northeast of Davy Crockett Lake PNNL and Nolichucky WMA and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 9 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 12a is located over 3.0 miles from any natural area in the vicinity of Nolichucky Reservoir. Davy Crockett Birthplace State Park, the nearest natural area to Parcel 12a, is located approximately 3.4 miles northeast of Parcel 12a. The allocation of Parcel 12a would be Zone 4 under Alternatives A and B and would change to Zone 3 under Alternative C. These alternatives would not adversely affect managed areas or ecologically significant sites.

Parcel 18 is located approximately 2.7 miles northeast of Nolichucky WMA and Davy Crockett PNNL, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 18 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 19 is located approximately 1.3 miles northeast of Nolichucky WMA and Davy Crockett PNNL, 2.0 miles northeast of Kinser Park, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The reallocation of Parcel 19 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 20 is located east and immediately adjacent to Nolichucky WMA and Davy Crockett PNNL, 1.2 miles northeast of Kinser Park, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 20 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 22 is located within the boundaries of Nolichucky WMA, immediately adjacent on the eastern shore of Davy Crockett PNNL, 0.5 mile south of Kinser Park, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 22 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcel 23 is located within the boundaries of Nolichucky WMA, immediately adjacent on the eastern shore of Davy Crockett PNNL, 0.5 mile south of Kinser Park, and over 3.0 miles from other natural areas in the vicinity of Nolichucky Reservoir. The proposed allocation change of Parcel 23 from Zone 4 under Alternative A to Zone 3 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

Parcels 25-38 are located over 3.0 miles from any natural area in the vicinity of Nolichucky Reservoir. Changing the allocation of Parcels 25-38 from Zone 6 under Alternative A to either Zone 3 or 4 under Alternatives B and C would not adversely affect managed areas or ecologically significant sites.

4.10. Visual Resources

Potential visual consequences were examined in terms of the likely visual changes between the existing landscape and the landscape as it might be altered by the proposed actions. The assessment of visual change considered the sensitivity of viewing points available to the general public, their viewing distances, and visibility of proposed changes. In this assessment, scenic character is described using a variety of adjectives. Scenic integrity, which relates to degree of intactness or wholeness of the landscape character, is also an important factor. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. Scenic value is determined by combining the levels of scenic attractiveness, scenic integrity, and scenic visibility. , scenic value, along with the foreground, middleground, and background viewing distances, was described previously in Section 3.11.

Comparative scenic values of TVA public land were assessed during the development of Alternatives B and C in order to identify areas for scenic protection and visual resource conservation. Those parcels having distinctive visual characteristics such as islands, rock bluffs, steep wooded ridges, wetlands, and flowering shallow water areas were allocated to Zone 3 (Sensitive Resource Management). Land that provides valuable protective screening also was given this allocation. Parcels that possess attractive visual resources of less significance were allocated to Zone 4 (Natural Resource Conservation). This zone also includes land that provides important scenic buffers. Activities that involve minor visible change, such as recreational hiking, picnicking, bank fishing, and some selective forest management, could take place under both zone allocations. Some development with more visible modifications could take place under the Zone 4 designation as long as the location and appearance were subordinate to maintaining the desired visual characteristics.

The scenic character of major WMAs and wetlands would be preserved under all the alternatives. Many islands around the reservoirs would be protected from alteration under all alternatives. This would preserve the scenic accent, attractive contrast, and visual richness they contribute to reservoir vistas. Several areas of the reservoirs would benefit under the action alternatives. Major sections of the riverine upper reservoirs would be protected or screened from further development. This would preserve the variety of wooded, river, ridge landforms; linear channel islands with low trees; broad areas of shallow water; flowering plants; and steep, forest-covered mountainside along the banks. The combined contributions of these attractive features would help sustain the scenic landscape character and aesthetically pleasing sense of place.

Under all the alternatives, the effect of land management on the Douglas and Nolichucky reservoirs would be beneficial for visual resources. Activities occurring during the management of TVA lands typically include road access, illegal dump clean up and prevention, construction and maintenance of access trails, wildlife and forest management, and the provision of parking areas within proximity of desired outdoor and recreational activities. These activities could provide greater visual opportunities for viewing natural scenery for pleasure from the water or land. For example, wildlife openings and agriculture leases could create positive visual contrast in the landscape. Controlled burns could enhance the aesthetic value of naturally appearing landscapes. Conducting timber

harvests in some areas of the reservoir could encourage successional forest cover that would enhance scenic integrity. The minor visual impacts following timber harvests and other types of vegetation management are temporary and would diminish as the site revegetates.

Likewise, future natural areas and wetlands management activities could preserve and enhance the exceptional natural, scenic, or aesthetic qualities of landscapes that are suitable for low-impact public use. To the extent practicable, TVA attempts to monitor and remedy abuses found in these areas, in order to enhance opportunities for viewing naturally appearing landscapes . Historically, such abuses include illegal dumping, unauthorized all-terrain vehicle use, and other activities not permitted in some areas.

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 all alternatives, TVA would continue to conduct site-specific environmental reviews for proposed actions on TVA land, 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.

Alternative A – No Action Alternative
Under the No Action Alternative, there would continue to be no established provision to allocate selected lands based upon visual resource conservation concerns. A slow but noticeable decline in scenic resources, aesthetic quality, and visual landscape character could occur as development demands continue to increase. Actions of TVA and others would be evaluated to determine potential visual effects prior to land use approval. Where TVA has custody of the land, this process could prevent serious visual disruptions or loss of scenic resources. Approval of some activities may also require avoidance or mitigation measures that reduce visual impacts. Otherwise, under Alternative A with some 408 acres (13 percent) of public land being uncommitted and subject to various forms of potential development, sections of highly scenic shoreline as well as those of more common, less unique, visual quality would be at risk from approval of these uses.

Frequently, lands that are sought after for development are also those with the greatest scenic qualities and the most desirable for public conservation. Alteration of lands with the least capacity to absorb change could occur. Under Alternative A, the cumulative effect of additional development could reduce the overall scenic attractiveness of the Douglas and Nolichucky reservoirs, which would negatively impact the visual landscape character and aesthetic sense of place. In this event, the scenic integrity of the predominately rural reservoirs would slightly decrease.

Adoption of Alternative A could result in long-term negative cumulative impacts, which include gradual losses of visual resources, scenic attractiveness, and undeveloped natural areas, as well as negative changes in the aesthetic sense of place. Scenic integrity would probably decrease as patchy development spreads within views from the reservoirs.

Alternative B – Proposed Land Use Alternative
Under Alternative B, the land plans would enhance conservation and protection of scenic resources. The plan would provide for preservation of the most scenic areas, and would protect additional shoreline from development. Lands with distinctive visual character would be placed in Zone 3 or 4, Sensitive Resource Management and Natural Resource

Conservation, respectively. About 621 acres would be allocated to Zone 3, 486 acres on the Nolichucky River corridor were judged to have unique scenic qualities. Another 980 acres would be allocated to Zone 4, which includes lands with attractive but less unique scenic qualities and little visible alteration. Another 496 acres would be allocated to Developed Recreation (Zone 6), which could have moderate visual impacts. Activities that involve little visible change, such as recreational hiking, picnicking, bank fishing, and some selective forest management (e.g., pine beetle salvage), could take place in Zones 3 or 4. Some development with more visible modifications could take place in Zone 4 areas, as long as the location and appearance remained subordinate to the desired visual characteristics. A total of 1,601 acres of publicly held reservoir acreage would be allocated to Zones 3 and 4. 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 in other zones.

Adoption of Alternative B would likely have an increasingly beneficial impact over time. The 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.

Alternative C – Modified Land Use Alternative
Under this alternative, effects to visual resources would be similar to those described under Alternative B as the proportion of land allocated to zones favorable to visual resources is slightly increased. About 713 acres would be allocated to Zone 3, 486 acres on the Nolichucky River corridor were judged to have unique scenic qualities. Another 971 acres would be allocated to Zone 4, which includes lands with attractive but less unique scenic qualities and little visible alteration. Further land proposed to be allocated to Developed Recreation (Zone 6), which could have moderate visual impacts, would be decreased to 413 acres.

Adoption of Alternative C would likely have an increasingly beneficial impact over time. Consequently, implementation of this alternative would likely provide more enhanced protective management for visual resources than either Alternative A or B and would help preserve the scenic landscape character of the reservoirs for long-term public enjoyment.

4.11. Water Quality

Increased development and intensive land use has the potential to result in some degree of negative impact to the aquatic environment whether from point source pollution, such as municipal or industrial discharges, or nonpoint source pollution, which comes from many sources (typically defined as sources that are not required to have an NPDES Permit). Development and intensive land uses often increase the amount of impervious surface (i.e., roofs, roads, and paved areas), remove vegetation, and increase storm water runoff, thereby reducing the natural buffering/filtering effect of vegetated lands and increasing the potential for soil erosion and other nonpoint sources of pollution. The main areas of concern, in terms of impacts to the aquatic environment and consequently aquatic life, are increased turbidity and sedimentation, increased levels of nutrients, which can lead to subsequent algal blooms and higher oxygen demands, and increased levels of chemicals and bacteria from impervious surfaces, disturbed lands, managed lawns, and improper operation or failure of wastewater treatment systems. As development of land around the

reservoirs increases, these cumulative impacts to water quality would continue regardless of the alternative selected by TVA,

Under any of the alternatives, the potential environmental consequences would be similar, but the more development and/or land disturbance allowed by an alternative, the greater the potential for adverse environmental impacts. Potential water quality impacts, such as erosion and nutrient runoff, would be expected to be higher from parcels designated for Project Operations, Industrial, Developed Recreation, or Shoreline Access use where more development and intensive land use might occur. However, prior to any individual actions taken on any parcels in the future, TVA would conduct additional site-specific environmental reviews on a case-by-case basis and require appropriate site design and management practices using TVA's *General and Standard Conditions/Best Management Practices* (TVA 2005) to minimize negative environmental impacts and help ensure the proposals best serve the needs and interest of the public. Further, any actual development of TVA and non-TVA lands must comply with state and federal environmental regulations, and applicants must often obtain permits specifically designed to prevent adverse impacts and violation of applicable water quality criteria.

Alternative A – No Action Alternative
Under Alternative A, no land on Douglas or Nolichucky reservoirs would be allocated to Sensitive Resource Management, the land use designation that is most protective of water quality. About 43 percent of the reservoir lands (1,359 acres) would be dedicated to Natural Resource Conservation, which affords some protection to water quality through restriction on development and protection of riparian vegetation.

Under Alternative A, a total of 1,078 acres (34 percent) of the reservoir lands would be allocated to Zone 2 (Project Operations). Alternative A also includes a 3.4-acre parcel on Nolichucky Reservoir allocated to Industrial, which currently is a sand and gravel pit. No other TVA-managed lands on the reservoirs are allocated for industrial development. About 738 acres (23 percent) are allocated to Developed Recreation, and the remaining 13 acres (less than 1 percent) to Shoreline Access. Activities associated with these four land use zones have some potential to adversely impact water quality, with the Industrial classification having the greatest potential for adverse impacts on any one site. However, the greatest potential for adverse impacts would come from the relatively large amount of Developed Recreation and Project Operation land, which could include disturbances from industrial facilities, recreation and sanitation facilities, roads and parking lots, or campgrounds. 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. Therefore, selection of Alternative A would result in minor direct, indirect, or cumulative impacts to water quality.

Alternative B – Proposed Land Use Alternative
Under Alternative B, a total of 1,601 acres (50 percent) of the reservoir lands would be allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Zone 3 and Zone 4 allocations afford the most protection to water quality because of the more stringent restrictions on land use and enhanced protection of riparian vegetation.

Under Alternative B, a total of 1,078 acres (34 percent) of the reservoir lands would be allocated to Zone 2 (Project Operations). The only land allocated to Industrial (Zone 5) use would be the 3.4-acre parcel on Nolichucky Reservoir. Additionally, 509 acres (16 percent) would be allocated to Zone 6 (Developed Recreation) or Zone 7 (Shoreline Access). Under these four land use zones, development potentially affecting water quality could occur. However, the increase in land allocated to Zones 3 and 4 with lesser impacts to water quality would be beneficial. In addition, as under Alternative A, proposed land uses would be required to protect water quality in accordance with TVA guidelines, federal regulations, and state permits. Consequently, direct, indirect, and cumulative impacts to water quality associated with Alternative B are expected to be minor.

Alternative C – Modified Land Use Alternative
Allocations under Alternatives C are similar to Alternative B except that 83 additional acres would be allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). The same parcels are allocated to Zones 2, 5, and 7 under Alternatives B and C. The minor variations in allocations to Zones 3, 4, and 6 do not represent substantial changes, although they are beneficial to water quality. Therefore, the potential for adverse impacts to water quality under Alternative C are the same as described under Alternative B above. Similarly, the requirements for project design, permitting, and monitoring to minimize impacts to water quality would be the same as described under Alternative B. Therefore, potential direct, indirect, and cumulative effects to water quality would be minor under Alternative C.

4.12. Aquatic Ecology

For aquatic species, the major source of potential adverse impacts to common aquatic species associated with activities on the uncommitted parcels of Douglas and Nolichucky reservoirs would be from land use changes and the potential for erosion. 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. It also provides a source of food for aquatic life. Insects associated with shoreline vegetation are fed upon by both carnivorous and insectivorous (insect eating) aquatic species. Tree root wads along the shoreline provide refuge from predation. Submerged trees that have fallen into the water from the shoreline also provide much needed structure in the reservoir environment. Riparian vegetation serves to stabilize soil along the shoreline as well, 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 (nonmoving) freshwater mussels that can be smothered by sedimentation. Under some circumstances, construction of docks and piers, while having short-term negative impacts, can increase fish habitat. Fixed docks, when combined with habitat improvements such as anchored brush, rock aggregations, log cribs, and/or other forms of cover, can actually enhance the shoreline aquatic habitat. Impacts to aquatic resources are directly related to changes in the existing natural shoreline conditions. Aquatic resources can be impacted by changes to shoreline (riparian) vegetation and land uses, including the presence of vegetation on back-lying lands. Similar to water quality (see Section 4.11) as development of land around the reservoirs increase, cumulative impacts to aquatic ecology from all sources would continue regardless of the alternative selected by TVA.

Alternative A – No Action Alternative
Under the No Action Alternative, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage the lands surrounding Douglas Reservoir. Nolichucky Reservoir has never been forecasted or planned; TVA would continue to use existing land use agreements to manage the lands surrounding Nolichucky Reservoir under the No Action Alternative. Approximately 1,740 acres on Douglas Reservoir and 1,043 acres of committed land on Nolichucky Reservoir would be managed according to existing agreements. On Nolichucky Reservoir, 93 acres of TVA land would remain unplanned and uncommitted and would be managed according to current TVA policy.

The approximately 3,191 acres of public land managed by TVA on Douglas and Nolichucky reservoirs would continue to be managed in accordance with current land uses. Therefore, 43 percent of the land would continue to be managed for Natural Resource Conservation, 34 percent for Project Operations, no land for Sensitive Resource Management, 23 percent for Developed Recreation, and less than 1 percent for Shoreline Access and Industrial.

Under Alternative A, TVA land parcels would continue to be managed under the current Forecast System designations, existing land use agreements, or would remain unplanned; therefore, environmental conditions would likely remain the same. State and federal environmental regulations would apply, and TVA's *General and Standard Conditions/Best Management Practices* (TVA 2005) would be required for TVA-approved projects. Further, there is only a small amount of TVA land surrounding these reservoirs in comparison to the overall land base in the reservoir watersheds. Therefore, selection of Alternative A would have minor direct, indirect, or cumulative impacts on aquatic ecology.

Alternative B – Proposed Land Use Alternative
Adoption of this alternative would promote conservation of natural resources. Under this alternative, TVA would create and implement individual land plans for Douglas and Nolichucky reservoirs. The approximately 3,191 acres of public land managed by TVA on Douglas and Nolichucky reservoirs would be placed into one of the seven land use zones that best fits the existing land use.

Under Alternative B, about 186.9 acres allocated for Zone 6 (Developed Recreation) under Alternative A, would change to, Zone 4 (Natural Resource Conservation) or Zone 3 (Sensitive Resource Management) and only 150 acres would remain in Zone 6. TVA would emphasize conservation of natural resources and project operations by allocating 31 percent of the land surrounding the reservoirs to Zone 4, 34 percent to Zone 2, 19 percent to Zone 3, 16 percent to Zone 6 and less than 1 percent to Zone 7 (Shoreline Access) and Zone 5 (Industrial).

The major source of potential impacts to aquatic communities would be ground disturbance activities in riparian areas, which could affect water quality. That is, the greater the soil disturbance from an activity, the greater the potential for adverse impacts to water quality and listed aquatic species from runoff resulting sedimentation. Due to the increase in acreage dedicated to natural resources, the state and federal environmental regulations designed to protect aquatic species, and the use of TVA's *General and Standard Conditions/Best Management Practices* (TVA 2005), there would not be significant direct or indirect adverse impacts to aquatic communities under Alternative B.

The implementation of Alternative B would not result in negative cumulative effects from these proposed actions. Over the long-term, allocation of lands to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation), which limit ground disturbance, vegetation removal, and other development, would decrease pollution and erosion, which is likely to benefit aquatic ecology.

Alternative C – Modified Land Use Alternative
Adoption of this alternative would provide additional opportunities for the conservation of natural resources with an emphasis on the management of sensitive resources. Under this alternative, TVA would create and implement individual land plans for Douglas and Nolichucky Reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use, public comments, and other opportunities identified during scoping. TVA would allocate approximately 31 percent of the land surrounding the reservoirs to Zone 4 (Natural Resource Conservation), 34 percent to Zone 2 (Project Operations), 22 percent to Zone 3 (Sensitive Resource Management), 13 percent to Zone 6 (Developed Recreation), and less than 1 percent to Zone 7 (Shoreline Access) and Zone 5 (Industrial).

Under Alternative C, zone allocations would change for almost 83 acres as compared to Alternative B. As compared to Alternative B, implementation of Alternative C would allocate more land to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Nolichucky Parcel 12a would be allocated to Zone 3 rather than Zone 4, and Parcels 25, 26, 27, and 31-38 would be allocated to either Zone 3 or Zone 4 rather than Zone 6. Also under Alternative C, Douglas Parcel 28 (10 acres), Parcel 33 (17 acres), and Parcel 47 (36 acres) would change from Zone 4 to Zone 3.

This increase in land allocated to Zones 3 and 4, with their greater protection of natural resources, would benefit aquatic ecology on the reservoirs. Furthermore, future environmental reviews for any proposed use of land would require the use of BMPs, along with compliance with state and federal regulations that would reduce or eliminate negative impacts to natural resources associated with the proposed action. Therefore, development opportunities on TVA lands would not have direct or indirect, adverse impacts to aquatic communities under Alternative C. In fact, some beneficial effects to these species may be recognized as a result of proposed allocations with this alternative's promotion of conservation of natural resources.

Implementation of Alternative C would not result in any negative cumulative effects from these proposed actions. In fact, they could lead to slightly improved riparian buffer zones and a small improvement to water quality and aquatic habitats downstream of the project areas, thereby having a slightly beneficial effect on aquatic life.

4.13. Air Quality

With respect to the DNTRLMP, the greatest potential for effects to air quality is from the Industrial land use zone. Under all three alternatives, a single 3.4-acre parcel on the Nolichucky Reservoir (Parcel 21) is the only Zone 5 (Industrial) allocation. It is currently being used as a sand and gravel pit, which recovers material from the Nolichucky River with minimal impact to air quality.

The potential for impacts to air quality from actions on Zone 2 (Project Operations) lands depends upon the type of development proposed in the future. Because all alternatives include 1,078 acres of land allocated to Zone 2, the potential for impacts to air quality is the

same under all the alternatives. Under any of the alternatives, an appropriate level of site-specific environmental review would document the extent of expected air quality impacts from projects proposed in the future. Future projects would be subject to federal, state, and local air quality regulations.

Activities associated with Zones 3 (Sensitive Resource Management), 4 (Natural Resource Conservation), 6 (Developed Recreation), and 7 (Shoreline Access) are not likely to generate emissions that affect air quality. Therefore, adoption of any of the three alternatives would result in minor direct, indirect, or cumulative impacts to air quality.

4.14. Noise

The greatest potential for community noise impacts comes from industrial and commercial development, commercial transportation, and, to a lesser extent, commercial recreational development. The potential for impacts associated with noise depends upon the types of developments proposed for Zone 2 (Project Operations), Zone 5 (Industrial), and Zone 6 (Developed Recreation) lands. Under all three alternatives, future industrial development is limited to a single 3.4-acre parcel near Nolichucky Reservoir. The amount of land allocated to Developed Recreation (Zone 6) is greatest under Alternative A (738 acres), is about a third less under Alternative B (496 acres), and is lowest under Alternative C (413 acres). The amount of land allocated to Project Operations is the same under all the alternatives.

Overall, based on the proportion of TVA public land available for development relative to the entire shoreline of Douglas and Nolichucky reservoirs, there would be an insignificant increase in the potential for impacts associated with noise under all three alternatives, with the lowest potential for noise expected under Alternative C.

4.15. Socioeconomics

4.15.1. Population and Economy

There is very little TVA-managed public land suitable for industry on either Nolichucky or Douglas reservoirs. Although most of the shoreline is TVA-managed public land, except for a sand mining operation, the Nolichucky Reservoir currently has little industrial opportunity because of the sensitive resources, lack of supporting infrastructure, and lack of potential industrial sites. Although the majority of shoreline on Douglas Reservoir is privately owned, there are likewise few current industrial opportunities. It is conceivable that future industrial opportunities could occur on some of the privately owned shoreline; however, the relatively small amount of TVA-managed public land on Douglas Reservoir is better suited for other purposes or has been committed to other uses.

Alternative A – No Action Alternative
Under Alternative A, the TVA lands would continue to be managed as they are currently. TVA would continue to manage TVA land around Douglas Reservoir using the Forecast System, while TVA land around Nolichucky Reservoir would continue to be managed according to existing land use agreements, as discussed in Section 2.2.1. Continuation of current practices and policy would not, by itself, have socioeconomic impacts. However, specific future land use decisions could result in such impacts and would therefore be reviewed, as appropriate, at that time.

Alternative B – Proposed Land Use Alternative
Under Alternative B, the major differences as compared to Alternative A would include an increase of 621 acres for Sensitive Resource Management, better reflecting appropriate

uses for these lands and a 242-acre decrease of land allocated for Developed Recreation. These changes generally are to zones that are more representative of current land uses. There would be no changes in the allocation for Project Operations (1,078 acres), for Shoreline Access (13 acres), or for Industrial, which consists of one tract of land that is 3 acres. Adoption of Alternative B would have insignificant socioeconomic impacts. However, future site-specific proposed uses, specifically for industry, could potentially have significant impacts. Such proposals would be reviewed, as appropriate, at that time.

Alternative C – Modified Land Use Alternative
Under Alternative C, the proposed changes in allocation of TVA lands are very similar to those under Alternative B. Developed Recreation lands would constitute 83 fewer acres than under Alternative B; these 83 acres consist of several tracts, some of which would be allocated to Sensitive Resource Management and the rest to Natural Resource Conservation. Project Operations would consist of 1,078 acres, the same as in Alternative B. Most of the changes proposed under Alternative C are intended to reflect current usage or most appropriate uses. No changes are proposed to Industrial or Shoreline Access lands. Adoption of Alternative C would have insignificant socioeconomic impacts. However, future site-specific proposed uses, specifically for industry, could potentially have significant impacts. Such proposals would be reviewed, as appropriate, at that time.

4.15.2. Environmental Justice

Alternative A – No Action Alternative
As discussed in Section 3.16.2, minority populations in the area around Douglas and Nolichucky reservoirs constitute a relatively small share of the total population. Poverty levels, however, are somewhat higher, overall, than the state and national averages. Continuation of the current land use classifications under Alternative A would have no noticeable disproportionate impact on disadvantaged populations. Specific land use proposals, however, could have such impacts. Any such proposals would receive the appropriate level of review and analysis of impacts.

Alternative B – Proposed Land Use Alternative
The proposed land allocations under Alternative B are largely a reflection of current land uses. These proposed allocations would have no significant disproportionate impacts to disadvantaged populations. Specific land use proposals, however, could have such impacts. Any such proposals would receive the appropriate level of review and analysis of impacts.

Alternative C – Modified Land Use Alternative
The proposed land allocations under Alternative C are largely a reflection of current land uses, with public comments and other opportunities identified during scoping providing the basis for some allocations. Alternative C would have only small differences as compared to Alternative B. These proposed allocations would have no significant disproportionate impacts to disadvantaged populations. Specific land use proposals, however, could have such impacts. Any such proposals would receive the appropriate level of review and analysis of impacts.

4.16. Unavoidable Adverse Effects

Continuing regional development trends, such as residential development on non-TVA lands, would likely continue to result in degradation of aquatic and terrestrial habitat regardless of the alternative selected. Because of the requirement that project-specific

environmental reviews be conducted prior to implementation, few, if any, unavoidable potential environmental effects would result under any of the three alternatives. Implementation of any of the three alternatives would result in no effects or minor effects to all of the resources examined. Implementation of any of the three alternatives is not expected to result in significant adverse cumulative effects to any resources.

4.17. Relationship Between Short-Term Uses and 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 land management plans, short-term uses generally are those that occur within a 10-year period, and long-term refers to later decades. Productivity is the capability of the land to provide market and amenity outputs and values for future generations. The capability of the land to maintain productivity is one factor that influences the quality of life for future generations.

Generally, the land planning process results in few actions that adversely affect long-term productivity. Where practicable, TVA's 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.

Commitments of the land for developed uses (e.g., 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. Under all three alternatives, Industrial and Shoreline Access uses are allocated to the same parcels, totaling about 1 percent of Douglas and Nolichucky reservoirs lands. The percentage of lands allocated to Zone 2 (Project Operations) is approximately 34 percent under all alternatives. The percentage of lands allocated to Zone 6 (Developed Recreation) is about a third smaller under Alternatives B and C compared to Alternative A. Therefore, the extent of land allocated to zones having a potential to adversely affect long-term productivity is greatest under Alternative A. The potential to convert prime farmland to nonagricultural uses is greatest under Alternative A and lowest under Alternative C.

Conversely, allocation to Zones 3 (Sensitive Resource Management) and 4 (Natural Resource Conservation) increases the likelihood of long-term productivity of those lands. The percentage of Douglas and Nolichucky reservoirs lands allocated to Zones 3 and 4 is approximately 43 percent under Alternative A and approximately 50 to 52 percent under Alternatives B and C. Therefore, long-term productivity of the land is expected to be greater under Alternatives B and C.

The scenic and recreational values of the Douglas and Nolichucky reservoirs are key factors in attracting new residents and visitors to the region. The current regional trends of increasing population and residential and commercial development are expected to continue. 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 values (i.e., Zones 3 and 4) is greatest under Alternatives B and C, while allocation to developed recreational uses is greatest under Alternative A. Therefore, adoption and implementation of any of the three alternatives is expected to promote public enjoyment of the reservoirs and, thereby, support regional trends of socioeconomic growth.

4.18. Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources generally occur through the use of nonrenewable resources that have few or no alternative uses at the termination of the proposed action. Irretrievable commitments of resources result in the lost production or elimination of renewable resources such as timber, agricultural land, or wildlife habitat.

Construction of residences and project operations, industrial, and recreational facilities/structures would involve irreversible commitment of fuel, energy, and building material resources. Use of these resources would occur under all three alternatives, but would be greatest under Alternative A due to the greater total number of acres allocated to Zones 2, 5, 6, and 7, as compared to the total acres in those zones under Alternatives B and C.

As shoreline is converted to residential, commercial, industrial, and some types of recreational use, the land is essentially permanently changed and no longer available for agriculture, forestry, wildlife habitat, natural areas, or certain dispersed recreational activities for the foreseeable future. This is an irretrievable commitment of land that would occur under all alternatives. Over the long term, this type of irretrievable commitment would be greatest under Alternative A, due to the greater total number of acres allocated to Zones 2, 5, 6, and 7, as compared to the total acres in those zones under Alternatives B and C.

4.19. Energy Resources and Conservation Potential

Developing and implementing land management plans do not involve substantive use of energy resources, but the activities allowed under land use zone definitions could use energy resources. Energy is used to fuel machines needed to maintain grassy areas on the TVA Project Operations lands such as dam reservations and various facilities on developed recreation lands.

Energy is also used by machines to maintain areas set aside for Zone 4 (Natural Resource Conservation). Under any of the three alternatives, fuel would be required to conduct natural resource management activities such as mowing, timber management, access road maintenance, etc., should those activities be prescribed for certain parcels. However, the majority of lands in Zone 4 are not actively maintained. Implementation of Alternative C would result in a slightly greater requirement for this type of energy use because it involves the greatest acreage allocated to Zone 4 (Natural Resource Conservation).

Energy may be consumed by campers, boaters, and other users on Zone 6 (Developed Recreation) lands. TVA is encouraging campers who utilize developed recreation areas to reduce energy consumption and to conserve water resources. 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. Alternative A involves the greatest number of acres allocated to Zone 6; therefore, energy use associated with developed recreation would be greatest under that alternative.

Finally, because each alternative contains the same Nolichucky parcel allocated to Zone 5 (Industrial), potential energy use associated with industrial activities would be the same under each of the three alternatives. TVA actively promotes public education and outreach to encourage energy efficiency and green-energy offerings and promotes the integration of

energy efficiency and water conservation into community planning and building construction. TVA would work with potential users of TVA lands to achieve energy savings and to implement conservation practices.

Under all three alternatives, energy use associated with land planning would be minor because nearly half the land area would likely be maintained in a natural condition. The small amount of energy used while implementing the RLMPs is not likely to have much influence on regional energy use demands.

4.20. Summary of TVA Commitments and Proposed Mitigation Measures

Mitigation measures are actions that could be taken to avoid, minimize, rectify, offset, reduce, or compensate for adverse impacts to the environment. In considering requests for use of TVA lands allocated under the DNTRLMP, TVA would implement the following commitments and mitigation measures.

- TVA has executed a PA with the Tennessee SHPO for RLMPs for the identification, evaluation, and treatment of all cultural resources adversely affected by future proposed uses of TVA lands planned in RLMPs. All activities would be conducted in accordance with the stipulations defined in this PA.

- Prior to approving any proposal to use TVA land, 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 mitigation measures, including BMPs (e.g., TVA's *General and Standard Conditions/Best Management Practices*; TVA 2005), as a condition of approval for use of TVA land.

- Landscaping activities on developed properties would not include the use of plants listed as Rank 1 (Severe Threat), Rank 2 (Significant Threat), or Rank 3 (Lesser Threat) on the TN-EPPC (2001) List of Invasive Exotic Pest Plants in Tennessee (Appendix E, Tables E-6 through E-8).

- Revegetation and erosion-control work would utilize seed mixes comprised of native species or noninvasive nonnative species (Appendix E, Table E-9).

CHAPTER 5

5.0 LIST OF PREPARERS

5.1. NEPA Project Management

Amy Burke Henry

Position:	NEPA Specialist
Education:	M.S., Zoology and Wildlife; B.S., Biology
Experience:	12 years in Biological Surveys, Natural Resources Management Planning, and Environmental Reviews
Involvement:	NEPA Compliance and Document Preparation

Heather L. Montgomery

Position:	NEPA Specialist
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Position:	Contract Senior NEPA Specialist
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5.2. Other Contributors

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Position:	Contract Natural Areas Biologist
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Mark S. McNeely

Position:	Program Administrator
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Position:	Program Manager, Flood Risk
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Involvement:	Recreation

W. Chett Peebles, RLA; ASLA

Position:	Specialist, Landscape Architect
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Involvement:	Visual Resources

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Dana M. Vaughn

Position:	Watershed Representative
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Involvement:	Project Manager, Douglas-Nolichucky Tributary Reservoirs Land Management Plan

Edward W. Wells III

Position:	Archaeologist
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Experience:	10 years Cultural Resource Management
Involvement:	Cultural Resources

Cassandra L. Wylie

Position:	Atmospheric Analyst
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Experience:	21 years in Atmospheric Modeling and Effects of Air Pollution on Forests; 9 years in Noise Analysis
Involvement:	Noise Impacts

CHAPTER 6

6.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES WERE SENT

Federal Agencies
Appalachian National Scenic Trail
Great Smoky Mountains National Park
U.S. Army Corps of Engineers, Nashville District
U.S. Army Corps of Engineers, Nashville Regulatory Branch
U.S. Department of the Interior
U.S. Fish and Wildlife Service, Cookeville, Tennessee
U.S. Forest Service, Cherokee National Forest

State Agencies
Tennessee Department of Agriculture
Tennessee Department of Economic and Community Development, First Tennessee Development District, Johnson City
Tennessee Department of Economic and Community Development, Nashville
Tennessee Department of Environment and Conservation, Air Pollution Control Division
Tennessee Department of Environment and Conservation, Director
Tennessee Department of Environment and Conservation, Natural Heritage Division
Tennessee Department of Environment and Conservation, Recreation Educational Svc. Division
Tennessee Department of Environment and Conservation, Water Pollution Control Division
Tennessee Department of Transportation
Tennessee Division of Archaeology
Tennessee Division of Forestry
Tennessee Historical Commission
Tennessee Wildlife Resources Agency, Environmental Services Division

Individuals Notified of Availability of the Final Environmental Impact Statement
The following list includes individuals who expressed interest in the DNTRLMP EIS by submitting comments during scoping or regarding the DEIS and/or by attending the public meeting. In addition post cards announcing the availability of the final EIS were mailed to approximately 1,800 stakeholders.

Scott Ackerman, Greeneville, Tenn.
Kate Agmann, Greeneville, Tenn.
Ralph Alexander, Jr., Dandridge, Tenn.
Barry Bales, Mosheim, Tenn.
Lee A. Barclay, Cookeville, Tenn.
James Barker, Dandridge, Tenn.
Jay and Ann Birdwell, Greeneville, Tenn.
Kendall Bowers, Greenville, Tenn.
Roberts J. and Pat Bradford, Chuckey, Tenn.
F. Joseph Brang, Dandridge, Tenn.
Donald Burchnell, Greeneville, Tenn.
Charolotte Burgner, Greeneville, Tenn.
Daniel E. Burgner Sr., Greeneville, Tenn.
Joseph and Elizabeth Carr, Greeneville, Tenn.
Scott Catlett, Sevierville, Tenn.
Johnny Collins, Greeneville, Tenn.
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Tommy D. Cox, Greeneville, Tenn.
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James A. Crane, Newport, Tenn.
Bryan Daniels, Afton, Tenn.
Fred and Colleen Daniels, Greeneville, Tenn.
Joyce Parvin Daniels, Afton, Tenn.
Tom Daniels, Afton, Tenn.
Laurie and Drew Danko, Dandridge, Tenn.
Angie and Howard Darnell, Chuckey, Tenn.
Carmen Del Valle, Weston, Fla.
Frank Dysart, Afton, Tenn.
Arvin G. Fillers, Greeneville, Tenn.
Paul Hayden, Greeneville, Tenn.

Marie Harmon, Greeneville, Tenn.
Michael and Paula Harris, Baneberry, Tenn.
Ed Hawhee, Greeneville, Tenn.
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Earl Hensley, Greeneville, Tenn.
G. M. Holt, Newport, Tenn.
James Holt, Chuckey, Tenn.
Amber Hope, Afton, Tenn.
Jerry Hope, Afton, Tenn.
Joy Jackson, Chuckey, Tenn.
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Roger Jennings, Greeneville, Tenn.
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Lindsey Johnson, Alcoa, Tenn.
Ginia Johnston, Greeneville, Tenn.
Gregg K. Jones, Greeneville, Tenn.
Kevin Kennard, Knoxville, Tenn.
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S. Dale Kiker, Sevierville, Tenn.
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Kathy Laws, Greeneville, Tenn.
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Gwen Lilley, Greene County, Tenn.
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Iliff McMahan, Newport, Tenn.
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CHAPTER 7

7.0 SUPPORTING INFORMATION

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7.2. Glossary of Terms

100-year floodplain - The area inundated by the 1 percent annual chance (or 100-year) flood.

agricultural licensing - Some parcels or portions of parcels designated for other purposes or uses may also be suitable for interim agricultural licensing. These parcels have been identified, using the criteria contained in TVA's agriculture guidance. Normal tenure for a TVA agricultural license is five years. Land with extreme erosion potential may not be licensed for agricultural use unless erosion and sediment controls, including the use of BMPs, can be successfully implemented. Further investigation and/or mitigation of adverse impacts to natural or cultural resources may be required prior to approval of license agreements.

attainment areas - Those areas of the U.S. that meet National Ambient Air Quality Standards as determined by measurements of air pollutant levels.

benthic - Refers to the bottom of a stream, river, or reservoir.

controlled burn - A managed fire to remove vegetation for the benefit of silviculture or wildlife management.

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 (physiognomic vegetation class, leaf type) - 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 - 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.

dredging - The removal of material from an underwater location, primarily for deepening harbors and waterways.

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 bulrushes.

endangered species - A species in danger of extinction throughout all or a significant portions 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 (physiognomic vegetation class, leaf type) - Vegetation with leaves that stay green and persist all year.

evergreen-deciduous (physiognomic vegetation class, leaf type) - 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 (physiognomic vegetation class) - 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 one or more smaller, disconnected areas.

herbaceous vegetation (physiognomic vegetation class) - Vegetation dominated by forbs, generally forming at least 25 percent cover; other life forms with less than 25 percent cover (Grossman et al 1998).

Hydrological units - Hydrologic Unit Codes (HUCs) are cataloging units assigned to each watershed by the U.S. Geological Survey for the purpose of assessment and management activities.

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).

Important Bird Areas - The Important Bird Area Program is part of an international effort to identify the most critical bird habitat. TWRA has partnered with the National Audubon Society to compile a list of sites in Tennessee.

macroinvertebrates - Bottom-dwelling aquatic animals without vertebrae, such as mollusks and arthropods.

mainstream reservoirs - Impoundments created by dams constructed across the Tennessee River.

marginal strip - The narrow strip of land owned by TVA between the water's edge and the adjoining private property, on which the property owner may construct private water use facilities upon approval of plans by TVA.

maximum shoreline contour - 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.

National Ambient Air Quality Standards - Uniform, national air quality standards established by the U.S. Environmental Protection Agency 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, particulates, sulfur dioxide, nitrogen, nitrogen dioxide, and lead.

overbank - Vegetation that grows out from the bank of a stream over the water.

overstory - The tallest and dominant community of trees of a forest.

physiographic provinces - General divisions of land with each area having characteristic combinations of soil materials and topography.

plan tract - A numbered parcel of TVA fee-owned land that, prior to the plan, has had no long-term commitments affecting future land uses as assigned through the reservoir land planning process.

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.

riparian zone - An area of land that has vegetation or physical characteristics reflective of permanent water influence. Typically a streamside zone or shoreline edge.

riprap - Stones placed along the shoreline for bank stabilization and other purposes.

riparian - The communities of plants and animals that occur within the influence of a stream, river, or body of water.

riverine - Having characteristics similar to a river.

row crops - Agricultural crops, such as corn, wheat, beans, cotton, etc., that 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.

shoreline management zone - A barrier of permanent vegetation established or left undisturbed around a reservoir in order to buffer the adverse impacts resulting from development and increased human activity.

shrublands (physiognomic vegetation class) - Vegetation consisting of shrubs generally greater than 0.5 meter tall with individuals or clumps not touching or overlapping, generally forming >25 percent cover; tree cover generally less than 25 percent (Grossman et al. 1998).

significant cultural resources - Some of the parcel descriptions state that "the parcel contains significant cultural resources" or that "cultural resource considerations may affect development of the parcel." However, many of the parcel descriptions contain no reference to archaeological or other cultural resources. The lack of such references within a parcel description does not necessarily indicate that significant cultural resources do not exist. The use of any parcel for developmental purposes may require additional archaeological testing or mitigation of adverse impact to archaeological sites. The costs of required testing or mitigation would be the responsibility of the developer.

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 portions 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.

understory - The least dominant community of trees of a forest, consisting of shade-tolerant species.

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 (physiognomic vegetation class) - open stands of trees with crowns not usually touching, generally forming 25-60 percent cover (Grossman et al. 1998).

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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. And 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, it further 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 backlying 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 – SCOPING INFORMATION

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SCOPING DOCUMENT
DOUGLAS AND NOLICHUCKY RESERVOIRS
LAND MANAGEMENT PLANS
ENVIRONMENTAL IMPACT STATEMENT
December 2008

Introduction

The Tennessee Valley Authority (TVA) develops reservoir land management plans to facilitate the management of reservoir properties under its administration. In general, TVA manages public lands to protect and enhance natural resources, generate prosperity, and improve the quality of life in the Tennessee Valley. Plans are submitted to the TVA Board of Directors for approval. If approved these plans provide for long-term land stewardship and accomplishment of TVA responsibilities under the TVA Act of 1933.

TVA is preparing a programmatic environmental impact statement (EIS) to assess the potential environmental impacts of implementing individual reservoir land management plans for TVA-managed public property on two tributary reservoirs—Douglas and Nolichucky. The proposed land plans involve approximately 3,200 acres of federally owned TVA-managed public land. Under the Douglas and Nolichucky Reservoirs Land Management Plans (DNRLMP), properties would be allocated to various categories of uses. This allocation would then guide the types of activities to be considered on TVA-managed land. Land allocations will be based on public needs, the presence of sensitive environmental resources, TVA goals and policies, existing land rights, and other pertinent issues.

Background

TVA originally acquired a total of about 3,750 acres in Cocke, Greene, Jefferson, and Sevier counties, Tennessee, above the normal summer pool of the two reservoirs. About 15 percent or approximately 550 acres of this land has subsequently been transferred or sold for economic, industrial, residential, public recreation, or natural resource conservation purposes. About two-thirds of the remaining land (approximately 2,100 acres) is on Douglas Reservoir, and one-third (approximately 1,100 acres) is on Nolichucky Reservoir. The approximately 3,200 acres remaining are managed by TVA and are the subject of the proposed reservoir land management plans.

Alternative land allocations will be analyzed as different alternatives in the EIS. In developing the land plans for each of the reservoirs, the lands currently committed to a specific use by deed, contract, or agreement will likely be allocated to that current use; however, changes that support TVA goals and objectives will be considered.

Douglas Reservoir was previously planned utilizing the Forecast System developed in 1965. Planned uses under the Forecast System included Dam Reservations, Public Recreation, Agriculture Research, Industry, Reservoir Operations, and Commercial Recreation. Under the Forecast System, the strip of land between the normal summer pool and a higher-contour elevation was not planned. TVA lands on Nolichucky Reservoir have never been planned.

In the planning process for the reservoirs, TVA would propose options for allocating its public lands into one of the categories shown in Table 1. The remaining lands that TVA does not own in fee, typically flowage easement lands, will be allocated to Zone 1 (Non-TVA Shoreland) and

are not included in this planning process. These zones are similar to those used on other TVA reservoirs that have been planned since 1999.

Table 1. TVA Reservoir Land Planning Zones

Zone	Definition
2 – Project Operations	TVA reservoir land currently used for TVA operations and public works projects.
3 – Sensitive Resource Management	Land managed for the protection and enhancement of sensitive resources.
4 – Natural Resource Conservation	Land managed for the enhancement of natural resources for human use and appreciation.
5 – Industrial	Land managed for economic development including businesses in distribution/processing/assembly and light manufacturing. Preference will be given for industries requiring water access.
6 – Developed Recreation	Land managed for public and/or commercial recreation.
7 – Shoreline Access	TVA-owned land where Section 26a applications and other land use approvals for shoreline alterations are considered.

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 reservoir land management plans for 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 will not allocate reservoir lands for residential use or dispose of reservoir properties for residential use. In addition, proposals for mixed-use development (live/work/play) will not be considered because of their residential component. For lands allocated as industrial, TVA will show a preference for water-based industries when disposing of land or land rights.

This EIS will tier from TVA's final EIS titled *Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley*, which was issued in November 1998. This EIS addressed the potential environmental effects of various alternatives for managing residential shoreline development on its reservoirs. In its May 24, 1999, record of decision (ROD), TVA adopted the Blended Alternative identified in the *Shoreline Management Initiative* (SMI) EIS. Under the Blended Alternative, TVA sought to balance residential shoreline development, recreational use, and resource conservation needs in a way that maintains the quality of life and other important values provided by its reservoir system. In accordance with the TVA Shoreline Management Policy (SMP), which implements SMI, TVA will categorize the residential shoreline of Douglas and Nolichucky reservoirs in response to permit requests. This will provide real-time information regarding the presence of sensitive species and their potential habitats, archaeological resources, and wetlands, which will result in accurate cumulative shoreline resources inventories meeting the intent of the SMP.

Scoping Activities

TVA has sought extensive public involvement to help determine the scope of the EIS and to identify alternative allocations for the lands being planned. The major public involvement steps are listed below.

May 30, 2008 — A Notice of Intent (NOI) was published in the *Federal Register* alerting other agencies and the public of the EIS.

June 2, 2008 — Over 2,500 informational packages were mailed to stakeholder groups and individuals in the reservoirs' area.

June 5, 2008 — An announcement of the June 12, 2008, public scoping meeting was published in six local newspapers: *Morristown Citizen Tribune*, *Jefferson City Standard Banner, Knoxville News-Sentinel, Sevierville Mountain Press, Newport Plain Talk*, and the *Greeneville Sun.*

June/July 2008 — TVA staff met with stakeholder groups and individuals in the reservoirs' area to brief them on the planning effort.

June 12, 2008 — A public scoping meeting was held at Walters State Community College in Morristown, Tennessee, and attended by 30 people.

July 15, 2008 — A 46-day scoping comment period concluded with the receipt of comments from 118 commenters.

In addition, several newspaper articles and television news reports were published during the comment period by the local news media. During the 46-day public comment period, a toll-free telephone line was established for people to make verbal comments. Information about the proposed Douglas and Nolichucky Reservoirs Land Management Plans, including maps and an interactive comment form, was also available on the TVA Web site, http://www.tva.gov/environment/reports/dnlp/index.htm.

Copies of the NOI were sent to federal, state, and local agencies (see Table 2). Written comments were received from three federal agencies: the U.S. Fish and Wildlife Service (USFWS), the U.S. Office of Surface Mining Reclamation and Enforcement (USOSM), and the U.S. Forest Service (USFS). Written comments were also received from the Tennessee Department of Transportation (TDOT) and the Tennessee Wildlife Resources Agency (TWRA).

Table 2. Agencies Sent a Copy of the Notice of Intent

Agency
First Tennessee Development District
Great Smoky Mountains National Park
Tennessee Department of Agriculture
Tennessee Department of Economic and Community Development
Tennessee Department of Environment and Conservation (TDEC) TDEC - Division of Air Pollution Control TDEC - Division of Archaeology TDEC - Division of Recreation Educational Services TDEC - Division of Water Pollution Control TDEC - Natural Heritage Division TDEC - Tennessee Historical Commission
Tennessee Department of Transportation
Tennessee Wildlife Resources Agency
U.S. Army Corps of Engineers, Nashville District
U.S. Fish and Wildlife Service: Cookeville, Tennessee
U.S. Forest Service - Cherokee National Forest

The comments received during public scoping are summarized in the attached *Summary of Public Participation* issued in September 2008. The results of the public scoping provided recommendations on land use allocations for individual reservoirs and their parcels and on the environmental issues to be addressed in the EIS, as well as a characterization of respondents' use of the two reservoirs.

Alternatives

TVA proposes to develop individual reservoir land management plans to guide land use approvals, private water use facility permitting, and resource management decisions on Douglas and Nolichucky reservoirs. Under all of the action alternatives, the plans would identify land use zones in broad categories. Land currently committed to a specific use would be allocated to that current use unless there is an overriding need to change the use. This committed TVA land is most often reservoir land with existing TVA projects or existing land use agreements such as transfers, leases, licenses, contracts, power lines, outstanding land rights, and TVA-developed recreation areas.

The potential environmental effects of implementing a No Action Alternative (Alternative A) and two action alternatives as described in the following paragraphs will be evaluated in the DNRLMP EIS. The amount of land allocated for TVA Project Operations (Zone 2) and Shoreline Access (Zone 7) would likely remain the same under all the action alternatives. The proposed action alternatives are as follows: Alternative B – Proposed Land Use Plan Alternative and Alternative C – Modified Land Use Plan Alternative. Alternative B is based on the management of natural resources as proposed during scoping. Alternative C is a result of the public comments and other opportunities identified during scoping, and its implementation would lead to increased natural resource conservation and sensitive resource protection opportunities on public lands.

Alternative A - No Action Alternative - Under the No Action Alternative, TVA would continue to use the Forecast System designations established by TVA in 1965 to manage the lands surrounding Douglas Reservoir. Nolichucky Reservoir would remain unplanned. The lands with existing TVA projects and existing land use agreements surrounding the two reservoirs would not be allocated to a land use zone; therefore, complete alignment with existing TVA policies would not occur. Requested land uses on Douglas Reservoir that are consistent with the Forecast System designation could either be approved or denied based on a review of potential environmental impacts, TVA's Land Policy, and other administrative considerations.

Alternative B - Proposed Land Use Plan Alternative - Adoption of this alternative would promote conservation of natural resources. Under this alternative, TVA would create and implement individual land plans for the two reservoirs. The 3,200 acres of public land managed by TVA would be placed into one of the seven land use zones that best fits the existing land use. TVA would promote conservation of natural resources and project operations by allocating 30 percent of the land surrounding the two reservoirs to Natural Resource Conservation (Zone 4), 34 percent to Project Operations (Zone 2), 19 percent to Sensitive Resource Management (Zone 3), 16 percent to Developed Recreation (Zone 6), and less than one percent in Zones 5 and 7 combined. Exact acreages for each land use zone are not known at this time.

Alternative C - Modified Land Use Plan Alternative - Adoption of this alternative would provide additional opportunities for the conservation of natural resources with an emphasis on the management of sensitive resources. Under this alternative, TVA would create and implement individual land plans for Douglas and Nolichucky reservoirs. The lands managed by TVA would be placed into land use zones that best represent the existing land use, public comments, and other opportunities identified during scoping. As compared to Alternative B, implementation of Alternative C would allocate more land to Sensitive Resource Management (Zone 3). TVA would allocate approximately 30 percent of the land surrounding the two reservoirs to Natural Resource Conservation (Zone 4), 34 percent to Project Operations (Zone 2), 22 percent to Sensitive Resource Management (Zone 3), and 14 percent to Developed Recreation (Zone 6). Exact acreages for each land use zone are not known at this time.

Significant Environmental Issues to be Addressed in Detail

The majority of the public responses to the NOI focused on land ownership and rights on Nolichucky Reservoir. Many comments received raised issues regarding TVA's ownership of specific tracts of land. Stakeholders requested further investigation and information from TVA.

Additional comments were received expressing concerns about TVA's public notice. The stakeholders believed they were not properly informed about public meetings and that the comment deadline was unfair. Many urged TVA to extend the comment period because most of the landowners directly affected by the plan were not notified. There were many comments on allocating land for public access/use. Many stakeholders do not want to see the shoreline around and/or fronting their property opened up for public access because they believe it would cause an increase in trespassers on their property and would trigger other use issues. Other stakeholders stated that private landowners do not allow them to use public land, and they fear that public use of the shoreline of the Nolichucky Reservoir would not be allowed. Stakeholders surrounding Nolichucky Reservoir commented on the amount of trash and litter, especially old tires, present along the shoreline.

The TWRA encouraged TVA to maintain the existing allocation of all lands currently committed to a specific use. Other stakeholders commented on the transferring of land to TWRA. A majority of these comments were against the transfer and stated that there had been past mismanagement and land ownership conflicts. The USFWS expressed the need to evaluate each alternative for impacts on the federally listed species that may occur in the project area.

Issues and Resources to be Addressed

Based on the analysis of the scoping comments as well as its internal scoping, TVA has identified the following resources and issues that would be affected by implementing new land management plans for Douglas and Nolichucky reservoirs. For each resource, the potential direct and indirect effects of each alternative will be described in the EIS. In addition, other activities that may affect resources of concern for land plans will be identified, and the potential effect of these activities on Douglas and Nolichucky reservoirs' resources and trends in the resources will be assessed. The major resource categories that will be considered in the EIS are listed below.

Land Use and Prime Farm Land - Existing land use patterns on TVA-managed properties and back-lying land have been mainly determined by TVA land acquisition, disposals, and land use agreements. Many of the parcels are committed to existing land uses with little to no potential for change in the 10-year planning horizon. Proposed allocations of the remaining uncommitted parcels will be evaluated using the goals of the DNRLMP and TVA policies and regulations. Prime farmland as defined in the 1981 Farmland Protection Policy Act is an important resource; its occurrence will be identified on TVA-managed public land, and the effects of the implementation of each alternative will be evaluated.

Recreation - Current recreation facilities available to meet public recreation needs will be identified, as will those lands that are important for consumptive and nonconsumptive dispersed recreation. The effects of implementing each alternative on recreation opportunities in the vicinity of Douglas and Nolichucky reservoirs will be evaluated.

Terrestrial Ecology - This category includes the plants and animals comprising the terrestrial ecosystems and communities found adjacent to the reservoirs, including the control of invasive species. Issues include the identification and protection of significant natural features, rare species' habitat, migratory birds, important wildlife habitat, and locally uncommon natural community types.

Endangered and Threatened Species - State or federally listed threatened and endangered plant and animals are known or likely to exist in the vicinity of Douglas and Nolichucky reservoirs. These species will be identified, including their occurrence and habitats on TVA lands and waters, and the effects of implementing each alternative will be evaluated, including compliance with the Endangered Species Act (ESA) and similar state laws.

Wetlands - Wetlands are important to terrestrial and aquatic ecosystems. Those found on TVA land and along the reservoir shoreline will be identified, and the effects of implementing each alternative will be evaluated, including compliance with Executive Order (EO) 11990 on wetlands and the Clean Water Act.

Floodplains - Floodplains are important to flood control and water quality issues and are productive natural areas. Those found on TVA land and along the reservoir shoreline will be identified, and the effects of implementing each alternative will be evaluated, including compliance with EO 11988 on floodplains.

Cultural and Historic Resources - Archaeological sites, historic buildings, and cultural landscapes and properties on or near the reservoirs lands including sites listed in the National Register of Historic Places (NRHP) will be identified, and the effects of implementing each alternative will be evaluated, including compliance with the National Historic Preservation Act.

Managed Areas and Sensitive Ecological Sites - TVA will identify special and unique natural areas on or in the vicinity of the reservoirs set aside for a particular management objective and lands that are known to contain sensitive biological, cultural, or scenic resources. The effects of implementing each alternative will be evaluated.

Aesthetics and Visual Resources - The aesthetic setting of the reservoir will be characterized and scenic and distinctive areas frequently seen by reservoir users and adjacent reservoir residents will be identified. The effect of each alternative on the natural beauty of the shoreline will be evaluated.

Water Quality - Water quality conditions affect the overall ecological health of Douglas and Nolichucky reservoirs. Water quality is influenced by activities causing shoreline erosion as well as pollution, litter, and debris control. The effect of implementing each alternative on water quality will be evaluated.

Aquatic Ecology - Aquatic ecology includes the plants and animals found in the waters of Douglas and Nolichucky reservoirs, their tributaries, and their tailwaters. Issues that will be evaluated include the identification and protection of rare species' habitat, important aquatic habitat, or locally uncommon aquatic community types. The effect of implementing each alternative on aquatic ecology will be evaluated.

Air Quality and Noise - Both resources are important for public health and welfare. The effect of implementing each alternative with National Ambient Air Quality Standards, which establish safe concentration limits of various air pollutants, is an important issue that will be identified and discussed.

Socioeconomics - The current population, labor force, employment statistics, income, and property values of the reservoirs' region will be described. A subset of these issues is environmental justice, the potential for disproportionate impacts to minority and low-income communities. The potential socioeconomic effects of adopting and implementing each alternative will be evaluated.

Issues and Resources Not to be Addressed

Based on the analysis of the scoping information, TVA has identified that the development of the land plans is unlikely to have an impact on greenhouse gases. No sequestered carbon would be released to the environment under any of the alternatives.

Some comments submitted during scoping dealt with lake levels. These comments have been previously addressed in TVA's 2004 *Reservoir Operations Study*. Comments pertaining to lake

levels are not within the scope of this EIS. Rather, these comments and other nonenvironmental issues, such as appreciation or critiques of TVA processes and guidelines, will be forwarded to TVA's Office of Environment and Research for attention, and will not be addressed further in this environmental review.

TVA will evaluate the potential impacts from the implementation of the land plans as valid projects are identified.

Related Environmental Documents

Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley Final Environmental Impact Statement (TVA 1998) (SMI EIS)
In 1998, TVA completed an EIS that analyzed possible alternatives for managing residential shoreline development throughout the Tennessee River Valley. The alternative selected determined TVA's current SMP. The SMP incorporates a strategy of maintaining and gaining public shoreline through an integrated approach that conserves, protects, and enhances shoreline resources and public use opportunities, while providing for reasonable and compatible use of the shoreline by adjacent landowners. The SMP defines the standards for vegetation management, docks, shoreline stabilization, and other residential shoreline alterations. The DNRLMP EIS will tier from the SMI EIS.

Reservoir Operations Study Final Programmatic Environmental Impact Statement (TVA 2004)
This EIS describes the evaluation of several possible alternatives for managing TVA's water operations. It includes Douglas and Nolichucky reservoirs and management of their seasonal water levels.

Nolichucky Reservoir Flood Remediation Final Environmental Impact Statement (TVA 2007)
On April 13, 2007, TVA issued the ROD for this project to evaluate alternative ways to address flooding effects of Nolichucky Dam and the accumulated sediment in Nolichucky Reservoir on land and property not owned by the federal government. The ROD was published in the *Federal Register* on April 19, 2007.

Nolichucky Sand Company Bird Bridge Dredge Final Supplemental Environmental Assessment (TVA 2004)
TVA, the U.S. Army Corps of Engineers (USACE) and TDEC authorized a dredge operation following the completion of an environmental assessment (EA) in August 1999. In June 2003, new owners, Vulcan Materials Inc., proposed to expand its existing commercial sand dredging operation upstream for nearly an additional mile above Bird Bridge. TVA and USACE jointly prepared a supplemental EA to analyze the environmental impacts of additional proposed dredging and the renewal of TVA land use, TVA Section 26a ,and USACE Section 10 approvals.

Cherokee Valley Subdivision Final Environmental Assessment (TVA 2007)
In January 2007, TVA issued a final EA and finding of no significant impact (FONSI) for Mountain Ridge LLC's proposed Cherokee Valley Subdivision near Sevierville. Construction of various structures in the floodplain of Lost Branch and Walden Creek requires TVA Section 26a approval. TVA's EA focused on potential impacts to floodplains and historic properties.

Pigeon Falls Lane Stream Modifications Final Environmental Assessment (USACE 2008)
In July 2008, TVA issued a FONSI for the issuance of Section 26a approval of construction of Pigeon Falls Lane in the City of Pigeon Forge, Sevier County, Tennessee. The City of Pigeon

Forge proposed to construct a 0.5-mile road to provide access to the proposed Pigeon Falls Village and other future developments. This road would also serve as a regional connector. The road construction would result in the filling of about 1,400 linear feet of two streams to the West Prong of the Little Pigeon River. TVA cooperated with the USACE in the preparation of an EA of the proposed action. TVA has adopted this EA.

Eagle's Landing Golf Course Expansion Final Environmental Assessment (TVA 2008)
In April 2008, TVA issued a FONSI and a final EA for Section 26a approval of the construction of bridges and placement of fill in a floodplain associated with the expansion of the Eagle's Landing Golf Course in Sevierville, Sevier County, Tennessee. The City of Sevierville Public Building Authority proposed to expand the golf course onto Sanders Islands in the Little Pigeon River at River Mile 2.4. The bridges and fill, as well as the associated construction of underground utilities, require approval by TVA under Section 26a of the TVA Act. TVA issued the Section 26a approval on April 30, 2008.

Other Environmental Review and Consultation Requirements

TVA will be the lead federal agency in the preparation of the land plans and EIS. Other environmental and permitting agencies, including the U.S. Environmental Protection Agency, USACE, USFS, U.S. Geological Survey, TDEC, Tennessee State Historic Preservation Office, and TWRA will be sent a copy of the draft EIS for review.

Delegation of Work Assignments

Office of Environment and Research, Environmental Services and Programs, NEPA Resources, will have primary responsibility for management of the EIS process and assembly of the draft and final EIS, in consultation with Land and Water Stewardship and the Office of the General Counsel. Other TVA groups, including Environmental Research and Technical Services, River Operations, and Economic Development, may contribute to the analysis.

Interdisciplinary Team

The following TVA staff individuals are potentially participating in preparation of the EIS. Their respective responsibilities for the individual resource area discussions are also denoted. Other personnel may also participate as needed.

Staff Member	Resource Area
Tyler Baker	Surface Water and Water Quality
Michael Broder	Air Quality
Chris Cooper and Dana Vaughn	Project Managers
Pat Cox	Botany and Endangered and Threatened Plants
Janice Dockery	Document Editor
Jim Eblen	Socioeconomics
Jerry Fouse	Project Advisor and Recreation
Kenneth Gardner	Aquatic Ecology and Endangered and Threatened Aquatic Animals
Kelie Hammond	Navigation
Hill Henry	Terrestrial Ecology and Endangered and Threatened Terrestrial Animals
Clint Jones	Aquatic Ecology and Endangered and Threatened Aquatic Animals
Alan Mays	Prime Farmland
Mark McNeely	Graphics
Johnathan McNutt	Recreation

Staff Member	Resource Area
Roger Milstead	Floodplains and River Operations
Aurora Moldovanyi	Recreation
Chett Peebles	Cultural Resources – Historic Structures and Visual Resources
Kim Pilarski-Brand	Wetlands
Laura Smith	Communications
Jan Thomas	Natural Areas
Rick Toennisson	NEPA Project Management
Dana Vaughn	Land Use and Watershed Initiatives
Ted Wells	Cultural Resources – Archaeology

Schedule for Draft EIS Preparation and Review

The following is a tentative schedule for the completion of the EIS.

Task	Date
Draft EIS notice of availability (NOA)	September 2009
Public review of draft EIS	September-October 2009
Development of final EIS	November 2009-January 2010
Final EIS NOA	February 2010
Consideration by TVA Board of Directors	April 2010
ROD NOA	May 2010

Douglas and Nolichucky Reservoirs Land Management Plans

Summary of Public Participation

Tennessee Valley Authority

September 2008

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Part I:

Public Comments Identified by Issue

Abbreviations for Government Agencies and Stakeholder Groups

TDOT	Tennessee Department of Transportation
TWRA	Tennessee Wildlife Resources Agency
USOSM	U.S. Office of Surface Mining Reclamation and Enforcement
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Land Ownership and Rights	
Ownership	
As homeowners along the Nolichucky River, specifically K3 and K4 on your map (in the red zone), Title parcel A3, we disagree with TVA taking our land and making another unnecessary boat ramp. We are not uneducated citizens; we are all for progress and for the good of many. However, we purchased a great deal of land in the County to have our privacy, to enjoy this natural environment.	Individuals (2)
Should we now turn to our local government for tax refunds or do you take any responsibility? What is your liability for individuals that find their way onto my land from the river bank you claim to own? That river bank that I have strived to protect from pollution and disturbance in an effort to maintain the fragile balance of nature. Are the title companies now in the mix of confusion and misinformation as it related to title searches? Are real estate brokers affected by their past sales to buyers who were under the false impression of ownership?	Individual
I learned by reading today's edition of the Greeneville Sun newspaper that you are planning to take over my property as well as the property of my neighboring landowners as if you owned the land that I just paid for about a year ago. There is no legal notice in my deed that you or anyone else has an easement or ownership of my land other than me. I have not received any notice from your office that you plan to do anything with my land. It has been my experience in Georgia, Washington, Oregon, and now Tennessee that local, state, and federal governments treat their citizens as worthless trash with no property rights. I don't know when this became Russia instead of the USA, but apparently the government agencies in this country think they rule by divine right and no one else has any rights whatsoever. I am considered good enough to pay megabucks in property taxes. What is the point of paying property taxes if TVA is just going to steal my property from me whenever they decide to?	Individual

Land Ownership and Rights	
Ensure that land owners with long time deeds to the middle of the river have their land protected from intrusion by the public. Ownership of lands needs to be clear as does liabilities and responsibilities.	Individual
I have been under the impression that I have owned the property adjoining Parcel 13 on Map B7. I have paid property taxes on it for over 10 years. My brother and I have managed the property adjacent to this parcel for wildlife and forestry. We have invested in food plots located near this parcel. We have had several instances of poaching and trespassers from this parcel. It is my opinion that this parcel is to small and sensitive for any use by the public.	Individual
The deed for our land calls for the property line to go to the river. TVA would be controlling many acres of land that have been bought and paid for by someone else (not to mention the payment of land taxes). TVA would be sitting in some office far away while we are contending with the problem that comes with strangers who neither love nor respect your land.	Individual
The suggestion that TVA owns and/or controls land upon which property taxes have been privately paid for for generations, and without regard to the huge investments private citizens have made to improve such property, has regional anti-eminent domain warriors on the rampage. I cannot imagine why TVA would want to bring this commotion down on itself. The legal, political and financial implications are enormous and portend significant, contentious conflicts between TVA and not only numbers of outraged private property owners, real estate brokers and title firms, but also with tax-assessing-and-collecting bodies within which property TVA says is owns is located.	Individuals (2)
I have also been informed that representatives of the TVA or related agencies have been systematically trespassing on my property in an effort to gain access to this parcel of land. We have witnessed vehicles appearing to display government issued plates trespassing over my land to travel on a private path across private property. I am very concerned with the actions of the TVA in this matter. Some of these actions cause fear, others doubt and mistrust, and overall give the whole Federal Government a bad reputation for trying to work within the law and concern for all citizens.	Individuals (2)
It was with great dismay that I recently learned of a plan to make public some lands that, while not directly connected with my property, open my property up to potentially more public activity - as well as the introduction of a negative environmental impact to a native Huron near my property (upstream of this proposal), and the character and landscape of the area. It was my understanding that the property in question (as I understand it identified, Nolichucky parcel A3) is owned by landowners in the area who paid for this property when acquiring a total parcel of land. This purchase was pursuant to the understanding that this riverfront land was included in the purchase. The ownership of this land by private citizens influenced my decision to invest in the property I now own, as I did not want public access near my property, both by accident and intent. It is now my understanding that the TVA is claiming rights of ownership to this land, and wishes to open it to public access.	Individual
The legal description of my property deed is Tract 20 of the Ed Wills Farm in the 9th Civil District of Greene County, Tennessee a plat of which is found of record in Plat Cabinet A, Slide 275, Register's Office for Greene County, Tennessee. I	Individual

Land Ownership and Rights	
have also been informed; representatives of the TVA or related agencies have been systematically trespassing on my property in an effort to gain access to this parcel of land. We have witnessed vehicles appearing to display government issued plates trespassing over my land to travel on a private path across private property. I am very concerned with the actions of the TVA in this matter. Some of these actions cause fear, others doubt and mistrust, and overall give the whole Federal Government a bad reputation for trying to work within the law and concern for all citizens.	
There are significant legal questions about property rights here, not to mention liability and further environmental damage from future uses of this watershed.	Individual
The deed problem is a big one here, as the deeds office is in the dark. Therefore, your claims are at a high risk until this is sorted out further and grave reason to extend your public comment period. These deeds must be addressed before you plow on with your management plans. Our deeds conflict with your assertions. TVA claims they inherited all this property. Alas, that information has not transferred to individual deeds. This presents a serious legal challenge which must be resolved.	Individuals (3)
I am a real estate agent in Greeneville, Tennessee. I need clarification on deeds regarding TVA ownership along the Nolichucky River in and around Greeneville as I must properly present this information to clients as well as protect my business reputation.	Individual
The WMA was created in the early 1970's out the decision to shut down the Nolichucky Hydro Plant. It had a number of goals among them was the creation of a resident Canada Goose flock of 300 birds and a resident Wood Duck flock of 1000 birds within 5 years of project completion. To accomplish these goals, several tracts of adjoining land were acquired, by condemnation, when necessary. The scheme was to create share croppers out of the former landowners. The tract taken from my family was leased to a number of people. The WMA has existed for over thirty years and none of the goals have been accomplished. There are now about 30-60 Canada Geese and no Wood Ducks to speak of. Almost all of the sharecroppers went broke. The land formerly owned by my family is now in nuisance vegetation as a result of government neglect. At this point in time, logic would dictate that the present WMA is a failure. Legal agreements can be amended or terminated by consent of all parties. There is no reason why wildlife management can't occur on privately-owned land. In fact it is being done under the Conservation Reserve Program. TVA can do what it will with the dam and reservoir but all other tracts on the map need to be put back in the hands of the former landowners.	Individual

Land Ownership and Rights	
My property is on Map A3 as parcels K4 and K3. This land is owned by my family who acquired the land many years ago. This purchase was pursuant to the understanding that this riverfront land was included in the purchase. The ownership of this land influenced my decision to invest in the property (approximately 200 acres) I now own and would have a very large impact on my property. I have a warranty deed, clear title opinion and title insurance. According to the map I was shown, it is now my understanding that the TVA is claiming rights of ownership to this land to which I have a deed, title insurance and surveys. Incidentally, I paid a premium for this land due to the river access.	Individual
We own Lot #9 & Lot # 10 at Riverview Estates along West Allens Bridge Road. We are opposed to TVA's proposed action plan to take possession of any portion of our property. We purchased this property in its entirety and have paid the Real Estate taxes on it annually as required, in addition to it maintenance. We consider this proposed action plan by TVA an injustice to any landowner who has purchased river front property.	Individuals (2)
I own about 500 acres with 3 miles of River. I have invested large sums to develop the property habitat to be a haven for wildlife. We are now home to a wide number of TN wildlife including herons, eagles, fox, beaver, quail Bob cat, cougar bear and turkey and of course 3 breeds of deer. To preserve this habitat and this effort should it prove that in fact I do not own the portions I believe I do I would request that either that 3 miles be classified as sensitive or that TVA purchase the whole property at the current value of 13 million.	Individual
The proposed actions that are being discussed would invade the privacy and well-being, including the safety of myself and family. To open access across my property could result in major problems with unruly, drunks, drug addicts and dangerous people that could be a threat to this community.	Individual
I do have a problem with anyone saying that I don't have the right to take my canoe down the river and getting out anywhere I want to go fishing. I don't believe a property owner should be able to own the river's right-of-way. You can't own a river.	Individual
As far as public/private property is concerned, the public needs to be made clearly aware of who owns what. Years ago, (when I could still get access there) I was standing in the water near Earnest Bridge with my young son when a landowner walked up and said we were trespassing and to leave. For years I did not believe he was right. Recently an acquaintance of mine spoke with a TWRA official who agreed with the landowner's position. It seems TWRA always strives to please the landowners instead of the public (to which the waters belong).	Individual
Access to Public Land	
The landowners who own property joining TVA lands think they own to the water's edge or to the center of the river. I have a copy of the maps that clearly show which part belongs to the TVA and where private land is owned. I have been threatened on several occasions and told that I cannot hunt there.	Individual

Land Ownership and Rights	
I know when I was young and coming up, you could cool anywhere along the Nolichucky River and everybody said TVA owned all the high water marks and all these people from the North came down and bought the land and said they owned every bit of it including the river. I wanted to know if that was the law or the old people's law.	Individual
It's my fear as a sportsman and one who lives near and utilizes the waterway for recreational purposes that, if allowed, private landowners will deny public access to public land along the river and lake. I understand the landowners' fears and concerns about a few people unlawfully accessing their land and property from the TVA land along river, however this is one of the aspects and drawbacks of owning land along a public waterway. Most people who raft, canoe, swim, fish, and camp along the river are law abiding citizens. Please do no limit access to our natural resources because of the acts of a few people. It is the landowner responsibility to secure their property lines and report all misdeeds and unlawful acts by others to the authorities; therefore I feel that the property owners have the right to limit access across their property to the river	Individuals (2)
There is not a public access road from the county road through our property nor will there be.	Individuals (2)
I have a lot of concerns that if the TVA opens that up to public access and stuff, that, one, it would open up a lot of people coming to visit in from different areas and put a lot of people in jeopardy that owns land around it. It would kill natural resources of the river they way the settings are right now.	Individual
I would love to see more access given to recreation on the river. Years ago I was able to access the river at Earnest Bridge; since then, the access there has been removed. Also, I think access at Allens Bridge is needed. From the access at the dam to Allens Bridge is my favorite section to float.	Individual
My family feels the public needs more access to the Nolichucky River and more public areas along the river in order to become more familiar with and appreciate the treasures and wonders of the State's natural and scenic waterways. I think if more people saw firsthand the amazing and delicate River, fewer people would be so willing to do things to impact the natural world negatively.	Individual
A little more public access on the river is ok, but it should be left somewhat remote and challenging to get to as well.	Individuals (2)
I can remember growing up fishing the Nolichucky river, at many locations in Greene County, but as time goes on it has become less accessible. I would love to give my children the same opportunities I had, but it is just is not so any more. There are very few places people can access the river at a safe location being disabled now makes it even more of an issue. I am not sure what the plan is in detail, but I would be one of the grateful anglers in East Tennessee that would love to have more access to our resource's, how are we to teach our children the important things of wild life if they cannot observe them, or interact with them.	Individual

Land Ownership and Rights	
Develop public access points at logical locations. There should be developed access points with parking lots and concrete boat ramps at various locations along the river. Jones Bridge and Kinser Bridge would be good starting points. It does belong to the public and should be accessible whether the adjacent land owners like it or not.	Individual
The roads to get to any portion of A3 are narrow and off the beaten track. The roads are not wide enough for two cars to pass, not to mention a boat or camper. The only way to enter these portions of the river via Gray Road and Pumpkin Bloom Road. We realize that most of the investigating on the part of the TVA has been done by river travel, have you checked the road access?	Individuals (4)
The right of way is only 20 feet wide, washed out and abandoned. How would this problem be resolved to meet current specs for public road widths and what effects would it have on the rest of my property? As a suggestion maybe an option to this major disruption, would be access points at all bridges crossing the Nolichucky. This would be accommodating to the public and to the property owners. Also it could be more feasible to maintain both law and order including sanitary issues.	Individuals (2)
With this in mind here are my recommendations regarding managed land use for recreation purposes: 1. To protect the private landowners, TVA should not build public access roads, walkways, paths, boat ramps, etc. on or across privately owned property for public to access to TVA managed land, unless TVA has obtained the private landowner's permission, and/or with just compensation to the private landowner for the land acquired for public access. 2. Public access to TVA managed land should be protected and maintained through utilization of existing public access sites and, when economically feasible, the develop public access sites in coordination and in conjunction with TRWA and local governments, as applicable. TVA purchase of private land for public access to TVA managed land would be a wasteful use of resources; therefore public access should occur across government owned land (municipal, county, state, and federal) whenever possible. 3. Private landowners should not be allowed to limit public access to TVA managed lands from riverside access, example; placing "No Trespassing" signs along the river or lake bank preventing access for people to get out of their boats, rafts, to rest or set up a camp site	Individual
I have heard landowners talking about how much trash is left behind by boaters/fishermen as their reasoning for wanting no more access given, and I have seen far more damage done by landowners than by the boaters (barbed wire fencing and dead livestock in the waters, dumping sites and direct drains from homes adjacent to waters, etc).	Individual
Trespassing	
I don't want anyone stepping foot on my land from the river or the road without my permission.	Individuals (2)
A small portion of my property does front on the river; however, it's a bluff, but my neighbor has property that I understand is a three-acre plat that is in dispute as to whether TVA owns it or not. That actually is in the corner of my property and it is a low walk-on area to the river. I have had problems in the past of people coming on to my property and then poaching deer on my property. I	Individuals (3)

Land Ownership and Rights	
have actually talked to the wildlife people about this but have not gotten any results or any help in trying to eliminate that. Actually I would like to talk to someone to, at least, voice my concerns about the fact that hunting or because of people allowed on the property what they would do on my property even though it will be posted.	
We are concerned about the creation of walking trails and rafting companies that pass our property because of the allure of our property. The property is inviting for rafters because of the ease of access to the river and the mounds of sand trapped inside our levies. Trespasser safety around the levies has continued to be a problem. We have posted no trespassing signs throughout the property but, rafters continue to take chances scaling the levies. We are fearful that trespassing will increase if rafters are encouraged to explore down the river past our property without public warning. We hope that TVA's actions will be responsible to the public by making them aware of possible hazards and that trespassing is not tolerated.	Individual
It is a struggle to keep trespassers off the land. It is posted but not all of the general public abides by the rules. Your plans to use the Nolichucky River in our area for recreational purposes is only going to increase the number of trespassers we encounter, add to the litter they leave behind, and open up huge legal liability for us in regards to people who may become injured on our property.	Individual

Land Plans	
Land Planning	
Why use the resources “money” on this kind of project.	Individual
I understand TVA is doing this by watershed, however, Nolichucky is very different. I need for TVA to separate out our unique set of circumstances and get that lake talk out of our plan.	Individual
All usage plans should give top priority to environmental concerns first, and public recreation/history second.	Individual
The introduction of the TVA Land Management Plan opens this river up to potential rapid development: residential, industrial, and recreational. Much of this development would be a drastic change from the peaceful way of life that now exists. An increase in population brings additional stresses to the land, to the water and to people. I do not want this to happen.	Individual
Under Zone 5, TVA lists fleeting areas, barge terminal sites etc. These are clearly for lake access and lake properties and I request all such zoning be separated out so that the people do not misunderstand they are a river and cannot be lumped in with what is happening on Douglas Lake or Norris or any other. We are not a lake we are a small river. Our issues for best management of the land are quite different from that of a lake, obviously. Yet this is not made specific in your proposal. Specifically in your proposal is lacking altogether. It is all too vague and as one mountaineer commented yesterday. “You would like us to comment on ghosts?” We need much clearer information designed for our region.	Individual

Land Plans	
Greene County needs to put zoning in place to prevent development on the edges of the river to protect what is so special about our waterfront as a natural environment.	Individual
I have looked at the maps for the Nolichucky Reservoir Land Management Plan and have a few questions. Are the areas marked in red (Zone 6) the only areas being considered for this Plan? If a portion of the land adjoining the river is not marked with a parcel number, am I correct in assuming these are Zoned 1 and will not be affected by this Land Management Plan? If so, does TVA only have flowage easements on these lands?	Individual
My land abuts the lake immediately downstream of Birds Bridge and part of it is leased to Vulcan Materials for its dredging operation. It also abuts part of the so-called Nolichucky Wildlife Management Area (WMA). Not knowing what, if any, proposed action TVA might have in mind, I can only comment on the territory immediately around me. Additionally, I've been told that, for legal reasons, there is no proposed action involving the WMA. There is an agreement with the TWRA. Nonetheless, it is considered part of the plan. It's on the map.	Individual
If I am even correct about where my property is on your plan, I am blue and turquoise. Then why would there be development lines slashing through these colors? Why would TVA propose to develop an area with sensitive resources?	Individual
I own a farm at the mouth of Coal Creek about a mile and one half below the Greeneville Power Dam. I am wondering how, if any, this plan affects me.	Individual
Land Use Designation and Allocations	
Again, we want to express our input that the areas K3-K6 be changed to zone 3 or 4 instead of 6 for the following reasons: 1. There is a cave which opens over the river on parcel K5. This cave houses thousands of bats which would be disturbed were this area to be used as recreation. 2. American Black Vultures roost all along parcels K5 and K6 daily and have nest down river. 3. Numerous Blue Herron nest are on the island designated as K5. This island is less than 10 acres, so it should ,by your own guidelines, be classified as Zone 4, notwithstanding the habitat of the Blue Herron and other native creatures. Let’s protect our natural habitat along the river and in 100 years we will be able to look back and say we did the right thing.	Individuals (8)
I own property that adjoins parcel 13 on map B7. Parcel 13 is currently zoned as type 4 and should be rezoned as a type 3. This parcel contains a year round spring. The terrain of the area and soil type are such that any disturbance would cause runoff and siltation that would be detrimental to the plant and animal life in this area. The area has a protected turkey roosting area, many nesting sites for numerous bird species, and may contain an Native American burial mound. The University of Tennessee conducted an archeological survey and dig near this area and found a significant amount of artifacts. This is an extremely delicate and sensitive parcel and should have limited human trespass.	Individual
As a concerned citizen, I feel the land management plan for the Nolichucky Reservoir should be modified near the convergence of Horse Creek and the Nolichucky River in Greene County and coded as Sensitive Resource	Individuals (2)

Land Plans	
Management (Zone 3) because: 1) The Nolichucky Watershed/Green County needs better protected resources. 2) In this specific area, the southern banks of the Nolichucky are home to many types of wildlife including many species of Sparrows and sensitive wetland species that deserve protection. 3) Usage in this area should be limited to prevent erosion, run-off, and water quality issues on the Nolichucky. Please consider rezoning the area of the Nolichucky River between Highway 351 and 107 to reflect the proper Land Management Plan needed for the flora and fauna in the local habitat.	
We request that parcel K6 on the Reservoir Map Title A# be rezoned from Zone 6 to Zone 4 or if possible Zone 3 for the following reasons: There are river otter and beaver living in the river along this section. A couple of minks were recently spotted. We have fresh water mussels which we understand are nowhere else in East TN. The island (known as Gray Island) as well as the shoreline of our property is a nesting place for the black vulture, the turkey buzzard and several nest of Blue herons, an eagle, ospry, red tailed hawk, and large woodpeckers are often spotted here. Some of these birds are on the endangered list. We have lived on this property for 25 years and have made every effort to preserve the habitat for the birds and other wild life that share our property. We feel the development of this property for public recreation will be a mistake for many generations to come. We would like our grandchildren to be able to come and enjoy the wonders of nature Please consider our request of rezoning this property from Zone 6 to Zone 3.	Individuals (2)
Due to the large number of wildlife along the Nolichucky River in Greene County, I feel those areas marked Zone 6 on the Nolichucky Reservoir Land Management Plan should at least be changed to a Zone 3. Several of the species we see are considered threatened and endangered. To proceed with the Land Management Plan of providing campgrounds, boat ramps, beaches, etc. would destroy their natural habitat and all of it would soon be gone.	Individual
TVA lands in and around the Nolichucky and Douglas Lake reservoirs should be used as conservation easements that will protect any wildlife there, but can be used for people to visit and enjoy.	Individual
My property fronts the Nolichucky River and Pigeon Creek in K-4 of reservoir map A-3. I am concerned that this section of the river is zoned 6. My concern is that further development in this area would have a negative effect on property values and wildlife habitat. There is also the question of public infrastructure available to handle additional traffic and activity. I'm particularly concerned about the viability of some county roads to handle additional traffic. I recognize the value of the river for public use but think it has greater value as zoned 3 and kept in a more natural state. Therefore I respectively ask that you reconsider and change the zoning of this portion of the river to zone 3.	Individual
We are requesting a rezoning of A3 map property from zone 6 to zone 3 or 4 because: According to your own charts islands of less than 10 acres should be zone 4. Gray Island is less than 10 acres, so it should be at least a zone 4. The other island is obviously not 10 acres either. According to your own charts, land that includes wetlands, small wild areas and habitat protection should be zone 3. Gray Island is a rookery for the Great Blue Heron and contains many heron nest. The entire A3 area is a roosting and nesting area for the Black Vulture. This section of the Nolichucky contains a rare mussel that is only found	Individuals (2)

Land Plans	
here and near Chattanooga. The banks of the A3 area are home to two bat caves as well as many other wild animals including black bears, bobcats, red and silver foxes, white-tailed deer, and the recently introduced black tailed deer, etc.	
I am writing regarding parcels 12 and 13 on the Nolichucky Reservoir. It is my understanding that these parcels are to be considered Zone 4. It is my suggestion that these parcels be rezoned to Zone 3 Sensitive Resource Management for several reasons. For a number of years, I have spent much time on the river near these parcels. In the recent past, I have begun to see otters, mink, beaver, and several species of birds at these areas. This May, I was on the river and became involved in a conversation with Jerry Denkins, a biologist from Knoxville. He stated that, in the span of a few minutes, he had seen five different species of swallow in this area. He commented on how unusual it is to see that many species of swallow in one area. There is also a spring on parcel 13 that flows year round. I feel that this should be protected from any sort of pollution or contamination, such as litter from people camping, hiking, or hunting in the area.	Individual
Rezoning on tiles A2 and A3 needs to be made, with considerations given to the endangered species of bats and vultures recently observed in shoreline caves, by contracting archeologists and biologists, from UT. What is now zoned for K5 and K6 needs to be changed to K4, to protect and conserve these species.	Individual
We feel the significant historical aspect of property along the Nolichucky River would be adversely affected if the proposed K3 through K13 properties are committed to zone 6. Being aware of the rich wildlife and history which surrounds these properties, we would ask the planning team to consider zoning these particular properties to zone 4 and maybe even zone 3. By keeping these properties in line with either of these two zones, we believe it would much better serve our farm and future endeavors into agricultural diversification as we provide visitors with a cultural experience by keeping the natural and scenic areas along the river intact.	Individuals (2)

Management of Land and Resources	
Management by TWRA	
Another concern that I have with the proposed TWRA involvement in river access comes from past experience. Not too long ago TWRA made an effort to increase public access to this section of the river by providing a graveled access area adjacent to the Earnest Bridge on TN Highway 351. After just a few years of availability to the public this access point was blocked off. It was my understanding that this was due to TWRA's inability to prevent vandalism, loitering and general misuse of the area by the general public. Has this issue been resolved? If so, what is the proposed solution to this issue and how is TWRA going to prevent this vandalism and misuse from spreading to private property along the river?	Individual
Given the choice between TVA and TWRA, we would prefer TVA as a neighbor.	Individuals (12)

Management of Land and Resources	
Neither TVA nor TWRA have adequate budget to handle current demands and properly manage existing resources, yet you are proposing additional development that will cost taxpayers and ratepayers. Beyond that, the Nolichucky is presently "managed" just fine the way it is. Nolichucky property owners take good care and are stewards of the environment, and yet there is plentiful public access that is nowhere near any use capacity.	Individuals (2)
We would also like to know the purpose and the need TVA has for transferring this property to the TWRA. Have you received a description for TWRA's proposed use and action to be taken if they receive control of the property with their application? If so, we would like to see a copy of TWRA's application for the TVA property.	Individuals (2)
I strongly object to TWRA having any additional control anywhere along or adjacent to the river. Reasons: 1. TWRA introduced river otter and they have reduced the fish population and probably will destroy it in years to come. 2. TWRA introduced beaver and they have caused destruction that is already showing along the river. 3. Other TWRA failures include the introduction of coyotes in the area. This is a problem to wildlife and cattle farmers. They introduced wild turkeys and expanded the raccoon population. Both of these populations are exploding and are seriously damaging crops and gardens. 4. TWRA has done fish studies for many years on Douglas Lake and found the crappie population had been falling rapidly. The steps they took were pathetically too late to protect the crappie--they are about gone. No doubt TWRA has had successes and employ many good people. However, I am seriously asking TVA to save the Nolichucky River from the TWRA.	Individual
Enforcement of Regulations and Policy	
Who at TVA shall I contact should there be a problem? Who has jurisdiction on the water? How Many TWRA officials will be available to now operate as marine police? How many TWRA officials will be assigned to patrol specified areas designated for hunting? What controls will be placed to ensure regulations are met? Where will the funds originate for such demands?	Individual
If this plan proceeds and does indeed evolve, which agency, the TVA or the TWRA will police and enforce the protection of this great, mighty river?	Individual
One of the major access points used by the poachers in the past has been parcel 13 on Map (Tile) B7. I have personally intercepted a poacher entering my property after gaining access from the river from this same parcel. What is the proposed method to stop this illegal encroachment in the future?	Individual
I do not like the fact that cows from adjacent farms run and feed freely on the land in the reservoir, including the now land-bridged former islands in the middle of the lake. TDEC and the soil conservation folks make a big issue of fencing cattle out of the streams. Where does the TVA stand? Have these folks paid for grazing and water rights on this public land? Can I get permission to harvest a cow or two? I you were to open a season on these non-native species on public land I imagine the farmers would round them up and keep them on their land! Do you think some negative publicity would help resolve this matter?	Individual
What trash receptacles will be available and who will tend to taking off the waste? While there are many responsible citizens, it is no secret we remain a	Individual

Management of Land and Resources	
planet in turmoil when it comes to pollution. How will these particular sites be managed? What agency will work to prevent fires that might be caused by irresponsible individuals? Those individuals that feel now that they have access, they confuse their rights with what they have access to, what agency will redirect their footsteps?	
What agency will be responsible for irresponsible hunters that miss their target and hit my home. What burden shall your agency carry should an innocent child be inflicted while playing on the river's edge from the miscalculation of a gun's crosshairs? What will isolate them to your tributary waters designated for hunting? What will prevent them from hunting from the river onto the land where innocent people living in their homes suffer the aftermath of such an event? Does your agency hold any responsibility based on the fact you are the vehicle to access? Who will oversee the regulations outlining the rules of hunting and fishing? The river has grown with residences and hunting on a 3 to 50 foot swath of land is frankly, nuts.	Individuals (2)
Boundaries	
I would like to suggest that boundary markers be put in place so that people would be less prone to claim land, harass people, and threaten people. I have spoken to people at TVA about boundary markers before. I am willing to donate some of my time and boat to help get this done. The markers could keep someone from getting into a squabble and possibly keep someone from getting injured over something we should all love and appreciate.	Individual
Take down the illegal "posted" signs, and clearly mark TVA owned land. I have seen several posted signs on land that I know is TVA land.	Individual
Who will locate the boundaries and mark them accordingly? What is legitimate? When the waters rise, how does this affect the boundaries? When the river floods and the banks change, who will inspect and be responsible for updating the boundaries and its public use?	Individual

Review and Planning Process	
Agency Coordination	
Thank you for the opportunity to comment on the preparation of an Environmental Impact Statement (EIS) for Douglas and Nolichucky Reservoirs Land Management Plan by Tennessee Valley Authority (TVA). At this time, the Forest Service does not have any specific comments as it pertains to scoping interest. However, the Cherokee National Forest would like to continue receiving notification of al documents and meetings as it pertains to this project, including the EIS when published.	USFS
Currently, the Tennessee Wildlife Resources Agency manages the wildlife resources within the scope of this proposed project; including Rankin Bottom Wildlife Management Area and Henderson Island Refuge within the Douglas Reservoir lands, and the Nolichucky Waterfowl Sanctuary and Environmental Study Area (jointly managed by TWRA and TVA) within the Nolichucky Reservoir lands. We request that all alternatives discussed in the forthcoming EIS include a commitment that all lands currently committed to a specific use	TWRA

Review and Planning Process	
would be allocated to that current use. If a change is presented in the EIS that would affect currently committed lands, we request that a detailed description of why the change would be necessary and how this would affect the wildlife resources inhabiting the lands proposed for allocation under the new plan.	
The evaluation of proposed alternatives should clearly document all riverine, wetland, and upland habitats utilized by federally protected species, including migratory birds. The selection process for a preferred alternative should be consistent with previous commitments by TVA documented in the programmatic EIS for the Reservoirs Operations Study, obligations under TVA's Operations and Maintenance Biological Assessment and the Service's Biological Opinion, and recent policy changes governing TVA's stewardship of natural resources implemented by its Board of Directors.	USFWS
Typically, the Service would not concur with a "not likely to adversely affect" determination at the programmatic consultation level if that finding is based solely on a commitment to conduct site-specific consultations. If there is a potential for a "likely to adversely affect" determination to be made during site-specific consultations in the future, the Service advises that "likely to adversely affect" is the appropriate determination at the programmatic consultation level. A commitment by TVA to consult on site-specific projects that result from potential changes to existing land uses at Douglas Reservoir and Nolichucky Reservoir should be explicitly stated in environmental documentation for this project. If needed, these site-specific consultations can tier back to the programmatic consultation for this proposed EIS.	USFWS
The Office of Surface Mining's Appalachian Regional Office appreciates the opportunity to comment on the above proposed undertaking. However, as our area of interest is generally limited to the coalfield areas of the Appalachian region and these reservoirs lie well outside the coalfield area, we have no comments or concerns related to the development of the proposed NEPA document. We appreciate being given the opportunity to participate in this process. If at any time in the future you have questions or need additional information, please don't hesitate to contact us.	USOSM
Since your study would have no impact on any transportation facilities, we do not have any comments to offer at this time.	TDOT
Alternatives	
Have you looked at other alternatives, including a 'no action' alternative?	Individuals (2)
Project Justification	
I am writing to ask you to NOT go forth with the proposed changes in our Nolichucky River. There are several boat docks, and campgrounds that are not even fully utilized by the community. I know this because I am a camper at Kinser Park, full time, and see the lack of use. We as a county are so blessed by the beauty of our area, and want to share that beauty with future generations. If the breaks are not put on come of this; there will be none to see.	Individual
It would be smart for TVA and TWRA to simple back away and say "no" to this plan.	Individual

Review and Planning Process	
I was a bit upset reading the article in the Greeneville Sun about TVA's interference in local Nolichucky River land owner's rights. The economy is in the dumper, but somehow a bureaucratic nitwit is looking on how to spend taxpayer's money. It time to stop spending and start conserving, which is unheard of for the government!	Individual
I have not ruled out legal action on this invasion and will contact the Conservation Society and Sierra Club for advice and legal action. Wakeup! We do not need another government boondoggle! Save your money.	Individual
This plan is the most ill-conceived such project I have ever seen proposed by TVA and it has provoked what appears to be an increasing storm of regional concern, criticism and outright anger unlike any TVA project within my memory.	Individual

Public Involvement	
Information, Materials , and Procedure	
Maps and other presentation materials need to be current and complete. The two draft panels failed to reveal current and future sub-divisions. This is important to know. Also, drawing the map of 1007 lake levels is confusing. It makes some developed land appear to be islands and it would be helpful to have the water elevation noted on the map to help make sense of shoreline topography.	Individuals (2)
I thought the agenda of the public meeting was confusing at first until I studied it. I then realized that one could choose wither session as they are duplicated. The TVA staff members that we talked to were very knowledgeable representatives. In one situation, one employee did not know an answer to my question, he asked someone else to come over and answer it.	Individual
I appreciated the opportunity to learn more about this entire process. TVA had very caring and knowledgeable representatives. I think people would like to hear how they can become more involved. Any specific website navigation after TVA.gov? Are there any formed groups that people can join? Schedule of Board meetings (probably on website)?	Individual
Thank you for allowing the public to comment on the land management plan.	Individuals (2)
The TVA representatives at the public meeting in Greeneville were not prepared to answer very many questions. It was not a productive meeting. They said they were expecting only one or two people to attend the meeting. The room was hot and about the size of two bedrooms and was standing room only, wall to wall. I was surprised and strongly disappointed that the moderator stated that lest 4 or 5 times that public meetings were extremely expensive for TVA to conduct because of salaries and rent for facilities. How much does a public meeting cost? There are many public meeting sites for free such as schools, fire halls and courthouses. We, the citizens, own them. I was asked personally if I would work extra hours without extra pay. I was totally shocked at this question. In private industry that comes with the territory. I have worked as many as 90 hours per week without extra pay. I believe that TVA employees, top to bottom, are the best paid in the region, both in money and benefits. I would love to work	Individuals (2)

Public Involvement	
for the TVA. Especially since TVA is in debt in the billions and raising costs to customers and still giving regular bonuses.	
It is time TVA listens to the property owners who have been paying taxes all these years on their land instead of to special interest groups lobbying you to get access publicly to privately owned areas that they could not otherwise accomplish.	Individual
One last thing, Park Overall doesn't speak for me or for the majority of the people I know in Greene County. She may consider herself to be Greene County's environmental specialist, as noted in the Greeneville Sun, but she would never be elected if it was put to a vote.	Individual
Further, everyone that had attempted clarification via your website found no relief. Only one woman in Monday's impromptu and unofficial meeting was able to access the color codes. Your website maps are not readable and wildly dated.	Individual
TVA I support you and expect you will provide for the needs of the many. In time the complaints of the few will be forgotten as they also will see your wise use of our public land. Thank you, thank you, and thank you.	Individual
Being a neighbor of the Shady Grove Boat Ramp I appreciated the update and the position that your group has taken in ending the overnight camping. Since the ending of camping over night, the area is now cleaner, peaceful and somewhat tranquil, a park like environment now prevails, great job.	Individual
Notification	
I did not get enough information about this issue to make a comment. Also we did not receive a notice of a meeting.	Individuals (3)
TVA needs to mail a notice to every single land owner on the Nolichucky River. They have done it once before 4-5 years ago on the sediment plan. That is the deal in these federal things.	Individual
I, along with the other attendees from Greene County, found it highly suspicious that most of the landowners affected by this were not informed of this action and are against an arbitrary deadline to make a public statement and response against this action. The rights of private landowners seem to have been violated. I only received notice three days ago in the Saturday Greeneville Sun Newspaper and from other very concerned landowners. The notice in the Greeneville Sun did not show a map so I would have had no manner of knowing you are claiming to own property I bought and paid for legally. No Phone calls, no mail informative pieces, nor anyone contacting us personally as they surveyed our land. The vagueness in the paper stating "stakeholders" vs. land owners, without roads or clear border lines, without notifying anyone actually involved in this land acquisition surely must break come written legal lines.	Individuals (17)
The stakeholders along the Nolichucky River were not given legal notice by TVA. Federal rules require the public notice be run 2 times in a 4 week period in a local paper. The Greeneville Sun has informed us that they ran a single small notice, June 5, oddly entitled, FYI From TVA. This is not standard format and not appropriate notice. One time is legally inadequate. I, personally, asked the Greeneville Sun to alert people that there would be a meeting with a rep of	Individual

Public Involvement	
TVA at the soil conservation office in Greeneville on Monday, June 30. The paper obliged and over 30 people showed up at yesterday's unofficial meeting, More than showed up at TVA's official meeting in Morristown. No one in that room had received a mailing from TVA. Nor was anyone aware of the FYI notice except for one woman who misunderstood which notice was official. No stakeholder in the room was aware of your alleged notice. Your Chris Cooper admitted at this surprise gathering, Monday that a TVA secretary made the egregious error and she has since retired. That is none of our affair. Appalachian stakeholders require the same legal standard as anyone else, and in this instance we were clearly left out of the legal loop.	
Extension of Comment Period	
I saw the notice in the Greeneville Sun on 7/01/2008, with a statement that the deadline for comments. I am sure that a lot of individuals will not be able to respond to this notice due to failure of seeing the article in time and the absence of email capability.	Individual
I am very concerned with the actions of the TVA in this matter. The lack of notice to private land owners and the neglect or consideration of environment impact leads me to believe a suspension of action is in order until more information can be gathered by the public and private land owners. The public deserves the opportunity to evaluate the environmental and economic impact of this action. I am requesting a stay for all actions and an extension of the comment period.	Individuals (9)
It is offensive to the citizens and property owners that consideration for another "public meeting" has been denied. According to your representative, much emphasis was placed on the costs of holding such a meeting. Had your agency properly notified the public, perhaps such a request would not have been necessary. Taking responsibility for this insufficient notice by your 'authority" is imperative to our community in an effort to show good faith. As Chris Cooper, attempted to address the rumor that this is a "done deal"...the community and property owners sit wondering what the deal really is. The origination of faith.the lack of proper notice. The denial of an extension of the comment period. In closing, I must admit that I could write a dissertation that is worthy for the cause is great. But since the deadline is midnight tonight, I recognize the criticality in submitting my comments immediately as I fear they will not reach you.	Individual
I strongly request a reasonable extension of the public comment period because of the inadequacy and illegality of your organization's notice to people of this community. Further, to ask mountain people to drive to Morristown for a case by case meeting is not only appalling but unacceptable. Have you people noticed the price of gas? If you have such limited resources that you cannot properly notice the public or come to the affected communities, please know that most mountain people have less money than TVA. This request to have us come to you is a mockery of federal law and an excessively unreasonable drain on the stakeholders. TVA continues to show a lack of interest or understanding of the people in these mountain communities. A region you claim to serve.	Individual

Public Involvement	
An Environmental Impact Statement was initiated nine months ago. We have great interest in the findings of this study and any decisions should be shelved until the completion	Individual
Add to Mailing List	
I wish to be added to your mailing list for the Douglas-Nolichucky Tributary Land Management Plan.	Individuals (25)

Stewardship of Public Lands	
Public Ownership	
As a member of Forestwatch our research, which is extensive, has found that the best stewards of an area are the owners. The worst at the government and corporations. I am happy to forward our data.	Individual
TVA managed public lands along the reservoirs and rivers should not be sold to private individuals, corporations or speculators. I've see this happen on The Little Tennessee River (now Tellico Lake), and on Douglas and Cherokee Lakes. The result is that the privileged few get to enjoy the lake and riversides and limit access to what was once everybody's to use and enjoy. I am submitting this in the honor and memory of a dear friend who introduced me to fishing, swimming, canoeing, and camping on the Nolichucky River and Douglas Lake nearly fifty years ago. I would hate to see our children and grandchildren deprived of privileges that I had. I think public use lands are great and I support your ideas.	Individuals (2)
I also fear that TVA may for profit or under pressure from the affluent landowners adjoining the TVA lands "cash in" our public lands along the river and lake by selling TVA managed land to the private landowners and speculators.	Individuals (2)
I feel that opening the Nolichucky as well as other areas up to general public would not be good. There are boat ramps and etc where boater can dock and put their boat in and several of these I think. We do not fish or boat on the river either – really do not have time – but if we did – we could find proper areas to put our boats in. It is very important for owners that join the river to continue to have privacy as well as the river to not be trashed any more than it is.	Individual
We feel that the "optimum public benefit" would be the preservation of a little slice of nature that is already suffering from the public assess that already exists, i.e. an ill placed campfire destroyed a large tree on TVA land in this area on the night of June 19, 2008.	Individuals (2)
Public Use of Public Land	
We enjoy outdoor recreation and we greatly appreciate all opportunities to enjoy our publicly owned lands and waters. Please do not let self-centered private land owners prevent us all from enjoying our natural resources.	Individuals (2)
I "support" the proposal to open up access to the Nolichucky River in the Greene county area for more public use. With the rising price of fuel and other	Individual

Stewardship of Public Lands	
items, many families will be unable to travel very far to enjoy a vacation. With the river land open for public use many of them will be able to go there and enjoy the scenic river. Hopefully there can also be some campsites set up to accommodate campers.	
TVA Stewardship	
I hope that TVA is not intimidated by 35 selfish property owners who want to block/prevent the General Public from being able to use Government Owned land, and enjoy the benefits of picnic and relaxation areas along the Nolichucky River. This is not their (35) personal river. This river belongs to the government, We the People. Please proceed with your plan to open up these areas for general public use.	Individual
I believe require that the property remain a TVA possession which should be unchanged: 1. This area of the Nolichucky River still is home to several family farms which hold great significance to Greene County which could be diminished if TWRA turns this into a recreation area. 2. The roads, specifically pumpkin bloom road is to small to handle an increase in traffic. 3. The cliffs at parcels K5 and K6 would be extremely dangerous.	Individual
I actually think there are some areas that used to be islands that are now land bridged that would make great areas if timber were cleared off for food plots for deer, duck and turkeys all up and down the river. Some of it is TVA owned and some of them might be able to be leased for those kinds of purposes. I know that some floods enough that it is not really useable as agricultural lands.	Individual
TVA land should be open to the public with an effective plan to keep the areas trash free.	Individual
Please don't allow the river to be trampled by hunters, fisherman and birdwatchers. They won't stay on public lands...They will trample private land as well	Individual
I'd like to see the river developed for recreation between Brown's Bridge and the dam especially the wetland areas. Obviously more points of access are needed. How about an upscale restaurant/bar in the power house?	Individual

Natural Resources	
Threatened and Endangered Species	
Which agency will be responsible for patrolling and ensuring the safety of existing habitat? What funds will be allocated to properly protect these sacred waters and the rare species of those gently creatures? Since the sensitivity of their existence is held classified in many cases, In the past, citizens have relied on you to protect. How will this be delegated? Should I consider taking down my wood duck boxes that have provided a safe refuge for them to produce? If not, then what agency will protect them from invasion of lost hunters?	Individual
According to our records, the federally endangered gray bat (*myotis grisescens*), Indiana bat (*Myotis sodalis*), oyster mussel (*Epioblasma capsaeformis*), and the	USFWS

Natural Resources	
federally threatened snail darter (*Percina tanasi*) may occur in the project impact area. Qualified biologists should evaluate the potential for each alternative to affect these species. Pursuant to section 7 of the Endangered Species Act, a programmatic level consultation on the identified preferred alternative for the proposed Douglas and Nolichucky Reservoirs Land Plan is needed.	
It is incumbent upon both of our agencies to coordinate adequately in the future so as to minimize the likelihood of any specific actions resulting in an adverse effect to listed species. These constitute the comments of the U.S. Department of the Interior in accordance with previsions of the Endangered Species Act (87 Stat. 884, as amended: 16 U.S.C. 1513 et seq.), the Migratory Bird Treaty Act (16 U.S.C. 703-711), and the Fish and Wildlife Coordination Act (16 U.S.C. 61 et seq.).	USFWS
If it is illegal to shoot a black Vulture then isn't it against the Federal Wildlife Protection Act to destroy their nesting habitat? Isn't there some law that prevents the destruction of a bird rookery? Why would TVA want to do such a thing?	Individuals (2)
The endangered fresh water mussel located in the swift waters near the Allens Bridge, (tile A3), by biologists contracted by the TDOT in 2005, deserves to be protected, not only from heavy silt produced during sand dredging operations, but also, from water turbulence produced by air boats and outboard motorboats. I suggest, airboats and gasoline motorboats be prohibited from use, in an area starting at the Kinser bridge to the bridge crossing Hwy 321, in Greene county. (Tiles A2 thru A3). Rezoning to a zone 4 would accomplish this protection. Canoes, kayaks and perhaps boats with electric motors would be OK in this area.	Individual
Several of the species we see are considered threatened and endangered. To proceed with the Land Management Plan of providing campgrounds, boat ramps, beaches, etc. would destroy their natural habitat and all of it would soon be gone.	Individual
A protected bat cave will be a target for the public crawling all over the wonderful area.	Individual
Aquatic Ecology	
Fishing in the river has been hurt since the dam was constructed across the river at Lowland. Can this dam be removed?	Individual
I am interested in a clean river where I can fish.	Individual
Terrestrial Ecology	
Before this decision is made, we are asking that you conduct enough studies and investigation to make an informed decision. We believe and are requesting that these studies include the following: A baseline survey during all seasons of the year; Nesting and habitat study be conducted in all seasons of the year for migratory birds and Black Vultures to ensure that your decision compiles with the Migratory Bird Treaty Act and the protected status of the Black Vulture; A study of the air quality, water quality and noise pollution to show the impact that your decision will have on all wildlife.	Individuals (2)
Roads expanded, wildlife restricted and harmed and relocating elsewhere; expense of protecting our land boundaries; infringement on our privacy; opening up a quiet/peaceful environment; dangers of boating in shallow rivers; no policing and on and on for generations to come. No, we do not want our river and natural	Individuals (2)

Natural Resources	
habitat destroyed. I have many photos if you like to see, of the great-blue and blue-Heron, several nests across the river of Heron and Vulture, Osprey, white-tail and black-tail deer, red fox, the American Kestrel and other Hawks, beavers, beautiful Kingfisher birds and even nests of skunks and raccoons.	
The area that I live on is Cane Island, (B-7). There are two nests of Great Blue Herons there and a family of River Otters that stay on island. In the winter Great Canadian Geese stay on Cane Island as they don't feel threatened by river traffic. I believe this area should be sanctioned as a bird wildlife preserve. I have pictures of these rookeries. Traffic in this area would drive off the Herons. There is also a nest of egrets. An Osprey also roosts a half mile up from this island. The development of this area will greatly affect the environment and destroy this natural wildlife area. If you need proof call me and I'll be happy to show you this area.	Individual
Near the convergence of Horse Creek and the Nolichucky River in Greene County is home to many types of wildlife including many species of Sparrows and sensitive wetland species that deserve protection.	Individual
Trash and Litter	
There is litter, old tires, and other debris in and around the river. We don't want increased land/water use to add to the problem. Work has been done to improve the situation, and it would be great to continue in that direction, cleaning up and putting public land/water to good use. Please only recommend uses that have a low impact, (such as hiking, primitive camping, canoeing, and kayaking) in environmentally sensitive areas! We don't need motorboats, jet skis, or other polluters in the Nolichucky River. We also don't need overly developed tourist attractions that require large buildings and paved parking lots. We need to preserve the beauty of the land/water in its natural state, to the greatest extent possible!	Individual
I would like to say that I am a hunter, fisherman, and I love spending time with nature. Although I hunt and fish I do not drink beer or liquor. I do not throw down beer cans or soft drink cans, I do not throw down trash on land or water. I do however pick up trash on the river banks and from the water. I have carried many bags of trash from the Nolichucky River and from around the area where I duck hunt.	Individual
I am the person who first raised the tires issue last spring and was very pleased that the tires were removed. My interest is in seeing that the remaining tires are taken out of the river and disposed of properly.	Individuals (2)
Water Quality	
Water quality downstream of dredging operations is deplorable. Three days are required for the water to clear silt content, after dredging operations are discontinued. All forms of wildlife, including endangered fresh water mussels, suffer as a result from this contamination. Policies need to be developed, to prevent water contamination caused by sand dredging on the Nolichucky River.	Individual
This river provides the most of the water that Greene County residents drink. Maintaining good water quality is utmost in sustaining good health to both humans and wildlife including some endangered species.	Individual

Natural Resources	
I live in the Greeneville area and am particularly interested in the Nolichucky Reservoir and followed the situation regarding the siltation and my belief is that the Nolichucky Reservoir will be a silt retention pond for Douglas Lake and eventually become a big wetland with a river channel running through it. It's close to that now.	Individual
The Nolichucky is this area's drinking water supply. There is one Federal superfund site upstream, Bumpass Cove. There are 2 state superfund sites, both on the river, and both in Erwin. All approx. 30 river miles from our drinking water intake. Nuclear Fuels Service is a notorious nuclear fuels facility, known nationwide for its multiple and murderous mistakes. Then From Erwin to Greeneville on the river it is entirely agriculture for 30 miles, another major source of pollution. So, we have pesticides on top of NFS's 50 year history of illegal dumping into the river, as well as the air, and 2 state superfunds. NFS just lost a federal lawsuit for seriously polluting its corporate neighbor. My neighbors on both sides of my properties have cows with unlimited access to the river. This is true on the whole stretch of our river.	Individual
We believe TVA's proposed action plan to be a threat to the quality of the water of the Nolichucky River. This plan will increase the chances of the river's water being polluted and trashed by public traffic and campsite usage. The possibility of campers dumping their waste water into the river is a tremendous concern, as well as regular trash (paper, plastic etc.). This action plan is not environmentally friendly and points more to a future disaster waiting to happen.	Individuals (4)
If campgrounds are developed, where will the campers dispose of their waste since septic systems are illegal on the river? Pollution to our drinking water? Human waste?	Individual
I am having difficulty understanding how recreational use of the Nolichucky River is going to aid any in sediment control. In fact, it seems that such use would only serve to restrict the possibility for silt retrieval and thereby undermine what initially was a major goal that began this whole review process.	Individual
Although the river is a major source of water for the animals, there is a spring on parcel 13 that I assume of much this wildlife can use if needed. Considering the droughts we have had over the past years, it seems any source of fresh water should be protected from contaminations that humans tend to create and kept as pure as possible for any wildlife that may need to use it.	Individual
Wetlands	
The wetland areas are beautiful and helpful, and should be enhanced to make them bigger and better, our county should be proud of the Nolichucky River and its wetland systems.	Individuals (3)
A TVA wetland specialist stated that the wetlands above the Dam were the finest in the seven state TVA area. These definitely need special protection but they also need to be used for environmental education.	Individual
Wildlife and Conservation	
The next issue that concerns me is the affect of increased river traffic on the wildlife in and along the river. I have noticed an increase in wildlife numbers both in species and population in the past 15 years. In my humble and uneducated	Individual

Natural Resources	
opinion this is due mostly to the homeostasis that has been reached in regard to the wildlife's acceptance of what human pressure is exerted at present. Will this balance be tipped in the wrong direction with increased activity?	
I am concerned about the impact these proposals will have specifically on the natural habitat.	Individual
We are extremely concerned that any development of recreational facilities and/or boat launches will ruin the wildlife habitat along the river. Currently, there are many different kinds of wildlife that enjoy the peace and quiet along the river: osprey, red tailed hawks, beaver, river otter, raccoons, deer, blue heron, black vultures, kingfisher, and even eagles. The river is not deep enough for motor boats in this section of the river (thank goodness) and the wildlife thrives. There is a cave down river from us that has a bat habitat. What will happen if the public is allowed to roam these shores freely? The animals will have to find another home and for what?	Individuals (3)
It is my feeling that one of the most important things TVA can do with the Nolichucky River, and Douglas Lake, is manage as intensively as possible for wildlife and wildlife habitat, particularly waterfowl. There is untold potential, especially above Bird's Bridge.	Individual
This plan would have a very big negative environmental impact to the extreme variety of wildlife bordering my property from West Allen's Bridge to Gray Road to Pumpkin Bloom Lane. It was news to me of the two of three bat caves. A protected Bat Cave will be a target for the public crawling all over this wonderful area. However, my wife is a photographer who has shared many photos of her deer, red fox, herons (attached newest three in a nest), vultures, ,bobcats to name a few. There are at least 20 Heron nests along the river – we have seen and witnessed some, as have others. Their young will return to this area. A bird sanctuary should be established for this Zone. The character and landscape of the area, with the smoky mountain backdrop is incomparable. It is said we have the best wetlands in the 7 states region.	Individual
In the article of the Greeneville Sun, the reporter mentioned bird watching. If people are allowed to come freely on the shores of the Nolichucky, the birds will leave for quieter havens. Bird watchers don't normally invest in boats just for that purpose.	Individuals (2)
Zone 4 – Natural Resource Conservation areas need to be kept natural and protected with little to no public access from the land.	Individual
My suggestion is that, the lake and adjacent tenable properties should be actively managed for water fowl habitat and the reservoir ought to be opened up to limited hunting instead of a closed waterfowl sanctuary especially in light of what TWRA is doing with Ducks Unlimited in the Lick Creek Management area.	Individual
Habitat protection areas and river corridor sensitive resources needs protection.	Individual
There are numerous river bottoms that would make great wildlife plots for deer, turkey, and waterfowl. I have planted several acres myself in the past. There are many locations for seasonal waterfowl impoundments, etc. For example, Rankin Bottom should be actively managed for waterfowl. Mark the no shooting zones. I know areas where houses are close enough to the river that waterfowlers who are	Individual

Natural Resources	
float hunting would be in violation of the law if they shot at a duck, but the houses aren't necessarily easy to see from the river due to foliage and elevations. There also used to be a sign protecting the slough at Kinser Park. Most people don't realize it is supposed to be a no shooting zone.	
Since TWRA and Ducks Unlimited have started the project at Lick Creek, which will include a large waterfowl sanctuary area, I would like to see the section between Bird's Bridge and the Dam opened to limited waterfowl hunting, perhaps 2 days per week during the regular waterfowl season.	Individual

Cultural Resources	
Visual	
The beauty of this place will be lost with overdevelopment. There is a painting of the Nolichucky Cliffs that has hung in a special place in the entry hall of the Governor's Mansion (now the "Tennessee Residence") in Nashville for years.	Individual
Archeology	
Another issue is the possible existence of a Native American burial mound on parcel 13, and a small wetland habitat. These would seem to be resources that should be protected, thus earning this particular area a zone 3 status.	Individual
This river valley was home to Native Americans including the Woodland Indians. The largest village site (above the Dam) was excavated in the 1950's and taken to the McClung Museum at the University of Tennessee for protection and display. There are other sites with artifacts along the river that need protection. These places should not be publicized. Who will protect them?	Individual
Historical	
I am a riverfront property owner on the Nolichucky River on the south side of the river directly across from Pigeon Creek and downstream. My great grandfather owned this land since before the Civil War and my farm has since been designated as a Century Farm.	Individual
My family has lived on the Nolichucky River (Mile 66-67) since 1777 when two land grants were obtained by Henry Earnest for his service in the American Revolution. I am the seventh generation to live here. The family history and my life are intertwined with the river and land. Stories of the river, the normal flow, the floods, the changes are part of our family history. The land along the river from mile marker 65 and ½ through 68 on the south side of the river is on the National Register of Historic Places (NRHP) as the Earnest Family Farms and the Mauris Earnest Fort House on the north side is also on the NRHP as a separate listing. This area is close to the Davy Crockett Birthplace State Park.	Individual
My question is about a rumor that TVA had purchased a tract of land including 2525 Sunnyside Rd, and that the 1800's brick home that stands there was going to be torn down. We don't want to see a part of the county's history destroyed.	Individual
Our farm has been in my husband's family for 150 years, and in order to maintain a viable income for ourselves and to preserve this land for our sixth	Individuals (2)

Cultural Resources	
generation granddaughter, we are encouraged to develop the potential of our farm to host visitors interested in our agricultural heritage through agritourism.	
I would like to have the Nolichucky River meet the standards for a National Scenic River and for TVA to have a role in making this happen.	Individual

Recreation	
Campgrounds	
My family loves to camp on the river, but we don't know if we can legally camp anywhere, except a public campground surrounded by other campers. My family is environmentally conscious, we don't litter – we collect others' litter, we go to the river to enjoy the wildlife and the outdoors – not the company of other campers, we obey the TWRA laws as best as we can understand them (we don't trout fish any more, too hard to understand different rules, different streams, sections of streams, etc).	Individual
Overnight camping should not be allowed unless there is an effective plant to maintain the area trash free.	Individual
I'm interested in properties suitable for campground, restaurant, wedding facility with banquets, and full service marina/boat rental. Something similar to the Dandridge, the Point property except public access/use and not private property sales such as point group is planning.	Individual
Campers on TVA managed land should have clear cut publicly announced and posted laws to protect the land owners adjacent to TVA land. TVA land should be clearly identified for those using the river and land for recreational purposes.	Individuals (2)
Any land use that makes room for community recreation is wonderful use of public land. We need this recreation to involve our children in activities that help keep them out of trouble. It is good for local economy as well. Recreation is tough to afford with the cost of travel. Every day our cost of living is spiraling up and any recreation close to home is needed and appreciated.	Individual
Install a few picnic tables in the Shady Grove Boat Ramp Park similar to what TVA has done at the Douglas Dam camp ground, an outstanding well maintained facility. Concrete tables and benches on a concrete pad, they will not float away and cannot be stolen, no maintenance, best of the best, like the people at TVA. This is still an active swimming area.	Individual
Consider contacting Glen Bibbins, the President of LOUD, to organize a cleanup group to care for what the campers have left behind at the Shady Grove Boat Ramp Park, especially the old camp fire sites. I have talked to Glen and he is amenable to this action.	Individual
Water Use	
The bass fishing can be done anywhere along the river – it isn't any better along our narrow portion of the river than it is anywhere else. Let us preserve the natural habitat along a little bit of the river so the amazing animals will continue to have a home.	Individual

Recreation	
Developed recreation should be limited. Too much recreation can over populate the river and decrease the quality of the water and endanger the wildlife. "Chucky Beach", an area used by the public as a party place, existed across the river from my property during the 1940-80's. Many people enjoyed the sandy beach and access to the water where they could use canoes and tubes. The negative effects are trash, noise at all hours of the day and night, lack of public restrooms, the firing of guns into the cliffs on my side the river, people drowning in the river. The property owners finally gave up trying to keep a nice recreational area nor could they continue to accept the liability. They sold the land and the new owners fenced off the beach to be used only by wildlife. Greenways and Blue ways-The Greeneville-Greene County Partnership is working on a long range plan to develop a greenway from Greeneville to, Kinser Park and later from Davy Crockett Birthplace State Park to Kinser Park. A Blue way could also be developed in the river. This endeavor takes years of discussions and planning and agreements by the affected land owners. Are the citizens and land owners ready for these recreation activities and the problems they bring?	Individual
I and many others would like to see the Nolichucky restricted from the use of any gasoline engines on boats or electric generators directly on the river.	Individual
Public Safety	
I am concerned about the placing of a public area down stream of the dam. The portion of the river between there and Allens Bridge is extremely dangerous because of all the hidden shoals and rocks. Nearly every 3 years come group drowns there and that is with minimal usage. Increased usage will mean more loss of life	Individual
As stated in a public meeting, there are many boat docks already available. In addition to being shallow waters, where locals will not even venture in for the undercurrents, I feel that safety is an issue of real concern.	Individual

Socioeconomic	
The Nolichucky View golf Club is interested in exploring the possibility of using the lower southwest portion of Parcel #3 at the Nolichucky Dam as a driving range for our golf course. How do we proceed with this request? Is it a possibility? Please provide direction. This would be a Zone 6 project. Presently being mowed for hay. Parcel 3 is maybe 15 acres of flat open land at present. The only thing we would do, would be to keep it mowed and maybe put up some rope dividers for a tee area.	Individual
I would like to see the Nolichucky Dam and Power House be transformed into money making educational facility for Greeneville and surrounding area. First of all would be to construct a building next to the existing power plant building. This building would be a museum/learning facility with displays of the early electrical generation equipment, the history of TVA and REA along with displays of Thomas Edison, George Westinghouse, Tesla, and other people who	Individuals (2)

Socioeconomic	
developed the electrical industry. The generators and turbines that exist now in the powerhouse would be removed and placed for viewing in the in the museum and new generators and turbines installed to generate power for the City of Greeneville to help with costs of running a city and cover the expenses of maintaining the museum plus lowering or keeping the tax rate in check and a few more jobs for local citizens. By installing new generators and turbines in the existing facility we would be cutting the need for many barrels of oil and tons of coal.	
Only two sand companies exist as industries on the river. To keep this area natural and beautiful there should be no additional industries except agriculture on this small river in Greene County and definitely no business parks.	Individual
During one of these meetings an individual had reported to the public forum they had traveled down the Nolichucky River from Davey Crockett State park to the dam and had saw no businesses along that route. This observation was incorrect. Our family operates a sand and gravel business on River Mile 61 near Kinser Bridge. We have Storm water permits through the Department of Environment and Conservation that allow for excavation activities within our levy system. We also have been permitted in the past for dredging and pumping of sand from the Nolichucky River at river, mile marker 61. We continue to maintain our water pumping and screening equipment for the day that we need to move our excavation activities from the earth levies and return to the river itself.	Individual
The Native Americans and later settlers recognized the area for the rich soil to grow food, clean water for fishing, and ample woodlands for hunting wild game. Various kinds of farming provided the primary income as this is very fine, old soil that washed down from the mountains to the river bottoms over thousands of years. We have not seen many changes in growth near the river because the people have been able to maintain a way of life in a very beautiful place.	Individual
This area of Appalachia is recognized as one of three “hot spots” in the country for high cancer rates for certain types of cancer. We have to ask questions, why? Is there something in the water? In the air? What is causing the problem? Do we need to add additional unnecessary stresses through development and over use of the river before these problems are solved?	Individual
This river cannot withhold anymore industrial impact. If TVA cannot control cows in the river, how is TVA to control industry with TVA’s current lack of funding? Why would TVA even suggest industry on such a highly impacted and fragile small river?	Individual

Douglas Reservoir	
Lake levels	
It’s hard to understand sometimes the water levels on Douglas Lake. I have land adjoining the lake here. I have noticed in the last week where Douglas Lake has been unchanged and several of the other lakes are still raising theirs. I know this has been a question probably before. This concerns a lot of the people that live on the lake the way they raise and lower the lake. It would be a	Individual

Douglas Reservoir	
Lake levels	
great help to get more water in the lake and keep it at an even space and keep it high enough so it could be used until October.	
Lake levels should be as high as possible all year to maximize recreational and quality of life issues.	Individual
I was hoping that there would be some encouraging work towards maintaining good water levels in Douglas Lake, but I guess it really depends on God sending the rain.	Individual
Other	
Public interest in recreation living is understandable, and we're among those who enjoy a home on Douglas Lake. What concerns us is the increase in RV parks and campgrounds and the danger they pose to water quality. We appreciate the demand on leases and permits for this purpose. But unless restrictions, protections, etc are in rock solid place, we worry about the long term state of Douglas Lake being compromised. Permanently compromised.	Individuals (2)
High winds blow up tall dust clouds from the lake bed, especially during fall and winter.	Individual
The Douglas Lake area does need cleaning up from all the recreational trash. Don't send it up river.	Individual

Part II:

Public Comments Identified for Nolichucky Reservoir Parcels

(No Parcels were identified for Douglas Reservoir)

Nolichucky Reservoir		
Parcel	**Suggested Land Use**	**Comment**
K3-K6	Zone 3 or 4	Again, we want to express our input that the areas K3-K6 be changed to zone 3 or 4 instead of 6 for the following reasons: 1. There is a cave which opens over the river on parcel K5. This cave houses thousands of bats which would be disturbed were this area to be used as recreation. 2. American Black Vultures roost all along parcels K5 and K6 daily and have nest down river. 3. Numerous Blue Herron nest are on the island designated as K5. This island is less than 10 acres, so it should ,by your own guidelines, be classified as Zone 4, notwithstanding the habitat of the Blue Herron and other native

Nolichucky Reservoir		
Parcel	**Suggested Land Use**	**Comment**
		creatures. Let's protect our natural habitat along the river and in 100 years we will be able to look back and say we did the right thing.
Convergence of Horse Creek and Nolichucky River	Zone 3	As a concerned citizen, I feel the land management plan for the Nolichucky Reservoir should be modified near the convergence of Horse Creek and the Nolichucky River in Greene County and coded as Sensitive Resource Management (Zone 3) because: 1) The Nolichucky Watershed/Green County needs better protected resources. 2) In this specific area, the southern banks of the Nolichucky are home to many types of wildlife including many species of Sparrows and sensitive wetland species that deserve protection. 3) Usage in this area should be limited to prevent erosion, run-off, and water quality issues on the Nolichucky. Please consider rezoning the area of the Nolichucky River between Highway 351 and 107 to reflect the proper Land Management Plan needed for the flora and fauna in the local habitat.
Map A3	Zone 3 or 4	We are requesting a rezoning of A3 map property from zone 6 to zone 3 or 4 because: According to your own charts islands of less than 10 acres should be zone 4. Gray Island is less than 10 acres, so it should be at least a zone 4. The other island is obviously not 10 acres either. According to your own charts, land that includes wetlands, small wild areas and habitat protection should be zone 3. Gray Island is a rookery for the Great Blue Heron and contains many heron nest. The entire A3 area is a roosting and nesting area for the Black Vulture. This section of the Nolichucky contains a rare mussel that is only found here and near Chattanooga. The banks of the A3 area are home to two bat caves as well as many other wild animals including black bears, bobcats, red and silver foxes, white-tailed deer, and the recently introduced black tailed deer, etc.
12 and 13	Zone 3	I am writing regarding parcels 12 and 13 on the Nolichucky Reservoir. It is my understanding that these parcels are to be considered Zone 4. It is my suggestion that these parcels be rezoned to Zone 3 Sensitive Resource Management for several reasons. For a number of years, I have spent much time on the river near these parcels. In the recent past, I have begun to see otters, mink, beaver, and several species of birds at these areas. This May, I was on the river and became involved in a

Nolichucky Reservoir		
Parcel	**Suggested Land Use**	**Comment**
		conversation with Jerry Denkins, a biologist from Knoxville. He stated that, in the span of a few minutes, he had seen five different species of swallow in this area. He commented on how unusual it is to see that many species of swallow in one area. There is also a spring on parcel 13 that flows year round. I feel that this should be protected from any sort of pollution or contamination, such as litter from people camping, hiking, or hunting in the area.
K3-K13	Zone 3 or 4	We feel the significant historical aspect of property along the Nolichucky River would be adversely affected if the proposed K3 through K13 properties are committed to zone 6. Being aware of the rich wildlife and history which surrounds these properties, we would ask the planning team to consider zoning these particular properties to zone 4 and maybe even zone 3. By keeping these properties in line with either of these two zones, we believe it would much better serve our farm and future endeavors into agricultural diversification as we provide visitors with a cultural experience by keeping the natural and scenic areas along the river intact.

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Appendix C – Forecast System Designations

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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 Landings	*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 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.

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Appendix D – Conversion Tables

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Table D-1. Total Area by Zone and Alternative for Douglas and Nolichucky Tributary Reservoirs

Zones	Alternative A		Alternative B		Alternative C	
	Acres	%	Acres	%	Acres	%
2 - Project Operations	1077.7	33.8	1077.7	33.8	1077.7	33.8
3 - Sensitive Resource Management	0.0	0.0	621.5	19.5	712.7	22.3
4 - Natural Resource Conservation	1359.3	42.6	979.6	30.7	971.0	30.4
5 - Industrial	3.4	0.1	3.4	0.1	3.4	0.1
6 - Developed Recreation	738.0	23.1	496.1	15.5	412.9	12.9
7 - Shoreline Access	12.3	0.4	12.3	0.4	12.3	0.4
Total	3190.7	100.0	3190.7	100.0	3190.7	100.0

Table D-2. Total Area by Zone and Alternative for Douglas Reservoir

Zones	Alternative A		Alternative B		Alternative C	
	Acres	%	Acres	%	Acres	%
2 - Project Operations	1021.9	49.7	1021.9	49.7	1021.9	49.7
3 - Sensitive Resource Management	0.0	0.0	1.4	0.1	64.6	3.1
4 - Natural Resource Conservation	646.3	34.4	869.4	42.3	828.7	40.3
5 - Industrial	0.0	0.0	0.0	0.0	0.0	0.0
6 - Developed Recreation	374.6	18.2	150.0	7.3	127.5	6.2
7 - Shoreline Access	12.3	0.6	12.3	0.6	12.3	0.6
Total	2055.0	100.0	2055.0	100.0	2055.0	100.0

Table D-3. Total Area by Zone and Alternative for Nolichucky Reservoir

Zones	Alternative A		Alternative B		Alternative C	
	Acres	%	Acres	%	Acres	%
2 - Project Operations	55.8	4.9	55.8	4.9	55.8	4.9
3 - Sensitive Resource Management	0.0	0.0	620.1	54.6	648.4	57.1
4 - Natural Resource Conservation	713.0	62.8	110.2	9.7	142.6	12.6
5 - Industrial	3.4	0.3	3.4	0.3	3.4	0.3
6 - Developed Recreation	363.4	32.0	346.1	30.5	285.4	25.1
7 - Shoreline Access	0.0	0.0	0.0	0.0	0.0	0.0
Total	1135.7	100.0	1135.7	100.0	1135.7	100.0

Table D-4. Allocation of Douglas Reservoir Parcels Under Alternatives A, B, and C

Parcel Number	Acres	Previous Designation	Alternative			Committed or Uncommitted	Shoreline Access Rights
			A*	B	C		
1	579.4	Dam Reservation	2	2	2	C	N
2	0.0	unplanned	4	6	6	C	N
3	0.4	unplanned	7	7	7	C	Y
4	384.5	Public Recreation	4	4	4	C	N
5	1.1	Reservoir Operations	2	2	2	C	N
6	0.6	Reservoir Operations	6	6	6	C	N
7	1.3	unplanned	7	7	7	C	N
8	2.7	Reservoir Operations	2	2	2	C	N
9	0.4	unplanned	6	6	6	C	N
10	1.4	unplanned	6	6	6	C	N
11	1.4	unplanned	7	7	7	C	Y
12	2.6	unplanned	6	4	4	U	N
13	208.1	Public Recreation	4	4	4	C	N
14	2.2	unplanned	6	6	6	C	N
15	1.0	Reservoir Operations	2	2	2	C	N
16	2.3	Reservoir Operations	2	2	2	C	N
17	2.4	Reservoir Operations	2	2	2	C	N
18	0.6	unplanned	6	6	6	C	N
19	4.8	unplanned	6	6	6	C	N
20	0.2	unplanned	6	6	6	C	N
21	1.2	unplanned	4	3	3	C	N
22	5.4	Public Recreation	6	4	4	U	N
23	1.0	unplanned	6	6	6	C	N
24	3.0	unplanned	6	6	6	C	N
25	1.0	Public Recreation	6	4	4	U	N
26	1.7	Public Recreation	6	2	2	C	N
27	0.2	unplanned	4	4	4	U	N
28	10.2	unplanned	4	4	3	U	N
29	0.6	unplanned	2	2	2	C	N
30	0.3	unplanned	6	6	6	C	N
31	0.5	unplanned	4	4	4	U	N
32	2.3	unplanned	6	6	6	C	N
33	16.7	unplanned	4	4	3	C	N
34	1.0	unplanned	2	2	2	C	N
35	3.1	unplanned	4	4	4	C	N
36	4.6	unplanned	4	4	4	U	N
37	0.1	Public Recreation	6	4	4	U	N
38	0.3	unplanned	7	7	7	C	Y
38a	0.4	unplanned	4	4	4	U	N
39	2.3	unplanned	6	2	2	C	N
40	0.7	unplanned	6	6	6	C	N
41	8.2	unplanned	7	7	7	C	Y
42	78.4	Public Recreation	6	6	6	U	N
43	5.5	unplanned	6	6	6	C	N

Parcel Number	Acres	Previous Designation	Alternative			Committed or Uncommitted	Shoreline Access Rights
			A*	B	C		
44	25.5	Public Recreation	6	6	6	C	N
45	30.8	Public Recreation	6	4	4	U	N
46	4.0	Reservoir Operations	2	4	4	C	N
47	36.3	Public Recreation	6	4	3	U	N
48	20.0	Public Recreation	6	6	4	C	N
49	0.3	Public Recreation	6	3	3	C	N
50	14.5	Public Recreation	4	4	4	C	N
51	29.8	Public Recreation	6	4	4	U	N
52	111.7	Public Recreation	6	4	4	U	N
53	2.5	unplanned	4	6	4	U	N
54	121.9	Public Recreation	2	2	2	C	Y
55	3.0	Public Recreation	6	4	4	C	N
56	0.6	unplanned	7	7	7	C	Y
57	3.8	Public Recreation	2	2	2	C	N
58	3.5	Public Recreation	2	2	2	C	N
59	13.4	Public Recreation	2	2	2	C	N
60	0.7	unplanned	6	6	6	C	N
61	284.8	Public Recreation	2	2	2	C	N
62	2.2	Public Recreation	6	4	4	C	N

*Equivalent land use zone

Table D-5. Allocation of Nolichucky Reservoir Parcels Under Alternatives A, B, and C

Parcel Number	Acres	Previous Designation	Alternative			Committed or Uncommitted	Shoreline Access Rights
			A*	B	C		
1	9.4	unplanned	6	6	6	C	N
2	52.7	unplanned	2	2	2	C	N
3	48.9	unplanned	4	4	4	C	N
4	265.3	unplanned	6	6	6	C	N
5	22.5	unplanned	4	3	3	C	N
6	42.5	unplanned	4	3	3	C	N
7	1.0	unplanned	6	6	6	C	N
8	62.0	unplanned	4	3	3	C	N
9	63.5	unplanned	4	3	3	C	N
10	2.5	unplanned	6	6	6	C	N
11	43.3	unplanned	4	3	3	C	N
12	38.0	unplanned	4	4	4	U	N
12a	2.8	unplanned	4	4	3	C	N
13	3.5	unplanned	4	4	4	U	N
14	3.1	unplanned	6	6	6	C	N
15	2.5	unplanned	4	4	4	C	N
16	4.7	unplanned	4	4	4	U	N
17	3.0	unplanned	4	4	4	C	N
18	33.5	unplanned	4	3	3	C	N
19	102.2	unplanned	4	3	3	C	N
20	64.8	unplanned	4	3	3	C	N
21	3.4	unplanned	5	5	5	C	N
22	80.7	unplanned	4	3	3	C	N
23	94.7	unplanned	4	3	3	C	N
24	3.1	unplanned	2	2	2	C	N
25	15.3	unplanned	6	6	3	C	N
26	7.6	unplanned	6	6	4	U	N
27	3.5	unplanned	6	6	3	C	N
28	7.3	unplanned	6	3	3	C	N
29	3.1	unplanned	6	3	3	C	N
30	6.9	unplanned	6	4	4	U	N
31	1.3	unplanned	6	6	4	U	N
32	6.7	unplanned	6	6	3	C	N
33	4.2	unplanned	6	6	6	U	N
34	1.8	unplanned	6	6	4	U	N
35	5.7	unplanned	6	6	4	U	N
36	12.3	unplanned	6	6	4	U	N
37	1.9	unplanned	6	6	4	U	N
38	4.5	unplanned	6	6	4	U	N

*Equivalent land use zone

Appendix E – Supporting Data

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Table E-1. Acres of Prime Farmland on Douglas and Nolichucky Tributary Reservoirs Parcels

Reservoir	Parcel	Common Name	Total Acres in Parcel	Acres Prime Farmland	Allocation		
					Alternative A	Alternative B	Alternative C
Douglas	1	Dam Reservation	579.4	148.9	2	2	2
Douglas	7	Shoreline Access	1.3	0.9	7	7	7
Douglas	13	Henderson Island Refuge	208.1	47.7	4	4	4
Douglas	32	Rankin Access	2.3	2.3	6	6	6
Douglas	33	Rankin Bottoms Wildlife	16.7	8.0	4	4	4
Douglas	44	Dandridge Big Ramp	25.5	6.5	6	6	6
Douglas	52	Catlets Shoreline	111.7	3.4	6	4	4
Douglas	54	Saddle Dam 10	121.9	1.4	2	2	2
Douglas	61	Saddle Dams 1-6 (Sevier Co. Park)	284.8	25.4	2	2	2
Nolichucky	2	Dam Reservation	52.7	13.1	2	2	2
Nolichucky	3	Golf Course	48.9	2.2	4	4	4
Nolichucky	4	Kinser Park	265.3	17.3	6	6	6
Nolichucky	5	Richland Creek	22.5	3	4	3	3
Nolichucky	8	Mutton Creek	62.0	4.8	4	3	3
Nolichucky	9	Jones Bridge South	63.5	34.3	4	3	3
Nolichucky	11	Jones Bridge North	43.3	1.1	4	3	3
Nolichucky	12	Gasteiger Project	38.0	2.6	4	4	4
Nolichucky	13	Johnson Hollow	3.5	1.1	4	4	4
Nolichucky	18	Bird Island Shoreline	33.5	12.7	4	3	3
Nolichucky	19	Johnson Island Shoreline	102.2	55.1	4	3	3
Nolichucky	20	Duck Blind	64.8	4.1	4	3	3
Nolichucky	21	Vulcan	3.4	0.2	5	5	5
Nolichucky	22	Mud Creek	80.7	12.2	4	3	3
Nolichucky	23	Flag Branch	94.7	28.5	4	3	3
Nolichucky	36	Kiker 11	12.3	1.1	6	6	4

Table E-2. Nolichucky Reservoir Nolichucky River Flood Elevations

River Mile		100-Year Flood[1]		500-Year Flood[1]		Landmark
46.00		1260.3		1266.3		Nolichucky Dam
46.19		1261.8		1268.3		
46.48		1262.7		1269.5		
47.02		1263.1		1269.8		
47.26		1263.7		1270.6		
47.75		1264.0		1270.7		
48.44		1265.5		1272.6		
48.75		1266.9		1274.6		
49.64		1268.1		1275.8		
50.10		1269.2		1276.8		
50.28	D*	1270.2		1277.7		Bird Bridge
50.28	U*	1271.7		1281.4		
50.60		1273.3		1283.4		
51.05		1274.1		1284.1		
51.49		1276.6		1286.4		
51.91		1276.8		1286.4		
52.72		1278.3		1288.1		
53.16		1279.4		1289.2		
54.23	D*	1282.8		1293.0		Jones Bridge
54.23	U*	1283.0		1293.1		
55.24		1286.9		1296.3		
55.68		1288.0		1297.3		
56.25		1290.7		1300.4		
56.69		1292.5		1303.2		
57.20		1294.1		1304.2		
58.08		1298.5		1308.7		
58.61		1302.2		1313.3		
58.95		1303.6		1315.1		
59.38		1305.0		1316.1		
59.90		1306.7		1318.0		
60.42	D*	1308.5		1320.0		John Sevier Highway
60.42	U*	1309.9		1322.1		
60.72		1310.6		1322.6		
61.28		1312.7		1324.5		
62.06		1317.3		1329.2		

[1]All elevations are National Geodetic Vertical Datum Model of 1929

*Downstream and Upstream at Bridges

Table E-3. Douglas Reservoir French Broad River Flood Profiles

River Mile		100-Year Flood[1]		500-Year Flood[1]		Landmark
32.30		1002.6		1003.0		Douglas Dam
33.27		1002.6		1003.0		Flat Creek
36.69		1002.6		1003.0		McGuire Creek
41.00		1002.6		1003.0		Muddy Creek
45.11		1002.6		1003.0		State Route 92 - James D Hoskins Bridge
46.20		1002.6		1003.0		Rimmer Creek
50.50		1002.6		1003.0		Indian Creek
51.10		1002.6		1003.0		Moore Branch
54.30		1002.6		1003.0		Seahorn Creek
54.36		1002.6		1003.0		U.S. Highway 25 & 70 - Swann Bridge
54.51		1002.6		1003.0		Interstate-40
64.22		1002.6		1003.0		U.S. Highway 25E - Walters Bridge
67.86		1002.6		1003.0		Southern Railway
67.90		1002.6		1003.0		Leadvale Creek
69.17		1002.6		1003.0		Nolichucky River
71.39		1002.6		1003.0		Abandoned Bridge
71.58		1002.6		1003.0		Rankin Bridge
71.77		1002.6		1003.0		
72.17		1002.6		1005.8		
72.20		1002.8		1005.9		
72.40		1003.8		1006.8		
72.50		1004.3		1007.2		
72.52		1004.5		1007.4		
72.63		1005.4		1008.4		
73.32		1011.2		1014.5		
73.80		1014.7		1018.1		Pigeon River
74.60		1020.4		1024.0		
75.20		1022.5		1026.7		

[1]All elevations are National Geodetic Vertical Datum Model of 1929

Table E-4. French Broad River Flood Profiles Downstream of Douglas Dam

River Mile		100-Year Flood[1]		500-Year Flood[1]		Landmark
31.40		883.8		892.1		Lower Limit of TVA Property
31.74	D*	884.5		892.7		Douglas Dam Road
31.74	U*	884.6		892.9		
32.10		885.3		893.7		
32.23		885.6		894.1		Downstream of Douglas Dam

[1]All Elevations are National Geodetic Vertical Datum Model of 1929

*Downstream and Upstream at Bridge

Table E-5. TVA's Reservoir Ecological Health Ratings for Dissolved Oxygen, Sediment Quality, and Chlorophyll at Forebay and Midreservoir Monitoring Locations on Douglas Reservoir

	Monitoring Years													
	1991	1992	1993	1994	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007
Douglas Forebay														
Dissolved Oxygen	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Chlorophyll	G	F	G	G	G	F	G	F	F	P	F	G	G	G
Sediment	G	G	G	G	G	G	F	G	NS	G	NS	G	NS	G
Douglas Midreservoir														
Dissolved Oxygen	NS	NS	P	P	P	F	P	P	P	P	P	P	P	P
Chlorophyll	NS	NS	F	G	P	P	P	F	P	P	P	P	P	P
Sediment	NS	NS	F	F	F	G	F	F	NS	F	NS	G	NS	G

* = The rating summaries represent the typical rating for each indicator and may not reflect all the rating categories applied to a given indicator.
Rating summary codes: G = Good; F = Fair; P = Poor
NS = Not sampled
** = The difference in reservoir benthic scoring methodology from 1990-1993 prevents a direct comparison to results from 1994-2007, and a difference in RFAI scoring methodology from 1990-1992 prevents a direct comparison to results from 1993-2007.

Table E-6. Invasive Exotic Pest Plants Rank 1 – Severe Threat*

Common Name	Scientific Name
Air-potato	*Dioscorea oppositifolia L.*
Amur bush honeysuckle	*Lonicera maackii (Rupr.) Maxim.*
Asian bittersweet	*Celastrus orbiculata Thunb.*
Autumn olive	*Elaeagnus umbellata Thunb.*
Bush honeysuckle	*Lonicera x bella Zabel*
Camus Nepalgrass, Japanese grass	*Microstegium vimineum (Trin.) A.*
Chinese privet	*Ligustrum sinense Lour.*
Common privet	*Ligustrum vulgare L.*
Common reed	*Phragmites australis (Cav.) Trin. ex Steud.*
English ivy	*Hedera helix L.*
Eurasian water milfoil	*Myriophyllum spicatum L.*
Garlic-mustard	*Alliaria petiolata (Bieb.) Cavara & Grande*
January jasmine	*Lonicera fragrantissima Lindl. & Paxton*
Japanese honeysuckle	*Lonicera japonica Thunb.*
Japanese knotweed, Japanese bamboo	*Polygonum cuspidatum Seib. & Zucc*
Japanese spiraea	*Spiraea japonica L.f.*
Johnson grass	*Sorghum halepense (L.) Pers.*
Kudzu	*Pueraria montana (Lour.) Merr.*
Mimosa	*Albizia julibrissin Durz.*
Morrow's bush honeysuckle	*Lonicera morrowii A. Gray*
Multiflora rose	*Rosa multiflora Thunb.*
Princess tree	*Paulownia tomentosa (Thunb.) Sieb. & Zucc. ex Steud*
Purple loosestrife	*Lythrum salicaria L. [all varieties and cultivars]*
Sericea lespedeza	*Lespedeza cuneata (Dum.-Cours.) G. Don*
Tartarian honeysuckle, twinsisters	*Lonicera tatarica L.*
Thorny-olive	*Elaeagnus pungens Thunb.*
Tree of heaven	*Ailanthus altissima (Mill.) Swingle*
Tropical soda apple	*Solanum viarum Dunal*
Winter creeper	*Euonymus fortunei (Turcz.) Hand.-Mazz.*

Source: Tennessee Exotic Plant Pest Council (TN-EPPC). 2001. *Invasive Exotic Pest Plants in Tennessee*. Retrieved from < http://www.tneppc.org/> (accessed September 23, 2008)

* Rank 1 — Severe Threat: Exotic plant species that possess characteristics of invasive species and spread easily into native plant communities and displace native vegetation

Table E-7. Invasive Exotic Pest Plants Rank 2 – Significant Threat*

Common Name	Scientific Name
Alligatorweed	*Alternanthera philoxeroides* (Mart.) Griseb.
Asian spiderwort	*Murdannia keisak* (Hassk.) Hand.-Mazz.
Bicolor lespedeza, shrubby bushclover	*Lespedeza bicolor* Turcz.
Bull thistle	*Cirsium vulgare* (Savi) Ten.
Bunchy knotweed, oriental lady's-thumb	*Polygonum caespitosum* Blume
Burning bush	*Euonymus alata* (Thunb.) Sieb.
Canada thistle	*Cirsium arvense* L. (Scop.)
Chinese wisteria	*Wisteria sinensis* (Sims) DC.
Coltsfoot	*Tussilago farfara* L.
Common cocklebur, rough cocklebur	*Xanthium strumarium* L.
Common mullein	*Verbascum thapsus* L.
Common periwinkle	*Vinca minor* L.
Crown vetch	*Coronilla varia* L.
Curly pondweed	*Potamogeton crispus* L.
Cutleaf teasel	*Dipsacus laciniatus* L.
Dame's rocket	*Hesperis matronalis* L.
Foxtail-millet	*Setaria italica* (L.) P. Beauv.
Fuller's teasel	*Dipsacus fullonum* L.
Garden vetch	*Vicia sativa* L.
Green millet	*Setaria viridis* (L.) P. Beauv.
Hairy jointgrass	*Arthraxon hispidus* (Thunb.) Makino
Hayek watercress	*Rorippa nasturtium-aquaticum* (L.)
Hydrilla, water thyme	*Hydrilla verticillata* (L.f.) Royle
Japanese barberry	*Berberis thunbergii DC.*
Japanese bromegrass	*Bromus japonicus* Thunb. ex Murray
Japanese privet	*Ligustrum japonicum* Thunb.
Leatherleaf clematis	*Clematis ternifolia* DC.
Meadow brome	*Bromus commutatus* Schrad.
Meadow fescue	*Festuca pratensis* Huds.
Moneywort, creeping Jenny	*Lysimachia nummularia L.*
Mugwort, common wormwood	*Artemisia vulgaris* L.
Musk thistle, nodding thistle	*Carduus nutans* L.
Nandina, sacred-bamboo	*Nandina domestica* Thunb.
Nodding foxtail-grass, Japanese bristle-grass	*Setaria faberi* R.A.W. Herrm.
Oregon grape	*Mahonia bealei* (Fortune) Carriere
Parrot's feather, water milfoil	*Myriophyllum aquaticum* (Vell.) Verdc.
Poison hemlock	*Conium maculatum* L.
Rye brome	*Bromus secalinus* L.
Spotted knapweed	*Centaurea biebersteinii* DC.
Spreading hedge-parsley	*Torilis arvensis* (Huds.) Link
Tall fescue	*Festuca arundinacea* Schreb.
Thatch bromegrass, cheat grass	*Bromus tectorum* L.
White poplar	*Populus alba* L.
White sweet clover	*Melilotus alba* Medik.
Wild carrot, Queen Anne's-lace	*Daucus carota* L.
Wisteria	*Wisteria floribunda* (Willd.) DC.
Yellow foxtail, smooth millet	*Setaria pumila* (Poir.) Roem. & Schult.
Yellow sweet clover	*Melilotus officinalis* (L.) Lam.
Zebra grass, Chinese silver grass	*Miscanthus sinensis* Andersson

Source: Tennessee Exotic Plant Pest Council (TN-EPPC). 2001. *Invasive Exotic Pest Plants in Tennessee*. Retrieved from < http://www.tneppc.org/> (accessed September 23, 2008

*Rank 2 — Significant Threat: Exotic plant species that possess characteristics of invasive species but are not presently considered to spread as easily into native plant communities as those species listed as Rank 1—Severe Threat

Table E-8. Invasive Exotic Pest Plants Rank 3 –Lesser Threat*

Common Name	Scientific Name
Bachelor's button, cornflower	*Centaurea cyanus L.*
Balloonvine, love-in-a-puff	*Cardiospermum halicacabum L.*
Brazilian elodea, Brazilian water-weed	*Egeria densa Planch.*
Bromegrass, rescue grass	*Bromus catharticus Vahl*
California poppy	*Eschscholzia californica Cham.*
Chicory	*Cichorium intybus L.*
Chinaberry	*Melia azedarach L.*
Corn gromwell	*Lithospermum arvense (L.) I. M. Johnston*
Field garlic	*Allium vineale L.*
Giant reed, elephant grass	*Arundo donax L.*
Gill-over-the-ground, ground ivy	*Glechoma hederacea L.*
Hairy crabweed	*Fatoua villosa (Thunb.) Nakai*
Japanese clover	*Kummerowia striata (Thunb.) Schindl.*
Korean clover	*Kummerowia stipulacea (Maxim.) Makino*
Lady's thumb	*Polygonum persicaria L.*
Ox-eye daisy	*Chrysanthemum leucanthemum L.*
Pale-yellow iris	*Iris pseudacorus L.*
Paper mulberry	*Broussonetia papyrifera (L.) L'Her. ex Vent.*
Puncturevine	*Tribulus terrestris L.*
Russian olive	*Elaeagnus angustifolia L.*
Sicklepod senna	*Senna obtusifolia (L.) H. S. Irwin & Barneby*
Smooth bromegrass	*Bromus inermis Leyss.*
Spiny cocklebur	*Xanthium spinosum L.*
Star of Bethlehem	*Ornithogalum umbellatum L.*
Stinging nettle	*Urtica dioica L.*
Wild parsnip	*Pastinaca sativa L.*
Wineberry	*Rubus phoenicolasius Maxim.*
Yellow goat's-beard	*Tragopogon dubius Scop.*

Source: Tennessee Exotic Plant Pest Council (TN-EPPC). 2001. *Invasive Exotic Pest Plants in Tennessee*. Retrieved from < http://www.tneppc.org/> (accessed September 23, 2008

*Rank 3 — Lesser Threat: Exotic plant species that spread in or near disturbed areas and are not presently considered a threat to native plant communities

Table E-9. Nonnative, Noninvasive Species Suitable for Erosion Control/ Stabilization Activities

Common Name	Scientific Name
Annual ryegrass	*Lolium multiflorum*
Browntop millet	*Panicum ramosum*
Japanese millet	*Echinochloa esculenta*
Winter wheat	*Triticum aestivum*
Oats (spring variety)	*Avena sativa*
Orchardgrass	*Dactylis glomerata*
Perennial ryegrass	*Lolium perenne*
Redtop	*Agrostis gigantea*
Rye	*Secale cereal*
Timothy	*Phleum pretense*
Weeping lovegrass	*Eragrostis curvula*
Crimson, red, and ladino clovers	*Trifolium incarnatum, Trifolium pretense, Trifolium repens*

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Appendix F – Public Comments and Responses With Agency Letters

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PUBLIC COMMENTS
Received by TVA on the
Douglas and Nolichucky Tributary Reservoirs Land Management Plan
and
Draft Environmental Impact Statement
May 2010

Introduction
The draft environmental impact statement (DEIS) for the Douglas and Nolichucky Tributary Reservoirs Land Management Plan was distributed in March 2010. TVA received almost 40 comments by letters, electronic mail, and oral statements during the comment period on the DEIS from March 12, 2010, to April 26, 2010. Following release of the DEIS, TVA held an information meeting at Newport, Tennessee, on April 6, 2010, where 42 people attended. The written and oral comments were received from 21 individuals, including five interested state and federal government agencies. TVA has reviewed all of the comments.

The comments and TVA responses to them appear below. In some cases the EIS was changed because of the information or issues presented in the comments. Due to their similarity, some of the comments were summarized to provide joint responses. The names of those individuals and organizations providing comments appear after the comment text. Because the comments were summarized, the precise wording could not always be used. However, TVA tried to retain all important issues and differences among similar comments. Furthermore, commenter's names may appear in more than one comment if they identified more than one issue. Copies of original comments and letters are available from TVA upon request. Letters from agencies and some organizations providing more information appear in Appendix E (Supporting Information). Comment order of appearance has no bearing on their importance as all comments were reviewed and considered.

The largest grouping of the public responses to the DEIS focused on the types of use allocation for specific parcels of TVA-managed land, in particular the Nolichucky Reservoir. There were also comments about the NEPA process and alternative selection and stewardship of public lands. There was interest in how TVA's Land Policy is applied and in the management of various types of recreation on public lands. Several individuals made comments addressing recreation opportunities, land use, and ownership. Several commenters expressed support for the preferred alternative (Alternative C) although there was at least one who supported the No Action Alternative.

The remainder of commenters on the DEIS raised questions and provided comments on the identified environmental issues such as water quality and litter. Two individuals supported the use of the Rankin Bottoms Wildlife Management Area including changing the allocation of TVA land to more protective management zones and preservation of an abandoned coal tipple on TVA land. There were several comments on the pros and cons of hunting on TVA-managed public land including concern about the individual safety of hunters and adjacent landowners.

The Tennessee Department of Transportation reviewed the DNTRLMP but had no comment to make at this time. The Tennessee Wildlife Resources Agency (TWRA) supported TVA's preferred alternative, Alternative C, and noted that the commitments and

agreements they have with TVA on lands adjacent to these reservoirs would be honored no matter which alternative is chosen. The Tennessee Historical Commission (THC) found that the current programmatic agreement between TVA and THC satisfied TVA's Section 106 of the National Historic Preservation Act (NHPA) responsibilities and instructed TVA to contact THC if project plans change that would affect Action 106.

The U.S. Environmental Protection Agency's (USEPA) agreed with and encouraged the continued identification of Alternative C as the preferred alternative in the FEIS. USEPA expressed that its primary concern with the DNTRLMP was the uncertainty whether or not allocated lands could be reallocated by TVA to management zones with a greater potential for adverse impacts (e.g., from the Sensitive Resource Management Zone 3 to Industrial Zone 5) during site-specific reviews or public requests to the TVA Board of Directors (Board). However, assuming that Alternative C is selected and the proposed allocations are finalized, USEPA rated the draft EIS as "LO" (Lack of Objection).

The U.S. Department of the Interior (DOI) recommended that TVA contact the DOI during future site-specific reviews to evaluate the potential for future proposed projects to impact federally listed species. In the opinion of DOI, reaching a determination of "likely to adversely affect" federally listed species would be unlikely. DOI stated that the requirements of Section 7 of the ESA of 1973, as they apply to DNTRLMP, have been fulfilled. However, obligations under Section 7 of the act must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities that were not considered in the permit application, or (3) new species are listed or critical habitat designated that might be affected by the proposed action. The DOI expressed support for Alternative C.

Comments on the Douglas and Nolichucky Tributary Reservoirs Land Management Plan Draft Environmental Impact Statement

Comment 1: The Tennessee Department of Transportation has reviewed this document and has no comment to make at this time.

- Edward H. Cole, Tennessee Division of Transportation, Nashville, Tennessee

Response: Comment noted.

Comment 2: My comment and concern is specific to water quality in the Anderson Branch/Muddy Creek area of Douglas. I am a home owner on Porter Rd, in the vicinity of Dickey Rd. The area adjacent to and surrounding numerous homes in this area are used by a local cannery to eliminate their waste water. Specifically, the liquid by-products of the canning process is systematically sprayed on to lands presumably owned by the cannery. There is signage on site that indicates they have some type of permit via the EPA to eliminate waste water in this way. However, the odor of the waste water more-often-than-not is that of sewage. My concern is that runoff of these areas directly into Douglas lake will alter the water quality in a negative way. Is TVA aware of this situation? Can you comment? Can anything be done to further "filter" the waste water before it is sprayed into the lakes watershed?

- Kevin Kennard, Knoxville, Tennessee

Response: TVA is aware of the Bush Brothers and Company spray irrigation system for treated wastewater, at the company's Chestnut Hill, Tennessee, foods manufacturing facility on private land adjacent to Douglas Reservoir and three of its tributaries. The company operates the spray irrigation system under a permit and regulations from the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control. This process has apparently been successfully used for several years and is monitored by TDEC; TVA understands that the process and permit are designed to exclude any direct contact with any surface waters. None of this occurs on TVA-managed land or waters.

Comment 3: Thank you for the information you mailed me regarding the above, and the related DEIS. After reading the report on the website, my family and I would like to communicate our support for Alternative C. We live and work in Greene and Hamblen Counties. We live next to Cherokee National Forest and enjoy many of the resources provided by TVA, including Kinser Park, various areas on the Nolichucky River, and Cherokee and Douglas Lakes. We would be very pleased to see Alternative C put in place.

- Karen Jacoby, Greeneville, Tennessee

Response: Comment noted.

Comment 4: As a TVA retiree and a Douglas land owner, I am concerned about doing business on Douglas "the way we have always done it." In the many years that I have lived near and on Douglas, I have watched TVA dump water far in excess of what is necessary or required for generation, maintaining channel depth, or for cooling water. I also know that dumping when the water level is 20 to 30 feet below normal when no flood is expected is also a waste. Having worked with many on the environmental side, I know that there are many bright and creative minds on the staff. How about coming up with a water management plan that would begin the fill earlier and maintain the water level through September. I will not be physically able to attend the April 6 meeting, but my neighbors will be. Please consider this request.

- James E. Barker, Dandridge, Tennessee

Response: Water levels on Douglas Reservoir were addressed in TVA's 2004 *Reservoir Operations Study* (ROS) *Final Programmatic Environmental Impact Statement*, which 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 the ROS, such as using weekly average-flow requirements to limit the drawdown of Douglas Reservoir June 1 through Labor Day to increase recreation opportunities; deciding to raise winter flood guides and winter operating ranges on Douglas Reservoir based on results of flood risk analysis; and formally scheduling water releases to increase tailwater recreation opportunities.

ROS and its implementation are pertinent to the management of TVA and private lands on Douglas Reservoir, especially recreation. However, changes to it are not part of the DNTRLMP. For more information, see the link to TVA's Web site at http://www.tva.com/environment/reports/ros_eis/index.htm.

Comment 5: At your request, our office has reviewed the above-referenced Draft Environmental Impact Statement in accordance with regulations codified at 36 CFR 800 (Federal Register, December 2, 2000, 77698-777390). In accordance with our previous correspondence dated, March 3, 2009, we find the current programmatic agreement between our agencies satisfied the Tennessee Valley Authority's Section 106 responsibilities.

If project plans are (changed), please contact this office to determine what further action, if any, will be necessary to comply with Action 106 of the National Historic Preservation Act.

- E. Patrick McIntyre Jr., Tennessee Historical Commission, Nashville, Tennessee

Response: TVA agrees with the Tennessee Historical Commission.

Comment 6: TVA, I would like to see more places open to public use. Some of use can't pay the price for a campsite and we like to have a little privacy.

- Roger Jennings, Greeneville, Tennessee

Response: TVA offers a diversity of recreation opportunities, from primitive areas with free camping to developed campgrounds located on several TVA dam reservations. Numerous public and private/commercial recreation developments occur on reservoir shoreline, some of which are operated on TVA-owned property but are managed by commercial operators under contractual agreement. For primitive camping, there is a maximum 14-day stay within a 30-day period on TVA lands that support dispersed recreation. TVA lands that provide camping at developed and dispersed areas are indicated in the individual land plans. More information about recreation opportunities on TVA reservoirs is available at www.tva.com/river/recreation and online maps are available at http://recreation.tva.com.

Comment 7: We are losing more and more of the use of public lands because of vandalism, drug and alcohol use, litter and too much hell raising. Why they don't help these people be better stewards of these precious places I don't know. Maybe some just don't care. Maybe there would be no use, some don't learn any better.

- Roger Jennings, Greeneville, Tennessee

Response: TVA understands your concerns regarding the misuse of public lands. TVA encourages all users of public land to act responsibly and will enforce laws to protect public property. TVA manages the public lands under its stewardship for long-term benefits and to provide a balanced set of recreational experiences. Unfortunately, not all users of public land will recreate responsibly. In addition, some areas can be overused if they are popular. TVA values community involvement and partnership development in stewardship activities on public lands. Any location and circumstances of general misuse should be reported by calling the Environmental Information Center at 1-800-882-5263 on weekdays. Any public safety issue should be reported to the TVA Police at 1-800-824-3861.

Comment 8: In Greene County at Parcel 15, who sold the island to TVA and when?

- Joyce Daniels, Afton, Tennessee

Response: TVA purchased Parcels 14 and 15 from Lamon and Melba Rice in November 1983. The deed is recorded in the Greene County Courthouse in book 380 on page 14.

Comment 9: I own property adjoining one of the tracts. And my major concern is that the draft, DEIS, did not sufficiently show the impacts on adjoining landowners. I know that they said it was a non-significant impact, but there's no data to back that up and nobody can tell me how they come to that conclusion. And not only for socioeconomics but all resource areas, there's not enough data to back up a conclusion of no significant impact.

- Ronnie Lance, Greeneville, Tennessee

Response: Existing land use patterns along the shoreline and back-lying land along Douglas and Nolichucky reservoirs have been largely determined by TVA land acquisitions, disposals, and land use agreements. In general, TVA

believes the allocation of land supports the goals of land planning (see page I-3), are beneficial to the public and stakeholders, and have insignificant adverse environmental impacts (see pages I-27 through I-29).

There may be localized impacts to individual back-lying parcels that occur as a consequence of TVA allocating land for particular uses. For example, allocating land to Zones 5 (Industrial), 6 (Developed Recreation), or 2 (Project Operations) would generally have greater adverse environmental impacts than Zones 3 (Sensitive Resource Management) or 4 (Natural Resource Conservation); consequently there could also be similar impacts to adjoining or neighboring land.

These impacts may be beneficial or adverse to adjacent landowners depending on their view and plans for their land. TVA is aware of impacts to adjoining land and wherever possible makes management decisions based on the neighboring land uses (see Section 2.1, The Allocation Process), sometimes to complement or mitigate the back-lying use; however, the intent is always to support the integrated goals of TVA, the stakeholders, and the community on a reservoir basis.

Comment 10: I represent Nolichucky View Golf Course. We would like to have a portion of Parcel 3 re-zoned from Zone 4 to Zone 6, which would be from Natural Resource Zone to a Recreational Zone, in order to install a driving range on our golf course. The total Parcel 3 is 48.9 acres, which includes the trees and things that's around the cove, that is a cove that's formed from the Nolichucky River, it's a back-up from the Nolichucky River. The only thing that we want to use, there's a portion of the Parcel 3 that is being mowed for hay right now. That portion consists of, I'm going to estimate ten to twelve acres that, like I say it's being mowed now and that portion which is the lower southwest portion of Parcel 3, would be re-zoned recreational in order to allow us to develop a driving range. We, during...the times were difficult, and we feel that if we could provide a driving range it would help us attract, you know, more players to our golf course and, you know, of course it would help us economically. It would be an incentive for, you know, we've been told that the reason we can't get a Tusculum College Tournament is because we don't have a driving range. So, it would help us, we think, tremendously, if we could have that re-zoned, that one small portion re-zoned to Zone 6, for purposes of a driving range.

- Jack Short, Greenville, Tennessee

Response: Parcel 3 has a license agreement with the Tennessee Wildlife Resources Agency (TWRA) to be managed for wildlife management, public recreation and with agreements with local farmers for the production of wildlife food crops. Therefore, any subsequent use would require the reassignment of the license by TWRA with approval from TVA. Due to the existing license agreement, this parcel must remain allocated to Zone 4, Natural Resource Conservation.

Comment 11: I would like to see TVA either do some land sales along the Nolichucky Reservoir and put the property back in the hands of the private individuals. This goes back to a couple of years ago when TVA was trying to decide

what to do with the dam as far as the flooding of non-TVA land. TVA has solved some of its problems in the past, I understand, through swaps, horse trades, whatever you want to call it. But I think that needs to be discussed here. Because I realize the problem will be the Tennessee Wildlife Resources Agency and the Department of Conservation. That I would think that in some of these circumstances they would at the very least have nothing to lose. The Nolichucky Wildlife Management Area, waterfowl Sanctuary that was put in place when the dam was shut down, has achieved none of its objectives, that is the objectives that were set for it back in 1969 and 1970. The land needs to be generating tax revenue for Greene County. It's my understanding the amount of money that TVA pays Greene County in lieu of taxes is a paltry sum.

- Daniel E. Burgne, Greeneville, Tennessee

Response: TVA recognizes that historical land transfers have contributed substantially to meeting multipurpose objectives in managing 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. Since 2006, when TVA instated its Land Policy, it has been TVA's policy to preserve reservoir lands remaining under its control in public ownership except where different ownership would result in significant benefits to the public.

In particular, TVA land will not be used for residential and retail use (see the TVA Land Policy, Volume I, Appendix A). TVA would 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.

Wildlife management, public recreation, and past environmental education at Nolichucky Reservoir have contributed to the local quality of life and have brought many visitors to the area, all of which have resulted in positive economic impacts for Greene County. As described above, promoting the protection of natural resources and enhancing local economies are TVA goals.

Comment 12: Please leave it alone, I suppose that "A" is the best option. I have been threatened many times while duck hunting on the river's edge or bank after reaching it by boat. I'm glad the people who have land adjoining the river are finding out for sure that TVA owns land too. I have left areas before to avoid a bad conflict, and I knew for sure that TVA owned it per TVA maps. Some people, who do own land which joins the river, think they own to the middle of the river. This is a dangerous situation that needs clarification.

- Johnny Collins, Greenville, Tennessee

Response: Comment noted. TVA land is available for hunting, as long as the hunters abide by all state, federal, and local laws and ordinances. If you are experiencing issues on TVA land, please contact the Holston-Cherokee-Douglas Watershed Team at 423-585-2123.

Comment 13: I am a regular visitor to the upper end of Douglas Lake, and usually focus on the area known as Rankin Bottoms and parts of Douglas Lake just downstream from there. My interest is in wildlife and enjoyment of the beauty of the area, marred as it is by litter. I am an amateur photographer, and do not hunt or fish, although I believe I share much in the way of wilderness ethics with hunters and fishers.

- Ronald Shrieves, Knoxville, Tennessee

Response: In managing its public lands and resources, TVA seeks to provide efficient resource stewardship that is responsive to stakeholder interests. TVA tries to ensure that resource stewardship issues and stakeholder interests are considered and attempts 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.

Comment 14: I wish to express my preference for Alternative C of the three alternatives. I feel that conserving the additional acreage for Sensitive Resource Management is very important. It will be even more important as global warming may require various species of wildlife to adapt their migration patterns.

- Ronald Shrieves, Knoxville, Tennessee

Response: The TVA preferred alternative–Alternative C, the Modified Land Use Alternative–would provide suitable opportunities for developed recreation, conservation of natural resources, and management of sensitive resources. Under Alternative C, all parcels with identified sensitive resources would be allocated to the most protective land use zone, whereas only some of those parcels would be zoned for sensitive resource management under Alternatives A and B.

Comment 15: Under the preferred alternative, Alternative C, all parcels with identified sensitive resources would be allocated to the most protective land use zone; whereas, only some of those parcels would be zoned for sensitive resource management under Alternatives A (the no-action alternative) and B. Compared to Alternative B, Alternative C includes slightly less land in Zone 6 (Developed Recreation) and slightly more in Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Alternative C, as contrasted to Alternative B, represents changes in land use zones for 15 parcels of TVA-managed land. Specifically, six additional parcels, totaling 75 acres, would be placed into Zone 3. All remaining nine parcels would be placed in Zone 4 (an additional 8 acres) under Alternative C. Due to the additional acreage included under Zone 3 and 4, which would provide added protection to federally listed species, we agree with TVA's decision to select Alternative C, as the preferred alternative.

- Gregory Hogue, U.S. Department of the Interior, Atlanta, Georgia

Response: Comment Noted. See response to comment number 14.

Comment 16: PREFERRED ALTERNATIVE: I fully support the choice of Alternative C over the others, but it doesn't go far enough. Any area that could potentially be designated as Zone 3 or 4 should be, and most areas designated as Zone 4 areas should be designated as Zones 3. The Zone 3 definition is broad enough in including wetlands, scenic areas, and "other sensitive ecological areas" to cover many areas designated as Zone 4. The upgrades are justified in that preservation and protection of existing natural qualities is the greatest overall contribution that TVA could make stakeholders in general. The Zone 3 classification comes closest to satisfying the interests and concerns of everyone using and living along the waterways under consideration.

- Michael Sledjeski, Del Rio, Tennessee

Response: Comment noted. See response to comment number 14.

Comment 17: I hope that in conjunction with the allocation of lands to "zones," greater consideration will be given to the impact of flood management on the wildlife affected by lake levels, especially in the vicinity of Rankin Bottoms.

- Ronald Shrieves, Knoxville, Tennessee

Response: The allocation of land to a management zone does not impact reservoir water levels, which consequently are not part of the scope of the preparation of this land plan. The effects of water levels on wildlife were addressed in TVA's 2004 *Reservoir Operations Study Final Programmatic Environmental Impact Statement*. Douglas Reservoir was a part of that study. See http://www.tva.com/environment/reports/ros_eis/index.htm at TVA's Web site, and refer to Section 5.10 on terrestrial ecology.

Comment 18: U.S. Environmental Protection Agency (EPA) concurs with TVA's Proposal to allocate all TVA-owned lands via an RLMP to upgrade Alternative A into Alternative B or C. We are pleased to note that TVA has identified a NEPA preferred alternative in the DEIS as opposed to deferring this decision to the Final EIS (FEIS). This presumably was feasible by gathering sufficient public comments during the scoping process prior to issuance of the DEIS, as well conducting field surveys. More importantly, we are pleased to find that Alternative C – which we believe to be the environmentally preferable alternative – was identified as the preferred alternative (pg. 1-20). EPA agrees with this decision and encourages the continued identification of Alternative C as the preferred alternative in the FEIS – and ultimately as the selected alternative in the prospective TVA Record of Decision (ROD).

- Heinz Mueller, Environmental Protection Agency, Atlanta, Georgia

Response: Comment noted.

Comment 19: EPA's primary concern with the DEIS is the uncertainty – even after prospective TVA approval of Alternative C in the TVA ROD – whether or not allocated lands could be re-allocated by TVA to environmentally lesser zones (e. g. from the Sensitive Resource Management Zone 3 to Industrial Zone 5) during site-specific reviews or public requests to the TVA Board of

Directors (Board). EPA would not concur with re-allocations to such zones due to increased potential for developmental impacts intent to entertain or reject such public requests of the Board to change proposed allocations for specific parcels of land to more developed zones. If the Board wishes to retain such discretion, the FEIS should fully discuss the expected likelihood of such re-allocations and identify any TVA policy, guidelines or rationale forming the basis for such TVA decisions as well as any thresholds (e. g. limitations in the number or kinds of acres or parcels that might be re-considered). If the TVA Land Policy (Appendix A) or TVA's Shoreline Management Policy is referenced, specific policy criteria should be related to the decision. Overall, EPA believes that if the approved (TVA ROD) allocations of Alternative C can nevertheless still be minimized by public requests approved by TVA, the meaning and value of the present EIS would be significantly diminished. We look forward to additional FEIS clarification in this regard.

- Heinz Mueller, Environmental Protection Agency, Atlanta, Georgia

Response: TVA's land planning efforts, including the DNTRLMP are designed to allocate shoreline parcels to land uses based on that parcel's current land use as well as its suitability and capability for future uses. These plans serve as guidelines to direct future use of shoreline properties by TVA or by other parties under land use agreements. Under the DNTRLMP any land use request that is obviously inconsistent and incompatible with a parcel's allocation would most likely be rejected. However, TVA could consider the reallocation of a parcel under certain limited circumstances. For example, TVA's Land Policy provides that TVA will 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. Additionally, discovery of deeded rights that were previously overlooked or misinterpreted could necessitate a possible change in allocation to accurately reflect those rights, as land plans do not take precedence over such legal rights. In such circumstances, TVA could reallocate the subject parcel, facilitating a potential change in land use. However, such a change in allocation would be subject to approval by the TVA Board of Directors or its designee, pending the completion of an appropriate environmental review. TVA would involve the public appropriately during any environmental review for a parcel reallocation.

Currently, only one industrial parcel is being considered and future industrial sites requiring water access are unlikely on the two tributary reservoirs. A reallocation in support of water-related recreation is more likely; however, no commercial sites other than the ones already considered have been identified. There could be some expectation of occasional future public ramps, access areas, and community facilities although TVA is not aware of any current need.

Comment 20: Assuming that Alternative C is selected in the TVA ROD and the proposed allocations are finalized, EPA rates this DEIS as and "LO" (Lack of Objection). Otherwise, TVA would have environmental concerns about

selection of a lesser environmental alternative and the uncertainty of potential impacts.

- Heinz Mueller, Environmental Protection Agency, Atlanta, Georgia

Response: Comment noted.

Comment 21: I am strongly in favor of Alternative C. I am an avid hunter and fisherman, spending many days a year on the Nolichucky River. Urban sprawl and development are taking more and more acres every day. I urge TVA to put this plan into action to protect as much of our great natural areas as possible.

- Barry Bales, Mosheim, Tennessee

Response: Comment noted. As a part of TVA's broad regional resource development mission, TVA reservoir properties are managed to provide multiple public benefits, including recreation, conservation, and industrial development. TVA recognizes the importance of striking a balance among the competing demands placed on the land and water resources.

Comment 22: TVA have indicated that three federally listed and a federally protected terrestrial animal species occur within three miles of the Douglas and Nolichucky reservoirs or are known from the surrounding counties. The federally listed as threatened, piping plover (*Charadrius melodus*), has been observed in two of the past five years at Rankin Bottoms Wildlife Management Area on Douglas Reservoir in September during the fall shorebird migration season.

The federally listed as endangered gray bat (*Myotis grisescens*) is known to occur in a cave approximately five miles east of Douglas Reservoir. Maternity colonies have also been recently discovered in caves upstream and downstream of Douglas Reservoir. The presence of these colonies suggests that gray bats forage throughout the study area.

Summer roosting habitat (e.g., trees with exfoliating bark), suitable for the federally listed as endangered Indiana bat (*Byotis sodalis*), exists throughout the study area, in addition to several caves, suitable for winter roosting, near Douglas and Nolichucky reservoirs. However, no Indiana bats have been found in these caves.

Bald eagles (*Haliaeetus leucocephalus*) remain federally protected under the Bald and Golden Eagle Protection Act. Bald eagles build nests on Douglas Reservoir and downstream of the dam and are observed along the Nolichucky River. Several TVA parcels on Douglas Reservoir and Nolichucky River provide suitable habitat for the species, and they have nested on TVA parcels in previous years. However, no nests are currently known on TVA lands.

TVA further indicated that a total of 19 federally listed aquatic species have been reported within the watersheds of Douglas and Nolichucky reservoirs. Many of the occurrence records for individual species are historical, and TVA determined that it is unlikely those particular aquatic species remain within either watershed. TVA concluded that two federally listed as endangered,

one federally listed as threatened and three candidates for federal listing occur near Douglas and Nolichucky reservoirs.

Federally endangered aquatic species, including the oyster mussel (*Epioblasma capsaeformis*) and the birdwing pearlymussel (*Lemiox rimosus*), have been collected in the Nolichucky River. Oyster mussels have not been found near any TVA land parcels. In 1982, TVA transplanted 1,000 birdwing pearlymussels into the Nolichucky River approximately 20 miles downstream from Nolichucky Dam; a small birdwing pearlymussel was found at the transplant site in 1995, suggesting some production.

The federally threatened snail darter (*Percina tanasi*) likely no longer occurs in the Nolichucky River. Recent surveys of that system have failed to encounter the species. A population, however, does occur in the French Broad River, downstream from Douglas Dam.

The three federal aquatic candidate species which TVA has indicated occur in the Nolichucky River near TVA lands include the spectaclecase (*Cumberlandia monodonta*), slabside pearlymussel (*Lexingtonia dolabelloides*) and fluted kidneyshell (*Ptychobranchus subtentum*). However, the slabside pearlymussel has not been collected in the Nolichucky River since 1964.

- Gregory Hogue, U.S. Department of the Interior, Atlanta, Georgia

Response: Your comment regarding the current known distributions of these species is correct. Due to the low frequency with which rare mussels such as slabside pearlymussel are encountered during survey efforts and the limited amount of survey effort for freshwater mussels in the Nolichucky system, TVA has assumed that slabside pearlymussel is still present in the Nolichucky River even though it has not been recently collected.

Comment 23: TVA has determined that no federally listed plants would be affected under any of the alternatives because none are known to occur and no suitable listed plant habitat exists within five miles of Douglas and Nolichucky reservoirs.

- Gregory Hogue, U.S. Department of the Interior, Atlanta, Georgia

Response: Comment noted.

Comment 24: TVA has indicated that adoption of Alternative A may, but would not likely, impact gray and Indiana bats or listed aquatic species. They further state that under action alternative B and C, no federally listed terrestrial animals would be affected, and federally listed aquatic species would not likely be affected. According to TVA, effects to listed species would be insignificant under all alternatives, and Alternative A, would have the greatest impact to listed species. TVA further indicates that Alternative B would have lesser impacts and Alternative C the least impacts.

- Gregory Hogue, U.S. Department of the Interior, Atlanta, Georgia

Response: Comment noted.

Comment 25: Regarding listed species, TVA has indicated in the EIS that "project-specific environmental reviews on any parcel would be performed, and mitigation would be required when warranted". We do recommend that TVA consult with the Department on individual site-specific projects in the future when details become known. If there is a potential for a "likely to adversely affect" determination to be made during site-specific consultation in the future, the Department advises that "likely to adversely affect" is the appropriate determination at the programmatic consultation level, also. However, after reviewing the EIS and discussing the DNTRLMP with TVA staff, we believe that the likelihood of reaching a determination of "likely to adversely affect" at the site specific consultation level in the future is unlikely.

In view of this, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as they apply to the DNTRLMP, have been fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered in your permit application, or (3) new species are listed or critical habitat designated that might be affected by the proposed action. Because this is a programmatic level consultation on the DNTRLMP site-specific consultations will still be needed, but can tier back to this consultation. It is incumbent upon TVA and the Department to coordinate adequately in the future to minimize the likelihood of any specific actions results in an adverse affect to listed species.

- Gregory Hogue, U.S. Department of the Interior, Atlanta, Georgia

Response: TVA would initiate Section 7 ESA consultation if a site-specific project were identified as having an adverse effect on listed species or designated critical habitat due to new species listings, discovery of new populations of listed species, or designation of critical habitat areas.

Comment 26: Parcel 29-30 faces Gray Island (Parcel 28). The Island is zoned 3 - property line is zoned 4 our property extends from the tip of the island and includes half the island. If this portion of parcel 30 could be rezoned to 3 we would be satisfied. I would be pleased to discuss this with you in the future.

- Louise Helbert, Greeneville, Tennessee

Response: TVA has reviewed the allocation of Nolichucky Parcels 29 and 30 and determined that the TVA public land fronting your property is correctly allocated to Natural Resource Conservation (Zone 4). Although the strip of shoreline vegetation on the parcels has some wetland species present, there are no high-quality wetlands or sensitive species present that would qualify them for allocation to Sensitive Resource Management (Zone 3). Parcels allocated to Zone 4 are managed to protect the function and value of the occurring natural resources; other than not having a sensitive resource present, most of the other management and recreational activities would be the same as Zone 3.

Comment: 27: Once again I find myself writing to a TVA representative in regards to TVA's zoning policy. The last time I wrote to TVA and appealed to them in regards to their zoning I was lucky enough to have caught someone's ear and the zone was changed from a Zone 6 to a Zone 4. However, the property adjacent to mine including an island was designated a Zone 3.

The Zone 3 designation was due to a maternity colony of Gray Bats and a Heronry. Both of which was brought to TVA's attention after their initial foray into said parcels by their biologists. Once these federally listed species were brought to TVA's attention they re-zoned Parcel 29 (the exact location of the bat cave and rookery) to Zone 3. However, they re-zoned parcel 30 adjacent to 29 and in some instances less than 600 feet from the rookery as a Zone 4.

In the recent Douglas-Nolichucky Tributary Reservoirs Land Management Plan and Environmental Impact Statement (Vol. III) the report states that, "Parcel 29 reflects occurrence of sensitive river corridor, wetland species as well as unique scenic qualities along the river main stem". Yet this is not included in the description of parcel 30 a natural continuation of parcel 29. Under Sensitive Resources it states "a gray bat colony occurs in a cave on the mainland portion of this parcel. The Zone 3 designation is warranted due to the close proximity of the cave on the back-lying property and the requirement of gray bats to use forested flight paths to access feeding areas over water."

I do not claim to be an expert on the gray bat, but I am pretty sure they are not stopping at the boundary line of 29 and 30 to feed. It is understandable that if Parcel 29 flowed into Parcel 30 which flowed in to 31 etc. That a line must be drawn. However, Parcel 29 and Parcel 30 are the only two parcels in that area. All the "Sensitive Resources" stated on parcel 29 are directly impacted and are part of Parcel 30. This includes Gray Island which in some instances is about 150 to 200 feet (less than the federal suggested 600 feet) from the shore line of Parcel 30. ….. change the allocation of Parcel 30 from zone 4 to zone 3 based on contiguity and proximity to parcel 29, which is zone 3 due to a maternity colony of gray bats (federally listed) and a heronry.

- Lyza and James Pascucci, Greeneville, Tennessee

Response: Please see the response for the previous comment (26) which was similar.

In addition, as an agency, TVA must apply the zone designations in a consistent manner among the various lands planning projects. The focus for Zone 3 lands is protecting and enhancing the sensitive resource the site supports; in this case, the cave for Parcel 29. The focus for Zone 4 lands is to manage TVA public lands, including the narrow strips of shoreline, such as that which fronts your property, for wildlife, water quality, and visual qualities. Parcels allocated to Natural Resource Conservation (Zone 4) are managed to protect the function and value.

TVA does not believe that the proximity of the cave to the shoreline fronting your property will have any impact on sensitive resources associated with the cave or cave inhabitants. Gray bats forage primarily over water. The intent of placing Parcel 29 into Zone 3 is to provide a forested corridor for

gray bats to travel from their cave to their foraging habitat, the river. The forested corridor between the cave and river supports the recovery objectives for this species outlined by the U.S. Fish and Wildlife Service.

Placing Parcel 30, a forested marginal strip not located between the cave and the river, into a Zone 3 would not be appropriate. However, the Zone 4 designation is warranted, as it will keep the parcel in its current state, benefiting a host of wildlife occurring along the Nolichucky River and providing a vegetative buffer between the river and adjacent lands. Neither Zone 3 nor 4 precludes the public from accessing these areas.

TVA takes great care to place specific parcels into appropriate zones to protect endangered species. We also make sure that zones are assigned consistently throughout the Tennessee River Valley. The assignment of Zone 3 on Parcel 29 is consistent with other categorizations involving parcels between gray bat roosts and their foraging habitat throughout the Valley.

Parcels are assigned to Zone 3, among other things, to protect endangered species, or to protect parcels with combined resources such as those observed at Gray Island. Parcels having heron colonies but no other resources are routinely placed in Zone 4, as heron colonies in the Valley often move from one locality to another. The reason Gray Island was assigned a Zone 3 was to protect the combination of the heron colony *and* wetlands.

Regarding the 600-foot distance in the comment, this distance is not a federal guideline; it is a buffer zone that TVA voluntarily applies to heron colonies. Assigning Zone 3 or 4 within a buffer zone is not inconsistent with the intent of TVA's buffers placed around heron colonies, as both of these zones provide protection to natural resources. TVA appreciates your raising these issues concerning our application of zones to protect the natural resources along the Nolichucky River.

Comment 28: This is a pristine area abundant with wildlife some federally protected some just existing because of the absence of the interference by human beings. Meaning, camping, hiking, and most of all hunting. TVA has allowed hunting in their Zones 3 and 4. That is understandable when you are talking large parcels of land with much acreage to hunt on. Unfortunately this "blanket" designation is very dangerous for homeowners on these narrow strips of river front property on the Nolichucky. A misdirected bullet can do a lot of harm.

These narrow strips of land are bordered by high bluffs and hills. In many cases you cannot see a house, barn, horses, people, cattle etc. from the shore line. In the past my husband and I have had to run off several hunters who came by boat. When they were confronted by us they responded with "we didn't know a house was there." The point is, these strips of land are too narrow to allow hunting. TVA needs to adjust their designations to fit the land. My home is within 200 yards of the river. I have expensive show horses on my property, my husband and I have family and friends over, we use our outdoor space extensively. If hunters come again and they will, who is liable for the injuries, or death of people or livestock? TVA? Please do not

insult our intelligence as some TVA employees have, and tell us to call the TWRA officer or the sheriff. We all know it will be too late. The one TWRA officer is stationed in Morristown a 45 minute minimum drive from us. Obviously calling any form of law enforcement would be a waste of time, the damage is done. …..where TVA land that is zoned 3 or 4 abuts residential property within 300 yards post the TVA land as no hunting to prevent conflict and accidents.

- Lyza and James Pascucci, Greeneville, Tennessee

Response: Comment noted. TVA as do many land managing federal agencies supports reasonable use by the public of public-owned land for recreation. Hunting is one of a myriad of legitimate uses of public land. Likewise, TVA supports the federal, state, and local safety regulations concerning the use of such land. Hunters are responsible for their own actions in upholding the laws and regulations that pertain to them. This situation is being further addressed as part of ongoing communications with the commenter.

Comment 29: RE: Environmental Impact on the Human Condition. TN law states that shots may not be fired within 100 yards of an occupied dwelling. We have been told that TVA honors this law. The question is, why would you zone areas so that hunting is allowed that lie within 100 yards of our home? Are you going to 'post' the area as 'no hunting'? Are you going to police the area? Have you considered the liability if a hunting accident occurs because of your zoning? Please consider the zoning of the Kiker property known as Gray Island and the adjacent river lands.

- Ken Jestes and Kate Agemann, Greeneville, Tennessee

Response: Comment noted. See response to previous comment.

Comment 30: We have received and reviewed the Draft Environmental Impact Statement (DEIS) for the Douglas and Nolichucky Tributary Reservoir Land Plan in Cocke, Greene, Hamblen, Jefferson, and Sevier Counties, Tennessee. The Tennessee Wildlife Resources Agency (TWRA) has commitments and agreements with the Tennessee Valley Authority (TVA) on lands adjacent to these reservoirs and we appreciate the confirmation in the DEIS that these commitments and agreements will be honored no matter which alternative is chosen. We support TVA's preferred alternative, Alternative C.

- Robert M. Todd, TWRA, Nashville, Tennessee

Response: Comment noted. TVA and TWRA have many similar goals and practices concerning the use of public lands. TVA is happy to cooperate with other government agencies when such agreements provide benefits and management efficiencies to the public.

Comment 31: I am a property owner in Greeneville TN. This is on the Nolichucky River off St. James close to HWY 321. It is my understanding that TVA claims ownership of the river front Parcel 34, Kiker 9. There is no mention of this in the deed from the Greene county court house. What is the evidence that

you have that indicates ownership? Can I have a copy of those records for my review?

- Claes Svendsen, Greenville, Tennessee

Response: Yes, a copy of the record can be provided to you. If you have further questions regarding TVA's ownership of this parcel, please contact the Holston-Cherokee-Douglas Watershed Team at 423-585-2123.

Comment 32: There's more than adequate property available for developed recreation and industrial use. Shoreline access and should only be increased if these areas are well-managed and maintained, which is not the case at this time; law enforcement and litter control is inadequate at most access points.

Overnight camping on all sites is poorly or not at all regulated and has led to degradation of natural area. Zone 4 management provides loopholes for exploitation of resources that could negatively impact overall natural qualities.

- Michael Sledjeski, Del Rio, Tennessee

Response: In general, TVA allows informal camping on lands designated as Zone 4. The demand for informal camping is increasing, and TVA supports the sustainable use of public land for dispersed recreation. In some instances, a conflict occurs between nearby landowners and the recreating public. TVA has established protocols for measuring environmental and social damage caused by this type of use. TVA attempts to take a holistic look, through these methods and responding to landowner concerns, to achieve an equitable solution in areas where conflict occurs.

Comment 33: Complex ecosystems and natural environments protected by Zone 3 designation are necessary for sustaining game species and watchable wildlife, both valued throughout the full spectrum of public interest categories, as are the natural viewscapes. Such areas are in general decline because of commercial and real estate development along the waterways and misguided attempts by private landowners to alter natural landscapes. TVA could most benefit the general public and local economies by ensuring that natural qualities will be maintained in its small portion of areas under consideration.

- Michael Sledjeski, Del Rio, Tennessee

Response: TVA agrees that the protection and enhancement of sensitive resources is important and in the preferred alternative has designated 679 acres to Zone 3 if there are sensitive resources present. TVA also has designated 971 acres to Zone 4 to be managed for the enhancement of natural resources for human use and appreciation. In both zones, recreational and natural resource activities, such as hunting, wildlife observation, and camping on undeveloped sites, may occur.

Comment 34: PARTNERSHIPS: TVA should take the initiative in seeking out more private and public partnerships, such as the Nature Conservancy, local organizations and governments to assist in appropriate maintenance of its

holdings. TWRA seems to be its primary partner and does a fair-to-good job of monitoring and improving hunting & fishing activity, but lags behind in the areas of non-game or watchable wildlife and protection of sensitive species and complex ecosystems. I should also mention that reckless and nuisance boating, especially the wholly inappropriate use of airboats, is way out-of-hand and tighter regulations and restrictions are overdue.

- Michael Sledjeski, Del Rio, Tennessee

Response: Comment noted. TVA values cooperative agreements and partnerships with other government agencies and local organizations when such opportunities provide benefits and management efficiencies for public land. TVA's ability to regulate boating is limited, as this is primarily the responsibility of the Tennessee Wildlife Resources Agency.

Comment 35: RANKIN: I'm most familiar with the shoreline of Douglas Lake from Swann's Bridge to the mouth of the Pigeon River, more particularly with seasonal shorelines from Taylor Bend to Rankin Bridge, and especially with the Rankin area. I conducted surveys for Hill Henry's system-wide shorebird survey and monitor and report on avian populations to the TN Ornithological Society and various online listing services. The DEIS has not sufficiently evaluated holdings in the areas described, particularly in parcels adjacent or committed to the Rankin WMA. I refer you to the TOS description of the Rankin Important Bird Area, which I authored. In discussions with TWRA and TVA, I found that there was some confusion over property boundaries and the subject should be revisited and more thoroughly examined. Parcels 33 to 37, in the DEIS should certainly be designated as sensitive areas, in consideration of their contiguity with the unique, complex seasonal ecosystems of the Rankin area.

- Michael Sledjeski, Del Rio, Tennessee

Response: Comment noted. TVA's license agreement with the Tennessee Wildlife Resources Agency (TWRA) does not include land above the 1002 elevation contour; therefore, Parcels 34 and 35 are not part of the agreement for the wildlife management area. In addition, TVA has determined that the zone allocations for Parcels 34-37 would be correctly allocated to the appropriate zone. Parcel 34 is allocated to Zone 2 (Project Operations) due to the bridge abutment; however, the marginal strip adjacent to Rankin Road would continue to be managed for the enhancement of natural resources.

TVA has reviewed the land use zone allocation for Parcel 33 and has determined that it should have been allocated to Zone 3 due to the Category 3, high-quality wetlands and function as part of the Rankin Bottoms Wildlife Management Area. The EIS has been changed to reflect the different allocation.

Comment 36: In addition, (Douglas) Parcel 31 should be classified as Zone 4, since it constitutes a dramatic river bluff and contains an unusual, untouched biological complex.

- Michael Sledjeski, Del Rio, Tennessee

Response: Comment noted. TVA has determined that Parcel 31 is correctly allocated to Zone 4 (Natural Resource Conservation). Only those parcels that contain a high-quality wetland, a sensitive species or natural resource, and critical habitat for a sensitive species or natural resource that needs protection would be allocated to Zone 3. Allocation to Zone 4 (Natural Resource Conservation) is appropriate for those parcels without sensitive resources and would still be managed for the enhancement of natural resources and scenic qualities.

Comment 37: Finally, the Rankin coal tower (tipple, or chute) has been is in the process of nomination to the National Historic Register and should be given special consideration in the DEIS, and by TVA, as part of a special Heritage Area, in conjunction with the Rankin WMA and WOA. I'll forward a summary of my nomination documents for inclusion with my comments.

- Michael Sledjeski, Del Rio, Tennessee

Response: The Rankin Coal Tipple is located on an abandoned railroad bed on the reservoir bottom near Parcel 36 of the land plan. This is TVA property that was purchased for the construction of Douglas Reservoir. This tract of TVA land is not part of the land plan, as it is located below the maximum shoreline contour. TVA appreciates the commenter's interest in preservation and has reviewed the documents submitted. Any decision by TVA to nominate historic properties to the National Register of Historic Places would follow the procedure as outlined in Section 110(a)(2) of the National Historic Preservation Act.

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

September 4, 2008

Mr. E. Patrick McIntyre, Jr.
State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

NORTHEASTERN TRIBUTARIES LAND MANAGEMENT PLAN, GREENE, CARTER, AND SULLIVAN COUNTIES, TENNESSEE

Dear Mr. McIntyre:

The Tennessee Valley Authority (TVA) is developing a Land Management Plan (LMP) for TVA lands on Beaver Creek, Boone, Cherokee, Clear Creek, Douglas, Fort Patrick Henry, Nolichucky, South Holston, Watauga, and Wilbur Reservoirs in Virginia and Tennessee.

In Tennessee, the southern portion of the Holston Reservoir extends into Sullivan County, Tennessee. South Holston, Boone, and Fort Patrick Henry Reservoirs lie on the South Fork of the Holston River near Kingsport, Tennessee. Watauga and Wilbur Reservoirs impound portions of the Watauga River which converges with the South Fork of the Holston River to form the Holston River. Cherokee Reservoir is located approximately halfway between this confluence and the city of Knoxville, Tennessee. To the south of the Holston River lies the Nolichucky Reservoir (or Davy Crockett Lake) on the Nolichucky River halfway between the headwaters and its confluence with the French Broad River. Douglas Reservoir lies on the French Broad River below the Nolichucky River to the east and above Knoxville to the west.

TVA prepares LMPs with the participation of public agencies and officials, private organizations, and the public to provide a clear statement of how TVA will manage public land. Identifying land for specific uses minimizes conflicting land uses and makes it easier to handle requests for use of public land. For the LMP currently being prepared, TVA Cultural Resources staff has identified the area of potential effects (APE) pursuant to 36 CFR Parts 800.4(a)(1) and 80.16(d) as the 880 acres on Boone, 9120 acres on Cherokee, 2055 acres on Douglas, 283 acres on Fort Patrick Henry, 1143 acres on Nolichucky, 2099 acres on South Holston, 1136 acres on Watauga, and 58 acres on Wilbur Reservoir in Tennessee. Future use of these lands is being planned or has been previously committed to specific land uses. Maps depicting the specific land parcels to be addressed by the LMP may be accessed on TVA's website at http://www.tva.com/environment/reports/ntrlmp/index.htm. However, if you require hard copies for your initial review, our office will be glad to furnish a set.

TVA has previously conducted cultural resources surveys on portions of the lands addressed by this LMP, and numerous historic properties potentially eligible for listing on the National Register of Historic Places have been identified by these surveys. TVA has also conducted a survey of certain parcels on Nolichucky, South Holston, and Watauga Reservoirs that are associated with the proposed LMP (Gage 2008). A copy of this

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

September 26, 2008

Dr. Thomas O. Maher
Tennessee Valley Authority
400 West Summet Hill Dr.
Knoxville, Tennessee, 37902-1499

RE: TVA, NORTHEAST TRIBUTARIES LAND MANAGEMENT PLAN, UNINCORPORATED, MULTI COUNTY

Dear Dr. Maher:

Pursuant to your request, received on Tuesday, September 9, 2008, this office has reviewed documentation concerning the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739)

Based on the information provided, we find that the current documentation adequately mitigates project effects upon properties eligible for listing in the National Register of Historic Places as stipulated in the existing Programmatic Agreement (PA).

Therefore, this office has no objection to the implementation of referenced project elements covered by the PA. Your continued cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jyg

May 09 06 04:28p ACHP 606 5072 p.2

Preserving America's Heritage

October 11, 2005

Mr. J. Bennett Graham
Senior Archaeologist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902-1401

REF: Programmatic Agreement for proposed land plans in Tennessee

Dear ~~Mr. Graham:~~ Bennett

Enclosed is the executed Programmatic Agreement for the referenced program. By carrying out the terms of the Agreement, the Tennessee Valley Authority will have fulfilled its responsibilities under Section 106 of the National Historic Preservation Act and the Council's regulations.

We appreciate your cooperation in reaching this Agreement. If you have any questions, please call Dr. Tom McCulloch at 202-606-8554.

Sincerely,

Don L. Klima
Director
Office of Federal Agency Programs

Enclosure

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 809 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

PROGRAMMATIC AGREEMENT
AMONG
THE TENNESSEE VALLEY AUTHORITY,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,
AND THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER
REGARDING THE IMPLEMENTATION OF RESERVOIR LAND MANAGEMENT PLANS IN TENNESSEE

WHEREAS, the Tennessee Valley Authority (TVA) has proposed to develop Reservoir Land Management Plans for TVA land holdings within the State of Tennessee, these reservoirs being Boone in Sullivan and Washington Counties; Cherokee in Grainger, Hamblen, Hawkins, and Jefferson Counties; Chickamauga in Bradley, Hamilton, McMinn, Rhea, and Meigs Counties; Douglas in Cocke, Jefferson, and Sevier Counties; Fort Loudoun in Blount, Knox, and Loudon Counties; Fort Patrick Henry in Sullivan and Hawkins Counties; Great Falls in Van Buren, Warren, and White Counties; Guntersville in Marion County; Kentucky in Benton, Decatur, Hardin, Henry, Houston, Humphreys, Perry, Stewart, and Wayne Counties; Melton Hill in Anderson, Knox, Loudon, and Roane Counties; Nickajack in Hamilton and Marion Counties; Nolichucky in Green County; Normandy in Bedford and Coffee Counties; Norris in Anderson, Campbell, Claiborne, Grainger, and Union Counties; Ocoee #1, #2, and #3 in Polk County; Pickwick in Hardin County; South Holston in Sullivan County; Watauga in Carter and Johnson Counties; Watts Bar in Loudon, Meigs, Rhea, and Roane Counties; Wilbur in Carter County; and the Beech River Project consisting of Beech, Cedar, Dogwood, Lost Creek, Pin Oak, Pine, Redbud, and Sycamore Reservoirs in Henderson County, Tennessee; and

WHEREAS, TVA has determined that the implementation of the Land Management Plans has the potential to affect historic properties that are eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, TVA has consulted with the Advisory Council on Historic Preservation (Council), the Tennessee State Historic Preservation Officer (SHPO), the Eastern Band of Cherokee Indians, the United Keetoowah Band, the Cherokee Nation of Oklahoma, Chickasaw Nation, the Muscogee (Creek) Nation of Oklahoma, the Poarch Band of Creek Indians, the Alabama-Coushatta Tribe, the Alabama-Quassarte Tribal Town, the Kialegee Tribal Town, the Mississippi Band of Choctaw Indians, the Choctaw Nation of Oklahama, the Jena Band of Choctaw Indians, the Seminole Nation of Oklahoma, the Seminole Indian Tribe, the Eastern Shawnee Tribe of Oklahoma, and the Absentee-Shawnee Tribe of Oklahoma pursuant to 36 CFR Part 800, the regulations of the Council implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the Eastern Band of Cherokee Indians, the Chickasaw Nation, the Choctaw Nation of Oklahoma, and the Muscogee (Creek) Nation of Oklahoma have been invited to be a signatory to the Programmatic Agreement; and will assist TVA in determining NRHP eligibility of historic properties and appropriateness of treatment plans for historic properties which have religious or cultural significance to the Eastern Band of Cherokee Indians, Chickasaw Nation, the Choctaw Nation of Oklahoma, and/or the Muscogee (Creek) Nation of Oklahoma that will be adversely affected by TVA Land Management Plans; and

WHEREAS, TVA has conducted complete or partial investigations to identify historic properties on portions of lands considered in the Reservoir Land Management Plans; and

WHEREAS, 36 CFR Part 800.14(b) of the regulations of the Council encourages the use of Programmatic Agreements when effects on historic properties are regional in scope and cannot be fully determined prior to the approval of the undertaking; and

WHEREAS, TVA will develop a Reservoir Land Management Plan at each of these reservoirs which will clearly identify the area of potential effect (APE) for each reservoir;

NOW THEREFORE, TVA, the Council, the SHPO, the Eastern Band of Cherokee Indians, Chickasaw Nation, the Choctaw Nation of Oklahoma and the Muscogee (Creek) Nation of Oklahoma agree that the undertaking shall be implemented in accordance with the following stipulations to satisfy TVA's Section 106 responsibilities for Reservoir Land Management Plans. The TVA Federal Preservation Officer, or the designee thereof, shall act for TVA in all matters concerning the administration of this Agreement.

Stipulations

TVA will ensure that the measures outlined below are a part of all Reservoir Land Management Plans developed by TVA within the state of Tennessee, and that these provisions relating to identification, evaluation, and treatment of historic properties are carried out within the APE prior to the commencement of any ground-disturbing activities or activities that may have visual or other effects on a historic property. This Agreement allows phased identification, evaluation, and treatment of the historic properties located within the APE.

1. CONSULTATION:

TVA will seek comments from all appropriate consulting parties as defined at 36 CFR 800.2(c), and from signatories to this agreement on any undertaking proposed pursuant to a Reservoir Land Management Plan. All comments received in response to such requests for comments will be taken into consideration by TVA in its decision to proceed with such undertaking.

2. AREA OF POTENTIAL EFFECT (APE):

The APE is defined as all TVA fee lands described in the Reservoir Land Management Plan and those private or other non-TVA lands which may be affected by an undertaking on TVA fee land.

3. IDENTIFICATION:

A. TVA shall conduct surveys to identify all historic properties within the APE for each Reservoir Land Management Plan. Previous inventories of TVA lands have identified some but not necessarily all historic properties eligible and potentially eligible for listing in the NRHP.

B. The surveys will be carried out in a manner consistent with the *Secretary of the Interior's Standards and Guidelines for Identification* (48 FR 44720-23) and the Tennessee SHPO Standards and Guidelines for Architectural and Archaeological Resource Management Studies. Survey Plans will be provided to all signatories for thirty (30) days for review and comment, and TVA shall take all comments into account prior to implementation. A written report of the survey shall be submitted to the SHPO, Indian tribes, and the other signatories for thirty (30) days for review and comment. Existing information such as previous survey data, photographs, maps, drawings, building plans, descriptions, sketches, etc. shall be used along with new data.

2

4. EVALUATION:

A. TVA, in consultation with the SHPO, Indian tribes, and the other signatories to this Agreement, shall evaluate the National Register eligibility of properties identified through the surveys in accordance with 36 CFR Part 800.4(c). For properties that have been determined to be potentially eligible for listing in the NRHP, TVA shall conduct evaluation studies in a manner consistent with the *Secretary of the Interior's Standards and Guidelines for Identification and Evaluation* (48 FR 44720-26) and the Tennessee SHPO Standards and Guidelines for Architectural and Archaeological Resource Management Studies. The SHPO, Indian tribes, and the other signatories shall review and comment on the scope of work (SOW) prior to the evaluation. The evaluations shall be conducted in consultation with the SHPO, Indian tribes, and the other signatories, and a written report shall be submitted to all signatories for thirty (30) days for review and comment.

B. Properties which have been evaluated and have been found to meet National Register criteria shall be considered historic properties. Should a dispute arise on the eligibility of a historic property, TVA will consult with the SHPO to resolve the objection. If TVA and the SHPO do not agree with the determination of eligibility, or if the Council or the Secretary of the Interior (Secretary) so request, TVA shall obtain a determination of eligibility from the Secretary pursuant to 36 CFR Part 63. If an Indian tribe that attaches religious and cultural significance to a property off tribal land does not agree with the determination of eligibility, it may ask the Council to request the TVA Federal Preservation Officer to reassess the determination of eligibility.

5. TREATMENT PLANS:

A. AVOIDANCE, PROTECTION, AND MAINTENANCE:

(1) TVA, in consultation with the SHPO, Indian tribes, and the other signatories, shall ensure that historic properties determined eligible for listing in the NRHP are, to the extent prudent and feasible as determined by the consultation process, avoided and preserved in place while conducting activities that could affect the characteristics of such property. In the implementation of the Reservoir Land Management Plans, alternatives to avoid adversely affecting historic properties eligible for the NRHP will be considered. All eligible historic properties, that are avoided, will be protected by a buffer zone established in consultation with the SHPO, Indian tribes, and the other signatories.

(2) TVA will develop a protection and maintenance plan for historic properties on a particular reservoir within two (2) years of the completion of a Reservoir Land Management for that reservoir as specified under Stipulation10.B. of this Agreement. This plan will be consistent with the standards for archaeological resources set forth in *Treatment of Archaeological Properties* (Advisory Council on Historic Preservation 1989), and with the recommended approaches to rehabilitation of historic structures set forth in the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (U.S. Department of the Interior, National Park Service, 1983). Furthermore, this plan will be developed in consultation with the SHPO, Indian tribes, and the other signatories. TVA will seek and consider the views of other consulting parties pursuant to 36 CFR Part 800.3(f).

B. DATA RECOVERY:

(1) When historic properties eligible for the NRHP will be adversely affected by unavoidable physical destruction or damage and all avenues of avoidance have been considered, and a treatment plan for data recovery is found through consultation with the signatories to this Agreement and Indian tribes having a cultural affiliation with the historic properties to be the appropriate treatment, data recovery will be implemented. In such an instance, TVA shall develop a data recovery plan in consultation with the SHPO, Indian tribes, and the other signatories for the recovery of historic and archaeological data from properties that are determined to be eligible for inclusion in the NRHP.

(2) The data recovery plan shall be developed in accordance with 36 CFR Part 800.5 and 800.16 and will be consistent with 36 CFR Part 800 and the standards set forth in *Archeology and Historic Preservation: Secretary of Interior's Standards and Guidelines.* The data recovery plan shall specify, at a minimum:

(a) the property, properties, or portions of properties where data recovery is to be carried out;

(b) any property, properties, or portions of properties that will be destroyed without data recovery;

(c) the research questions to be addressed through data recovery, with an explanation of their relevance and importance;

(d) the field and laboratory methods to be used, with an explanation of their relevance to the research questions;

(e) the methods to be used in analysis, data management, and dissemination of data, including a schedule;

(f) the proposed disposition of recovered materials and records. The proposed location of this material will be at the University of Tennessee, McClung Museum except for items specified under Stipulation 9 below;

(g) proposed methods for involving the interested public in data recovery;

(h) proposed methods for disseminating results of the work to the interested public;

(i) a proposed schedule for the submission of progress reports to the SHPO; and

(j) a plan, developed in consultation with the SHPO, Indian tribes, and the other signatories, delineating the manner in which historic properties, human remains, and associated funerary objects discovered subsequent to the ratification of this Agreement document would be treated.

(3) TVA shall provide all signatories an opportunity to monitor the implementation of the data recovery plan.

6. POST REVIEW DISCOVERIES:

Previously unidentified historic properties discovered during the implementation of the Reservoir Land Management Plans will be subject to the evaluation process under Stipulation 4 and treated according to the process under Stipulation 5.

Should historic properties be discovered on TVA lands, the discovered historic properties shall be protected and stabilized to prevent any further disturbance until TVA can make an informed decision about further steps to take to meet Federal agency obligations under Section 106 and the terms of this Agreement.

7. REPORTS:

TVA shall ensure that all historical and archaeological investigations undertaken for compliance with this Agreement are recorded in formal written reports that meet the *Archeology and Historic Preservation: Secretary of Interior's Standards and Guidelines* and the Tennessee SHPO Standards and Guidelines for Architectural and Archaeological Resource Management Studies. The SHPO, Indian tribes, and the other signatories shall be afforded thirty (30) days to review and comment on any archaeological or historical reports submitted under this Agreement.

8. SHORELINE STABILIZATION:

Consistent with its obligations under Section 110 of the NHPA, TVA will monitor reservoir shorelines to determine whether any historic properties are being affected by reservoir operation and/or vandalism. TVA will implement appropriate measures, in consultation with the SHPO, Indian tribes, and the other signatories to protect eligible historic properties that are determined to be adversely affected by such causes.

Since fiscal year 1999, TVA has been pursuing a systematic effort in identifying the most significant and endangered archaeological sites along its reservoir shorelines and stabilizing/protecting them. All stabilization to date has been coordinated with the requisite SHPO and Indian tribes.

9. TREATMENT OF HUMAN REMAINS:

A. TVA shall ensure that the treatment of any human remains discovered within the APE complies with all State and Federal laws, including the Native American Graves Protection and Repatriation Act (NAGPRA), concerning archaeological sites and treatment of human remains. Regarding human remains identified on State lands, TVA shall ensure that the remains be treated in a manner that is consistent with the Advisory Council of Historic Preservation's *Policy Statement Regarding the Treatment of Human Remains and Grave Goods* (1988), and in accordance with Tennessee Code Annotated (T.C.A.) 46-4-101 et seq. "Termination of Use of Land as a Cemetery," and T.C.A. 11-6-116b, "Notification and Observation," and T.C.A. 11-6-119 "Reinterment" with implementing Tennessee Rules and Regulations Chapter 0400-9-1 "Native American Indian Cemetery Removal and Reburial." Should human remains be encountered during historic properties investigations or post-review discovery, all ground disturbing activities in the vicinity of the human remains will be ceased immediately. TVA will notify signatories within three (3) business days and invite them to comment on any plans developed to treat the human remains.

B. After consultation with signatories and culturally affiliated Indian tribes in accordance with the provisions of NAGPRA, if any Native American human remains and/or associated funerary objects are excavated during the survey, evaluation, or data recovery of historic properties, TVA shall ensure that these remains and associated objects will be repatriated in accordance with the provisions of NAGPRA within sixty (60) days of completion of any investigations specified in the research design. The temporary curation of the human remains and associated funerary objects will be at the University of Tennessee, McClung Museum during this interim.

10. TIMETABLES FOR COMPLIANCE:

A. Consistent with Stipulation 11 that allows phased compliance, TVA shall ensure that the commitments in this Agreement are met prior to commencement of any ground-disturbing activities. In the event that previously unidentified historic properties should be encountered during the implementation of any ground-disturbing activities, consultation with the SHPO, Indian tribes, and the other signatories will be conducted to determine where work can resume while the effects to the historic property are addressed.

B. Within two (2) years of completion of a Reservoir Land Management plan in Tennessee, TVA will develop a plan for protection and maintenance of historic properties at that particular reservoir. The plan will be submitted to the SHPO, Indian tribes, and the other signatories for review pursuant to Stipulation 5.A(2).

C. Throughout this agreement, unless otherwise stated, the SHPO, Indian tribes, and the other signatories shall have thirty (30) days to review and comment on all reports concerning investigations of historic properties and proposed data recovery plans provided by TVA. Comments received from the signatories shall be taken into consideration in preparing final plans. A copy of the final reports and data recovery plans shall be provided to the signatories.

11. PHASED COMPLIANCE:

Consistent with 36 CFR Part 800.4(b)(2), this Agreement allows phased identification, evaluation, and treatment of historic properties in order to meet the requirements of Section 106 of the National Historic Preservation Act (NHPA).

12. LAND TRANSFER OF PROPERTY RIGHTS:

The instrument of conveyance for the transfer, lease or sale, of any parcel containing or that may contain a historic property from the Federal Government to a third party will include provisions to ensure that all requirements of Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) are met. The instrument of conveyance shall contain, when necessary to protect historic properties, a legally binding preservation covenant for the protection of such properties prepared in consultation with the SHPO, Indian tribes, and the other signatories. TVA may release the grantee from the preservation covenant in whole or in part, as appropriate, pursuant to the terms of the covenant and after consultation with the SHPO, Indian tribes, and the other signatories. The covenant may be enforced by TVA or the United States of America.

13. ADMINISTRATIVE CONDITIONS:

A. If Stipulations 1 - 12 have not been implemented within ten (10) years, this Agreement shall be considered null and void, unless the signatories have agreed in writing as provided in Paragraph 13.B. below to an extension for carrying out its terms. If no agreement is reached on an extension at the end of this 10-year period, TVA and the SHPO will resume consultation pursuant to 36 CFR Part 800.

B. If Stipulations 1 - 12 have not been implemented within nine (9) years from the date of this Agreement's execution TVA and the SHPO shall review the Agreement to determine whether the Agreement should be extended. If an extension is deemed necessary, TVA, the Council, and the SHPO and other signatories will consult to make appropriate revisions to the Agreement.

C. The signatories to this Agreement shall consult at least once every year to review implementation of the terms of this Agreement. Prior to the reviews, TVA shall provide to the signatories a report detailing how it has carried out its obligations pursuant to this Agreement.

D. The Council, SHPO, Indian tribes and the other signatories may monitor activities carried out pursuant to the Agreement, and the Council will review such activities if so requested. TVA will cooperate with the Council, SHPO, Indian tribes and the other signatories in carrying out their monitoring and review responsibilities.

E. The signatories to this Agreement may agree to amend the terms of the Agreement. Such amendment shall be effective upon the signatures of all signatories to this Agreement, which shall be appended to the Agreement as an attachment.

F. Should the SHPO, Indian tribes and the other signatories object within thirty (30) days after receipt of any plans, specifications, contracts, or other documents provided for review pursuant to this Agreement, TVA shall consult with the SHPO to resolve the objection. If TVA determines that the objection cannot be resolved, TVA shall request the further comments of the Council pursuant to 36 CFR Part 800. Any Council comment provided in response to such a request will be taken into account by TVA in accordance with 36 CFR Part 800 with reference only to the subject of the dispute; TVA's responsibility to carry out all actions under this Agreement that are not the subjects of the dispute will remain unchanged.

G. In the event the SHPO is unable to fulfill its responsibilities pursuant to this Agreement, TVA shall consult with the Council on an appropriate course of action for implementing the terms of this Agreement.

H. If the Council determines that the terms of this Programmatic Agreement are not being carried out, or if this Agreement is terminated, TVA shall comply with subpart B of 36 CFR Part 800 with regard to individual Reservoir Land Management Plans covered by this Agreement.

I. TVA shall ensure that public involvement in addition to its outreach to the signatories to this Agreement is conducted pursuant to 36 CFR Part 800.14 by inviting comment through Public meetings, Public notices, or other appropriate mechanisms as may be agreed upon by the signatories.

Execution and implementation of this Programmatic Agreement evidences that TVA has taken into account the effects on historic properties resulting from its action to develop Reservoir Land Management Plans in Tennessee and TVA has thereby complied with its obligations under Section 106 of National Historic Preservation Act for these actions..

SIGNATORIES:

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: 10/11/05
[ ]

TENNESSEE VALLEY AUTHORITY

By: _____ Date: 7.20.05
[ ]

TENNESSEE STATE HISTORIC PRESERVATION OFFICER

By: Herbert L. Harper, DSHPO Date: 8/23/05
[ ]

CONCURRING PARTIES:

EASTERN BAND OF CHEROKEE INDIANS

By: _____ Date: _____
[ ]

CHICKASAW NATION

By: _____ Date: _____
[ ]

CHOCTAW NATION OF OKLAHOMA

By: _____ Date: _____
[ ]

MUSCOGEE (CREEK) NATION OF OKLAHOMA

By: _____ Date: _____
[ ]

By: _____ Date: _____
[ ]

By: _____ Date: _____
[ ]

8

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

March 29, 2010

Mr. A. Eric Howard
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

RE: TVA, DRAFT ENVIRONMENTAL IMPACT STATEMENT, DOUGLAS AND NOLICHUCKY TRIBS LMP, UNINCORPORATED, MULTI COUNTY

Dear Mr. Howard:

At your request, our office has reviewed the above-referenced Draft Environmental Impact Statement in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). In accordance with our previous correspondence dated, March 3, 2009, we find the current programmatic agreement between our agencies satisfies the Tennessee Valley Authority's Section 106 responsibilities.

If project plans are, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your continued cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
SAM NUNN
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA GEORGIA 30303-8960

Doc Type: EIS-Administrative Record
Index Field: Agency Comment
Project Name: Douglas-Nolichucky Trib. LMP
Project No.: 2008-32
Rec'd 4-21-2010

April 19, 2010

Ms. Amy B. Henry
NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Subject: EPA NEPA Review Comments on TVA's DEIS for "Douglas and Nolichucky Tributary Reservoirs Land Management Plan"; Cocke, Greene, Hamblen, Jefferson and Sevier Counties, TN; CEQ #20100067; ERP #TVA-E65088-TN

Dear Ms. Henry:

The U.S. Environmental Protection Agency (EPA) has reviewed the subject Tennessee Valley Authority (TVA) Draft Environmental Impact Statement (DEIS) in accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. In this DEIS, TVA proposes to develop a Douglas and Nolichucky Tributary Reservoirs Land Management Plan (DNTRLMP, RLMP or Plan) to guide land use decisions for approximately 3,191 acres of public lands under TVA's control located around Douglas Reservoir (French Broad River) and Nolichucky Reservoir (Nolichucky River) in northeastern Tennessee.

Alternatives

Of the 3,191 acres of land being considered around Douglas and Nolichucky Reservoirs, 2,734 acres have been previously (and will continue to be) committed by TVA since 1965, while 457 acres of land remain uncommitted with no RLMP. Alternative A (*No Action Alternative*) would continue this current approach while action Alternative B (*Proposed Land Use Alternative*) and Alternative C (*Modified Proposed Land Use Alternative)* would establish an RLMP for the Douglas and Nolichucky Tributary Reservoirs and allocate the remaining 457 acres (28 parcels) to various allocation zones. Similar to other TVA RLMPs, the zones available are: 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). In addition to land allocations, TVA would conduct site-specific environmental reviews under all alternatives before TVA approval of any development or activity on the public lands (pg. 1-21).

It is noteworthy that Alternative A would not propose any parcels of land for Sensitive Land Management (Zone 3). In contrast, Alternatives B and C are more

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environmentally responsible than A since they do propose allocation to Zone 3 as well as more parcels to Zone 4 and less to Zone 6. However, Alternatives B and C do not propose changes to Zones 2, 5 and 7 which would remain the same as for Alternative A (1,078 ac for Zone 2; only 3 ac for Zone 5; and 13 ac for Zone 7). Specifics for Alternatives B and C are as follows:

* Alternative B (*Proposed Land Use Alternative*) – Alternative B would allocate the remaining 28 parcels to Zones 2, 3, 4 or 6. This would result in some 50% of these parcels being allocated to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4), and some 16% allocated to Developed Recreation (Zone 6).

* Alternative C (*Modified Proposed Land Use Alternative*) – As a modification of Alternative B, Alternative C would allocate 15 parcels to more environmentally responsible zones than B would, resulting in some 53% being allocated to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4), and only 13% to Developed Recreation (Zone 6). Specifically, six parcels of land containing high quality wetlands that are allocated to Zones 4 or 6 under Alternative B would instead be allocated to Zone 3 under C. As such, Alternative C would be the most protective alternative of the three offered, since more lands would be allocated to Sensitive Resource Management (Zone 3: 696 ac for C vs. 621 ac for B) and Natural Resource Conservation (Zone 4: 988 ac for C vs. 980 ac for B), and less lands allocated to Developed Recreation (Zone 6: 413 ac for C vs. 496 ac for B) with its moderate development.

EPA Conclusions & Recommendations

EPA concurs with TVA's proposal to allocate all TVA-owned lands via an RLMP to upgrade Alternative A into Alternative B or C. We are pleased to note that TVA has identified a NEPA preferred alternative in the DEIS as opposed to deferring this decision to the Final EIS (FEIS). This presumably was feasible by gathering sufficient public comments during the scoping process prior to issuance of the DEIS, as well conducting field reviews. More importantly, we are pleased to find that Alternative C – which we believe to be the environmentally preferable alternative – was identified as the preferred alternative (pg. 1-29). EPA agrees with this decision and encourages the continued identification of Alternative C as the preferred alternative in the FEIS – and ultimately as the selected alternative in the prospective TVA Record of Decision (ROD).

EPA's primary concern with the DEIS is the uncertainty – even after prospective TVA approval of Alternative C in the TVA ROD – whether or not allocated lands could be re-allocated by TVA to environmentally lesser zones (e.g., from the Sensitive Resource Management Zone 3 to Industrial Zone 5) during site-specific reviews or public requests to the TVA Board of Directors (Board). EPA would not concur with re-allocations to such zones due to the increased potential for developmental impacts

intent to entertain or reject such public requests of the Board to change proposed allocations for specific parcels of land to more developmental zones. If the Board wishes to retain such discretion, the FEIS should fully discuss the expected likelihood of such re-allocations and identify any TVA policy, guideline or rationale forming the basis for such TVA decisions as well as any thresholds (e.g., limitations in the number or kinds of acres or parcels that might be re-considered). If the TVA Land Policy (App. A) or TVA's Shoreline Management Policy is referenced, specific policy criteria should be related to the decision. Overall, EPA believes that if the approved (TVA ROD) allocations of Alternative C can nevertheless still be minimized by public requests approved by TVA, the meaning and value of the present EIS would be significantly diminished. We look forward to additional FEIS clarification in this regard.

EPA DEIS Rating

Assuming that Alternative C is selected in the TVA ROD and the proposed allocations are finalized, EPA rates this DEIS as an "LO" (Lack of Objection). Otherwise, EPA would have environmental concerns about selection of a lesser environmental alternative and the uncertainty of potential re-allocations to environmentally lesser zones with attendant developmental impacts.

EPA appreciates the opportunity to review the DEIS. Should TVA have questions regarding our comments, please feel free to contact Chris Hoberg of my staff at 404/562-9619 or hoberg.chris@epa.gov.

Sincerely,

Heinz J. Mueller
Chief, NEPA Program Office
Office of Policy and Management

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

April 20, 2010

Amy Henry
TVA NEPA Compliance
400 West Summit Hill Drive, WT 11D
Knoxville, TN 37902

Re: Draft Environmental Impact Statement (DEIS) – Douglas and Nolichucky Tributary Reservoirs Land Plan – Cocke, Green, Hamblen, Jefferson, and Sevier Counties, Tennessee

Dear Ms. Henry:

We have received and reviewed the Draft Environmental Impact Statement (DEIS) for the Douglas and Nolichucky Tributary Reservoirs Land Plan in Cocke, Green, Hamblen, Jefferson, and Sevier Counties, Tennessee. The Tennessee Wildlife Resources Agency (TWRA) has commitments and agreements with the Tennessee Valley Authority (TVA) on lands adjacent to these reservoirs and we appreciate the confirmation in the DEIS that these commitments and agreements will be honored no matter which alternative is chosen. We support TVA's preferred alternative, Alternative C.

Thank you for the opportunity to review and comment on this document.

Sincerely,

Robert M. Todd

Robert M. Todd
Fish and Wildlife Environmentalist
NEPA Coordinator

cc: Rob Lindbom, Region IV Habitat Biologist
John Gregory, Region IV Manager

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

Doc. Type: EIS-Administrative Record
Index Field: Agency Comment
Project Name: Douglas-Nolichucky Tributary, LMP
Project No.: 2008-37

(1)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
Environmental Division
Suite 900 - James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

March 22, 2010

Ms Linda B. Shipp, Senior Manager
NEPA Compliance
Environmental Permits and Compliance
Environment and Technology
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902-1499

Subject: DEIS For Douglas and Nolichucky Tributary Reservoir Island Management Plan. Cocke, Greene, Hamblen, Jefferson, and Sevier Counties, Tennessee

Dear Ms Shipp:

The department is in receipt of your letter regarding the above mentioned subject. Thank you for the opportunity to review the Draft EIS for this management plan.

The Tennessee Department of Transportation's Environmental Division has reviewed this document and has no comment to make at this time.

Again, we appreciate being given the opportunity to comment. If the department can be of any assistant to you, please contact Ms. Suzanne Herron, Director of our Environmental Division at 615-741-2612.

Sincerely,

Edward H. Cole
Chief of Environment & Planning

EHC:sbh:jrk

Cc: Suzanne B. Herron Jim Ozment

Rec'd 3/29/10

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

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April 26, 2010

Doc. Type: EIS Admin Record
Index Field: Agency Comment
Project Name: Douglas Nolichucky LMP
Project No.: 2008-32

Amy Henry
TVA NEPA Compliance
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902

Re: Comments for the Review of Draft Environmental Impact Statement (DEIS) for the Douglas and Nolichucky Tributary Reservoirs Land Plan

Dear Ms. Henry:

The Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Douglas and Nolichucky Tributary Reservoirs Land Management Plan (DNTRLMP) and provide the following comments. The DEIS describes a reservoir land management plan to guide land use decisions on TVA owned and managed reservoir lands, surrounding the Douglas and Nolichucky reservoirs on the French Broad and Nolichucky rivers, in east Tennessee. The DNTRLMP is designed to guide land use approvals, private water use facility permitting, and resource management decisions on these TVA public lands. TVA's Holston-Cherokee-Douglas Watershed Team would use the proposed DNTRLMP along with TVA policies and guidelines to manage resources and to respond to requests for the use of TVA public lands. All lands under TVA ownership on these two reservoirs, a total of 3,191 acres, are under consideration in this planning process. TVA has identified three alternatives for managing public land under its control around the two tributary reservoirs, including the proposed actions.

Under the preferred alternative, Alternative C, all parcels with identified sensitive resources would be allocated to the most protective land use zone; whereas, only some of those parcels would be zoned for sensitive resource management under Alternatives A (the no-action alternative) and B. Compared to Alternative B, Alternative C includes slightly less land in Zone 6 (Developed Recreation) and slightly more in Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). Alternative C, as contrasted to Alternative B, represents changes in land use zones for 15 parcels of TVA-managed land. Specifically, six additional parcels, totaling 75 acres, would be placed into Zone 3. All remaining nine parcels would be placed in Zone 4 (an additional 8 acres) under Alternative C. Due to the additional

acreage included under Zone 3 and 4, which would provide added protection to federally listed species, we agree with TVA's decision to select Alternative C, as the preferred alternative.

TVA have indicated that three federally listed and a federally protected terrestrial animal species occur within three miles of the Douglas and Nolichucky reservoirs or are known from the surrounding counties. The federally listed as threatened, piping plover (*Charadrius melodus*), has been observed in two of the past five years at Rankin Bottoms Wildlife Management Area on Douglas Reservoir in September during the fall shorebird migration season.

The federally listed as endangered gray bat (*Myotis grisescens*) is known to occur in a cave approximately five miles east of Douglas Reservoir. Maternity colonies have also been recently discovered in caves upstream and downstream of Douglas Reservoir. The presence of these colonies suggests that gray bats forage throughout the study area.

Summer roosting habitat (e.g., trees with exfoliating bark), suitable for the federally listed as endangered Indiana bat (*Byotis sodalis*), exists throughout the study area, in addition to several caves, suitable for winter roosting, near Douglas and Nolichucky reservoirs. However, no Indiana bats have been found in these caves.

Bald eagles (*Haliaeetus leucocephalus*) remain federally protected under the *Bald and Golden Eagle Protection Act*. Bald eagles build nests on Douglas Reservoir and downstream of the dam and are observed along the Nolichucky River. Several TVA parcels on Douglas Reservoir and Nolichucky River provide suitable habitat for the species, and they have nested on TVA parcels in previous years. However, no nests are currently known on TVA lands.

TVA further indicated that a total of 19 federally listed aquatic species have been reported within the watersheds of Douglas and Nolichucky reservoirs. Many of the occurrence records for individual species are historical, and TVA determined that it is unlikely those particular aquatic species remain within either watershed. TVA concluded that two federally listed as endangered, one federally listed as threatened and three candidates for federal listing occur near Douglas and Nolichucky reservoirs.

Federally endangered aquatic species, including the oyster mussel (*Epioblasma capsaeformis*) and the birdwing pearlymussel (*Lemiox remosus*), have been collected in the Nolichucky River. Oyster mussels have not been found near any TVA land parcels. In 1982, TVA transplanted 1,000 birdwing pearlymussels into the Nolichucky River approximately 20 miles downstream from Nolichucky Dam; a small birdwing pearlymussel was found at the transplant site in 1995, suggesting some production.

The federally threatened snail darter (*Percina tanasi*) likely no longer occurs in the Nolichucky River. Recent surveys of that system have failed to encounter the species. A population, however, does occur in the French Broad River, downstream from Douglas Dam.

The three federal aquatic candidate species which TVA has indicated occur in the Nolichucky River near TVA lands include the spectaclecase (*Cumberlandia monodonta*), slabside

pearlymussel (*Lexingtonia dolabelloides*) and fluted kidneyshell (*Ptychobranchus subtentum*). However, the slabside pearlymussel has not been collected in the Nolichucky River since 1964.

TVA has determined that no federally listed plants would be affected under any of the alternatives because none are known to occur and no suitable listed plant habitat exists within five miles of Douglas and Nolichucky reservoirs. TVA has indicated that adoption of Alternative A may, but would not likely, impact gray and Indiana bats or listed aquatic species. They further stat at under action alternative B and C, no federally listed terrestrial animals would be affected, and federally listed aquatic species would not likely be affected. According to TVA, effects to listed species would be insignificant under all alternatives, and Alternative A, would have the greatest impact to listed species. TVA further indicates that Alternative B would have lesser impacts and Alternative C the least impacts.

Regarding listed species, TVA has indicated in the EIS that "project-specific environmental reviews on any parcel would be performed, and mitigation would be required when warranted". We do recommend that TVA consult with the Department on individual site-specific projects in the future when details become known. If there is a potential for a "likely to adversely affect" determination to be made during site-specific consultation in the future, the Department advises that "likely to adversely affect" is the appropriate determination at the programmatic consultation level, also. However, after reviewing the EIS and discussing the DNTRLMP with TVA staff, we believe that the likelihood of reaching a determination of "likely to adversely affect" at the site specific consultation level in the future is unlikely.

In view of this, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as they apply to the DNTRLMP, have been fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered in your permit application, or (3) new species are listed or critical habitat designated that might be affected by the proposed action. Because this is a programmatic level consultation on the DNTRLMP site-specific consultations will still be needed, but can tier back to this consultation. It is incumbent upon TVA and the Department to coordinate adequately in the future to minimize the likelihood of any specific actions results in an adverse affect to listed species

If you have question or need further assistance, please contact Todd Shaw on (931) 528-6481, extension 215. I can be reached on (404) 331-4524 or at gregory_hogue@ios.doi.gov.

Sincerely,

Gregory Hogue
Regional Environmental Officer

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