

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



Norris Reservoir Land Management Plan

Final Environmental Assessment

MARCH 2001



This page intentionally left blank

REEVALUATED FINDING OF NO SIGNIFICANT IMPACT

TENNESSEE VALLEY AUTHORITY

NORRIS RESERVOIR LAND MANAGEMENT PLAN

ANDERSON, CAMPBELL, CLAIBORNE, GRAINGER, AND UNION COUNTIES, TENNESSEE

Proposed Action and Need

On August 8, 2001, the Tennessee Valley Authority (TVA) issued a finding of no significant impact (FONSI) for the *Norris Reservoir Land Management Plan* (NRLMP), which included the allocation of 27,927 acres of TVA-managed public land on Norris Reservoir into five planning zones. In the NRLMP, land parcels were allocated to Project Operations (Zone 2), Sensitive Resource Management (Zone 3), Natural Resource Conservation (Zone 4), Developed Recreation (Zone 6), and Residential Access (Zone 7). There are no Industrial/Commercial Development (Zone 5) parcels on Norris Reservoir.

Recent research of deeds shows that on certain TVA reservoir land tracts, the current land management zone allocations, particularly Zone 6 (Developed Recreation), have the potential to conflict with egress and ingress rights of the adjacent property owners if the current back-lying land use were to change. The resolution of these potential conflicts could result in the TVA Board of Directors receiving a number of requests for minor changes to land allocations in several TVA reservoir land plans including the NRLMP. To recognize the existing deeded landrights of adjoining landowners with respect to access to TVA reservoirs, TVA proposes to modify the NRLMP to allow allocation changes under certain circumstances.

Specifically, TVA proposes to change the allocation of all or portions of 16 marginal strip parcels (see Table 1) on TVA-managed public land from Zone 6 to Zone 7 (Residential Access) upon request from those adjoining (i.e., back-lying) landowners having the necessary deeded access rights. The effects of these allocation changes were addressed in the attached March 2010 environmental report, which is incorporated by reference.

Table 1. Norris Reservoir Parcels

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
21	6	3.1	1,551	This parcel is licensed to Twin Cove for commercial recreation.
66	6	7.0	4,752	This parcel has three sections: (1) shoreline fronting XNR-655; Whitman Hollow Dock has a license for commercial recreation; (2) portion transferred to the Tennessee Wildlife Resources Agency, and has a concrete launching ramp and gravel parking lot; and (3) portion fronting TVA-retained fee land (NR-721). Section 2 and 3 do not have private access rights.
77	6	14.7	3,613	This parcel fronts a Blue Ridge Council of the Boy Scouts of America camp.
80	6	8.2	3,309	Rainbow Marina and Resort is located on this parcel.
84	6	5.8	2,301	This parcel fronts the Ministers and Orphanage Camp.

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
87	6	6.9	5,075	Shanghai Resort is located on this parcel.
109	6	19.2	4,493	This parcel is licensed to the Powell Valley Resort.
118	6	6.6	4,632	Flat Hollow Marina is located on this parcel.
124	6	7.4	6,814	Blue Springs Boat Dock is located on the right bank of this parcel.
140	6	0.5	764	This parcel fronts Greasy Hollow Boat Dock.
209	6	65.4	9,529	This parcel has three sections: (1) 30-year recreation easement was conveyed to Claiborne County (now expired); (2) a small tract transferred to the Tennessee Wildlife Resources Agency; and (3) portion licensed for mooring rights for Lone Mountain Dock. Sections 1 and 2 have no private access rights.
293	6	10.5	7,523	This parcel has a license agreement for mooring rights for Hickory Star Boat Dock; the portion of parcel fronting Big Ridge State Park does not have private access rights.
297	6	132.6	39,551	This parcel fronts the Tanasi Girl Scout Camp, which has a license agreement to provide security and protection camp.
301	6	8.7	2,540	This parcel is licensed to Andersonville Boat Dock for mooring rights and harbor limits.
310	6	24.2	16,030	This parcel has a license agreement to Stardust Resort and Marina providing mooring rights and harbor limits.
315	6	5.3	2,173	Sequoyah Lodge and Marina Inc. has a license agreement providing mooring rights and harbor limits.
Totals		326.1	114,650	

Discussion of Impacts

The 16 Norris Reservoir land parcels are composed of approximately 326 acres of land allocated to Zone 6, and have a total shoreline length of 114,650 feet (21.7 miles). This is about 1 percent of the TVA-managed public land on Norris Reservoir. Potential environmental effects from any shoreline access by back-lying landowners would be considered and evaluated in future environmental reviews. These reviews would be initiated when TVA considers requests for Section 26a approvals or land use actions. Furthermore, mitigation, such as requiring the use of best management practices (BMPs) and the imposition of TVA's General and Standard Conditions, as stipulated in the environmental reviews, would tend to decrease environmental impacts.

According to the 2001 environmental assessment for the NRLMP, TVA would manage the residential shoreline in accordance with the requirements of the 1999 Shoreline Management Initiative (SMI). The Shoreline Management Policy, which implements the SMI, requires an individual vegetation management plan for all new shoreline development included as Zone 7 (Residential Access). This measure would reduce water quality/aquatic ecological impacts, as well as impacts to wildlife and visual resources. TVA would require applicants for Section 26a approval to implement construction-related BMPs to further reduce potential effects to water quality and aquatic biota. The attached environmental report concluded that the previous

analysis and determinations of potential effects are valid and that these potential environmental impacts would be insignificant.

Conclusion and Findings

Based on the above analysis and the attached environmental report, TVA has determined that the potential environmental impacts of changing all or some of the allocation of 16 parcels on Norris Reservoir from Zone 6 (Developed Recreation) to Zone 7 (Residential Access) would not be a major federal action significantly affecting the environment. The environmental and project goals of the NRLMP would still be met. The previous FONSI remains valid. Accordingly, an environmental impact statement is not required.



3-17-10

Linda B. Shipp, Senior Manager
NEPA Compliance
Environmental Permits and Compliance
Environment and Technology
Tennessee Valley Authority

Date Signed

Attachment: *Recognition of Deeded Access Rights in Three Tennessee Valley Authority Reservoir Land Management Plans Environmental Report*, TVA March 2010

ENVIRONMENTAL REPORT

RECOGNITION OF DEEDED ACCESS RIGHTS IN THREE TENNESSEE VALLEY AUTHORITY RESERVOIR LAND MANAGEMENT PLANS

**Guntersville Reservoir, Alabama; Norris Reservoir, Tennessee;
and Pickwick Reservoir, Alabama**

PREPARED BY:
TENNESSEE VALLEY AUTHORITY

MARCH 2010

Prepared by:

Richard L. Toennisson
NEPA Compliance
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902
Phone: 865-632-8517
Fax: 865-632-3451
E-mail: rltoennisson@tva.gov

Page intentionally blank

ENVIRONMENTAL REPORT

RECOGNITION OF DEEDED ACCESS RIGHTS IN THREE TENNESSEE VALLEY AUTHORITY RESERVOIR LAND MANAGEMENT PLANS GUNTERSVILLE RESERVOIR, ALABAMA; NORRIS RESERVOIR, TENNESSEE; AND PICKWICK RESERVOIR, ALABAMA

TENNESSEE VALLEY AUTHORITY

MARCH 2010

Issue

The Tennessee Valley Authority (TVA) uses a land planning process to allocate individual parcels on its reservoir lands to one of six land use zones. After approval of a reservoir land management plan (LMP) by the TVA Board of Directors (TVA Board), all future uses of TVA lands on that reservoir must then be consistent with the allocations within that LMP. TVA's Land Policy (TVA 2006) states that TVA may consider changing a land use designation outside of the normal planning process only for the purposes of providing water access for industrial or commercial recreation operations on privately owned back-lying land or to implement TVA's Shoreline Management Policy (SMP). A change in allocation of any parcel is subject to approval by the TVA Board or its designee.

Recent research of deeds shows that on certain TVA reservoir land tracts, the current land management zone allocations, particularly Zone 5 (Industrial) and Zone 6 (Developed Recreation), have the potential to conflict with egress and ingress rights of the adjacent property owners if the current back-lying land use were to change. The resolution of these potential conflicts could result in the TVA Board receiving a large number of requests for minor changes to land allocations in several LMPs.

Background

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 completed environmental impact statements (EISs) and LMPs for 40,236 acres of TVA-managed land on Gunterville Reservoir (September 2001) and 19,238 acres on Pickwick Reservoir (August 2002). Similarly, an environmental assessment (EA) and LMP for 27,927 acres on Norris Reservoir were completed in September 2001.

The LMPs are designed to guide land use approvals, the permitting of private water use facilities, and resource management decisions on these reservoirs. In the LMPs, land parcels are allocated into broad categories or "zones", which include Project Operations (Zone 2), Sensitive Resource Management (Zone 3), Natural Resource Conservation (Zone 4), Industrial/Commercial Development (Zone 5), Developed Recreation (Zone 6), and Residential Access (Zone 7). Land along the reservoir that is privately-owned or owned by

a public entity other than TVA is labeled Zone 1 (Non-TVA Shoreland) for better understanding and evaluation of impacts during the planning process.

Marginal strips are the narrow band of TVA land around the rim of the reservoir between the water and the boundary of former TVA land that was sold to a specific contour elevation. For example, TVA sold back-lying property on Wheeler Reservoir to the 560-foot contour, leaving a strip of TVA land between the normal summer pool elevation of 556 feet and the sale contour of 560 feet. Current owners of former TVA land often have rights of ingress and egress across the TVA marginal strip that were granted in their property deeds. Although most back-lying parcels have been developed for residential purposes, many of the sale deeds have very general ingress and egress language that would allow a variety of uses. Consequently, some marginal strip parcels have back-lying commercial recreation or industrial land uses, and owners of these back-lying properties may have land use agreements with or Section 26a agreements issued by TVA.

Under the Land Planning Guidelines, those parcels committed to a particular use are typically allocated to the zone that supports that use. Under this practice, marginal strip parcels are allocated to a zone that reflects the current use of the back-lying former TVA property. If the back-lying use is residential, TVA allocates the marginal strip parcel to Zone 7 (Shoreline Access, formerly Residential Access). If the use of the adjacent former TVA property is commercial recreation, TVA would normally allocate the marginal strip to Zone 6 (Developed Recreation). Similarly, if the adjacent land use is industrial, the parcel would be allocated to Zone 5 (Industrial/Commercial).

However, adjacent land uses can change without any involvement by TVA. This practice could lead to misalignments in situations where the back-lying property owner proposes to use the property for a purpose that is consistent with the owner's deeded rights but inconsistent with TVA's zoning of the marginal strip. For example, a developed recreation area on a privately owned back-lying property could be converted (without TVA approval) to a residential subdivision. The new lot owners are eligible to apply for private water use facilities because of the ingress/egress rights TVA placed in the original sale deeds. However, because the marginal strip parcel was allocated to a different use zone (e.g., Developed Recreation) in a TVA Board-approved LMP, TVA could not permit private water use facilities that would only be appropriate under a residential access zone.

Other Environmental Reviews and Documentation

- *Guntersville Reservoir Final Environmental Impact Statement and Land Management Plan* (TVA 2001a)
- *Norris Reservoir Final Environmental Assessment and Land Management Plan* (TVA 2001b)
- *Pickwick Reservoir Final Environmental Impact Statement and Land Management Plan* (TVA 2002)
- *Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley, Final Environmental Impact Statement* (TVA 1999)

Proposal

To recognize the existing deeded landrights of adjoining landowners with respect to access to TVA reservoirs, TVA proposes to modify the existing Guntersville, Norris, and Pickwick reservoirs LMPs by allowing allocation changes under certain circumstances. Specifically, TVA proposes to change the allocation of all or parts of 52 marginal strip parcels on TVA-managed public land from Zones 5 (Industrial/Commercial) or Zone 6 (Developed Recreation) to Zone 7 (Residential Access) on request from adjoining landowners having the necessary deeded access rights. TVA must determine whether the potential environmental impacts of these potential future changes to the land use allocation fall within the scope of the existing environmental reviews.

Scope of Evaluation

In total, TVA identified 52 marginal strip parcels on Guntersville, Norris, and Pickwick reservoirs, all or a portion of which meet the criteria described above. These parcels have adjoining landowners with ingress and egress rights. Some parcels have multiple adjoining landowners where some of the adjoining landowners have deeded access rights and some may not. The parcels that meet the deeded rights criteria occupy about 522 acres and 33.5 miles of shoreline. See attached maps of parcels.

Norris Reservoir (see attached Table 1) has 16 planned marginal strip parcels that front 25 back-lying sales tracts. These 16 parcels with deeded access rights across all or part of them comprise are composed of approximately 326 acres of Zone 6 (Developed Recreation) land and have a total shoreline length of 114,650 feet (21.7 miles). Because some of the back-lying property owners have necessary deeded landrights, the allocation of the relevant portions of these 16 marginal strip parcels could be changed to Zone 7 (Residential Access).

A total of 26 planned marginal strip parcels on Guntersville Reservoir (see attached Table 2) with deeded rights across all or part of them have a cumulative shoreline footage of 55,602 linear feet (10.5 miles). These parcels adjoin 36 back-lying sales tracts. Approximately 122.3 acres of Zone 6 land and 14.4 acres of Zone 5 (Industrial/Commercial) land comprise the portions of these 26 parcels with deeded access rights. Because some of the back-lying property owners have necessary deeded landrights, the allocation of the relevant portions of these 26 marginal parcels could be changed to Zone 7.

On Pickwick Reservoir, there are 10 planned marginal strip parcels fronting 10 back-lying sales tracts (see attached Table 3). These 10 parcels with deeded access rights across all or part of them comprise approximately 26.9 acres of Zone 6 land and 32.4 acres of Zone 5 land and have a total shoreline footage of 26,982 linear feet (5.1 miles). Because some of the back-lying property owners have necessary deeded landrights, the allocation of the relevant portion of these 10 marginal parcels could be changed to Zone 7.

All of the three environmental reviews for the three LPMs state that additional environmental reviews would occur on a case-by-case basis when future changes to zone allocations are proposed.

Discussion of Impacts

Although the relevant portions of all of the 52 parcels (see attached Table 4) could be subject to an allocation change to Zone 7 (Residential Access), the need to change the

allocation for all of them over the life of the LMPs is unlikely. There may be requests for an allocation change for some parcels to Zone 7 in the near term. However, changing the allocation of other parcels in the foreseeable future is unlikely, as many of the back-lying owners have long-term commitments and investments based on the current allocations or they may be unwilling to invest in the cost and time needed on some parcels to resolve potential sensitive resource issues.

The back-lying private property landowners that have deeded rights on the relevant portions of these 52 parcels may request permits for water use facilities and implementation of vegetation management plans on TVA public land. Any permit request would be reviewed to assess potential impacts to protected terrestrial wildlife and plant species. All requests must follow TVA's SMP standards. SMP standards were developed to minimize impacts to terrestrial ecology on residential access land. These standards were evaluated in *TVA's Shoreline Management Initiative (SMI) Final EIS* (TVA 1999).

The above potential allocation changes to Zone 7 would impact parcels totaling about 522 acres of TVA-managed public land on Gunter'sville, Norris, and Pickwick reservoirs, which is about 0.6 percent out of a total of the combined 87,401 acres of TVA land on these three reservoirs. However, because portions of some parcels would not be involved, the actual area potentially impacted would be less.

Any action as a consequence of an allocation change would have potential environmental impacts. Parcels allocated to Zones 5, 6, or 7 are subject to potential adverse effects because portions of the land in these zones could be devoted to land-disturbing activity uses such as industrial development, developed recreation, or residential access.

The greatest potential adverse impacts to land resources would occur on those parcels allocated to Zone 5 (Industrial/Commercial), where major soil disturbances would be likely when industrial facilities are constructed. Once these facilities are established, they often remain intact for long periods, and large tracts of land may remain impacted.

Major soil disturbances could also occur in specific locations on those parcels allocated to 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 of parcels to Zone 7 (Residential Access) would result in minor soil disturbances to narrow corridors providing access to private water use facilities. Additionally, construction of shoreline erosion-control structures could cause some soil disturbance.

Aquatic Resources

The parcels currently allocated to Zones 5 or 6 (industrial or recreation) would be the likely areas of future impacts, depending on changes to current practices at the sites. Changing the allocation to Zone 7 would likely have fewer future impacts to aquatic resources as compared to Zone 5 where the site disturbance is greatest and remain about the same if changed to Zone 6 where many similar activities could occur. Changing these parcels to Zone 7 would likewise have the same or lesser potential to affect aquatic listed species.

The potential environmental impacts of future changes from a Zone 5 (Industrial/Commercial) or Zone 6 (Developed Recreation) allocation to a Zone 7 (Residential Access) allocation have been evaluated within the scope of the existing

environmental documents. Appropriate environmental reviews would occur when future changes to zone allocations are proposed.

Wetlands

Many of the parcels under consideration for future allocation changes to Zone 7 contain small areas of scattered wetlands. However, none of these parcels contain significant wetlands as described in the environmental reviews. Any future request for an allocation change for a parcel associated with a water access project (e.g., docks, ground disturbance, etc.) would be subject to a separate project review as described in the environmental reviews for the LMPs. Consequently, potential effects to wetlands would be evaluated under such reviews, and any impacts could be avoided or mitigated. As a result, the potential environmental impacts to wetlands by future modification of the existing LMPs to change allocations from Zones 5 (Industrial/Commercial) or Zone 6 (Developed Recreation) to Zone 7 (Residential Access) on request from adjoining landowners with deeded access rights have been evaluated within the scope of the existing LMPs and their environmental reviews.

Terrestrial Plants

To verify the original data of the environmental reviews, a TVA Natural Heritage database review was conducted for records of state- and federally listed plant species reported from within 5 miles of the 52 parcels. The resultant information is provided as Table 5 for those parcels on Guntersville Reservoir, Table 6 for Norris Reservoir, and Table 7 for Pickwick Reservoir.

The federal candidate species, Georgia rockcress, is reported from within 5 miles of Pickwick Parcel 59. Records show that the population has been possibly extirpated from the state. Historic records of monkey-face orchid, a federal candidate species, indicate this plant species has been reported from within 5 miles of Pickwick Parcels 140, 141, and 150 in the Yellow Creek area. This population is also thought to have been extirpated from this area of Mississippi. In addition, a historic record of the monkey-face orchid was known to occur within 5 miles of Guntersville Parcel 158. No other federally listed plant species was reported from within 5 miles of the Pickwick or Norris reservoir parcels under consideration.

One federally listed as threatened species, Price's potato bean, was reported to occur within 5 miles of Guntersville Parcels 20a, 65, 102, 108, 109, and 110. Habitat to support this federally listed species is not present within or in the immediate vicinity of these parcels.

Alabama state-listed species are known to occur within one mile of Guntersville Parcels 29, 43, 49, 61, 186, 216, 218, and 229. Norris Parcels 66 and 77 have Tennessee state-listed species occurring within 1 mile of the area. The Alabama state champion tree, Deodara cedar, is found near Guntersville Parcel 249. Allocation changes to these parcels would not affect the viability of this special tree.

The effects on the federally and state-listed plants near the parcels proposed for allocation changes would not differ from the effects identified in the existing LMPs and environmental reviews, and no adverse impacts are expected.

Terrestrial Animals

To verify the original data of the environmental reviews for the LMPs, a TVA Natural Heritage database review was conducted for state- and federally listed animal species

within 3 miles of the 52 parcels. This information is provided in Table 8 for those parcels on Guntersville Reservoir, Table 9 for Norris Reservoir, and Table 10 for Pickwick Reservoir.

No federally listed terrestrial animal species occur on any of the subject TVA parcels; however, there are records of occurrence for federally listed gray bats (*Myotis grisescens*) near nine parcels, and for Indiana bats (*Myotis sodalis*) near six parcels. There are records of a bald eagle (*Haliaeetus leucocephalus*), a federally protected species, nest near at least 17 of the parcels. Caves potentially with unique habitats occur near seven parcels. In addition, there are several state-listed animal species near parcels on all three reservoirs. However, potential impacts of future land use allocation changes to listed terrestrial animals and their associated habitats have been evaluated within the scope of the existing environmental documents and LMPs. Generally, impacts under a current Zone 5 allocation may be more detrimental than those attributed to Zone 7 and about the same as under Zone 6, depending on construction plans.

Based on a review of these parcels and the current environmental reviews for the three environmental reviews and LMPs, the proposed Zone 7 allocation changes would be covered by the scope of the environmental reviews. The environmental reviews indicate that any proposed shoreline construction on these parcels would be evaluated in an appropriate project-specific environmental review. This review would take into account changes over time to the terrestrial habitat on these parcels and would evaluate any potential impacts to listed terrestrial species or their habitats at the time of the proposed project. Consequently the evaluations in the previous environmental reviews remain valid.

Cultural Resources

As described in the environmental reviews for the LMPs and since the reviews occurred, the shoreline has been surveyed for cultural resources on a portion of the 52 parcels (see Tables 8, 9, and 10). Four archaeological sites have been previously identified on the Guntersville Reservoir parcels; 30 sites have been located on the Norris Reservoir parcels; and six sites on the Pickwick Reservoir parcels. There may be potential historical structures on or near some of the parcels. Neither the remainder of the TVA parcels nor the back-lying property has not been surveyed for cultural resources. Therefore, there is a potential for more archaeological resources to be identified on the unsurveyed shoreline and back-lying property. Generally, potential impacts to cultural resources from activities anticipated under Zone 7 would be less than those expected under a Zone 5 or Zone 6 allocation because of the reduced potential for ground disturbance.

Programmatic Agreements (PAs) have been executed between TVA, the Advisory Council on Historic Preservation, and the respective Alabama and Tennessee State Historic Preservation Officers (SHPOs) regarding the implementation of TVA reservoir LMPs for identification, evaluation, and treatment of historic properties that are eligible for inclusion on the National Register of Historic Places (NRHP). A commitment in the EIS for the Pickwick Reservoir LMP for TVA land in Mississippi would incorporate a phased identification and evaluation procedure to take into consideration the effects on historic properties. NRHP eligibility will be evaluated in consultation with the Alabama and Tennessee SHPOs according to stipulations of the PAs and the requirements of Section 106 of the *National Historic Preservation Act*. Necessary mitigation of adverse effects to any historic property by future modification of the existing LMPs to change the specified parcels or portions of parcels from Zones 5 and 6 to Zone 7 would be conducted according to the stipulations in the PAs and other requirements within the existing LMPs and their

respective environmental reviews. Consequently the evaluations in the previous environmental reviews remain valid.

Visual and Historical

Parcels that are currently allocated for Zone 5 (Industrial/Commercial Development) and Zone 6 (Developed Recreation) are assumed to have a scenic value class and visual absorption capacity suitable for a change in allocation to Zone 7 (Residential Access). Generally, potential impacts to visual or historic resources from activities anticipated under Zone 7 would be less than those expected under a Zone 5 or Zone 6 allocation because of the reduced potential for disturbances to the natural environment.

A cursory review of buildings and structures that may be reviewed for eligibility for listing in the NRHP appears in Tables 8, 9, and 10. However, Norris Parcel 310 is noted in the Norris Reservoir LMP as having historic house(s) near it. Similarly, Norris Parcel 310 also is located at or near Mt. Pleasant United Methodist Church and Cemetery, as well as (potentially) an access road to a white frame 1888 church building. No direct impacts to potentially eligible buildings or structures were identified in the Guntersville Reservoir LMP or the Pickwick Reservoir LMP. Consequently the evaluations by the previous environmental reviews remain valid.

Socioeconomics

On Guntersville and Pickwick reservoirs, there are 10 parcels of land allocated as Zone 5 (Industrial/Commercial) with deeded access rights over a portion of them. The relevant portions of these 10 parcels occupy about 46.8 acres and have about 5.6 miles of shoreline. Most of these parcels have industrial or commercial developments in place except for Guntersville Parcel 20a and Pickwick Parcel 140.

The allocation of parcels with existing facilities is not likely to change because of the reluctance to abandon the large commitments and investments in industrial and commercial developments. Changing the allocation to Zone 7 from Zone 5 would undoubtedly lead to lesser environmental impacts because of the lesser degree of ground disturbance and other direct effects to the surrounding environment. Some of the socioeconomic value lost by changing an allocation to Zone 7, such as jobs, income, and economic activity, would be part of new residential developments. The future reviews required by the LMPs and their respective environmental reviews would take into account changes to socioeconomic conditions resulting from the reallocation of these parcels and would evaluate any potential impacts at the time of the proposed project. Consequently, the evaluations by the previous environmental reviews are not changed and remain valid.

Recreation

All or portions of 42 parcels of land allocated as Zone 6 (Developed Recreation) on Norris, Guntersville, and Pickwick reservoirs have deeded access rights across them. These parcels comprise 475.3 acres and provide about 31.7 miles of shoreline. Changing the land use allocation from recreation (Zone 6) to shoreline access (Zone 7) likely continues to result in some type of water based recreation. For example, if the back-lying private property were subdivided into lots or multi-dwelling facilities were constructed, there could be multiple private or community docks instead of a commercial marina or other facility.

On Norris Reservoir, all or portions of 16 planned parcels could be subject to reallocation to Zone 7 due to appropriate deeded rights held by back-lying landowners. There are 25 back-lying sales tracts adjacent to these parcels. The 16 parcels occupy approximately

326 acres of Zone 6 land and have a total shoreline footage of 114,650 linear feet (21.7 miles). Examination and review of these parcels revealed that should reallocation occur, recreation resources would still be provided in this area of the reservoir.

Portions of 19 planned parcels allocated as Zone 6 on Gunterville Reservoir could be subject to reallocation to Zone 7. The relevant portions of these parcels total approximately 122.3 acres and have a total shoreline footage of 44,281 linear feet (8.4 miles).

Examination and review of these parcels revealed that should reallocation occur, recreation resources would still be provided in this area of the reservoir.

Portions of 7 planned parcels on Pickwick Reservoir front seven back-lying sales tracts with appropriate deeded access rights to request a change to a Zone 7 allocation. The TVA parcels occupy approximately 27 acres of Zone 6 land with a total shoreline footage of 8,683 linear feet (1.6 miles). Examination and review of these parcels revealed that should changes in allocation occur, recreation resources would still be provided in this area of the reservoir.

Summary

Potential environmental effects from any shoreline access by back-lying landowners would be considered in future environmental reviews. These reviews would be initiated when TVA considers requests for Section 26a approvals or land use actions. Furthermore, mitigation, such as the use of best management practices (BMPs) and the imposition of TVA's General and Standard Conditions, as stipulated in the environmental reviews, would tend to decrease environmental impacts.

According to the original environmental reviews (TVA 2001a, 2001b, 2002) for the LMPs, TVA would manage the residential shoreline in accordance with the requirements of the SMI (TVA 1999). The SMP protection requirements which implement SMI would require an individual vegetation management plan for all new shoreline development included as Zone 7 (Shoreline Access). In addition, TVA's Section 26a regulations and SMP specify access corridors, dock size, and buffers, and these requirements would further reduce potential environmental impacts. These measures would reduce water quality/aquatic ecological impacts, as well as impacts to wildlife and visual resources. TVA would require construction-related BMPs to further reduce potential water quality and aquatic biota impacts to insignificant levels.

TVA Preparers

Benjamin J. Bean, Watershed Project Manager
Patricia C. Cox, Botany Specialist
Frank B. Edmondson, Manager, Stewardship Projects
Jerry G. Fouse, Recreation Management Specialist
Clinton E. Jones, Aquatic Biologist
Holly G. LeGrand, Zoologist
Kim Pilarski, Wetland Specialist
Tim D. Pruitt, Watershed Representative
Jon C. Riley, Architect, Muscle Shoals
Marianne M. Shuler, Archaeology Technician
Richard L. Toennisson, Contract Senior NEPA Specialist
Lesley M. White, Watershed Representative

References

- Tennessee Valley Authority. 1999. *Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley, Final Environmental Impact Statement*. Norris, Tenn.: TVA Public Land Management, April 1999.
- _____. 2001a. *Guntersville Reservoir Final Environmental Impact Statement and Land Management Plan*. Guntersville, Ala.: TVA Resource Stewardship, Guntersville Watershed Team, September 2001.
- _____. 2001b. *Norris Reservoir Final Environmental Assessment and Land Management Plan*. Norris, Tenn.: TVA Resource Stewardship, Clinch-Powell Watershed Team, September 2001.
- _____. 2002. *Pickwick Reservoir Final Environmental Impact Statement and Land Management Plan*. Muscle Shoals, Ala.: TVA Resource Stewardship, Pickwick Watershed Team, August 2002.
- _____. 2006. *TVA Land Policy*. Knoxville, Tenn.: TVA Board of Directors, November 2006. Available from <http://www.tva.gov/river/landandshore/land_policy.htm>.

Attachments

Reservoir Property Parcels

- Table 1. Norris Reservoir Parcels
Table 2. Guntersville Reservoir Parcels
Table 3. Pickwick Reservoir Parcels
Table 4. Potential Changes to Zone 7 (Residential Access)

Sensitive Plant Species

Table 5. Pickwick Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Table 6. Norris Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Table 7. Guntersville Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Resource Comments

Table 8. Guntersville Reservoir Resource Comments

Table 9. Norris Reservoir Resource Comments

Table 10. Pickwick Reservoir Resource Comments

Maps of Parcels

Figure No. Norris Reservoir

1. Norris Reservoir Parcel 21
2. Norris Reservoir Parcel 66
3. Norris Reservoir Parcel 77
4. Norris Reservoir Parcel 80
5. Norris Reservoir Parcel 84
6. Norris Reservoir Parcel 87
7. Norris Reservoir Parcel 109
8. Norris Reservoir Parcel 118
9. Norris Reservoir Parcel 124
10. Norris Reservoir Parcel 140
11. Norris Reservoir Parcel 209
12. Norris Reservoir Parcel 293
13. Norris Reservoir Parcel 297
14. Norris Reservoir Parcel 301
15. Norris Reservoir Parcel 310
16. Norris Reservoir Parcel 315

Figure No. Guntersville Reservoir

17. Guntersville Reservoir Parcel 20a
18. Guntersville Reservoir Parcel 21
19. Guntersville Reservoir Parcel 29
20. Guntersville Reservoir Parcel 32
21. Guntersville Reservoir Parcels 43 and 49
22. Guntersville Reservoir Parcel 61
23. Guntersville Reservoir Parcel 65
24. Guntersville Reservoir Parcel 102
25. Guntersville Reservoir Parcel 114
26. Guntersville Reservoir Parcel 139
27. Guntersville Reservoir Parcel 158
28. Guntersville Reservoir Parcel 186
29. Guntersville Reservoir Parcel 204
30. Guntersville Reservoir Parcel 207

- 31. Guntersville Reservoir Parcel 214
- 32. Guntersville Reservoir Parcels 216 and 218
- 33. Guntersville Reservoir Parcels 227 and 249
- 34. Guntersville Reservoir Parcels 228 and 229
- 35. Guntersville Reservoir Parcel 231
- 36. Guntersville Reservoir Parcel 236
- 37. Guntersville Reservoir Parcel 248
- 38. Guntersville Reservoir Parcel 276

Figure No. Pickwick Reservoir

- 39. Pickwick Reservoir Parcel 12
- 40. Pickwick Reservoir Parcel 19
- 41. Pickwick Reservoir Parcel 59
- 42. Pickwick Reservoir Parcel 89
- 43. Pickwick Reservoir Parcel 91
- 44. Pickwick Reservoir Parcel 103
- 45. Pickwick Reservoir Parcel 112
- 46. Pickwick Reservoir Parcels 140 and 141
- 47. Pickwick Reservoir Parcel 150

Attachments

Table 1. Norris Reservoir Parcels

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
21	6	3.1	1,551	This parcel is licensed to Twin Cove for commercial recreation.
66	6	7.0	4,752	This parcel has three sections: (1) shoreline fronting XNR-655, Whitman Hollow Dock has a license for commercial recreation; (2) portion transferred to the Tennessee Wildlife Resources Agency, and has a concrete launching ramp and gravel parking lot; and (3) portion fronting TVA retained fee land (NR-721). Section 2 and 3 do not have private access rights.
77	6	14.7	3,613	This parcel fronts a Blue Ridge Council of the Boy Scouts of America camp.
80	6	8.2	3,309	Rainbow Marina and Resort is located on this parcel.
84	6	5.8	2,301	This parcel fronts the Ministers and Orphanage Camp.
87	6	6.9	5,075	Shanghai Resort is located on this parcel.
109	6	19.2	4,493	This parcel is licensed to the Powell Valley Resort.
118	6	6.6	4,632	Flat Hollow Marina is located on this parcel.
124	6	7.4	6,814	Blue Springs Boat Dock is located on the right bank of this parcel.
140	6	0.5	764	This parcel fronts Greasy Hollow Boat Dock.
209	6	65.4	9,529	This parcel has three sections: (1) 30-year recreation easement was conveyed to Claiborne County (now expired); (2) a small tract transferred to the Tennessee Wildlife Resources Agency; and (3) portion licensed for mooring rights for Lone Mountain Dock. Sections 1 and 2 have no private access rights.
293	6	10.5	7,523	This parcel has a license agreement for mooring rights for Hickory Star Boat Dock, portion of parcel fronting Big Ridge State Park does not have private access rights.
297	6	132.6	39,551	This parcel fronts the Tanasi Girl Scout Camp, which has a license agreement to provide security and protection camp.
301	6	8.7	2,540	This parcel is licensed to Andersonville Boat Dock for mooring rights and harbor limits.
310	6	24.2	16,030	This parcel has a license agreement to Stardust Resort and Marina providing mooring rights and harbor limits.
315	6	5.3	2,173	Sequoyah Lodge and Marina Inc., has a license agreement providing mooring rights and harbor limits.
	Totals	326.1	114,650	

Table 2. Guntersville Reservoir Parcels

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
20a	5	1.6	677	Parcel would accommodate anticipated commercial development.
21	6	4.6	2,502	This parcel is used for recreation because it fronts the old Snug Harbor Marina site and because of deeded access rights due to transfer of land (XTGR-5) to the State of Alabama for public recreation purposes.
29	6	5.2	1,564	This parcel is used by Alred Marina for commercial recreation.
32	6	3.9	2,074	Marshall County has deeded access rights across this parcel for public recreational use due to transfer of back-lying land (XTGR-75). Additionally there is a sales tract within the parcel that is currently used by the Lake Guntersville Yacht Club.
43	6	1.9	839	Parcel 43 is used for commercial recreation because it fronts Lakeside Sailing Center.
49	6	4.5	1,583	This parcel is used by Marshall Baptist Camp for developed recreation.
61	6	3.4	1,660	Parcel 61 fronts Ney-A-Ti Church Camp and is currently used for developed recreation.
65	6	1.0	510	Parcel 65 fronts Clay's Marina and is currently used for commercial recreation.
102	6	7.9	3,990	This parcel is used by Camp Maranatha for developed recreation.
114	6	17.3	6,543	Parcel 114 is licensed to the City of Scottsboro for Scottsboro Municipal Park.
139	6	0.4	391	This parcel is used for recreation; a public boat ramp, dock, and parking lot maintained by Alabama Department of Conservation and Natural Resources are present.
158	5	0.2	704	This parcel is used by the Alabama State Docks for industrial access.
186	6	2.7	2,811	Parcel 186 is used for recreation; a public boat ramp, dock, and parking lot maintained by Alabama Department of Conservation and Natural Resources are present.
204	6	8.9	2,358	This parcel is used by South Sauty Resort Inc. for commercial recreation.
207	6	23.4	6,028	Parcel 207 is used by Little Mountain Marina and Mountain Lakes Resorts for commercial recreation purposes.
214	6	2.5	1,391	This parcel is used by Signal Point Marina for commercial recreation.
216	5	4.1	3,264	Parcel fronts multiple industrial sites.
218	5	2.1	847	Parcel 218 is used by Continental Tire and Rubber Company Inc. for industrial purposes.
227	5	4.7	4,296	This parcel is used by back-lying landowners (Goldkrist, Inc., Cargill, Inc., and Continental Grain Co.)for industrial purposes.
228	5	0.9	818	Parcel 228 is licensed to the back-lying land owner (Powel Harbor) for commercial recreation purposes.
229	6	5.2	2,257	This parcel is used by the City of Guntersville as a city

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
				park.
231	6	2.7	1,702	This parcel is used by Covenant Cove Marina for commercial recreation.
236	6	5.0	2,402	Parcel 236 is licensed to Vaughn's Recreation Marina.
248	6	1.3	532	This parcel is proposed for use as a commercial marina by Cisco Steel, which would convert its existing industrial operation.
249	5	0.8	715	This parcel is used by several commercial/industrial companies (Amoco, Port of Guntersville Terminal, Cargill, Nashville, and Chattanooga and St. Louis Railroad) for water access.
276	6	20.5	3,144	A portion of this parcel is licensed for Riverview Campground, and the remainder is under easement to Marshall County as a Marshall County Park #2.
	Total	136.7	55,602	

Table 3. Pickwick Reservoir Parcels

Parcel Number	Current Zone	Acres	Feet of Shoreline	Current Use
12	6	13.0	3,740	This parcel fronts Waterloo City Park.
49	5	13.5	8,407	This parcel fronts Black Eagle Minerals and is used for a barge terminal.
59	5	14.0	9,199	This parcel fronts Cherokee Nitrogen and is used for a barge terminal.
89	6	0.8	479	This parcel fronts Johnson's Fish Camp.
91	6	1.5	996	This parcel fronts the Buzzard Roost Recreation area.
103	6	1.0	15	This portion of this parcel is a sale tract that mostly fronts land transferred to the State of Alabama for Public Recreation.
112	6	6.6	1,662	This parcel fronts Mill Creek
140	5	4.9	693	This parcel was previously planned/allocated as an Industrial site for Yellow Creek Port.
141	6	0.8	0	This parcel fronts the former TCDF recreation development.
150	6	3.2	1,791	This parcel fronts Grand Harbor Marina
	Total	59.3	26,982	

Table 4. Parcels with Potential Changes to Zone 7 (Residential Access)

Reservoir	Total Parcel Acres by Zone		
	Zone 5 Industrial/ Commercial	Zone 6 Developed Recreation	Total
Guntersville	14.4	122.3	136.7
Pickwick	32.4	26.9	59.3
Norris	0.0	326.1	326.1

Total	46.8	475.3	522.1
--------------	-------------	--------------	--------------

Table 5. Pickwick Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
Alabama snow-wreath	<i>Neviusia alabamensis</i>	--	S1	SLNS	140/141, 150
Allegheny-spurge	<i>Pachysandra procumbens</i>	--	S3	SLNS	12, 112, 140/141, 150*
American columbo	<i>Frasera caroliniensis</i>	--	S2	SLNS	103
American bladdernut	<i>Staphylea trifolia</i>	--	S3	SLNS	12, 112, 140/141, 150
American ginseng	<i>Panax quinquefolius</i>	--	S3	SLNS	140/141, 150
Appalachian golden-rod	<i>Solidago flaccidifolia</i>	--	S1S2	SLNS	12, 112
Autumn goldenrod	<i>Solidago sphacelata</i>	--	S1S2	SLNS	140/141, 150
Big shellbark hickory	<i>Carya laciniosa</i>	--	S2S3	SLNS	140/141, 150
Black bugbane	<i>Cimicifuga racemosa</i>	--	S1S2	SLNS	12, 112, 140/141, 150
Black-stem spleenwort	<i>Asplenium resiliens</i>	--	S1	SLNS	12, 112, 140/141, 150
Blue ash	<i>Fraxinus quadrangulata</i>	--	S2	SLNS	140/141, 150*
Canada moonseed	<i>Menispermum canadense</i>	--	S3	SLNS	12, 112
Canada wild-ginger	<i>Asarum canadense</i>	--	S2S3	SLNS	140/141, 150
Canadian milkvetch	<i>Astragalus canadensis</i>	--	S2	SLNS	150
Carolina tassel-rue	<i>Trautvetteria caroliniensis</i>	--	S1	SLNS	150
Crested fringed orchid	<i>Platanthera cristata</i>	--	S3	SLNS	140/141, 150
Downy yellow violet	<i>Viola pubescens</i> var. <i>eriocarpa</i>	--	S1S2	SLNS	140/141, 150
Dutchman's breeches	<i>Dicentra cucullaria</i>	--	S2	SLNS	59, 112, 140/141, 150
Dwarf larkspur	<i>Delphinium tricornis</i>	--	S2	SLNS	140/141, 150
Eastern cottonwood	<i>Populus deltoides</i>	--	Alabama Champion Tree		49
Eastern leatherwood	<i>Dirca palustris</i>	--	S2	SLNS	140/141, 150
Ernest's spider-wort	<i>Tradescantia ernestiana</i>	--	S1	SLNS	140/141, 150
False rue-anemone	<i>Enemion biternatum</i>	--	S2	SLNS	59
Giant alumroot	<i>Heuchera villosa</i> var. <i>macrorhiza</i>	--	S1	SLNS	140/141, 150*
Giant chickweed	<i>Stellaria pubera</i>	--	S2S3	SLNS	140/141, 150*
Greek valerian	<i>Polemonium reptans</i>	--	S2S3	SLNS	140/141, 150
Green violet	<i>Hybanthus concolor</i>	--	S2	SLNS	12, 112, 140/141, 150
Hairy lipfern	<i>Cheilanthes lanosa</i>	--	S2	SLNS	12, 112, 140/141, 150*
Harper's umbrella-plant	<i>Eriogonum longifolium</i> var. <i>harperi</i>	--	S1	SLNS	49
Heart-leaved foam-flower	<i>Tiarella cordifolia</i>	--	S2	SLNS	140/141, 150

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
Kentucky coffee-tree	<i>Gymnocladus dioicus</i>	--	S2	SLNS	140/141, 150
Lovage	<i>Ligusticum canadense</i>	--	S1S2	SLNS	12, 112, 140/141, 150*
Mock-orange	<i>Philadelphus hirsutus</i>	--	S1	SLNS	140/141, 150*
Mountain holly	<i>Ilex Montana</i>	--	S3?	SLNS	89, 91, 103, 112, 150
Muhly	<i>Muhlenbergia tenuiflora</i>	--	S1S2	SLNS	140/141, 150
Nodding trillium	<i>Trillium flexipes</i>	--	S1	SLNS	140/141, 150
Phacelia	<i>Phacelia bipinnatifida</i>	--	S1	SLNS	140/141, 150
Pink turtlehead	<i>Chelone lyonii</i>	--	S1	SLNS	12, 112
Purple cliff-brake	<i>Pellaea atropurpurea</i>	--	S1S2	SLNS	140/141, 150*
Puttyroot	<i>Aplectrum hyemale</i>	--	S1	SLNS	140/141, 150
Sedge	<i>Carex jamesii</i>	--	S1S2	SLNS	140/141, 150
Sedge	<i>Carex prasina</i>	--	S1	SLNS	89, 91, 103, 112, 140/141, 150
Sedge	<i>Carex stricta</i>	--	S2	SLNS	89, 91, 103, 112, 140/141, 150*
Sedge	<i>Carex picta</i>	--	S2S3	SLNS	89, 91, 103, 112, 140/141, 150
Shooting star	<i>Dodecatheon meadia</i>	--	S2	SLNS	140/141, 150*
Sicklepod	<i>Arabis canadensis</i>	--	S2S3	SLNS	140/141, 150
Silver bell	<i>Halesia Carolina</i>	--	Alabama Champion Tree		49
Silvery glade fern	<i>Athyrium thelypteroides</i>	--	S1S2	SLNS	150
Single-head pussytoes	<i>Antennaria solitaria</i>	--	S3?	SLNS	140/141, 150
Slender toothwort	<i>Dentaria heterophylla</i>	--	S2S3	SLNS	140/141, 150
Smoother sweet-cicely	<i>Osmorhiza longistylis</i>	--	S3	SLNS	140/141, 150
Spotted wintergreen	<i>Chimaphila maculata</i>	--	S2	SLNS	140/141, 150
Stonecrop	<i>Sedum ternatum</i>	--	S2	SLNS	12, 112, 140/141, 150*
Turk's cap lily	<i>Lilium superbum</i>	--	S3	SLNS	140/141, 150
Two-leaf toothwort	<i>Dentaria diphylla</i>	--	S1S2	SLNS	140/141, 150
Virginia pine	<i>Pinus virginiana</i>	--	S2	SLNS	12, 112, 140/141, 150*
Virginia bluebells	<i>Mertensia virginica</i>	--	S1S2	SLNS	140/141, 150
Wahoo	<i>Euonymus atropurpureus</i>	--	S2S3	SLNS	12, 112, 140/141, 150
Walking fern	<i>Asplenium rhizophyllum</i>	--	S1S2	SLNS	12, 112, 140/141, 150
Waterleaf	<i>Hydrophyllum appendiculatum</i>	--	S2?	SLNS	140/141, 150
White trout-lily	<i>Erythronium albidum</i>	--	S1S2	SLNS	49
White turtlehead	<i>Chelone glabra</i>	--	S3	SLNS	140/141, 150*
Wild columbine*	<i>Aquilegia canadensis</i>	--	S1S2	SLNS	140/141, 150*
Wild hyacinth	<i>Camassia scilloides</i>	--	S2S3	SLNS	140/141, 150
Woodrush	<i>Luzula acuminata</i>	--	S3	SLNS	140/141, 150*
Yellow trout-lily	<i>Erythronium rostratum</i>	--	S1S2	SLNS	140/141, 150*

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
Yellowwood	<i>Cladrastis kentukea</i>	--	S2	SLNS	12, 112, 140/141, 150
Historical Records Species					
Alabama glade- cress	<i>Leavenworthia alabamica</i>	--	S2	SLNS	49, 59
Alabama lipfern	<i>Cheilanthes alabamensis</i>	--	S3	SLNS	49
Allegheny-spurge	<i>Pachysandra procumbens</i>	--	S3	SLNS	89, 91, 103
Autumn goldenrod	<i>Solidago sphacelata</i>	--	S1S2	SLNS	140/141
Carolina willow	<i>Salix caroliniana</i>	--	S3	SLNS	140/141, 150
Dwarf larkspur	<i>Delphinium tricornis</i>	--	S2	SLNS	12, 112
Dutchman's breeches*	<i>Dicentra cucullaria</i>	--	S2	SLNS	49*
Georgia rock-cress	<i>Arabis georgiana</i>	C	S1 (X?)	SLNS	59
Giant chickweed	<i>Stellaria pubera</i>	--	S2S3	SLNS	12, 112, 140/141*
Monkey-face orchid	<i>Platanthera integrilabia</i>	C (X)	S1	SLNS	140/141, 150
Perideridia	<i>Perideridia americana</i>	--	S1S2	SLNS	140/141, 150
Sedge*	<i>Carex picta</i>	--	S2S3	SLNS	140/141*
Single-head pussytoes	<i>Antennaria solitaria</i>	--	S3?	SLNS	12, 112
Slender toothwort	<i>Dentaria heterophylla</i>	--	S2S3	SLNS	12, 112, 140/141*
Virginia pine	<i>Pinus virginiana</i>	--	S2	SLNS	89

-- = Not applicable

* Indicates those species that are reported from within 1 mile of the parcel

Federal abbreviations: C = Candidate; C (X) = Candidate extirpated

State status abbreviations: SLNS = No state status

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; S#S# = Occurrence numbers are uncertain; S#? = Inexact numeric rank; S# (X?) = Inexact numeric rank possibly extirpated

Table 6. Norris Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
American barberry	<i>Berberis canadensis</i>	--	S2	SPCO	272
Appalachian bugbane	<i>Cimicifuga rubifolia</i>	--	S3	THR	6/8, 315
American ginseng	<i>Panax quinquefolius</i>	--	S3S4	S-CE	6/8, 21, 66, 77*, 80, 84, 87, 209, 272, 297, 301, 310, 315
Canada lily	<i>Lilium canadense</i>	--	S3	THR	6/8, 21, 66, 272
Goldenseal	<i>Hydrastis canadensis</i>	--	S3	S-CE	21, 66, 118, 124, 209, 272, 301
Kentucky rosin-weed	<i>Silphium wasiotense</i>	--	S2	END	6/8, 21, 66*, 77*, 80, 84, 87, 301, 310, 310
Large-leaved grass-of-parnassus	<i>Parnassia grandifolia</i>	--	S3	SPCO	118, 124, 140
Large roundleaf orchid	<i>Platanthera orbiculata</i>	--	S3	THR	209
Leatherleaf meadowrue	<i>Thalictrum coriaceum</i>	--	S1	THR	21
Meehania mint(heart-leaf meehania)	<i>Meehania cordata</i>	--	S2	THR	6/8, 66, 77*, 80, 84, 87, 293, 297, 301, 310, 315
Mountain honeysuckle	<i>Lonicera dioica</i>	--	S2	SPCO	66, 87
Northern bush-honeysuckle	<i>Diervilla lonicera</i>	--	S2	THR	6/8, 315
Northern white cedar	<i>Thuja occidentalis</i>	--	S3	SPCO	6/8, 21, 66, 77*, 80, 84, 87, 118, 124, 140, 315
Ozark bunchflower	<i>Melanthium woodii</i>	--	S1	END	6/8, 21, 66, 87
Palamocladium	<i>Palamocladium leskeoides</i>	--	S1	THR	6/8, 315
Pink lady-slipper	<i>Cypripedium acaule</i>	--	S4	S-CE	6/8, 21, 66, 77*, 80, 84, 87, 209, 293, 297, 301, 310, 315
Rough hawkweed	<i>Hieracium scabrum</i>	--	S2	THR	21
Spreading false-foxglove	<i>Aureolaria patula</i>	--	S3	SPCO	6/8, 21, 66, 109, 118, 124, 140, 315
Sullivantia	<i>Sullivantia sullivantii</i>	--	S1	END	6/8, 66, 77*, 80, 84, 87, 315
Historical Record Species					
Alderleaf buckthorn	<i>Rhamnus alnifolia</i>	--	S1	END	66, 77*, 80, 84, 87
Goldenseal	<i>Hydrastis canadensis</i>	--	S3	S-CE	6/8
Horned beakrush	<i>Rhynchospora capillacea</i>	--	SH	E-P	66, 77*, 80, 84, 87
Large-leaved grass-of-parnassus	<i>Parnassia grandifolia</i>	--	S3	SPCO	6/8, 315
Sharp's homaliadelphus	<i>Homaliadelphus sharpii</i>	--	S1	END	6/8, 66, 77*, 80, 84, 87, 315
Spike-rush	<i>Eleocharis intermedia</i>	--	S1	END	66*, 80, 84, 87, 272
Swamp lousewort	<i>Pedicularis lanceolata</i>	--	S1S2	SPCO	272
Tall larkspur	<i>Delphinium exaltatum</i>	--	S2	END	6/8, 315

-- = Not applicable

* Indicates those species that are reported from within 1 mile of the parcel

State status abbreviations: END = Endangered; E-P = Endangered, possibly extirpated; S-CE = Special concern-commercially exploited; SPCO = Species of special concern; THR = Threatened

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; SH = State Historic; S#S# = occurrence numbers are uncertain

Table 7. Guntersville Reservoir Plants of Conservation Concern Found Within 5 Miles of the Designated Parcels

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
Alabama lipfern	<i>Cheilanthes alabamensis</i>	--	S3	SLNS	20a, 21, 29, 43, 49, 158
Alabama snow-wreath	<i>Neviusia alabamensis</i>	--	S2	SLNS	186
American columbo	<i>Frasera carolinensis</i>	--	S2	SLNS	158
American smoke-tree	<i>Cotinus obovatus</i>	--	S2	SLNS	102, 108, 109, 110, 114, 186
Appalachian quillwort	<i>Isoetes engelmannii</i>	--	S3	SLNS	236
Butler's quillwort	<i>Isoetes butleri</i>	--	S2	SLNS	20a, 21, 29*, 32, 43, 49, 61, 186, 214, 216, 218, 227, 228, 229, 248, 249, 267
Carolina silverbell	<i>Halesia carolina</i>	--	S2	SLNS	29, 43, 49, 102, 108, 109, 110, 114, 186, 204, 214, 216*, 218*, 227, 228*, 229*, 231, 236, 248, 249, 267
Carolina spring-beauty	<i>Claytonia caroliniana</i>	--	S1	SLNS	20a, 21, 29, 43, 49, 61, 65, 214, 216, 218, 227, 228, 229, 249
Chestnut oak	<i>Quercus montana</i>	--	Alabama Champion Tree		29, 43, 49, 214, 216, 218, 227, 228, 229*, 231, 236, 248, 249, 267
Cumberland rosinweed	<i>Silphium brachiatum</i>	--	S2	SLNS	29, 43, 49, 65, 102, 108, 109, 110, 114, 186, 214, 216, 218, 227, 228, 229, 248, 249
Deodara cedar	<i>Cedrus deodara</i>	--	Alabama Champion Tree		29, 43, 49, 214, 216, 218, 227, 228*, 229*, 231, 236, 248, 249, 267
Dutchman's breeches	<i>Dicentra cucullaria</i>	--	S2	SLNS	158
Dwarf filmy-fern	<i>Trichomanes petersii</i>	--	S2	SLNS	204
False helleborne	<i>Melanthium parviflorum</i>	--	S1S2	SLNS	61
Featherfoil	<i>Hottonia inflata</i>	--	S2	SPCO	158
Goldenseal	<i>Hydrastis canadensis</i>	--	S2	SLNS	186, 236
Granite gooseberry	<i>Ribes curvatum</i>	--	S2	SLNS	43, 49, 61
Great yellow wood-sorrel	<i>Oxalis grandis</i>	--	S1	SLNS	114, 186
Harper's dodder	<i>Cuscuta harperi</i>	--	S2	SLNS	214, 216, 218
Limestone adder's-tongue	<i>Ophioglossum engelmannii</i>	--	S2S3	SLNS	20a, 21, 29, 43, 49, 267
Little river canyon onion	<i>Allium speculae</i>	--	S2	SLNS	204, 214, 216, 218
Michaux leavenworthia	<i>Leavenworthia uniflora</i>	--	S2	SLNS	20a, 21, 29*, 32, 43*, 49*, 61, 186, 214, 216, 218, 227, 228, 229*, 231, 248, 249, 267
Mohr's rosin-weed	<i>Silphium mohrii</i>	--	S1	SLNS	29, 43, 49, 214, 216, 218, 227, 228, 229, 248, 249
Nuttall's rayless golden-rod	<i>Bigelovia nuttallii</i>	--	S3	SLNS	214, 216, 218, 228, 229
One-flowered broomrape	<i>Orobanche uniflora</i>	--	S2	SLNS	204
Ovate catchfly	<i>Silene ovata</i>	--	S2	SLNS	29, 43, 49, 214, 216, 218, 227, 228, 229, 248, 249
Pasture glade-cress	<i>Leavenworthia exigua</i> var. <i>lutea</i>	--	S1	SLNS	20a, 21, 29*, 32, 43, 49, 61, 214, 216, 218, 227, 228, 229*, 231, 248, 249, 267
Pink turtlehead	<i>Chelone lyonii</i>	--	S1	SLNS	20a, 21, 29, 267
Price's potato-bean	<i>Apios priceana</i>	LT	S2	SLNS	20a, 65, 102, 108, 109, 110
Prickly gooseberry	<i>Ribes cynosbati</i>	--	S1S2	SLNS	186

Common Name	Scientific Name	Federal Status	State Rank	State Status	Parcels
Scarlet Indian-paintbrush	<i>Castilleja coccinea</i>	--	S1	SLNS	214, 216, 218, 228, 229
Sedge	<i>Carex purpurifera</i>	--	S2	SLNS	204
Silky-camellia	<i>Stewartia malacodendron</i>	--	S2S3	SLNS	204
Southern red trillium	<i>Trillium sulcatum</i>	--	S1	SLNS	204
Sunnybell	<i>Schoenolirion wrightii</i>	--	S1	SLNS	214, 216, 218, 228, 229
Sweetflag	<i>Acorus calamus</i>	--	S1	SLNS	29, 158, 214, 216, 218, 227, 228, 229*, 231, 236, 248, 249, 267
Tennessee leafcup	<i>Polymnia laevigata</i>	--	S2S3	SLNS	108, 109, 110, 114, 186*
Twingleaf	<i>Jeffersonia diphylla</i>	--	S2	SLNS	139, 186
Wahoo	<i>Euonymus atropurpureus</i>	--	S3	SLNS	186
Waterweed	<i>Elodea canadensis</i>	--	S1	SLNS	20a, 21, 29, 43, 49, 61*, 65, 207
Willow oak	<i>Quercus phellos</i>	--	Alabama Champion Tree		214, 227, 228, 229, 248, 249
Witch-alder	<i>Fothergilla major</i>	--	S2	SLNS	204
Yellow giant-hyssop	<i>Agastache nepetoides</i>	--	S1	SLNS	158
Historical Record Species					
Bog goldenrod	<i>Solidago uliginosa</i>	--	SH	SLNS	
Dutchman's breeches	<i>Dicentra cucullaria</i>	--	S2	SLNS	20a, 65
Granite gooseberry	<i>Ribes curvatum</i>	--	S2	SLNS	65, 207
Great yellow wood-sorrel	<i>Oxalis grandis</i>	--	S1	SLNS	158
Large whorled pogonia	<i>Isotria verticillata</i>	--	S2	SLNS	158
Monkey-face orchid	<i>Platanthera integrilabia</i>	C	S2	SLNS	158
Pussy willow	<i>Salix humilis</i>	--	S2S3	SLNS	139
Royal catchfly	<i>Silene regia</i>	--	SH	E-P	158
Sedge	<i>Carex purpurifera</i>	--	S2	SLNS	65
Sweetflag	<i>Acorus calamus</i>	--	S1	SLNS	139
Wall-rue spleenwort	<i>Asplenium ruta-muraria</i>	--	S2	SLNS	158
White-leaved sunflower	<i>Helianthus glaucophyllus</i>	--	SH	SLNS	186

-- = Not applicable

* Indicates those species that are reported from within 1 mile of the parcel.

Federal abbreviations: C = Candidate; LT= Listed threatened

State status abbreviations: E-P = Endangered, possibly extirpated ; SLNS = No state status; SPCO = Species of special concern

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; SH = State historic; S#S# = Occurrence numbers are uncertain

Table 8. Guntersville Reservoir Resource Comments

Parcel Number	Resource Comments
20a	<ul style="list-style-type: none"> • This parcel is forested shoreline bordered by more forested shoreline and a paved road. There are records of gray bats at least 0.85 mile away from the parcel. Conversion of this parcel to Zone 7 would require removal of forested habitat common in the region and would increase boat traffic slightly, as this parcel is small. • There would be no impacts to terrestrial listed species. • There is a potential for deep cultural deposits.
21	<ul style="list-style-type: none"> • This parcel is a strip of forest area that exists between a marina and the reservoir. It is currently impacted by recreationists. There are records of gray bats greater than 1 mile from the parcel. Rezoning this parcel to Zone 7 may decrease human impacts on this area if the marina is converted to private boat docks. However, human use and impacts may increase if private docks are created in addition to the marina. • Neither outcome will impact any terrestrial listed species. • The shoreline and back-lying area have not been surveyed. The eastern portion is considered to have the potential for deeply buried cultural deposits.
29	<ul style="list-style-type: none"> • This parcel is a forested area between a marina and private boat docks. There are records of bald eagle nests within 1.5 miles of this parcel. This section is already impacted by commercial recreation. Conversion of this area to more boat docks would increase congestion and human disturbance. • Butler's quillwort, <i>Michaux leavenworthia</i>, and pasture glade-cress are three species known to occur on cedar glades and have been reported within 1 mile of the parcel. Due to the current land use, it is unlikely that habitat to support these species is present. • The shoreline and back-lying area have not been surveyed. Farmsteads are depicted on the acquisition map, and there is the potential for buried deposits.
32	<ul style="list-style-type: none"> • This parcel is already recreationally used and includes the Guntersville Yacht Club with several large docks. • There are records of bald eagle nests over 2 miles away. Rezoning this parcel to Zone 7 would either result in no changes of human disturbance and use of the area or potentially decrease use of the area if converted to private boat docks rather than a large marina. • The shoreline and back-lying area have not been surveyed. The Yacht Club lies on much of the landform, near a cultural site.
43	<ul style="list-style-type: none"> • Boat traffic is heavy in this area. The parcel is adjacent to Zone 2 and Zone 4. This parcel is in an already congested area with numerous boat docks. Rezoning this parcel to Zone 7 could reduce congestion and human disturbance if this area were converted to private residential boat docks. One community dock would minimize impacts to an already congested shoreline. • Two bald eagle nests are within 3 miles of the parcel, but all are over 1 mile away. • Butler's quillwort, <i>Michaux leavenworthia</i>, and pasture glade-cress are three species known to occur on cedar glades and have been reported within 1 mile of the parcel. Due to the current land use, it is unlikely that habitat to support these species is present. • The shoreline and back-lying area have not been surveyed. A marina has likely disturbed much of the area.
49	<ul style="list-style-type: none"> • This parcel is adjacent to Zone 7 and across from two forested islands that are zoned as Zone 3. This parcel is partially forested with one dock already on it. Rezoning this parcel to Zone 7 could reduce congestion and human disturbance from the camp if this area were converted to private residential boat docks. • Two bald eagle nests are within 3 miles of the parcel, but all are over 1 mile away. • Butler's quillwort, <i>Michaux leavenworthia</i>, and pasture glade-cress are three species known to occur on cedar glades and have been reported within 1 mile of the parcel. Due to the current land use, it is unlikely that habitat to support these species is present. • The shoreline and back-lying area have not been surveyed. Acquisition map shows

Parcel Number	Resource Comments
	structures.
61	<ul style="list-style-type: none"> This parcel is adjacent to two parcels that are Zone 7 and are already covered in boat ramps. The parcel is a small forested section between developed shoreline. Rezoning this parcel to Zone 7 could reduce congestion and human disturbance from the camp if this area were converted to private residential boat docks. One bald eagle nest is located 2 miles away. The submerged aquatic species, Waterweed (<i>Elodea canadensis</i>) has been found growing near the parcel. Changes to allocations would not impact populations of waterweed. The shoreline has been surveyed, but the back-lying area has not. No cultural resources are identified on the shoreline.
65	<ul style="list-style-type: none"> Adjacent to two parcels that are Zone 7. This parcel is a marina. Rezoning this parcel to Zone 7 could reduce congestion and human disturbance from the camp if this area were converted to private residential boat docks. No listed terrestrial species would be impacted. This parcel is identified as an area with potential buried archeological deposits.
102	<ul style="list-style-type: none"> This parcel, which has been partially developed, is adjacent to Zone 3 and Zone 4 parcels. The upper section of this parcel could potentially be used by nesting bald eagles. A cave with gray bats occurs 2 miles from this parcel. Rezoning this parcel to Zone 7 could reduce boat traffic from the camp. One community dock rather than multiple private docks would minimize impacts to this forested parcel. The shoreline and back-lying area have not been surveyed. The parcel is unlikely to contain significant deposits due to slope.
114	<ul style="list-style-type: none"> This park is used recreationally, and a few small boat docks exist. There is a heron colony 130 feet away and a bald eagle nest 2.5 miles away from the parcel. Rezoning this parcel to Zone 7 may increase use of this parcel, which may disturb this heronry and increase congestion and human disturbance in the area. The shoreline has been surveyed on the southern portion with no cultural resources identified. The northern portion and back-lying property have not been surveyed. The acquisition map shows structures. A potential for buried deposits exists.
139	<ul style="list-style-type: none"> This parcel is a small strip of land under and adjacent to a large bridge. South and east of the parcel are developed areas and small sections of forest. The parcel is already used for recreation and as a public boat dock. Congestion and use of the area may decrease if the area is converted to private versus a public boat dock and parking lot. There are five records of bald eagle nests within 3 miles of the parcel; the closest one is approximately 1 mile from the parcel. No listed species would be impacted by the rezoning of this area. The shoreline has been surveyed, and no cultural resources were identified. The back-lying area has not been surveyed.
158	<ul style="list-style-type: none"> This parcel is a narrow strip of shoreline between an industrial area and the reservoir. There is a cave with gray bat records 1.7 miles away and a record of a bald eagle nest 3 miles away. Rezoning this parcel may reduce boating traffic if converted to private docks or may increase traffic if public use is allowed in addition to private industrial use. Neither result would impact any listed terrestrial species. The parcel has cultural sites recorded. Buried cultural deposits are likely.
186	<ul style="list-style-type: none"> This parcel is a strip of shoreline under and on either side of a large bridge. It is already used for recreation and as a public boat ramp. There is a cave 0.5 mile away that may serve as a transitory gray bat roost. Should this parcel be converted to private boat docks rather than public access, boat traffic and human disturbance may decrease. Otherwise, there would be no change to the current level of disturbance in the area. Neither outcome would impact any listed species. This parcel is adjacent to B. B. Comer Bridge, and habitat is not present for <i>Polymnia laevigata</i>, Tennessee leafcup, an Alabama state species of conservation concern that is

Parcel Number	Resource Comments
	<p>known to occur nearby.</p> <ul style="list-style-type: none"> Shoreline and area of B. B. Comer Bridge replacement have been surveyed with no cultural resources identified.
204	<ul style="list-style-type: none"> This parcel is highly developed shoreline associated with a resort. Several boat docks already exist on the parcel. There are two records of bald eagle nests within 3 miles from the parcel; the closest one being 1.2 miles away. Rezoning this parcel to Zone 7 would likely result in no changes to usage or human disturbance in the area. The shoreline and back-lying area have not been surveyed. The parcel is considered likely for buried deposits.
207	<ul style="list-style-type: none"> The majority of this parcel is highly developed with a small northeastern section that remains forested. Several boat docks already exist on the parcel. A heronry is located on two islands less than 0.25 mile from the parcel. Rezoning of this parcel to Zone 7 could increase human disturbance in the area if more boat docks are created, which could impact the heronry. The shoreline has not been surveyed. A cultural site is nearby. The parcel is considered likely for buried deposits.
214	<ul style="list-style-type: none"> This parcel is a narrow strip of shoreline associated with a marina. There are several large boat docks attached to this parcel. Should the parcel be rezoned to Zone 7, human disturbance and use could decrease if small private docks replace the large marina docks. There are no state-listed terrestrial animal species within 1 mile of the parcel, and no federal listed species within 3 miles. No impacts to listed terrestrial species are expected. The shoreline and back-lying area have not been surveyed. The acquisition map shows structures on the parcel.
216	<ul style="list-style-type: none"> This parcel consists of thin strips of shoreline that front industrial buildings. Several boat docks exist on the parcel. There is one cave on this parcel situated on private property. There are no records of terrestrial animal species within this cave. Any construction or development should be avoided within 200 feet of this area. Boating activity and congestion would increase if more docks are created as a result of rezoning this parcel to Zone 7. No listed species are expected to be impacted by rezoning this parcel. Carolina silverbell occurs within a mile of the parcel. Due to the activities present on site, habitat to support Carolina silverbell is not present. The shoreline and back-lying area have not been surveyed. The acquisition map shows structures on this parcel.
218	<ul style="list-style-type: none"> This parcel fronts a large industrial building with a bridge and small boat docks on either side. Some of the parcel is forested. The closest record of a state-listed terrestrial animal is greater than 0.4 mile away. No federally listed species records exist within 3 miles of the parcel. This parcel is at the opening of a cove lined with private boat docks. Rezoning this parcel to Zone 7 would increase the amount of boat congestion and human use in the area. Carolina silverbell occurs within a mile of the parcel. Due to the activities present on site, habitat to support Carolina silverbell is not present. The shoreline and back-lying area have not been surveyed. The acquisition map shows structures on this parcel.
227	<ul style="list-style-type: none"> This parcel consists of mostly forested shoreline with some industrial buildings. Inland lie more industrial buildings. A large dock used for industrial purposes is attached to this parcel. Nearby shorelines are all developed. The closest record of a state-listed terrestrial animal species is 0.85 mile away. No federal listed species records exist within 3 miles of the parcel. Rezoning this parcel to Zone 7 may increase boating congestion due to the addition of private boat docks if created. The shoreline and back-lying area have not been surveyed. A cultural site is present, and

Parcel Number	Resource Comments
	structures are shown on the acquisition map.
228	<ul style="list-style-type: none"> • The parcel is shoreline property adjacent to a bridge and industrial complexes. It is used for recreational purposes. • The closest record of a state-listed terrestrial animal species is 0.5 mile away. No federally listed species records exist within 3 miles of the parcel. Rezoning this parcel to Zone 7 may increase boating congestion due to the addition of private boat docks if created. • The shoreline and back-lying area have not been surveyed. A structure is shown on the acquisition map.
229	<ul style="list-style-type: none"> • This parcel, used as a city park, is forested shoreline adjacent to a bridge and developed areas with private boat docks. • The closest record of a state-listed terrestrial animal species is 0.75 mile away. No federally listed species records exist within 3 miles of the parcel. Rezoning this parcel to Zone 7 may increase boating congestion due to the addition of private boat docks if created. • The shoreline and back-lying area have not been surveyed. Several structures are shown in the vicinity on the acquisition map.
231	<ul style="list-style-type: none"> • This parcel is the shoreline access of a marina with existing large docks. • The closest record of a state-listed terrestrial animal species is 0.75 mile away. No federally listed species records exist within 3 miles of the parcel. Rezoning this parcel to Zone 7 may decrease boating congestion and human impacts if small private boat docks were created in place of large ones. • The shoreline and back-lying area have not been surveyed. A cultural site is nearby.
236	<ul style="list-style-type: none"> • One section of this parcel sits between a marina and large boat docks, while the other is deforested undeveloped shoreline. Adjacent to the parcels are highly developed areas. • The closest record of a state-listed terrestrial animal species is 0.35 mile away. A bald eagle nest exists 2.8 miles away. Rezoning this parcel to Zone 7 may cause a slight increase or decrease in boating congestion and use of the area depending on the creation of private docks and/or removal of large marina docks. • The shoreline and back-lying area have not been surveyed. A historic farmstead lies near the eastern portion of the parcel.
248	<ul style="list-style-type: none"> • This parcel fronts an industrial area next to a large bridge. Similar industrial lots lay adjacent to the parcel. The parcel consists of early successional habitat next to a structured shoreline (riprap or retaining wall). • The closest record of a state-listed species is 1 mile away, and there are no federally listed species within 3 miles of the parcel. Rezoning this parcel to Zone 7 would increase boating congestion and usage in the area if boat docks were created. • The parcel is not likely to contain intact cultural deposits due to roadway construction.
249	<ul style="list-style-type: none"> • This parcel fronts an industrial area next to a large bridge. Similar industrial lots lay adjacent to the parcel. The parcel consists of early successional habitat next to a structured shoreline (riprap or retaining wall). • The closest record of a state-listed species is 0.9 mile away, and there are no federally listed species within 3 miles of the parcel. Rezoning this parcel to Zone 7 would increase boating congestion and usage in the area if boat docks were created. • The Alabama state champion tree, Deodara cedar, is within a mile. Allocation changes to these parcels would not affect the viability of this special tree. • The shoreline and back-lying area have not been surveyed. The acquisition map shows multiple structures on this parcel.
276	<ul style="list-style-type: none"> • This parcel is recreationally used as a forested campground and county park. A few boat docks exist along the shoreline. • The closest record of a state-listed terrestrial animal species is 1.25 miles away. Four bald eagle nests exist 2.5 miles away or greater. Rezoning this parcel to Zone 7 may cause a slight increase in boating congestion and use of the area depending on the creation of boat docks.

Parcel Number	Resource Comments
	<ul style="list-style-type: none"> The shoreline and back-lying area have not been surveyed. The acquisition map shows multiple structures on this parcel.

Table 9. Norris Reservoir Resource Comments

Parcel Number	Resource Comments
21	<ul style="list-style-type: none"> • The parcel is across from an island. • Records for hellbender and two species of shrew exist within 3 miles. Boat traffic/development associated with individual water use facilities would likely be similar or less compared to a commercial marina. • Shoreline has been surveyed, and the back-lying property has not. One archaeological site has been identified on this parcel.
66	<ul style="list-style-type: none"> • Parcel is marginal strip adjacent to Zone 4 forested tract along a narrow branch and across from a forested tract also in Zone 4. • No records of federally listed terrestrial animal species exist within 3 miles of the parcel. Conversion of the tract from Zone 6 with existing infrastructure and use as a dock and launching ramp to Zone 7 is not likely to result in significantly different impacts to terrestrial animals. • Kentucky rosin weed (<i>Silphium lasiocarpum</i>) is known to occur near the area. However, in the area of the boat dock and boat launch, habitat to support this species is not likely present. • Shoreline has been surveyed, and the back-lying property has not. One archaeological site has been identified on this parcel.
77	<ul style="list-style-type: none"> • This parcel is along the Clinch River. No water use facilities appear to currently exist here. Parcel and back-lying tract are forested as is the tract across the river. • No records of federally listed species occur within 3 miles. A cave and heron colony are present, but greater than 2 miles away. Conversion to Zone 7 could result in forest clearing, shoreline development, increased human use and congestion, and erosion of the shoreline through clearing and placement of docks. Increased impacts to listed terrestrial animal species or associated habitat as a result of the zone conversion are not likely to be present. • American ginseng, Kentucky rosin weed, and pink lady-slipper are known to occur within 1 mile of this parcel, but none were found within the parcel. • Shoreline has been surveyed, and the back-lying property has not. One archaeological site has been identified on this parcel.
80	<ul style="list-style-type: none"> • Parcel already has both private water use facilities and commercial use. Conversion to Zone 7 may result in either replacement of the marina with three additional private facilities resulting in a total of five private facilities, assuming the parcel remains as five sections. Impacts to the shoreline including development and human use may either remain the same or decrease slightly. • Records of gray and Indiana bats exist within 3 miles of the parcel and are associated with a cave that is greater than 2 miles away. Impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline has been surveyed, and the back-lying property has not.
84	<ul style="list-style-type: none"> • Based on the aerial, a single water use facility exists on the parcel. Portions of the shoreline and back-lying land have been cleared, and a portion of the shoreline remains forested. Conversion to Zone 7 could result in subdivision of the tract into multiple lots and associated private water use facilities, which could result in increased clearing, development, and human use impacts in this cove. • Records of gray and Indiana bats exist within 3 miles of the parcel and are associated with a cave that is greater than 2 miles away. Impacts to terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline has been surveyed, and the back-lying property has not.

Parcel Number	Resource Comments
87	<ul style="list-style-type: none"> • The harbor limits and associated infrastructure (commercial piers) span the full extent of the parcel shoreline boundary. Conversion to Zone 7 and individual private facilities may result in a decrease in the density in human use and associated boat traffic. However, the conversion likely would result in increased clearing of the back-lying property for residential development would likely result in a decrease of human use and associated boat traffic. • Records of Indiana bats and gray bats are associated with a cave that is within 0.25 mile of the parcel. However, impacts to terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline has been surveyed, but the back-lying property has not.
109	<ul style="list-style-type: none"> • Parcel abuts Zone 7 tracts on either side, where private docks currently exist. The marina has a high density of boathouses fronting the parcel. • Records of federally listed species within 3 miles of the project include Indiana bat. However, impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline and the back-lying property have not been surveyed.
118	<ul style="list-style-type: none"> • Parcel is developed extensively related to the marina. There also appear to be existing private water use facilities along the shoreline. • Records of federally listed species within 3 miles of the project include Indiana bat and an associated cave. However, impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline and the back-lying property have not been surveyed.
124	<ul style="list-style-type: none"> • This is a very large marina fronting the shoreline of both sections of the parcel. Conversion to Zone 7 likely would result in equivalent or less impact with respect to human use, density, and related infrastructure (private docks). • There are no records of federally listed species within 3 miles of the project. A cave is present within 3 miles but greater than 0.5 mile from the parcel. Impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline and the back-lying property have not been surveyed.
140	<ul style="list-style-type: none"> • Conversion from Zone 6 to 7 may result in increased infrastructure along the shoreline, which appears to have nothing fronting the shoreline currently. The parcel is across from a Zone 7 tract. • There are no records of federally listed species within 3 miles of the project. A cave is present within 3 miles but greater than 2 miles from the parcel. Impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline has been surveyed, and the back-lying property has not. One cultural site has been identified on this parcel.
209	<ul style="list-style-type: none"> • Most of the shoreline inside the Long Branch embayment is undeveloped. Rezoning this portion to Zone 7 could increase boat traffic/congestion and could result in the loss of some forested shoreline. • The section closer to the main stem of the Tennessee River has two state-listed shrews and one bald eagle record occur within 3 miles. The shrews are over 1.5 miles away, and the bald eagle nest is over 2.5 miles away. No records of federally listed species were found within 3 miles of the parcel. Impacts to listed terrestrial animals and associated habitats are not expected to be different under a Zone 7 allocation. • Shoreline has been surveyed, and the back-lying property has not. Five cultural sites have been identified on this parcel.

Parcel Number	Resource Comments
293	<ul style="list-style-type: none"> • This parcel already contains a boat dock at the mouth of the embayment. Rezoning this parcel to Zone 7 may cause a slight increase or decrease in boating congestion and use of the area depending on the creation of private docks and/or removal of Hickory Star Boat Dock. The southern section of this parcel inside the small embayment is a forested shoreline and could be impacted by increased private boat docks. • Several caves occur within 3 miles of this parcel, but all are over 1.5 miles away and would not be impacted. Terrestrial listed species would not be impacted. • Shoreline has been surveyed, and the back-lying property has not. Eight cultural sites have been identified on this parcel.
297	<ul style="list-style-type: none"> • This is mostly undeveloped shoreline bordered by Zone 6 and across from Zone 4. Increased boat traffic and congestion could occur as a result of rezoning this parcel as well as some loss of the forested shoreline due to dock construction. • Caves occur within 3 miles of this parcel, but all are over 1.5 miles away and would not be impacted. Terrestrial listed species would not be impacted. • Shoreline has been surveyed, and the back-lying property has not. Twelve cultural sites have been identified on this parcel.
301	<ul style="list-style-type: none"> • This parcel already contains a boat dock and is bordered by Zone 7 property on either side. Rezoning this parcel to Zone 7 might reduce boat traffic from the current Andersonville Boat Dock. • One record of the Allegheny woodrat occurs over 2.5 miles away. Terrestrial listed species would not be impacted. • Shoreline has been surveyed, but the back-lying property has not.
310	<ul style="list-style-type: none"> • The western section of the parcel already has numerous docks and is developed. The eastern section of the parcel, however, is not as developed and offers a continuous forested shoreline. The shoreline connects with undeveloped shoreline zoned 4 and is across from a Zone 4 wildlife management area. Rezoning this parcel to Zone 7 could impact the forested shoreline on the eastern portion of this parcel due to an increased number of boat docks. • A cave also occurs on this eastern portion and could be negatively impacted from increased boat dock construction and use. One record of the Allegheny woodrat occurs over 2 miles away. Terrestrial listed species would not be impacted. However a unique habitat (cave) could be negatively impacted if this parcel is rezoned to 7. • Shoreline has been surveyed, and the back-lying property has not.
315	<ul style="list-style-type: none"> • Parcel contains a marina and is heavily congested. Rezoning this parcel to Zone 7 might reduce congestion. • Records of smoky shrew and Allegheny woodrat occur over 2 miles away. A cave with the federally listed as endangered gray bat occurs over 2.5 miles away. No terrestrial listed species would be impacted. • Shoreline has been surveyed, and the back-lying property has not. One cultural site has been identified on this parcel.

Table 10. Pickwick Reservoir Resource Comments

Parcel Number	Resource Comments
12	<ul style="list-style-type: none"> • This parcel is across from a forested peninsula allocated as Zone 6. • This parcel contains bald eagle records within 1 mile. If parcel is divided into multiple lots under Zone 7, it may congest/concentrate private water use facilities; alternatively could reduce concentration of human traffic related to currently being a public park. • Four cultural sites are recorded. Numerous structures are shown on the acquisition maps.
49	<ul style="list-style-type: none"> • This parcel is across from a forested tract allocated as Zone 4. • There are gray bat cave records 0.5 mile away or more. If parcel is allocated to Zone 7, it may increase disturbance for natural resource conservation area across inlet especially with multiple private docks in addition to barge terminal; however, potential development under current Zone 5 allocation may be more detrimental than potential Zone 7 depending on construction plans. • Two cultural sites are recorded.
59	<ul style="list-style-type: none"> • This parcel is across from a forested island (Koger's Island). • There is a gray bat cave record approximately 1 mile away and bald eagle nest 2.25 miles away. If allocated to Zone 7, it may increase disturbance to island that offers potential roosting habitat for heron colonies or bald eagles, especially with multiple private docks in addition to barge terminal. However, potential development under current Zone 5 allocation may be more detrimental than potential Zone 7 depending on construction plans. • No cultural resources recorded.
89	<ul style="list-style-type: none"> • The marina is surrounded by other businesses or residential areas. • There are no listed terrestrial animal species within 3 miles; there would be no impacts to terrestrial animal species if this parcel was rezoned to Zone 7. Should this area be converted to private residential boat docks, congestion and human disturbance may decrease. • Back-lying area has not been surveyed. "Negro" cemetery recorded nearby.
91	<ul style="list-style-type: none"> • This small strip of trees is part of an existing recreation area. • There are no listed terrestrial animal species within 3 miles; if rezoned to 7, human traffic would likely increase due to use of shoreline access in addition to usage of existing recreation area. • Back-lying area has not been surveyed. The acquisition map shows structures on the parcel.
103	<ul style="list-style-type: none"> • Forested wetland parcel attached to a larger tract of forest along Bear Creek. • There are two state- and no federally listed terrestrial species within 3 miles of the parcel. The closest state-listed species is over 2 miles away. If rezoned to 7, one large dock would impact less forested wetland shoreline habitat than multiple private docks. • Back-lying area has not been surveyed. The acquisition map shows a historic farmstead at the southern edge of the parcel. The potential for cultural deposits is considered high.
112	<ul style="list-style-type: none"> • This marina is almost 3 miles away from two state-listed species and a documented cave with gray and Indiana bat records. Rezoning this parcel to Zone 7 would not impact any listed terrestrial animal species. • Back-lying area has not been surveyed.

Parcel Number	Resource Comments
140/141	<ul style="list-style-type: none"> Sections of the shoreline of these parcels are forested; however, the majority of the area has already been developed. Shoreline access already occurs in these developed areas. There is a record of a state-listed frog species 90 feet away and a bald eagle nest 2 miles away from these parcels. Rezoning these parcels to Zone 7 would not impact this pond but may result in the loss of sections of forest along the shore. This forested habitat is common regionally. The installation of more boat docks on the parcel would not impact any listed species; however, impacts to habitat could be minimized by using community versus private boat docks. Back-lying areas have not been surveyed on either parcel.
150	<ul style="list-style-type: none"> This parcel is a marina. There is one record of a bald eagle nest 0.5 mile from the parcel. Rezoning this parcel to Zone 7 could reduce congestion and human disturbance if this area were converted to private residential boat docks. No listed species would be impacted. There are 155 element occurrence records for plants reported within 5 miles of Parcel 150. In addition, 15 Mississippi state-listed species are located within 1 mile of the area, but no species of special concern were reported from within or directly adjacent to this tract of land. Since this area is a marginal strip fronting an existing marina, there would be limited habitat to support rare species. Back-lying area has not been surveyed, but the shoreline was surveyed and found to have no cultural resources.

Maps of Parcels – Norris Reservoir

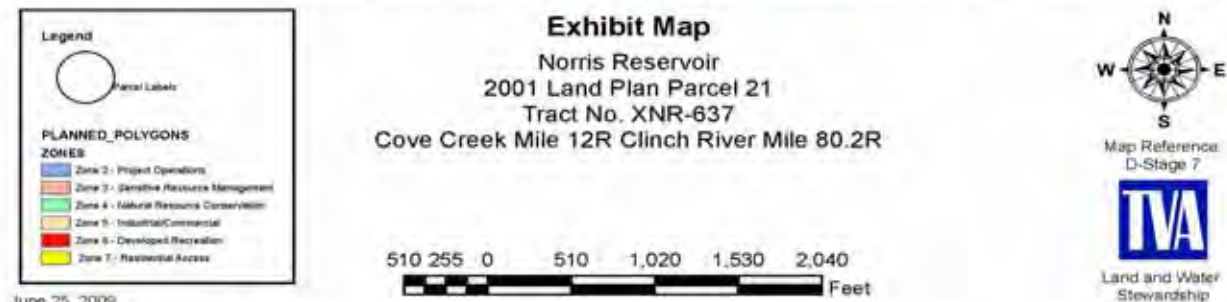
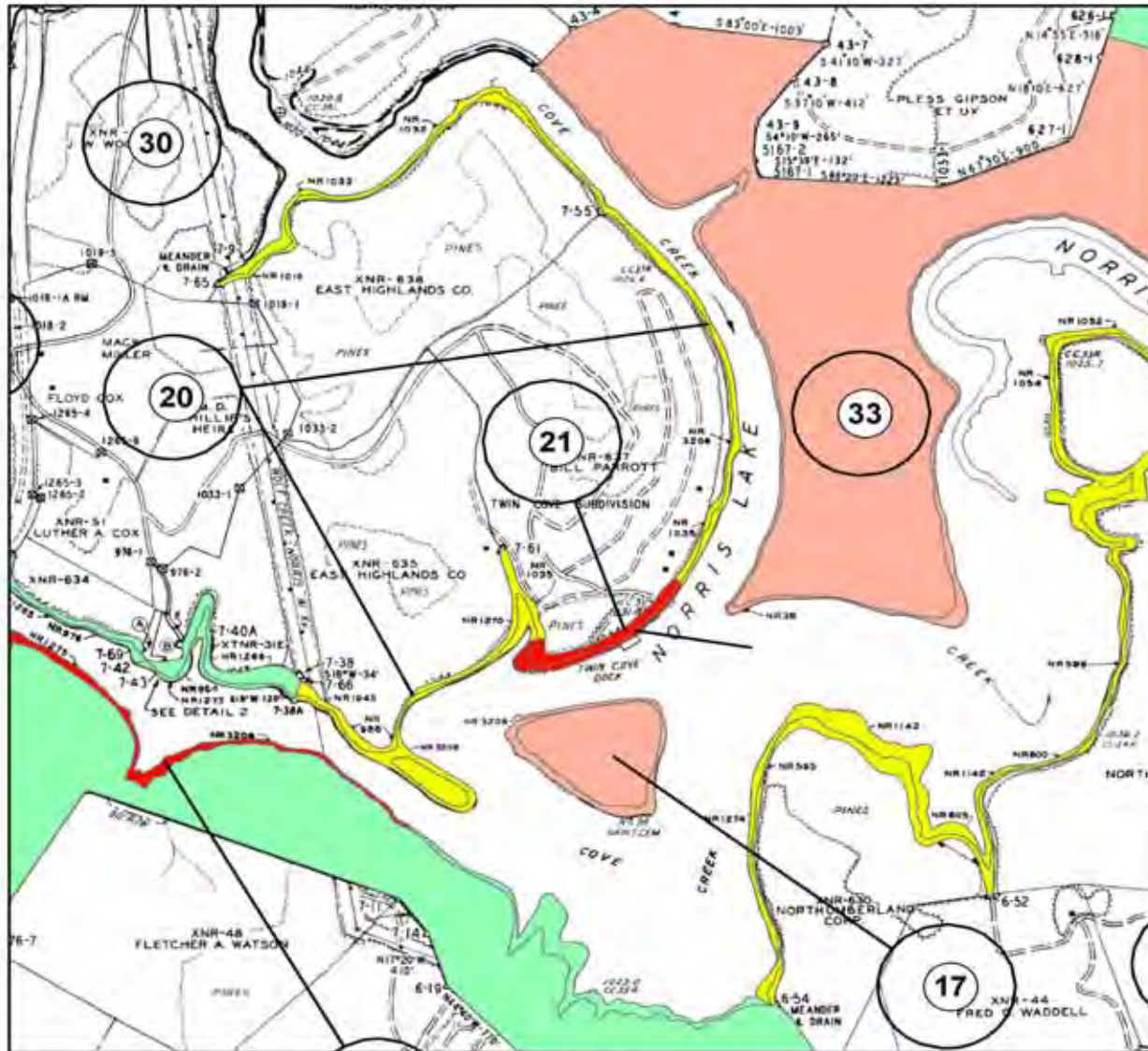
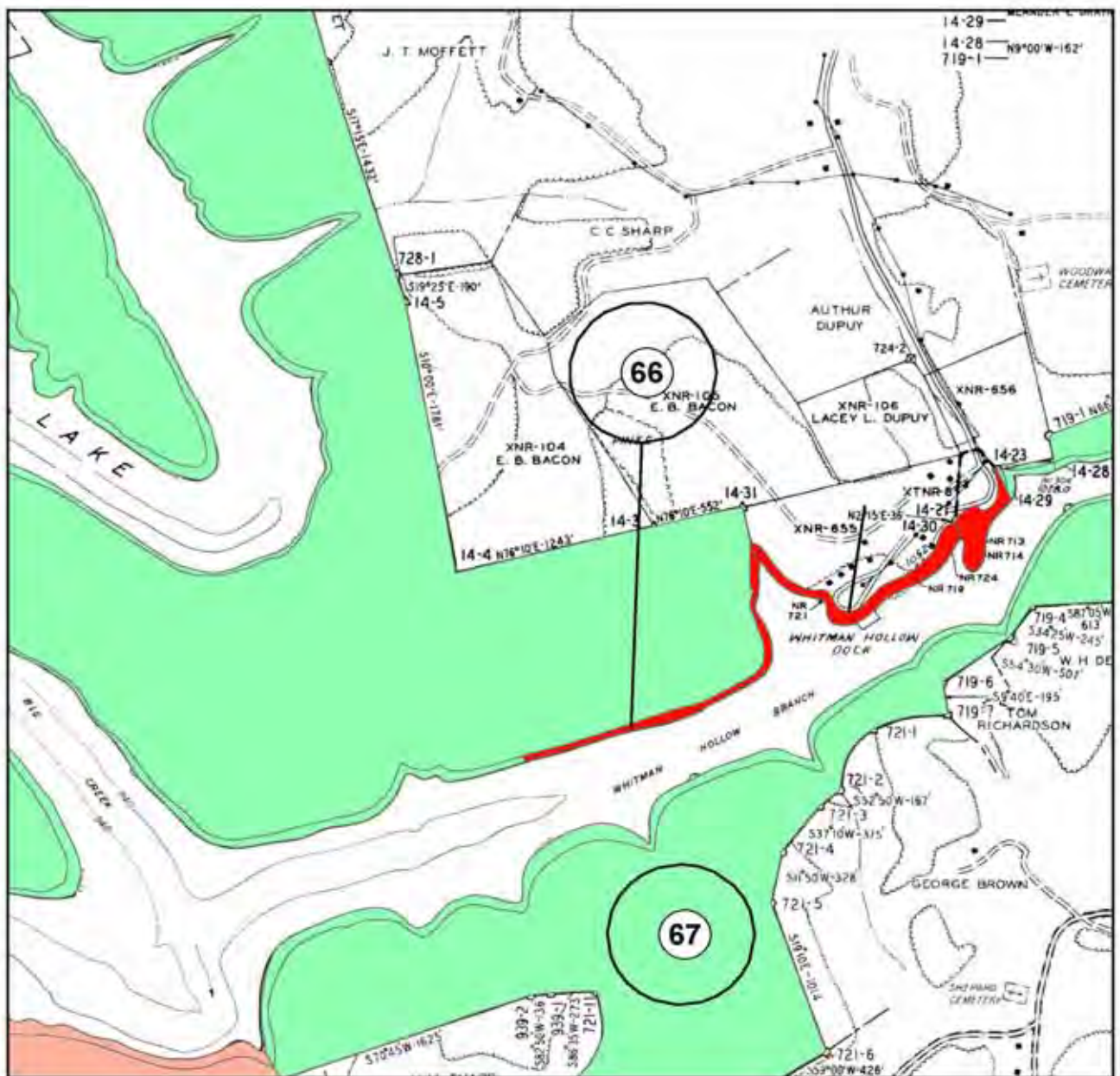
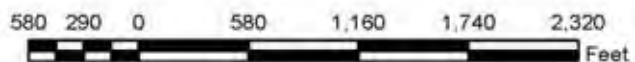


Figure 1. Norris Reservoir Parcel 21



June 25, 2009

Exhibit Map
 Norris Reservoir
 2001 Land Plan Parcel 66
 Tract No. XNR-655
 Big Creek Mile 8.5L Clinch River Mile 83R

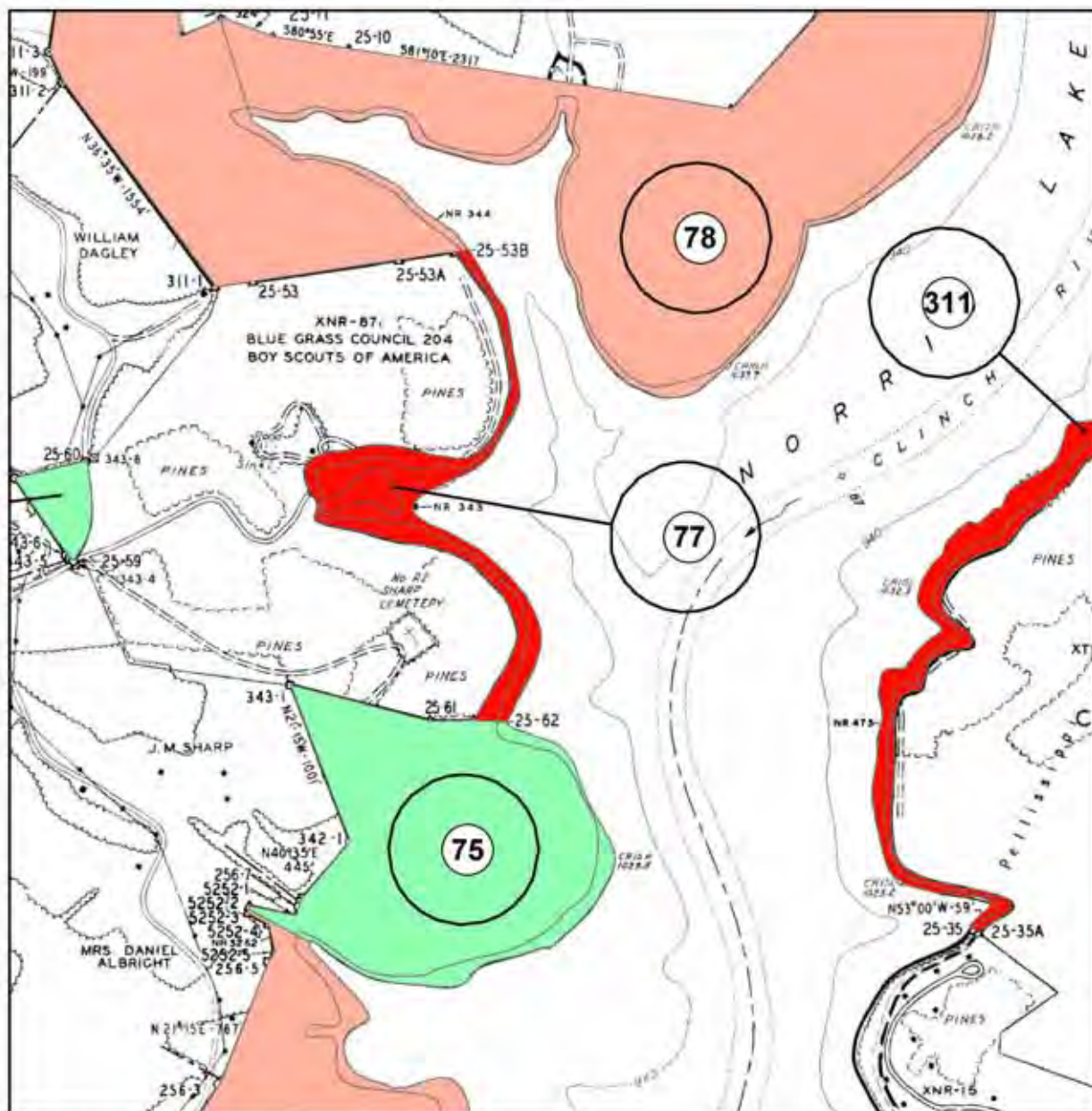


Map Reference
 D-Stage 7



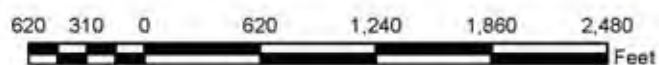
Land and Water
 Stewardship

Figure 2. Norris Reservoir Parcel 66



June 25, 2009

Exhibit Map
 Norris Reservoir
 2001 Land Plan Parcel 77
 Tract No. XNR-871
 Clinch River Mile 87.0R



Map Reference:
 D-Stage 25



Land and Water
 Stewardship

Figure 3. Norris Reservoir Parcel 77

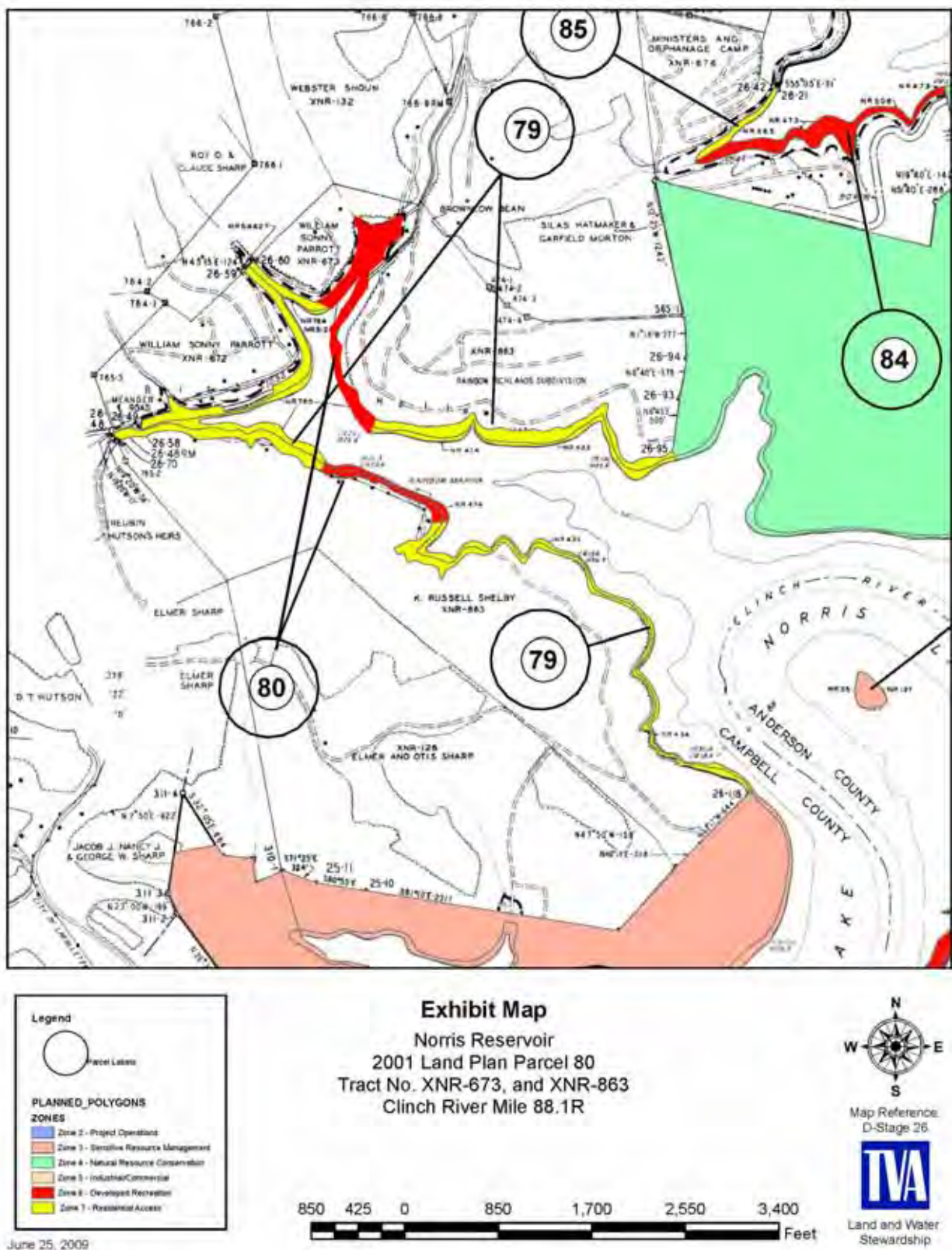


Figure 4. Norris Reservoir Parcel 80

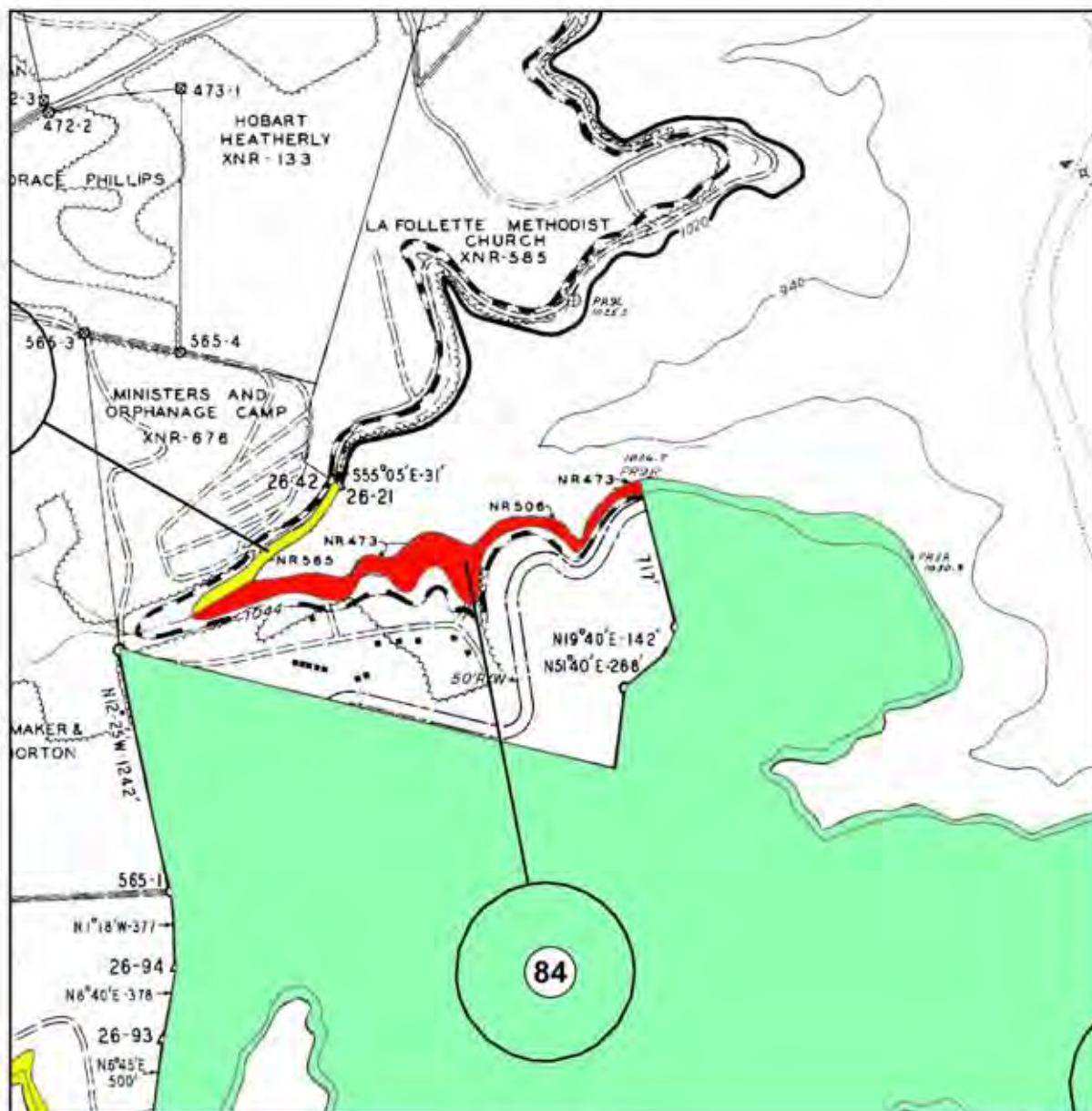


Exhibit Map
Norris Reservoir
2001 Land Plan Parcel 84
Tract No. XNR-676
Powell River Mile 4.0R



Map Reference:
D-Stage 26-



Land and Water
Stewardship



June 25, 2009

Figure 5. Norris Reservoir Parcel 84

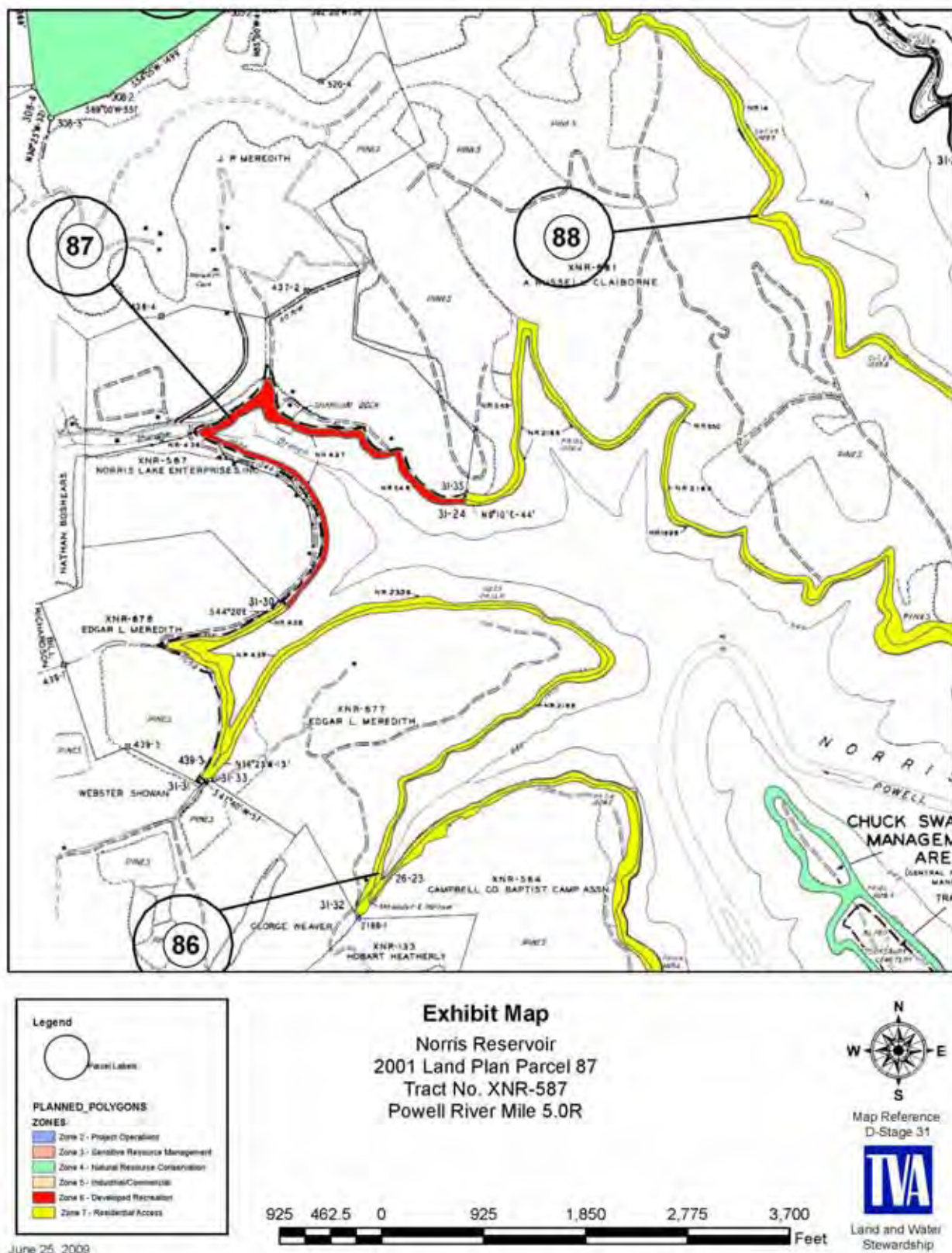


Figure 6. Norris Reservoir Parcel 87

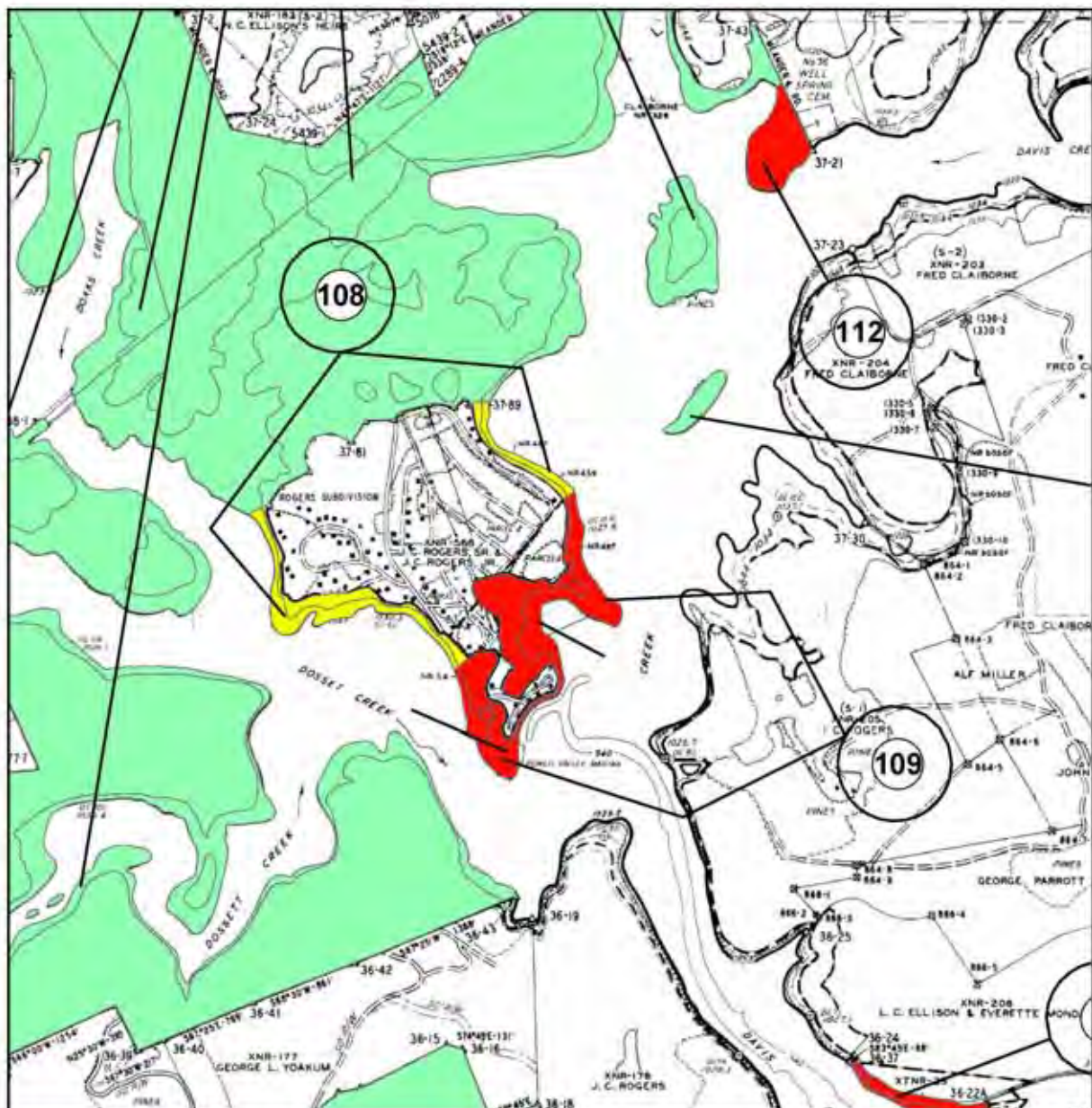


Exhibit Map
 Norris Reservoir
 2001 Land Plan Parcel 109
 Tract No. XNR-588
 Davis Creek Mile 4.3R and Powell River Mile 17.2R



Map Reference:
D-Stage 37



Land and Water
Stewardship



June 25, 2009

Figure 7. Norris Reservoir Parcel 109

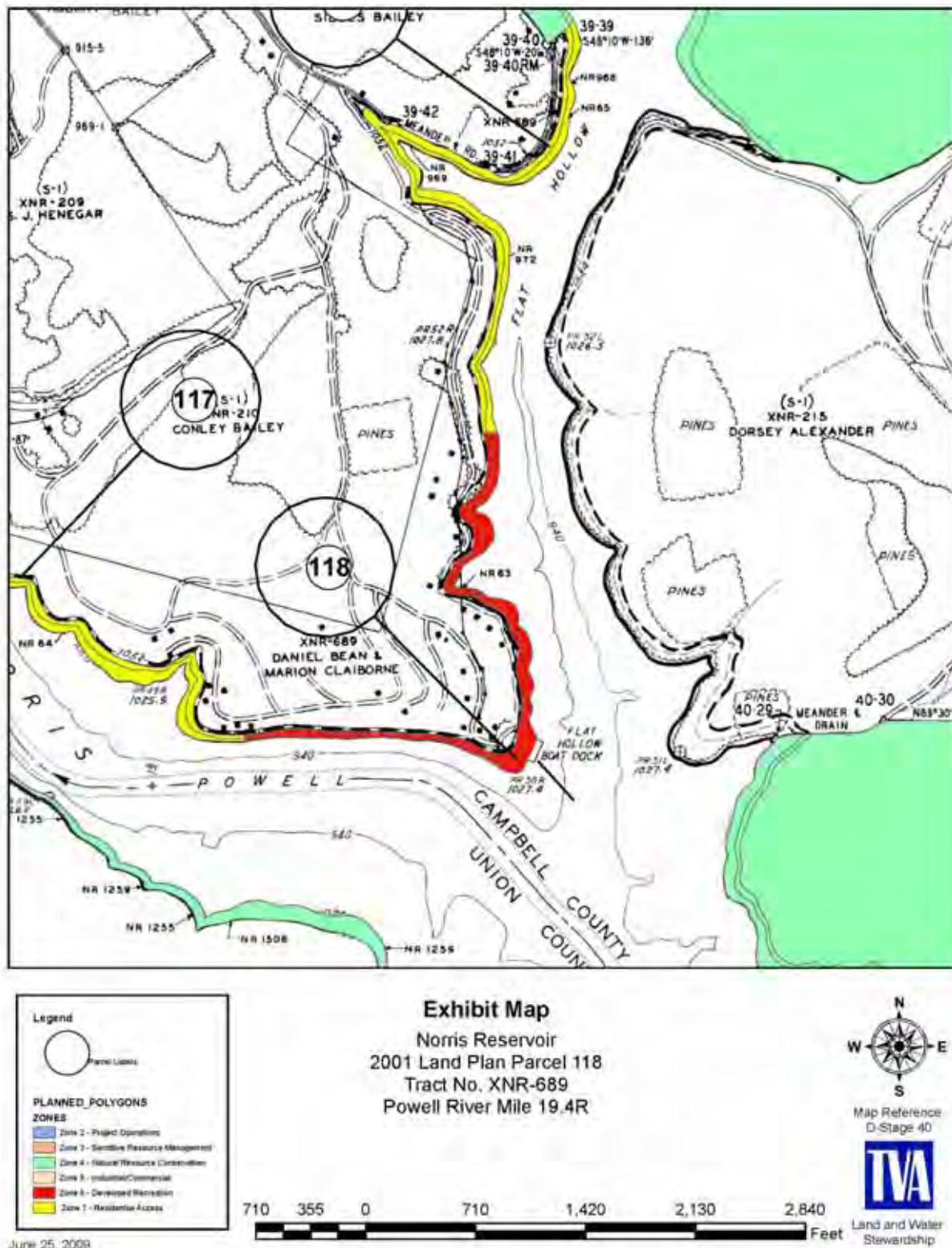


Figure 8. Norris Reservoir Parcel 118

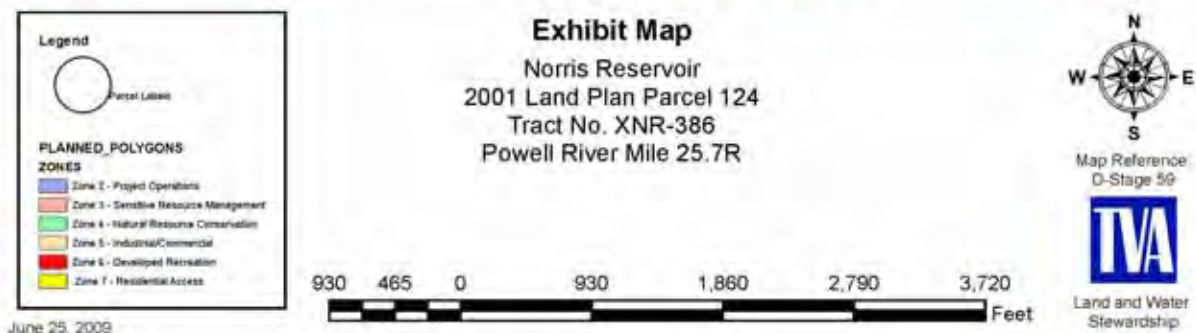
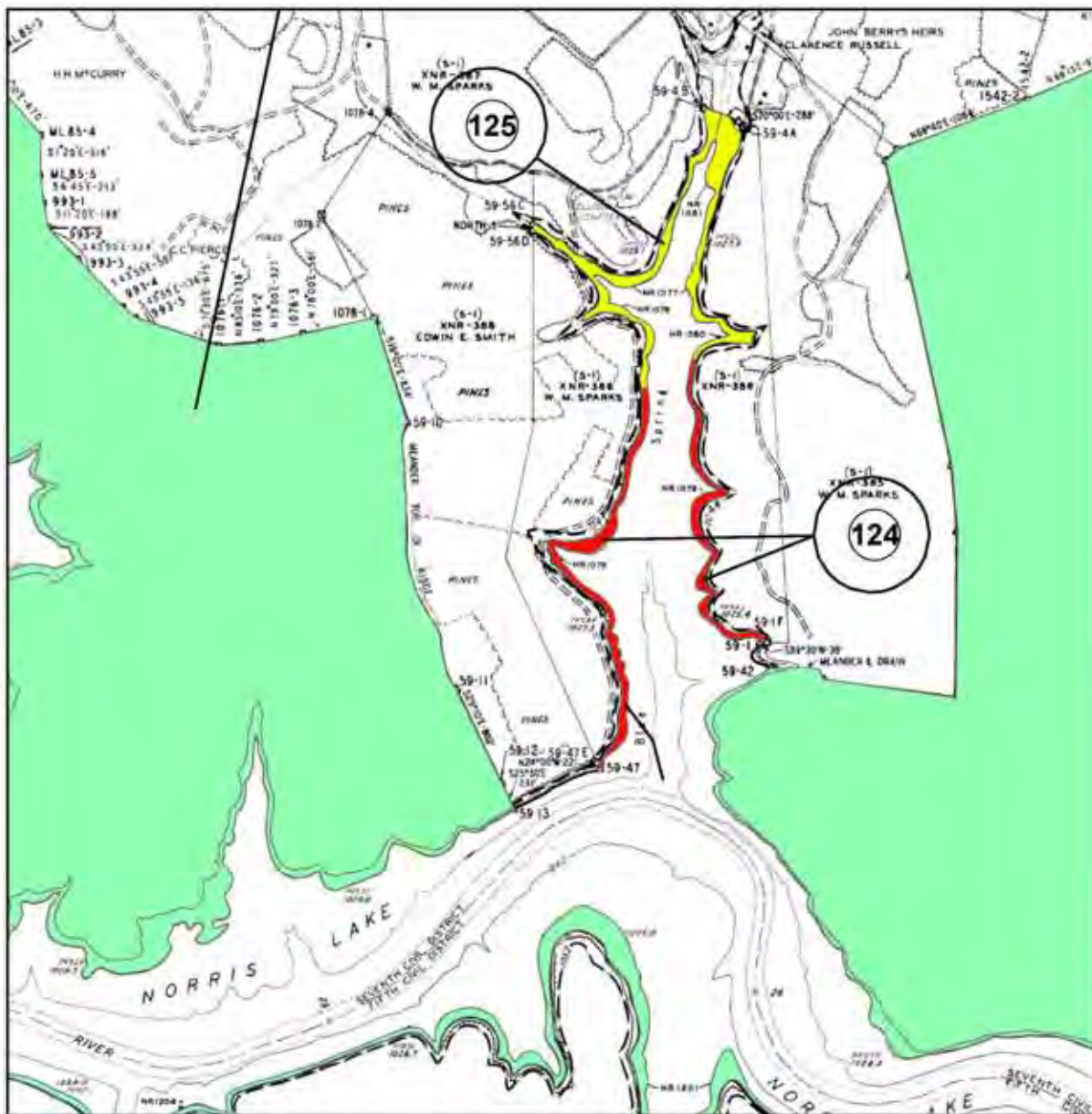


Figure 9. Norris Reservoir Parcel 124

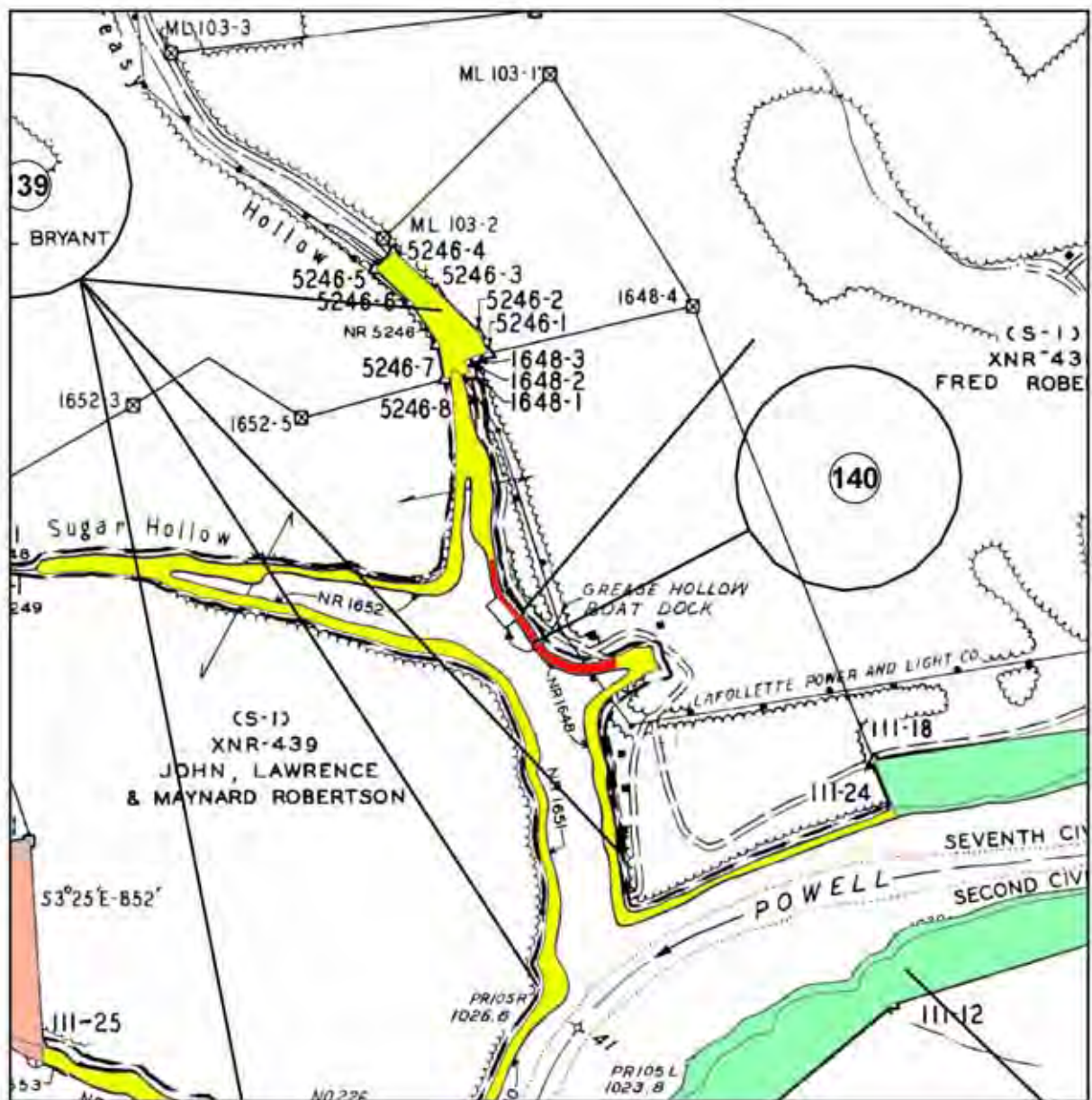


Exhibit Map
Norris Reservoir
2001 Land Plan Parcel 140
Tract No. XNR-439 (S-1)
Powell River Mile 42.0R



Map Reference
D-Stage 111



Land and Water
Stewardship

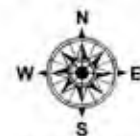


June 25, 2009

Figure 10. Norris Reservoir Parcel 140



Exhibit Map
 Norris Reservoir
 2001 Land Plan Parcel 209
 Tract No. XNR-755
 Ball Creek at Big Sycamore Creek mile 1.0R
 Clinch River mile 135.4R



Map Reference:
 D-Stage 92

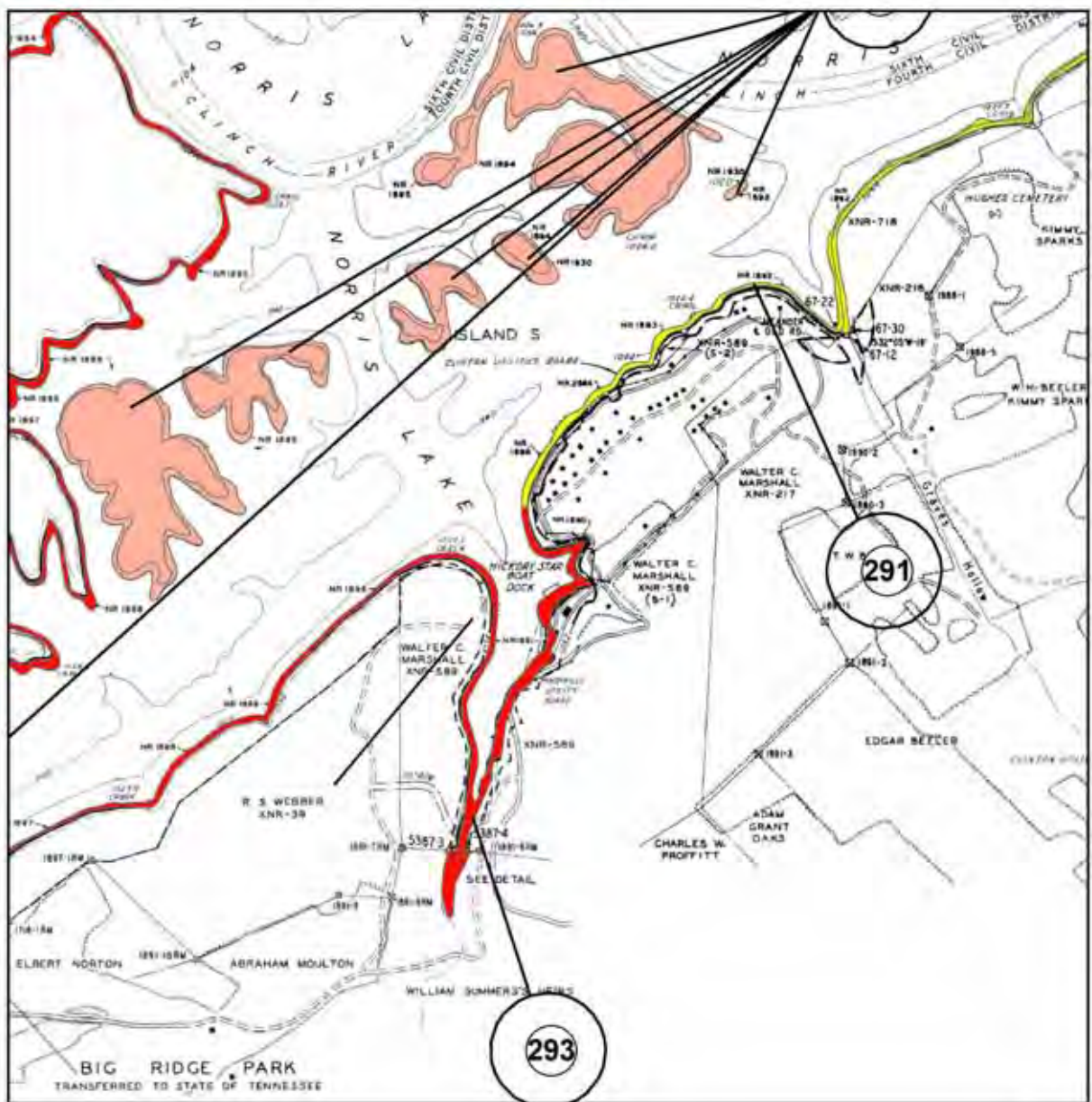


Land and Water
 Stewardship



June 25, 2009

Figure 11. Norris Reservoir Parcel 209



June 25, 2009

Exhibit Map
Norris Reservoir
2001 Land Plan Parcel 293
Tract No. XNR-589
Poor Land Creek mile .80R
Clinch River mile 104.2L



Figure 12. Norris Reservoir Parcel 293

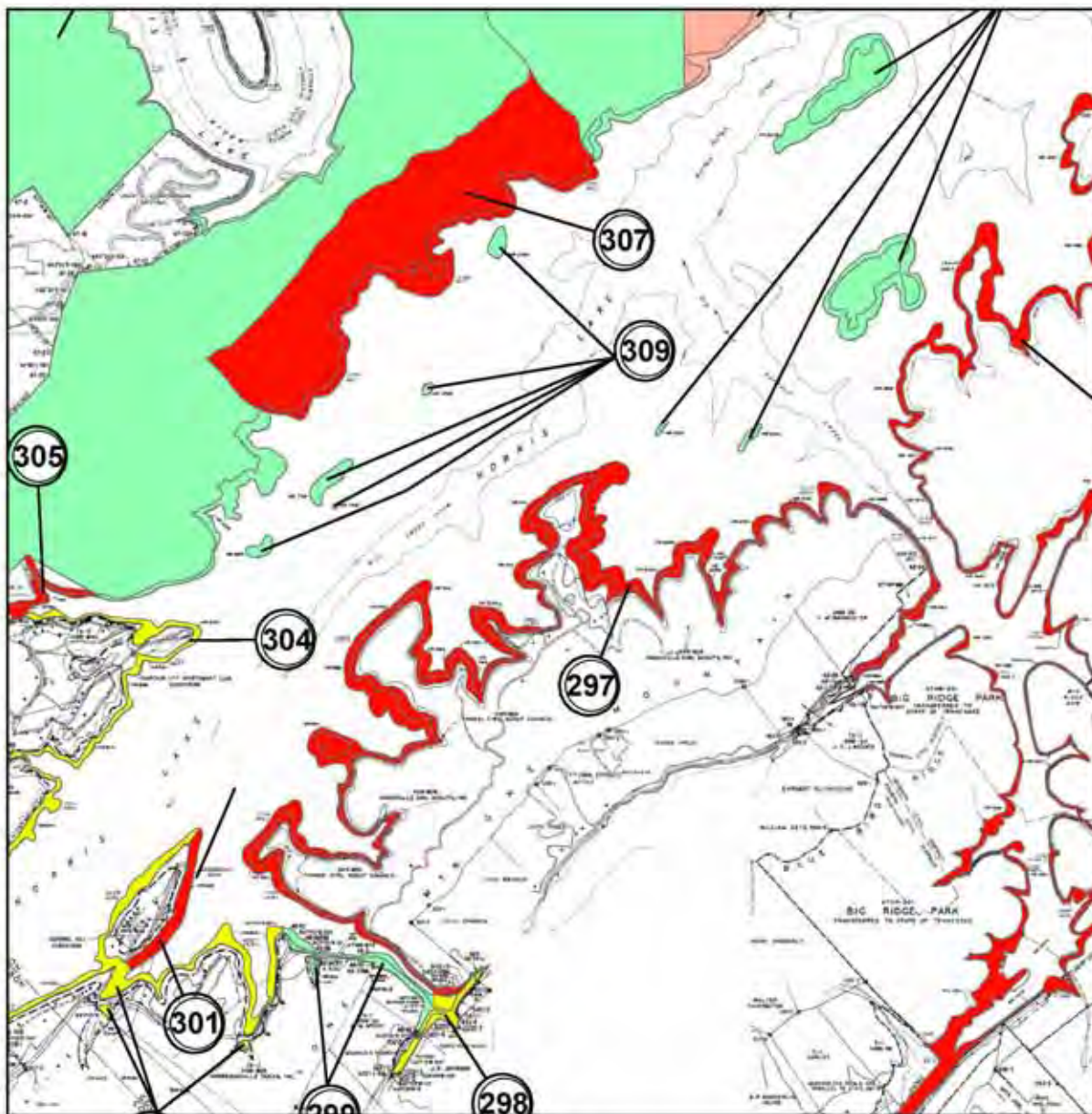


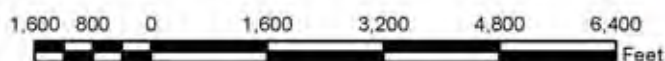
Exhibit Map
 Norris Reservoir
 2001 Land Plan Parcel 297
 Tract No. XNR-806 & XNR-826
 Mill Creek mile 2.0R
 Clinch River mile 97.5L



Map Reference:
 D-Stage 48 & 49

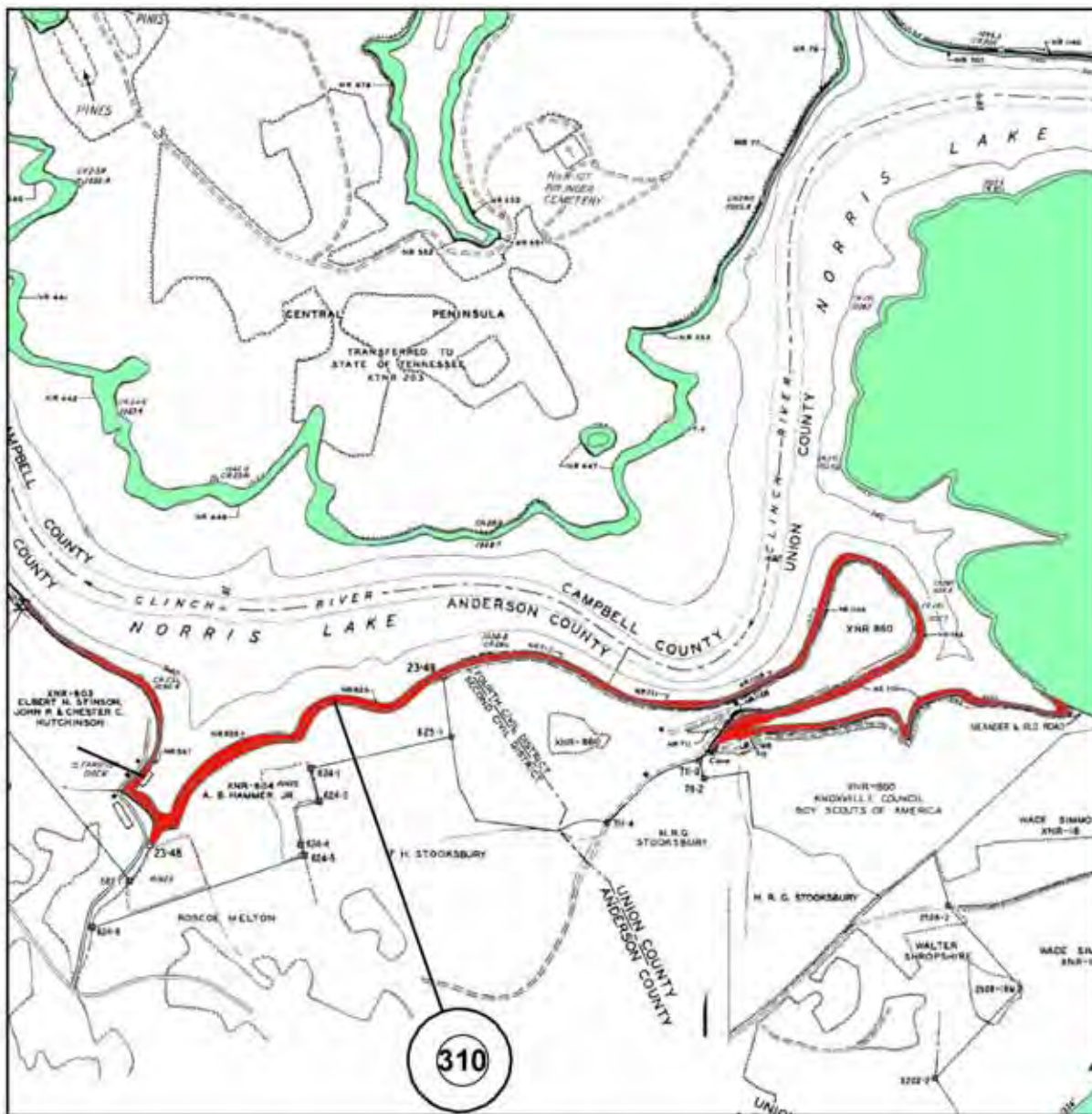


Land and Water
 Stewardship



June 25, 2009

Figure 13. Norris Reservoir Parcel 297



June 25, 2009

Exhibit Map

Norris Reservoir
2001 Land Plan Parcel 310
Tract No. XNR-603, XNR-604, & XNR-860
Clinch River mile 91.7L



Map Reference:
D-Stage 23 & 47



Land and Water
Stewardship

Figure 15. Norris Reservoir Parcel 310

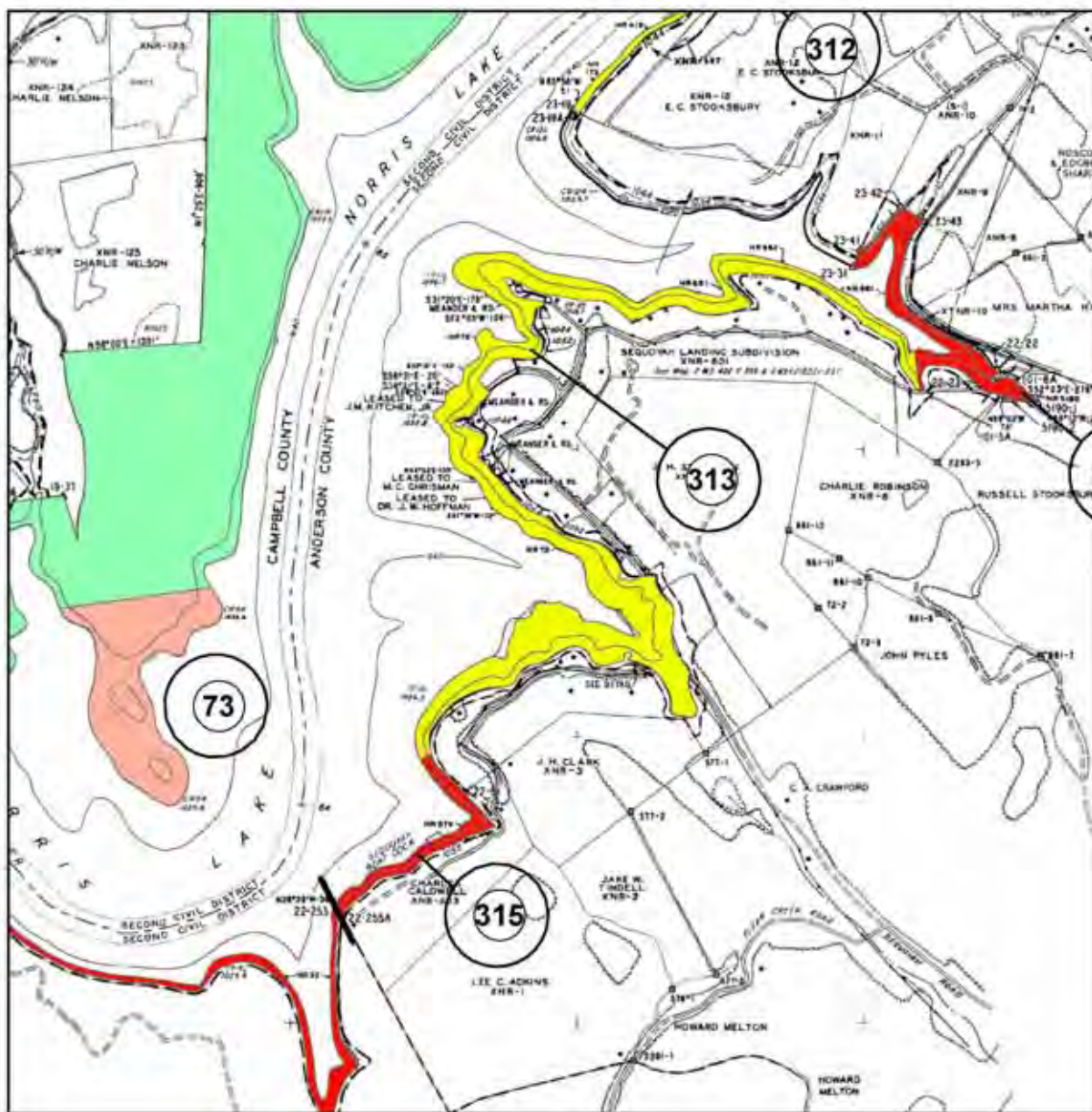


Exhibit Map

Norris Reservoir
2001 Land Plan Parcel 315
Tract No. XNR-803
Clinch River mile 84.0L



Map Reference
O-Stage 22



Land and Water
Stewardship



June 25, 2009

Figure 16. Norris Reservoir Parcel 315

Maps of Parcels – Guntersville Reservoir

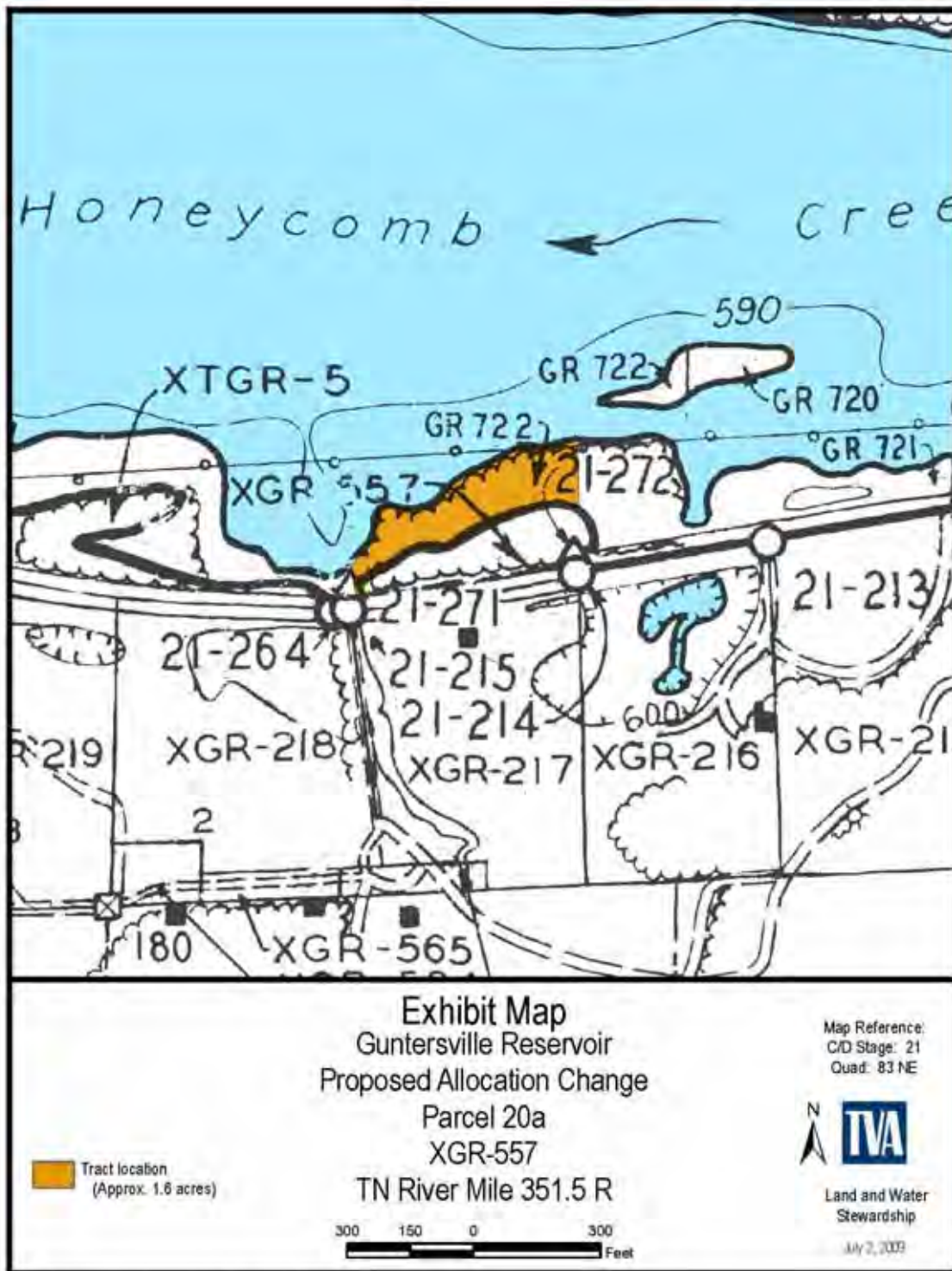


Figure 17. Guntersville Reservoir Parcel 20a

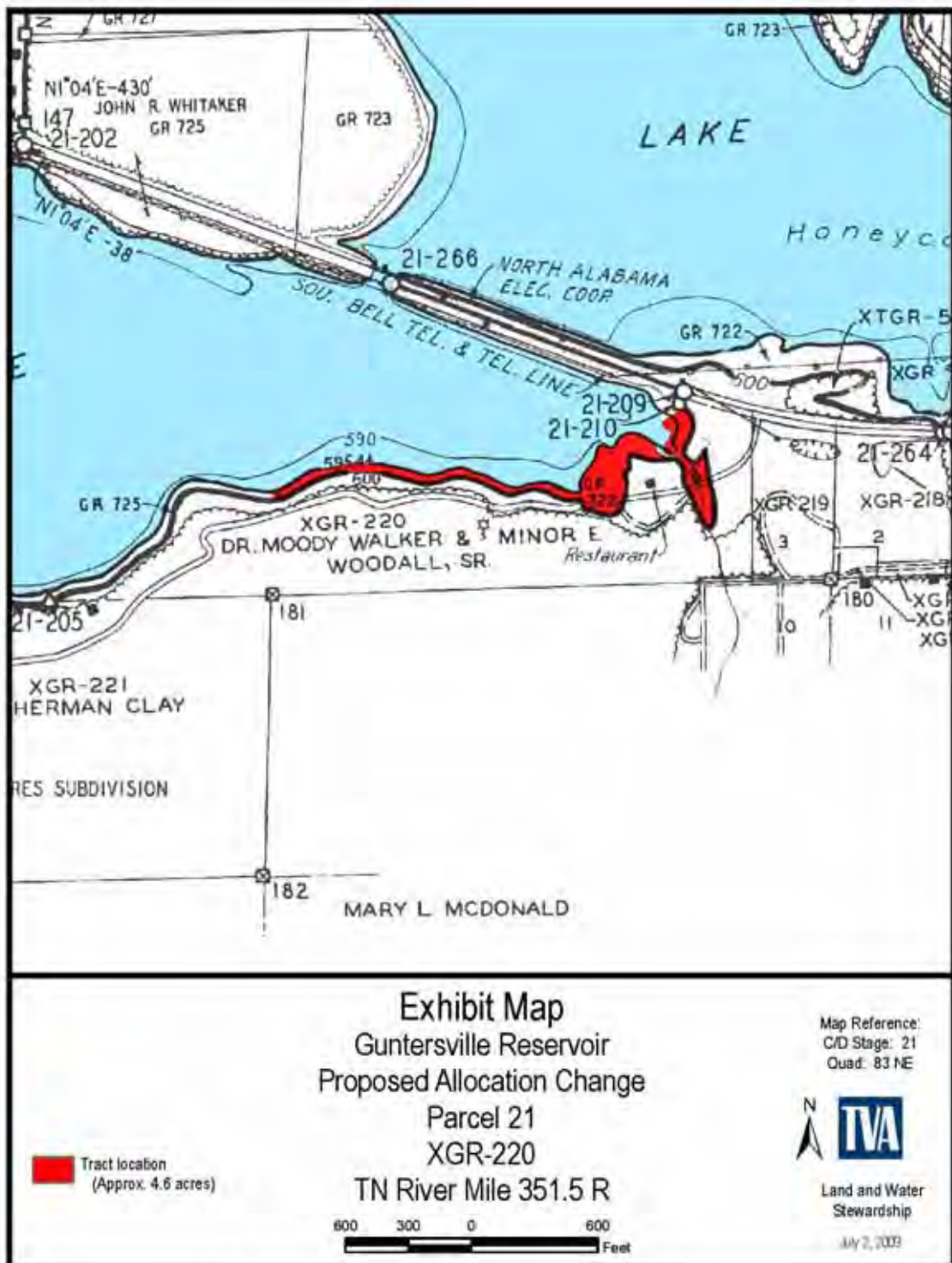


Figure 18. Guntersville Reservoir Parcel 21

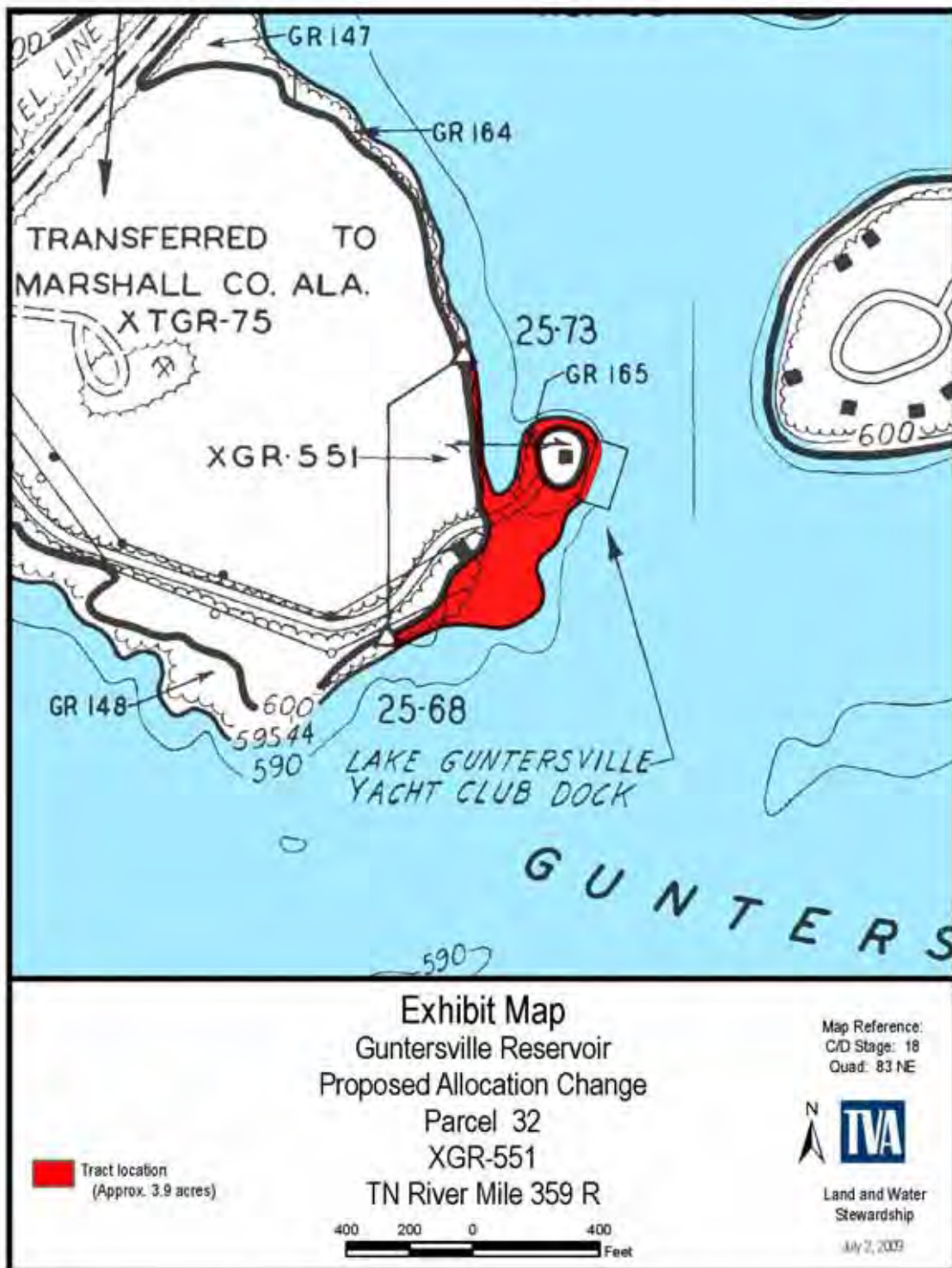


Figure 20. Guntersville Reservoir Parcel 32

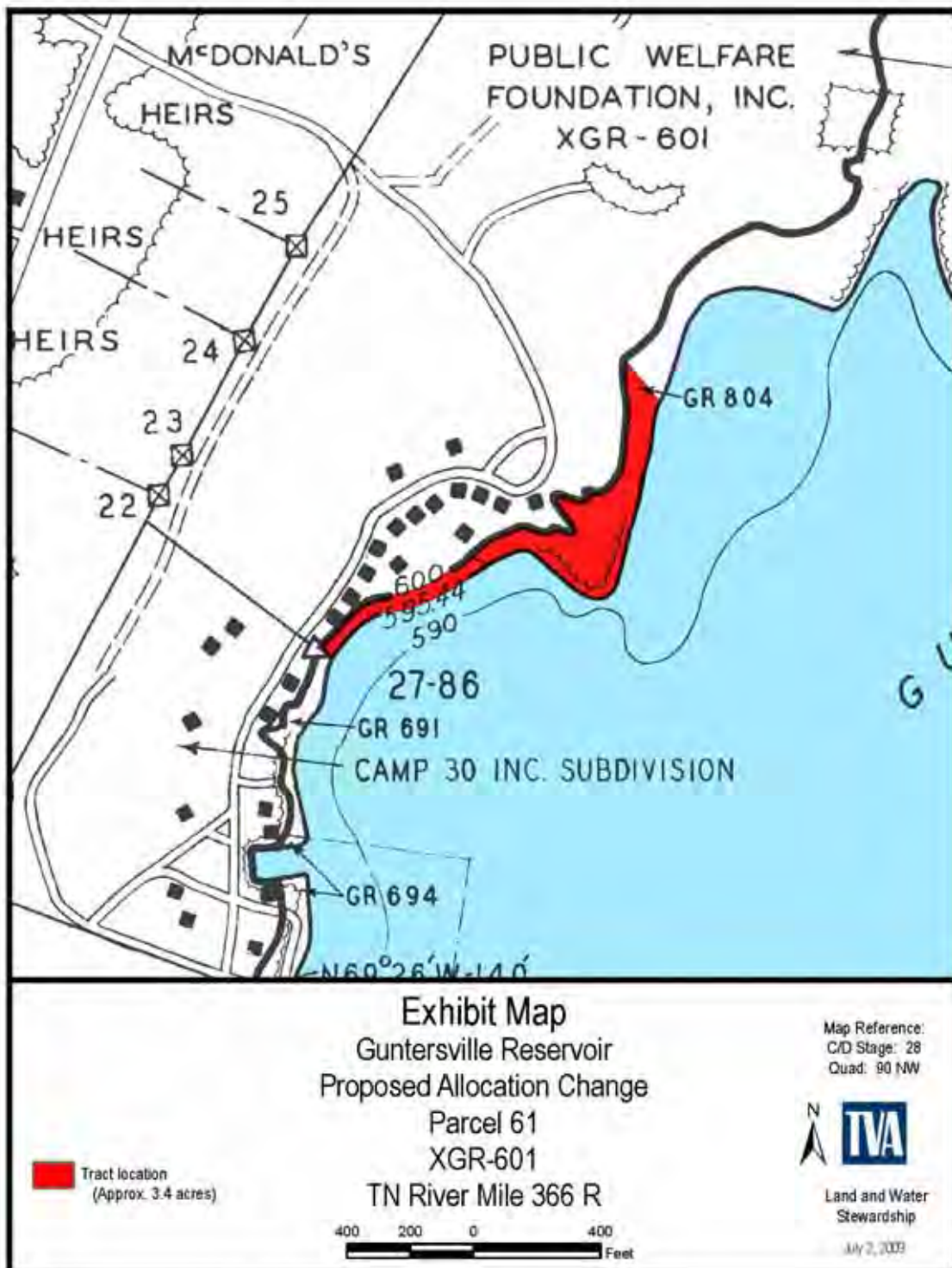


Figure 22. Guntersville Reservoir Parcel 61

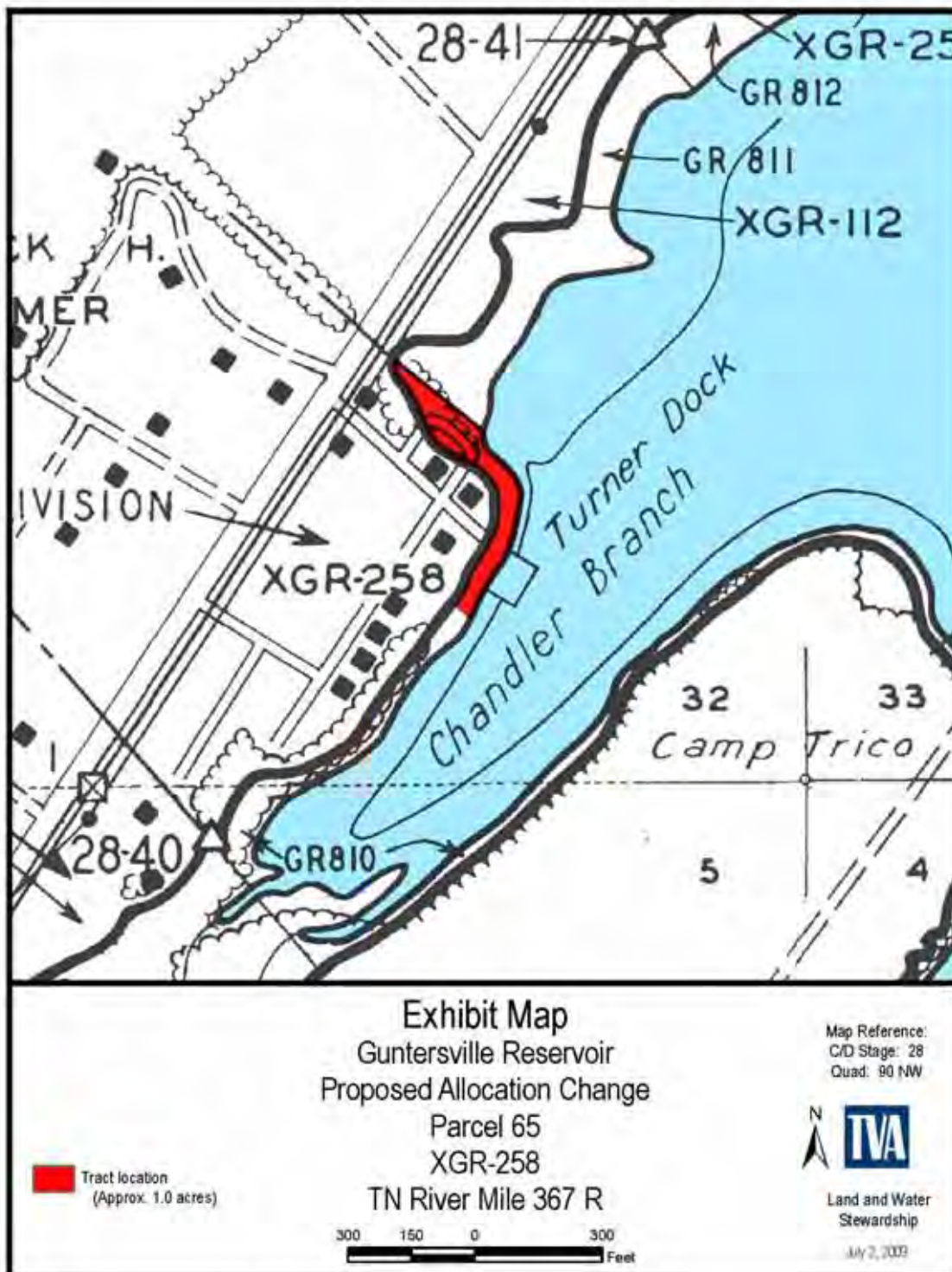


Figure 23. Guntersville Reservoir Parcel 65

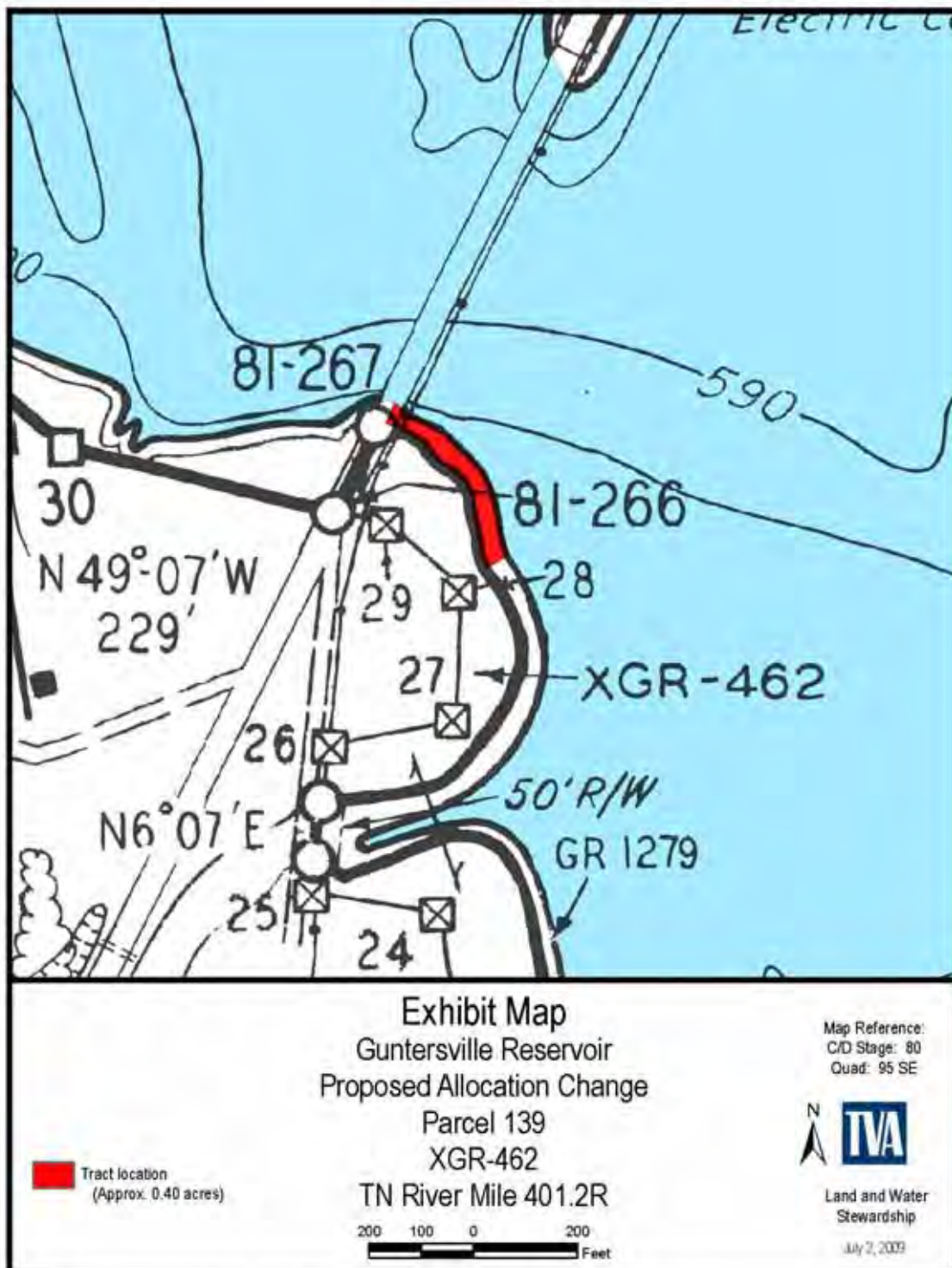


Figure 26. Guntersville Reservoir Parcel 139



Figure 27. Guntersville Reservoir Parcel 158

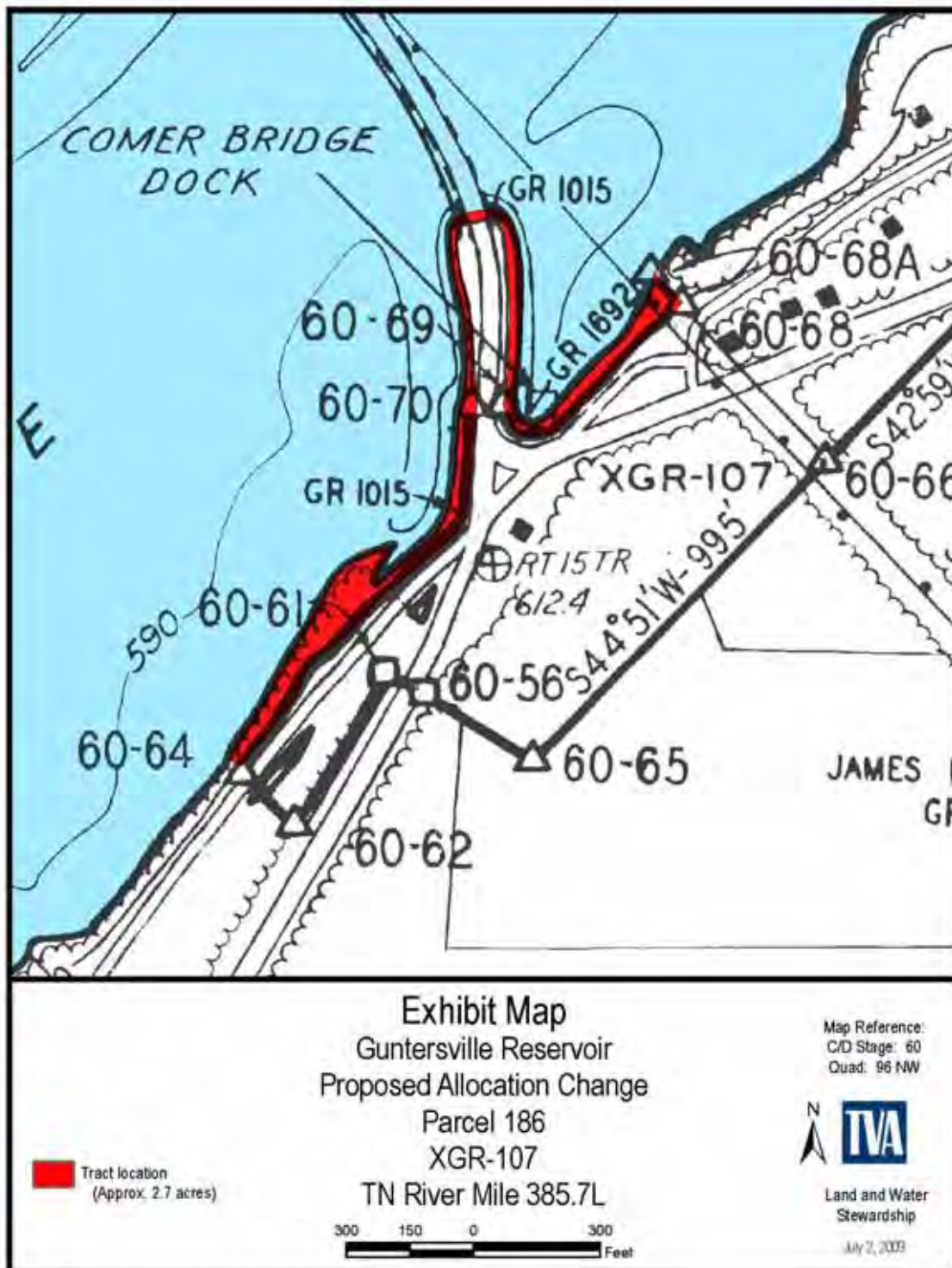


Figure 28. Guntersville Reservoir Parcel 186

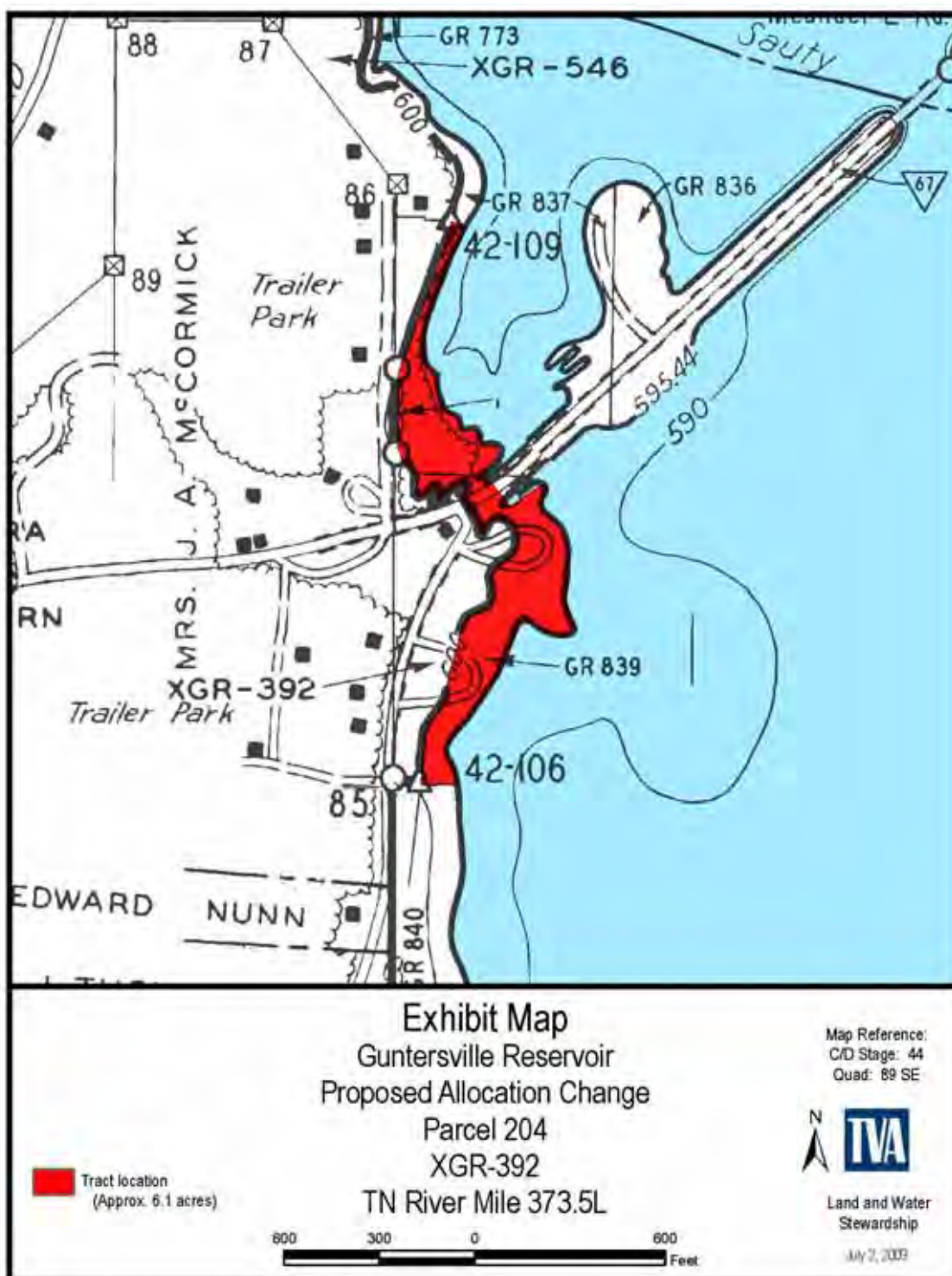


Figure 29. Guntersville Reservoir Parcel 204



Figure 31. Guntersville Reservoir Parcel 214



Figure 32. Guntersville Reservoir Parcels 216 and 218

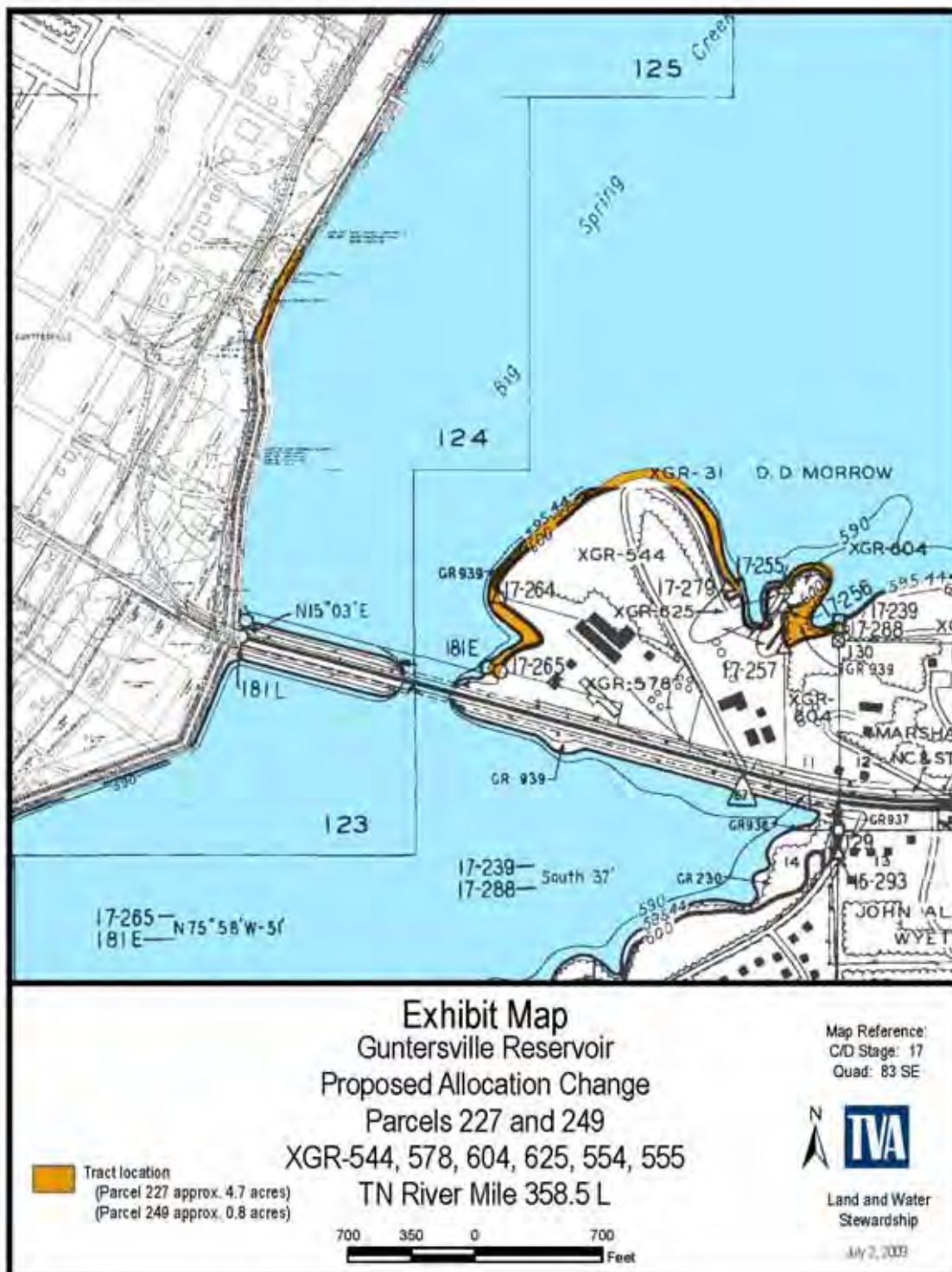


Figure 33. Guntersville Reservoir Parcels 227 and 249

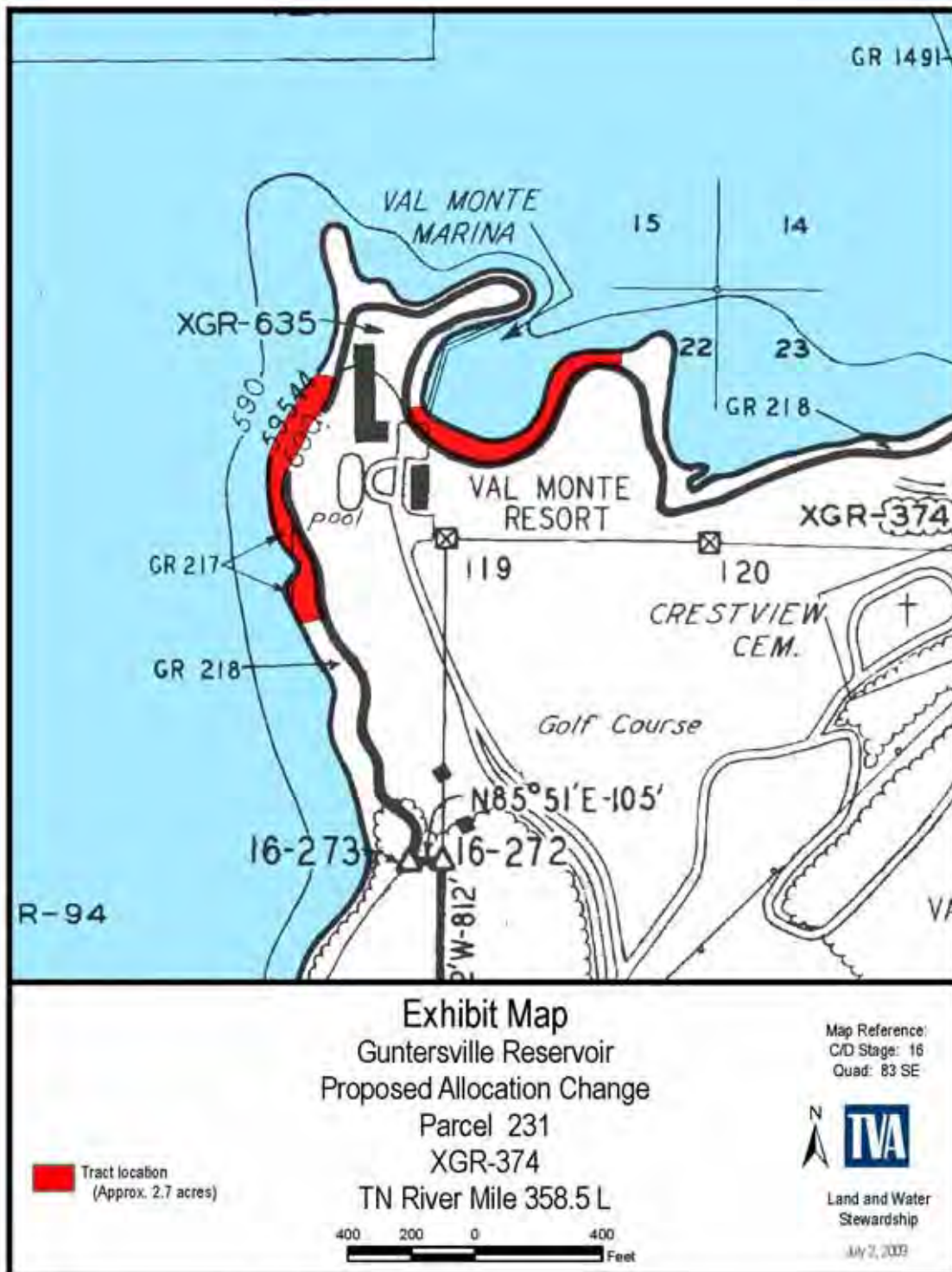


Figure 35. Guntersville Reservoir Parcel 231

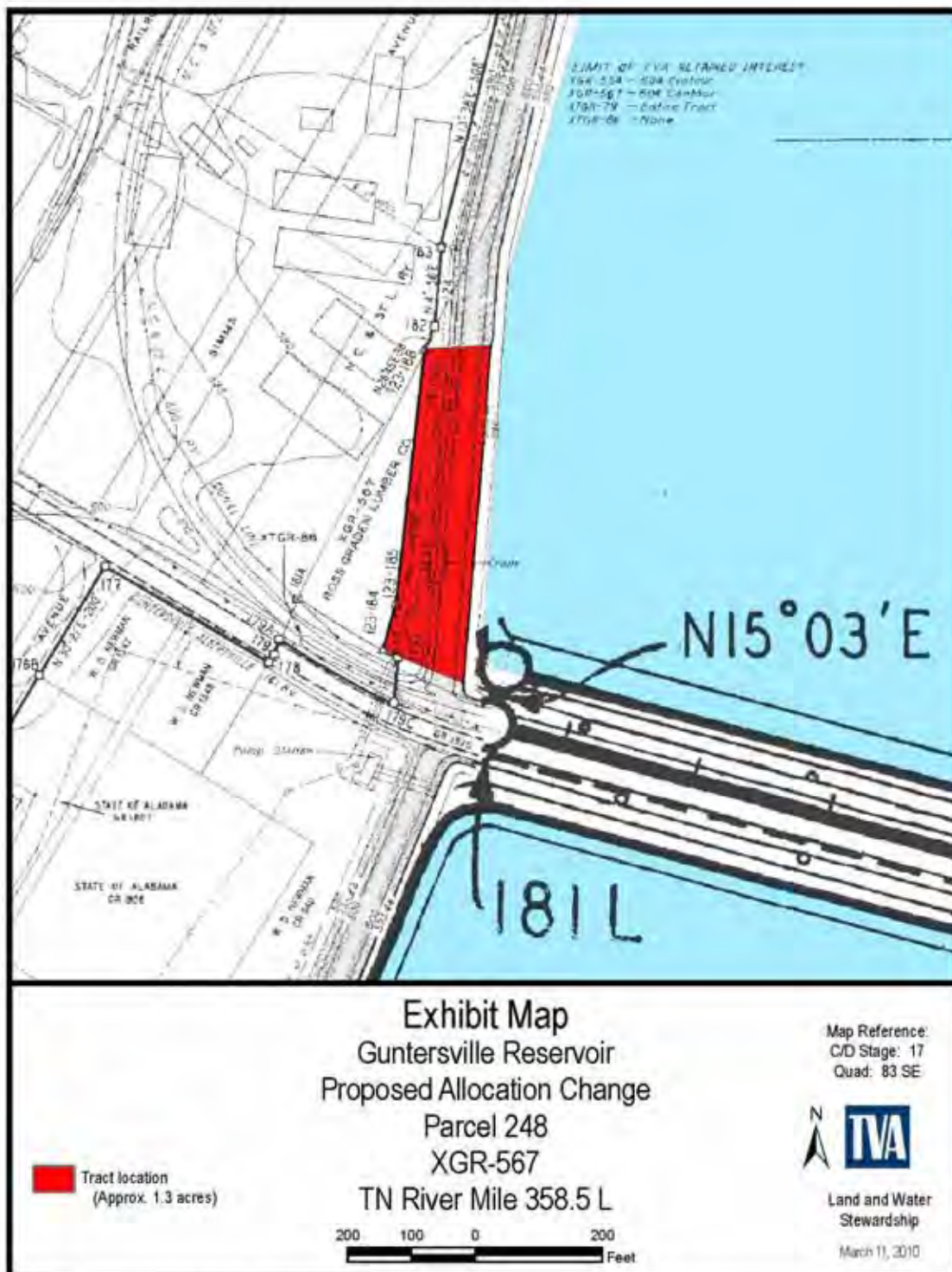


Figure 37. Guntersville Reservoir Parcel 248

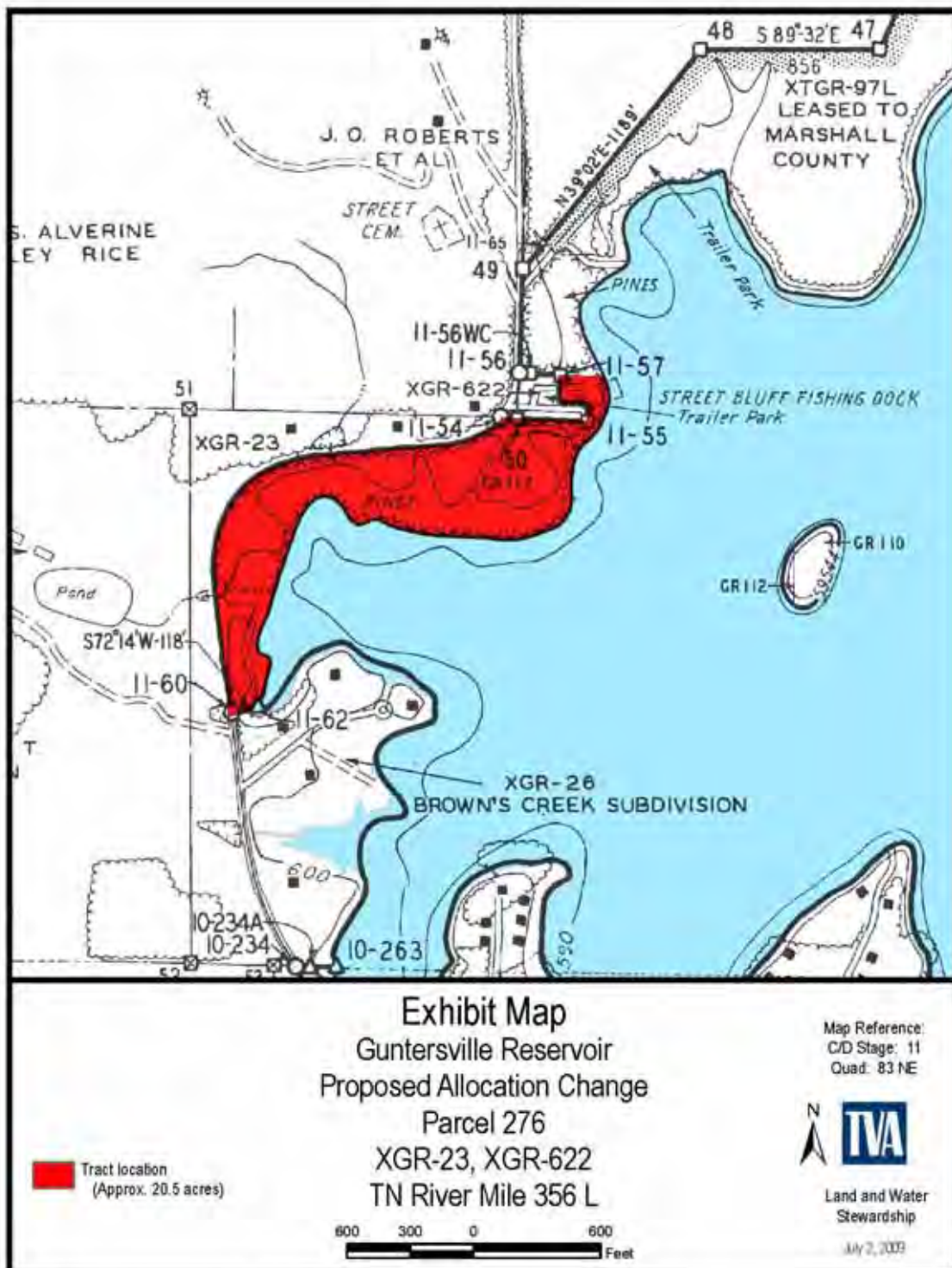


Figure 38. Guntersville Reservoir Parcel 276

Maps of Parcels – Pickwick Reservoir

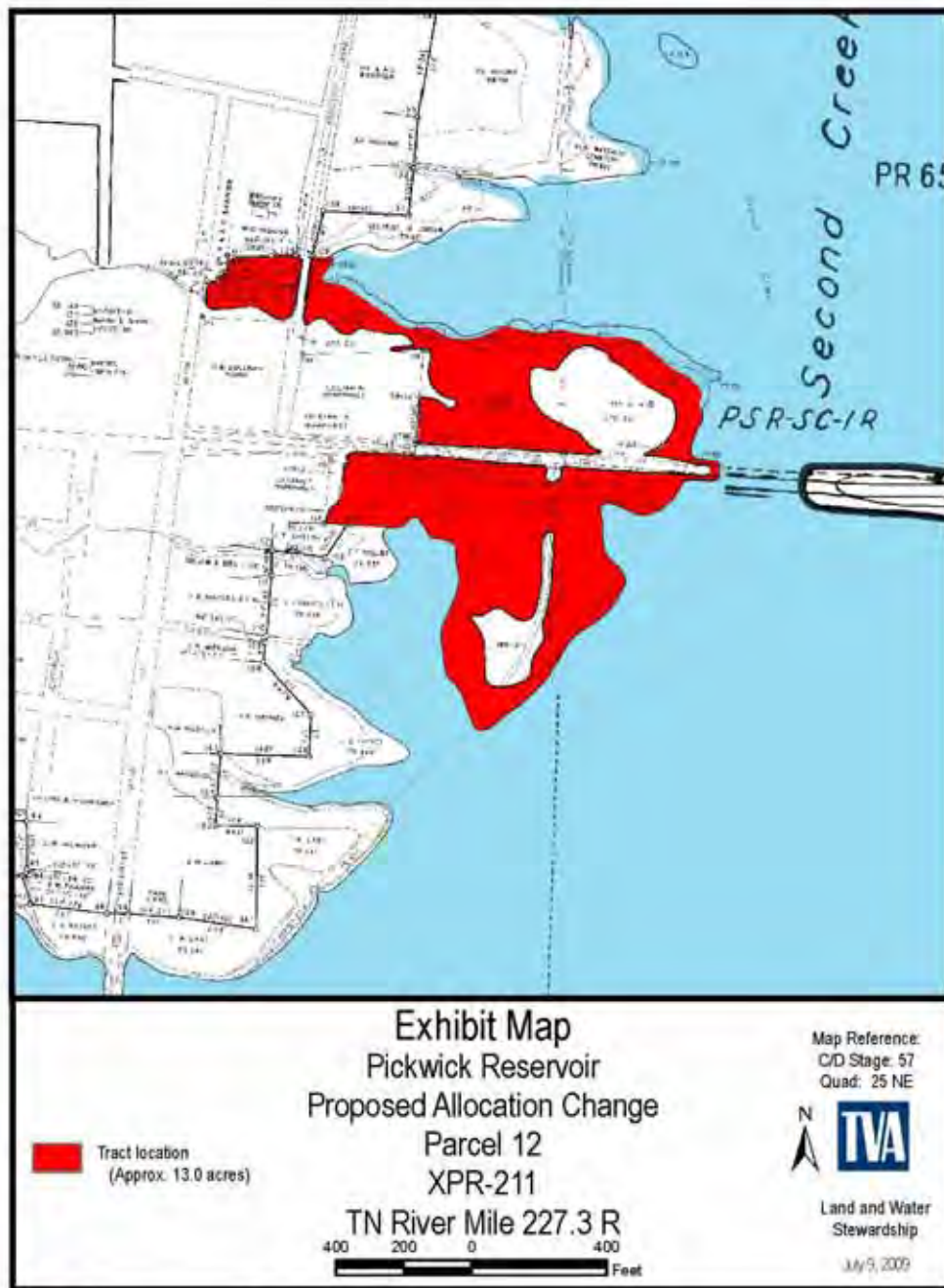


Figure 39. Pickwick Reservoir Parcel 12

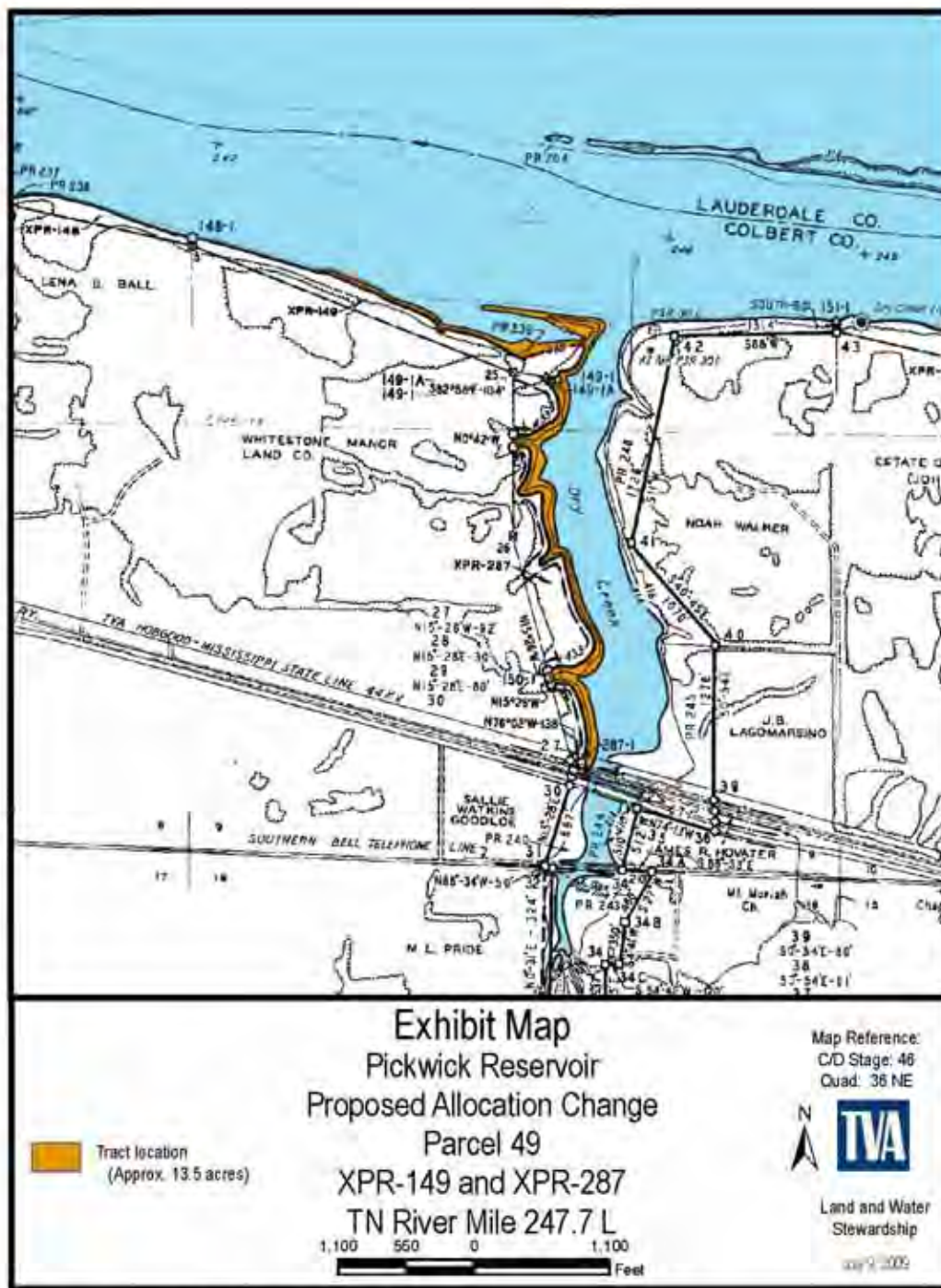


Figure 40. Pickwick Reservoir Parcel 49

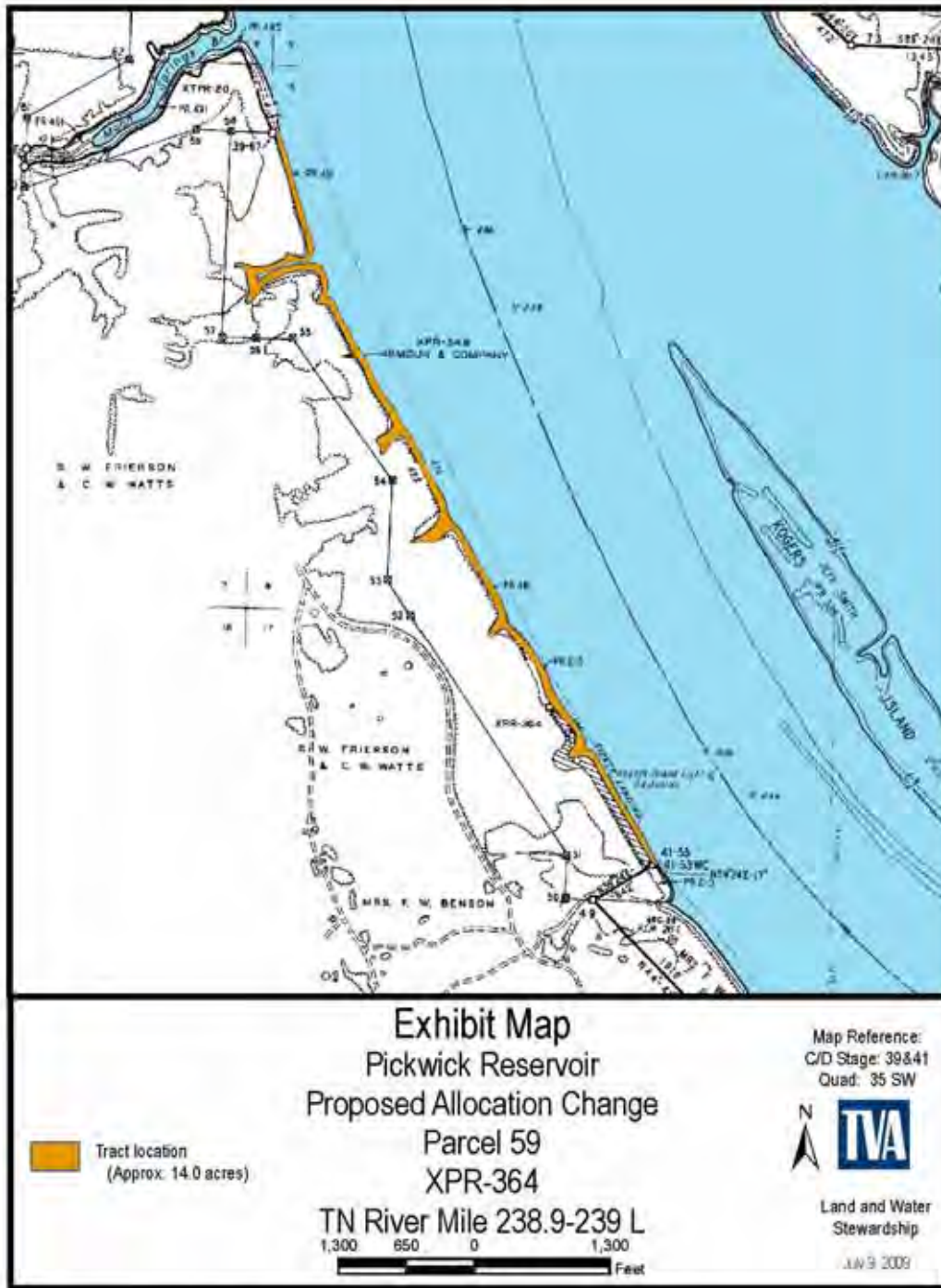


Figure 41. Pickwick Reservoir Parcel 59

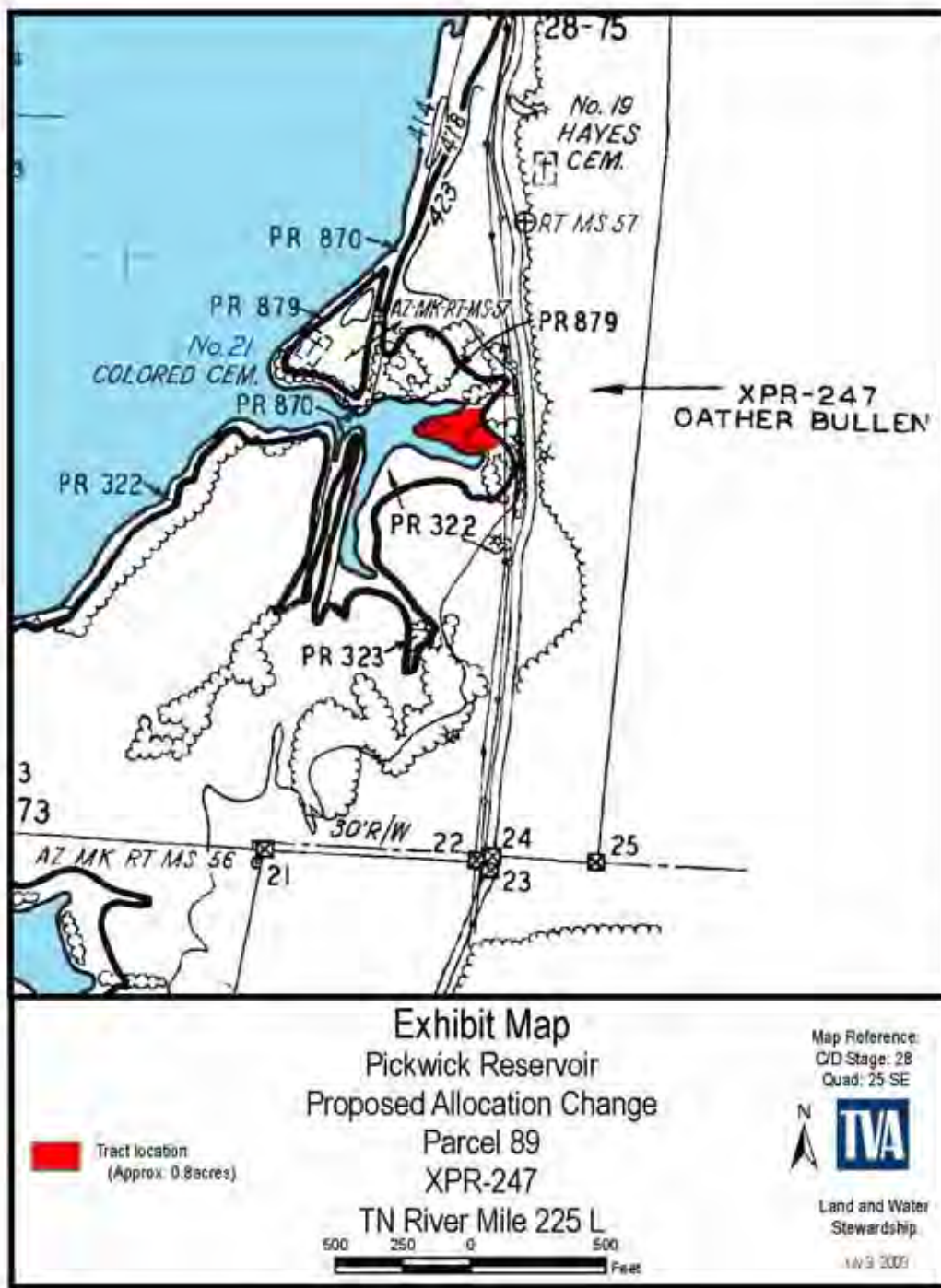


Figure 42. Pickwick Reservoir Parcel 89

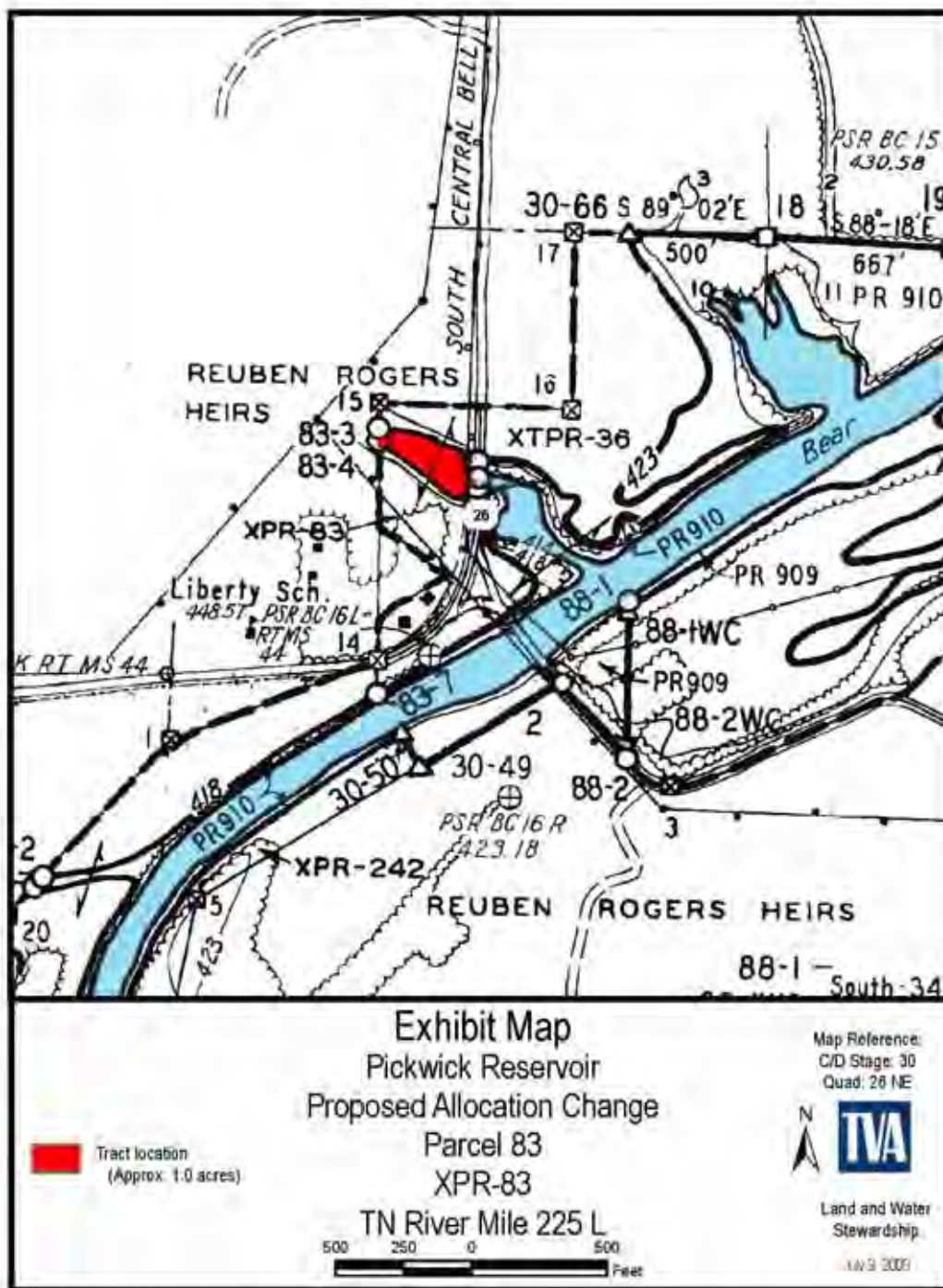


Figure 44. Pickwick Reservoir Parcel 103

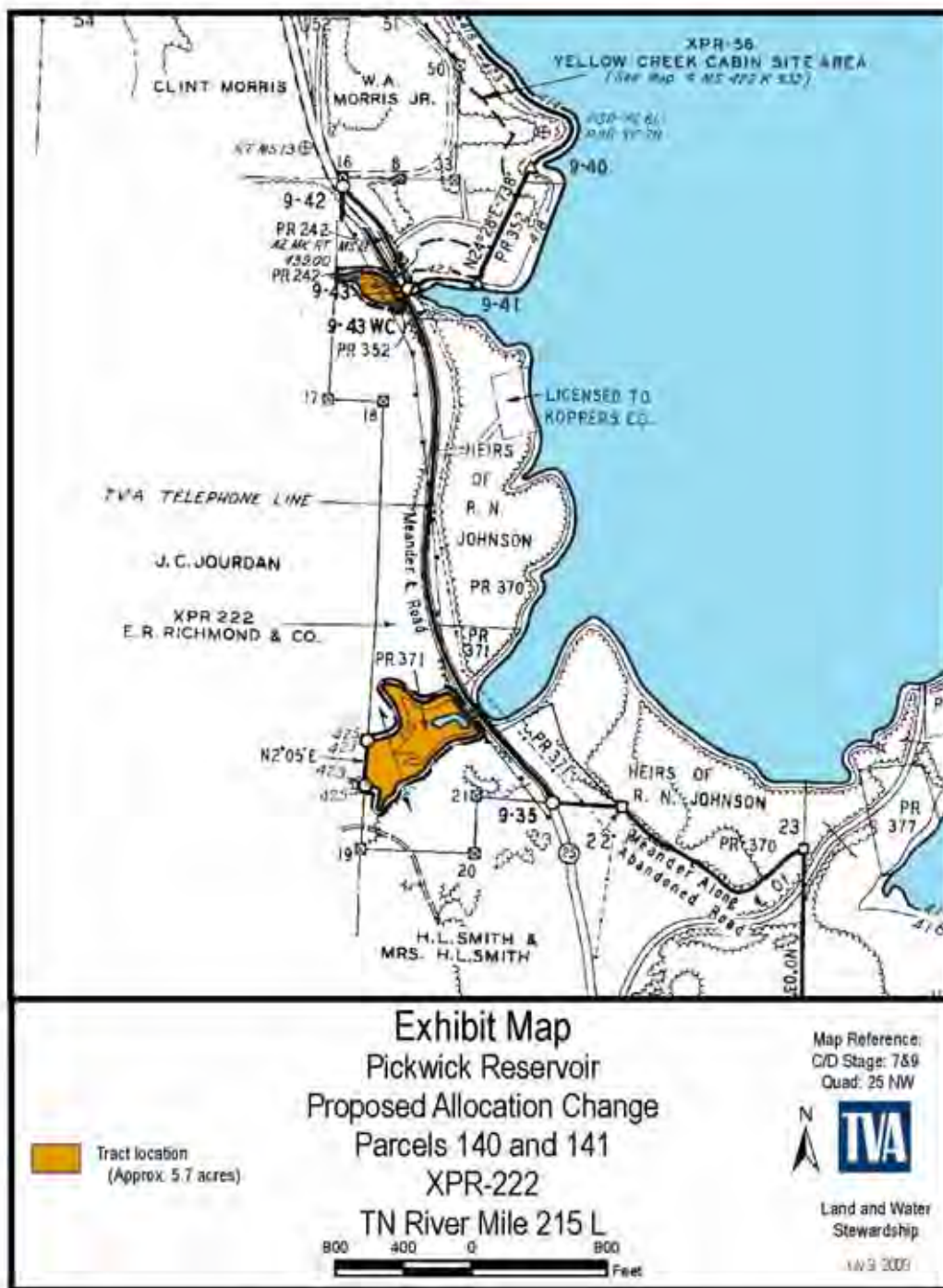


Figure 46. Pickwick Reservoir Parcels 140 and 141

Environmental Assessment

Norris Reservoir Land Management Plan



September 2001



**ENVIRONMENTAL ASSESSMENT
NORRIS RESERVOIR LAND MANAGEMENT PLAN**

**RESOURCE STEWARDSHIP
Clinch-Powell Watershed Team**

TENNESSEE VALLEY AUTHORITY

September 2001

NORRIS RESERVOIR LAND MANAGEMENT PLAN

Anderson, Campbell, Claiborne, Grainger, and Union Counties, Tennessee

Responsible Federal Agency: Tennessee Valley Authority (TVA)

Abstract: TVA has prepared an Environmental Assessment (EA) and a comprehensive Land Management Plan for the 27,927 acres and 809 shoreline miles of TVA public land above the summer pool levels on Norris Reservoir. The EA documents the analysis of alternative uses of TVA public land and their effects on the surrounding environment. TVA considered two alternatives for making land use decisions for TVA public land around Norris Reservoir. Under the No Action Alternative (Alternative A), TVA would continue to use the existing 1968 Forecast System to manage TVA public land on Norris Reservoir. The Forecast System emphasizes recreation and power plant development. Under the Allocation Alternative (Alternative B) TVA would use the Norris Reservoir Land Management Plan (Norris Plan) to manage TVA public land based on scientific, cultural, and economic principles. The Norris Plan emphasizes resource management and sensitive resource protection. The Norris Plan takes into account the comments received from the general public and various state and federal agencies, elected officials, resource conservation groups and other interested groups. The Norris Plan is intended to guide TVA resource and property management decisions for the foreseeable future. It identifies the most suitable range of uses for 315 parcels of TVA public land. Regardless of the alternative adopted by TVA, either planning strategy would be implemented consistent with the current TVA Shoreline Management Policy.

The draft EA was distributed in June 2001. TVA received forty-four sets of comments on the draft. The EA includes responses to these comments. The full EA and Norris Land Management Plan can be viewed on the Internet at <http://www.tva.gov/environment/reports/norris>.

Requests for further information should be directed to:

David B. Harrell
Norris Plan Project Leader
Tennessee Valley Authority
Resource Stewardship
Post Office Box 1589
Norris, TN 37828-1589
Telephone: (865) 632-1539
email: dbharrell@tva.gov

Cheryl V. Ward
Project Manager, Watershed Technical Services
Tennessee Valley Authority
Resource Stewardship
Post Office Box 1589
Norris, TN 37828-1589
Telephone: (865) 632-1531
email: cvward@tva.gov

Executive Summary

The Tennessee Valley Authority (TVA) has prepared this Environmental Assessment (EA) on alternative plans for the management of TVA public land around Norris Reservoir. Public involvement began in April 1999 with the publication of an article announcing that planning was underway on Norris Reservoir in *TVA River Neighbors*. Mailings were also sent to approximately 3,000 citizens notifying them of the planning process and how to get involved. Members of the public, various state and federal agencies, elected officials, resource conservation groups and other interested groups have participated in the preparation of this EA by attending two public scoping meetings in 1999: October 28 at Anderson County High School and November 2 at Lincoln Memorial University. Participation continued in 2001 during the comment period for the draft EA by attending: June 19, Friends of Norris Lake, Anderson County Chapter meeting in Norris Tennessee; June 26, Friends of Norris Lake, Campbell County Chapter meeting in LaFollette, Tennessee; July 3, Campbell Outdoor Recreation Association, meeting in LaFollette, Tennessee; July 9 Clinch-Powell Watershed Team Open House in Norris, Tennessee; and July 13 Campbell County Leadership Forum held on Norris Reservoir. Comments were also received through emails, the Norris Reservoir Land Management Plan (Norris Plan) website, 1-800 TVA LAND, and the U.S. mail.

Alternatives

TVA considered two alternatives for making land use decisions for the TVA public land around Norris Reservoir. Under the No Action Alternative (Alternative A), TVA would continue to use the existing 1968 Forecast System. Under the Allocation Alternative (Alternative B), TVA would use the Norris Plan to guide future land use decisions.

A common feature of both alternatives is categorization of the residential shoreline. In accordance with the TVA Shoreline Management Policy (SMP) (November 1, 1998) the three categories used for residential shoreline include: Shoreline Protection, Residential Mitigation, and Managed Residential.

Alternative A – No Action Alternative

TVA would continue to use the existing 1968 Forecast System on the Reservoir. This Forecast System allocates land into the following eleven categories:

Dam Reservation (904 acres) includes land managed to protect the integrity of the dam and associated switchyards and power lines.

Reservoir Operations (2,568 acres) includes generally, narrow bands of shoreland retained by TVA for flood control and other reservoir operations purposes. Also Reservoir Operations includes islands in the mainstream or tributaries used for informal, dispersed recreation and natural resource management projects.

Power Transmission (584 acres) includes land reserved for future power development or to maintain the integrity of existing power lines.

Public Recreation (18,050 acres) includes land set aside for use by the general public for recreational activities.

Commercial Recreation (97 acres) includes land that TVA has reserved primarily for commercial use.

Minor Commercial Landings (24 acres) includes land allocated for minor commercial landings available for public or private development of small-scale barge facilities.

Forestry Research (726 acres) includes land used as on-going sites for monitoring tree growth and stress.

Steam Plant Study (821 acres) includes land set aside to potentially serve as a future steam plant location.

TVA Small Wild Area (363 acres) includes land 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.

Wildlife Management (175 acres) includes land managed for the enhancement of natural resources for human use and appreciation.

No Forecast (3,635 acres) identifies TVA public land not included in the Forecast System.

Alternative B – Allocation Alternative

Alternative B, the proposed Plan, was developed using information obtained from the public, other agencies, organizations, existing and newly collected field data, both on land conditions and resources, and technical knowledge of TVA staff. In determining proposed allocations for 315 parcels of public land, TVA considered a wide range of possible land uses. This alternative allocates land into categories that emphasize sensitive resource management (preservation and enhancement of wetlands, biodiversity, and archaeological and historic resources) and natural resource conservation. Each parcel of land was reviewed to determine its physical capability for supporting certain uses, suitability of supporting these uses, and public needs. Based on this information, TVA allocated land parcels to one of seven planning zones.

Zone 1: Non-TVA Shoreland includes shoreland located above the summer water level that TVA does not own in fee or land never purchased by TVA. This Non-TVA shoreland is subject to TVA's 26a permitting requirements. TVA is not allocating private or other non-TVA public land.

The proposed Norris Plan allocates 27,927 acres of TVA public land on the Norris Reservoir into the following six planning zones:

Zone 2: TVA Project Operations (935 acres) includes TVA reservoir land currently used for TVA operations and public works projects.

Zone 3: Sensitive Resource Management (4,839 acres) includes 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. 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.

Zone 4: Natural Resource Conservation (18,937 acres) includes 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, resource management, wildlife observation, and camping on undeveloped sites.

Zone 5: Industrial/Commercial Development (0 acres) the Norris Plan has no land allocated for industrial or commercial development.

Zone 6: Recreation (1,744 acres) includes all reservoir land managed for concentrated, active recreation activities that require capital improvement and maintenance.

Zone 7: Residential (1,473 acres) includes TVA public 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. As provided for in the SMP, residential access would be divided into the three categories based on the presence of sensitive ecological resources.

Comparison of Alternatives

Selection of Alternative A could result in some reduction in potential long-term benefits on Norris Reservoir. The Forecast System emphasizes recreation and power plant development. A major change from the existing Forecast System land designations is the creation of Zone 3 (Sensitive Resource Management); land containing sensitive resources such as protected species, wetlands, archaeological, historical, and significant visual resources are allocated to this zone in Alternative B. Under Alternative A, the resources identified for protection would be protected by individual environmental reviews of specific land use proposals. However, allocation of these resources to Zone 3 in Alternative B allows the protection of the sensitive resource to be the overriding objective for the management of a particular parcel of land, as well as providing an additional tool to better manage the potential cumulative effects which might occur to a sensitive resource. The Norris Plan emphasizes resource management and sensitive resource protection. Under Alternative B, eleven new TVA Natural Areas would be designated because of the presence of rare species or other sensitive resources. Also the existing Monks Corner Small Wild Area will be expanded by 25 acres. Other potential TVA Natural Areas would be considered during the Resource Management Unit Planning process.

Preferred Alternative

TVA has selected Alternative B as the preferred alternative. Alternative B meets the desires of a majority of the members of the public and various agencies that commented on the draft EA. This alternative formulates a new and comprehensive Norris Plan for 315 parcels of TVA public land on Norris Reservoir. The proposed Norris Plan honors previous land use commitments and allocates uncommitted public land into zones that allow for a balance of development and conservation. The results of the evaluation of possible environmental effects (summarized in Section 2.3 of the EA) indicate that Alternative B would not have adverse environmental effects. It addresses the stewardship of sensitive resources and other important issues and concerns raised by citizens and other stakeholders. Selection of this alternative would be beneficial to public land and would protect current resource functions and values.

Commitments

1. All land-disturbing activities shall be conducted in accordance with Best Management Practices (BMPs) as defined by Section 208 of the Clean Water Act and implementing regulations to control erosion and sedimentation. Forest management activities will be conducted in accordance with practices prescribed for forestry in *Best Management Practices for Silvicultural Activities on TVA Land*.
2. Visual and water quality enhancement buffers, between 50 and 100 feet Wide, will be provided to screen wildlife habitat enhancement areas from public thoroughfares and shorelines and to minimize the potential for sediments or other nonpoint source pollutants to enter Norris Reservoir.
3. Any facilities or structures subject to flood damage will be floodproofed or located above the 500-year flood elevation.
4. TVA will utilize a phased identification and evaluation approach to identify cultural resources.
5. Controlled burns will be conducted in accordance with Tennessee open burning regulations.
6. BMPs for agriculture, including maintenance of vegetative buffers, will be included in agricultural licenses as described in *Agricultural Land Licensing for 1999-2003 Crop Years - Northeast Region, Land Management*, TVA, 1999.

CONTENTS

1. PURPOSE OF AND NEED FOR ACTION	1
1.1 BACKGROUND	1
1.2 OTHER PERTINENT ENVIRONMENTAL REVIEWS OR DOCUMENTATION	2
1.3 PUBLIC INVOLVEMENT AND ISSUE IDENTIFICATION	6
1.4 THE DECISION	8
1.5 NECESSARY FEDERAL PERMITS OR LICENSES	8
2. ALTERNATIVES, INCLUDING THE PROPOSED ACTION	11
2.1 THE PROPOSED ACTION	11
2.2 ALTERNATIVES	11
2.2.1 <i>Alternative AóNo Action Alternative</i>	13
2.2.2 <i>Alternative BóAllocation Alternative</i>	15
2.3 COMPARISON OF ALTERNATIVES	22
2.4 THE PREFERRED ALTERNATIVE	23
3. AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS.....	35
3.1 VISUAL RESOURCES	35
3.1.1 <i>Affected Environment</i>	36
3.1.2 <i>Environmental Consequences</i>	38
3.2 CULTURAL RESOURCES	40
3.2.1 <i>Archaeological Resources</i>	40
3.2.2 <i>Historic Structures</i>	43
3.3 THREATENED AND ENDANGERED SPECIES	46
3.3.1 <i>Affected Environment</i>	46
3.3.1 - 1 Plant Species	46
3.3.1 - 2 Terrestrial Animals and Sensitive Ecological Areas	49
3.3.1 - 3 Aquatic Animals	54
3.3.2 <i>Environmental Consequences</i>	56
3.3.2 - 1 Plant Species	56
3.3.2 - 2 Terrestrial Animals	57
3.3.2 - 3 Aquatic Animals	57
3.4 TERRESTRIAL ECOLOGY AND SIGNIFICANT NATURAL AREAS	58
3.4.1 <i>Affected Environment</i>	58
3.4.1 - 1 Terrestrial Ecology	58
3.4.1 - 2 Significant Natural Areas	61
3.4.2 <i>Environmental Consequences</i>	62
3.4.2 - 1 Terrestrial Ecology	62
3.4.2 - 2 Significant Natural Areas	64
3.5 WETLANDS/RIPARIAN ECOLOGY	65
3.5.1 <i>Affected Environment</i>	65
3.5.2 <i>Environmental Consequences</i>	66
3.6 RECREATION	68
3.6.1 <i>Affected Environment</i>	68
3.6.2 <i>Environmental Consequences</i>	70

3.7 WATER QUALITY	71
3.7.1 Affected Environment.....	71
3.7.2 Environmental Consequences.....	75
3.8 AQUATIC ECOLOGY	76
3.8.1 Affected Environment.....	76
3.8.2 Environmental Consequences.....	80
3.9 SOCIOECONOMIC	82
3.9.1 Affected Environment.....	82
3.9.2 Environmental Consequences.....	86
3.10 NAVIGATION	88
3.10.1 Affected Environment.....	88
3.10.2 Environmental Consequences.....	88
3.11 PRIME FARMLAND	89
3.11.1 Affected Environment.....	89
3.11.2 Environmental Consequences.....	90
3.12 OTHER ISSUES	90
3.12.1 Floodplain	90
3.12.2 Noise	92
3.12.3 Air Quality	94
3.13 CUMULATIVE IMPACTS	95
3.14 UNAVOIDABLE ADVERSE EFFECTS	97
3.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES	97
3.16 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL	98
3.17 RELATIONSHIP OF SHORT-TERM AND LONG-TERM PRODUCTIVITY	98
3.18 COMMITMENTS.....	99
4. SUPPORTING INFORMATION.....	101
4.1 LIST OF TVA PREPARERS AND CONTRIBUTORS.....	101
4.2 LIST OF AGENCIES AND ORGANIZATIONS CONSULTED.....	104
4.3 GLOSSARY	107
4.4 ACRONYMS AND ABBREVIATIONS	111
4.5 LITERATURE CITED.....	112

APPENDIXES

APPENDIX A-1 NORRIS RESERVOIR LAND MANAGEMENT PLAN	117
APPENDIX A-2 NORRIS RESERVOIR WATERSHED SURVEY RESULTS	157
APPENDIX A-3 PARCEL INFORMATION MATRIX	215
APPENDIX A-4 TVA RESPONSE TO PUBLIC COMMENTS AND COPIES OF ORIGINAL COMMENTS.....	237
APPENDIX B-1 PARCEL 6 - NORRIS DAM RESERVATION TACTICAL PLAN	283
APPENDIX C-1 TERRESTRIAL ECOLOGY - WILDLIFE SPECIES BY COMMUNITY	297
APPENDIX C-2 SENSITIVE BAT SPECIES KNOWN TO OCCUR IN VICINITY	301

INDEX

Index.....	303
------------	-----

TABLES

TABLE 2-1 EXISTING RESIDENTIAL SHORELINE CATEGORIZATION.....	12
TABLE 2-2 FORECAST SYSTEM DESIGNATION DEFINITIONS	13
TABLE 2-3 SUMMARY OF FORECAST SYSTEM DESIGNATIONS FOR NORRIS RESERVOIR.....	15
TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS.....	16
TABLE 2-5 SUMMARY OF ALLOCATION OF COMMITTED LAND ON NORRIS RESERVOIR	21
TABLE 2-6 SUMMARY OF PROPOSED LAND USE ALLOCATIONS FOR ALTERNATIVE B	21
TABLE 2-7 COMPARISON OF ALLOCATIONS FOR ALTERNATIVES A AND B.....	22
TABLE 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE.....	24
TABLE 3-1 ARCHAEOLOGICAL RESOURCES RECORDED WITHIN THE 3214 ACRES OF SURVEYED LAND	43
TABLE 3-2 LISTED PLANT SPECIES KNOWN TO OCCUR IN THE VICINITY OF NORRIS RESERVOIR AND SPECIES FOUND DURING PARCEL SURVEYS	46
TABLE 3-3 LIST OF RARE TERRESTRIAL ANIMALS KNOWN TO OCCUR IN THE NORRIS RESERVOIR VICINITY FROM RECORDS (1999) AND PARCEL SURVEYS	49
TABLE 3-4 PROTECTED AQUATIC ANIMALS KNOWN FROM AREAS ADJACENT TO PARCELS INCLUDED IN THE NORRIS RESERVOIR LAND MANAGEMENT PLAN	54
TABLE 3-5 RESERVOIR FRINGE WETLANDS	68
TABLE 3-6 HYDROLOGIC UNITS COMPRISING THE NORRIS RESERVOIR WATERSHED AND THE HUC RATING	72
TABLE 3-7 NORRIS RESERVOIR WATER QUALITY RATINGS, BASED ON VITAL SIGNS MONITORING PROGRAM DATA.....	74
TABLE 3-8 NORRIS RESERVOIR BENTHIC COMMUNITY RATINGS, BASED ON VITAL SIGNS MONITORING DATA	77
TABLE 3-9 NORRIS RESERVOIR FISHERIES ASSEMBLAGE INDEX, BASED ON VITAL SIGNS MONITORING DATA.....	78
TABLE 3-10 FISH SPECIES COLLECTED DURING NORRIS RESERVOIR VITAL SIGNS MONITORING, FALL 1999	79
TABLE 3-11 POPULATION AND POPULATION PROJECTIONS, 1980-2020.....	82
TABLE 3-12 PERCENT CHANGE IN POPULATION.....	82
TABLE 3-13 LABOR FORCE DATA, RESIDENTS OF NORRIS RESERVOIR AREA, 1999.....	83
TABLE 3-14 EMPLOYMENT, NORRIS RESERVOIR AREA	84
TABLE 3-15 OCCUPATION OF WORKERS (PERCENT DISTRIBUTION, 1990).....	84
TABLE 3-16 PER CAPITA PERSONAL INCOME.....	85
TABLE 3-17 MINORITY POPULATION, 1998, AND POVERTY, 1995.....	86
TABLE 3-18 SOILS IN THE NORRIS LAND USE PROJECT AREA CLASSIFIED AS PRIME FARMLAND	89

FIGURES

FIGURE 1-1 VICINITY MAP OF NORRIS RESERVOIR	3
FIGURE 3-1 VIEWING DISTANCE.....	36

EXHIBIT

EXHIBIT 1. ALTERNATIVE B—NORRIS RESERVOIR LAND MANAGEMENT PLAN	MAP POCKETS
--	-------------

1. PURPOSE OF AND NEED FOR ACTION

The Tennessee Valley Authority (TVA) manages public land on Norris Reservoir to generate prosperity and improve the quality of life in the Tennessee Valley. This TVA public land, together with adjoining private land, is used for public and commercial recreation, natural resource management, and to meet a variety of other community needs. The purpose of land planning is to apply a systematic method of evaluating and identifying the most suitable use of public land under TVA stewardship. Land management plans seek to integrate land and water resources, provide for the optimum public benefit, and balance competing, and sometimes conflicting, resource uses. Each reservoir land management plan (Plan) is submitted for approval to the TVA Board of Directors (Board), and adopted as agency policy to provide for long-term land stewardship and accomplishment of TVA responsibilities under the 1933 TVA Act.

Plans have been completed and implemented for seven mainstream and five tributary reservoirs. Older Plans are being updated for selected mainstream reservoirs. Currently, Norris Reservoir is managed using a Forecast System developed in 1968. The purpose of this Environmental Assessment (EA) is to examine the impacts of a proposed Plan for alternative uses of TVA's land on Norris Reservoir and to involve the public in decisions regarding the allocation of TVA public land on Norris Reservoir.

1.1 Background

The Clinch River basin offered excellent opportunities for construction of a large storage project, and as early as 1911 the present site for Norris Dam was investigated by power company interests. These studies recommended a number of dam sites, among them one on the Clinch River at approximately the present location of Norris Dam, then known as the Cove Creek site. As early as 1922, the outstanding importance of the Cove Creek Dam as a flood-control measure was emphasized, particularly by Nebraska Senator George Norris. Senator Norris also recognized the importance of such projects in hydroelectric generation and navigation development.

The history of the Norris Project was inextricably connected with that of the Muscle Shoals development in Alabama. The importance of navigation on the Tennessee River had been recognized for more than a century. At the time of the creation of TVA, several reservoirs existed in the Tennessee Valley upstream of Wilson Dam. Tennessee Electric Company operated Hales Bar Dam and Powerhouse on the Tennessee River and a three-dam development on the Ocoee-Toccoa River. The Aluminum Company of America had constructed three dams on the Little Tennessee River system and was planning others. In 1930, Carolina Power Company had completed the Waterville Project on the Big Pigeon River, a tributary of the French Broad River. Numerous smaller water/power projects had been completed, and several preliminary power studies had been conducted by private interests on the possibility of hydroelectric development of the French Broad, Holston, and Clinch Rivers (TVA, 1940).

TVA created its first dam, the 1860-foot-long, 265-foot-high Norris Dam at Clinch River mile (CRM) 79.8. Named for Senator Norris, construction of Norris Dam and Reservoir began in 1933 and was completed in 1936. Located in the Tennessee counties of Anderson, Campbell, Union, Claiborne, and Grainger (see Figure 1.1-1), Norris Reservoir has the largest flood control storage capacity of any reservoir on a tributary of the Tennessee River. Nearby towns and communities include Clinton, Norris, Andersonville, Caryville, Jacksboro, LaFollette, Lake City, Harrogate, and Tazewell.

Norris Reservoir extends 129 miles upstream from the dam site (73 miles up the Clinch River and 56 miles up the Powell River) and covers 34,200 surface acres at normal maximum (summer) pool elevation of 1020-foot mean sea level (msl). The top of the gates, maximum shoreline contour (msc), is 1034-foot msl, while the normal minimum pool (winter) elevation is 960-foot msl. On Norris Reservoir, typical annual water level fluctuation is 42 feet and ranges from elevation 978- to 1020-foot msl. It has 809.2 miles of mainland and island shoreline and collects rainfall runoff from a 3850-square-mile watershed from portions of east Tennessee and southwest Virginia. This watershed accounts for roughly 7 percent of the entire Tennessee River drainage basin.

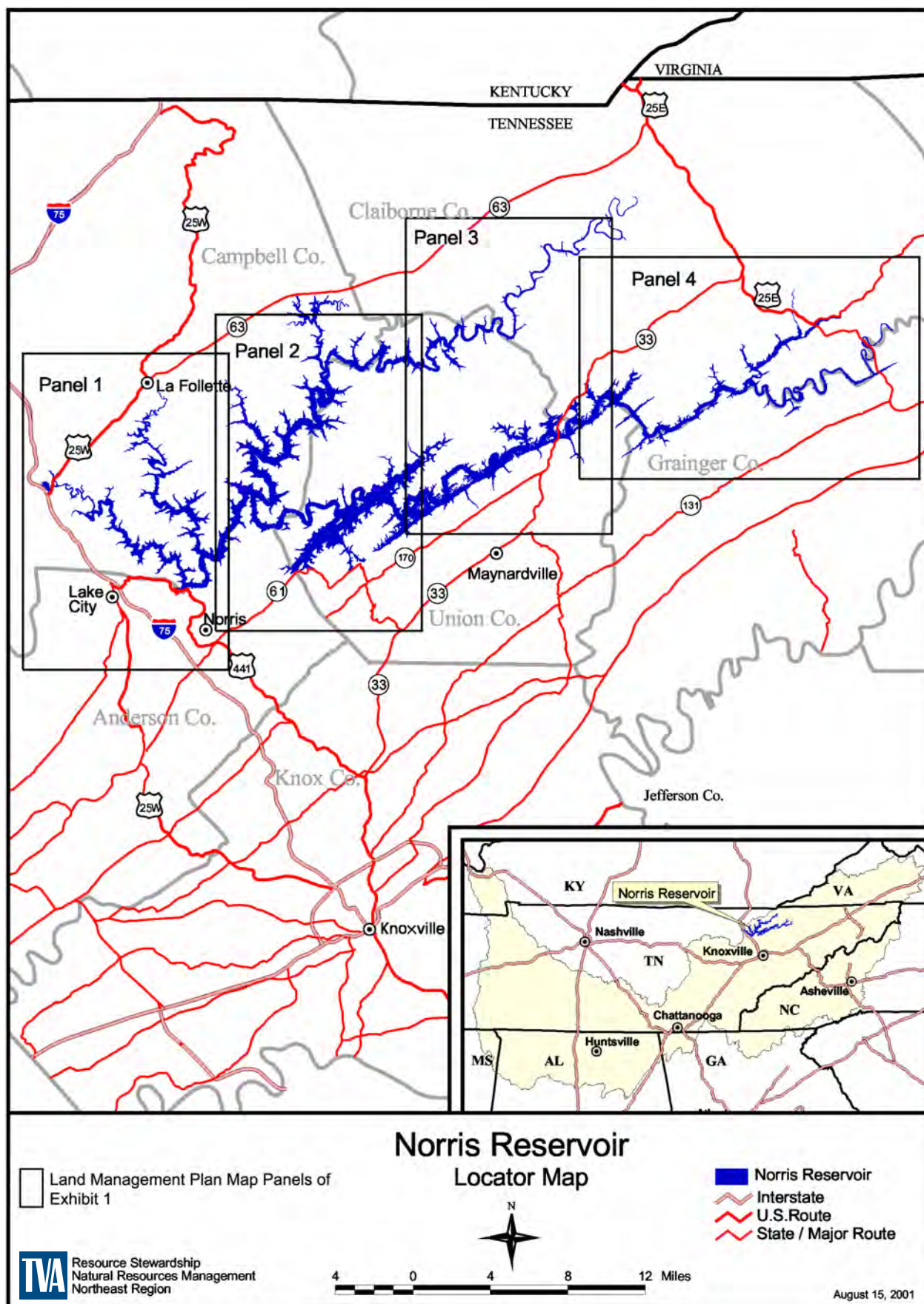
Norris Dam and Reservoir form an integral unit in the overall system of water control projects in the Tennessee Valley that aids in reducing main river flood stages and in stabilizing low water flows. As a multipurpose project it also provides power production, navigation, recreation opportunities, and residential as well as regional economic development. As an example of its navigation benefit, immediately after its completion, substantial releases from Norris Reservoir during periods of low water on the lower river added 2 feet to the controlled depth of the 250-mile reach of the river between Wilson Dam and the mouth of the Tennessee River (TVA, 1940).

Originally, TVA acquired 122,000 acres of land around Norris Reservoir. TVA later sold 56,700 acres and transferred or leased an additional 35,000 acres to the state of Tennessee and various counties for recreation development (including Norris Dam, Cove Lake, and Big Ridge State Parks). TVA also acquired the right to flood (flowage easement rights) over 4000 acres of privately held land to allow flexibility of reservoir operations. The agency retained landrights below elevation 1044 (and in some cases below elevation 1052). Subsequent transfers of land for economic, industrial, residential, or public recreation development have resulted in a current net balance of 27,926.8 acres (in fee simple ownership) of public land on Norris Reservoir. Forests occupy the majority of the land, and some 85 percent of the TVA-managed shoreline remains undeveloped.

1.2 Other Pertinent Environmental Reviews or Documentation

Tennessee River and Reservoir System Operation and Planning Review (TVA, 1990). In December 1990 TVA completed an Environmental Impact Statement (EIS) addressing changes to the operation of its reservoir system, with emphasis on water quality and lake levels. In this EIS TVA also addressed the environmental and socioeconomic consequences of changes in reservoir operations on land and shoreline development. Following completion

Figure 1-1 Vicinity Map of Norris Reservoir



of the review, TVA delayed the late summer drawdown of tributary reservoirs until August 1. It also began a system-wide program, now nearing completion, to improve water quality below dams.

Agricultural Land Licensing for 1999-2003 Crop Years - Northeast Region, Land Management - Boone, Cherokee, Douglas, Norris, and South Holston Reservoirs and the Clinchport River Access Site in Anderson, Campbell, Claiborne, Grainger, Hamblen, Hawkins, Jefferson, Sevier, Sullivan, Union, and Washington Counties, Tennessee, and Scott and Washington Counties, Virginia (TVA, 1999a). In January 1999 TVA completed an EA on the licensing of TVA public land in the Northeast Region for agricultural use. TVA proposed to license 72 tracts totaling 1039 acres for a 5-year cycle. The EA evaluated the potential environmental impacts of issuing all of the licenses (Action Alternative) or not taking any action (No Action Alternative). Under the Action Alternative, TVA would relicense for the 1999 through 2003 crop years. The majority (646 acres) would be licensed for hay crop production. The remainder would be licensed for hay/pasture (379 acres), hay with garden space (10 acres), or row crops (4 acres). Under the No Action Alternative, the 72 tracts would not be licensed for agriculture and would likely be allowed to revert to early successional vegetation.

Under the Action Alternative, TVA determined that there would be no effect on cultural resources or threatened and endangered species. There would likely be insignificant water quality impacts and insignificant impacts to aquatic biota due to nonpoint source pollution from pastureland. Existing agricultural Best Management Practices (BMPs), which are part of the agricultural license agreement, would protect wetlands, water quality, and aquatic life. Under the No Action Alternative, there would be no new impacts to environmental resources. Over time, vegetation growth and natural succession would result in some local improvements to water quality and aquatic ecology. After review of the EA, TVA found that the proposed licensing of 72 tracts for agricultural use would not have a significant impact on the quality of the environment. Because of the beneficial uses of the land, TVA adopted the Action Alternative. The outcome of this EA applies to 454 acres on Norris Reservoir.

Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley (TVA, 1998). In November 1998 TVA completed an EIS on residential shoreline development impacts throughout the Tennessee Valley. Under the Blended Alternative, adopted in the Record of Decision, sensitive natural and cultural resource values of reservoir shorelines are being conserved and retained by: (1) preparing a shoreline categorization for individual reservoirs; (2) encouraging voluntary donations of conservation easements to properties over which TVA holds a flowage easement (i.e., property over which TVA has the right to flood) or other shoreland to protect scenic landscapes; and (3) establishing a policy that no additional residential access rights will be granted across public shorelines unless “maintain and gain” objectives to prevent losses of public shoreline are achieved.

Davis Creek Management Unit - Norris Reservoir - Resource Management Plan and Environmental Assessment (TVA, 2000a). In January 2000 TVA completed an EA addressing plans to manage the 1562-acre Davis Creek Management Unit on Norris

Reservoir. TVA proposed numerous activities to manage public use, forest resources, and wildlife resources over the next 25 years. The EA evaluated the potential environmental impacts of three alternatives: (1) Current Management (Alternative A), (2) No Resource Management (Alternative B), and (3) Proposed Resource Management Program (Alternative C). Under any of the three alternatives, the EA found that impacts to ecological communities, sensitive natural resources, cultural resources, water quality, air quality, and visual resources would be insignificant. Alternative C, which includes construction of a loop road and development of reservoir access sites, will result in improvements in the quality of available wildlife habitats, improved forest management, and better access for recreational users. Outdoor recreation activities, including hunting, fishing, bicycling, camping, and wildlife viewing, will be enhanced. Because of these benefits TVA selected Alternative C for implementation.

Fullerton Bend Management Unit - Norris Reservoir - Resource Management Plan and Environmental Assessment (TVA, 2001). In January 2001 TVA completed an EA and Finding of No Significant Impact (FONSI) addressing plans to manage the 2492-acre Fullerton Bend Unit. Just as with Davis Creek Management Unit, TVA proposes numerous activities to manage public use, forest resources, and wildlife resources over the next 25 years. The EA evaluates the potential environmental impacts of three alternatives: (1) Current Management (Alternative A), No Resource Management (Alternative B), and Proposed Resource Management Program (Alternative C). Under any of the three alternatives, the EA found that impacts to ecological communities, sensitive natural resources, cultural resources, water quality, air quality, and visual resources would be insignificant. Alternative C proposes improvements to an existing forest road to improve public access and meeting anticipated public parking needs by constructing small parking areas. These changes will result in improvements in the quality of available wildlife habitats, improved forest management, and better access for recreational users. Outdoor recreation activities, including hunting, fishing, bicycling, camping, and wildlife viewing, will be enhanced under Alternative C. Because of these benefits, TVA selected Alternative C for implementation.

Lone Mountain Shores Corporation - Request for Approval of Shoreline Management Plan, Community Dock, and Boat Ramp for Tract Nos. XNR-836 and -837 (TVA, 2000b). In March 2000 TVA completed an EA which assessed the impacts of future activities on 161 acres of TVA-public land adjacent to Lone Mountain Shores' 2400-acre project site. The EA found that impacts to public resources from the adoption of the proposed shoreline management plan and approval of the community dock and boat ramp would be insignificant. The resources evaluated included traffic congestion, socioeconomic conditions, recreation, terrestrial and aquatic ecology, air and water quality, public utilities, and floodplains. These resources would be significantly affected on an individual or cumulative basis. TVA chose Alternative 4 since it protects sensitive shoreline resources, provides additional mitigation measures to reduce potential impacts, and allows reasonable access to the water for all potential lot owners.

Request for Land Sale (Tract No. XNR-907) - Caryville Stone, L.L.C. - Norris Reservoir, Campbell County, Tennessee (TVA, 1999b). In March 1999 TVA completed an EA which evaluated the request to sell a 13.5-acre nonwaterfront tract of TVA public land to accommodate the expansion of Caryville Stone's existing rock quarrying operations. TVA determined that the incremental impacts of the sale of this property and subsequent implementation of development planned by Caryville Stone, L.L.C., when added to past, present, and reasonably foreseeable future actions, would be insignificant. TVA required Caryville Stone, L.L.C., to offset anticipated wetland impacts by mitigating loss of a 1.9-acre wetland.

Proposed Deed Modification - Norris Crest Partnership, Campbell County, Tennessee (TVA, 1996a). In July 1996 TVA issued an EA and FONSI for the proposed deed modification for Norris Crest Partnership, a residential subdivision development on Norris Reservoir. In return for removal of deed restrictions and to protect the environment, standards outlined in the *Shoreline Management Initiative* (SMI) would apply to vegetation removal and water use facility construction.

1.3 Public Involvement and Issue Identification

In April 1999 an article was published in *TVA River Neighbors* announcing that land use planning was underway on Norris Reservoir. This publication was sent to over 20,000 people inside and outside the Tennessee Valley. Fifteen people responded by calling 1-800-TVA-LAND and asked to be placed on the Norris Reservoir land planning mailing list. This toll free telephone number is still available for anyone to call and request to be added to the mailing list. Mailings were also sent to approximately 3000 citizens notifying them of the planning process and how to become involved.

From October through November 1999 TVA sought comments from elected officials, county chamber of commerce members, public agency representatives, citizens, recreational users, and other stakeholders of Norris Reservoir. Local officials were personally visited, told about the Norris Reservoir Land Management Plan (Norris Plan) and how to become involved, and were asked to help notify the public about the process. Information packets were also left for the officials to distribute. A series of meetings were held between TVA and other public agencies who have responsibility within the Norris Reservoir watershed. Agency representatives were asked to identify issues that should be addressed in the Norris Plan and to share what information they knew about the condition of the watershed (see Section 4.2, List of Agencies and Organizations Consulted). Agencies were also asked to provide information concerning proposed or ongoing activities affecting Norris Reservoir. Input from stakeholders and the general public was sought through news releases to local newspapers announcing public participation opportunities. Individuals were also invited to submit comments by electronic mail.

Citizens were invited to attend two public meetings. The first meeting was held at Anderson County High School on October 28, 1999, and the second was held at Lincoln Memorial University on November 2, 1999. These two meetings had a total of 104 participants who

were asked to respond to questions to help define issues associated with Norris Reservoir and the watershed area. The meetings were cosponsored by TVA and the Tennessee Department of Environment and Conservation (TDEC).

Additionally, individuals were invited to complete a questionnaire indicating their preferences and opinions regarding Norris Reservoir (see Appendix A-2) and submit comments about their valued and preferred uses of TVA public land. They were also asked about the watershed surrounding Norris Reservoir and to identify important issues that need to be addressed over the life of the Norris Plan. Questionnaires were mailed to individuals whose names were compiled from TVA mailing lists and were also distributed during public meetings. A total of 322 questionnaires were returned. The vast majority of respondents (77 percent) indicated a preference for water-related activities and more than half (59 percent) used Norris Reservoir and surrounding TVA public land for wildlife observation. Respondents (72 percent) suggested that the number (or amount) of marinas on Norris Reservoir were about right, while almost half (46 percent) indicated a need for more opportunities for wildlife observation. Seventy-five percent suggested a preference for fewer jet skiers on Norris Reservoir. Over 50 percent felt that more land was needed for sensitive resources, wildlife management, and other natural resource management areas. Over 50 percent thought that about the right amount of land was already allocated for state park and commercial recreation areas.

Survey respondents also felt that boat waste, trash and litter cleanup, water quality monitoring, and improved recreational access and facilities should be high priority issues, while industrial/economic development opportunities should be low. Those surveyed also expressed a relatively strong willingness to get involved and help with such projects as litter cleanup and wildlife food plantings. A slightly less strong willingness was expressed regarding participation in watershed coalitions, erosion control/prevention, or committing to proper disposal of boat waste. About 9 percent indicated an interest in starting a watershed coalition. As a result, two watershed coalitions—Friends of Norris Lake, Anderson County and Campbell County Chapters, were formed. These coalitions are working to improve water quality throughout the Norris watershed by stabilizing stream banks, working with farmers to minimize agricultural impacts, cleaning up litter and dump sites, and providing educational opportunities.

TVA staff also solicited input from representatives of a cross section of groups who used or were concerned with the natural resource conservation issues on Norris Reservoir. Information packets were sent to county chamber of commerce offices with an offer to visit the office as a follow-up. Interested state and federal agencies and resource conservation groups, such as the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Tennessee Wildlife Resources Agency (TWRA), Tennessee Division of Forestry, Tennessee Conservation League, Quail Unlimited, National Wild Turkey Federation, and others were asked to participate in the planning process by providing information and input, including concerns about proposed or ongoing activities and land use issues around Norris Reservoir. The responses from these groups are also provided in Appendix A-2.

Issue Identification – Internal scoping, the general public, public officials, stakeholders, peer agencies, and focus groups were used to identify the following resources/issues that are considered in this EA:

- Aesthetics and Visual Resources
- Cultural Resources (Archaeological and Historical)
- Threatened and Endangered Species
- Terrestrial Ecology
- Wetlands and Riparian Areas
- Recreation
- Water Quality
- Aquatic Ecology
- Socioeconomics

The following issues, also identified in scoping, are not likely to be affected by the proposed alternatives:

- Navigation
- Prime Farmland
- Air Quality
- Noise
- Floodplains

Participation continued in 2001 during the comment period for the draft EA by attending: June 19, Friends of Norris Lake, Anderson County Chapter meeting in Norris, Tennessee; June 26, Friends of Norris Lake, Campbell County Chapter meeting in LaFollette, Tennessee; July 3, Campbell Outdoor Recreation Association, meeting in LaFollette, Tennessee; July 9 Clinch-Powell Watershed Team (CPWT) Open House in Norris, Tennessee; and July 13 Campbell County Leadership Forum held on Norris Reservoir. Comments were also received through emails, the Norris Plan website, 1-800 TVA LAND, and the U.S. mail. The majority of the comments were in support of Alternative B. The comments and TVA responses are provided in Appendix A-4.

1.4 The Decision

The Board will decide whether to adopt the Norris Plan to guide implementation of future policy or to continue the use of the existing Forecast System for land use.

1.5 Necessary Federal Permits or Licenses

No federal permits are required to develop a Plan. Site-specific information on Norris Reservoir resources has been characterized in this EA, and potential impacts on these resources were considered in making land use allocation recommendations. Appropriate agencies administering laws and other environmental regulations associated with the development of wetlands, taking of endangered species, and effects on historic resources

have been consulted during this planning process. When specific actions, such as construction of water use facilities, buildings, roads, or walking trails, are proposed that could affect sensitive resources, additional review and appropriate permits or consultations may be required in order to gain approval for the action.

2. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 The Proposed Action

The proposed action is to formulate a comprehensive plan for managing TVA public land on Norris Reservoir. The proposed Norris Plan (Appendix A-1) is intended to provide a clear statement of how TVA would manage its land in the future, based on scientific, natural, and cultural resource management and economic principles. It addresses sensitive resources and other important issues and concerns raised by citizens and other stakeholders. The Norris Plan is intended to guide TVA resource management and property administration decisions for the next 10 years. It identifies the proposed range of uses for 315 parcels of TVA public land.

2.2 Alternatives

TVA is considering two alternatives for making land use decisions for the TVA public land around Norris Reservoir. Under the No Action Alternative (Alternative A), TVA would continue to use the existing Norris Reservoir land Forecast System to manage TVA public land. Under the Allocation Alternative (Alternative B), TVA would use the proposed Norris Plan to guide future land use decisions.

A common feature of both alternatives is categorization of the residential and flowage easement shoreline. In accordance with the TVA Shoreline Management Policy (SMP), TVA categorized the residential shoreline of Norris Reservoir based on resource data collected from field surveys of sensitive species and their potential habitats, archaeological resources, and wetlands along the residential shoreline of Norris Reservoir. The shoreline categorization is composed of three categories:

- **Shoreline Protection** is designed for shoreline segments that support sensitive ecological resources, such as federal-listed threatened or endangered species, high priority state-listed species, wetlands with high function and value, archaeological and/or historical sites of national significance, and certain navigation restriction zones. Within this category all significant resources would be protected.
- **Residential Mitigation** is intended for shoreline segments where resource conditions or certain navigation restrictions would require special analysis of individual development proposals, additional data, or specific mitigation measures.
- **Managed Residential** is depicted along shoreline segments where no sensitive resources are known to exist. An environmental review would be completed for any proposed action.

A resource inventory for threatened and endangered species, wetlands, and cultural resources was conducted, and the results were used to categorize the residential shoreline as shown in Table 2-1. The Residential Access (Zone 7) on Norris Reservoir comprises 130.8 miles or 16.2 percent of the total 809.2 shoreline miles. Another 133.2 miles (16.5 percent) of shoreline is land TVA does not own in fee, but has retained rights to flood (Non-TVA

Shoreland, Zone 1). Owners of this shoreland can apply to TVA for permission to construct water use facilities. Together, the mileage for Non-TVA Shoreland (Zone 1) and Residential Access (Zone 7) were included in the residential shoreline on Norris Reservoir.

Approximately 5 percent of the residential shoreline has known archaeological resources or the potential for their occurrence; 24 percent has wetland vegetation; and 65 percent has the potential habitat to support sensitive plant and/or animal species. Depending on the vulnerability and sensitivity of archaeological, wetland, and rare plant and/or animal species resources, the shoreline reaches were placed in either the Shoreline Protection or Residential Mitigation categories. All other residential shoreline will be placed in the Managed Residential category. The result is that 5.0 miles (1.9 percent) of the total residential shoreline is in the Shoreline Protection category, 232.7 miles (88.1 percent) is in the Residential Mitigation category, and 26.3 miles (10.0 percent) is in the Managed Residential category.

TABLE 2-1 EXISTING RESIDENTIAL SHORELINE CATEGORIZATION			
Category	Residential Shoreline		Total Reservoir Shoreline
	Miles	Percent	Percent
Shoreline Protection	5.04	1.9	0.62
Residential Mitigation	232.65	88.1	28.75
Managed Residential	26.27	10.0	3.25
Total	263.96	100.0	32.62

Docks and other residential shoreline development would not be permitted on land within the Shoreline Protection category because of the sensitive nature of the resources contained in these areas or because of navigation restrictions. Section 26a applications for docks and other residential shoreline development in the Residential Mitigation category would be reviewed by TVA for compliance with the SMP (TVA, 1998) and Section 26a regulations. Development restrictions or mitigation measures may be necessary in this shoreline category. Section 26a applications for docks and other shoreline development in the Managed Residential category would also be reviewed for compliance with the SMP and Section 26a regulations.

It is strongly emphasized that as new data is collected on the spatial location and significance of endangered species, wetlands, cultural resources, or navigation restrictions, adjustments to category boundaries may be necessary. Over time, some areas designated as Shoreline Protection or Residential Mitigation category could be moved into the Managed Residential category if new resource information warrants such a change. Similarly, some areas designated as Managed Residential category could be moved into the Shoreline Protection or Residential Mitigation categories if new information supports such a change. Property owners should check with the TVA CPWT for the current status of an area.

2.2.1 Alternative A—No Action Alternative

Under this alternative, TVA would continue to use the Forecast System to manage public land on Norris Reservoir. The Forecast System for Norris Reservoir was developed by TVA staff in August 1968, without the particular consideration for sensitive resource protection and public input provided by the National Environmental Policy Act (NEPA) decision-making process. It serves as a general guide for land use and/or development, and documents actual and prospective uses indicated for most of the TVA public land surrounding Norris Reservoir. When a proposal is received from an external applicant or an internal TVA organization, the proposed land use is evaluated for consistency with the Forecast System. The request is then either approved or denied, based on a review of potential environmental effects and other considerations.

Under Alternative A, the land which TVA has retained in fee ownership below the 1020-foot msc, not specifically considered in the Forecast System designations, would be managed consistent with outstanding landrights. The Forecast System does not identify where residential access could be permitted. However, the adoption of the SMP (see Section 1.2) has put in place a consistent approach to TVA permitting decisions about residential shoreline alterations. As such, the TVA public land acreage available for residential access is the same for both Alternatives A and B. The Forecast System designation categories are defined in Table 2-2. Acreage for each Forecast System designation is summarized in Table 2-3.

TABLE 2-2 FORECAST SYSTEM DESIGNATION DEFINITIONS	
Forecast System Designation	Definition
Dam Reservation	<i>Land managed to protect the integrity of the dam and associated switchyards and power line.</i> – Most TVA dam reservations provide a visitor reception building that overlooks the facilities. Day use recreational activities, such as picnicking, fishing, hiking, and birdwatching, are encouraged. Campgrounds and boat launching facilities are often available. Hunting and unregulated camping are generally prohibited on the reservation.
Public Recreation	<i>Land set aside for use by the general public for recreational activities</i> – 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)	<i>Islands in the mainstream or tributaries used for informal, dispersed recreation and natural resource management projects.</i>
Reservoir Operations (Mainland)	<i>Generally, narrow bands of shoreland retained by TVA for flood control and other reservoir operations purposes</i> – Although there are no outstanding rights to construct water use facilities, TVA allowed backlying residential property owners to construct facilities on the land until 1992. Since 1992 facilities have only been allowed on reservoir operations land in those areas where existing facilities have been permitted.

TABLE 2-2 FORECAST SYSTEM DESIGNATION DEFINITIONS	
Forecast System Designation	Definition
Power Transmission and Power Needs	<i>Land reserved for future power development or to maintain the integrity of existing power lines – Interim wildlife enhancement projects are often implemented on the land.</i>
Commercial Recreation	<i>Land that TVA has reserved primarily for commercial use – This use includes, but is not limited to, marinas and campgrounds. Informal, dispersed recreational activities often occur on this land as an interim use.</i>
Minor Commercial Landings	<i>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.</i>
Forestry Research	<i>Tracts used as ongoing sites for monitoring tree growth and stress – Also, trees are used in these areas to produce reliable seed sources.</i>
Steam Plant Study	<i>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.</i>
TVA Small Wild Area	<i>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.</i>
Wildlife Management	<i>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.</i>

TABLE 2-3 SUMMARY OF FORECAST SYSTEM DESIGNATIONS FOR NORRIS RESERVOIR	
Forecast System Name	Acres
Minor Commercial Landing	23.85
Commercial Recreation	97.32
Dam Reservation	903.74
Forestry Research	726.23
Power Transmission System	584.37
Public Recreation	18,029.59
Reservoir Operations - Island	1,221.58
Reservoir Operations - Mainland	1,346.09
Steam Plant Study	820.99
TVA Small Wild Area	363.31
Wildlife Management	175.19
No Forecast	3,634.51
Total	27,926.77

2.2.2 *Alternative B—Allocation Alternative*

Alternative B, the Allocation Alternative, was developed using information obtained from the public, other agencies, organizations, existing and newly collected field data on land conditions and resources, and technical knowledge of TVA staff. In determining proposed allocations for 315 parcels of TVA public land, TVA considered a wide range of possible land uses. Each parcel of land was reviewed to determine its physical capability and suitability for supporting possible uses as well as expressed public needs. Based on this information, the Norris Reservoir Planning Team (see Appendix B-2 for list of team members) allocated parcels to four of the seven planning zones. No additional land was allocated to Non-TVA Shoreland (Zone 1), Project Operations (Zone 2), or Residential Access (Zone 7). Should changing conditions warrant, TVA will consider future zone allocation changes for TVA public land with the appropriate level of environmental review, public involvement, and approval from the Board. Compatible public works/utilities projects proposed in any zone will not require an allocation change.

No proposals were made during the planning process to allocate TVA public land to Industrial/Commercial Development (Zone 5). In the past, TVA has accommodated requests for commercial or industrial uses on Norris Reservoir or projects to accommodate water access, water supply, or water treatment needs. In addition, TVA supports local communities in their efforts to improve the overall economic situations. If it is determined that public land on Norris Reservoir could enhance an overall community development concept which includes commercial use, TVA would consider requests for utility corridor easements or allocation changes to support the proposal. The standardized planned land use zones are

described in Table 2-4 on the following page. These definitions would apply to Norris Reservoir as appropriate. A description of the planning process is included in Appendix A-1, Introduction, Process.

TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
1	Non-TVA Shoreland (<i>Flowage/Retained Rights</i>)	<p>Shoreland located above summer pool elevation that TVA does not own in fee or land never purchased by TVA. TVA is not allocating private or other non-TVA public land. This category is provided to assist in comprehensive evaluation of potential environmental impacts of TVA's allocation decision. Non-TVA shoreland includes:</p> <ul style="list-style-type: none"> • Flowage easement land—Privately or publicly owned land where TVA has purchased the right to flood and/or limit structures. Flowage easement land is generally purchased to a contour elevation. Since this land is subject to TVA's Section 26a permitting requirements, the SMP guidelines discussed in the definition of Residential Access (Zone 7) apply to the construction of water use facilities fronting flowage easement residential development. SMP guidelines addressing landbased structures and vegetation management do not apply. • Privately owned reservoir land—This is land never purchased by TVA and may include, but is not limited to, residential, industrial, commercial, or agricultural land. This land is subject to TVA's Section 26a approvals for structures.
2	Project Operations	<p>All TVA public land currently used for TVA operations and public works projects includes:</p> <ul style="list-style-type: none"> • 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 used for 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 day-boards and beacons—Areas with structures placed on the shoreline to facilitate navigation. • Public works projects—Includes fire halls, public water intakes, public treatment plants, etc. (These projects are placed in this category as a matter of convenience and may not relate specifically to TVA projects.) • Land planned for any of the above uses in the future.

TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS

	Zone	Definition
3	Sensitive Resource Management	<p>Land managed for protection and enhancement of sensitive resources. Sensitive resources, as defined by TVA, include resources protected by state or federal laws or executive orders and other land features/natural resources TVA considers important to the area viewscape or natural environment. Recreational activities, such as hunting, wildlife observation, and camping on undeveloped sites, may occur in this zone, but the overriding focuses are protecting and enhancing the sensitive resource the site supports. Areas included are:</p> <ul style="list-style-type: none"> • TVA-designated sites with potentially <i>significant archaeological resources</i>. • TVA public land with <i>sites/structures listed on or eligible for listing on the National Register of Historic Places</i>. • Wetlands—Aquatic bed, emergent, forested, and scrub-shrub wetlands as defined by TVA. • <i>TVA public land under easement, lease, or license to other agencies/individuals for resource protection purposes</i>. • <i>TVA public land fronting land owned by other agencies/individuals</i> for resource protection purposes. • Habitat protection areas—These TVA natural areas are areas managed to protect populations of species identified as threatened or endangered by the USFWS, 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 areas 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 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. These areas will be included in Sensitive Resource Management (Zone 3) when identified sensitive resources are present. • Significant scenic areas—These are areas designated for visual protection because of their unique vistas or particularly scenic qualities.

TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS

Zone		Definition
		<ul style="list-style-type: none"> • <i>Champion tree site</i>— 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. • <i>Other sensitive ecological areas</i>—Examples of these areas include heron rookeries, uncommon plant and animal communities, and unique cave or karst formations. • <i>Land planned for any of the above uses in the future.</i>
4	Natural Resource Conservation	<p>Land managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this zone. Appropriate activities in this zone include hunting, timber management to promote forest health, wildlife observation, and camping on undeveloped sites. Areas included are:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license</i> to other agencies for wildlife or forest management purposes. • <i>TVA public land fronting land owned by other agencies</i> for wildlife or forest management purposes. • <i>TVA public land</i> managed for wildlife or forest management projects. • <i>Informal recreation areas</i> maintained for passive, dispersed recreation activities, such as hunting, hiking, birdwatching, photography, primitive camping, bank fishing, and picnicking. • <i>Shoreline Conservation Areas</i>—Narrow riparian strips of vegetation between the water’s edge and TVA’s backlying property that are managed for wildlife, water quality, or visual qualities. • <i>Wildlife Observation Areas</i>—Areas with unique concentrations of easily observable wildlife that are managed as designated public wildlife observation areas. • <i>River corridor without sensitive resources present</i>—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 Natural Resource Conservation (Zone 4) unless sensitive resources are present (see Sensitive Resource Management, Zone 3).
5	Industrial/Commercial* Development	<p>Land managed for economic development, including business, commercial, light manufacturing, and general industrial uses. Areas included are:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license to other agencies/individuals.</i> • <i>TVA public land fronting land owned by other agencies/individuals.</i> • <i>Sites planned for future use supporting sustainable development.</i>

TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS

	Zone	Definition
		<p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • Business parks—TVA waterfront land which would support business and light manufacturing activities. • Industrial access—Access to the waterfront by backlying 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 which 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	<p>All reservoir land managed for concentrated, active recreation activities that require capital improvement and maintenance, including:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license to other agencies/individuals</i> for recreational purposes. • <i>TVA public land fronting land owned by other agencies/individuals</i> for recreational purposes. • <i>TVA public land developed for recreational purposes</i>, such as campgrounds and day use areas. • <i>Land planned for any of the above uses in the future.</i> <p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • <i>Commercial recreation</i>, e.g., commercial marinas, resorts, campgrounds, and golf courses. • <i>Public recreation</i>, e.g., local, state, and federal parks and recreation areas. • <i>Greenways</i>, e.g., linear parks 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. • <i>Water access sites</i>, e.g., boat ramps, courtesy piers, canoe access, fishing piers, vehicle parking areas, picnic areas, trails, toilet facilities, and information kiosks.

TABLE 2-4 PLANNED LAND USE ZONE DEFINITIONS

	Zone	Definition
7	Residential Access	<p>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. Under the Norris Plan, residential access would be divided into three categories based on the presence and potential impacts to sensitive ecological resources, such as threatened or endangered species, wetlands, and archaeological and historic sites. The categories are (1) Shoreline Protection where no residential alterations would be permitted; (2) Residential Shoreline Mitigation, where special analysis would be needed; and (3) Managed Residential Shoreline, where no known sensitive resources exist.</p> <p>Types of development/management that can be considered on this land are:</p> <ul style="list-style-type: none"> • Residential water use facilities, e.g., docks, piers, launching ramps/driveways, marine railways, boathouses, enclosed storage space, and potable/nonpotablewater intakes. • Residential access corridors, e.g., pathways, wooden steps, walkways, or mulched paths which can include portable picnic tables and utility lines. • Shoreline stabilization, e.g., bioengineering, riprap, and gabions, and retaining walls. • Shoreline vegetation management on TVA-owned residential access shoreland. • Conservation easements for protection of the shoreline. • Other activities, e.g., fill, excavation, grading.

**Commercial recreation uses, such as marinas and campgrounds, are included in Zone 6.*

A basic premise of reservoir land planning is that land currently committed to a specific use will be allocated to that current use unless there is an overriding need to change the use. Committed land includes transfers, leases, licenses, contracts, outstanding landrights, small wild areas, and areas with identified sensitive resources, TVA project land, such as the dam reservation or power lines, and TVA-developed recreation areas. Agricultural licenses would be excluded because they are considered to be an interim use of TVA public land. For planning purposes, a total of 6696.70 acres of Norris Reservoir is considered committed. Table 2-5 on the next page summarizes the allocation of committed land on Norris Reservoir.

TABLE 2-5 SUMMARY OF ALLOCATION OF COMMITTED LAND ON NORRIS RESERVOIR	
Land Use Zones	Acres
Zone 2 - Project Operations	934.50
Zone 3 - Sensitive Resource Management	467.19
Zone 4 - Natural Resource Conservation	2,147.02
Zone 6 - Developed Recreation	1,675.44
Zone 7 - Residential Access	1,472.55
Total	6,696.70

The balance of Norris Reservoir (21,230.1 acres) was considered “plannable land,” that is, land that was not previously committed to a use. Field data and/or existing information were collected on all plannable land by technical specialists, such as archaeologists, historic architects, wetland specialists, visual specialists, and biologists to identify areas containing sensitive resources and recommend a future best use.

Technical specialists were asked to rate each parcel high, medium, or low by a given set of criteria and to rank the parcels high, medium, or low depending on customer needs. Customer needs were identified during the scoping process (see Appendix A-2) to help determine the most suitable use for the land. After the ranking exercise, the planning team and technical specialists met to allocate the plannable parcels to the seven planning zones. Using resource maps and all of the information collected during the planning process, including public input, the capability and suitability of each parcel were discussed. Allocation decisions were made by consensus.

The allocations were used to prepare the proposed Norris Plan (Appendix A-1). The proposed Norris Plan contains an explanation of the planning process and an overview of the history and development of Norris Reservoir. The acreage totals for each of the six zones is summarized in Table 2-6.

TABLE 2-6 SUMMARY OF PROPOSED LAND USE ALLOCATIONS FOR ALTERNATIVE B	
Proposed Land Allocations	Acres
2 - Project Operations	934.50
3 - Sensitive Resource Management	4,839.18
4 - Natural Resource Conservation	18,936.64
5 - Industrial/Commercial Development	0.00
6 - Developed Recreation	1,743.90
7 - Residential Access	1,472.55
Total	27,926.77

Appendix A-3 is the Parcel Information Matrix which identifies each parcel number, the proposed allocation zone, number of acres, reason for allocation, prior forecast designation, and map panel locator. The location of each parcel is shown on the Norris Plan map for Alternative B (located in map pocket as Exhibit 1).

2.3 Comparison of Alternatives

Table 2-7 shows the comparison of acres of the forecast designations and proposed zones. Alternative A would continue the use of the existing Forecast System. Selection of this alternative could result in some reduction in potential long-term benefits on Norris Reservoir. Alternative B would allocate land into categories that emphasize sensitive resource management and natural resource conservation. Selection of this alternative would be beneficial to public land and would protect current resource functions and values. Impacts of either alternative (summarized in Table 2-8) would be insignificant.

TABLE 2-7 COMPARISON OF ALLOCATIONS FOR ALTERNATIVES A AND B							
Alternative A Forecast Designations	Alternative B Proposed Zones						Alt. A TOTAL ACRES
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	
Dam Reservation	903.74						903.74
Reservoir Operations	19.65	379.60	1,977.16		145.93	45.33	2,567.67
Public Recreation	4.02	3,355.31	14,186.17		483.66	0.43	18,029.59
Commercial Recreation			97.32				97.32
TVA Small Wildlife Area		363.31					363.31
Minor Commercial Landing		1.74	22.11				23.85
Forestry Research	6.29	70.58	608.61		40.75		726.23
Steam Plant Study		396.20	424.79				820.99
Wildlife Management			175.19				175.19
Power Transmission		218.72	365.65				584.37
No Forecast	0.80	53.72	1,079.64		1,073.56	1,426.79	3,634.51
Alt B TOTAL ACRES	934.50	4,839.18	18,936.64	0	1,743.90	1,472.55	27,926.77

Alternative A acres are added horizontally with the total acres in the right-hand column.

Alternative B acres are added vertically with the total acres along the bottom row.

Alternative A did not forecast any of the many narrow shoreline strips that front land which TVA sold to private individuals or transferred to a state agency. In many cases when TVA

leased or transferred land, it retained a narrow band of property between the 1044- and 1020-foot contour elevation. The narrow strip that comprises the shoreline around the two state wildlife management areas (Chuck Swan and Cove Creek) and the three state parks (Cove Lake, Big Ridge, and Norris Dam) totals 1673.1 acres that were not accounted for in Alternative A, but are reflected in Alternative B. Table 2-7 accounts for the nonforecast acres by including them in the “no forecast” row. Under Alternative B, the 783.9 acres of shoreline fronting the wildlife management areas are placed in Natural Resource Conservation (Zone 4) because of the dominant use of the adjacent transferred land. Likewise, the 889.2 acres of shoreline property fronting the three state parks are placed in Developed Recreation (Zone 6) because of the dominant use of the adjacent transferred land. Another notable variance is that Alternative A does not account for residential access parcels. The actual acreage for each alternative would be the same for both alternatives.

Alternative B allocates 68.5 percent less acreage to Project Operations (Zone 2) than does Alternative A. This means that more land would be available in Alternative B for undeveloped public use, as compared to Alternative A. Natural and sensitive resource management receives considerably more emphasis under Alternative B. Conversely, Developed Recreation (Zone 6) is allotted considerably more acreage under Alternative A.

Selection of Alternative A could result in some reduction in potential long-term benefits on Norris Reservoir. The Forecast System emphasizes recreation and power plant development. A major change from the existing Forecast System land designations is the creation of Sensitive Resource Management (Zone 3); land containing sensitive resources, such as protected species, wetlands, archaeological, historical, and significant visual resources, are allocated to this zone in Alternative B. Under Alternative A, the resources identified for protection would be protected by individual environmental reviews of specific land use proposals. However, allocation of these resources to Sensitive Resource Management (Zone 3) in Alternative B allows the protection of the sensitive resource to be the overriding objective for the management of a particular parcel of land, as well as providing an additional tool to better manage the potential cumulative effects which might occur to a sensitive resource. The Norris Plan emphasizes resource management and sensitive resource protection. Under Alternative B, eleven new TVA habitat protection areas would be designated because of the presence of rare species or other sensitive resources. Also, the existing Monks Corner Small Wild Area will be expanded by 25 acres. Other potential TVA natural areas would be considered during the Resource Management Unit Planning process.

2.4 The Preferred Alternative

The Preferred Alternative is Alternative B (Appendix A-1). The proposed Norris Plan honors previous land use commitments and allocates uncommitted TVA public land into zones that allow for a balance of development and conservation. It addresses the stewardship of sensitive resources and other important issues and concerns raised by citizens and other stakeholders. Shoreland habitat is incorporated into planning decisions. Land allocation decisions also consider critical knowledge of watershed conditions and their potential effects on reservoir resources.

TABLE 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.1	Visual Resources	Due to land subject to potential development, the cumulative effects could substantially reduce the scenic attractiveness of Norris Reservoir land over time, resulting in an adverse impact on the visual landscape character and aesthetic sense of place.	With implementation of this alternative, substantial preservation of the scenic qualities, aesthetic sense of place, and attractive visual character of Norris Reservoir could be expected. This alternative would have beneficial impacts to the aesthetic resources of Norris Reservoir.
3.2 Cultural Resources			
3.2.1	Archaeological Resources	There are a number of archaeological resources that are considered potentially eligible for listing in the National Register of Historic Places (NRHP). Approximately 73 percent of the recorded archaeological resources are located on land proposed for public recreation. The remaining 27 percent are located on the Norris Dam Reservation, reservoir operations, and steam plant study areas. Under this alternative, site-specific activities are reviewed for impact to archaeological resources. If archaeological investigations demonstrate the need for mitigation, an appropriate archaeological investigation will be necessary, and potentially impacted resources will be properly recorded and removed. The Forecast System does not provide for specific preservation of archaeological resources. However, TVA will comply with regulatory requirements of the National Historic Preservation Act (NHPA) and Archaeological Resources Protection Act (ARPA).	This alternative would incorporate the phased identification and evaluation procedure to effectively preserve historic properties. Early identification of the presence of cultural resources through allocating land into the zones avoids the likelihood of soil-disturbing activities in areas known to contain historic properties. This would, in turn, save time, reduce costs, and ensure more efficient compliance of Section 106 of the NHPA than under Alternative A. All soil-disturbing activities that occur on TVA parcels would be reviewed by a TVA archaeologist. TVA will take necessary steps to ensure compliance with regulatory requirements of the NHPA and the ARPA. Within this alternative, there are commitments to the management of archaeological resources within Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) and to effectively preserve resources within the other planned parcels.

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.2.2	Historic Structures	Under this alternative, proposals for changes to any TVA parcel will be reviewed on a case-by-case basis to assess impacts to historic structures potentially eligible or eligible for listing on the NRHP within the Area of Potential Effect (APE). This will include structures both on or adjacent to all TVA parcels.	Under this alternative, specific TVA parcels are identified as potentially subject to development. Historic structures were identified in the APE of these specific parcels and marked on the maps. The proposed use for a TVA parcel will determine the impact on the historic structure. Impacts of the proposed use will be assessed as required under Section 106 review of the NHPA.
3.3 Threatened and Endangered Species			
3.3.1 - 1	Plants	<p>Under this alternative, use of TVA public land on Norris Reservoir would continue to be based on the Forecast System. The Forecast System does not currently include any areas, other than TVA small wild areas, reserved primarily for protection of natural resources. There are 39 reported occurrences of state-listed plant species on the subject parcels. Under the Forecast System 35 of these occurrences are on land designated for public recreation, 3 are on a parcel designated for steam plant study, and 1 is on land designated for forestry research.</p> <p>If the Forecast System continues to be used, potential impacts to state-listed threatened and endangered plants would be assessed during site-specific reviews. Each proposed land use would be reviewed, and its anticipated impacts to existing vegetation, including rare plants, would be evaluated. Some Forecast System uses would likely be modified, based on the environmental review process. However, the review process would ensure that impacts to state-listed plants would be negligible. Under the Forecast System, no land is managed specifically for the protection and enhancement of the rare plant populations present.</p>	This alternative would provide protective status for 16 parcels containing 39 state-listed plant occurrences. Under the Norris Plan 12 (75 percent) of these parcels are in Sensitive Resource Management (Zone 3), 3 parcels (20 percent) are in Natural Resource Conservation (Zone 4); and 1 parcel (5 percent) is in Developed Recreation (Zone 6). In Sensitive Resource Management (Zone 3) the overriding focuses are protecting and enhancing the sensitive resources the site supports (see Section 2.2.2). Parcels in Natural Resource Conservation (Zone 4) are managed for the enhancement of natural resources for human use and appreciation. If this alternative is implemented with the Norris Plan, 86 percent of the parcels containing listed plants would be allocated to Sensitive Resource Management (Zone 3) and 14 percent would be allocated to Natural Resource Conservation (Zone 4).

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.3.1 - 2	Terrestrial Animals	<p>Currently, decisions regarding the use of TVA public land surrounding Norris Reservoir are based upon the Forecast System. Effects to populations of rare terrestrial animals and sensitive ecological areas (caves and heron colonies) would be considered during TVA environmental reviews associated with specific projects; therefore, no significant impacts to threatened or endangered terrestrial animals are expected. Although this process would protect most populations of rare terrestrial animals and sensitive ecological areas along Norris Reservoir, TVA's ability to address cumulative impacts to these resources would be limited.</p>	<p>Using the land planning allocation process, land planning parcels that harbor populations of rare terrestrial animals or sensitive ecological areas would be designated for Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). This process would protect populations of federal- and state-listed species, significant rare species habitat, and sensitive ecological areas. In parcels designated for Natural Resource Conservation, habitat manipulation would be allowed to improve this habitat for wildlife.</p> <p>This alternative would benefit rare terrestrial animals, their habitat, and sensitive ecological areas by applying appropriate protective buffers around them. Ultimately, unit plans would be developed for TVA public land surrounding Norris Reservoir. These plans would specifically designate protective zones for populations of rare terrestrial animals, their habitat, and sensitive ecological areas, and specify wildlife management requirements and limitations for Norris Reservoir. For these stated reasons, this alternative is preferred over Alternative A.</p>

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.3.1 - 3	Aquatic Animals	<p>Under this alternative, TVA actions would be unlikely to adversely affect the habitat of protected aquatic species. While four federal- and/or state-listed fishes could occur in portions of the Clinch and Powell Rivers upstream from the land included in the Forecast System, current environmental review practices would likely avoid or minimize any adverse impacts to these species.</p>	<p>Under this alternative, no parcels were identified specifically to protect habitats necessary for sensitive aquatic species. However, adoption of this alternative would lead to the protection of several large areas containing wetlands and sensitive terrestrial habitats. Many of these areas would act as riparian buffer zones and could have indirect but positive effects on aquatic habitat quality. The cumulative effects of these actions may help improve water quality and aquatic habitats downstream from these parcels, including areas where sensitive aquatic species may occur. Therefore, this alternative could afford these species and/or habitats greater protection than the current Forecast System.</p>

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.4 Terrestrial Ecology and Significant Natural Areas			
3.4.1 - 1	Terrestrial Ecology	<p>Approximately 69 percent of TVA public land on Norris Reservoir is under either the public recreation, small wild area, forest research, or wildlife management designations. Approximately 65 percent of this land is under the public recreation designation. This Forecast System designation allows a wide variety of potential uses and management options ranging from undeveloped to developed recreation. Changes in use patterns under the public recreation designation could create a corresponding change in vegetation and terrestrial ecology of the affected parcels. However, these types of impacts would be localized and insignificant on a regional or subregional basis. Overall, the cumulative impacts to terrestrial ecology under this alternative would be insignificant on TVA's forestland, open land, and riparian areas.</p>	<p>This alternative allocates 23,775.8 acres within the categories of Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). These two categories comprise approximately 85 percent of TVA public land on Norris Reservoir. The management of these parcels under this alternative would be guided by written unit management plans. These plans describe the type and intensity of wildlife and public use management that are anticipated over the long-term. These plans would be developed and reviewed with public input. There would be approximately seven such units ranging in size from 1500 to 4000 acres.</p> <p>Selection of Alternative B would have a beneficial effect on the terrestrial ecology on TVA public land because 85 percent of public land has been allocated to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). These areas would be managed to enhance and protect natural resources.</p>
3.4 1- 2	Significant Natural Areas	<p>All existing natural areas will continue to be managed in a manner consistent with no significant impacts. However, under the Forecast System there are no new areas identified as natural area candidates.</p>	<p>Because this alternative has a specific zone for Sensitive Resource Management (Zone 3) and allows for establishing new TVA natural areas and expansion of an existing small wild area, this is the preferred alternative. Eleven parcels meet the criteria for designation as new TVA habitat protection areas because of the presence of plant species with Tennessee state status. This alternative would have no significant impacts on TVA natural areas land.</p>

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.5	Wetlands/Riparian Ecology	Wetland areas located on TVA public land surrounding Norris Reservoir are found in most of the Forecast System categories. Under this alternative, these areas would most likely remain unchanged, although some emergent wetlands may gradually mature to scrub-shrub wetlands, and aquatic beds will vary in size depending on yearly reservoir water levels. Even though the Forecast System may change on these areas, it would be subject to TVA NEPA review, and any action would be subject to Executive Order No. 11990 (Protection of Wetlands). Because of TVA's review process, selection of this alternative would have insignificant or no impacts on either of these resources.	<p>Under this alternative, significant wetland areas (excluding Residential Access [Zone 7] areas) would be allocated to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) areas will be part of TVA's unit planning process.</p> <p>Selection of this alternative would provide a beneficial effect to wetland and riparian resources on TVA public land, and future permit reviews would ensure that any impacts to Residential Access (Zone 7) wetlands and riparian areas would be insignificant.</p>
3.6	Recreation	A large portion of TVA's retained land is forecast for public and commercial recreation—18,147 acres and 65 acres, respectively. Under the Forecast System this land could be used indefinitely for informal recreation activities, such as primitive camping, bank fishing, and hunting. However, this same land is subject to requests for developed recreation activities by other public agencies and private individuals as they might interpret the recreation and tourism demand. Requests for recreation development would be subject to environmental review and avoidance and/or mitigation of wetlands, threatened and endangered species, cultural resources, floodplains, and other elements of concern.	<p>Under this alternative, 1744 acres are proposed for Developed Recreation (Zone 6). No additional land is allocated in Developed Recreation (Zone 6) for new commercial recreation development, but some land was allocated for expansion of mooring rights at existing marinas, where the appropriate rights exist. This allocation would give certain marinas the ability to request additional harbor area. The effects of expanded boat mooring capacity at existing areas would be expected to be minor and regionally insignificant.</p> <p>Under this alternative, 16,403 fewer acres would be subject to developed recreation proposals than there were under Alternative A. This means TVA would be considering developed recreation opportunities on significantly fewer acres than it would under Alternative A. This decrease is, however, in alignment with public desires expressed during scoping.</p>

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.7	Water Quality	Under this alternative, few parcels comprising small acreages of TVA property are designated specifically for protection of sensitive resources. Although protection of the natural reservoir shoreline may be undertaken as a secondary consideration on parcels designated for various uses, natural resource protection or conservation and the resulting impacts on reservoir water quality may not be a primary consideration when land use decisions are made.	This alternative would provide a better opportunity to protect water quality by identifying Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) as the designated use on some parcels now having more general designations. Any of the proposed uses of Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) land would allow for protection of water quality either due to less development or ensured use of management practices to minimize negative impacts. Allocation of other parcels for future developed recreation activities or other public access/use areas would allow TVA control over development to minimize adverse impacts.
3.8	Aquatic Ecology	Under this alternative, few parcels of TVA public land are designated specifically for protection of sensitive resources. Although protection of the natural reservoir shoreline may be undertaken as a secondary consideration on parcels of TVA public land designated for various uses, natural resource protection or conservation, and consequently, impacts to aquatic communities, may not be a primary consideration when land use decisions are made affecting those parcels. There could be more recreational and TVA operations development under this alternative. Consequently, more direct and indirect disturbance of aquatic habitat could occur. There could also be greater potential for sedimentation and nutrient runoff.	Adoption of this alternative would provide a better opportunity to protect or enhance aquatic habitats by identifying sensitive resource management or conservation as the designated use on some parcels now having general designations for other uses. Because aquatic habitat on Norris Reservoir can be considered only “fair” overall, impacts to aquatic habitats would be a major consideration in future decisions affecting TVA public land under either alternative. However, this alternative better defines suitable activities for each parcel of TVA public land, and would likely result in fewer impacts.

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.9	Socioeconomic	The Forecast System would continue to be used. This system currently classifies no land for industrial use, except for some small tracts used for commercial landing purposes. Any proposals for industrial use of these properties would receive appropriate environmental review when specific proposals are presented for TVA approval.	Under this alternative, no land would be classified for industrial/commercial use. However, as with similar municipal requests, TVA would consider requests for the use of suitable land in Project Operations (Zone 2), Natural Resource Conservation (Zone 4), and Developed Recreation (Zone 6) to provide minimum width corridors for reservoir access for the purpose of siting water intakes or other utility support to industry on backlying private land. The compatibility of the request with approved land use allocation (e.g., zone) would be considered, and each proposal would be subjected to the appropriate level of environmental review. Over 1700 acres would be zoned for Developed Recreation (Zone 6). All of this could be available for development requiring capital expenditures and maintenance. Construction of facilities and use of the property for such purposes would have some positive impact on income and employment in the area. Much of the use, however, depending on the type of development, is likely to be by residents of the local area or adjoining counties, limiting the impact.
3.10	Navigation	There would be no significant impact on navigation aids used by recreational boaters.	There would be no significant impact on navigation aids used by recreational boaters.

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.11	Prime Farmland	With the exception of the parcels which are less than 10 acres, completion of Form AD 1006 would assist in evaluating the impacts of farmland conversion for all the remaining parcels. Because of the small amount of prime farmland in the project area, any of these developments would probably result in an impact rating score below 160 which requires that protection of farmland be considered.	Most of the land in the project area that is used for agriculture has been allocated for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). There are only five parcels which are larger than 10 acres and have a significant percentage of the acreage in agriculture that are allocated for Developed Recreation (Zone 6) or Residential Access (Zone 7). The total agriculture land use in all these parcels is approximately 90 acres, and none contain prime farmland soils. The development of these parcels would have an insignificant impact on farmland.
3.12 Other Issues			
3.12.1	Floodplain	Under this alternative, the allocation, development, and/or management of properties would be made on a case-by-case basis, and evaluations would be done individually to ensure compliance with Executive Order No. 11988. Potential development would generally consist of water use facilities and other repetitive actions in the floodplain that could result in minor floodplain impacts.	Under this alternative, 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. Little development which could affect floodplain values would occur on Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) land. Under either alternative, impacts to floodplain values would be insignificant.

Table 2-8 COMPARISON OF POTENTIAL ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Section of EA	Resource Area	Alternative A	Alternative B
3.12.2	Noise	<p>The Forecast System land designations within which development of specific, new noise sources might occur are the reservoir operations - mainland (approximately 1347 acres), commercial recreation (approximately 97 acres), and industrial and minor commercial landings (approximately 24 acres). Reservoir Operations land includes residential development; commercial recreation (e.g., marinas); and industrial and commercial landings. Industrial and commercial landings comprise a range of potential manufacturing and processing operations as well as barge-loading and servicing facilities.</p> <p>Noise from single-family residences usually comes from recreational activities (boating and personal watercraft), landscaping, and transportation sources. These are common noises currently found around Norris reservoir. The level of these noises depends on the density of residences in an area. Multifamily residences, such as condominiums would generate the same type of noises but at higher levels in the local area. Large developments of single or multifamily housing would have the second level of community noise evaluation.</p>	<p>The allocations of committed land in this alternative are not exactly similar to those described in Alternative A. However, the amount of residential development (approximately 1744 acres) will not vary between the two alternatives. There is no land allocated to the Industrial/Commercial Development (Zone 5) in this alternative.</p>
3.12.3	Air Quality	Insignificant effects on air quality.	Insignificant effects on air quality.

3. AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS

The existing environment affected by the proposed actions and the potential environmental consequences of each alternative action are described in this chapter.

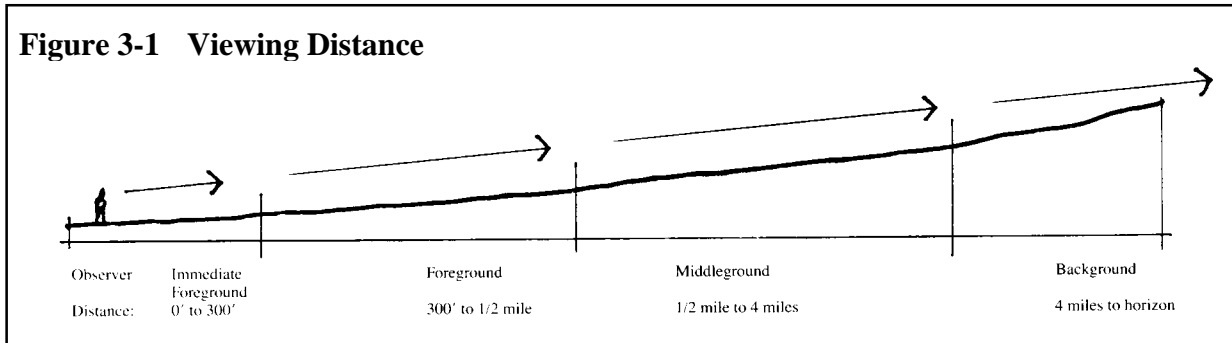
3.1 Visual Resources

Asked what they valued most about the land and water around Norris Reservoir, scoping respondents' most frequent response (24 percent) was the natural beauty and scenery. The physical, biological, and cultural features seen in the landscape give reservoir land its distinctive 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 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 a half mile of the observer, where details of objects are easily distinguished. Details are most significant in the immediate foreground of 0 to 500 feet.
 - * **Middle ground** is normally between a half-mile and 4 miles from the observer, where objects may be distinguishable but their details are weak and tend to merge into larger patterns.
 - * **In the background**, landscape is beyond 4 miles, object details and colors are seldom discernible unless they are especially large, standing alone, or provide strong contrast. Figure 3-1 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 3-1 Viewing Distance

As an example, an area with high rock bluffs, interesting vegetative patterns, and little human alteration, which is seen frequently in the foreground for an extended time by medium numbers of people, such as residents or boat traffic, would have excellent scenic value. In contrast, an area with little scenic variety and a great deal of disruptive human alteration that is seen briefly in passing by a large number of people, such as motorists, would have poor scenic value.

Where and how a landscape is viewed affects human perceptions of the aesthetic quality and sense of place. These impressions of the visual character can have a significant influence on how scenic resources are appreciated, protected, and used.

3.1.1 Affected Environment

The visual landscape surrounding Norris Reservoir has a predominantly natural, undisturbed appearance. Extensive tree-covered ridges frame the occasional fields, rolling pasture land, and shoreline development. There are no actual towns or industrial facilities visible from Norris Reservoir. The attractive natural features, together with the residential areas and other cultural development, provide a scenic, relatively harmonious rural countryside.

Among the scenic resources of Norris Reservoir, the water body itself is the most distinct and outstanding aesthetic feature. The horizontal surface provides visual balance and contrast to the islands, bluffs, and wooded hillsides. Norris Reservoir provides harmony and creates mystery as it weaves around the ridges and bends, constantly changing views seen from the water. It also provides unity, serving as a visual ribbon that links the other landscape features together. Middle ground views across the water provide a tranquil sense of place that is satisfying and peaceful to most observers.

Islands are another significant visual feature. They provide scenic accents and attractive visual reference points throughout Norris Reservoir. They also serve as visual buffers for less desirable views of development and provide a pleasing foreground frame for the distant shoreline or background. Some islands, such as Island F, show evidence of overuse which reduces scenic value and integrity. This includes an absence of understory vegetation, litter accumulation, and shoreline erosion.

The natural rock bluffs, such as along the upper reaches of the Clinch River, are also distinct scenic elements, along with similar sections of shoreline that exhibit unusual rock outcrops and formations. The rock faces rise sharply with steep, wooded ridges rising above them in

some locations. Associated with these bluffs are small, wet-weather waterfalls, known as seeps, and displays of uncommon plants. The bluffs provide attractive vertical accents and a natural contrast of colors that can be seen from the middle ground. In upper reservoir sections, they form a gorge-like visual character along both the Clinch and Powell Rivers.

Other important scenic features include the tranquil secluded coves and steep, wooded ridges that occur around Norris Reservoir. The numerous coves with wooded shoreline provide peaceful, relatively private locations for fishing and overnight boat anchorage. They also provide an attractive setting or focal point for shoreline residents in some areas. Steep slopes along the shoreline rise mostly undisturbed to wooded skylines, with some ridge tops, such as Lone Mountain, reaching more than 900 feet above the water. The significant elevation changes provide a dramatic contrast to the surrounding reservoir and gently sloping countryside, particularly when they are viewed from background distances.

Three state parks and two wildlife management areas comprise large contiguous landholdings, which help preserve substantial stretches of undeveloped shoreline. Scenic values vary from excellent to very good, and scenic integrity is high. Numerous residences ranging from cabins and second homes to large primary dwellings can be seen scattered around the shoreline, along with a variety of private water use facilities. The scenic value is moderately good, although scenic integrity is low. Concentrations of dwellings and related water use facilities are visually dominant on some parts of Norris Reservoir, where they create a strong adverse contrast with the natural landscape character. Scenic value is fair, and scenic integrity is very low.

The boat dock and marina developments provide access and anchorage for boats ranging in size from runabouts to large boats and floating cabins. These facilities adversely contrast with the undisturbed shoreline. Scenic values vary from fair to moderately good, and scenic integrity is low. In addition, they support and contribute to the increasing variety, concentration, and visual congestion of recreational boating seen on Norris Reservoir.

As a tributary reservoir, the water level of Norris has considerable fluctuation during the year due to power generation and flood control operations. The most scenic views of and from Norris Reservoir are generally during the late spring and summer months when reservoir levels are highest. The normal drawdown of 42 feet or more exposes a “bath tub ring” of bare earth and rock around the shoreline from late summer to spring. This drawdown zone is a dominant visual element that provides strong adverse contrast with the surrounding landscape. Lake use is reduced from late fall to early spring, so the drawdown zone is most noticeable to residents and passing traffic on nearby roads. Although a negative visual impact is associated with the drawdown zone, it does expose additional rock formations and bluffs at various points on Norris Reservoir. Sightings of deer, turkey, and other forms of wildlife are more frequent along the exposed shoreline. At different reservoir elevations, a variety of islands appear within Norris Reservoir that may have some visual interest for boaters, highway travelers, and shoreline residents.

3.1.2 Environmental Consequences

Visual consequences are evaluated in terms of the visible differences between an existing landscape and proposed actions, based on the scenic values, viewing distances, and viewing points available to the general public. This helps identify potential adverse changes in scenic character based on commonly held perceptions of landscape beauty and the aesthetic sense of place.

The value of existing scenery has been confirmed by public input. Public comments, summarized in the survey report, Appendix A-2, indicate that TVA should place a high priority on preservation of natural areas, wetlands, and sensitive resource areas. Their comments identify concerns about shoreline erosion, loss of natural resources, and increased/unwanted development. Respondents specifically expressed preferences for the scenic beauty and concern about over development. They indicated that scenic natural beauty was what they valued most—about equal with water quality. These responses indicate a public appreciation of visual aesthetics, along with a clear desire to encourage preservation of the area's natural resources and scenic attractiveness.

Most human alterations around Norris Reservoir have added visual discord to the natural landscape. Fortunately a significant amount of natural shoreline and scenic features remain undisturbed. Careful land management can help balance and, hopefully, dilute the visual discord by retaining sufficient undisturbed land to preserve the attractive scenic qualities of Norris Reservoir. Practices such as scenic protection in strategic locations, visual impact reviews by project, and direction/mitigation of future development can help minimize further adverse visual impacts.

With either alternative, development standards implemented through TVA's SMP would limit the size of docks, which would help minimize increasing visual congestion on Norris Reservoir. In addition, conservation easements are encouraged to protect resources and scenic values along the shoreline. When established, these easements would also help lessen cumulative visual impacts.

Alternative A—Under this alternative, the current Forecast System would remain in place. The Forecast System has no land use designation (see definitions in Table 2-2) or provisions for visual/aesthetic resource protection. Forecast System land uses would likely continue to be administered with about 20,000 acres of public land possibly being subject to various forms of development. Sections of highly attractive shoreline, as well as those of more common visual quality, would continually be at risk for loss from development under the Forecast System. A slow, but noticeable, decline in scenic resources, aesthetic quality, and visual landscape character could be expected as residential, commercial, and industrial development demands continue to increase.

In evaluating Section 26a and land use actions, TVA would continue to consider the project's potential visual impacts prior to approval of the action. This process may prevent the most serious visual disruptions or loss of scenic resources. It may also require mitigation measures that reduce visual impacts.

Alternative A would probably result in relatively little preservation of specific scenic areas. A gradual loss of natural undisturbed areas may also continue, along with alteration of land having the least capacity to absorb visual change. The cumulative effects of Alternative A, which have over 18,000 acres designated as public or commercial recreation, could reduce the scenic attractiveness of Norris Reservoir land over time, resulting in an adverse impact on the visual landscape character and aesthetic sense of place. The steam plant study area (Parcels 211, 212, 228, and parts of 208 and 226) is also subject to development under this alternative.

Alternative B—Under this alternative the visual/aesthetic resources of Norris Reservoir would be enhanced through preservation and protection. Scenic areas identified during the planning process would be specifically allocated to land use zones—the Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). The proposed Norris Plan would provide protection for areas of greatest scenic value, and balance any further development with the preservation of sufficient undisturbed shoreline to retain the attractive natural character of Norris Reservoir.

Over 4800 acres of land with distinctive visual characteristics, such as islands, rock bluffs, steep wooded ridges, and wetlands would be allocated to Sensitive Resource Management (Zone 3). Almost 19,000 acres would be allocated to Natural Resource Conservation (Zone 4), which includes land with attractive, but less unique, scenic qualities and minor visible alteration. Most of the 18,000 acres designated as Public Recreation in Alternative A would be allocated for Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). Activities that involve little visible change, such as recreational hiking, picnicking, bank fishing, and some selective forest management (e.g., timber harvest—will not exceed 20 acres in size for individual cuts), could take place under both categories of use to maintain scenic character, timber harvest would be limited to 20 acres. Selected development with more visible modifications could take place under the Natural Resource Conservation (Zone 4) designation, as long as the location and appearance remained subordinate to the desired visual characteristics. A total of 23,775.8 acres (about 85 percent) of TVA public land would be allocated to these two zones. Management and protection of the scenic landscape character would provide direction for any land use decisions affecting these parcels. The environmental review process ensures that visual impacts would also be considered in decisions affecting the proposed use of parcels in other zones.

Alternative B would be responsive to the public's expressed concern for visual aesthetics. It would directly address stated preferences for more protection of scenic resources and natural, undeveloped areas on Norris Reservoir. Those using Norris Reservoir would have assurance that the natural characteristics and beauty of selected bluffs, islands, coves, and reservoir shoreline were being retained and protected for public use and enjoyment.

Alternative B would have an increasingly beneficial impact on visual resources over time. The Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) zones would provide protective management as demands for residential, commercial, and industrial development increase. Scenic values and visual integrity would remain moderately

high or higher for land in these zones. With implementation of Alternative B, substantial preservation of the scenic qualities, aesthetic sense of place, and attractive visual character of Norris Reservoir could be expected. Alternative B would have beneficial impacts to the aesthetic resources of Norris Reservoir. Actions proposed in the Norris Dam Reservation Tactical Plan (Tactical Plan) on Parcel 6 would not affect visual resources.

3.2 Cultural Resources

3.2.1 Archaeological Resources

Affected Environment

For at least 12,000 years, the land along the Clinch and Powell Rivers has been an area for human occupation which became more intense through succeeding cultural periods. In the upper east Tennessee area, archaeological investigations have demonstrated that Tennessee and the Eastern Ridge and Valley regions were the settings for each one of these cultural/temporal traditions, from the Paleo-Indian (12000-8000 B.C.), the Archaic (8000-1200 B.C.), the Woodland (1200 B.C.-1000 A.D.), the Mississippian (1000-1500 A.D.), to the Protohistoric-Contact Period (1500-1750 A.D.). Historic era cultural traditions have included the Cherokee (1700 A.D.-present) and European- and African-American (1750 A.D.-present) occupations.

Prior to the completion of Norris Dam, the University of Tennessee and crews supplied by the Civil Works Administration conducted a major archaeological survey of the Norris basin in 1934 (Webb, 1938). This investigation focused on the prehistoric occupation of the area. Twenty-three sites were identified and excavated. A survey of the Norris Dam State Park was conducted by the Tennessee Division of Archaeology in 1984 (Froeschauer, et al., 1986). In the mid-1990s, some limited archaeological surveys associated with road construction were conducted by the University of Tennessee's Department of Transportation Center (DuVall, 1995; Greene, 1995; Juchniewicz, et al., 1994).

TVA is mandated under the NHPA of 1966 and the ARPA of 1979 to protect significant archaeological resources and historic properties located on TVA public land or affected by TVA undertakings. A historic property is defined, under 36 C.F.R. § 800.16 (l), as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP." In response to this federal legislation, TVA conducts inventories of its land to identify historic properties.

For the action proposed in this EA, the APE is the 27,926 acres of retained TVA public land being planned or previously committed to specific land uses. The APE, as defined in 36 C.F.R. § 800.16(d), is

"the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist."

TVA contracted with TRC Garrow and Associates (Pietak, et al., 1999) to conduct a Phase I cultural resources survey of approximately 231 miles of TVA public shoreland (in 1996) being planned above the summer pool level on Norris Reservoir. The parcels were surveyed based on the probability of future recreational or industrial/commercial development.

Existing data, along with the recent survey results, were reviewed and over 300 archaeological sites have been identified within and along Norris Reservoir. A number of these sites have been inundated due to reservoir impoundment. Prehistoric components and sites dating from the Archaic through Woodland Periods were recorded. Historic archaeological sites were associated with the nineteenth- to twentieth-century habitation of the area. There were 83 sites recommended as potentially eligible for inclusion on the NRHP, and 39 sites were recommended as ineligible. In addition, one site will be further investigated to determine eligibility status. Therefore a total of 122 previously recorded sites were identified.

TRC Garrow and Associates completed a second survey of Norris Reservoir that involved parcels associated with the Norris Plan. This survey of 3214 acres (in 1999) identified 128 sites and revisited two previously recorded sites. Prehistoric components and sites dating to possibly the transitional Paleo-Indian or Early Archaic through the Mississippian and Protohistoric Periods were identified. Historic archaeological sites potentially associated with the late eighteenth- to twentieth-century occupation of the area were identified. Through consultation with the State Historic Preservation Officer (SHPO), it was determined that 60 sites were potentially eligible for inclusion on the NRHP. In addition, one site will be further investigated to determine eligibility status. About 24,713 acres were not fully investigated during the preparation of this EA and recent surveys. These parcels were not fully investigated either because no development was anticipated or there was a low probability of the presence of archaeological resources due to the steep terrain.

Combining the 122 previously recorded sites with the 128 recently surveyed sites and the one site needing further investigation totals 251 sites identified. Of the 251 sites identified, 246 are recorded archaeological sites located on TVA public land included in the Norris Plan.

Environmental Consequences

Under either alternative, prior to an undertaking, TVA would conduct the phased identification and evaluation procedure set forth in 36 C.F.R. § 800.4(b)(2), regulations of the Advisory Council on Historic Preservation, and would implement 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 C.F.R. § 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; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to delegation or approval by a federal agency.”

As with all undertakings, TVA will take necessary steps to ensure compliance with regulatory requirements of the NHPA and ARPA. The results of archaeological testing on Norris Reservoir will be consulted prior to undertaking site-specific activities under either alternative. TVA will continue the present process of case-by-case review in TVA-controlled areas potentially subject to ground-disturbing actions, such as dredging, shoreline development, or timber harvesting through phased identification and evaluation of historic properties. Archaeological resources within these areas would be avoided and protected whenever possible. If avoidance is not possible, then proper procedures would be implemented in the mitigation of the historic property. Under either alternative, the cumulative effects to significant archaeological resources will be minimized by avoidance and protection of the resource or by mitigation through data recovery excavations pursuant to 36 C.F.R. § 800.

Alternative A—A number of archaeological resources in the APE are considered potentially eligible for listing in the NRHP. Approximately 73 percent of the recorded archaeological sites are located on land allocated for public recreation. The remaining 27 percent of the recorded archaeological sites are located in dam reservation, reservoir operations, and steam plant study areas. Under this alternative, site-specific activities proposed in the future would be approved, mitigated, or denied according to the significance of the resource. If mitigation is required, appropriate archaeological investigation would be necessary, and potentially impacted resources would be properly recorded and removed. The Forecast System does not provide for specific preservation of archaeological resources. However, these resources will be protected in the course of complying with regulatory requirements of the NHPA and ARPA.

Alternative B—This alternative would incorporate the phased identification and evaluation procedure to effectively preserve historic properties. Early identification of the presence of cultural resources through zoning avoids the likelihood of soil-disturbing activities in areas known to contain historic properties. This would, in turn, save time, reduce costs, and ensure more efficient compliance with Section 106 of the NHPA than under Alternative A. All soil-disturbing activities that occur on parcels which contain historic properties would be reviewed by a TVA archaeologist. TVA will take necessary steps to ensure compliance with regulatory requirements of the NHPA and ARPA.

The investigations at Norris Reservoir identified archaeological resources within all five zones to which land was allocated (see Table 3-1). Under Alternative B, 57 percent of recorded archaeological sites would be placed in Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) would effectively preserve the resources. Further investigations would be required if the resources could not be avoided by future resource protection and management activities. The remaining 43 percent of the recorded archaeological sites in the APE would be in Project Operations (Zone 2), Developed Recreation (Zone 6), and Residential Access (Zone 7).

The greatest potential for development would be in Residential Access (Zone 7), and identification of archaeological resources within this zone would enable development to

avoid the resources effectively. If the resources could not be avoided, then further investigations would be required to determine the resources' eligibility for inclusion in the NRHP. Within Alternative B, there are commitments to management of archaeological resources within Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) effectively preserve resources within the other planned parcels. Actions proposed in the Tactical Plan on Parcel 6 would not affect archaeological resources.

A Programmatic Agreement (PA) is being prepared for the identification, evaluation, and treatment of all historic properties in the APE that are eligible for inclusion in the NRHP. Until the PA is executed, TVA will incorporate the phased identification, evaluation, and treatment procedure to effectively preserve historic properties as required by the Section 106 regulation.

TABLE 3-1 RECORDED ARCHAEOLOGICAL SITES		
Zone	Number of Recorded Archaeological Sites	Percent of Total Sites Within Each Zone
2	3	1.2
3	95	38.6
4	46	18.7
6	24	9.8
7	78	31.7
Total	246	100.0

3.2.2 Historic Structures

Affected Environment

Structures and man-made features which are over 50 years old (including farmhouses, churches, cemeteries, and Norris Dam), on or adjacent to TVA parcels, are classified as historic by definition under NRHP criteria. All sites considered potentially eligible or eligible for listing on the NRHP have been identified and mapped. Most of these features—with the exception of Norris Dam—are not on TVA parcels, but are adjacent to or near TVA parcels. Many of the historic sites are along the access roadways leading to TVA public land.

Following is the list of proposed TVA parcels which have these adjacent historic structures and features, and in some instances historic features on the parcel:

- Parcel 3: Island Home Church and Miller Cemetery located along Norris Freeway is on the interior of this parcel. The former Civilian Conservation Corps (CCC) Camp 4493-5 was located adjacent to the east side of this parcel which is now largely impacted by new subdivision development. The NRHP listed Norris Historic District is adjacent to the southeast side of this parcel.

- Parcel 6: An early barn and mill was moved onto this parcel during the Norris Dam impoundment. The former CCC Camp 494 was located adjacent on the east side of this parcel. Norris Dam is also located on this parcel and is eligible for listing on the NRHP.
- Parcel 12: Adjacent to the southwest and along the road access to this TVA parcel is a former early twentieth-century frame schoolhouse with several classrooms and an early twentieth-century frame house.
- Parcels 34, 37, and 38: The Coopers View Cemetery, located on sold Hiwassee No. 2 tract, is adjacent to or in the viewshed of these parcels. The cemetery is being surrounded by residential development.
- Parcel 72: The Murrayville Church Cemetery is located adjacent to the northeast portion of this parcel. The old Murrayville Church building has been replaced with a new building.
- Parcels 75 and 77: Sharp Cemetery is located on the ridge top within a sold tract adjacent to the north side of Parcel 75 and west side of Parcel 77.
- Parcels 120 and 121: Nat Hollow Cemetery is located within Parcel 120 and in the viewshed of the west edge of Parcel 121.
- Parcel 122: Historic Stiners Woods is currently protected as a TVA natural area.
- Parcel 145: Minton Mill Dam, located on Gap Creek, is just upstream of the north edge of Parcel 145. The mill building is no longer present.
- Parcel 181: The Graves Cemetery is located on the sold Shelley tract. The cemetery is adjacent to the north side of the southwest portion of this parcel.
- Parcel 183: A historic farm complex is located adjacent to the east edge of this parcel.
- Parcels 182, 185, and 274 through 276: The Highway 33 Bridge over the Clinch River, built for impoundment of Norris Reservoir, is in the viewshed of these parcels.
- Parcel 194: A substantial log house is located adjacent to this parcel on the north side of the large inlet downstream of Straight Creek.
- Parcel 209: Jackson Cemetery is located near the southern portion of Parcel 209.
- Parcel 212: Evans Cemetery is located within this parcel.
- Parcel 217: Big Spring Union Church and Cemetery is located on Little Sycamore Creek just upstream from Parcel 217. The log church was built in 1795-96 and is listed on the NRHP.
- Parcel 250: This parcel contains the only access to a large historic frame house at Williams Springs and several smaller, less significant houses along Dutch Valley Road.
- Parcels 252 through 255: These parcels contain the only access to a historic frame church. Other historic farmhouses are located along this road.
- Parcel 254: Arnwine Cemetery is located within this parcel.

- Parcel 257: Beeler Mill Dam, located on Williams Creek, is a stone dam upstream from this parcel. The original mill structure is no longer present.
- Parcels 259 and 260: These parcels contain a historic steel truss bridge over Hogskin Creek.
- Parcels 302 through 315: Parcels in this area, which includes Park Road, have historic houses near them.
- Parcels 310, 311, and 312: Mt. Pleasant United Methodist Church and Cemetery are located on these parcels. These parcels also contain a road access to a white frame 1888 church building, as well as sold tracts Hagarman, Oak Ridge Yacht Club 2, Anderson County Sportsman's Club, Hammer, and Anderson County Park.

Environmental Consequences

All actions considered on a TVA parcel will require review and assessment for potential impacts on these historic structures. Impacts can be positive or adverse. Adverse impacts include visual changes of the environment surrounding these sites, noise, increased road traffic, increased development (changing the existing landscape), etc. Some sites are more sensitive to potential TVA actions. Proposed TVA actions affecting historic structures will require SHPO review, as mandated under Section 106 of the NHPA. Mitigation and/or modification of the TVA action may be necessary to protect the historic resources from adverse impacts.

Alternative A—Under the No Action Alternative, site-specific activities proposed in the future would be approved, mitigated, or denied according to the significance of the historic structure. This would require a survey of the APE to determine what features exist on TVA public or adjacent land.

Alternative B—Under this alternative, all uncommitted TVA public land with historic structures would be allocated to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) for protection. Committed land in Project Operations (Zone 2), Industrial/Commercial Development (Zone 5), Developed Recreation (Zone 6), and Residential Access (Zone 7) has been surveyed, and all significant historic structures on and adjacent to these TVA parcels have been identified. As indicated above, a number of historic structures are adjacent to Developed Recreation (Zone 6) and Residential Access (Zone 7). Visual impacts on these structures will be considered in any TVA permitting or land use actions on these parcels. Alternative B places more historic resources in land use categories that will provide cultural resource protection than Alternative A. Actions proposed in the Tactical Plan on Parcel 6 would not affect historic structures. Under all alternatives, review for applicability of the NHPA would take place for any proposed activities that have the potential to affect historic resources identified on or adjacent to TVA public land. It should be recognized that the current status of any of the identified structures could change by actions taken by the owners or by acts of nature.

3.3 Threatened and Endangered Species

3.3.1 Affected Environment

3.3.1 - 1 Plant Species

Prior to the 1999 field surveys for the Norris Plan, a search of the TVA Natural Heritage Project database was conducted to identify protected plant species known from the six Tennessee counties (Anderson, Campbell, Claiborne, Grainger, Hancock, and Union) containing portions of Norris Reservoir. It should be noted that while there is no TVA public land in Hancock County, the county is in the Norris watershed and species occurring in that county could also be present on land considered as part of either alternative.

The results of the search indicated that no federal-listed and 29 Tennessee state-listed plant species (97 occurrences) were known from these counties (see Table 3-2). This list, combined with regional information on additional species likely to occur on Norris Reservoir land, provided a focus for the field surveys. During the 1999 field inventories of 3214 acres, areas which appeared to be suitable habitat for listed plants were intensively surveyed. Surveys continued until the botanist determined that additional searches for rare plants would be unproductive. Several parcels contained more than one listed plant species. No federal-listed plant species were found. Twelve Tennessee state-listed plant species (39 occurrences) were found during this survey. Table 3-2 provides a list of plant species presently known from the parcels being planned, the number of different parcels on which they were found, and their current status. A discussion of each of the 12 Tennessee state-listed species follows Table 3-2.

TABLE 3-2 LISTED PLANT SPECIES KNOWN TO OCCUR IN THE VICINITY OF NORRIS RESERVOIR AND SPECIES FOUND DURING PARCEL SURVEYS			
Common Name	Scientific Name	Found During Parcel Surveys	Tennessee State Status
Alder-leaf buckthorn	<i>Rhamnus alnifolia</i>		E
American barberry*	<i>Berberis canadensis</i>	Yes (1 Parcel)	SC
American ginseng	<i>Panax quinquefolius</i>	Yes (8 Parcels)	S-CE
Appalachian bugbane	<i>Cimicifuga rubifolia</i>	Yes (1 Parcel)	T
Branching whitlow-wort	<i>Draba ramosissima</i>		SC
Bush honeysuckle	<i>Diervilla lonicera</i>		T
Butternut	<i>Juglans cinerea</i>	Yes (1 Parcel)	T
Canada lily	<i>Lilium canadense</i>	Yes (2 Parcels)	T
Climbing fumatory	<i>Adlumia fungosa</i>		T
Cumberland rosin-weed	<i>Silphium brachiatum</i>		E
Goldenseal	<i>Hydrastis canadensis</i>	Yes (4 Parcels)	S-CE
Green-and-gold	<i>Chrysogonum virginianum</i>		T
Kentucky rosinweed*	<i>Silphium wasiotense</i>	Yes (2 Parcels)	E
Largeleaf grass-of-parnassus	<i>Parnassia grandifolia</i>		SC
Large roundleaf orchid	<i>Platanthera orbiculata</i>		T
Leatherleaf meadowrue	<i>Thalictrum coriaceum</i>		T

TABLE 3-2 LISTED PLANT SPECIES KNOWN TO OCCUR IN THE VICINITY OF NORRIS RESERVOIR AND SPECIES FOUND DURING PARCEL SURVEYS

Common Name	Scientific Name	Found During Parcel Surveys	Tennessee State Status
Meehan's mint	<i>Meehania cordata</i>		T
Michigan lily	<i>Lilium michiganense</i>		T
Mountain honeysuckle*	<i>Lonicera dioica</i>	Yes (1 Parcel)	SC
Northern white cedar	<i>Thuja occidentalis</i>	Yes (2 Parcels)	SC
Ozark bunchflower*	<i>Melanthium woodii</i>	Yes (2 Parcels)	E
Pink lady's-slipper*	<i>Cypripedium acaule</i>	Yes (6 Parcels)	E-CE
Porter's reedgrass	<i>Calamagrostis porteri</i>		T
Red iris	<i>Iris fluva</i>		T
Roundleaf bittercress	<i>Cardamine rotundifolia</i>		T
Shining ladies' tresses	<i>Spiranthes lucida</i>		T
Showy lady's slipper	<i>Cypripedium reginae</i>		E
Southern rein orchid	<i>Platanthera flava</i> var <i>flava</i>		SC
Spike-rush	<i>Eleocharis intermedia</i>		SC
Spreading false-foxglove	<i>Aureolaria patula</i>	Yes (6 Parcels)	T
Spreading rockcress	<i>Arabis patens</i>		E
Tall larkspur	<i>Delphinium exaltatum</i>		E
Waterweed	<i>Elodea nuttallii</i>		SC
Witch-alder	<i>Fothergilla major</i>		T

E: Endangered SC: Special Concern E-CE: Endangered-Commercially Exploited

T: Threatened S-CE: Special Concern-Commercially Exploited

*Species that were not known to occur in the Norris vicinity, but were found during the parcel surveys.

Note: No federal-listed plant species were known to occur in the Norris vicinity or found during parcel surveys. (Norris vicinity Includes Anderson, Campbell, Claiborne, Grainger, Hancock, and Union Counties.)

American barberry (*Berberis canadensis*)—This member of the barberry family is typically found on rocky, wooded slopes; bluffs; creek banks; and roadsides. A single plant of American barberry occurs, along with two other state-listed plant species, in the rocky, wooded area of one parcel. Thirteen other populations of this species are presently known from the state of Tennessee.

American ginseng (*Panax quinquefolius*)—American ginseng favors shady, mesic sites, especially under American beech and sugar maple. This species is protected because it is frequently harvested from the wild for use in commercial herb trade. In addition, suitable habitat for this plant is becoming increasingly rare due to general habitat loss. This species occurs, usually as single individuals, on eight parcels. More than 160 other populations of this species are known from the state of Tennessee.

Appalachian bugbane (*Cimicifuga rubifolia*)—A member of the buttercup family, this species is typically found on rich, well-drained, loamy soils in a closed canopy of mixed hardwoods. This species is threatened by forest-clearing activities and erosion associated with logging. One individual of Appalachian bugbane occurs on one parcel. Fifty-four other populations of this species are known from the state of Tennessee.

Butternut (*Juglans cinerea*)—This member of the walnut family usually reaches a height of 30 to 60 feet and a diameter of 1 to 2 feet at maturity. Butternut prefers moist, rich soils but can also grow on drier, rocky sites. Although this tree is found in every physiographic province in Tennessee, forest stands rarely contain more than an occasional tree. Threats to this species include a fungal disease and excessive shading. This species occurs on one parcel. Thirty-three other populations of this species are known from the state of Tennessee.

Canada lily (*Lilium canadense*)—This member of the lily family normally grows in moist, sunny areas with acidic soils. The population of approximately 50 plants occurs on one parcel with this typical habitat. However, on another parcel this species occurs on a very dry, rocky site. Forty-five other populations of this species are known from the state of Tennessee.

Goldenseal (*Hydrastis canadensis*)—This member of the buttercup family is typically found in rich soils in dry or moist forest types. Populations of this plant have been greatly reduced as a result of habitat destruction and over harvesting for the herb trade. Four parcels have one occurrence each of this Tennessee state-listed special concern (commercially exploited) plant. Eighty other populations of this species are known from the state of Tennessee.

Kentucky rosin-weed (*Silphium wasiotense*)—This member of the sunflower family is typically found in open forests or forest edges. Four parcels have been found to contain populations of this Tennessee state-listed endangered plant. These populations vary in size from 2 to over 300 individuals. Six additional populations of this species are presently known from the state of Tennessee.

Mountain honeysuckle (*Lonicera dioica*)—This sprawling shrub or vine grows on steep, rocky, shaded slopes. One nonflowering plant was found; therefore, positive identification was not possible. This potential population was found on one parcel. Eighteen other populations of this species are known from the state of Tennessee.

Northern white cedar (*Thuja occidentalis*)—This evergreen tree is typically found on moist cliffs and limestone seeps. One occurrence of this species is known from one parcel. In addition, two occurrences each were found on two other parcels. Twelve other populations of this species are known from Tennessee.

Ozark bunchflower (*Melanthium woodii*)—This summer-blooming herb grows in deciduous forests on rich, moist, wooded slopes. Because the *Melanthium* plants were not blooming, positive identification was not possible. Flowers are necessary to distinguish this species from the more common *M. parviflorum*. Potential populations of this Tennessee state-listed endangered plant were found on two parcels (one with five plants and the other containing three plants). Both parcels are allocated for Sensitive Resource Management (Zone 3) because of other state-listed plants occurring on them. Three other populations of this species are known from the state of Tennessee.

Pink lady's-slipper (*Cypripedium acaule*)—This showy orchid is frequently harvested by plant diggers, but rarely survives being transplanted. The species is exceedingly difficult to

nursery propagate. Several individuals of this Tennessee state-listed endangered (commercially exploited) plant occur on six parcels. More than 160 populations of this species are known from the state of Tennessee.

Spreading false-foxglove (*Aureolaria patula*)—This fall-blooming herb typically grows in open stands of mixed hardwoods on limestone creeks or river bluffs. Although often found in association with eastern red cedar, this Tennessee state-listed threatened plant occurs on four parcels. Fifty-seven populations of this species are known from the state of Tennessee.

3.3.1 - 2 Terrestrial Animals and Sensitive Ecological Areas

The various plant communities on Norris Reservoir provide suitable habitat for a variety of federal- and state-listed terrestrial animals. These diverse communities include pine forests, upland and riparian hardwood forests, wetlands, and open-field habitats. In addition to distinctive vegetated communities, many features, such as streams, caves, rock communities, and sinkholes on reservoir parcels, provide unique habitats for rare species of wildlife.

Prior to initiating field surveys on reservoir parcels, the TVA Regional Natural Heritage Project database was queried to identify federal- and state-protected terrestrial animals as well as sensitive ecological areas (e.g., caves and heron colonies) from counties adjacent to Norris Reservoir (Anderson, Campbell, Claiborne, Grainger, Hancock, and Union Counties, Tennessee). Twenty-four sensitive terrestrial animal species were identified from the database (see Table 3-3). Four of these terrestrial animals are federal-protected under the Endangered Species Act, and the remaining 20 are protected by the state of Tennessee. Terrestrial animal field surveys, restricted to specified TVA public land on Norris Reservoir, were conducted from April through October 1999. In each parcel, special emphasis was placed on locating populations of federal- and state-listed animals, uncommon habitats, and sensitive ecological areas. Protected terrestrial animals which were observed during the 1999 parcel surveys are also presented in Table 3-3. Five terrestrial animals were found during parcel surveys. A discussion of these five species and sensitive ecological areas follows Table 3-3. Two of the terrestrial animals were previously not known to be present in the Norris Reservoir vicinity. A total of 96 terrestrial animal species were observed or detected during field activities on surveyed parcels (Appendix C-1). Also, 82 caves and 4 heron colonies were noted from existing records.

TABLE 3-3 LIST OF RARE TERRESTRIAL ANIMALS KNOWN TO OCCUR IN THE NORRIS RESERVOIR VICINITY FROM RECORDS (1999) AND PARCEL SURVEYS				
Common Name	Scientific Name	Federal Status	Tennessee State Status	Found During Parcel Surveys
<i>Amphibians</i>				
Eastern hellbender	<i>Cryptobranchus a. alleganiensis</i>	—	In Need of Management	—
Four-toed salamander	<i>Hemidactylium scutatum</i>	—	In Need of Management	—

TABLE 3-3 LIST OF RARE TERRESTRIAL ANIMALS KNOWN TO OCCUR IN THE NORRIS RESERVOIR VICINITY FROM RECORDS (1999) AND PARCEL SURVEYS				
Common Name	Scientific Name	Federal Status	Tennessee State Status	Found During Parcel Surveys
<i>Birds</i>				
Peregrine falcon	<i>Falco peregrinus</i>	—	Endangered	—
Red-cockaded woodpecker	<i>Picoides borealis</i>	Endangered	Extirpated	—
Appalachian bewick's wren	<i>Thryomanes bewickii altus</i>	—	Threatened	—
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	In Need of Management	Yes (3 Parcels)
Common barn-owl	<i>Tyto alba</i>	—	In Need of Management	—
Northern saw-whet owl	<i>Aegolius acadicus</i>	—	In Need of Management	—
Little blue heron*	<i>Egretta caerulea</i>	—	In Need of Management	Yes (1 Parcel)
Sharp-shinned hawk	<i>Accipiter striatus</i>	—	In Need of Management	—
Osprey*	<i>Pandion haliaetus</i>	—	Formerly Threatened	Yes (1 Parcel)
Swainson's warbler	<i>Limnothlypis swainsonii</i>	—	In Need of Management	—
<i>Mammals</i>				
Gray bat	<i>Myotis grisescens</i>	Endangered	Endangered	—
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	—
Allegheny woodrat	<i>Neotoma magister</i>	—	In Need of Management	—
Common shrew	<i>Sorex cinereus</i>	—	In Need of Management	—
Eastern big-eared bat	<i>Corynorhinus rafinesquii</i>	—	In Need of Management	—
Eastern small-footed bat	<i>Myotis leibii</i>	—	In Need of Management	—
Hairy-tailed mole	<i>Parascalops breweri</i>	—	In Need of Management	—
Meadow jumping mouse	<i>Zapus hudsonius</i>	—	In Need of Management	—

TABLE 3-3 LIST OF RARE TERRESTRIAL ANIMALS KNOWN TO OCCUR IN THE NORRIS RESERVOIR VICINITY FROM RECORDS (1999) AND PARCEL SURVEYS				
Common Name	Scientific Name	Federal Status	Tennessee State Status	Found During Parcel Surveys
<i>Mammals - continued</i>				
Smoky shrew	<i>Sorex fumeus</i>	—	In Need of Management	Yes (3 Parcels)
Southeastern shrew	<i>Sorex longirostris</i>	—	In Need of Management	Yes (3 Parcels)
Southern bog lemming	<i>Synaptomys cooperi</i>	—	In Need of Management	—
Woodland jumping mouse	<i>Napaeozapus insignis</i>	—	In Need of Management	—

**Species that were not known to occur in the Norris vicinity, but were found during the parcel surveys. (Norris vicinity includes Anderson, Campbell, Claiborne, Grainger, Hancock, and Union Counties.)*

Bald eagle (*Haliaeetus leucocephalus*)—Bald eagles, listed as federal- threatened and in need of management by the state of Tennessee, were observed on several occasions roosting and flying on or near TVA public land. Bald eagle populations continue to increase in Tennessee; however, nesting bald eagles are uncommon in east Tennessee. Large, mid-aged and mature tracts of deciduous woodlands adjacent to reservoirs provide both nesting habitat for resident eagles and wintering roosting habitat for migratory bald eagles. These birds regularly perch on snags adjacent to water when foraging. Suitable bald eagle nesting and foraging habitat are found on Norris Reservoir, especially along six parcels. Protecting large forested parcels and snags would benefit bald eagles. An active nest is located on private land along the Clinch River. Although birds are observed on Norris Reservoir during summer and winter months, no active nests are known on TVA public land.

Osprey (*Pandion haliaetus*)—Ospreys, formerly listed as threatened by the state of Tennessee, were observed flying and foraging along the channel of Norris Reservoir on two occasions during the project. In recent years, osprey populations have increased in Tennessee due to the establishment of artificial nesting platforms. Ospreys are sensitive to human intrusion, and protective measures should be taken near their nesting sites. Suitable nesting and foraging habitat for this species are found on multiple reservoir parcels. Protecting snags and mature woodlands along Norris Reservoir would benefit this species. Although birds were observed occasionally, no nesting activity was confirmed on TVA parcels.

Little blue heron (*Egretta caerulea*)—Little blue herons, listed as in need of management by the state of Tennessee, were observed roosting on one parcel. The little blue heron is an uncommon colonial nesting bird that nests in woods or thickets near water and forages along mud flats and in shallow water. In Tennessee, this heron occurs predominately in the western part of the state. This bird is most commonly observed in east Tennessee during migration

periods. Suitable habitat for the little blue heron exists on Norris Reservoir. Protection of areas consisting of shallow water and mud flats bordered by woodlands along Norris Reservoir would benefit this bird. Nesting of this species was not confirmed on any parcels.

Southeastern shrew (*Sorex longirostris*)—Southeastern shrews, listed as in need of management by the state of Tennessee, are found in a variety of habitats across Tennessee, including moist forests and wetlands. Southeastern shrews were documented by five sightings on three parcels. Suitable habitat for this species is found on most parcels and additional sampling efforts on parcels would likely yield more records for this mammal.

Smoky shrew (*Sorex fumeus*)—Smoky shrews, listed as in need of management by the state of Tennessee, can be found in moist woodlands with ample leaf litter and in grassy areas along streams. In Tennessee, this mammal generally occurs in the eastern part of the state where limited information about the species is available. Smoky shrews were documented by four occurrences on three parcels. Several parcels on Norris Reservoir provide suitable habitat for this species. Protection of moist woodland habitats and wetlands along Norris Reservoir would benefit this species.

Caves—Caves represent very specialized habitats and a significant number of federal- and state-listed species find suitable habitat within caves. Cave habitats are used year-round as roosting and maternity sites by federal-endangered bats. Caves are used as nest sites by the state-listed Allegheny woodrat and common barn-owl. Several sensitive species, which rely on caves (gray bat, Indiana bat, eastern small-footed bat, eastern big-eared bat, Allegheny woodrat, and common barn-owl), have been documented in the vicinity of Norris Reservoir.

Appendix C-2 provides a list of bats known from caves which occur in the vicinity of Norris Reservoir. Caves and suitable foraging areas are important habitat requirements for these species. Gray bats typically forage over large bodies of water, and Norris Reservoir provides ample foraging habitat for this species. Woodland streams and hillsides and wetlands associated with Norris Reservoir provide foraging habitat for the eastern small-footed bat and eastern big-eared bat, and upland forests and forested riparian habitats provide foraging habitat for the Indiana bat. Forested areas characterized by mature trees, hollow trees, and snags are suitable habitat for woodland species of bats, including the Indiana bat. In July 1999 bats were surveyed using mist nets at five locations on two parcels, which resulted in the capture of three species of bats: northern red bat, little brown bat, and big brown bat.

Heron colonies—Heron colonies are colonial nesting sites used by migratory wading birds. Several species of birds, in large numbers, may nest in colonies. Birds that occupy these colonies are sensitive to disturbance, especially during the nesting season. Norris Reservoir, including many parcels, provides suitable foraging and nesting habitat for these birds.

Two new heron colonies were discovered during field surveys. The first colony, located in a hardwood/pine forest on the crown of a steep peninsula adjoining Beech Island Small Wild Area, contained 25 to 30 nests of great blue herons. The second colony, containing seven great blue heron nests, is located on a parcel in shoreline pines. The establishment of heron colonies on Norris Reservoir is significant. Great blue heron populations in Tennessee

underwent declines in the late 1960s and early 1970s (Nicholson, 1997). These new occurrences suggest that Norris Reservoir may provide suitable nesting habitat for other species of wading birds that are considered uncommon in Tennessee, such as the little blue heron. Additionally, Norris Reservoir provides habitat for regional populations of herons which may relocate there due to human disturbance or loss of habitat in other areas. Additional suitable habitat for wading birds is present along Norris Reservoir.

No populations of the remaining rare animal species listed in Table 3-3 were found during field surveys. However, suitable habitat exists on Norris Reservoir for many of these species. The presence of sensitive terrestrial animal species was projected based on the geographical range of the species and the presence of habitat deemed suitable for the respective species found in Choate, et al., 1994; Harvey, 1992; Nicholson, 1997; Petranks, 1998; Redmond and Scott, 1996; Whitaker and Hamilton, 1998; and Wilson, 1995.

Early successional habitats, such as old-fields, along Norris Reservoir provide suitable habitat for common barn-owls (*Tyto alba*), and the Appalachian bewick's wren (*Thryomanes bewickii altus*). Sharp-shinned hawks (*Accipiter striatus*) nest in woodlands and may forage in early successional habitats.

A diversity of forested areas provide habitat for a variety of rare animals. Rock communities and caves provide suitable habitat for the Allegheny woodrat (*Neotoma magister*) and eastern small-footed bat (*Myotis leibii*). Woodland jumping mice (*Napaeozapus insignis*) may be found along Norris Reservoir in mature woodlands and wetlands. Damp woodlands and wetlands provide habitat for the southern bog lemming (*Synaptomys cooperi*) and common shrew (*Sorex cinereus*). The meadow jumping mouse (*Zapus hudsonius*) and hairy-tailed mole (*Parascalops breweri*) may find suitable habitat in both woodland and open habitats along Norris Reservoir.

Wetlands and other aquatic habitats on reservoir parcels provide habitat for four-toed salamanders (*Hemidactylium scutatum*). This salamander prefers woodlands containing abundant moss or sedges near a water source. Eastern hellbenders (*Cryptobranchus a. alleganiensis*) inhabit cool unpolluted waters and may be found along several parcels.

No suitable habitat for red-cockaded woodpeckers (*Picoides borealis*) or the peregrine falcon (*Falco peregrinus*) was observed on Norris Reservoir parcels. Although stands of pine were observed, none were of suitable age or were extensive enough to provide suitable nesting habitat for the red-cockaded woodpecker. TWRA listed the red-cockaded woodpecker as extirpated in Tennessee in 2000. Limited habitat exists on Norris Reservoir parcels for the peregrine falcon. Swainson's warblers (*Limnothlypis swainsonii*) nest in forests containing dense undergrowth and may be associated with ravines. This habitat type was not encountered on any parcels. The northern saw-whet owl (*Aegolius acadicus*) can be found in mixed-deciduous woodlands; however, records for this species are sparse throughout the region, and it would not be expected on Norris Reservoir parcels except rarely during migration.

Several species, not currently known from areas surrounding the parcels, may find suitable habitat along Norris Reservoir. Forested habitats along Norris Reservoir provide suitable habitat for the long-tailed shrew (*Sorex dispar blitchi*), southern coal skink (*Eumeces anthracinus pluvialis*), and northern coal skink (*Eumeces anthracinus anthracinus*). Open country provides habitat for the northern harrier (*Circus cyaneus*), vesper sparrow (*Pooecetes gramineus*), Bachman's sparrow (*Aimophila aestivalis*), and the eastern slender glass lizard (*Ophisaurus attenuatus longicaudus*). Wetland and riparian areas provide habitat for the great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), least bittern (*Ixobrychus exilis*), king rail (*Rallus elegans*), and star-nosed mole (*Condylura cristata parva*).

3.3.1 - 3 Aquatic Animals

Several aquatic species now protected as either federal- or state-listed endangered or threatened species existed in the reservoir area prior to impoundment. Those species include several freshwater mussels (such as the dromedary pearlymussel, *Dromus dromas*; green blossom pearlymussel, *Epioblasma torulosa gubernaculum*; shiny pigtoe pearlymussel, *Fusconaia cor*; fine-rayed pigtoe, *Fusconaia cuneolus*; and birdwing pearlymussel, *Lemiox rimosus*) and a few fishes (such as the palezone shiner, *Notropis albizonatus* and spotfin chub, *Cyprinella monacha*). Information available in the TVA Regional Natural Heritage Project database and other sources indicated that most of these species are unlikely to occur in the types of habitats present in the reservoir pool. Some federal- and state-protected aquatic species are either known to occur or might still persist in parts of the Clinch and Powell Rivers adjacent to some upstream parcels considered in the Norris Plan. These species are identified in Table 3-4. Those which might still be present in the area are discussed in the following paragraphs.

TABLE 3-4 PROTECTED AQUATIC ANIMALS KNOWN FROM AREAS ADJACENT TO PARCELS INCLUDED IN THE NORRIS RESERVOIR LAND MANAGEMENT PLAN				
Common Name	Scientific Name	Federal Status	Tennessee State Status	Possible Near Plan Parcels?
Mussels				
Birdwing pearlymussel	<i>Lemiox rimosus</i>	Endangered	Endangered	X
Dromedary pearlymussel	<i>Dromus dromas</i>	Endangered	Endangered	X
Fine-rayed pigtoe	<i>Fusconaia cuneolus</i>	Endangered	Endangered	X
Green blossom pearlymussel	<i>Epioblasma torulosa gubernaculum</i>	Endangered	Endangered	X
Shiny pigtoe pearlymussel	<i>Fusconaia cor</i>	Endangered	Endangered	X
Fish				
Palezone shiner	<i>Notropis albizonatus</i>	Endangered	Endangered	X
Slender chub	<i>Erimystax cahni</i>	Threatened	Threatened	P

TABLE 3-4 PROTECTED AQUATIC ANIMALS KNOWN FROM AREAS ADJACENT TO PARCELS INCLUDED IN THE NORRIS RESERVOIR LAND MANAGEMENT PLAN

Common Name	Scientific Name	Federal Status	Tennessee State Status	Possible Near Plan Parcels?
Fish continued				
Spotfin chub	<i>Cyprinella monacha</i>	Threatened	Endangered	X
Tangerine darter	<i>Percina aurantiaca</i>	None	In Need of Management	P
Western sand darter	<i>Ammocrypta clara</i>	None	Threatened	P
Yellowfin madtom	<i>Noturus flavipinnis</i>	Threatened	Threatened	?

X = Assumed Extirpated

P = Possible

? = Unknown

Tangerine Darter (*Percina aurantiaca*)—This darter is known from the upper Tennessee River drainage from its headwaters in southwestern Virginia downstream as far as the Hiwassee River system in Tennessee, North Carolina, and northeast Georgia. Tangerine darters are found in medium-size creeks and rivers, including free-flowing portions of the Clinch and Powell Rivers above Norris Reservoir. They normally occur in deep riffles and boulder-strewn runs and pools over substrates of bedrock, boulders, cobble, gravel, and sand that are relatively free of silt (Etnier and Starnes, 1993; Shute et al., In Press).

Slender Chub (*Erimystax cahni*)—This minnow has been collected recently only in the Clinch and Powell Rivers upstream from Norris Reservoir; although, historically, it was also known from the Holston River. The free-flowing portions of the Clinch and Powell Rivers above the Norris Reservoir impoundment are designated critical habitat for the slender chub (USFWS, 1983). No recent records are available for this species from within the impoundment area. Slender chubs appear to prefer gravel shoal areas in large rivers (Etnier and Starnes, 1993; Shute et al., In Press).

Western Sand Darter (*Ammocrypta clara*)—The western sand darter is widespread in streams in the Mississippi and Ohio River systems, including portions of the Cumberland and Tennessee watersheds. This darter is known in Tennessee only from the Clinch and Powell Rivers above the impoundment of Norris Reservoir. It has been collected recently only in the Powell River. Western sand darters occur in small to large rivers in areas having moderate current over clean sand or sand and gravel substrates (Etnier and Starnes, 1993; Shute et al., In Press).

Yellowfin Madtom (*Noturus flavipinnis*)—Unimpounded portions of the Powell River are designated critical habitat for the yellowfin madtom (Greenwald, 1977). Yellowfin madtoms have been recently found in the main stem Powell River upstream from Norris Reservoir (P. W. Shute, TVA, personal observation). No recent records are available for this species from within the impoundment area.

3.3.2 Environmental Consequences

3.3.2 - 1 Plant Species

Alternative A—Under this alternative, use of TVA public land on Norris Reservoir would continue to be based on the Forecast System. The Forecast System does not currently include any areas, other than TVA small wild areas, reserved primarily for protection of natural resources. There are 39 reported occurrences of state-listed plant species on TVA public land. Under the Forecast System 35 of these occurrences are on land designated for Public Recreation, three are on a parcel designated for Steam Plant Study, and one on land designated for Forestry Research.

If the Forecast System continues to be used, potential impacts to state-listed threatened and endangered plants would be assessed during site-specific reviews. Each proposed land use would be reviewed and its anticipated impacts to existing vegetation, including rare plants, would be evaluated. Some Forecast System uses would likely be modified, based on the environmental review process. However, the review process would ensure that impacts to state-listed plants are minimized. Under the Forecast System, no land is managed specifically for the protection and enhancement of the rare plant populations present.

Alternative B— This alternative would provide protective status for 16 parcels containing 39 state-listed plant occurrences. Under the Norris Plan 12 (75 percent) of these parcels are in Sensitive Resource Management (Zone 3), 3 parcels (20 percent) are in Natural Resource Conservation (Zone 4); and 1 parcel (5 percent) is in Developed Recreation (Zone 6). In Sensitive Resource Conservation (Zone 3), the overriding focuses are protecting and enhancing the sensitive resource the site supports (see Section 2.2.2). Parcels in Natural Resource Conservation (Zone 4) are managed for the enhancement of natural resources for human use and appreciation. Actions proposed in the Tactical Plan on Parcel 6 would not affect threatened and endangered plant species.

Conclusion—Under either alternative, individual land use proposals would be reviewed under NEPA to determine potential effects on plant species. These activities would be approved, denied, or approved subject to modification of the activity to reduce potential environmental effects. Also, both alternatives would use the most recent plant survey information. Under Alternative A, this new information about the types and location of listed plants would be used to improve the use of the Forecast System. Consequently, if left in place, the Forecast System is expected to have a minimal effect on threatened and endangered plants.

If Alternative B is implemented, 95 percent of the identified listed plants would be allocated to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). Because both zones provide for increased protection and enhancement of the rare plants present, the Norris Plan is anticipated to provide better protection for listed plants. Alternative B is expected to benefit listed plants and is preferred over Alternative A.

3.3.2 - 2 Terrestrial Animals

Alternative A—Currently, decisions regarding the use of TVA public land surrounding Norris Reservoir are based upon the Forecast System. Effects to populations of rare terrestrial animals and sensitive ecological areas (caves and heron colonies) would be considered during TVA environmental reviews associated with specific projects; therefore, no significant impacts to threatened or endangered terrestrial animals are expected. Although this process would protect most populations of rare terrestrial animals and sensitive ecological areas along Norris Reservoir, TVA's ability to address cumulative impacts to these resources would be limited.

Alternative B—Using the land planning allocation process, parcels that harbor populations of rare terrestrial animals or sensitive ecological areas would be designated for Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). This process would protect populations of federal- and state-listed species, significant rare species habitat, and sensitive ecological areas. In parcels designated for Natural Resource Conservation (Zone 4), habitat manipulation would be allowed to improve this habitat for wildlife.

This alternative would benefit rare terrestrial animals, their habitat, and sensitive ecological areas by applying appropriate protective buffers around them. Ultimately, unit plans would be developed for TVA public land surrounding Norris Reservoir. These plans would specifically designate protective zones for populations of rare terrestrial animals, their habitat, and sensitive ecological areas, and specify wildlife management requirements and limitations for the reservoir. For these stated reasons, Alternative B is preferred over Alternative A. Actions proposed in the Tactical Plan on Parcel 6 would not affect threatened and endangered terrestrial animals.

3.3.2 - 3 Aquatic Animals

Alternative A—Under this alternative, TVA actions would not be likely to adversely affect the habitat of protected aquatic species. While four state- and/or federal-listed fishes could occur in portions of the Clinch and Powell Rivers upstream from the land included in the Forecast System, current environmental review practices would likely avoid or minimize any adverse impacts to these species.

Alternative B—Under this alternative, no parcels were identified specifically to protect habitats necessary for sensitive aquatic species. However, adoption of this alternative would lead to the protection of several large areas containing wetlands and sensitive terrestrial habitats. Many of these areas would act as riparian buffer zones and could have indirect but positive effects on aquatic habitat quality. The cumulative effects of these actions may help improve water quality and aquatic habitats downstream from these parcels, including areas where sensitive aquatic species may occur. Therefore, this alternative could afford these species and/or habitats greater protection than the current Forecast System. Actions proposed in the Tactical Plan on Parcel 6 would not affect threatened and endangered aquatic animals.

3.4 Terrestrial Ecology and Significant Natural Areas

3.4.1 Affected Environment

3.4.1 - 1 Terrestrial Ecology

Norris Reservoir is located within the Great Valley of east Tennessee, or geographically what is described as the Appalachian Ridge and Valley Physiographic Province of east Tennessee. This physiographic province is characterized by long ridges and intervening valleys that generally run in a southwestern-to-northeastern direction. Norris Reservoir is within the oak-hickory forestland resource region, as described by the U.S. Forest Service (U.S. Department of Agriculture [USDA], Forest Service, 1969).

The 27,926.8 acres of TVA public land surrounding Norris Reservoir can be divided into three broad community types: (1) forestland; (2) open land; and (3) wetland/riparian areas. Approximately 22,262 acres have been inventoried as part of the TVA forest prescription process. Of this land, the following major cover types occur:

- Hardwoods (15,184 acres—68 percent)
- Mixed (4,443 acres—20 percent)
- Pines (1,745 acres—8 percent)
- Red Cedar (332 acres—1 percent)
- Open (412 acres—2 percent)
- Other (146 acres—1 percent)

Past land use has played a major role in creating the present mosaic of forest conditions. At the time of TVA purchase, TVA public land on Norris Reservoir was typical of other land in the Tennessee Valley—primarily small subsistence farming on marginal land with pastures and row crop areas interspersed with woodlands. Pasture and row crops made up a majority of the landscape, while most woodland areas were grazed and often burned to promote the growth of annuals and other forage plants. Woodlots were also selectively harvested periodically to provide construction lumber, firewood, and other wood products. After purchase, open land was either planted to shortleaf pine by TVA or reverted naturally to Virginia pine, red cedar, hickory, and other hardwoods.

Two events during the 1970s had major impacts on the forest resources on Norris Reservoir. The first event, related to TVA entering into a 10-year contract with Longleaf Industries for harvest of 40 million board feet of timber from Norris Reservoir land. All harvesting was done using a selection system with a moratorium on regeneration harvests. This ultimately resulted in “high-grading,” which had detrimental long-term effects on Norris Reservoir land. The second event was the epidemic outbreak of the southern pine beetle in the early and mid-1970s. This infestation caused heavy mortality in the old-field pine stands and greatly diminished the composition of pine on Norris Reservoir.

Although a variety of hardwood types are present on Norris Reservoir, upland hardwood comprises over 76 percent of the hardwood stands. Typical species that occur in these are

white oak, black oak, southern red oak, hickories, red maple, and beech. Mixed hardwood stands, that are composed primarily of upland and cove hardwood, comprise about 14 percent of the hardwood. Other hardwood types include cove, northern, and bottomland. Typical species in these types include yellow-poplar, sugar maple, white ash, chinkapin oak, beech, black willow, sycamore, and persimmon. Past logging activity has resulted in stands of various ages that have two main age classes: the older trees exceed 100 years while the younger component is generally 30 to 40 years old. Because of the advanced age, most of the dominant hardwood is small and large sawtimber size.

Pine types are dominated by Virginia pine (56 percent), mixed pine (31 percent), and planted shortleaf pine (8 percent). The remaining pine types include planted loblolly and white pine. Most of the pine exceeds 50 years of age and is pole and small sawtimber size. Mixed forest stands comprise 20 percent of the forest and include cedar-hardwood, pine-cedar, pine-hardwood, and pine-cedar-hardwood types. These types have various mixtures of red cedar, Virginia and shortleaf pine, elm, oaks, hickories, red maples, and other hardwoods. These types range in size from poles to large sawtimber and are a variety of age classes. Also, as a result of old-field reversion, eastern red cedar occurs on poorer, rocky sites that were either marginal farmland or heavily depleted of soil nutrients.

In 1981 TVA implemented an inventory and prescription process to standardize forest management planning for its land. Using this approach, staff foresters inventoried approximately 10 percent of TVA's forested land annually. Based on these annual inventories, forest management prescriptions were developed and reviewed by various TVA interests (water quality, wildlife, aesthetics, cultural resources, etc.). Utilizing input received during these reviews, prescriptions were either approved, modified, or disapproved. Thereafter, approved prescriptions were evaluated to determine the nature and significance of anticipated environmental effects. The remaining 5604.8 acres of TVA public forestland surrounding Norris Reservoir have not been inventoried and include a variety of conditions. This land includes properties fronting residential development, state parks, and wildlife management areas. It also includes unmanaged forest areas, recreation and natural areas, riparian/wetland areas along streams and the lakeshore, portions of Norris Dam Reservation, and the city of Norris' watershed area. These parcels range in size from less than 2 acres to over 450 acres. For example, Parcel 7, approximately 450 acres, is managed by the city of Norris, with TVA assistance, for their municipal watershed. Ecological conditions and forest communities occupying this land are similar to inventoried reservoir land except some marginal strip land fronting residential development may have been cleared for mowed lawns or the forested areas cleared of underbrush.

Open land on Norris Reservoir is composed of managed TVA public land licensed to individuals for agricultural purposes and area purposely maintained as open land for the enhancement of wildlife habitat. TVA agricultural licensed land consists of 454 acres in 20 parcels, licensed primarily for hay production. Open land leased by individuals for agricultural purposes must be maintained using BMPs as outlined by TVA in the license agreements and commitments in TVA's agricultural EA (TVA, 1999a). Many of the tracts of open land licensed on Norris Reservoir for agricultural purposes have been managed to improve wildlife habitat in conjunction with approved agricultural practices. Various stages

of transitional habitat for resident wildlife species have been created along field borders, fencerows, and woodlots associated with these agricultural tracts. TVA maintained open land is managed to provide various types of early succession wildlife habitat, such as old-fields and meadows. Old-fields and edge areas include a variety of shrubs, vines, forbs, weeds, tree seedlings, and grasses. These old-field communities might include dogwoods, maples, sumac, honeysuckle, ironweed, ragweed, thistle, beggarweed, blackberries, and broom-sedge. Meadows may include planted native warm season grasses, clovers, lespedeza, orchard grass, and wheat. Many areas have been managed to improve wildlife habitat using prescribed burns, mowing, disking, planting wildlife food crops, and establishing native warm season grasses.

TVA has also taken action to establish and promote riparian vegetation on TVA public land along streams and lakeshores to provide wildlife habitat, protect water quality, and minimize soil erosion. Riparian areas along streams and lakeshores include forested buffer strips, reverting old-fields, shoreline fringe wetlands, and mowed lawns adjacent to residential areas. The wetland communities found on Norris Reservoir make up the smallest percentage of the community types considered and are addressed in Section 3.5.

The forested upland, openland, and riparian/wetland community types surrounding Norris Reservoir provide a broad range of habitats capable of supporting a wide array of terrestrial wildlife species. Mammals commonly found in these habitats include gray and fox squirrels, white-tailed deer, woodchucks, and white-footed mice. Bird species using these habitats throughout the year include eastern wild turkey, various woodpeckers, eastern bluebirds, song sparrows, and northern cardinals. Migrant neotropical songbirds, such as yellow-billed cuckoos, red-eyed vireos, yellow-throated warblers, and indigo buntings may be observed during spring and summer. Eastern box turtles, black rat snakes, and five-lined skinks are common reptile species also utilizing these widely varied habitats. The wildlife species expected to occur in the major ecological community types on Norris Reservoir are listed in Appendix C-1. Forested areas and managed open land make up 85 percent of the 27,926.8 acres of TVA public land on Norris Reservoir.

Strips of TVA public land (below the 1044-foot contour elevation) separate the reservoir shoreline and private residential land in some areas. These residential-influenced strips of land are located along 131 miles of shoreline. On an additional 133 miles of residential access shoreline on Norris Reservoir, TVA does not own any land above normal summer pool (1020-foot contour elevation). Combined, these residential access areas make up 32 percent of the total reservoir shoreline. On these residential access areas, the backlying private property landowners have deeded rights to request permits for water use facilities and implementation of vegetation management plans on TVA public land. Any permit request is reviewed to assess potential impacts to protected terrestrial wildlife and plant species. All requests must follow TVA's SMP standards (see Section 1.2). SMP standards were developed to minimize impacts to terrestrial ecology on residential access land. These standards were evaluated in TVA's SMI Final EIS (TVA, 1998).

3.4.1 - 2 Significant Natural Areas

The following criteria were used to evaluate each parcel for its potential for natural area designation:

- ***Aesthetics*** includes the presence of unique natural features (waterfalls, mature trees, wildflower displays, concentrations of observable wildlife, panoramic views).
- ***Solitude*** is a measure of the parcels' isolation from developed landscapes and ability to provide a quiet place in the natural world without the background sounds of urban, industrial, and residential activities.
- ***Access*** includes ease of access from public roads and development of parking areas, as well as a determination of whether the topography of the parcel is favorable for trail development.
- ***Ecological Integrity*** is the capability to protect the resource, minimize visual intrusions, separate incompatible uses, and the presence or absence of invasive, exotic species.
- ***Environmental Education and Scientific Research*** indicate the site has potential to be used for wildlife viewing opportunities, environmental education, and scientific research. These are often unique or uncommon ecological communities or habitats important to migratory wildlife or easily observable species.
- ***Threatened and Endangered Species Habitat*** is a site with the known occurrence of plant or animal species with federal or state status.

There are eight significant ecological sites or managed areas on Norris Reservoir. Six of these areas (Beech Island, Comby Ridge, Hemlock Bluff, Monks Corner, Stiners Woods, and River Bluff) are TVA Small Wild Areas and are managed for low impact public use, such as hiking. One area (Norris Dam Cave) is a TVA habitat protection area and is managed for the protection of federal and/or state protected species. One area (the Norris Song Bird Trail) is a state wildlife observation area and is managed for various types of viewable wildlife.

Beech Island TVA Small Wild Area (Parcel 276)—This small wild area, located in Union County on the Clinch River arm of Norris Reservoir includes 13 acres of beech-maple forests and numerous steep ridges and cliffs overlooking Norris Reservoir. Trails wind through upland hardwood forests floored with numerous wildflower species. This area has been proposed as a potential national natural landmark.

Comby Ridge TVA Small Wild Area (Parcel 225)—This small wild area, located in Claiborne County near Big Sycamore Creek, is composed of 75 acres of upland and cove hardwoods along a steep, narrow ridge. This ridge forms a geologic feature uncommon in the Ridge and Valley region.

Hemlock Bluff TVA Small Wild Area (Parcel 308)—This 177-acre small wild area, located in Union County on Norris Reservoir, is unique because of numerous hemlocks growing on a steep limestone ridge. A 7-mile loop hiking trail winds through a mixed forest that includes hemlock, white oak, beech, and pine. This area has been proposed as a potential national natural landmark.

Monks Corner TVA Small Wild Area (Parcel 123)—This small wild area, located in Union County adjacent to Chuck Swan Wildlife Management Area, includes 145 acres of upland hardwoods on saw-back ridges with numerous limestone outcrops. Numerous spring and fall wildflowers can be found at Monks Corner. Recreation opportunities include hiking trails and limited primitive camping.

River Bluff TVA Small Wild Area (Parcel 6)—This small wild area is located on the Norris Dam Reservation in Anderson County. Composed of 125 acres of rich, mixed mesophytic forest on a steep north-facing slope, this area harbors a rich assemblage of wildflowers, including several rare species. A 3.1-mile loop hiking trail provides access to a 40-year-old pine plantation, rich vegetation, and steep bluffs overlooking the Clinch River. Numerous species of wildlife utilize this forest, including deer, songbirds, and wild turkey.

Stiners Woods TVA Small Wild Area (Parcel 122)—This small wild area, located in Union County, contains a beech-dominated, mixed mesophytic forest. The area is of historical significance because of carvings on several of the beech trees. In addition, this 57-acre area provides habitat for an active vulture roost.

Norris Dam Cave TVA Habitat Protection Area (Parcel 6)—This habitat protection area, located in Campbell County immediately downstream from Norris Dam on the west bank of the Clinch River includes approximately 6 acres that provide habitat (April through October) for a colony of about 8000 gray bats (*Myotis grisescens*).

Norris Song Bird Trail State Wildlife Observation Area (Parcel 6)—Song Bird Trail, located below Norris Dam on the Clinch River, provides a variety of habitats (including riverine, old-fields, bottomland hardwoods, and grassy areas) for many songbirds and other wildlife. A special feature is the high concentration of eastern bluebirds breeding in the area. Osprey and bald eagles can occasionally be seen along the river.

3.4.2 Environmental Consequences

3.4.2 - 1 Terrestrial Ecology

Alternative A—Approximately 69 percent of TVA public land on Norris Reservoir is under either the public recreation, small wild area, forest research, or wildlife management designations. Approximately 65 percent of this land is designated for public recreation, which allows a wide variety of potential uses and management options ranging from undeveloped to developed recreation. These developed changes might include the creation of parks, the building of boat launching sites, and developed campgrounds. Therefore, changes

in use patterns under the public recreation designation could create a corresponding change in vegetation and terrestrial ecology of the affected parcels. However, these types of impacts would be localized and insignificant on a regional or subregional basis. Overall, the cumulative impacts to terrestrial ecology under Alternative A would be insignificant on TVA's forestland, open land, and riparian areas.

Alternative B—This alternative allocates 23,775.8 acres to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). These two zones comprise approximately 85 percent of TVA public land on Norris Reservoir. The management of these parcels would be guided by unit management plans, developed and reviewed with public input, which would provide for a long-term (25 years) management strategy for natural resource management. There would be approximately seven such units ranging in size from 1500 acres to 4000 acres. The following types of activities could occur in a given unit, following site-specific environmental review:

- Forest management to improve the diversity of tree species and sizes; encourage growth and maturation of native fruit- and nut-producing trees; develop wildlife openings and various successional stages of wildlife habitat; and protect snags and wildlife nesting cavities.
- Open land management to provide a diversity of vegetation, ranging from planted native warm season grasses to old-fields and shrub edges.
- Wetland management to protect and/or enhance the hydrology, soils, and vegetation as well as to improve overall functions and values.
- Riparian management to allow the natural development of native vegetation or restoration of riparian vegetation through soil bioengineering.
- Management and protection of sensitive terrestrial resources and natural areas in accordance with existing regulations, requirements, and principles of good stewardship.
- Public use management, including hiking trails, informal camping, fishing access sites, and parking areas.

The proposed Norris Plan allocated land to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) based on resource inventories and capability/suitability analyses. As a result, the above types of management activities would result in beneficial impacts to terrestrial ecological resources on these parcels.

Fifteen percent of TVA public land on Norris Reservoir includes 935 acres allocated to Project Operations (Zone 2), 1744 acres allocated to Developed Recreation (Zone 6), and 1473 acres allocated to Residential Access (Zone 7). SMP standards for docks, corridors, and vegetation management would be implemented to reduce the cumulative impacts of residential shoreline management activities proposed. Any Zone 2 areas developed for TVA Project Operations will be reviewed by TVA prior to any development to ensure that any impacts to terrestrial resources will be avoided or minimized. Development within parcels

allocated to Project Operations (Zone 2) and/or Developed Recreation (Zone 6) would have insignificant effects on terrestrial ecology on a regional or subregional basis.

Privately owned forests and open land are likely to be subject to increased pressure in the surrounding area primarily from residential development. By maintaining more than three-fourths of TVA public land in forested and open land parcels, implementation of Alternative A or B could offset some negative effects of development and fragmentation on nearby private land. However, because of the small percentage of TVA acreage within the region, TVA's choice of an alternative for management of public land would be unlikely to influence regional trends in terrestrial ecology. Timber harvests undertaken on Norris Reservoir for the purpose of regeneration of forest will not exceed 20 acres in size for individual cuts. Selection of Alternative B would have a beneficial effect on the terrestrial ecology on TVA public land. Actions proposed in the Tactical Plan on Parcel 6 would not affect terrestrial ecology.

3.4.2 - 2 Significant Natural Areas

Alternative A—Under the Forecast System all existing natural areas will continue to be managed in a manner consistent with no significant impacts. However, since no new areas are identified as natural area candidates, Alternative A would have somewhat less positive impact than Alternative B.

Alternative B—Field surveys of selected uncommitted planning parcels were conducted between April and November of 1999. The purpose of the surveys was to evaluate the parcels for their scenic and aesthetic qualities, ecological significance, and suitability for designation as a TVA natural area. TVA natural areas include small wild areas, ecological study areas, habitat protection areas, and wildlife observation areas. See the Sensitive Resource Management (Zone 3) definition in Table 2-4 for a description of each of these natural areas.

Based on the survey findings all or portions of 11 parcels meet the criteria for designation as a TVA habitat protection area because of the presence of plant species with Tennessee state status.

Habitat protection area designation includes:

- Parcel 5 - Clinch River Bluffs TVA Habitat Protection Area
- Parcel 7 - Clear Creek TVA Habitat Protection Area
- Parcel 10 - Oak Grove River Bluffs TVA Habitat Protection Area
- Parcel 13 - No Rope Cave TVA Habitat Protection Area
- Parcel 35 - Island Ford Road TVA Habitat Protection Area
- Parcel 36 - Cove Creek Bluffs TVA Habitat Protection Area
- Parcel 52 - Big Creek TVA Habitat Protection Area
- Parcel 74 - Murrayville Flats TVA Habitat Protection Area

- Parcel 145 - Gap Creek Bluffs TVA Habitat Protection Area
- Parcel 181 - Little Barren Creek TVA Habitat Protection Area
- Parcel 182 - Cedar Grove TVA Habitat Protection Area

These habitats and the species, along with others surrounding Norris Reservoir, are described in the Threatened and Endangered Species Section of this report. Although no areas were identified as suitable for designation as new TVA small wild areas, under Alternative B, 25 acres will be added to the existing Monks Corner TVA Small Wild Area.

Because Alternative B has a specific zone for Sensitive Resource Management (Zone 3) and allows for expansion of an existing small wild area, this is the preferred alternative. Alternative B would have a beneficial impact on significant natural areas. Actions proposed in the Tactical Plan on Parcel 6 would not affect significant natural areas.

3.5 Wetlands/Riparian Ecology

3.5.1 Affected Environment

Wetlands are typically transitional ecosystems between terrestrial and aquatic communities. In the Ridge and Valley Physiographic Province, lower slope/terraced land and floodplains represent a small percentage of the landscape relative to the uplands due primarily to the geology of the region. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, mud flats, and natural ponds (TVA, 1983).

Wetlands along TVA's reservoirs tend to be diverse and highly productive components of the overall reservoir ecosystem. They provide habitat for many wildlife species, serve as shoreline stabilization zones, aid in flood control, and contribute to improved water quality. Most wetlands on Norris Reservoir are found in shallow coves or embayments. They generally are in linear strips, ranging in size from one-tenth of an acre to 60 acres in size, following the shape of the shoreline and below the 1020-foot contour elevation (normal summer pool).

Along reservoir shorelines, wetlands and riparian areas are transitional ecosystems between terrestrial and aquatic communities. Historically, there were no lakes in the upper Tennessee River basin. TVA's impoundments inundated the previous riverine and upslope habitats creating new wetland areas and many miles of terrestrial shoreline riparian habitat, which consist of summer shoreline riparian zones and winter drawdown mud flats (Amundsen, 1994).

The wetlands of Norris Reservoir primarily lie along approximately 135.6 miles of shoreline. These fringe and reservoir wetlands influence 16.7 percent of Norris Reservoir's 809.2 miles of shoreline and embody a variety of wetland habitat types, including aquatic beds, emergent, scrub-shrub, and forested wetlands, all of which can be found as isolated or mixed units. The small percentage of wetland acreage, when compared to all TVA public land on Norris Reservoir, does not diminish overall importance of the wetlands. In fact, it serves to increase and focus their importance within the system, as it tends to concentrate the wildlife species

utilizing these habitat types. Many of these species found in wetland habitats are listed in Appendix C-1.

Three of the most significant reservoir-influenced wetland areas on Norris Reservoir are found in the Big Sycamore Creek, Indian Creek, and Lost Creek areas. These wetland areas range in size from approximately 20 to 60 acres. The Big Sycamore Creek and the Indian Creek wetland areas are adjacent to Parcels 222, 223, and 239. They are located on the east side of U.S. Highway 25E. The Lost Creek wetland is located next to Parcel 166 adjacent to a large TVA licensed agricultural tract in Parcel 167 and bounded to the east by private agricultural pastures and Lost Creek Campground. These wetland areas are the largest on Norris Reservoir and provide valuable brood-rearing areas for wood ducks in the spring and feeding areas for migrating water birds in the fall.

Also of special significance on Norris Reservoir are smaller, isolated wetland areas not influenced directly by reservoir fluctuations. Such a wetland exists on Parcel 254. It is a half-acre herbaceous wetland associated with a shallow, meandering, rocky stream located near the center of the parcel. The wetland area has a thick layer of organic material (not sphagnum) that creates a quaking bog effect. This area is unique because wetlands of this type are rare on Norris Reservoir. There are two other significant wetland areas on Norris Reservoir which are associated with agricultural licenses. These two areas are located in Parcels 239 and 286. The wetland in Parcel 239 is upstream from the reservoir-influenced areas mentioned previously and is maintained in an emergent-successional stage by allowing restricted grazing and mowing. The wetland area on Parcel 286 is along Crooked Creek and has been fenced to protect it from grazing cattle. This area is being restored to its original forested condition by replanting wetland tree species.

Norris Reservoir's riparian zone and winter mud flats offer important habitats for many waterfowl, wading birds, and shorebird species. During full summer pool these areas offer feeding, resting cover, and breeding areas for wood ducks. Shoreline with high banks over the water provide cavity nesting sites and feeding territory for belted kingfishers. Wading birds, such as great blue herons, use riparian zones and wetlands for cover and feeding. Exposed mud flats present during the winter drawdown period provide feeding sites for resident and migrant shorebirds, such as killdeer and sandpipers.

Wetland and riparian areas are also important to mammalian groups. Muskrats and beaver feed along wetland and riparian zone edges, as well as build bank dens for rearing and protection of young. Predator species, such as mink, hunt along the banks and shorelines for prey species which also use these zones.

3.5.2 Environmental Consequences

Alternative A—Wetland areas located on TVA public land surrounding Norris Reservoir are found in most of the Forecast System categories. Under Alternative A, these areas would most likely remain unchanged, although some emergent wetlands may gradually mature to scrub-shrub wetlands, and aquatic beds will vary in size depending on yearly reservoir water levels. Even though the Forecast System designation may change on these areas, it would be

subject to TVA NEPA review, and any action would be subject to Executive Order No. 11990 (Protection of Wetlands). Executive Order No. 11990 directs federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Wetland areas located below the 1020-foot contour elevation, but fronting private land would be reviewed for protection through the Section 26a review process and Executive Order No. 11990 when permits for water use facilities are requested. Permitted water use facilities would be located to avoid or minimize impacts to these fringe wetlands. Impacts to riparian areas (located on TVA public land) on Norris Reservoir and fronting residential access land would be minimized by requiring a 50-foot-deep Shoreline Management Zone (SMZ) be maintained consistent with TVA SMP standards, effective November 1, 1999 (see Section 1.2). These SMZ areas would be left undisturbed to protect water quality, minimize shoreline erosion, and provide habitat and food for plants and animals. Because of the review mechanisms that are in place to look at any action that might impact wetland and riparian areas on Norris Reservoir, selection of Alternative A would have insignificant or no impacts on either of these resources.

Alternative B—Under Alternative B, significant wetland areas (excluding Residential Access [Zone 7] areas) would be allocated to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) (see Table 3-5 on next page). Parcels allocated to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) are candidates to be part of TVA's unit planning process. During unit planning, management strategies to preserve and enhance the value of these wetland resources would be developed. Wetlands would be managed to protect and/or enhance the hydrology, soils, and vegetation of each wetland system. Any impacts to wetlands fronting Residential Access (Zone 7) areas would be avoided or minimized through the Section 26a review process and Executive Order No. 11990 if backlying property owners requested a permit for water use facilities. In addition, all Residential Access (Zone 7) shoreline would be subject to shoreline categorization under the SMP. All wetlands would be placed in either the Shoreline Protection or Residential Mitigation categories, with most wetland areas in the Residential Mitigation category. In reviewing requests for water use facilities, TVA would relocate facilities or take other action to avoid impacts. If avoidance is not possible, requests may be denied or special mitigation measures may be required. Actions proposed in the Tactical Plan on Parcel 6 would not affect wetland and riparian ecology.

Riparian communities would be managed to allow the natural development of native vegetation or restored through bioengineering where shoreline erosion is occurring. A minimum 50-foot-deep riparian SMZ would be maintained on all Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) land, and a minimum 50-foot-deep SMZ would be maintained on all Residential Access (Zone 7) TVA-owned public land consistent with TVA SMP guidelines effective November 1, 1999. These SMZ areas would be left relatively undisturbed to protect water quality, minimize shoreline erosion, and provide habitat and food for plants and animals.

TABLE 3-5 RESERVOIR FRINGE WETLANDS		
Zone	Miles of Reservoir Fringe Wetland Areas Influencing Norris Reservoir Shoreline/Zone	Percent of Total Shoreline
1	34.4	4.2
2	0.5	0.1
3	13.9	1.7
4	46.2	5.7
6	13.3	1.6
7	27.3	3.4
Total	135.6	16.7

Selection of Alternative B would provide a beneficial effect to wetland and riparian resources placed in Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4), and future permit reviews would ensure that any impacts to Residential Access (Zone 7) wetlands and riparian areas would be insignificant.

3.6 Recreation

3.6.1 Affected Environment

Norris Reservoir is bordered by Anderson, Campbell, Claiborne, Union, and Grainger Counties. Many people living in these counties find Norris Reservoir an attractive day trip and weekend destination. Norris Reservoir has also recently been discovered by out-of-state residents, especially travelers along the north and south I-75 corridor. Increases in new housing construction and requests to expand marina facilities are the result of this new population of Norris Reservoir users as well as the growing population of native county residents.

As of 1994 only 13.2 percent of the shoreline was developed (TVA, 1998). From the survey and public meetings conducted during the scoping portion of the Norris Plan, the public expressed an interest in controlling and managing development on the shoreline of Norris Reservoir. Such values as “scenic beauty of the shoreline and hills around the reservoir,” “lack of development along the shoreline,” and “wildlife” were consistently identified as reasons why people were attracted to Norris.

Only 2 percent (17 miles) of the shoreline was developed for recreation as of 1994. This development included marinas, public parks, and public boat ramps. There are 3 state parks, 2 county parks, 12 paved public boat ramps, and TVA’s Loyston Point Recreation Area (Loyston) providing public access and facilities. Developed campsites are available at two state parks, one county park, and Loyston.

Of the 24 approved marinas, 23 have been developed. Developed campsites are available at 14 of the marinas and two commercial campgrounds. The marinas provide mooring for approximately 3500 boats and 1200 houseboats. The marinas are fairly well dispersed around Norris Reservoir although the majority are located along the northern portion of Norris Reservoir. Two are in Cove Creek, two in Big Creek, four on the lower Clinch, four on the lower Powell, one in Davis Creek, four on the upper Powell, and seven on the upper Clinch.

Informal and dispersed recreation activities, such as primitive camping, bank fishing, hunting, and wildlife observation, occur on the 23,775.8 acres allocated to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). Most of these acres are accessed by dirt and gravel roads; however, approximately 1000 acres of islands are accessible only by boat. Many of the islands are treasured camping spots during the summer months.

There are four ski slalom courses on Norris Reservoir, as well as several large parcels allocated for group camps, including Boy Scouts and Girl Scouts. In addition to the reservoir recreation activities, Norris Dam Reservation has many paved parking lots, picnic tables, river access points, and trails. Literally, tens of thousands of people use these facilities each year to gain access to the Clinch tailwater, which is one of only six TVA tailwaters stocked with trout in the state of Tennessee. In addition, Norris Dam Reservation support facilities are used to gain access to the city of Norris' watershed trail system which has become very popular with mountain bikers and horseback riders.

Recreation Trends

The Outdoor Recreation Resources Review Commission of 1962 documented that the proximity to water was the most important factor when people chose an outdoor recreation setting. Cordell (1998) identified power boating, water skiing, fishing, and camping as some of those recreation activities that have continued to grow in popularity since 1960.

Results from the questionnaire used during the scoping portion of the Norris Reservoir planning process (See Appendix A-2) indicated that six of the eight most popular activities are water-oriented: fishing, pleasure boating, use of marinas, swimming in undesignated areas, use of public boat ramps, and water skiing.

Although TWRA reports the total fishing pressure on Norris Reservoir decreased 10 percent between 1988 and 1998 (declining from 298,000 hours to 267,000 hours), the total popularity of water-based recreation will continue strong into the future. This is based on national trends and the fact that boating registration has increased in Tennessee at an average rate of 15 percent per year from 1962 through 1998. This is a considerably faster rate of increase than the population rate increase during the same period. A final localized indicator of the continued increase in boating popularity is the fact that many Norris Reservoir marinas have expanded and improved their facilities during the last 4 to 5 years.

Although hunting is on a national decline (Cordell, 1998) and TWRA reports a 14 percent decline in big game hunting since 1988 (TWRA, 1999a), the undeveloped land surrounding

Norris Reservoir provides important areas suitable for this activity. Cordell (1998) reports an increased participation rate in mountain biking and primitive camping on a national level. Also, TVA's scoping efforts indicate the users of Norris Reservoir find value in the undeveloped shoreline since it provides the type of environment they want when participating in water-based recreation activities.

It is anticipated that the demand for local outdoor recreation opportunities, particularly water-based, will continue for the duration of the Norris Plan. It is assumed the minimum increase in demand will be 8.6 percent, which is the projected increase in population from 1999-2010.

3.6.2 Environmental Consequences

Alternative A—Under Alternative A, a large portion of TVA's retained land is forecast for public and commercial recreation, 18,029.6 acres and 97.3 acres, respectively. Under the Forecast System, this land could be used indefinitely for informal recreation activities, such as primitive camping, bank fishing, and hunting. However, this same land is subject to requests for developed recreation activities by other public and private agencies depending on the recreation and tourism demand. Accordingly, there is a much greater potential for recreational development to occur under the Forecast System than under Alternative B.

Alternative B—Under this alternative, 247 acres of additional land are proposed for Developed Recreation (Zone 6). This is in addition to the 1496.9 acres of committed land allocated to Developed Recreation (Zone 6) due to commitments that were made during the last 60 years. The acreage committed includes the state parks, county parks, marinas, and TWRA access sites.

Under Alternative B, 16,404 fewer acres are subject to developed recreation proposals than under Alternative A. This decrease is, however, in alignment with public desires expressed during scoping. The 247 additional acres allocated to Developed Recreation (Zone 6) under this alternative are allocated as either expansions of existing public camping and day use areas or new public camping or day use areas. An additional 105 acres were added to Parcel 307 to expand the existing facilities at Loyston; 4 acres were added to Parcel 159, to develop a boat ramp along the left bank of the Powell River arm; and approximately 138 acres were added to Parcels 176 and 188 to provide a new day use area and/or campground supporting the upper arm of the Clinch River.

No additional land is allocated in Developed Recreation (Zone 6) for new commercial recreation development, but some land was allocated for expansion of mooring rights at existing marinas, where the appropriate rights exist. This allocation would give certain marinas the ability to request additional harbor area. The effects of expanded boat mooring capacity at existing areas would be expected to be minor and regionally insignificant.

Conclusion—From a dispersed recreation perspective, there is little practical difference between the two alternatives. Much of the land categorized as Public Recreation, Reservoir Operations, and Steam Plant Study areas under Alternative A is allocated to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) under

Alternative B. Recreation activities, such as primitive camping, hunting, bank fishing, bicycle riding, and horseback riding, occurring today under the category Public Recreation can also occur under these two zones.

Under both alternatives there is some potential loss of informal recreation opportunities because sensitive resources have been identified where some fairly intensive informal recreation is taking place. In general, the desires for more wildlife observation, hiking, bank fishing, hunting, bicycle riding, nature photography, and primitive camping could be met through the proposed Norris Plan or the existing Forecast System. However, there is the potential for informal recreation activities to receive better management through the unit planning process which would provide a long-term resource management strategy specifically for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) land. Unit Plans are not prepared under Alternative A.

Neither the scoping nor public meetings identified a need or desire for a new major recreation development located on TVA public land. However, there was some expression of additional recreation facility needs not being met by the present level and type of recreation development on Norris Reservoir. The 247 acres of uncommitted land allocated to Developed Recreation (Zone 6) in Alternative B are proposed to help meet this need. The type of facilities proposed for this additional recreational acreage could help alleviate some of the expressed public need for additional picnicking, swimming in designated areas, camping in developed areas, and boat ramp access.

From a developed recreation perspective there will be very little increase in boating traffic due to this alternative. Based upon available reservoir access areas, private docks, and existing marina capacity, TVA anticipates that any incremental increase and cumulative effects on surface water recreational use capacity would be insignificant. Actions proposed in the Tactical Plan on Parcel 6 would not affect recreation.

In summary, recreation needs of the Norris Reservoir stakeholder can be met under either land allocation system equally well. However, under Alternative B TVA would not have to consider commercial recreation proposals made on land not allocated to Developed Recreation (Zone 6).

3.7 Water Quality

3.7.1 Affected Environment

Watershed Description

The Clinch River watershed above Norris Dam encompasses 2912 square miles in the Ridge and Valley Physiographic Provinces in southwest Virginia and northeast Tennessee. The area is relatively lightly populated. Norris Reservoir is the major reservoir in the watershed (Melton Hill Reservoir lies downstream of Norris). Runoff to Norris Reservoir from the watershed is essentially free flowing, with an average annual discharge of about 4300 cubic feet per second (cfs); the Clinch and Powell Rivers contribute about 80 percent of this flow (TVA, 1999c). Approximate land use in the Clinch River watershed is 54 percent forest, 28 percent pasture, 10 percent water, 7 percent cropland, and 1 percent urban areas.

Hydrologic Units—Hydrologic Unit Codes (HUCs) are assigned by the U.S. Geological Survey to watersheds ranging in size from the two-digit region codes to the smaller eight-digit cataloging units. The Norris Reservoir watershed is divided into two cataloging units that denote the Clinch and Powell Rivers. The following table (Table 3-6) lists the 11 hydrologic units comprising the Norris Reservoir watershed, according to their unique identifying number and corresponding name, and indicates the assigned rating for each HUC.

TABLE 3-6 HYDROLOGIC UNITS COMPRISING THE NORRIS RESERVOIR WATERSHED AND THE HUC RATING		
TN-06010205-190	Clinch River (Upper Clinch Arm)	Good
TN-06010205-200	Indian Creek	Fair
TN-06010205-210	Sycamore Creek	Fair
TN-06010205-220	Clinch River (Lower Clinch Arm)	Fair
TN-06010205-230	Big Creek	Poor
TN-06010205-240	Cove Creek	Fair
TN-06010206-060	Powell River (Powell Valley East)	Fair
TN-06010206-080	Russell Creek	Fair
TN-06010206-090	Powell River (Upper Powell Arm)	Good
TN-06010206-100	Powell River (Lower Powell Arm)	Good
TN-06010206-110	Davis Creek	Poor

The 11 HUCs or watersheds that drain into Norris Reservoir have been rated as being in good, fair, or poor ecological condition. Ratings are based on the professional judgment of TVA public land and water resource specialists after consideration of Index of Biotic Integrity sampling results, condition of aquatic habitats in the watersheds, and land uses. Although both systems use three levels of designation, HUC ratings (i.e., good, fair, or poor) are not directly comparable to state water quality designations which identify streams as either impaired, partially impaired, or unimpaired for various use categories. Three of the 11 HUCs listed in Table 3-6 were rated as “good,” six rated as “fair,” and the remaining two were “poor.”

TVA watershed initiatives are based on conditions of watersheds using input from stakeholders, coalitions, local governments, and state and federal agencies. Initiatives are undertaken to maintain and improve stewardship practices, land and water quality, biological health and diversity, recreation opportunities, use of BMPs, and establishment of riparian and ecological corridors linking landscape features and inhabitants.

Climatology

Mean annual precipitation in the Clinch River watershed ranges from 42.4 inches to 51.3 inches. Mean monthly precipitation is relatively constant with a tendency toward maximum rainfall in March and minimum rainfall in October (TVA, 1979). The mean annual air temperature at the National Weather Service cooperative station in Tazewell,

Claiborne County, Tennessee, is 54.1 degrees Fahrenheit (°F). Mean monthly temperatures range from 32.7°F in January to 74.1°F in July.

General Water Quality Characteristics

Like other deep storage impoundments with long retention times, Norris Reservoir exhibits strong vertical density/temperature stratification during summer months. As a consequence, oxygen in the cold, bottom layer is gradually depleted by natural decomposition processes. To remedy this dissolved oxygen (DO) problem in the tailwater (the water in the Clinch River below the dam), Norris was the first dam to benefit from the TVA Reservoir Releases Improvement Program. Routine seasonal use of hub baffles and turbine venting was employed from 1983 to 1995. In September 1995 a newly designed autoventing turbine runner, which more efficiently aerates discharge water, replaced one of the two original turbine runners. Minimum flows (200 cfs) are provided in the Clinch River below Norris Dam by a reregulating weir constructed in 1984 (TVA, 1996b).

Recent TVA Water Quality Monitoring and Results

TVA's reservoir (and stream) monitoring programs were combined with fish tissue and bacteriological studies in 1990 to form an integrated Reservoir Vital Signs Monitoring Program (RVSM) to systematically monitor reservoir ecological conditions. RVSM activities focus on:

- Physical/chemical characteristics of water
- Physical/chemical characteristics of sediment
- Benthic macroinvertebrate community sampling
- Fish assemblage sampling

Because the confluence of the Clinch and Powell River arms is relatively close to Norris Dam, three Norris Reservoir sampling sites are included in the monitoring program: one forebay site at CRM 80.4, and mid-reservoir sites at CRM 125.0, and Powell River mile (PRM) 30.0 (TVA, 1999c). The RVSM rating of the overall ecological condition of Norris Reservoir was "fair" in 1999 (near the "good" range); similar results have been seen in previous years. The most consistent problem is low DO levels in the lower half of the water column during late summer and early autumn at all three sites. Water quality ratings from RVSM data are shown in Table 3-7 (TVA, 1997; 2000c).

Algae are the base of the aquatic food chain. Without algae converting sunlight energy, carbon dioxide, and nutrients into oxygen and new plant material, a reservoir could not support other aquatic life; consequently, measuring algal biomass or primary productivity (i.e., chlorophyll levels) is important in evaluating ecological health. Chlorophyll ratings are based on sampling results compared to what would be considered the "natural" nutrient level in a watershed (i.e., nutrient levels would be expected to be lower in a reservoir in a nutrient-poor watershed than in a more fertile watershed). Norris Reservoir sampling indicates acceptable nutrient levels at all sampling sites (TVA, 2000c).

Contaminated bottom sediments can directly impact benthic (i.e., bottom) fauna and can be long-term sources of toxic substances that enter the aquatic environment. Subsequently,

contaminants may impact wildlife and humans through the consumption of contaminated food or water or through direct contact. Sampling of Norris Reservoir sediments indicates poor to fair sediment quality at the forebay (area of the reservoir nearest the dam) due to elevated levels of lead and arsenic. Sediment at the Powell River mid-reservoir site, which rated poor in 1997 due to elevated levels of lead and nickel, returned to the good ratings seen in previous years with 1999 concentrations being within suggested criteria. Sediment at the Clinch River mid-reservoir site rated good in 1999 (TVA, 2000c).

TABLE 3-7 NORRIS RESERVOIR WATER QUALITY RATINGS, BASED ON VITAL SIGNS MONITORING PROGRAM DATA						
Location & Elements Monitored	Monitoring years (no samples taken in 1996 or 1998)					
	1992	1993	1994	1995	1997	1999
Forebay - (CRM 80.4)						
DO	Fair	Poor	Poor	Poor	Poor	Poor
Chlorophyll	Fair	Fair	Fair	Good	Good	Good
Sediment	Fair	Fair	Fair	Fair	Fair	Poor
Clinch Mid-Reservoir - (CRM 125.0)						
DO	Poor	Poor	Poor	Poor	Poor	Poor
Chlorophyll	Good	Good	Fair	Good	Good	Good
Sediment	Good	Fair	Good	Good	Good	Good
Powell Mid-Reservoir - (PRM 30.0)						
DO	Poor	Poor	Poor	Poor	Poor	Poor
Chlorophyll	Good	Good	Good	Good	Good	Good
Sediment	Good	Fair	Fair	Fair	Poor	Good

There are no swimming advisories for Norris Reservoir. TVA monitored fecal coliform bacteria levels at three swimming beaches in 1998. Samples taken at Loyston and Big Ridge State Park were well within state of Tennessee guidelines for water contact. One of the 10 samples collected at Anderson County Park contained high levels of fecal coliform bacteria in a sample collected shortly after a rainstorm.

Recent Evaluations by the State of Tennessee

The 1998 TDEC water quality assessment report, known as the 305(b) Report, listed Norris Reservoir as fully supporting designated stream use classifications. Section 303 of the federal Clean Water Act directs all states to compile a list of the streams and lakes requiring additional pollution controls in order to meet water quality standards. The state 303(d) list was established as part of the Total Maximum Daily Load (TMDL) Program, a state program seeking to restore pollution-impacted waters to a condition that meets criteria for the designated uses of the water body. TDEC's priority TMDL streams are Davis Creek, Big Creek, and Russell Creek. Davis Creek is impaired by pathogens, nutrients and siltation. The major source is from a confined animal feeding operation. Big Creek is impaired by

pathogens and nutrients stemming from sewer overflows. Russell Creek is impaired by nutrients and siltation from urban runoff and storm sewers (TDEC, 1998).

3.7.2 Environmental Consequences

Alternative A—Under the No Action Alternative, relatively few parcels are designated specifically for sensitive and natural resource management. Although protection of the natural reservoir shoreline may be undertaken as a secondary consideration on land designated for other uses (Project Operations [Zone 2], Industrial/Commercial Development [Zone 5], Developed Recreation [Zone 6], and Residential Access [Zone 7]), the resulting impacts on reservoir water quality may not be a primary consideration when land use decisions are made.

The extent to which land uses under the existing Forecast System might affect water quality depends on the nature and extent of development. Under this alternative, future land use and development is less restricted. Additional residential, industrial, and recreational developments on either TVA or private property have the potential to result in some degree of increased soil erosion due to clearing of woody vegetation and brush, increased runoff of agricultural/lawn chemicals, increased sewage/septic-loading, and an increase in currently unknown contaminants if additional point source permits are issued on Norris Reservoir. Negative impacts to water quality associated with these activities include increased turbidity, increased levels of substances toxic to aquatic life, increased bacteriological content, and further increases in nutrient-loading, which is already occurring in Norris Reservoir.

Use of vegetated buffer zones and other BMPs would minimize some damaging effects of riparian vegetation removal associated with development. In addition, protective measures presently in place under TVA's permitting process, and included in TVA's SMP, will substantially offset impacts of private property development. New facilities with permitted discharges would be required to meet National Pollutant Discharge Elimination System permit limits as well as possible future TMDL limits.

Alternative B—The proposed Norris Plan would protect water quality by allocating some land with more general designations to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). Any of the proposed uses of Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) land would promote improved water quality either due to reduced development opportunity or ensured use of management practices to minimize negative impacts. Allocation of other parcels to Developed Recreation (Zone 6) for future developed recreation activities or other public access/use areas would allow TVA control over development to minimize adverse impacts.

Shoreline development would increase under either alternative. These additional developments have the potential to result in some degree of increased soil erosion due to clearing of woody vegetation and brush, increased runoff of agricultural/lawn chemicals, increased sewage/septic-loading, and an increase in currently unknown contaminants if point source discharge permits are issued on Norris Reservoir. Negative impacts to water quality associated with these activities include increased turbidity, increased levels of substances

toxic to aquatic life, increased bacteriological content, and a further increase in nutrient-loading which is already occurring in Norris Reservoir. TVA's SMI EIS (described in Section 1.2) assessed these anticipated effects and resulted in the adoption of shoreline protection measures to establish standards that minimize these effects.

While water quality impacts resulting from uses of TVA public land would be minimized under either alternative with proper controls, Alternative B limits additional recreation-based development, does not allocate any land for Industrial/Commercial Development (Zone 5), and ensures that other activities, such as timber harvesting, or other conservation uses would be conducted with protection of natural resources as an objective. Actions proposed in the Tactical Plan on Parcel 6 would not affect water quality.

3.8 Aquatic Ecology

3.8.1 Affected Environment

Aquatic habitat in the littoral (near shore) zone is greatly influenced by underwater topography and backlying land use. Underwater topography at Norris Reservoir varies from moderately steep, with extensive areas of exposed bedrock near the river channel, to typically shallower in embayments, coves, and areas further from the river channel and tributary stream channels, particularly in upper reservoir reaches. Rock is an important constituent of littoral aquatic habitat over much of Norris Reservoir, either in the form of bedrock outcrops or a mixture of rubble and cobble on steeper shorelines or gravel along shallower shorelines. Most of the soil exposed in the drawdown zone is clay. Numerous islands are present throughout Norris Reservoir. Undeveloped shoreline is mostly wooded, so fallen trees and brush provide woody cover in those areas. Woody habitat is usually reduced on TVA public land and non-TVA land where backlying property is largely residential or agricultural. In areas characterized by residential development, habitat includes man-made features, such as shoreline stabilization structures (e.g., riprap) and docks; fallen trees are less numerous in residential areas.

In January 1997 a survey was conducted on Norris Reservoir by TVA to arrive at a Shoreline Aquatic Habitat Index (SAHI) score which would indicate the quality of aquatic habitat conditions in near shore areas. Shoreline conditions were evaluated by moving along the shoreline in a boat during winter drawdown and recording observed conditions. Scoring parameters (metrics) included four physical habitat parameters (i.e., cover/habitat, substrate/gradient, riparian zone/canopy, and bank stability) important to Tennessee Valley reservoir resident sport fish populations which rely heavily on shoreline areas for reproductive success, juvenile development, and/or adult feeding. Individual parameters were scored by comparing observed conditions with "reference" conditions and then assigned a corresponding value of good=5, fair=3, or poor=1. The scores for each metric were summed to obtain the SAHI value. The range of potential SAHI values (4-20) were divided into thirds to provide some descriptor of habitat quality (good=16-20; fair=10-15; and poor=4-9). The overall average SAHI score at Norris Reservoir was 13.3 (of a possible 20), which indicates generally "fair" shoreline aquatic habitat within Norris Reservoir. Of the

shoreline distance surveyed, 21 percent rated “good,” 74 percent rated “fair,” and 5 percent rated “poor.”

Benthic Community—Benthic macroinvertebrate (e.g., lake bottom dwelling, readily visible aquatic worms, snails, crayfish, and mussels) samples were taken in three areas of Norris Reservoir in 1994, 1995, 1997, and 1999 as part of TVA’s RVSMP. Areas sampled included the forebay (area of the reservoir nearest the dam) at CRM 80.4, and mid-reservoir transition stations at CRM 125.0 and PRM 30.0. Bottom dwellers 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 analyses were based on seven parameters (eight parameters prior to 1995) that indicate species diversity, abundance of selected species that are indicative of good (and poor) water quality, total abundance of all species except those indicative of poor water quality, and proportion of samples with no organisms present. Collection methods and rating criteria were different prior to 1994, so those results are not compared directly to samples taken using current methods.

As shown in Table 3-8, the benthic community in the three areas of Norris Reservoir rated from poor to excellent at various times in comparison to other Ridge and Valley ecoregion reservoirs. The poor rating in the 1999 samples from the forebay is largely a result of low density of benthos, which were comprised primarily of tolerant oligochaetes. The condition of the forebay benthic community also reflects the low DO levels consistently found there (TVA, 2000c).

TABLE 3-8 NORRIS RESERVOIR BENTHIC COMMUNITY RATINGS, BASED ON VITAL SIGNS MONITORING DATA				
Station	Monitoring Years			
	1994	1995	1997	1999
Forebay (CRM 80.4)	Fair	Fair	Good	Poor
Mid-reservoir Clinch River (CRM 125.0)	Good	Fair	Fair	Fair
Mid-reservoir Powell River (PRM 30.0)	Excellent	Fair	Good	Excellent

Fish Community—The RVSMP included annual fish sampling at Norris Reservoir from 1990 through 1995, 1997, and 1999 (no samples were taken in 1996 or 1998). The electrofishing and gill netting sampling stations correspond to those described for benthic sampling. Fish are included in aquatic monitoring programs because they are important to the aquatic food chain and because they have a long life cycle which allows them to reflect conditions over time. Fish are also important to the public for aesthetic, recreational, and commercial reasons. Monitoring results for each sampling station are analyzed to arrive at a Reservoir Fish Assemblage Index ratings which are based primarily on fish community structure and function. Also considered in the rating is the percentage of the sample represented by omnivores and insectivores, overall number of fish collected, and the occurrence of fish with anomalies, such as diseases, lesions, parasites, deformities (TVA, 1999c).

The vital signs fish community monitoring results are shown in Table 3-9. This data compares Norris Reservoir to other Ridge and Valley ecoregion reservoirs. Overall results indicate that the Norris Reservoir fish assemblage has scored consistently higher at the two mid-reservoir stations than at the forebay. In TVA's most recent fish collections at Norris Reservoir in the fall of 1999, the fish assemblage rated "excellent" at both mid-reservoir stations due to very good species diversity and composition and very low incidence of anomalies. Similar results were not seen at the forebay, where lower-than-expected catch rate and species diversity resulted in a lower score. Thirty-one fish species were collected. More abundant species in the overall sample were gizzard shad, spotfin shiner, bluegill, spotted and largemouth bass, and black crappie (TVA, 2000c).

TABLE 3-9 NORRIS RESERVOIR FISHERIES ASSEMBLAGE INDEX, BASED ON VITAL SIGNS MONITORING DATA								
Station	Monitoring Years							
	1990	1991	1992	1993	1994	1995	1997	1999
Forebay (CRM 80.4)	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair
Mid-Reservoir Clinch River (CRM 125.0)	Good	Fair	Good	Good	Excellent	Fair	Good	Excellent
Mid-Reservoir Powell River (PRM 30.0)	Good	Good	Good	Good	Excellent	Good	Good	Excellent

TWRA 1998 creel data indicate that black bass (i.e., smallmouth, spotted, and largemouth bass), bluegill, striped bass, crappie, and catfish are the most sought after sport fish (TWRA, 1999b). In recent years, TWRA has conducted annual spring samplings on Norris Reservoir to monitor growth, mortality, recruitment, and abundance of important sport fish species. Methods were revised in 1999 to select sampling sites that are more representative of the reservoir's habitat types. Fall 1999 (Table 3-10) sampling found that the percentage of largemouth bass in the black bass sample decreased when compared with previous samples, but this is thought to be a reflection of more accurate sampling rather than an actual decline in largemouth bass densities. The overall age structure of the largemouth bass population is good, with nine-year classes well distributed in the sample; growth rates were normal compared with previous samples from Norris Reservoir. The sampling of more representative sites in 1999 resulted in a higher percentage of smallmouth bass than seen in past samples.

Norris Reservoir has conditions for supporting a quality smallmouth bass fishery, but has yet to reach its full potential. Smallmouth bass are the most numerous black bass species caught by anglers. Spotted bass were abundant in the sample, but they do not attain quality size. Both angler and sampling surveys have shown that black crappie is the dominant crappie species in Norris Reservoir, with higher populations in the Big Sycamore Creek embayment on the upper Clinch River arm of Norris Reservoir. Data indicate that the walleye fishery is

one of the most productive in Norris Reservoir, but is being negatively impacted by their diet rich in alewife which results in early mortality of walleye larvae. Walleye stocking has been implemented in an effort to mitigate mortality losses. Because of the potential for competition between striped bass and other predators for forage, the stocking rate for striped bass has been reduced by 40 percent compared with historic stocking rates (TWRA, 1999a).

TABLE 3-10 FISH SPECIES COLLECTED DURING NORRIS RESERVOIR VITAL SIGNS MONITORING, FALL 1999

Species	Forebay (CRM 80.4)	Mid-reservoir Clinch River (CRM 125.0)	Mid-reservoir Powell River (PRM 30.0)
Longnose gar	-	X	X
Gizzard shad	X	X	X
Common carp	X	X	X
Spotfin shiner	X	X	X
Quillback carpsucker	-	X	X
Northern hog sucker	-	X	X
Silver redhorse	-	X	X
Shorthead redhorse	-	X	X
River redhorse	-	X	X
Black redhorse	-	X	X
Golden redhorse	-	X	X
Channel catfish	X	X	X
Flathead catfish	X	X	X
Brook silverside	X	X	-
White bass	-	-	X
Striped bass	X	X	-
Rock bass	X	X	-
Green sunfish	-	X	-
Warmouth	-	-	X
Bluegill	X	X	X
Redear sunfish	-	X	-
Longear sunfish	X	-	-
Smallmouth bass	X	X	X
Spotted bass	X	X	X
Largemouth bass	X	X	X
Black crappie	-	X	X
Sauger	-	X	X
Walleye	X	X	X
Logperch	-	X	X
Tangerine darter	-	-	X
Freshwater drum	X	X	X

A Sport Fishing Index (SFI) has been developed to measure sport fishing quality for various species in Tennessee and Cumberland Valley reservoirs (Hickman, 1999). The SFI is based on the results of fish population sampling by TVA and state resource agencies and results of angler success as measured by state resource agencies (i.e., bass tournament results and creel surveys). In 1998 Norris Reservoir rated better than average for smallmouth, spotted, and striped bass. The SFI rating was below average for black bass species as a group, largemouth bass, crappie, walleye/sauger, and channel catfish.

There are no fish consumption advisories in effect for Norris Reservoir. TVA last collected channel catfish and largemouth bass for tissue analysis in the autumn of 1997. All contaminant levels were either below detection levels or below the levels used by the state to issue fish consumption advisories.

3.8.2 Environmental Consequences

Impacts to aquatic resources are directly related to changes of the existing natural shoreline conditions. Aquatic resources can be impacted by changes to shoreline (riparian) vegetation, vegetation on backlying land, and land uses. Shoreline vegetation (particularly trees) provides shade, organic matter (a food source for benthic macroinvertebrates), and shoreline stabilization; and trees provide aquatic habitat (cover) as they fall into the reservoir. Shoreline vegetation and vegetation on backlying land provide a riparian zone which functions to filter pollutants from surface runoff while stabilizing erodible soils. Therefore, there would likely be some degradation of aquatic habitats associated with continued development along Norris Reservoir shoreline under either alternative.

Preservation of a natural shoreline condition, to the extent possible, on TVA public land is important on Norris Reservoir because such a large percentage of the backlying property is in private ownership and, therefore, subject to development. Although much of the private land is presently undeveloped, future development could greatly alter much of the character of Norris Reservoir shoreline. Shoreline development can alter the physical characteristics of adjacent fish and aquatic invertebrate habitats, which can result in dramatic changes in the quality of the fish community. One of the most detrimental effects of shoreline development is the removal of riparian zone vegetation, particularly trees. Removal of this vegetation can result in loss of fish cover and shade, which elevates surface water temperatures. Also, fish spawning habitat, such as gravel and woody cover, can be rendered unsuitable by excessive siltation and erosion, which can occur when riparian vegetation is cleared (TVA, 1998). Additionally, shoreline development often results in the removal of existing aquatic habitat (i.e., stumps, brush, logs, boulders) in association with the construction of water use facilities.

Under some circumstances, construction of docks and piers, while having short-term negative impacts, can increase fish habitat. Docks and other water use facilities can provide shade and cover for fish and aquatic invertebrates. Water use facilities, 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.

Alternative A—Under this alternative, few parcels are designated specifically for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). Natural resource protection or conservation, and consequently the mitigation of impacts to aquatic communities, may not be a primary consideration when land use decisions are made affecting those parcels. There could be more recreation and TVA operations development under this alternative. Consequently, more direct and indirect disturbance of aquatic habitat could occur. There could also be greater potential for sedimentation and nutrient runoff.

Alternative B—Adoption of the proposed Norris Plan would provide a better opportunity to protect or enhance aquatic habitats by allocating land to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) as the designated use on some parcels now having general designations for other uses. Any of the proposed uses of Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) land would allow for the protection or enhancement of aquatic habitats by preserving a natural shoreline condition offering a variety of cover types. The extent of woody shoreline cover on such land as is included in Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) would be expected to increase in the future as natural succession continues. Alternative B allocates 4839.2 acres (17 percent) of TVA public land on Norris Reservoir to Sensitive Resource Management (Zone 3) and an additional 18,936.6 acres (68 percent) to Natural Resource Conservation (Zone 4).

Even consumptive activities, such as timber harvesting (or other resource manipulation activities) on Natural Resource Conservation (Zone 4) land would not adversely impact aquatic resources if properly planned and conducted so that the riparian zone and associated littoral aquatic habitats are protected. The littoral area is the most productive region of a reservoir. The more important fish species use littoral habitats because of their spawning requirements, the availability of submerged cover (i.e., rocks, logs, brush), and aquatic invertebrates and small fish as a food source.

Allocation of other parcels for future recreation activities would allow TVA to manage such developments to minimize adverse impacts. Under Alternative B, 1743.9 acres (approximately 6 percent) are allocated to Developed Recreation (Zone 6). Development associated with recreation infrastructures, such as public parks, recreation areas, and water access sites, could allow access for bank fishing and may be suitable for fishing piers, placement of artificial fish attractors, or other habitat enhancements.

Residential development of Norris Reservoir shoreline is likely to continue under either alternative. However, standards implemented in accordance with TVA's SMP (TVA, 1998) would provide improved protection for existing natural shoreline conditions. Some negative impacts to the aquatic environment would occur under either alternative, but such impacts can be rendered insignificant with proper planning and use of protective and mitigative measures during development and implementation of shoreline categorization. Because aquatic habitat on Norris Reservoir can be considered only "fair" overall, impacts to aquatic habitats would be a major consideration in future decisions affecting TVA public land under either alternative. However, Alternative B is preferred because it better defines suitable activities for each parcel of TVA public land, and would likely result in fewer impacts. Actions proposed in the Tactical Plan on Parcel 6 would not affect aquatic ecology.

3.9 Socioeconomic

3.9.1 Affected Environment

Population

The population of the five counties in the Norris Reservoir area, according to the 2000 Census of Population, is 179,513 which is a 12 percent increase over the 1990 population of 160,255 (Tables 3-11 and 3-12). This growth rate is slower than that of the state, which grew 16.7 percent, as well as the Nation, at 13.1 percent. Union County, located just to the north of Knoxville and part of the Knoxville metropolitan area, had the fastest growth rate at 30.0 percent, followed by Grainger County to the east of the Knoxville metropolitan area, at 20.8 percent. Projections suggest that the area is likely to grow more slowly than the state and the Nation over the next 20 years, although Union County is expected to continue to grow faster.

TABLE 3-11 POPULATION AND POPULATION PROJECTIONS, 1980-2020					
County/State/Nation	1980	1990	2000	2010	2020
Anderson	67,346	68,250	71,330	76,000	79,275
Campbell	34,923	35,079	39,854	41,236	43,104
Claiborne	24,595	26,137	29,862	31,968	33,531
Grainger	16,751	17,095	20,659	21,691	23,332
Union	11,707	13,694	17,808	20,216	23,574
County Total	155,322	160,255	179,513	191,111	202,816
Tennessee	4,591,023	4,877,203	5,689,283	6,062,695	6,593,194
United States (000s)	226,542	248,791	281,422	299,862	324,927

Source: Historical data from the U.S. Census Bureau; state and county projections from University of Tennessee, Center for Business and Economic Research, Population Projections for Tennessee Counties and Municipalities, March 1999; U.S. projections are the middle series from the U.S. Census Bureau, Population Division, Population Projections Program.

TABLE 3-12 PERCENT CHANGE IN POPULATION					
County/State/Nation	1980-1990	1990-2000	2000-2010	2010-2020	1980-2020
Anderson	1.3	4.5	6.5	4.3	17.7
Campbell	0.4	13.6	3.5	4.5	23.4
Claiborne	6.3	14.3	7.1	4.9	36.3
Grainger	2.1	20.8	5.0	7.6	39.3
Union	17.0	30.0	13.5	16.6	101.4
County Total	3.2	12.0	6.5	6.1	30.6
Tennessee	6.2	16.7	6.6	8.8	43.6
United States	9.8	13.1	6.6	8.4	43.4

Labor Force and Unemployment

In 2000 the civilian labor force of the area was 83,240, as shown in Table 3-13. Of these, 3710 were unemployed, for an unemployment rate of 4.5 percent. Unemployment rates varied among the counties from 3.3 percent in Union County to 6.3 percent in Campbell County. The overall rate was somewhat higher than the state and national rates, with three of the five counties higher than both the state and the Nation.

TABLE 3-13 LABOR FORCE DATA, RESIDENTS OF NORRIS RESERVOIR AREA, 2000			
County/State/Nation	Civilian Labor Force	Unemployment	Unemployment Rate (%)
Anderson	35,460	1,290	3.6
Campbell	16,900	1,070	6.3
Claiborne	12,820	650	5.1
Grainger	10,210	440	4.3
Union	7,850	260	3.3
County Total	83,240	3,710	4.5
Tennessee	2,798,400	110,200	3.9
United States	140,863,000	5,655,000	4.0

Source: Tennessee Department of Employment Security

Jobs

In 1999 the Norris Reservoir area had almost 89,000 jobs, an increase of almost 22 percent over the level in 1989. This represents a faster rate of growth than in the Nation, but a slower rate than the state. Three of the five counties grew faster than the state, while Anderson and Campbell grew more slowly. Almost 54 percent of the jobs in 1999 were in Anderson County.

Manufacturing is a larger part of the economy of the Norris Reservoir area counties than in the state or the Nation. More than 23 percent of jobs in the area are manufacturing, compared to 15.3 percent state-wide and 11.8 nationally. Manufacturing's share of total employment in Campbell County is lower than in the state. This is in contrast to the other four counties, which range from 22.4 percent in Union County to 27.1 percent in Grainger County. Nationally, as production has become more efficient and the economy moves more and more to a service economy, manufacturing employment has declined, decreasing by 3.7 percent between 1989 and 1999. The state of Tennessee has been following that trend, but at a slower pace, with a decline of 1.7 percent from 1989 to 1999. In contrast, the Norris Reservoir area counties had an increase of 3.7 percent during this same time period. Anderson County had a decline of 1.2 percent, Campbell County had a decline of 24.8 percent; and the other three counties had increases, led by Union County with an increase of 33.1 percent (see Table 3-14).

TABLE 3-14 EMPLOYMENT, NORRIS RESERVOIR AREA			
County/State/Nation	1989	1999	Percent Change
Total Employment			
Anderson	40,464	48,137	19.0
Campbell	11,627	13,270	14.1
Claiborne	11,656	15,094	29.5
Grainger	5,913	7,518	27.1
Union	3,382	4,908	45.1
County Total	73,042	88,927	21.7
Tennessee	2,753,529	3,437,597	24.8
United States (000s)	137,240.8	163,757.9	19.3
Manufacturing			
Anderson	12,090	11,942	- 1.2
Campbell	2,456	1,846	- 24.8
Claiborne	3,018	3,949	30.8
Grainger	1,738	2,039	17.3
Union	827	1,101	33.1
County Total	20,129	20,877	3.7
Tennessee	534,526	525,207	- 1.7
United States (000s)	19,992.5	19,252.7	- 3.7

Note: Includes full- and part-time employment, both wage and salary and proprietors

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System

Occupation Patterns

As shown in Table 3-15, the Norris Reservoir area has a smaller proportion of its workers in managerial and professional jobs than the state and national averages. The area also has a smaller proportion of its workers in technical, sales, and administrative support positions. Conversely, it has a higher share of its workers in blue-collar jobs, including the higher paid skill levels. The five counties in the area vary considerably with regard to occupational distribution, with Anderson County having a distribution much more like the national distribution.

TABLE 3-15 OCCUPATION OF WORKERS (PERCENT DISTRIBUTION, 1990)				
Occupation	Anderson	Campbell	Claiborne	Grainger
Managerial and Professional	26.3	15.4	16.3	10.0
Technical, Sales, Administrative	29.8	22.8	20.4	18.0
Service Occupations	12.8	14.0	10.2	10.4
Farming, Forestry, Fishing	1.1	1.8	4.2	5.7
Precision Production, Craft, Repair	14.2	18.7	16.9	17.3
Operators, Fabricators, Laborers	15.9	27.3	32.0	38.5

TABLE 3-15 OCCUPATION OF WORKERS (PERCENT DISTRIBUTION, 1990)

Occupation	Union	Area Average	Tennessee	U.S.
Managerial and Professional	9.0	19.4	22.6	26.4
Technical, Sales, Administrative	24.3	25.3	30.1	31.7
Service Occupations	8.3	12.0	12.4	13.2
Farming, Forestry, Fishing	3.6	2.4	2.2	2.5
Precision Production, Craft, Repair	18.6	16.2	12.2	11.3
Operators, Fabricators, Laborers	36.2	24.8	20.5	14.9

Source: U.S. Bureau of the Census, *Census of Population 1990*

Income

Per capita personal income in the Norris Reservoir area increased by 53.8 percent from 1989 to 1999 (see Table 3-16). This was the same as the national growth rate, but below the state rate of 60.9 percent. Only Claiborne County, at 68.7 percent, exceeded the state growth rate; the slowest growth was in Anderson County, with a growth rate of 50.1 percent.

TABLE 3-16 PER CAPITA PERSONAL INCOME

County/State/Nation	1989	1999	Percent Change
Anderson County	16,771	25,181	50.1
Campbell County	10,545	16,556	57.0
Claiborne County	10,948	18,471	68.7
Grainger County	10,601	16,874	59.2
Union County	9,724	15,610	60.5
County Total	13,205	20,306	53.8
Tennessee	15,883	25,548	60.9
United States	18,566	28,546	53.8

Source: U.S. Department of Commerce, *Bureau of Economic Analysis*

Environmental Justice

Table 3-17 shows the minority population in the area at 4.3 percent of the total in 2000. This is well below the state average of 20.8 percent and the national average of 30.9 percent. Minority population is defined as nonwhite persons and white Hispanics (nonwhite Hispanics are already included in the nonwhite estimate and are not counted again as Hispanic). None of the five counties has a minority population share close to the state and national averages, with Anderson the highest at 7.3 percent. Overall, the poverty level in the area at 17.0 percent is higher than the state at 13.6 percent and the Nation at 13.3 percent. Rates by county vary from a low of 13.1 percent in Anderson County to a high of 21.3 percent in Campbell County.

TABLE 3-17 MINORITY POPULATION, 2000 AND POVERTY, 1997					
County/State/ Nation	Population	Minority Population			Poverty
	Total	Nonwhite	White Hispanic	Percent Minority	Percent Below Poverty Level
Anderson	71,330	4,737	469	7.3	13.1
Campbell	39,854	745	196	2.4	21.3
Claiborne	29,862	660	128	2.6	20.9
Grainger	20,659	329	141	2.3	17.2
Union	17,808	274	108	2.1	17.1
County Total	179,513	6,745	1,042	4.3	17.0
Tennessee	5,689,283	1,125,973	57,380	20.8	13.6
United States	281,421,906	69,961,280	16,907,852	30.9	13.3

Source: Estimates by the U.S. Bureau of the Census

3.9.2 Environmental Consequences

Potential socioeconomic impacts could arise from use of Norris Reservoir land for industrial or commercial use and from the construction of water use facilities. Effects may also occur if recreational or visual resources attract people from outside the area. Additional impacts may occur if residential development is attracted to areas on or near Norris Reservoir.

Under both Alternatives A and B, about 1473 acres would be designated for residential access. These are areas that already have deeded or implied access rights and, therefore, could be used for residential access under each alternative. Generally, these are narrow strips along the reservoir that could provide access for residents on adjacent or backlying properties. Residents of such developments generally would be persons who would otherwise live elsewhere in the area. However, some retirees might be attracted to these developments, especially if planned and marketed for retirees. To the extent that retirees are attracted from outside the area, there would be some increase in population and in local income and spending. Building of water access facilities might also have some positive impact on the local economy.

Alternative A—Under this alternative, the Forecast System would continue to be used. This system currently classifies no land for industrial use, except for some small tracts used for commercial landing purposes. Any proposals for industrial use of these properties would receive appropriate environmental review when specific proposals are presented for TVA approval.

Over 18,000 acres of land are designated for Public Recreation. Most of this is used only for informal, dispersed activities, such as hunting, hiking, fishing, and primitive camping. Most activity of this type is by people who live in the general area and are close enough that visits do not require overnight accommodations. However, there is and would continue to be some outside usage. Outside usage has a positive impact on income and employment in the area; however, this impact is not likely to be an important component of income in the area. In

addition to informal recreation, these properties, with TVA approval, could also be developed for more formal activities, such as parks, boat launching areas, and campgrounds. Also, about 97 acres are classified as Commercial Recreation allowing for more developed and intensive use, such as commercial marinas and campgrounds. Much of the use of these more developed areas would also be local in nature, but some users would be from outside the area, and their spending would have a small, but positive, impact on income in the area.

Some of the remaining land, such as Reservoir Operations or Dam Reservation could be used for informal recreation purposes, attracting primarily users from the local area and surrounding counties. Such uses would have only small impacts on income and employment in the local area.

Alternative B—Under Alternative B, no land would be classified for industrial/commercial use. However, as with similar municipal requests, TVA would consider requests for the use of suitable land in Project Operations (Zone 2), Natural Resource Conservation (Zone 4), and Developed Recreation (Zone 6) to provide minimum width corridors for reservoir access for the purpose of siting water intakes or other utility support to industry on backlying private land. The compatibility of the request with approved land use allocation (e.g., zone) would be considered, and each proposal would be subjected to the appropriate level of environmental review.

Over 1700 acres would be zoned for Developed Recreation (Zone 6). All of this could be available for development requiring capital expenditures and maintenance. Construction of facilities and use of the property for such purposes would have some positive impact on income and employment in the area. Much of the use, however, depending on the type of development, is likely to be by residents of the local area or adjoining counties, limiting the impact.

Most of the remaining land would be zoned as either Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). These areas may be used for informal recreation and such usage would be largely by residents of the local area or surrounding counties. Such activities would have no noticeable impact on the local economy. Protection and good management of such land would, however, enhance the scenic and environmental qualities of the area, thereby improving the quality of life and making the area more attractive to potential residents and visitors. This attraction would have some indirect positive impacts on income and employment in the area. Actions proposed in the Tactical Plan on Parcel 6 would not affect socioeconomic conditions.

Environmental Justice

No industrial land was forecast (Alternative A) for Norris Reservoir and none is allocated under Alternative B. Residential development and tourism amongst visitors from outside the area would positively affect the local economy. None of the five counties in the Norris Reservoir area has a percentage of its minority population close to the state or national averages, and overall per capita income of whites and nonwhites has increased comparable to state and national trends. As discussed in Section 3.9.1 and indicated Table 3-17, the number

of nonwhites in the population is very small and well below the state and national averages. The low-income population is only slightly higher than the state and national averages.

Although positive, TVA does expect that the economic effects of either alternative would not differ substantially and be small. Because these benefits would be small, no adverse effects on minority or low-income populations are expected. Therefore, the small positive economic benefits generated are not expected to disproportionately negatively affect disadvantaged groups compared to other populations. Any major development project that might occur under either alternative could have positive impacts. However, any such developments that required TVA approval would receive the appropriate level of environmental review, including potential environmental justice effects.

3.10 Navigation

3.10.1 Affected Environment

There is no commercial navigation on Norris Reservoir; however, the TVA Navigation Program assists in the installation and maintenance of navigation aids on land surrounding Norris Reservoir to assist recreational boaters. There are 25 daymarks located at intervals on the Clinch River between Norris Dam (mile 79.8) and CRM 148.3 that provide boaters with information on the river mile locations. In addition, nine daymarks are located at intervals on the Powell River, a tributary which enters the Clinch River at mile 88.6. TVA also assists in marking hazardous boating areas with boat hazard buoys on Norris Reservoir. Maintenance is performed at least once a year to replace missing or damaged navigation aids and boat hazard buoys, and vegetation is removed from the immediate vicinity of the daymarks to ensure that they are visible to boaters.

3.10.2 Environmental Consequences

The main concerns related to navigation under either alternative is to maintain access needed to continue providing for repairs or replacements of the signs along the shoreline and visibility of the signs. Because navigation aids are located along the shoreline, the construction of water use facilities associated with residential development or marinas would have the greatest potential for impacting these structures. Requests for water use facilities within 50 feet of navigation aids will be reviewed by TVA and potential effects evaluated. The Section 26a process would ensure that water use facilities constructed along the shoreline would not reduce visibility of the signs or compromise their placement on the shoreline. Industrial and commercial developments that do not involve the placement of structures in the reservoir would have no impact on navigation aids.

Increased residential and recreational development on Norris Reservoir would likely have a minor and regionally insignificant increase in the number of recreational boats and other types of pleasure craft on Norris Reservoir. The SMP will prevent a net increase in residential access shoreline. TWRA is responsible for enforcement of boating safety regulations in the state of Tennessee, including Norris Reservoir.

No commercial navigation occurs, and no new recreation areas would likely be developed outside areas presently used for that purpose. In accordance with SMP, no net increase in residential access shoreline is likely to occur. Therefore, under either alternative TVA anticipates potential effects on navigation on Norris Reservoir would be minor and insignificant.

3.11 Prime Farmland

3.11.1 Affected Environment

Prime farmland may currently be in use as cropland, pastureland, range land, forestland, or other uses, but cannot be urban or built-up land. Land use within a 1-mile buffer strip around the shoreline of Norris Reservoir is approximately 64 percent forestland and 17 percent agricultural land. Only about 1143 acres (5 percent) of the TVA land on Norris Reservoir are used for agriculture. Few parcels have more than 50 percent of the acreage in agricultural land use.

Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The soils which constitute prime farmland must have properties needed for the economic production of sustained high yields of crops. The conversion of farmland and prime farmland soils to industrial and other nonagricultural uses essentially precludes farming the land in the foreseeable future. Creation of the 1981 Federal Farmland Protection Policy Act (FPPA) addressed this possibility and established provisions under which federal agencies evaluate land prior to permanently converting it to a nonagriculture land use. The FPPA encourages federal agencies, with assistance from the Natural Resource Conservation Service, to complete Form AD 1006, *Farmland Conversion Impact Rating*, before an action is taken. Soils in the project area classified as prime farmland soils are listed in Table 3-18.

TABLE 3-18 SOILS IN THE NORRIS LAND USE PROJECT AREA CLASSIFIED AS PRIME FARMLAND	
County	Soils
Anderson	Sequatchie and Staser loams; Hamblen and Tasso silt loams
Claiborne	Leadville silt loam; Holston, Philo, Pope, and Sequatchie fine sandy loams
Grainger	Sewanee loam
Union and Campbell	Dewey, Emory, Etowah, Greendale, Lindside, and Ooltewah silt loams; Philo, Pope, and Sequatchie fine sandy loams

The Norris Plan reaches portions of a five-county area and contains 131 different soil mapping units. The Fullerton, Talbot, Clarksville, and Claiborne soil series predominate. The Fullerton, Clarksville, and Claiborne soils were derived from cherty and sandy dolomitic limestone and are located on slopes and crests of the high ridges around the river valleys. The Talbot soils were derived from limestone residuum and are located on steep and hilly slopes.

The prime farmland soils are located on the colluvial sloping fans and benches of the foot slopes of hills or on the floodplains of streams and rivers. Soils classified as prime farmland are loams, silt loams, and fine sandy loams. Emory, Greendale, and Ooltewah soils were derived from materials washed from the uplands underlain by limestone and dolomite. Pope, Philo, and Sequatchie were formed from alluvium chiefly from sandstone and shale materials and Lindsie chiefly from limestone alluvium. Leadvale soil was derived from materials washed from uplands underlain by sandstone and shale with some limestone influence. There are 433.5 acres of prime farmland on TVA land on Norris Reservoir.

3.11.2 Environmental Consequences

The farmland conversion 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. Sites receiving 160 total points or greater must be given a higher level of consideration for protection.

Alternative A—Completion of Form AD 1006 assists in evaluating the impacts of farmland conversion for parcels of TVA land containing prime farmland. Under Alternative A, development of TVA land for a steam plant, commercial recreation, or permitted residential uses of mainland reservoir operations land (totaling about 2275 acres) would likely result in prime farmland soils conversion. However, because of the small amount of prime farmland in the project area, developments associated with these uses would probably result in an impact rating score below the threshold of 160 points. A rating above 160 would require protection of farmland be given consideration by evaluating alternative sites.

Alternative B—The majority of the parcels with prime farmland have been allocated for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). These parcels would need no further evaluation because land use conversion is unlikely. Depending on the nature of the action, completion of Form AD 1006 could be used to assist in evaluating the impacts of future development on parcels in Developed Recreation (Zone 6). Based on the rating, development impacts on prime farmland in the individual parcels would be minimized. Also, completion of Form AD 1006 would assist in evaluating the impacts on residential access parcels. Within Residential Access (Zone 7), disturbance of the land from excavation and grading could occur. The small amount of prime farmland in any of these parcels would probably result in a low rating.

3.12 Other Issues

3.12.1 Floodplain

Affected Environment

The 100-year floodplain on Norris Reservoir is the area inundated by the 100-year flood. The 100-year flood for the Clinch River varies from elevation 1032 feet above msl at Norris Dam

(CRM 79.8) to elevation 1055-feet msl at approximately the upper end of Norris Reservoir (CRM 155.14). For the Powell River, the 100-year flood varies from elevation 1032-feet msl at the mouth to elevation 1068-feet msl at approximately the upper end of Norris Reservoir (PRM 63.28).

Any development proposed in the 100-year floodplain would be subject to the requirements of Executive Order No. 11988 (Floodplain Management). The first step would be to determine if the activity is covered under TVA's "Class Review of Certain Repetitive Actions in the 100-Year Floodplain" (El-Ashry, 1981). The following repetitive actions were reviewed:

- Private and public water use facilities
- Commercial recreation marinas and water use facilities
- Picnic tables, benches, grills, and fences on TVA land
- Underground, overhead, or anchored utility and related lines and support structures
- Water intake structures
- Outfalls
- Mooring and loading facilities for barge terminals
- Agricultural use of TVA land
- Minor grading and fills
- Bridges and culverts for pedestrian, highway, and railroad crossings
- Small, private, land-based storage sheds and buildings having less than 25 square feet of floor space and used for storage of water use-related equipment

As a result of this review, TVA determined that there were no practicable alternatives to several actions that would avoid siting in the floodplain. A set of review criteria was also established to ensure that natural and beneficial floodplain values are not significantly affected by the repetitive actions. If these criteria are followed, adverse floodplain impacts would be minimized.

If an activity is not a repetitive action in the 100-year floodplain, Executive Order No. 11988 (Floodplain Management) requires the applicant and TVA to evaluate alternatives to the floodplain siting which would either identify a better option or support and document a determination of "no practicable alternative" to siting within the 100-year floodplain. If this determination can be made, adverse floodplain impacts would be minimized.

Any fill material placed between elevations 930 and 1020 feet msl is subject to a charge for lost power storage. Generally, the quantity of fill required for residential projects, such as shoreline stabilization and boat ramps, would not result in a charge for lost power storage. Any material placed between elevations 985 feet msl and the 500-year flood elevation is subject to the requirements of the *TVA Flood Control Storage Loss Guideline* (TVA, 1999d). All development subject to flood damage must be located above the 500-year flood elevation.

The 500-year or "critical action" floodplain on Norris Reservoir varies from elevation 1035.0-feet msl at Norris Dam (CRM 79.8) to elevation 1058.7-feet msl at approximately the

upper end of Norris Reservoir (CRM 155.14). For the Powell River, the 100-year flood varies from elevation 1032 feet msl at the mouth to elevation 1073 feet msl at approximately the upper end of Norris Reservoir (PRM 63.28).

Environmental Consequences

For either Alternative A or B, any development proposed in the 100-year floodplain would be subject to the requirements of Executive Order No. 11988 (Floodplain Management).

Under Alternative A, decisions about development or management of properties would be made on a case-by-case basis, and evaluations would be done individually to ensure compliance with Executive Order No. 11988 (Floodplain Management). Under this alternative, projects, such as development of TVA land for a steam plant, commercial recreation, or permitted residential uses of mainland reservoir operations land, would be reviewed for their effects on floodplains. Potential developments of this nature would be planned to avoid, minimize, or mitigate adverse floodplain impacts to minor or insignificant levels.

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. Little development which could affect floodplain values would occur on Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) land (23,776 acres or 85 percent). Less land in Developed Recreation (Zone 6) would be subject to flooding compared to the amount of land in Residential Access (Zone 7). However, potential development in both these zones would likely be constructed above the flood elevation or consist of boat ramps, docks, and other water use facilities as well as other repetitive actions in the floodplain that would result in minor impacts. If a permissible nonrepetitive action is proposed, TVA would ensure Executive Order No. 11988 (Floodplain Management) compliance as outlined above. Therefore, under Alternative B, impacts on floodplains would be minimized, and under either alternative, impacts to floodplain values would be insignificant.

3.12.2 Noise

Affected Environment

Community noise levels follow the extent of human activities. As activities go up, the community noise increases and to some degree the reverse is also true. There are no federal or state standards for community noise. Many municipal governments have statutes limiting the level of noise that can be emitted within their jurisdictions. The main purpose of statutes is to reduce the disturbance of adjacent residents. In 1974, the U.S. Environmental Protection Agency (USEPA) published community noise guidelines (USEPA, 1974) recommending levels of community noise that should protect the health and welfare of the public. Although the guidelines are not standards, they are frequently used to evaluate the potential effects of intruding community noise from new sources. Other approaches to evaluating the potential

effects of intruding community noise are also used. These include modeling the intruding noise and comparing it to the current or background level of community noise or using local covenants, such as those found in zoning laws.

These methods of evaluating community noise effects depend on knowing the new sources of noise. Potential community noise effects have been evaluated for this EA on two levels. The first level will be a comparison of the likely effects based on the change in land allocations from Alternative A to B. In general, the amount of land allocated to each zone or land use designations would be a measure of the potential noise effects from the land uses. The second level is a review conducted in the future to evaluate each land use request to determine its potential for causing community noise effects. The land allocation summaries for Alternatives A and B are found in Table 2-7.

Environmental Consequences

Alternative A—The Forecast System land designations within which development of specific, new noise sources might occur are the Reservoir Operations - Mainland (approximately 1346 acres), Commercial Recreation (approximately 97 acres), and Minor Commercial Landings (approximately 24 acres). Reservoir Operations land includes residential development; Commercial Recreation covers marinas; and Minor Commercial Landings comprise a range of potential manufacturing and processing operations as well as barge-loading and servicing facilities.

Noise from single-family residences usually comes from recreational (boating and personal watercraft), landscaping, and transportation sources. These are common noises currently found around the reservoir. The level of these noises depends on the density of residences in an area. Multifamily residences, such as condominiums, would generate the same type of noises but at higher levels in the local area. This alternative has approximately 1473 acres available for residential access. Large developments of single-family or multifamily housing would likely have the second level of community noise evaluation.

Possible development of marinas and campgrounds on the Commercial Recreation land would increase to some extent, the levels of recreational and transportation noise generated in the respective areas. All of these possible developments would have the second level of community noise evaluation. The relatively small amount of land designated in this designation, 97 acres, limits the size and number of potential new facilities.

Minor Commercial Landing operations could generate noise from a very wide array of operations, such as metal pressing, log debarking, and barge transloading that are very noisy. Sometimes the operations are in buildings, which is usually the case for metal pressing, but other times the operations are outside, which is usually the case for log debarking. All requests for Minor Commercial Landing development would go through the second level of community noise evaluation. The land designated for this zone, about 24 acres, is too small for the development of medium- or large-size operations.

Alternative B—The allocation of committed land in this alternative is different from Alternative A, with the exception of residential development (approximately 1473 acres) which will not vary between the two alternatives.

A broader land use zone designated Developed Recreation (Zone 6) in Alternative B includes the Commercial Recreation of Alternative A as well as the other recreational uses given in Table 2-4. Approximately 1744 acres are allocated to Developed Recreation (Zone 6) in Alternative B. It should be noted that 73 percent of the land allocated to Developed Recreation (Zone 6) has already been developed or previously designated for a developed recreation use. Actions proposed in the Tactical Plan on Parcel 6 would not affect noise.

Alternative B has about a 92 percent decrease in available land for Commercial Recreation and a 100 percent reduction (going from 97 acres to 0 acres) in land for Minor Commercial Development. The impacts of noise from increases in residential dwellings would be equal between the two alternatives.

Alternative B is preferred because it allocates less land to developed recreation uses and does not allocate any land to industrial/commercial uses. This will reduce the level of community noise from those levels anticipated that could be present with Alternative A. There would be no significant noise impacts associated with Alternative B.

3.12.3 Air Quality

Affected Environment

National Ambient Air Quality Standards establish safe concentration limits in the outside air for six pollutants: particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead. These standards are designed to protect public health and welfare. An area where any air quality standard is violated is designated as a nonattainment area for that pollutant, and emissions of that pollutant from new or expanding sources are carefully controlled. Knox County, Tennessee, which is only a few miles to the south from the southernmost parts of Norris Reservoir, had been a nonattainment area for ozone, but has achieved attainment of the one-hour ozone standard and currently is in maintenance status for that pollutant. In July 1997 USEPA promulgated new, more restrictive standards for ozone and particulate matter. These new standards upon being challenged, were remanded by the U.S. Supreme Court for further analysis and review.

In addition, Prevention of Significant Deterioration (PSD) regulations protect national parks and wilderness areas that are designated PSD Class I air quality areas. A new or expanding major air pollutant source is required to estimate potential impact of its emissions on the air quality of any nearby Class I area, as specified by the state or local air regulatory agency, with input from the federal land manager(s) having jurisdiction over the given Class I area(s). Of the two PSD Class I areas within 62 miles of Norris Reservoir, the closest is the Great Smoky Mountains National Park, approximately 38 miles to the southeast at the nearest point. The other, in North Carolina, is Joyce Kilmer/Slickrock National Wilderness Area, approximately 53 miles to the south at the nearest point.

Environmental Consequences

The Norris Plan is designed to minimize direct and indirect, and cumulative air emissions impacts resulting from any TVA allocation decisions. Pollution from fossil-fuel combustion in construction equipment, fugitive dust emissions from operation of this equipment during dry conditions, and increased traffic during construction would cause some minor and temporary air quality degradation in the vicinity of the reservoir. However, state air pollution rules require construction projects to use reasonable precautions to prevent fugitive dust emissions. After construction is completed, normal residential activities, such as using wood stoves, fireplaces, and gas-powered grounds-keeping equipment, and increased traffic would contribute somewhat to deterioration in local air quality but would have little or no impact on regional air quality.

Under Alternative A, any proposed commercial facilities would be reviewed on a case-by-case basis. No facilities are anticipated that would be inconsistent with meeting air quality standards and PSD regulations. In the event that a fossil-fuel power plant or equivalent facility would be developed on the land designated as “Steam Plant Study,” it would have to be designed and operated to comply with PSD requirements. Therefore, local or regional air quality would not be significantly deteriorated as defined by regulations.

Under Alternative B, no land is allocated to Industrial/Commercial Development (Zone 5). Alternative B does not propose a steam plant site, as forecast in Alternative A, which eliminates a potential source of air emissions. Also, this alternative proposes to allocate 85 percent of the total acreage into Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). This would result in the majority of land being left in a woodland state that would contribute to enhanced air quality. Actions proposed in the Tactical Plan on Parcel 6 would not affect air quality.

Alternative A has the potential for greater air quality impacts than Alternative B because commercial development is possible. Alternative B, which would effectively preclude future industrial/commercial development on the TVA-controlled land, would definitely be more favorable for air quality.

3.13 Cumulative Impacts

Under Alternative B, the preferred alternative, 85 percent of the TVA public land acreage would be allocated to either Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) uses, which would generally be less impacting than the current Forecast System on the surrounding environment. Under this alternative only 14 percent could be subject to more intensive development. Moreover, no TVA public land is allocated for industrial or commercial (i.e., business) use and only limited new commercial recreation development is anticipated. Future private water use facilities, public works, and TVA public land use proposals would be reviewed for compliance with applicable environmental laws and regulations.

Virtually all sensitive plant and animal communities, wetland habitats, and visually significant areas have been allocated to Sensitive Resource Management (Zone 3) (17.3 percent of the TVA public land), where development would be unlikely. Management in Sensitive Resource Management (Zone 3) would focus upon protection and enhancement of ecological function and would provide a high level of protection for the integrity of the significant natural features contained within them. Management in Natural Resource Conservation (Zone 4) would focus upon management of natural resources to enhance the quality of outdoor recreational uses, such as hiking, hunting, and wildlife observation. These, as well as some Sensitive Resource Management (Zone 3) land, are also the focus of TVA's resource management unit planning efforts. Because of careful planning associated with natural resource and public use management, sensitive resources would not be directly or indirectly adversely affected within Natural Resource Conservation (Zone 4). Where appropriate (e.g., control of invasive exotic species and use of controlled burning) management would be implemented to enhance habitats for rare plants. A resource inventory for threatened and endangered species, wetlands, and cultural resources was conducted along shoreline where TVA would consider permits for water use facilities and residential shoreline alterations. The results were used to categorize the residential shoreline. Depending on the sensitivity of archaeological, wetland, and rare plant and/or animal species resources, the shoreline reaches were placed in either the Residential Protection or Shoreline Mitigation categories. This shoreline categorization system is designed to improve the protection of sensitive resources.

Watershed health can be defined as the ability to support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to those of natural habitats within a region. Alternative B would provide a better opportunity to protect water quality by identifying Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) as the designated use on some parcels now having more general designations. Any of the proposed uses of Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) land would allow for protection of water quality either due to less development or ensured use of management practices to minimize negative impacts. Allocation of other parcels for future developed recreation activities or other public access/use areas, would allow TVA control over development to minimize adverse impacts. Thus, Alternative B would contribute to protecting and enhancing the health of the Clinch-Powell watershed.

Adoption of Alternative B would have little overall potential for negative effects on rare plants and present opportunities for management and enhancement. Future land uses anticipated on sensitive and resource conservation parcels, coupled with minimal development on other parcels, would afford rare plants and animals additional protection, so no direct or indirect impacts are anticipated. Cumulative effects would also be unlikely because less land would likely be used to accommodate development and, therefore, such use would not cause or contribute a local or regional negative trend.

Two highway widening projects are proposed in the State of Tennessee Transportation Improvement Program that would likely affect land along Norris Reservoir. The proposed four-lane construction of US 25E between Tazewell and an existing four-lane section at

Indian Creek would likely affect Parcels 220, 222, 224, 225, and 226 along Big Sycamore Creek and Parcels 234 and 237 at the Clinch River crossing. The proposed four-lane construction of Tennessee Route 63 between LaFollette and Harrogate would likely affect Parcels 103 and 110 in the Doakes Creek area. Construction would impact narrow bands of terrestrial habitat in the area of Norris Reservoir and would potentially affect wetlands at the Big Sycamore Creek crossing. An additional bridge at the Clinch River crossing has been the subject of consultation under the Endangered Species Act on impacts to aquatic species. In addition, these projects could make land near Norris Reservoir more attractive to development for residential, commercial, or light industrial uses. TVA's conservative allocations, including the zoning of 85 percent of the land to Sensitive Resource Conservation (Zone 3) or Natural Resource Conservation (Zone 4) would enhance the environment of the area and not contribute to any indirect effects of these highway projects. In addition, TVA would ensure through the environmental review and consultation process for these highway actions that any impacts to sensitive resources are avoided, minimized, or mitigated prior to approval of land use easements or Section 26a approvals.

Other than relatively small-scale timber harvests from private nonindustrial forestland in the Norris Reservoir watershed, TVA is unaware of any other major demands for forest resources in this general area. However, the continuing industrial, commercial, and residential development in the area will impact these terrestrial habitats. Because of its conservation emphasis, implementation of Alternative B would neither cause nor contribute to adverse trends on forests and associated ecological communities, and affect a very small amount of forestland in the region. Therefore, TVA has determined that the incremental and cumulative effects of adoption of Alternative B, when added to the past, present, and reasonably foreseeable future actions, would be regionally insignificant. Similarly, insignificant cumulative effects would be expected on protected species; wetlands; water and air quality; aquatic communities; socioeconomic; prime, or other important farmland; and recreation, visual, and historic resources. Additionally, no long-term effects on regional biodiversity would be anticipated from implementation of Alternative B.

3.14 Unavoidable Adverse Effects

Because of the requirement that site-specific environmental reviews would be conducted prior to implementation, there are currently few, if any, adverse environmental effects which cannot be avoided should Alternative B be implemented. However, regional development trends, such as residential shoreline development, will continue to result in losses of aquatic and terrestrial habitat. These losses would occur anyway and are not related to implementation of the Norris Plan.

3.15 Irreversible and Irretrievable Commitments of Resources

Irretrievable use of nonrenewable resources (i.e., fuel, energy, and some construction materials) could occur under Alternatives A and B due to residential shoreline development as well as some types of recreational development. The residential development would result in region-wide population increase. This means that the same development could occur

somewhere else in the region. Therefore, use of most (if not all) of these resources could occur somewhere else in the region to provide the same residential development services regardless of the alternative chosen.

As shoreline is converted to residential and recreational use, the land is essentially permanently changed and not available for agricultural, forestry, wildlife habitat, natural areas, and some recreation uses in the foreseeable future. This is an irreversible commitment of land which would occur under all alternatives; over the long-term, it would likely be greater in magnitude under Alternative A.

3.16 Energy Requirements and Conservation Potential

Energy is used by machines for fuel to maintain grassy areas on the dam reservation and by the operation of the hydroelectric plant located at Norris Dam. There are no short-term energy uses required for the dam reservation because it is already established.

Energy is also used by machines to maintain areas set aside for natural resource conservation. Although these activities are not likely to have much influence on regional energy use demands either, there would be some short-term energy use for fuel to conduct prescribed natural resource conservation activities such as mowing, timber management, controlled burning, disking, planting of small grain crops, etc. Alternative B would have a greater requirement for this type of energy use, since it contains the largest amount of acreage allocated for Natural Resource Conservation (Zone 4).

A greater amount of TVA public land is allocated to Sensitive Resource Management (Zone 3) in Alternative B. Some areas set aside for protection of archaeological sites could potentially be maintained by mowing, light disking, or controlled burning. There would be some short-term energy use of fuel for machines to conduct these types of activities. The level of these activities is considered minimal.

3.17 Relationship of Short- and Long-term Productivity

Commitments of the shoreline to residential access, commercial, industrial, and some types of recreational development are essentially long-term decisions that would decrease the productivity of land for agricultural, forest, wildlife, and natural area management. Long-term productivity decreases would likely be greatest under Alternative A. As described in earlier sections, the types of changes that occur with residential development would result in a decline in the habitat quality for some terrestrial species and increase the habitat for others. Many of the water-related impacts of shoreline development could be minimized by the use of appropriate controls on erosion, added nutrients, and pesticide input.

Increased development could occur under both alternatives and result in population increase along the shoreline. There is a potential for small, long-term, socioeconomic productivity benefits from new jobs and income, as long as the desirable features that prompted their move to the shoreline were maintained or enhanced.

3.18 Commitments

1. All land-disturbing activities shall be conducted in accordance with Best Management Practices (BMPs) as defined by Section 208 of the Clean Water Act and implementing regulations to control erosion and sedimentation. Forest management activities will be conducted in accordance with practices prescribed for forestry in *Best Management Practices for Silvicultural Activities on TVA Land*.
2. Visual and water quality enhancement buffers, between 50 and 100 feet Wide, will be provided to screen wildlife habitat enhancement areas from public thoroughfares and shorelines and to minimize the potential for sediments or other nonpoint source pollutants to enter Norris Reservoir.
3. Any facilities or structures subject to flood damage will be floodproofed or located above the 500-year flood elevation.
4. TVA will utilize a phased identification and evaluation approach to identify cultural resources.
5. Controlled burns will be conducted in accordance with Tennessee open burning regulations.
6. BMPs for agriculture, including maintenance of vegetative buffers, will be included in agricultural licenses as described in *Agricultural Land Licensing for 1999-2003 Crop Years - Northeast Region, Land Management*, TVA, 1999.

4. SUPPORTING INFORMATION

4.1 List of TVA Preparers and Contributors

Judith P. Bartlow, Senior Natural Areas Specialist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee (Retired)

Patricia Bernard-Ezzell, Historian, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Cultural Resources, Norris, Tennessee

Robert E. Buchanan, Jr., Program Administrator, River Operations, Navigation, Navigation and Structures Engineering, Knoxville, Tennessee

J. Leo Collins, Senior Botanist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

Chellie J. Cook, Clerk/Editor, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Stephen D. Cottrell, Wildlife Biologist, River System Operations and Environment, Resource Stewardship, Northeast Region, Norris, Tennessee

Dennis T. Curtin, Program Administrator, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

Stanford E. Davis, Environmental Scientist, River System Operations and Environment, Resource Stewardship, Northeast Region, Morristown, Tennessee

Janice F. Dockery, Editorial Clerk, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Information and Technical Support Services, Chattanooga, Tennessee

Harold M. Draper, NEPA Specialist, NEPA Administration, Environmental Policy and Planning, Knoxville, Tennessee

James H. Eblen, Economist (Contractor), River System Operations and Environment, Knoxville, Tennessee

Frank B. Edmonson, Senior Land Use Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Upper Holston Watershed Team, Kingsport, Tennessee

Joe C. Feeman, Forester, River System Operations and Environment, Resource Stewardship, Northeast Region, Norris, Tennessee

Linda J. Fowler, Land Use Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Nancy D. Fraley, Natural Areas Specialist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

David B. Harrell, Land Use Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Debra L. Heck, Land Use Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Travis Hill Henry, Senior Terrestrial Zoologist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

A. Eric Howard, Archaeologist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Cultural Resources, Norris, Tennessee

Deborah K. Hubbs, Watershed Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

George M. Humphrey, Land Use Specialist/Recreation Planner, River System Operations and Environment, Resource Stewardship, Northeast Region, Norris, Tennessee

Jimmie J. Kelso, Environmental Scientist, Environmental Research and Services, Muscle Shoals, Alabama

Tere C. McDonough, Manager, River System Operations and Environment, Resources Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Roger A. Milstead, Technical Specialist, River Operations, Knoxville, Tennessee

Jason M. Mitchell, Terrestrial Zoologist (Contractor), River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

Norris A. Nielsen, Meteorologist, Environmental Research and Services, Muscle Shoals, Alabama

T. Shannon O'Quinn, Land Use Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Kingsport, Tennessee

George E. Peck, Aquatic Biologist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Norris, Tennessee

Samuel C. Perry, Project Leader, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Site Planning and Design, Norris, Tennessee (Retired)

Larry R. Pounds, Botanist (Contractor), River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

Tim D. Pruitt, Land Use Specialist, River System Operations and Environment, Resource Stewardship, Clinch-Powell Watershed Team, Norris, Tennessee

Wayne H. Schacher, Zoologist/Wildlife Biologist (Contractor), River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee (Retired)

Peggy W. Shute, Senior Aquatic Biologist/Project Leader, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Regional Natural Heritage Project, Norris, Tennessee

Deborah K. Smith, Senior Computer Technician, River System Operations and Environment, Resource Stewardship, Geographic Information Systems, Norris, Tennessee

Charles R. Tichy, Historical Architect, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Cultural Resources, Norris, Tennessee

William B. Tidwell, Land Use Agent, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Julie S. Tindell, Watershed Specialist, River System Operations and Environment, Resource Stewardship, Northeast Region, Clinch-Powell Watershed Team, Norris, Tennessee

Cheryl V. Ward, Project Manager-Environmental, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Projects and Services, Norris, Tennessee

James F. Williamson, Jr., NEPA Projects Manager, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Projects and Services, Norris, Tennessee

Richard W. Yarnell, Archaeologist, River System Operations and Environment, Resource Stewardship, Watershed Technical Services, Cultural Resources, Norris, Tennessee

4.2 List of Agencies and Organizations Consulted

The draft EA was distributed to the following federal, state and local agencies, conservation organizations, and area public libraries and courthouses.

Federal Agencies

U.S. Geological Services

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

State Agencies

Tennessee Department of Economic and Community Development

Tennessee Wildlife Resources Agency

Tennessee Department of Transportation

Tennessee Department of Environment and Conservation

Commissioner's Office

Division of Water Pollution Control

Division of Air Pollution Control

Division of Water Supply

Division of Groundwater Protection

Division of Natural Heritage

Division of State Parks

Tennessee Historical Commission

Tennessee Commission of Indian Affairs

Tennessee Division of Forestry

Regional/Local Agencies

Anderson County Chamber of Commerce

Anderson County Tourism Council

Campbell County Chamber of Commerce

Claiborne County Chamber of Commerce

Lake City Chamber of Commerce

Oak Ridge Chamber of Commerce

Conservation Organizations

Campbell Outdoor Recreation Association
Tennessee Conservation League
National Wildlife Federation
National Wild Turkey Federation
Quail Unlimited
Ducks Unlimited
Soil Conservation District Board
Friends of Cove Lake
Friends of Big Ridge State Park
Campbell County Soil Conservation

Area Public Libraries and Courthouses

Anderson County Courthouse
Campbell County Courthouse
Caryville Public Library
Claiborne County Courthouse
Clinton Public Library
Grainger County Courthouse
Jacksboro Public Library
Knoxville City-County Building
Knox County Public Library (Halls Branch)
LaFollette Public Library
Lake City Public Library
Lawson McGhee Library (Knoxville)
Norris Public Library
Rutledge Public Library
Union County Courthouse

Persons Consulted

Altivene Adams	Ms. Peggy S. Duncan	Mr. Michael Nixon
Mr. Bryan Allen	Mr. Ted H. Ellis III	Mr. William C. Noell, Jr.
Ms. Katherine E. Andrews	Sam and Micky Etnier	Mr. Patrick O'Christie
Mr. Jimmy B. Arnold	Mr. Larry K. Evans	Tom and Deb Orlin
Mr. B. Chris Arnold	Mr. Daniel N. FaForce, Sr.	Ms. Linda Osborne
Ms. Lorretta Arwood	Clinton Utilities Board	Mr. John Ozier
B&B Straight Creek Boat Dock	Mr. Michael V. Ferraro	Mr. John Perry
Mr. Lawrence M. Bailey	Mr. Eugene Flaute	Ms. Bonnie Peters
Barge, Waggoner, Sumner, &	Ms. Carol Forman	Mr. Richard Phillips
Cannon, Inc.	Mr. Larry Gibney	Lewis and Phyllis Phillips
Mr. Alan Barrett	Mr. Terrill G. Gillespie	Powell Valley Electric Cooperation
Mr. Charles A. Bartlett	Adrian M. Gonzalez	Mr. Rob Powers
Mr. Leon R. Beal	Marcell Goodwin	Mr. James C. Price
Mr. J. Victor Bean	Mr. Lester Hacker	Mr. Paul Purcell
Mr. Jake Beeler	Mr. Gerald G. Hamman, Jr.	Mr. Steve Pyatt
Mr. Dennis Blankemeyer	Mr. Mark W. Hausfeld	Mr. Fred H. Redmond
May and Spencer Boardman	Dave and Jan Henry	Ms. Marcy Reed
Mr. Patrick Bowler	Mr. R. Ellis Hill	Mr. Joseph A. Reed, Jr.
Mr. Thomas W. Boyd	Mr. Robert Hilty	Mr. Jason Reeves
Mr. Harry Bracy	Ms. Carol Houff	Mr. Larry Dean Reeves
Mr. W. Lee Brame	Ijams Nature Center	Ms. Maribeth Richter
Mr. Lester Branham	Mr. Claude Isaacs	Four Seasons Properties
Mr. Willard T. Braswell	Mr. Ernest L. Jeffcoat	Mr. Paul Sharp
Mr. Robert Brownlee	Mr. Jack Jenkins	Mr. Jerry L. Shepherd
Mr. Devoy Brunson	Mr. Jay R. Jira	Mr. Ira Smith
Mr. James Burke	Mr. Mike Jolly	Angela and Tim Snow
Ms. Kathy Calvert	Mr. Allan Jones	Ms. Patricia Snyder
Mr. Allan E. Cameron	Mr. Michael Juscus	Mr. Robert Spurling
Mr. Jack Campbell	Mr. James M. Kain	Ms. Sharon Startup
Mr. Bill Cannon	Ron and Neva Kitts	Mr. Jeff Stephens
Mr. Dail R. Cantrell	Mr. John B. Kopp	Mr. Tom Strotzman
Mr. Benny Carden	Mr. Bill Kornrich	Mr. Guy Sturms
Mr. David J. Cassady	LaFollette Utilities	S. R. Sumner
Mr. Raymond Casta	Mr. Charles E. Lawson	Swiger and Son
Ms. Thresa Champagne	Mr. Al Leinart	Dennis and Cliff Swett
Mr. Donn Claiborne	Mr. J. P. Light	Southern Lifestyles
Mr. Wayne Coffey	Mr. David L. Linn	Mr. Tom Taylor
Ms. Bette W. Collier	Mr. Gordon Livingston	Mr. Jerry Tenbrook
Mr. Richard E. Cook	Mr. Paul Longmire	Mr. Paul Thompson
Mr. David B. Cook	Mr. Howard L. Loveless	C. A. Torbett
Mr. Robert R. Croley	Mr. William Malone	Mr. Jerry Trimbach
Mr. Danny Crowley	Mr. Calloway A. Massengill	Mr. Steve Turpin
Mr. William F. Crowley	Mr. Ray F. Mauger	Mr. Kermit Violet
Mr. Dwight Crutchfield	Mr. Mack Mauley	Mr. Gerald P. Wagner
Terry Cunningham	Mr. David D. Maxwell	Ms. Merry Jane Walsh
Mr. Rick Daugherty	Mr. James McIntosh	Ms. Barbara A. Walton
Mr. Richard P. Davis	Mr. James R. McMillen	Mr. Gary West
Marion Davis	Mr. George McNeely	Mr. Jim Wilbanks
Mr. Bill Dean	Mr. James McReynolds	Mr. Edd Willoughby
Deer Lake Condominiums	Mr. Greg McWhorter	Mr. Roy Ted Wilson
Mr. Dale Dietrich	Mr. John K. Mitchell	Mr. James M. Woods
I. T. Dudley	Ms. Barbara Monroe	Mr. Ralph J. Wright
	Mr. Nicholas J. Munafò	Mr. Curtis Yeary
	Mr. Dan H. Nishwitz	Mr. John Young

4.3 Glossary

100-year Floodplain	The area inundated by the 1 percent annual chance (or 100-year) of flooding.
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 the January 1999 Agriculture Land Licensing EA. 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.
Cumulative Impacts	Impacts which 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 C.F.R. § 1508.7).
Dam Reservation	Land generally maintained in a park-like 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, and picnicking.
Direct Impacts	Effects which are caused by the action and occur at the same time and place (40 C.F.R. § 1508.4).
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 Zone	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.
Embayment	A bay or arm of the reservoir.
Emergent Wetland	Wetlands dominated by erect, rooted herbaceous plants, such as cattails and bulrush.
Endangered Species	Any species in danger of extinction throughout all or a significant portion of its range or territory.
Fecal Coliform	Common intestinal bacteria in human and animal waste.
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	Non-TVA 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 review plans for the construction of structures under Section 26a of the TVA Act.
Forecast System	The process used for planning the use of TVA public land. TVA staff would provide a record of actual and prospective uses indicated for particular properties. A Forecast System record book was prepared for each TVA reservoir to serve as a general guide for use or development to benefit TVA staff interests and the local or regional economy. Decisions on the best use of the property were made, using internal agency expertise. The new land use planning process will eventually replace the Forecast System as the mechanism for identifying acceptable uses of TVA public land. A major difference between the two methods is the involvement of the public in the planning process.
Fragmentation	The process of breaking up a large area of relatively uniform habitat into one or more smaller, disconnected areas.
Indirect Impacts	Effects which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable (40 C.F.R. § 1508.4).
Macroinvertebrates	Aquatic insects, snails, and mussels whose species, genus, etc., can be determined with the naked eye.
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 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, particulate, sulfur dioxide, nitrogen, nitrogen dioxide, and lead.
National Environmental Policy Act	Legislation signed into law in 1970 which, among other provisions, requires U.S. government agencies to prepare environmental reviews on proposed policies, procedures, plans, approvals, and other proposed federal actions. Approval of a private water use facility or sale of an easement to use federal land are examples of federal actions subject to NEPA.
Neotropical Migrant Birds	Birds which nest in the U.S. or Canada and migrate to spend the winter in Mexico, Central America, the Caribbean, or South America.
Physiographic Provinces	General divisions of land with each area having characteristic combinations of soil materials and topography.

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 oilseed 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.
Reservoir Operations Tracts	<p>Prior to the reservoir land planning process (1979), TVA made land use decisions based on a Forecast System approach. The term <i>Reservoir Operations</i> was used to identify specific TVA public land where the field district manager had been given the authority by the Board to approve or deny minor shoreline alterations requested by adjacent private landowners. In cases where property owners had no rights of ingress or egress across TVA property, but owned land adjacent to a Reservoir Operations tract, the agency could provide a letter permit allowing the property owner the right to construct preapproved private shoreline improvements.</p> <p>During TVA's formative years (1930s and 1940s) when public land was more abundant, TVA wanted to assist in providing recreation access to the reservoir wherever feasible. Reservoir Operation tracts provide this opportunity and are disbursed throughout the entire TVA reservoir system.</p>
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.
Riverine	Having characteristics similar to a river.
Sawtimber	Refers to the size of a tree. A hardwood tree that is 11 inches or greater in diameter is classified as sawtimber size. Pine trees 9 inches or greater in diameter are classified as sawtimber size.
Section 26a Review Process	Section 26a of the TVA Act requires 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 within TVA and USACE. 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.
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.
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.
Unit Plan	In 1997 TVA began managing its resources on reservoir land through a two-tier process which includes (1) Land Management Plans - a strategic look at all of the land on a reservoir to determine what is the best use (zone) and (2) Unit Plans - a tactical plan on a designated management unit which outlines a 25-year management (implementation) program for parcels zoned for natural resource conservation and sensitive resource management in the Land Management Plans. Unit plans, which include a management plan and EA, are developed with stakeholder involvement and include a number of alternatives. Management activities are categorized into wildlife habitat, forest, natural areas, and public use. Currently there are two completed plans on Norris Reservoir, Davis Creek Management Unit, 1562 acres (TVA, 2000a) and Fullerton Bend Management Unit, 2492 acres (TVA, 2001); and one draft plan, Lone Mountain Management Unit, approximately 4000 acres, scheduled to be completed in 2002.
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 seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, mud flats, and natural ponds.”

4.4 Acronyms and Abbreviations

APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
Board	TVA Board of Directors
BMPs	Best Management Practices
CCC	Civilian Conservation Corps
cfs	cubic feet per second
CPWT	Clinch-Powell Watershed Team
CRM	Clinch River Mile
°F	Degrees Fahrenheit
DO	dissolved oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement
FPPA	Federal Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
HUCs	Hydrologic Unit Codes
msc	maximum shoreline contour
msl	mean sea level
Loyston	Loyston Point Recreation Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Norris Plan	Norris Reservoir Land Management Plan
NRHP	National Register of Historic Places
PA	Programmatic Agreement
Plan	Reservoir Land Management Plan
PRM	Powell River Mile
PSD	Prevention of Significant Deterioration
RVSMMP	Reservoir Vital Signs Monitoring Program
SAHI	Shoreline Aquatic Habitat Index
SFI	Sport Fishing Index

SHPO	State Historic Preservation Officer
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
SMZ	Shoreline Management Zone
Tactical Plan	Norris Dam Reservation Tactical Plan
TDEC	Tennessee Department of Environment and Conservation
TMDL	Total Maximum Daily Load
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

4.5 Literature Cited

- Amundsen, C. C. 1994. "Reservoir Riparian Zone Characteristics in the Upper Tennessee River Valley," in: *Wetlands of the Interior Southeastern United States*. Kluwer Academic Press, pp. 273-297.
- Choate, J. R., J. K. Jones, Jr., and C. Jones. 1994. *Handbook of Mammals of the South-Central States*. LSU Press. Baton Rouge, Louisiana. 304 pp.
- Cordell, H. Ken. 1998. *The National Survey on Recreation and the Environment*. pp. 221-227.
- DuVall, Glyn. 1995. *An Archaeological and Historic Assessment of the Route 1090 Bridge Over Hunting Creek (L.M.5.45), Union County, Tennessee*. Submitted to Neel-Schaffer, Inc., Nashville, Tennessee.
- El-Ashry, T. 1981. Memorandum to Those listed, Subject: Class Review of Certain Repetitive Actions in the 100-year Floodplain, Dated August 13, 1981.
- Etnier, D. A., and W. C. Starnes. 1993. *The Fishes of Tennessee*. The University of Tennessee Press, Knoxville, Tennessee.
- Froeschauer, John, Peggy Froeschauer, and Charles Stripling. 1986. *Archaeological Survey of State-Owned Lands*. Tennessee Department of Conservation, Division of Archaeology, Report of Investigations No. 3. Nashville, Tennessee.

- Greene, Lance. 1995. *Phase II Testing of Ten Archaeological Sites and Five Rock Shelters in the Proposed State Route 32 (U.S. Route 25E) Right-of-Way, from 0.8 km North of Indian Creek to 1.6 km North of the Powell River, Claiborne and Grainger Counties, Tennessee*. Submitted by the University of Tennessee Transportation Center, Knoxville, Tennessee. Submitted to Neel-Schaffer Inc., Nashville, Tennessee.
- Greenwald, L. N. 1977. "Endangered and Threatened Wildlife and Plants. Final Threatened Status and Critical Habitat for Five Species of Southeastern Fishes." *Federal Register*, Volume 42, No. 175. Friday, September 9, 1977. 6 pp.
- Harvey, M. J. 1992. *Bats of the Eastern United States*. Arkansas Game and Fish Commission/United States Fish and Wildlife Service/Tennessee Technological University. 46 pp.
- Hickman, Gary D. 1999. *Sport Fishing Index (SFI) - A Method to Quantify Sport Fishing Quality*. Tennessee Valley Authority, Resource Stewardship, Norris, Tennessee. Unpublished report. 24 pp.
- Juchniewicz, Joanne, Richard Alvey, Henry McKelway, Lance Greene, and Noeleen McIlvenna. 1994. *Phase I Archaeological Reconnaissance Survey for Cultural Resources in the Proposed State Route 32 Realignment Right-of-Way, Claiborne and Grainger Counties, Tennessee*. Submitted by the University of Tennessee Transportation Center, Knoxville, Tennessee. Submitted to Chester IDE Associates, Inc., Nashville, Tennessee.
- Nicholson, C. P. 1997. *Atlas of the Breeding Birds of Tennessee*. The University of Tennessee Press. Knoxville, Tennessee. 426 pp.
- Petranka, J. W. 1998. *Salamanders of the United States and Canada*. Smithsonian Institution Press. Washington, D.C. 587 pp.
- Pietak, Lynn, Ray Ezell, and Jeffrey Holland. 1999. *Phase I Archaeological Survey of Norris Lake, Anderson, Campbell, Claiborne, Grainger, and Union Counties, Tennessee* (Volumes 1 and 2). Submitted by TRC Garrow and Associates to the Tennessee Valley Authority.
- Redmond, W. H., and A. F. Scott. 1996. *Atlas of Amphibians in Tennessee*. Miscellaneous Publication No. 12. Austin Peay State University, Clarksville, Tennessee. 94 pp.
- Shute, P. W., D. A. Etnier, R. D. Bivens, C. F. Saylor. In Press. "Fishes," in: *Tennessee's Rare Vertebrates*. Tennessee Wildlife Resources Agency Publication.
- Tennessee Department of Environment and Conservation. 1998. *The Status of Water Quality in Tennessee: 1998 305(b) Report*. Division of Water Pollution Control, Nashville, Tennessee. 65 pp.
- Tennessee Valley Authority. 1940. *The Norris Project*. Knoxville, Tennessee.
- , 1979. *Precipitation in the Tennessee River Basin*. TVA Annual Report. Knoxville, Tennessee.
- , 1983. "TVA Instruction IX Environmental Review Procedures for Compliance with National Environmental Policy Act." *Federal Register*, 48 FR 19264.

- , 1990. *Tennessee River and Reservoir System Operation and Planning Review*. Final Environmental Impact Statement. 198pp.
- , 1994. *Best Management Practices for Silvicultural Activities on TVA Land*. TVA Land Management. 30 pp.
- , 1996a. *Proposed Deed Modification - Norris Crest Partnership, Campbell County, Tennessee*. Environmental Assessment. TVA Resource Stewardship, Clinch-Powell Watershed Office, Norris, Tennessee. 26 pp.
- , 1996b. *Biological and Water Quality Responses in Tributary Tailwaters to Dissolved Oxygen and Minimum Flow Improvements*. Primary authors: Edwin M. Scott, Jr., Kenny D. Gardner, Dennis S. Baxter, and Bruce L. Yeager. TVA Water Management, Environmental Compliance, Norris, Tennessee.
- , 1997. *Aquatic Ecological Health Determinations for TVA Reservoirs—1996*. Primary authors/editors Don L. Dycus and Dennis L. Meinert. TVA Water Management, Clean Water Initiative, Chattanooga, Tennessee.
- , 1998. *Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley*. Volume 1 - Final Environmental Impact Statement (November 1998). TVA Public Land Management, Norris, Tennessee.
- , 1999a. *Agricultural Land Licensing for 1999-2003 Crop Years - Northeast Region, Land Management - Boone, Cherokee, Douglas, Norris, and South Holston Reservoirs and the Clinchport River Access Site in Anderson, Campbell, Claiborne, Grainger, Hamblen, Hawkins, Jefferson, Sevier, Sullivan, Union, and Washington Counties, Tennessee, and Scott and Washington Counties, Virginia*. Stanford E. Davis, Environmental Specialist, TVA Resource Stewardship, Northeast Region, Morristown, Tennessee. 28 pp.
- , 1999b. *Request for Land Sale (Tract Number XNR-907) - Caryville Stone, L.L.C., Norris Reservoir, Campbell, Tennessee*. Environmental Assessment. TVA Resource Stewardship, Clinch-Powell Watershed Office, Norris, Tennessee. 26 pp.
- , 1999c. *Aquatic Ecological Health Determinations for TVA Reservoirs—1998. An Informal Summary of 1998 Vital Signs Monitoring Results and Ecological Health Determination Methods*. Primary authors/editors: Don L. Dycus, Dennis L. Meinert, and Tyler F. Baker. TVA Water Management, Clean Water Initiative, Chattanooga, Tennessee.
- , 1999d. *TVA Flood Control Storage Loss Guideline* (revised). Tennessee Valley Authority, Knoxville, Tennessee.
- , 2000a. *Davis Creek Management Unit - Norris Reservoir - Resource Management Plan and Environmental Assessment*. TVA Resource Stewardship, Clinch-Powell Watershed Office, Norris, Tennessee. 111 pp.
- , 2000b. *Lone Mountain Shores Corporation – Shoreline Management Plan -- Community Dock and Boat Launching Ramp*. Environmental Assessment. TVA Resource Stewardship, Clinch-Powell Watershed Office, Norris, Tennessee. 38 pp.

- , 2000c. *Aquatic Ecological Health Determinations for TVA Reservoirs—1999. An Informal Summary of 1999 Vital Signs Monitoring Results and Ecological Health Determination Methods*. Primary authors/editors: Don L. Dycus and Tyler F. Baker. TVA Water Management, Clean Water Initiative, Chattanooga, Tennessee.
- , 2001. *Fullerton Bend Management Unit - Norris Reservoir - Resource Management Plan and Environmental Assessment*. TVA Resource Stewardship, Clinch-Powell Watershed Office, Norris, Tennessee. 97 pp.
- Tennessee Wildlife Resources Agency. 1999a. *Norris Reservoir Annual Report - 1998*. Primary authors Douglas C. Peterson and James A. Negus. Fisheries Report 99-9. Tennessee Wildlife Resources Agency, Talbott, Tennessee.
- , 1999b. *Tennessee Reservoir Creel Survey - 1998*. Primary author Stephen Malvestuto, KGN Consulting, Inc. Fisheries Report 99-39. Tennessee Wildlife Resources Agency, Nashville, Tennessee.
- U.S. Department of Agriculture, Forest Service. 1969. *A Forest Atlas of the South*. Southern Experiment Station, New Orleans, Louisiana; Southeastern Forest Experiment Station, Asheville, North Carolina. 27pp.
- U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, Bulletin 118.
- U.S. Fish and Wildlife Service. 1983. *Slender Chub Recovery Plan*. U.S. Fish and Wildlife Service, Atlanta, Georgia. 34 pp.
- Webb, William. 1938. *An Archaeological Survey of the Norris Basin in Eastern Tennessee*. Bureau of American Ethnology.
- Whitaker, J. O, Jr., and W. J. Hamilton, Jr. 1998. *Mammals of the Eastern United States* (3rd edition). Cornell University Press. Comstock Publishing Associates. Ithaca, New York. 583 pp.
- White, S. T. 1975. *The Influence of Piers and Bulkheads on the Aquatic Organisms in Lake Washington*. M.S. thesis, University of Washington, Seattle, Washington.
- Wilson, L. A. 1995. *Land Manager's Guide to the Amphibians and Reptiles of the South*. The Nature Conservancy, SE Region. Chapel Hill, North Carolina. 324 pp.

**NORRIS RESERVOIR
LAND MANAGEMENT PLAN**

**RIVER SYSTEM OPERATIONS AND ENVIRONMENT
RESOURCE STEWARDSHIP
Clinch-Powell Watershed**

Prepared by

Tennessee Valley Authority

September 2001

CONTENTS

FINDING OF NO SIGNIFICANT IMPACT (FONSI)	121
1. INTRODUCTION	125
1.1 Background	125
1.2 Purpose	126
1.3 Process	127
2. NORRIS RESERVOIR REGIONAL OVERVIEW	129
2.1 The Past	129
2.2 The Project	132
2.3 The Present Shoreland	133
2.4 The Future	133
3. PUBLIC SCOPING SUMMARY	137
4. PLANNING GOALS AND OBJECTIVES	139
4.1 Norris Reservoir Planning Objectives	140
4.1.1 TVA Projects Goal	140
4.1.2 Watershed Management Goal	141
4.1.3 Resource Management Goal	142
4.1.4 Sustainable Development Goal	143
4.1.5 Recreational Development Goal	144
4.1.6 Residential Access Goal	144
4.2 Other Objectives	145
5. ALLOCATION PROCESS	147
6. GLOSSARY OF TERMS	153

TABLE

Table A-1.1 Planned Land Use Zone Definitions	147
---	-----

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

NORRIS RESERVOIR LAND MANAGEMENT PLAN ANDERSON, CAMPBELL, CLAIBORNE, GRAINGER, AND UNION COUNTIES, TENNESSEE

Background

TVA develops reservoir land management plans to assist in managing the public lands around its reservoirs. In conjunction with its construction of Norris Dam in the early 1930s, TVA acquired 122,000 acres of land. Sales and transfers of land for economic, industrial, residential, or public recreation development have resulted in a current net balance of 27,927 acres of public land. In order to determine future management direction for this land, TVA has prepared a land allocation plan for Norris Reservoir. This plan updates a previous 1968 plan. Of the 27,927 acres, 18,937 acres (68 percent) are proposed to be allocated for natural resource conservation, 4,839 acres (17 percent) are proposed for sensitive resource management, 1,744 acres (6 percent) are proposed for recreation, 1,473 acres (5 percent) are proposed for residential access, and 935 acres (3 percent) are proposed for TVA project operations. In addition, TVA would expand its Monks Corner Small Wild Area by 25 acres and establish 11 new Habitat Protection Areas to protect state-listed plants and other sensitive resources. Finally, TVA would make the following recreational and land management improvements to Parcel 6, the Norris Dam Reservation:

- Construct a restroom between Clear Creek and the Clinch River weir dam
- Construct new trail extensions
- Replace the handrail and sidewalk for the powerhouse parking lot
- Mow, spray, or cut exotic plant species and restore native species
- Convert areas in fescue grass to native warm season grasses
- Remove woody vegetation on the east side of US 441 between the Aquatic Biology Laboratory and Clear Creek.
- Establish shoreline management zones where mowing is prohibited around Clinch River and Clear Creek.

TVA notified the public and environmental agencies of its land planning effort for Norris Reservoir through articles in its *TVA River Neighbors* publication in April 1999 by questionnaires distributed to local government agencies and organizations, and through two public meetings in October and November 1999. Following consideration of scoping comments, staff research and resource inventories, TVA developed draft allocations and prepared a draft environmental assessment (EA) evaluating the impacts that could result from such allocations. The draft EA and plan, released in June 2001, was provided to the public, agencies, and interested organizations. A general public meeting was held on the Norris Dam Reservation on July 9 and four other opportunities for public participation were provided at meetings of Friends of Norris Lake, Campbell Outdoor Recreation Association, and Campbell County Leadership Forum during the comment period. Comment letters were received from 22 individuals, agencies, or organizations. Responses to these comments are provided in Appendix A-4 of the EA. Public comments were generally supportive of implementation of Alternative B. Commenters raised specific concerns about forest management, noise, light pollution, rights of subdivision lot owners, and recreational boating impacts. In general, TVA believes that

its conservative allocations would have minimal potential to affect these issues. TVA's emphasis in forest management is on preserving forest health and productivity.

Agencies commenting on the draft land plan included the East Tennessee Development District (ETDD), Tennessee Department of Environment and Conservation (TDEC), Tennessee Department of Transportation (TDOT), Tennessee Historical Commission (THC), U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Service (FWS). ETDD indicated that there were no conflicts with plans or programs of agencies within the region. TDEC, USACE, and FWS indicated support for Alternative B because of benefits to recreation and fish and wildlife resources. TDOT provided suggestions to better address transportation concerns, which were subsequently made to the draft. THC indicated that the project area contains resources potentially eligible for listing in the National Register of Historic Places. In response, TVA contacted THC and received concurrence in a phased identification and evaluation approach for consideration of impacts to cultural resources, consistent with National Historic Preservation Act regulations.

After considering all comments, TVA developed a Final Environmental Assessment and Land Management Plan.

Alternatives

The EA evaluates the potential environmental impacts of two alternatives, no action (Alternative A), and the proposed Reservoir Land Management Plan (Alternative B). The EA and accompanying Land Use Plan and Parcel Descriptions are attached and incorporated by reference. Under Alternative A, TVA would continue management of its properties according to the 1968 reservoir land use forecast system. When a proposal is received from an external applicant or internal TVA organization, TVA would evaluate the proposed land use for consistency with the forecast. Under the forecast system, 18,050 acres or 65 percent of reservoir lands are designated for public recreation, which is defined as land set aside for use by the general public for recreational activities. Other major designations are Reservoir Operations (9 percent) and Steam Plant site (3 percent). Smaller areas of land are designated for Dam Reservation, TVA Small Wildlife Area, Forestry Research, Wildlife Management, and Power Transmission. Approximately 3,635 acres considered for allocation under Alternative B were not included in the previous forecast system. Requests for use of these "no forecast" lands would be handled on a case-by-case basis under Alternative A. "No forecast" lands and reservoir operations lands with deeded residential access rights would be managed in accordance with the TVA Shoreline Management Policy adopted in 1999.

Under Alternative B, 27,927 acres would be allocated into 5 planning zones as described above in the background section. The planning zones in Alternative B take into account the results of resource inventories for sensitive resources such as rare species, archaeological resources, significant visual resources, and wetlands. Recognizing the sensitive resources identified in these inventories, 11 additional Habitat Protection Areas are proposed to be designated on all or portions of parcels 5, 7, 10, 13, 35, 36, 52, 74, 145, 181, and 182. The existing Monks Corner Small Wild Area (parcel 123) would be expanded. Alternative B grandfathers previous land use commitments but allocates a major portion of otherwise uncommitted TVA land to zones emphasizing resource stewardship. TVA would prepare natural resource management

unit plans and environmental assessments for lands allocated to Zones 3 and 4. Residential Access lands would be specifically designated as zone 7.

Impacts Assessment

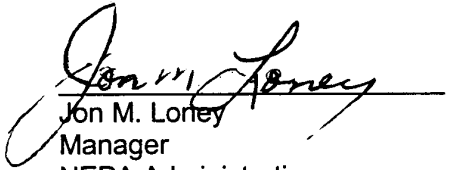
Under either alternative, the EA finds that impacts to environmental resources would be insignificant. Under Alternative A, the individual project review process would avoid or minimize impacts to sensitive environmental resources. However, TVA could consider enhanced recreational development on more than 65 percent of Norris Reservoir lands, and some tracts are available for expanded power development needs. By contrast, Alternative B provides enhanced protection to sensitive resources (such as cultural sites, wetlands, and rare species) by allocating certain lands (17 percent) to the Sensitive Resource Management zone, thereby reducing the potential that these sensitive lands would be put to incompatible uses. Sensitive resources would be further protected through administrative designation or expansion of habitat protection areas and small wild areas. In total, under Alternative B, TVA would make a long-term commitment to natural resource management and protection on 85 percent of TVA lands. The EA identifies Alternative B as the preferred alternative since this alternative emphasizes conservation-oriented uses for more than 80 percent of public lands while allowing compatible public uses on the remaining lands.

Conclusion and Findings

The State Historic Preservation Officer has reviewed the draft plan and concurred, by communication of July 25, 2001, with a phased identification and evaluation approach to compliance under Section 106 of the National Historic Preservation Act. Following identification and evaluation efforts, TVA will prepare the appropriate findings related to historic properties for each ground-disturbing activity.

TVA also consulted with FWS on impacts to federally-listed endangered and threatened species. The July 26, 2001, letter from the FWS indicated that Alternative B would result in benefits to fish and wildlife of the area. Thus, TVA concludes that the requirements of Section 7 of the Endangered Species Act have been met.

After review of the EA, we agree that the proposed allocation of 27,927 acres of land on Norris Reservoir into five planning zones would not have a significant impact on the quality of the environment. Accordingly, an environmental impact statement is not required. This FONSI is contingent upon the commitments in Section 3.18 of the attached EA.


 Jon M. Lorrey
 Manager
 NEPA Administration
 Environmental Policy & Planning
 Tennessee Valley Authority


 Date

COMMITMENTS

NORRIS RESERVOIR LAND MANAGEMENT PLAN

1. All land-disturbing activities shall be conducted in accordance with Best Management Practices (BMPs) as defined by Section 208 of the Clean Water Act and implementing regulations to control erosion and sedimentation. Forest management activities will be conducted in accordance with practices prescribed for forestry in *Best Management Practices for Silvicultural Activities on TVA Land*.
2. Visual and water quality enhancement buffers, between 50 and 100 feet Wide, will be provided to screen wildlife habitat enhancement areas from public thoroughfares and shorelines and to minimize the potential for sediments or other nonpoint source pollutants to enter Norris Reservoir.
3. Any facilities or structures subject to flood damage will be floodproofed or located above the 500-year flood elevation.
4. TVA will utilize a phased identification and evaluation approach to identify cultural resources.
5. Controlled burns will be conducted in accordance with Tennessee open burning regulations.
6. BMPs for agriculture, including maintenance of vegetative buffers, will be included in agricultural licenses as described in *Agricultural Land Licensing for 1999-2003 Crop Years - Northeast Region, Land Management, TVA, 1999*.

1. INTRODUCTION

The Norris Reservoir Land Management Plan (Norris Plan) is the result of a study of the Tennessee Valley Authority (TVA) public-owned land surrounding Norris Reservoir. This *Introduction* provides background information about the history of the Norris Reservoir area, explains the purpose of the Norris Plan, and describes the process used to develop the Norris Plan. The *Norris Reservoir Regional Overview* describes the natural and social development of the reservoir and surrounding area. *Planning Objectives* list the objectives around which the Norris Plan was developed. *Allocation Process* includes a summary of the parcel allocation process and zone definitions. Appendix A-3 of the Environmental Assessment (EA) contains a Parcel Information Matrix, which identifies each parcel number, the proposed allocation zone, number of acres, reason for allocation, prior forecast designation, and map panel locator. The Allocation map (Exhibit 1) is stored in a pocket at the back of this document.

1.1 Background

The massive dam and reservoir construction program that was undertaken by TVA, following its creation in 1933, required the purchase of over one million acres of land for the creation of 34 reservoirs in five of the seven states in the Tennessee Valley region. Approximately 600,000 acres of that land lie above the summer pool elevation of the TVA reservoir system.

Arthur Morgan, Chairman of the TVA Board of Directors (Board) in the 1930s, viewed TVA public land ownership as a tool to promote social objectives. Throughout its history, TVA has managed the reservoir land under its stewardship to meet a wide range of regional and local resource development needs and to improve the quality of life, both within specific reservoir areas and throughout the Tennessee Valley. Reservoir properties have been used for public parks; commercial recreation; industrial, residential, and tourism development; forest and wildlife management designation; and small wild areas to meet a variety of other needs associated with local communities and government agencies.

Today, TVA's land base Valley-wide has been reduced to less than 265,000 acres. An increasing demand for and use of reservoir land sometimes results in conflicting land use patterns and friction between public and private use. These competing interests and development pressures, coupled with today's environmental awareness, underscore the necessity for a planned approach to the management of TVA's reservoir land and related resources.

In order to systematically manage its land, TVA initiated a comprehensive reservoir land management planning process in 1979. The Tennessee Valley Authority (TVA) develops reservoir land management plans (Plans) to integrate land and water resources, provide for the optimum public benefit, and balance competing and sometimes, conflicting resource uses. By providing a clear statement of how TVA hopes to manage land and by identifying each parcel for specific purposes, TVA intends to balance conflicting land uses and facilitate decision-making for use of its TVA public land. Plans are approved by the TVA Board of

Directors (Board) and adopted as agency policy to provide for long-term land stewardship and accomplishment of TVA responsibilities under the TVA Act of 1933. Plans have been completed and implemented for seven mainstream and five tributary reservoirs.

1.2 Purpose

The purpose of the Norris Plan is to help TVA make decisions relating to the future use of its land within the watershed around Norris Reservoir. By providing a clear statement of how TVA will manage its land and by identifying land for specific uses, the Norris Plan helps improve TVA's responsiveness to the public concerning land use requests.

TVA's Vision is **Generating Prosperity in the Valley**. This vision will be accomplished by TVA setting the standard for:

- **Supplying low-cost reliable power** - Meet the changing needs of power distributors and directly served customers for energy products and services in changing markets.
- **Supporting a thriving river system** - Minimize flood damage, maintain navigation, support power production, improve water quality, protect public health and the environment, and support recreational uses.
- **Stimulating economic growth** - Provide services based on core expertise to solve regional problems, protect natural resources, create jobs, and build partnerships for public benefit.

The Norris Plan uses an integrated resource management approach that focuses on balancing flood control, navigation, power generation, water quality, recreation, and land use needs to obtain the optimum benefit for the whole system. Land planning supports TVA's corporate strategic goals to be environmentally responsible, customer driven, and growth oriented by providing a framework for deciding the best use of TVA public land toward continued implementation of the TVA mission.

The Norris Plan will guide TVA resource management and property administration decisions on 27,926.77 acres of land around Norris Reservoir that are under TVA stewardship responsibilities. It identifies the most suitable uses for 315 parcels of TVA public land, providing areas for TVA Project Operations (Zone 2), Sensitive Resource Management (Zone 3), Natural Resource Conservation (Zone 4), Developed Recreation (Zone 6), and Residential Access (Zone 7). The planned acreage is TVA-retained (fee-owned) land and accounts for 676.03 miles or 84 percent of the total 809.2 miles of reservoir shoreline. It also categorizes the Residential Access Zone (Zone 7) (consisting of 130.79 shoreline miles) and Non-TVA Shoreland (Zone 1) subject to Section 26a jurisdiction (consisting of 133.17 miles of shoreline) into three categories, in accordance with the Shoreline Management Initiative (SMI) Environmental Impact Statement (EIS) which was approved by the Board in April 1999. The proposed activities and management approach for the Norris Dam Reservation, which is allocated to Project Operations (Zone 2), are also described (Appendix B-1 - Norris Dam Reservation Tactical Plan [Tactical Plan]).

1.3 Process

Land planning is a systematic method of identifying and evaluating the most suitable use of TVA public land. It uses resource data, computer analyses, and input from citizens, other public agencies, organizations, and TVA staff to allocate land to seven clearly defined zones (see Table A-1.1 for zone definitions):

- Zone 1: Non-TVA Shoreland (e.g., flowage easement land subject to Section 26a jurisdiction)
- Zone 2: Project Operations
- Zone 3: Sensitive Resource Management
- Zone 4: Natural Resource Conservation
- Zone 5: Industrial/Commercial Development
- Zone 6: Developed Recreation
- Zone 7: Residential Access

TVA land management plans have a 10-year planning horizon. The Norris Plan was developed by a team of land managers and technical specialists, knowledgeable about the reservoir and its resources. A list of the planning team members is provided in Appendix B-2. The planning team made land use decisions by considering agency and public needs, environmental and watershed conditions, economic benefits, and state and federal policies. The process includes:

- Identification of existing landrights. All “committed land” (parcels with existing commitments through transfers, leases, licenses, contracts, and TVA projects) is automatically allocated to designated use. “Uncommitted land” is an area where there is no prior existing commitment through transfers, leases, licenses, contracts, and TVA projects.
- Compilation of existing resource data for all reservoir land.
- Field collection of new resource data for federal-mandated categories (i.e., sensitive resources, such as wetlands, threatened and endangered species, and archaeology/historical) on portions of “uncommitted” land, e.g., land with no prior commitments, as defined above.
- Identification of issues and concerns about TVA reservoir land from the public and other local, state, and federal entities.
- Analysis of land capability and suitability by TVA resource managers based on subsequent rating/ranking of parcels for specific land uses.
- Initial allocation of uncommitted parcels by the Land Planning Team based on public input and land needs justification (capability rating/ranking analysis).
- Development of an EA document and Norris Plan based on proposed allocation.
- Categorization of the residential shoreline.

- Internal and external review of draft EA and Norris Plan.
- Make environmental document and Norris Plan revisions based on internal and external reviews.
- Approval of final environmental document and Norris Plan by the Board.

Reservoir land planning uses TVA's Geographic Information System's (GIS) automated landrights database to identify ownership patterns for TVA public land to be planned. All new data collected during the planning process is stored in the GIS system. Norris Plan map and other reports are generated by GIS.

2. NORRIS RESERVOIR REGIONAL OVERVIEW

Norris Reservoir, with its 809.2 miles of shoreline, extends into five Tennessee counties: Anderson, Campbell, Claiborne, Grainger, and Union. The reservoir is located within the portion of the Tennessee River Valley known as the Clinch River basin. The Clinch River drains an area of 2912 square miles and is 300 miles long; its major tributary, the Powell River, drains 938 square miles and is about 180 miles long. This area falls entirely within the southern Appalachian Region which includes the Blue Ridge Mountains section and the Eastern Ridge and Valley section. The southern Appalachia Region is characterized by rugged topography, abundant rainfall, and a multitude of native plant and animal species. The amount of public national forest and park land in southern Appalachia is greater than anywhere east of the Mississippi River. Almost three-fourths of the land is forested.

2.1 The Past

It is believed that humans occupied this land at least some 12,000 years ago. They lived in small groups and were believed to be highly mobile following herds of large game animals or moving from season to season to where there were plant and animal resources. The abundant natural resources of the region provided a diverse source of food which included deer, nuts, fruits, a variety of small animals, fish, and shellfish. Between 8000 B.C. and about 500 B.C., there are signs of increased population, settlement, and trade among regions. By 500 A.D., settled village life had developed as evidenced by cultivated plants, houses, pottery, and burial mounds. By 1500 A.D., there is evidence of a complex, developed social structure with town centers, domiciliary mounds, some fortified villages, an elite class, as well as smaller and scattered farmsteads.

Southern Appalachia was occupied by the Cherokee nation. Cherokee territory extended throughout southern Appalachia and included parts of Virginia, North Carolina, Kentucky, Tennessee, Georgia, and South Carolina. The Cherokee lived in this area until they were forcibly removed to Oklahoma in 1838, a journey known as the “Trail of Tears.” From January 1934 until the following June, an archaeological survey was conducted of the Norris basin. The findings of this survey included evidence of 23 prehistoric sites, 20 dwellings, and 34 other structures in the Norris basin area. Recent surveys of the Norris basin conducted in 1997 and 1998 identified more evidence of past human lifeways.

One of the oldest historic sites in the region is the Cumberland Gap, located in Claiborne County just south of the convergence of Tennessee, Kentucky, and Virginia. This natural pass had long been known as the “Gateway to the West,” since it afforded access across the forbidding Allegheny Ridge which had barred the passage of colonists to the Northwest Territory. Native Americans made heavy use of the pass, and the trails they followed became known as the “Warriors’ Path,” the “Wilderness Trail,” and the “Wilderness Road.” In 1750 Dr. Thomas Walker claimed discovery of Cumberland Gap, and in 1775 Daniel Boone led 30 men through the gap and opened a road west for white settlement.

While the Cumberland Gap opened up a land route for settlement, hunters and trappers had long been venturing by water into the Clinch-Powell River Valley. It is believed Elisha Walden traveled this valley as early as 1761, and there exists a diary entry from 1773 that documents a party crossing the Clinch River and camping overnight at Cove Creek.

This region was settled principally by Anglo-Saxon pioneers from Virginia and North Carolina soon after the establishment of the Wilderness Road as a pioneer route. As the colonists headed westward, some settled in the Clinch-Powell River Valley and farmed the fertile land along these rivers. Thomas Frost has the distinction of being the first permanent white settler to the Norris basin. In 1796, the same year that Tennessee became a state, he built his cabin in what would become Anderson County. Other pioneers were to follow, and soon, settlements were seen throughout the Clinch-Powell River Valley—Sycamore Creek, Barren Creek, Well's Station, and Hamilton's Cross Roads, to name a few. In fact, settlement led to the creation of counties: Grainger County, 1796; Claiborne and Anderson Counties, 1801; Campbell County, 1806; and Union County, 1856.

Rutledge, the county seat of Grainger County, was founded in 1798. Shortly thereafter in 1801, the town of Tazewell was laid out as the county seat of Claiborne County. A post office, courthouse, and jail were built in 1804. Soon Tazewell was a community with businesses, churches, even a school. Also in 1801, Clinton, situated on the Clinch River, was laid out as the county seat of Anderson County. Jacksboro was founded in 1807 and served as the hub of Campbell County and its government activities. Liberty, later named Maynardville, became the county seat of Union County.

The early 1800s saw the extension of commerce, growing settlements, and the development of transportation. Farming was the primary economic activity of most in the region, but a number of businesses supplemented subsistence farming. The manufacturing census of 1820 listed the following small businesses in Anderson County: 12 hat shops, 3 tanyards, 16 blacksmiths, 5 saddlers, 5 wheelwrights, 10 coopers and barrel makers, 3 cabinet makers, 38 sugar manufacturers, and 44 distilleries. When steamboats began plying the upper section of the river, Clinton became the head of steamboating on the Clinch River. Quantities of lumber, the principal export from the Clinch Valley, were floated down from Virginia on rafts and flatboats.

Railroad service in Tennessee began in 1851, but it was not until 1856 that rails began to be laid in Anderson County. The Knoxville and Kentucky Railroad Company (K&K) began a line northward from Knoxville which would extend to the Kentucky boundary. Tracks were laid from Knoxville to the south bank of the Clinch River at the outbreak of the Civil War. All work on the road stopped when the war began.

During the Civil War, Claiborne County and the Cumberland Gap figured prominently in the war strategy of both the Union and Confederate Armies, changing hands four times. While most of the area was not affected by major battles, bloody skirmishes did take place, and mixed loyalties among residents and alienation among families took a heavy toll.

The close of the Civil War found the Nation faced with new social, economic, and political problems. For one thing, the returning southern soldier faced the necessity of a reorientation of his political and economic policies, since the systems with which he had been familiar were uprooted and destroyed by the war. He had to regear his agricultural economy, which had furnished his principal means of livelihood, to a system of free labor. Other pursuits that he had gradually developed before the war as complements to agriculture and some of the war industries had to be reestablished under a changed economic and social order. Transportation facilities, too, had largely broken down and had to be rebuilt, expanded, and enlarged.

Soon after peace was restored, the mining of coal became a prominent practice because of the rich deposits of this mineral found in the surrounding mountains. By 1870, commerce and industry were on the upswing in the region. The development of the vast coal land in this area and the building of railroads went hand-in-hand, each dependent on the other. The coal operators had to have means of transportation for their product; the prospect of large coal shipments by rail assured the railroad promoters there would be sufficient revenue from that source alone to justify building a line through the coal region. The mining companies included the Knoxville Iron Company, the Black Diamond Coal Company, and the Coal Creek Mining and Manufacturing Company. Besides coal mining, an important source of income to many in the region was Clinch River pearls. In fact, Clinton was the center of the pearling industry for this area. The Knoxville and Ohio Railroad took over the K & K line and began building branch lines to transport other natural resources out of the Valley.

While agriculture remained the primary livelihood of most in this area, the new century brought new industries into the area. For example, in November 1905, a new industry was started in Anderson County—the Magnet Knitting Mills—manufacturers of men's knit socks. Magnet became one of the largest hosiery mills in the South, and provided much needed jobs to the region. But while new industries provided some with opportunities, old, familiar businesses saw disaster. On the morning of May 19, 1902, just after coal miners entered the Fraterville Mine in Coal Creek Valley, an explosion occurred killing 184 men and boys. A violent strike, lasting 2 years, ensued. An explosion at Cross Mountain Mine No. 1 in Briceville occurred in 1911, killing 84 men.

The 1920s began as a prosperous decade. Farm prices remained at a reasonable level after World War I, and with the introduction of the automobile and improved roads, more markets could be reached. Land prices in east Tennessee were at an all-time high. Advantages such as free mail delivery, telephone service, and electricity were brought to parts of the region. However, this prosperity was short-lived as banks began to fail and the stock market crashed. The decade closed with the beginning of The Great Depression.

The Depression gloom was lightened immensely in the Clinch-Powell River Valley by the creation of the TVA in 1933. TVA, created to provide flood control, navigation, and cheap electricity, provided thousands of jobs for many in the region. TVA launched its first major construction project with the building of Norris Dam. As part of this project, TVA also built the planned community of Norris, and with the help of the Civilian Conservation Corps

(CCC), the public parks at Norris and Big Ridge. While TVA added much to the economy of the area, it did cause pain as land and communities were flooded for the Norris Reservoir.

World War II brought further changes to this Valley. The Clinton Engineering Works in Oak Ridge provided jobs to those fighting the war on the homefront. Post-war industries include furniture manufacturing plants, such as England Manufacturing Company, and Oakwood Furniture Manufacturing, a medical supply manufacturer, DeRoyal Industries, mobile home manufacturers, such as Norris Homes, and textile factories, such as Claiborne Textile, Incorporated. Agriculture is still a part of the economy with tobacco and Grainger County tomatoes, while tourism has become a major industry for the region with Norris Reservoir and state parks attracting numerous visitors.

The post-War economy of the Clinch-Powell watershed area rapidly changed from one predominantly rural in character to one more equally divided between agriculture and industry. This provided larger incomes for families of the area, as well as made additional demands for trained personnel for business, industry, and agriculture. The wartime baby boom created need for more schools in the 1950s and 1960s. In the late 1970s, completion of interstate highways through the area linking the east coast with points west not only improved accessibility for travelers, business persons, and local residents, but stimulated more development. Homes “out in the county,” neighborhood shopping centers, fast food outlets, shopping plazas, office parks, and scattered residential subdivisions became more accessible and demanded even better roads.

Norris Reservoir provided a new source of recreation for the area. The management of water levels by TVA provides a reliable and predictable water level for seasonal recreation. Norris Reservoir is conveniently accessible to area residents and provides an attractive vacation destination for out-of-state visitors.

Through its stories of settlement and development, of becoming a state and enduring the Civil War, of transitioning from a rural, agrarian society to a more urban, industrialized area, the history of the Clinch-Powell River Valley reflects the history of our Nation as a whole. It will be interesting to see the continuing history of the Valley and the Nation unfold in the twenty-first century.

2.2 The Project

The Norris Project was authorized by the TVA Act of 1933 (May 18) by the 73rd Congress of the United States of America. Actual work began on October 1, 1933. The overriding purpose of the dam was for flood control, water releases for navigation, and power generation. Norris Reservoir collects rainfall from a 3850-square-mile watershed.

The Norris Project involved more than construction of the dam. It involved the acquisition of land in Anderson, Campbell, Claiborne, Grainger, and Union Counties. To make way for the reservoir, other project activities included surveying, mapping, and clearing the reservoir area; constructing bridges; relocating buildings, roads, cemeteries, power and telephone lines; and relocating families.

2.3 The Present Shoreland

Today, there are approximately 27,927 acres of Norris Reservoir shoreland on which TVA can plan future uses. This land includes about 809 miles of shoreline. Of the 809 miles of total shoreline, 16 percent is privately owned flowage easement land (referred to as Non-TVA Shoreland [Zone 1]), 42 percent is owned and managed by TVA (this is land that has been allocated to Project Operations [Zone 2], Sensitive Resource Management [Zone 3], Natural Resource Conservation [Zone 4], and Developed Recreation [Zone 6]), 26 percent is owned by TVA and jointly managed (this is shoreland fronting areas like Chuck Swan Wildlife Management Area and Norris Dam State Park. The shoreland was allocated in accordance with the adjacent use), and 16 percent is TVA-owned residential access shoreland (Residential Access [Zone 7]).

2.4 The Future

Recent trends within the southern Appalachia Region provide us with a glimpse of the kind of pressures that will bear on Norris Reservoir in the future. Long-term shifts in the regional economy and social trends, along with broad shifts in recreational behavior, and current and anticipated environmental issues combine to frame a picture of the challenges ahead and what it will take to protect places like Norris Reservoir.

The population of the five counties in the Norris Reservoir area, according to the 2000 Census of Population, is 179,513 which is a 12 percent increase over the 1990 population of 160,255 (Tables 3-11 and 3-12). This growth rate is slower than that of the state, which grew 16.7 percent, as well as the Nation, at 13.1 percent. Union County, located just to the north of Knoxville and part of the Knoxville metropolitan area, had the fastest growth rate at 30.0 percent, followed by Grainger County to the east of the Knoxville metropolitan area, at 20.8 percent. Projections suggest that the area is likely to grow more slowly than the state and the Nation over the next 20 years, although Union County is expected to continue to grow faster. With increases in population, there has been expansion of urban and suburban areas into what were formerly rural and natural areas and an increase in the demand for recreational activities. Population for this area is projected to grow to about 191,111 by the year 2010.

Trends affecting the Norris Reservoir area mirror those of the larger region of which it is a part. The current population of the southern Appalachian Region is better-educated, older, and has a higher net income than 20 years ago. More people throughout the region are moving out of urban areas and commuting to work. There is increased demand for real estate that includes attributes associated with a leisurely, rural lifestyle, but affords access to the benefits of a metropolitan area. Thus, development pressures on lakefront properties a short distance from urban centers can be very high.

The most significant trend in recreation is an increase in both numbers of participants and the diversity of activities. The percentage of the population that participates in recreational activities, such as fishing, camping, and hiking, has grown or remained stable. Future population changes are expected to result in major growth in less physically demanding activities, such as pleasure driving, sightseeing, nature and cultural resource study, and

developed camping. Increased pressure on nature-based recreation settings and facilities is also expected in the future. Urban, suburban, and transitional settings where development is emerging are expected to increase at the expense of existing rural or natural-appearing settings. Public land will have to supply a larger portion of nature-based outdoor recreation opportunities as settings and opportunities on private land decline. Without better cooperation between public and private sectors, key natural and cultural settings on public land may be negatively affected by increasing density of development.

Environmental quality issues will become increasingly important as population and demands on the environment increase. The southern Appalachia Region has more species of native plants, animals, and insects than any other region with a similar climate in North America. The high mountains and abundant streams and rivers create a variety of habitat types that support thousands of species, many of which occur only in this region. Land that borders the streams, rivers, and water bodies in the valleys is a significant contributor to this regional diversity. Riparian zones—strips of land bordering water bodies—are characterized by many different native species often occurring as dense populations. Poor land use practices near the water and reductions in wetland areas can threaten both this diversity of species and water quality. In southern Appalachia, generally, land conversion, fragmentation of large areas of forest into smaller patches, invasions of nonnative pest species, air and water pollution, and other human-caused stresses are having an impact on these native resources.

Nonnative insect, disease, and plant and animal species, such as the gypsy moth, dogwood anthracnose, zebra mussel, and hydrilla, are impacting the region. Some of the most pressing air quality issues relate to ground-level ozone, visibility, and acid rain. Land management or human activities adjacent to streams, rivers, and reservoirs can increase erosion into the aquatic system and lead to sedimentation, alter the natural shape of stream channels, change water chemistry, and impact aquatic organisms.

Two-thirds of reported water quality impairments within the southern Appalachian Region are from nonpoint sources, such as septic tanks, agricultural runoff, storm water discharges and landfill and mining leachate. Agricultural impacts due to runoff containing commercial fertilizer, animal manure, and pesticides are greatest where slopes are greater than 3 percent and where agricultural operations are immediately adjacent to water bodies. Highways, especially those close to or crossing waterways, impact water quality in a number of ways. Capital investments in municipal and industrial wastewater treatment processes since the adoption of the Clean Water Act in 1972 have resulted in significant improvements in the quality of point-source discharges into waterways and, in turn, have reduced water pollution. As growth continues, further improvements will be necessary. Increases in the amounts of water withdrawn from surface water bodies for use can have downstream impacts on the quality of water.

Norris Reservoir is a unique resource that can be enjoyed by many future generations. For it to be enjoyed in the future, it must be able to accommodate increased demands that are placed upon it, or some of those demands must be curtailed. How Norris Reservoir can best accommodate these increased demands will depend on the actions of government, business,

and civic leaders within the region, those who come to enjoy Norris Reservoir for whatever purpose, and those who own the land on or near its shoreline.

Norris Reservoir's future will be affected by trends and issues that extend far beyond its shoreline. Population growth within the upper east Tennessee region, land development and community planning practices, growing tourism and recreation economy, a growing diversity of recreational pursuits, as well as developments in upstream portions of the Clinch-Powell watershed all will affect the quality of experience Norris Reservoir provides. Close attention must be given to reserving shorelands with unique or special qualities, properly managing and conserving the natural resources of the shoreline, and protecting different uses so they can be enjoyed by the public.

3. PUBLIC SCOPING SUMMARY

From October 18 to November 30, 1999, TVA sought comments from citizens and recreational users of the Norris Reservoir watershed. The solicitation of public comments was sought through news releases to local newspapers announcing public participation opportunities. Individuals could also submit comments by electronic mail. Additionally, individuals were invited to complete a questionnaire indicating their preferences and opinions regarding the Norris Reservoir watershed (see Appendix A-2 Scoping Document). In addition to the public meetings, TVA met with elected officials in the Norris Reservoir watershed area, and held two interagency meetings to gather information from agency personnel who have management responsibility or interest in the Norris Reservoir area.

The majority (77 percent) of respondents indicated water-related activities (fishing, pleasure boating, marina, swimming, use of public boat ramps, water skiing). More than half (59 percent) of the respondents also indicated wildlife observation. Respondents were also asked to indicate their preferences regarding facilities for various recreation activities on or around Norris Reservoir. The majority of respondents registered that there were about the right amount of marinas, boat fishing, pleasure boating, water skiing, swimming in nondesignated areas, boat ramps, and bank fishing areas and/or facilities. The majority of these respondents also felt that there should be less facilities and/or areas devoted to jet skiing and off-road vehicles.

The majority (over 50 percent) of respondents expressed that more land was needed for sensitive resource areas (e.g., wetlands, cultural, endangered species), state wildlife management areas, and resource management areas (e.g., forests). The majority (over 50 percent) of respondents indicated that about the right amount of land was allocated for state parks and commercial recreation areas (e.g., commercially operated marinas, resorts, campgrounds). In addition, many (40 percent) respondents indicated that the right amount of land was allocated for resource management and wildlife management areas and that more land was needed for state park areas.

Respondents were asked to prioritize (by allocating \$100 to any or all of) the following issues: improve recreational access and facilities, erosion control, improve wildlife, work with private landowners to clean up/prevent impact to water quality, provide industrial/economic development opportunities, trash/litter cleanup, monitor water quality conditions, address houseboat waste issues, help farmers minimize agricultural impact to water quality, and work with private landowners to improve forestry practices. Analysis of respondents' prioritization indicates houseboat waste issues, trash/litter cleanup, and monitor water quality conditions as the top three issues.

Many respondents (47 percent) expressed that no new marinas were needed but that some existing marinas should *expand their facilities*. Several respondents (27 percent) stated that *no new marinas* or expansions were needed, while three percent of respondents stated that *one additional marina* was needed; an additional 12 percent expressed that *more than one marina* was needed.

The majority of respondents (59 percent) indicated that the quality of water is good, while 37 percent indicated that it was fair; the remaining 4 percent indicated poor water quality. Respondents were asked to explain their rating of the water quality in Norris Reservoir. Respondents predominantly based their rating on: comparison with other lakes, appearance of the water, observed litter and/or houseboat waste, degree of improvement needed, and the apparent health of fish in the lake. Additional explanations of the water quality included: use of TVA's water quality reports, degree of industrial/agricultural waste, amount of development and population (i.e., recreational users and residents), water level, and/or their recreational use of Norris Reservoir (e.g., swimming).

Respondents reported that they would help in litter cleanup activities (44 percent) and/or planting food plots for wildlife (39 percent). In addition, between 24 and 33 percent reported they would participate in a watershed coalition, erosion control/prevention, and/or committing to proper disposal of houseboat waste. Approximately 9 percent of respondents indicated an interest in starting a watershed coalition.

Respondents were asked, "What do you value most about the land and waters around Norris Lake?" For this question, approximately 60 percent of respondents' comments collectively referred to water quality, natural scenery, and the lack of development. The remaining comments expressed value in the recreational opportunities, abundant wildlife and habitat, cleanliness of the area, the peace and solitude of the area, and the fact that it is a public resource accessible to everyone.

Respondents were also asked, "Over the next 10 years, what will be the major problems or issues that must be addressed regarding the Norris Lake watershed?" Water quality and over development were the predominant themes/issues regarding this question. Nearly 30 percent of comments collectively expressed concern about erosion, loss of natural resources and wildlife, litter, and boat waste. Approximately 20 percent of comments referred to crowding and overuse of the area as well as boating and jet ski use. Remaining comments expressed concern regarding fluctuating water levels.

Lastly, respondents were asked, "What projects/activities are needed to provide cleaner water in Norris Lake and the streams that flow into it?" Approximately half of all responses mentioned activities associated with enforcement of waste pollution, waste pollution from industry, agriculture, and boating, and the need for sewage treatment and water monitoring. More than 20 percent of comments expressed the need for litter removal and education programs for pollution and litter prevention. Many respondents also commented on limiting/restricting development, restricting jet ski use, and maintaining water levels.

4. PLANNING GOALS AND OBJECTIVES

As previously stated, TVA's Vision is **Generating Prosperity in the Valley**. This vision will be accomplished by TVA setting the standard for:

- **Supplying low-cost reliable power** - Meet the changing needs of power distributors and directly served customers for energy products and services in changing markets. As part of the internal scoping for the Norris Plan, an assessment was conducted to determine if land would be needed for future power project operations (i.e., generation facilities, switchyards, transmission facilities, and rights-of-ways). No needs were identified.
- **Supporting a thriving river system** - Minimize flood damage, maintain navigation, support power production, improve water quality, protect public health and the environment, and support recreational uses. The Norris Plan aligns with this standard by assessing that there would be no significant impacts on floodplains or navigation (Sections 3.12.1 and 3.10.2 of the accompanying EA). The Preferred Alternative (Alternative B) would provide better opportunity to protect water quality by identifying Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4) as the designated use on the majority of land, now having more general designations. Improved water quality supports protecting health and the environment. Recreational uses are supported through the planning process by aligning findings from public scoping with allocating land to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) that accommodate bank fishing, swimming in nondesignated areas, wildlife observation, picnicking, hiking, hunting, informal camping, and other dispersed recreation activities.
- **Stimulating economic growth** - Provide services based on core expertise to solve regional problems, protect natural resources, create jobs, and build partnerships for public benefit.

The Norris Plan recognizes that protecting, managing, and enhancing natural resources on TVA public land has a direct link to stimulating economic growth. As noted in Section 3.9.2 in the accompanying EA, activities associated with informal recreation can support the local economy through the sale of boats, gasoline, hunting and fishing supplies, etc. Additionally, public scoping participants indicated that the natural beauty and scenery of land and water around Norris Reservoir is what they value most. By protecting scenic amenities, Norris Reservoir and surrounding TVA public land maintain the ability to attract visitors which support local economies.

The Norris Plan focuses on TVA's mission by setting several goals:

- **TVA Projects Goal** - To maintain TVA facilities for flood control, navigation, and power production and transmission.

- **Watershed Management Goal** - To help improve the condition of the watershed by monitoring conditions in streams and reservoirs and by partnering with local communities and others interested in watershed protection and improvement.
- **Resource Management Goal** - To manage TVA public land for the enhancement of natural resources for human appreciation and use and to protect sensitive resources.
- **Sustainable Development Goal** - To manage TVA public land to complement the region's economic development activities while not impairing the natural resources and quality of life aspects.
- **Recreational Development Goal** - To manage TVA public land for recreational activities.
- **Residential Access Goal** - To manage residential shoreland consistent with the Shoreline Management Policy (SMP).

Land planning objectives for Norris Reservoir were developed by the Clinch-Powell Watershed Team using customer and TVA staff input received during the scoping process. *Scoping* is the issue-gathering phase of the environmental review process. The following objectives were used to allocate TVA public land on Norris Reservoir. They reflect the public's interest in Norris Reservoir and TVA's desire to manage TVA public land on Norris Reservoir in the public's best interest. These objectives are consistent with TVA's mission and its land planning goals.

4.1 Norris Reservoir Planning Objectives

Considering customer input received during the scoping process and TVA needs, the Clinch-Powell Watershed Team allocated the TVA public land on Norris Reservoir using the following objectives:

4.1.1 TVA Projects Goal

- ***Provide for the protection of TVA projects, such as the dam reservation and navigation markers.*** When considering land use around Norris Reservoir, an important component is providing adequate protection for the integrity of TVA facilities, such as the dam, transmission lines, and other TVA programmatic projects associated with the reservoir and power operations. The Norris Plan allocates approximately 935 acres to TVA Project Operations. The bulk of this land, approximately 904 acres, is in the Norris Dam Reservation. The remaining acreage consists of existing power line rights-of-way and TVA administrative buildings. A Tactical Plan (Appendix B-1), that examines how to best utilize the Dam Reservation, is included as part of this planning process. There was a separate public scoping effort to determine visitor use patterns, habitat modifications, and facility needs. Consistent with the reservoir land planning scoping results, none of the comments received indicated a need for any intensive type of development that would alter the recreation use to a more structured format. However, some supporting facility needs were identified. Specifically in response to public comments, the Tactical Plan proposes to add additional parking spaces to the existing Clear Creek parking area and

develop a permanent restroom building between the Weir Dam parking lot and the Clear Creek parking area.

- ***Provide for navigation aids on Norris Reservoir.*** Navigation aids provide for a safer reservoir experience. Seventy-seven percent of the survey respondents indicate that they use Norris Reservoir for water-based activities. Norris Reservoir has 25 navigation markers. Land use decisions will not negatively impact the role of navigation markers that are located on TVA public land. In addition, TVA maintains several underwater rock buoys to identify hazard areas on Norris Reservoir.

4.1.2 Watershed Management Goal

- ***Consider the impacts of the allocations on water quality on Norris Reservoir.*** Water quality was the highest ranking concern during public scoping. Twenty-four percent of the respondents indicated that water quality will be a major problem that must be addressed over the next 10 years. Also, 23 percent of those surveyed indicated that good water quality is what they value most about Norris Reservoir. Water quality would benefit from the Norris Plan allocations. As previously stated, the Norris Plan allocates 60 parcels containing 4,839 acres along 87 shoreline miles to Sensitive Resource Management (Zone 3) and 122 parcels containing 18,937 acres along 336 shoreline miles to the Natural Resource Conservation Zone (Zone 4). These two zones combined comprise 85 percent of the 27,927 acres of Norris Reservoir TVA public land and 62 percent of the TVA-managed shoreline miles. Any of the proposed uses of Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) would allow for the protection of water quality either as a result of less development or by ensuring management practices to minimize negative impacts.

In some cases the land is large blocks and in other cases only narrow strips between backlying uses, such as residential and agricultural. These strips would provide a buffer to the reservoir from agricultural and residential chemical use, mowing, and clearing of the backlying land. In addition, five commercial marinas currently are equipped with sewer pump-out facilities. Other marinas contract pump-out services with a private vendor. TVA is actively working with other agencies, concerned citizens and organizations in attempting to identify water quality problems within the watershed and form partnerships to provide effective solutions to correct potential problems.

Twenty-six percent of public scoping respondents indicated that they would be interested in being involved in a watershed coalition, while 9 percent of the respondents connoted a willingness to start a watershed coalition. As a result, two watershed coalitions—Friends of Norris Lake, Anderson County and Campbell County Chapters, were formed. These coalitions are working to improve water quality throughout the Norris watershed by stabilizing stream banks, working with farmers to minimize agricultural impacts, clean up litter and dump sites, provide educational opportunities, etc. Public scoping results also showed that one-fourth (25 percent) of the respondents indicated that water pollution enforcement projects/activities are most needed to provide cleaner water in Norris Reservoir and the streams that flow into it. A major concern embedded in that deals with

controlling houseboat waste. In response to that increasing concern, TVA has begun a Clean Marina Campaign (CMC). The CMC was initiated to promote environmentally responsible practices at marinas. This program is designed to help marina owners protect clean water, the very resource that provides them with their livelihood. A critical element of the CMC involves working with several partners to effectively address the boat waste issue with a multifaceted strategy that includes:

- Increasing public awareness of proper marine sanitation practices.
- Providing information to marinas about grants available from the Tennessee Wildlife Resources Agency (TWRA) for installation of pump-out systems.
- Partnering with certain marinas to offer financial incentives to boaters promoting installation of holding tanks or execution of a contract to have holding tanks pumped at regular times throughout the recreation season.
- Investigating reports of illegal dumping of waste from boats.
- Evaluating how to most effectively increase enforcement activities.

4.1.3 Resource Management Goal

- ***Allocate additional land for resource management areas.*** TVA places a high priority on stewardship practices that maximize resource benefits on its land. Fifty-four percent of the scoping survey respondents indicated that land should be allocated to resource management. The Norris Plan allocates 122 parcels, containing 18,937 acres, to Natural Resource Conservation (Zone 4), in an effort to meet this planning objective. Areas allocated to Natural Resource Conservation (Zone 4) will be further reviewed and a unit plan will be developed that specifically determines how best to maximize their potential natural resource benefits.
- ***Preserve undeveloped TVA public land to balance the high amount of development that has occurred and will continue to occur on non-TVA managed land around Norris Reservoir.*** Sixteen percent of the scoping survey respondents indicated “lack of development” was what they valued most about Norris Lake. Moreover, “over development” was identified by 20 percent, second only to water quality, as a major problem or issue that must be addressed over the next 10 years. To align with the above sentiments, no TVA public land was allocated to Industrial/Commercial Development (Zone 5). Also, no additional land was allocated to Residential Access (Zone 7).
- ***Protect sensitive resources on TVA public land.*** These resources include threatened and endangered species, cultural resources, wetlands, unique habitats, natural areas and distinctive visual resources. During the public scoping process, the respondents to the scoping questionnaire indicated that TVA should place a high priority on protection of these resources. Fifty-two percent of the respondents preferred allocations that focused on devoting more TVA public land to sensitive resource areas. The Norris Plan identifies 60 parcels containing 4,839 acres of land containing sensitive resource amenities. These parcels may be used for activities, such as informal recreation opportunities and natural resource conservation, but protection of the sensitive resource is the overall guide to the management of the parcel.

TVA has previously designated six small wild areas on Norris Reservoir. Norris Reservoir has more small wild areas than any other reservoir in the TVA system. Those areas range in acreage from 13 (Beech Island) to 125 (River Bluff). Small wild areas on Norris Reservoir total 592 acres. The Norris Plan proposes to expand one existing small wild area, Monks Corner, by 25 acres.

- ***Provide informal recreation opportunities on Norris Reservoir.*** According to the scoping survey respondents, informal recreation activities like fishing (77 percent of all respondents), pleasure boating (76 percent of all respondents), swimming in undesignated areas (63 percent of all respondents), and wildlife observation (59 percent of all respondents) are very important. The Norris Plan allocates 85 percent of the land to Sensitive Resource Management (Zone 3) or Natural Resource Conservation (Zone 4). The land is basically undeveloped, with the exception of signs and parking areas accommodating many informal uses, such as camping, hiking, nature observation, hunting, and fishing. The TVA public land comprises the majority of the TVA public land that is undeveloped and available for informal use by the public.

4.1.4 Sustainable Development Goal

- ***Consider the expansion of utilities (water, electric, telephone, cable, and others that may develop) on TVA public land.*** Like roads, utilities are the lifeblood of economic development. While specific parcels for distribution lines for water, electric, telephone, and cable have not been designated, it is expected that proposals for use of TVA public land for utilities would be received. Typically, these requests involve using existing road or utility rights-of-way. The Norris Plan recognizes that these utilities are necessary. As new proposals for utility expansion or new utilities are developed, it may be necessary to utilize TVA public land. However, projects should be directed away from Sensitive Resource Management (Zone 3) parcels unless the proposal can be accomplished in such a way without affecting the sensitive resources being protected.
- ***Understand the linkages between managing TVA public land to complement the region's economic development activities while not impairing the natural resources and quality of life aspects.*** It is realized that leaving public land in a more natural state and allowing access to the land for more dispersed recreational opportunities, stimulates economic growth in the **surrounding** counties. It is believed that people are willing to travel from urban landscapes to areas that are largely undisturbed to pursue activities, such as informal camping, hiking, nature photography, mountain bike riding, etc. These users frequently require infrastructure services, such as gasoline, food, and other supplies that are provided for by private area businesses.

Keeping TVA public land in a more undeveloped state and allowing it to serve as a magnet to attract visitors to this area align with the results from public scoping. The majority (over 50 percent) of scoping respondents expressed that more TVA public land was needed for sensitive resource areas (e.g., wetlands, cultural resources, endangered species) and resource management areas (e.g., forests, wildlife areas). The majority (over 50 percent) also indicated that about the right amount of TVA public land was allocated

for state parks and commercial recreation areas (e.g., commercially operated marinas, resorts, campgrounds). When asked what respondents valued most about the land and water around Norris Reservoir, 24 percent indicated it was the natural beauty/scenery.

4.1.5 Recreational Development Goal

- ***Provide for developed reservoir access areas.*** Reservoir access provides use and enjoyment of the reservoir for the general public. TVA has partnered, in the past, with TWRA, Tennessee state parks, and local municipalities to provide reservoir access sites. TVA also maintains access sites to Norris Reservoir. Over 75 percent of the scoping survey respondents indicated that they used Norris Reservoir for some type of water-based activity, such as boating, fishing, or boat launching. Sixty-six percent of the respondents indicated that the amount of land for commercial and recreational development on Norris Reservoir was about the right amount. Many respondents (47 percent) also expressed that no new marinas were needed but that some existing marinas should expand their facilities. Several respondents (27 percent) stated that no new marinas or expansions were needed.

The Norris Plan allocates 1744 acres to Developed Recreation (Zone 6). The majority of these acres (86 percent) have been previously allocated over the past 60 years for developed recreation purposes. Several parcels are managed by TVA with developed boat ramps for reservoir access. TVA also manages Loyston Point Campground and the Cove Creek Boat Ramp (known as Site B). Norris Reservoir supports 23 marinas. These marinas utilize both TVA public land and adjoining private land. The Norris Plan allocates 247 acres to be used for day use developed recreation purposes.

4.1.6 Residential Access Goal

- ***In an effort to manage TVA public land consistent with the decision in the SMI, the Norris Plan does not allocate any new land to Residential Access (Zone 7).*** In 1998 TVA completed an EIS on residential shoreline development impacts throughout the Tennessee Valley. Under the chosen alternative (the Blended Alternative), sensitive natural and cultural resource values of reservoir shorelines are to be conserved and retained by preparing a shoreline categorization of the residential shoreline for individual reservoirs. Voluntary donations of conservation easements over flowage easement or other shoreland to protect scenic landscapes would be encouraged. A "maintain and gain" public shoreline policy has been adopted to ensure no net loss, and preferably net gain, of public shoreline when considering requests for additional access rights. Under this policy, TVA would allow docks and other alterations along shoreline where access rights exist and where sensitive resources, navigation, flood control, and power generation concerns do not exist. TVA would also limit consideration of requests for access rights across shorelines where such rights do not exist to (a) projects proposed by others for exchange of access rights that result in no net loss, or preferably a net gain, of undeveloped public shoreline, and (b) TVA projects that support the agency's integrated resource management mission. Other than these situations, no additional residential access rights would be considered.

TVA, as part of the Norris Plan, would categorize all the residential shoreline (Non-TVA Shoreland [Zone 1] and Residential Access ([Zone 7], which total 264 miles of shoreline). This categorization would be based on resource data collected from field surveys of the residential shoreline. The shoreline categorization is composed of three categories: Managed Residential Shoreline; Residential Shoreline Mitigation; and Shoreline Protection. A resource inventory has been conducted for sensitive species and their potential habitats, archaeological resources, and wetlands along Norris Reservoir's residential shoreline. The residential shoreline on Norris Reservoir comprises 33 percent of the total 809 miles of shoreline. Of that 264 miles of potential residential access shoreline, 133.17 miles are flowage easement.

A total of 65 percent of the residential shoreline has potential habitat for sensitive species; approximately 5 percent of the residential shoreline has archaeological resource concerns; and 24 percent of the residential shoreline has wetland vegetation. When these three components are mapped, the result is that 5.04 miles (1.91 percent) of residential shoreline would be in the Shoreline Protection category; 232.65 miles (88.14 percent) would be in the Residential Shoreline Mitigation category, and 26.27 miles (9.95 percent) of the residential shoreline would be in the Managed Residential Shoreline category. The Shoreline Protection category denotes shoreland segments possessing populations of federal- and state-listed species that are especially vulnerable to impacts associated with shoreline development. Within the Residential Shoreline Mitigation category, site-specific impacts of each resource would be assessed and mitigated in accordance with the applicable regulations governing that resource. Shoreline categorized in the Managed Residential Shoreline category would not have any known sensitive resources.

4.2 Other Objectives

- ***Honor existing land use commitments on TVA public land where the existing uses are meeting intended objectives.*** A basic premise of the land planning process is to honor existing commitments on TVA public land. Each of these commitments has been reviewed in light of continuing to provide public benefit and/or uphold sound management practices which meet TVA's expected level of performance. TVA is always prepared to evaluate unacceptable conditions and render necessary solutions when TVA public land is involved.

A large portion of Developed Recreation (Zone 6) parcels was already committed for recreation facilities. All Project Operations (Zone 2) and Residential Access (Zone 7) were committed parcels. Fifty-seven parcels, containing 1,743.90 acres (86 percent), are considered committed to Developed Recreation (Zone 6).

The fourteen parcels, containing 934.50 acres, were allocated to Project Operations (Zone 2) because of existing land uses. Likewise, the 69 parcels, containing 1,472.55 acres, are allocated to Residential Access (Zone 7) because of prior commitments. The majority of these parcels have had the adjacent property sold with outstanding rights of ingress and

egress in the late 1950s. These current commitments of TVA public land are honored in the Norris Plan and have met the planning objective.

5. ALLOCATION PROCESS

During the allocation process, the location, existing conditions, and qualities of each parcel were discussed. As explained in the Introduction to the Norris Plan, the allocation team honored all existing commitments—that is, existing leases, licenses, easements, and uses by TVA programs. Allocation to Residential Access (Zone 7) was based on SMP commitments. The remaining parcels were allocated based on reservoir planning objectives and TVA programs' requested land uses, which were developed with public input. Proposed allocations were made by consensus.

During the allocation meeting, the planning team allocated the TVA public land by parcels to six of the seven zones defined in Table A-1.1. No additional land was allocated to Non-TVA Shoreland (Zone 1). Appendix A-3 is the Parcel Information Matrix which identifies each parcel number, allocation zone, number of acres, reason for allocation, prior forecast designation, map panel locator.

TABLE A-1.1 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
1	Non-TVA Shoreland (<i>Flowage/Retained Rights</i>)	<p>Shoreland located above summer pool elevation that TVA does not own in fee or land never purchased by TVA. TVA is not allocating private or other non-TVA public land. This category is provided to assist in comprehensive evaluation of potential environmental impacts of TVA's allocation decision. Non-TVA shoreland includes:</p> <ul style="list-style-type: none"> • Flowage easement land—Privately or publicly owned land where TVA has purchased the right to flood and/or limit structures. Flowage easement land is generally purchased to a contour elevation. Since this land is subject to TVA's Section 26a permitting requirements, the SMP guidelines discussed in the definition of Residential Access (Zone 7) apply to the construction of water use facilities fronting flowage easement residential development. SMP guidelines addressing land based structures and vegetation management do not apply. • Privately owned reservoir land—This is land never purchased by TVA and may include, but is not limited to, residential, industrial, commercial, or agricultural land. This land is subject to TVA's Section 26a approvals for structures.
2	Project Operations	<p>All TVA public land currently used for TVA operations and public works projects includes:</p> <ul style="list-style-type: none"> • 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.

TABLE A-1.1 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
		<ul style="list-style-type: none"> • Dam reservation land—Areas used for 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 day-boards and beacons—Areas with structures placed on the shoreline to facilitate navigation. • Public works projects—Includes fire halls, public water intakes, public treatment plants, etc. (These projects are placed in this category as a matter of convenience and may not relate specifically to TVA projects.) • Land planned for any of the above uses in the future.
3	Sensitive Resource Management	<p>Land managed for protection and enhancement of sensitive resources. Sensitive resources, as defined by TVA, include resources protected by state or federal laws or executive orders and other land features/natural resources TVA considers important to the area viewscape or natural environment. Recreational activities, such as hunting, wildlife observation, and camping on undeveloped sites, may occur in this zone, but the overriding focuses are protecting and enhancing the sensitive resource the site supports. Areas included are:</p> <ul style="list-style-type: none"> • TVA-designated sites with potentially significant archaeological resources. • TVA public land with sites/structures listed on or eligible for listing on 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 areas managed to protect populations of species identified as threatened or endangered by the USFWS, 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.

TABLE A-1.1 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
		<ul style="list-style-type: none"> • <i>Small wild areas</i>—These TVA natural areas are areas 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. • <i>River corridor with sensitive resources</i>—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. These areas will be included in Sensitive Resource Management (Zone 3) when identified sensitive resources are present. • <i>Significant scenic areas</i>—These are areas designated for visual protection because of their unique vistas or particularly scenic qualities. • <i>Champion tree site</i>— 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. • <i>Other sensitive ecological areas</i>—Examples of these areas include heron rookeries, uncommon plant and animal communities, and unique cave or karst formations. • <i>Land planned for any of the above uses in the future.</i>
4	Natural Resource Conservation	<p>Land managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this zone. Appropriate activities in this zone include hunting, timber management to promote forest health, wildlife observation, and camping on undeveloped sites. Areas included are:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license</i> to other agencies for wildlife or forest management purposes. • <i>TVA public land fronting land owned by other agencies</i> for wildlife or forest management purposes. • <i>TVA public land</i> managed for wildlife or forest management projects. • <i>Informal recreation areas</i> maintained for passive, dispersed recreation activities, such as hunting, hiking, birdwatching, photography, primitive camping, bank fishing, and picnicking. • <i>Shoreline Conservation Areas</i>—Narrow riparian strips of vegetation between the water’s edge and TVA’s backlying property that are managed for wildlife, water quality, or visual qualities. • <i>Wildlife Observation Areas</i>—Areas with unique concentrations of easily observable wildlife that are managed as designated public wildlife observation areas.

TABLE A-1.1 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
		<ul style="list-style-type: none"> • <i>River corridor without sensitive resources present</i>—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 Natural Resource Conservation (Zone 4) unless sensitive resources are present (see Sensitive Resource Management, Zone 3).
5	Industrial/ Commercial* Development	<p>Land managed for economic development, including business, commercial, light manufacturing, and general industrial uses. Areas included are:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license to other agencies/individuals.</i> • <i>TVA public land fronting land owned by other agencies/individuals.</i> • <i>Sites planned for future use supporting sustainable development.</i> <p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • Business parks—TVA waterfront land which would support business and light manufacturing activities. • Industrial access—Access to the waterfront by backlying 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 which 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	<p>All reservoir land managed for concentrated, active recreation activities that require capital improvement and maintenance, including:</p> <ul style="list-style-type: none"> • <i>TVA public land under easement, lease, or license to other agencies/individuals</i> for recreational purposes. • <i>TVA public land fronting land owned by other agencies/individuals</i> for recreational purposes. • <i>TVA public land developed for recreational purposes</i>, such as campgrounds and day use areas. • <i>Land planned for any of the above uses in the future.</i> <p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • <i>Commercial recreation</i>, e.g., commercial marinas, resorts, campgrounds, and golf courses.

TABLE A-1.1 PLANNED LAND USE ZONE DEFINITIONS		
Zone		Definition
		<ul style="list-style-type: none"> • Public recreation, e.g., local, state, and federal parks and recreation areas. • Greenways, e.g., linear parks 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. • Water access sites, e.g., boat ramps, courtesy piers, canoe access, fishing piers, vehicle parking areas, picnic areas, trails, toilet facilities, and information kiosks.
7	Residential Access	<p>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. Under the Norris Plan, residential access would be divided into three categories based on the presence and potential impacts to sensitive ecological resources, such as threatened or endangered species, wetlands, and archaeological and historic sites. The categories are (1) Shoreline Protection where no residential alterations would be permitted; (2) Residential Shoreline Mitigation, where special analysis would be needed; and (3) Managed Residential Shoreline, where no known sensitive resources exist. Types of development/management that can be considered on this land are:</p> <ul style="list-style-type: none"> • Residential water use facilities, e.g., docks, piers, launching ramps/driveways, marine railways, boathouses, enclosed storage space, and potable/nonpotablewater intakes. • Residential access corridors, e.g., pathways, wooden steps, walkways, or mulched paths which can include portable picnic tables and utility lines. • Shoreline stabilization, e.g., bioengineering, riprap, and gabions, and retaining walls. • Shoreline vegetation management on TVA-owned residential access shoreland. • Conservation easements for protection of the shoreline. • Other activities, e.g., fill, excavation, grading.

*Commercial recreation uses, such as marinas and campgrounds, are included in Zone 6.

6. GLOSSARY OF TERMS

Dam Reservation	Land generally maintained in a park-like 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, and picnicking.
Emergent Wetland	Wetlands dominated by erect, rooted herbaceous plants, such as cattails and bulrush.
Endangered Species	Any species in danger of extinction throughout all or a significant portion of its range or territory.
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.
Forecast System	The process used for planning the use of TVA public land. TVA staff would provide a record of actual and prospective uses indicated for particular properties. A Forecast System record book was prepared for each TVA reservoir to serve as a general guide for use or development to benefit TVA staff interests and the local or regional economy. Decisions on the best use of the property were made, using internal agency expertise. The new land use planning process will eventually replace the Forecast System as the mechanism for identifying acceptable uses of TVA public land. A major difference between the two methods is the involvement of the public in the planning process.
Fragmentation	The process of breaking up a large area of relatively uniform habitat into one or more smaller, disconnected areas.
Mainstream Reservoirs	Impoundments created by dams constructed across the Tennessee River.
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.
Section 26a Review Process	Section 26a of the TVA Act requires 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 within TVA and USACE. 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.
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.
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 seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, mud flats, and natural ponds.”

ACRONYMS AND ABBREVIATIONS

Board	TVA Board of Directors
BMPs	Best Management Practices
CMC	Clean Marina Campaign
EA	Environmental Assessment
EIS	Environmental Impact Statement
GIS	Geographic Information System
Norris Plan	Norris Reservoir Land Management Plan
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
Tactical Plan	Norris Dam Reservation Tactical Plan
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency

Norris Reservoir Watershed Survey Report



August 2000

Summary of Norris Reservoir Watershed Survey

From October through November, 1999, TVA sought comments and input from citizens and recreational users of the Norris Reservoir Watershed. Public participation was sought to assist the Clinch-Powell Watershed Team in developing a plan to identify specific future uses for TVA managed land around Norris Reservoir.

Comments were compiled from correspondence, questionnaires, public meetings, and interagency meetings. A total of 322 questionnaires were completed and 104 participants attended the public meetings.

Summary of Questionnaire Results

Recreation.

- The majority of survey respondents indicated participating in water-related activities, including fishing, pleasure boating, and swimming. Wildlife observation was another activity popular with respondents.
- Many expressed the need for more wildlife observation opportunities as well as facilities for picnicking, hiking, and pier fishing.
- The majority of survey respondents think that there are currently enough facilities for water-related activities, such as marina use, boat fishing, and pleasure boating.
- Also, many respondents would like to see less jet-skiing and off-road vehicle use.

Public Land.

- The majority of survey respondents believe that more public land should be allocated for management of natural resources, wildlife, and sensitive resources.
- Many believe that there is that there is the right amount of land allocated for commercial recreation and state parks.

Priority of Issues.

- Houseboat waste issues, trash/litter clean-up, and monitoring water quality conditions were the three issues indicated as most important by survey respondents.

Marina Preferences.

- Most respondents do not want any new marinas. However, there is some disagreement regarding the expansion of existing marinas—some respondents are in favor of current marinas expanding while others are not.

Water Quality.

- Approximately 60% of respondents think that water quality of Norris Reservoir is good, while less than 5% believe it is poor.
- In general, these ratings were based on comparisons with other lakes, the appearance of Norris Reservoir, and the amount of litter and houseboat waste visible on or around the reservoir.

Public Participation for Improving Norris Reservoir Watershed.

- Approximately 40% of respondents indicated interest in participating in litter clean-up activities and planting food plots for wildlife.
- About one-third of respondents expressed interest in erosion control activities, while one-fourth of respondents reported willingness to properly dispose of houseboat waste and involvement in a watershed coalition.

Open-ended Questions.

- Respondents were asked what they value most about the lands and water around Norris Lake. Nearly two-thirds of

responses relate to the natural beauty and scenery, water quality, and lack of development of the area.

- Respondents were asked what they think are the most important issues that would need to be addressed over the next ten years. Nearly two-thirds of responses involve water quality, over-development, erosion, crowding, and over-use.
- Respondents were also asked to comment on what projects and activities they think are needed to provide cleaner water in the Norris Lake area. Nearly two-thirds of responses concern water pollution enforcement, litter removal, boat waste monitoring and clean-up, and pollution and litter prevention/education.

Summary of Comments from Public Meetings & Interagency Meetings

Open-ended Questions.

Public meeting participants were assigned to small discussion groups and asked four open-ended questions.

- What do you value most about the public lands and waters around Norris Lake? Approximately 70% of comments relate to the natural scenery and beauty of the area, clean water, recreation opportunities, and protected, undeveloped land and natural resources.
- How could the management of TVA public lands be improved? Nearly two-thirds of responses include more control of litter, maintaining a stable water level, enforcement and regulations, erosion control, and recreational opportunities and public access.

- Over the next ten years, what will be the major land use, water quality, or other problems and issues that must be addressed within the watershed drained by the Clinch and Powell Rivers, including the Norris Reservoir Watershed? Approximately 70% of comments involve issues regarding pollution, increased and unwanted development, loss of public land, access, and natural resources, and crowding and over-use.
- How do you think water quality of the lake, rivers, and streams will change in the watershed drained by the Clinch and Powell Rivers (including the Norris Reservoir Watershed) over the next five to ten years? Approximately 70% of responses include pollution and development/ industry.

Norris Reservoir Watershed Survey Report

Background and Purpose

TVA develops reservoir land management plans to help manage the public lands around its reservoirs. Plans are developed in accordance with TVA policy and performance standards with active participation by public agencies, officials, private organizations, and individuals.

The Clinch/Powell Watershed Team is developing a plan focusing on TVA managed lands and the watershed around Norris Reservoir. Specific uses for the land will be identified, including resource protection, natural sensitive resource management, industrial/commercial development, recreation, residential access, and TVA operations.

From October 18, 1999 to November 30, 1999, TVA sought comments from citizens and recreational users of the Norris Reservoir Watershed. The solicitation of public comments was sought through news releases to local newspapers announcing public participation opportunities. Individuals could also submit comments by electronic mail (e-mail). Additionally, individuals were invited to complete a questionnaire indicating their preferences and opinions regarding the Norris Reservoir Watershed (see Appendix III). Questionnaires were mailed to individuals whose names were compiled from TVA mailing lists and were distributed during two public meetings. As of November 30, 1999, 319 questionnaires were completed and returned.

Citizens of the Norris Reservoir Watershed were invited to attend a public meeting at Anderson Country High School (ACHS) on October 28, 1999, and/or a public meeting at Lincoln Memorial University (LMU) on November 2, 1999; the two meetings had a total of 104 participants. At each public meeting, all attendees were invited to participate in small discussion groups where they were asked to respond to questions concerning the Norris Reservoir Watershed. Participants were assigned to one of nine discussion groups, with six groups at ACHS and three groups at LMU. The meetings were cosponsored by the Tennessee Department of Environment and Conservation (TDEC).

In addition to the public meetings, TVA met with elected officials in the Norris Reservoir Watershed area, and held two interagency meetings to gather information from agency personnel who have management responsibility or interest in the Norris Reservoir Watershed.

Report Overview

This report provides a summary of the results from the questionnaire as well as the comments recorded during the public meetings. Part I of the report is a summary of the questionnaire responses, including analysis of responses to open-ended questions. Part II of the report consists of comments compiled from the public meetings. Tables listing all comments from the questionnaire and public meetings are in Appendices I and II, respectively.

Part I – Questionnaire Results

Recreation Use. Table 1 displays respondents' recreational activities on and around Norris Reservoir. The majority of respondents indicated water-related activities (fishing, pleasure boating, marina use, swimming, use of public boat ramps, waterskiing). More than half of the respondents also indicated wildlife observation.

<i>Table 1. Recreation Use Around Norris Reservoir</i>		
Recreation Activity	Percentage of Total Respondents	Number of Respondents
Fishing	77%	244
Pleasure Boating	76%	242
Use of Marina	70%	224
Swimming in Undesignated Area	63%	201
Wildlife Observation	59%	188
Use of Public Boat Ramp	58%	184
Picnicking	44%	141
Waterskiing	44%	139
Hiking	40%	127
Hunting	34%	107
Nature Photography	32%	103
Camping in Developed Area	30%	94
Camping in Undeveloped Area	27%	86
Swimming in Designated Area	26%	83
Jet Skiing	22%	71
Off-road Vehicles	15%	48
Bicycle Riding	13%	40
Golfing	12%	38
Mountain Biking	7%	23
Sailing	5%	16
Horseback Riding	4%	12
Total Number of Respondents = 319		

Preferences for Recreation Facilities. Respondents were asked to indicate their preferences regarding facilities for various recreation activities on or around Norris Reservoir. Tables 2 to 5 display the percentages and number of respondents for each preference option: Right amount, need more, need less, and no opinion. The table include only activities for which more than 20% of respondents indicated a facility preference are included.

Table 2. Summary Information for Facility Preferences— Right Amount.		
Recreation Activity	Percentage of Total Respondents	Number of Respondents
Marina	72%	209
Boat Fishing	68%	199
Pleasure Boating	65%	186
Water Skiing	65%	177
Swimming in Non-designated Area	60%	167
Boat Ramp/Boating	56%	164
Bank Fishing	52%	145
Picnicking	49%	129
Swimming in Designated Area	48%	130
Camping in Developed Area	45%	123
Camping in Undeveloped Area	39%	104
Nature Photography	37%	99
Wildlife Observation	35%	98
Hiking	32%	85
Horseback Riding	31%	77
Hunting	29%	79
Mountain Biking	26%	65
Bicycle Riding	22%	57
Total Number of Respondents = 319		

Table 3. Summary Information for Facility Preferences— Need More.		
Recreation Activity	Percentage of Total Respondents	Number of Respondents
Wildlife Observation	46%	129
Picnicking	42%	111
Hiking	42%	110
Pier Fishing	41%	114
Swimming in Designated Area	37%	102
Camping in Developed Area	36%	98
Boat Ramp Boating	32%	93
Bank Fishing	31%	87
Hunting	29%	79
Bicycle Riding	28%	72
Nature Photography	27%	71
Camping in Non-developed Area	24%	65
Total Number of Respondents = 319		

Table 4. Summary Information for Facility Preferences— Need Less.		
Recreation Activity	Percentage of Total Respondents	Number of Respondents
Jet Skiing	75%	202
Off-road Vehicles	56%	151
Hunting	24%	66
Total Number of Respondents = 319		

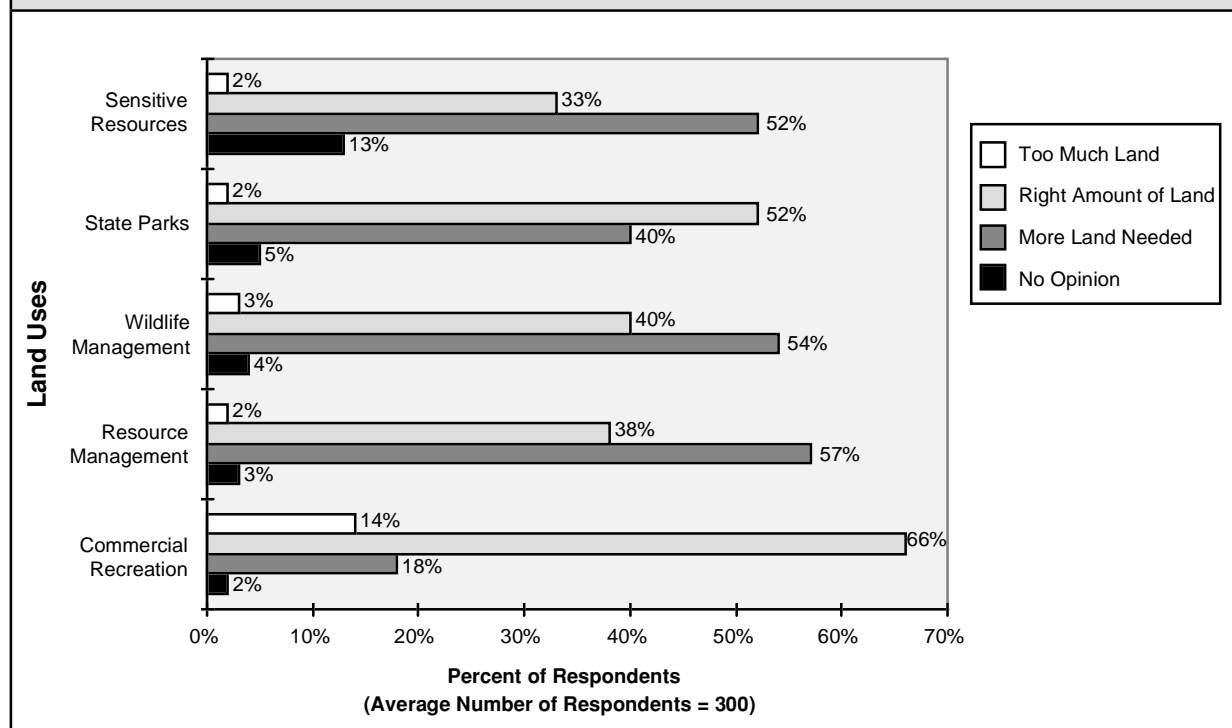
Table 5. Summary Information for Facility Preferences— No Opinion.		
Recreation Activity	Percentage of Total Respondents	Number of Respondents
Mountain Biking	50%	128
Sailing	46%	112
Bicycle Riding	44%	113
Horseback Riding	44%	110
Golfing	39%	103
Nature Photography	34%	90
Pier Fishing	26%	72
Total Number of Respondents = 319		

Preferences for allocation of public land. Figure 1 displays respondents' preferences regarding the allocation of public land. The majority (over 50%) of respondents expressed that more land was needed for sensitive resource areas (e.g., wetlands, cultural resources, endangered species), state parks, wildlife management areas, and resource management areas (e.g., forests).

The majority (over 50%) of respondents indicated that about the right amount of land was allocated for state parks and commercial recreation areas (e.g., commercially operated marinas, resorts, campgrounds).

In addition, many (40%) respondents indicated that the right amount of land was allocated for resource management and wildlife management areas and that more land was needed for state parks.

Figure 1. Norris Reservoir Watershed Land Use Allocation

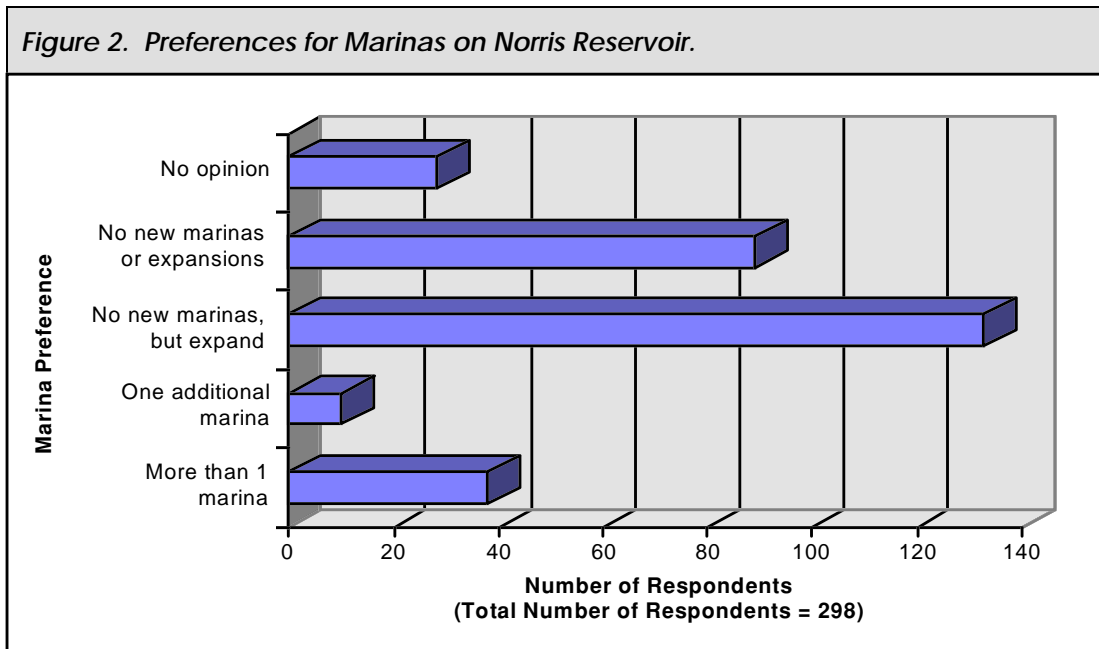


Respondents were asked to prioritize (by allocating \$100 to any or all of) the following issues: improve recreational access and facilities, erosion control, improve wildlife, work with private landowners to clean up/prevent impact to water quality, provide industrial/economic development opportunities, trash/litter clean-up, monitor water quality conditions, address houseboat waste issue, help farmers minimize agricultural impact to water quality, work with private landowners to improve forestry practices.

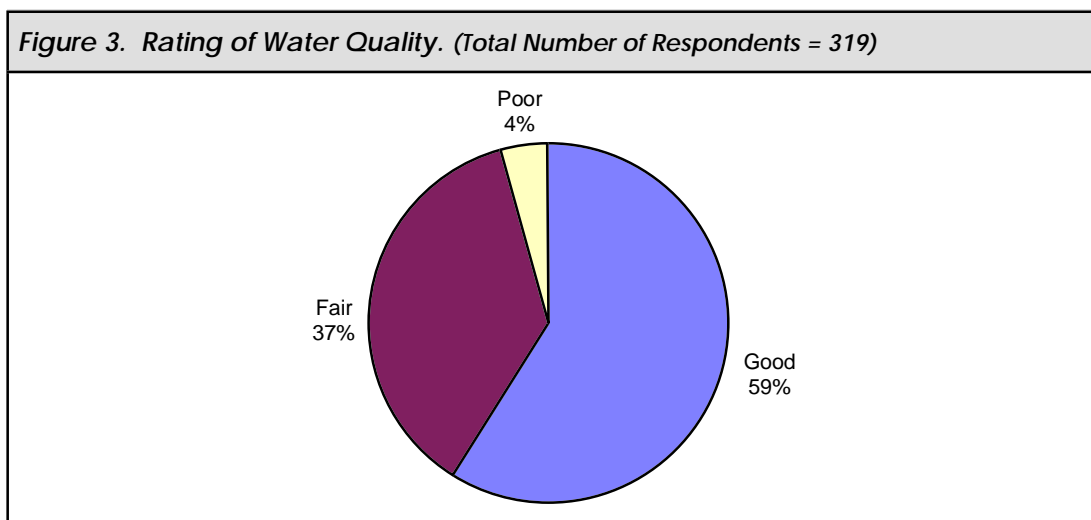
Analysis of respondents' prioritization indicates the following rank-ordering of issues:

- 1) houseboat waste issues
- 2) trash/litter clean-up
- 3) monitor water quality conditions
- 4) improve recreational access and facilities
- 5) work with private landowners to clean up/prevent impact to water quality
- 6) erosion control
- 7) help farmers minimize agricultural impact to water quality
- 8) work with private landowners to improve forestry practices
- 9) provide industrial/economic development opportunities

Preferences regarding marinas. As seen in Figure 2, many respondents (47%) expressed that no new marinas were needed but that some existing marinas should *expand their facilities*. Several respondents (27%) stated that *no new marinas* or expansions were needed, while 3% of respondents stated that *one additional marina* was needed; an additional 12% expressed that *more than one marina* was needed.



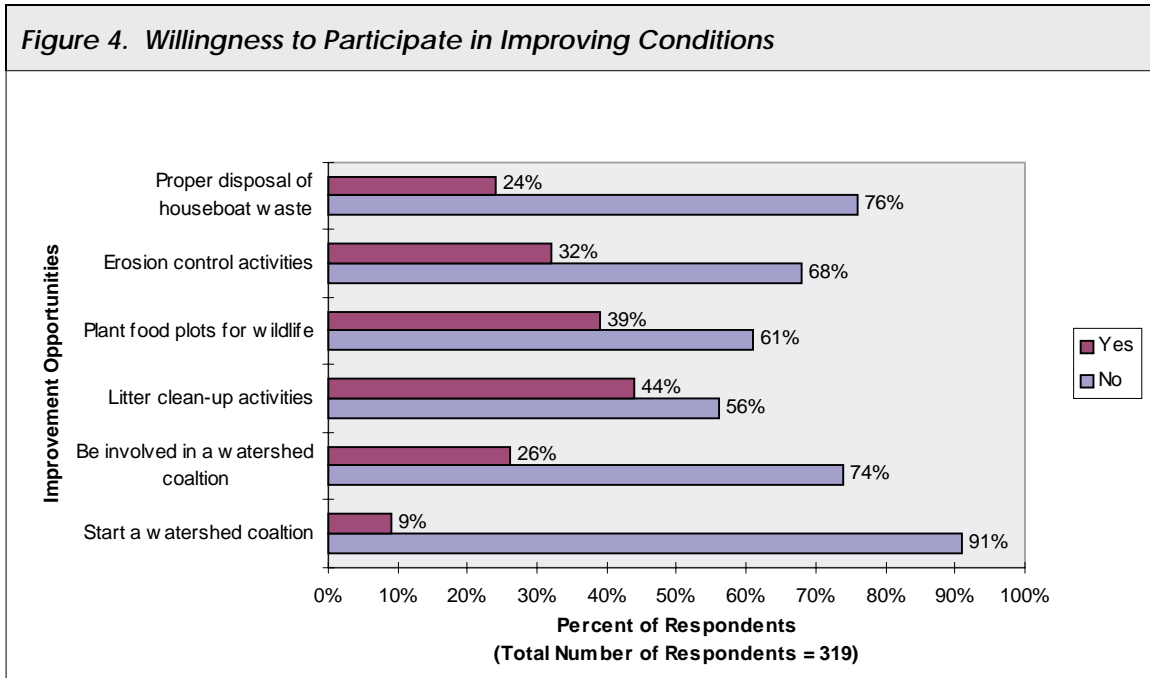
Opinions of water quality. Figure 3 displays respondents' opinions regarding the water quality of Norris Reservoir and the streams that flow into the Reservoir. The majority of respondents (59%) indicated that the quality of water is good, while 37% indicated that it was fair; the remaining 4% indicated poor.



Respondents were asked to explain their rating of the water quality in Norris Reservoir. As shown in Table 6, respondents' predominantly based their rating on: comparison with other reservoirs, appearance of the water, observed litter and/or house-boat waste, degree of improvement needed, and the apparent health of fish in the reservoir. Additional explanations of the water quality included: use of TVA's water quality reports, degree of industrial/agricultural waste, amount of development and population (i.e., recreational users and residents), water level, and/or their recreational use of the reservoir (e.g., swimming).

Table 6. Major Themes and Issues.		
Explanations of Water Quality Rating		
Themes	Rating	Issues
Comparison with Other Lakes	Good	<i>Norris Lake over all seems cleaner than other lakes; Norris is the cleanest reservoir in the TVA system; I have been to very few lakes where the water quality is anywhere near this beautiful lake</i>
	Fair	<i>fair in relation to other area lakes</i>
	Poor	<i>we have looked at other lakes as we travel</i>
Appearance	Good	<i>it always seems clear; clarity and observed cleanliness; it appears healthy</i>
	Fair	<i>15 years ago, the water was cleaner than it is today; water is green an not clear in many areas; foam floating on water would indicate that water is polluted</i>
	Poor	<i>slime is everywhere</i>
Litter	Good	<i>I do not see much trash; not excessively littered</i>
	Fair	<i>too much garbage is being dumped near the shoreline; it is a shame to see all the cans and garbage floating in the lake</i>
	Poor	<i>excessive trash coming downstream; trash is everywhere</i>
House Boat Waste	Fair	<i>there is improper waste disposal from boats; I know there is al lot of raw sewage from boats being dumped into the lake</i>
	Poor	<i>people dump raw sewage straight into the lake</i>
Needs Improvement	Good	<i>for the most part the water is very good, but there are areas that need more clean-up efforts</i>
	Fair	<i>it could be better; some areas need to be cleaned up; could definitely be improved; efforts need to be taken to clean up in-flowing streams</i>
Good Fishing	Good	<i>no fish advisories until recently; I have been eating the fish from these waters all of my life; good diversity of fish</i>
	Fair	<i>it is supposed to be safe to eat the fish you catch; fish seem to be healthy</i>

Public participation and improvements to Norris Reservoir Watershed. As shown in Figure 4, 39% and 44% of respondents reported that they would help in litter clean-up activities and/or planting food plots for wildlife, respectively. In addition, between 24% and 33% reported they would participate in a watershed coalition, erosion control/prevention, and/or committing to proper disposal of houseboat waste. Approximately 9% of respondents indicated an interest in starting a watershed coalition.



Open-ended questions. Respondents were asked to write comments regarding the following questions

- 1) What do you value most about the public lands and waters around Norris Reservoir?
- 2) Over the next ten years, what will be the major problems or issues that must be addressed regarding the Norris Reservoir Watershed?
- 3) What projects/activities are needed to provide cleaner water in Norris Reservoir and the streams that flow into it?

A content analysis was conducted on all responses to each question. This analysis involved categorizing and compiling responses for themes using qualitative data analysis techniques. Figures 5 - 7 display the percentages of total responses by themes for each question. Additionally, comments for each theme are provided in Tables 7 - 9.

What do you value most about the lands and waters around Norris Reservoir?

For this question, approximately 60% of respondents' comments collectively referred to water quality, natural scenery, and the lack of development. The remaining comments expressed value in the recreational opportunities, abundant wildlife and habitat, cleanliness of the area, the peace and solitude of the area, and the fact that it is a public resource accessible to everyone.

**Figure 5. Percentage of Response Themes/Issues
(What Do you Value Most About the Lands and Waters Around Norris Reservoir?)**

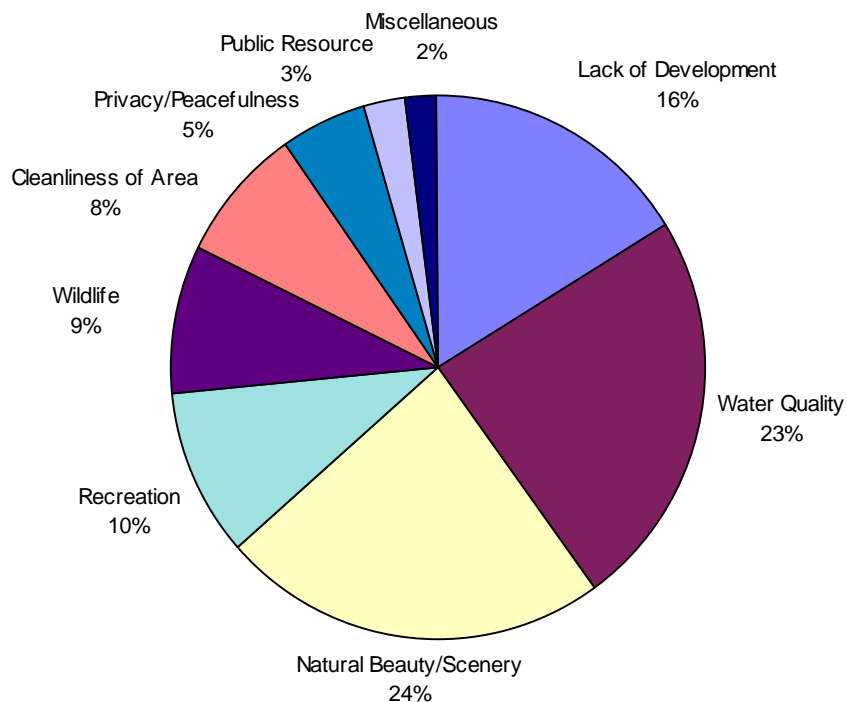


Table 7. Major Themes/Issues

<i>What do you value most about the lands and water around Norris Reservoir?</i>	
Themes/Issues	Comments
Water Quality	<i>water quality; cleanliness of water; water purity; clean, pretty water</i>
Natural Beauty/Scenery	<i>the pristine beauty; beauty of the lake; scenic landscape; view from the lake; landscape and trees; beautiful wooded forests ; natural areas</i>
Lack of Development	<i>the remaining undeveloped lands that surround the lake; not over developed; free of commercial development; most shoreline has not been developed; without industrial or private encroachment; not as developed as some other lakes; undeveloped wildlife areas; not every inch crowded with homes</i>
Wildlife	<i>the numerous habitats and the variety of species throughout the area; wildlife observation; friendly to wildlife; abundant wildlife; able to see native wildlife</i>
Cleanliness of Area	<i>beautiful and clean; how clean and beautiful the entire area is ; cleanliness</i>

Table 7 (cont.). Major Themes/Issues

<i>What do you value most about the lands and water around Norris Reservoir?</i>	
Themes/Issues	Comments
Recreation	<i>outdoor recreation opportunities; water ways for recreation; access to wild area through hunting, hiking, camping, and fishing; swimming and pleasure boating good fishing; fish are edible</i>
Privacy/Peacefulness	<i>being able to relax and get away; tranquillity; solitude, unspoiled conditions; relative privacy; peace and quiet</i>
Public Resource	<i>large acreage of public lands; abundance of public owned shoreline and land; public access; keep land public</i>

Over the next ten years, what will be the major problems or issues that must be addressed regarding the Norris Reservoir Watershed?

Water quality and over development were the predominant themes/issues regarding this question. Nearly 30% of comments collectively expressed concern about erosion, loss of natural resources and wildlife, litter, and boat waste. Approximately 20% of comments referred to crowding and over use of the area as well as boating and jet ski use. Remaining comments expressed concern regarding fluctuating water levels.

Figure 6. Percentage of Response Themes/Issues (What Will be the Major Problems or Issues During the Next 10 Years?)

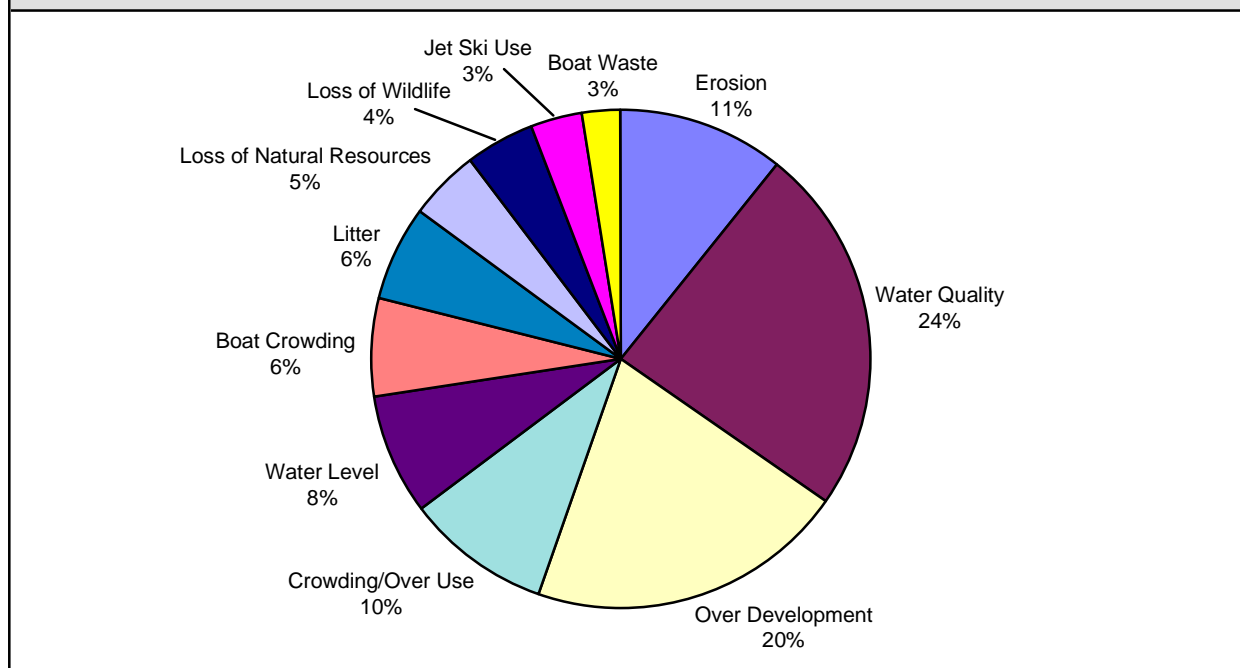


Table 8. Major Themes/Issues and Example Comments.	
What will be the major problems or issues during the next 10 years?	
Themes/Issues	Comments
Water Quality	<i>water pollution; keep water clean; decrease in water quality from development; septic tank problems; maintaining water quality; Norris Lake will probably be polluted without proper waste water management (i.e., septic, etc.)</i>
Over Development	<i>greatly increased residential, commercial, and industrial development; increasing private home development and boat houses crowding the shoreline; limit commercial and residential development; over development without planning or controls in place; the push for more development must be stopped; increasing private home development</i>
Erosion	<i>shoreline erosion from wave action; erosion from developments; concerned about erosion</i>
Crowding/Over Use	<i>increasing human population and their use of the watershed; overuse causing depletion of resources; numbers using the watershed; increased boat traffic; increase in recreational use</i>
Water Level	<i>water draw-down and effect on marinas; large lake fluctuations; lowering of the lake too early; please let up on draining our lake so early and so fast</i>
Boat Crowding	<i>proliferation of water craft; how many jet skis and houseboats can you put on one body of water?; over use by boaters of all kinds; concerned about the increasing number of jet skis and large boats</i>
Litter	<i>trash problems; trash on shoreline; litter from boaters and campers; need to eliminate the trash being dumped into the lake; need garbage/litter control</i>
Loss of Natural Resources	<i>loss of the beautiful, peaceful forests; better management of resources; the continued abuse of the area's resources will have an effect on wildlife and the people; depleting resources; need more wilderness areas with native vegetation</i>
Loss of Wildlife	<i>loss of land and wildlife habitat to development; improve wildlife habitat; loss of wildlife; too much building on the land without regard to wildlife</i>
Boat Waste	<i>houseboats dumping sewage into the lake; septic tank discharge into lake; need waste control; waste from houseboats, boats, and marinas</i>
Personal Watercraft Use	<i>limit jet skis; many jet ski operators are unsafe; ban or restrict jet skis; jet skiing on the lake is a big safety issue; jet skis are under regulated—they are too fast and drivers are too young</i>

What Projects/Activities are needed to provide cleaner water in Norris Reservoir and the streams that flow into it?

For this question, approximately half of all responses mentioned activities associated with enforcement of waste pollution, waste pollution from industry, agriculture, and boating, and the need for sewage treatment and water monitoring. More than 20% of comments expressed the need for litter removal and education programs for pollution and litter prevention. Many respondent also commented on limiting/restricting development, restricting jet ski use, and maintaining water levels.

Figure 7. Percentage of Response Themes/Issues
(What Projects/Activities are needed to provide cleaner water in Norris Reservoir and the streams that flow into it?)

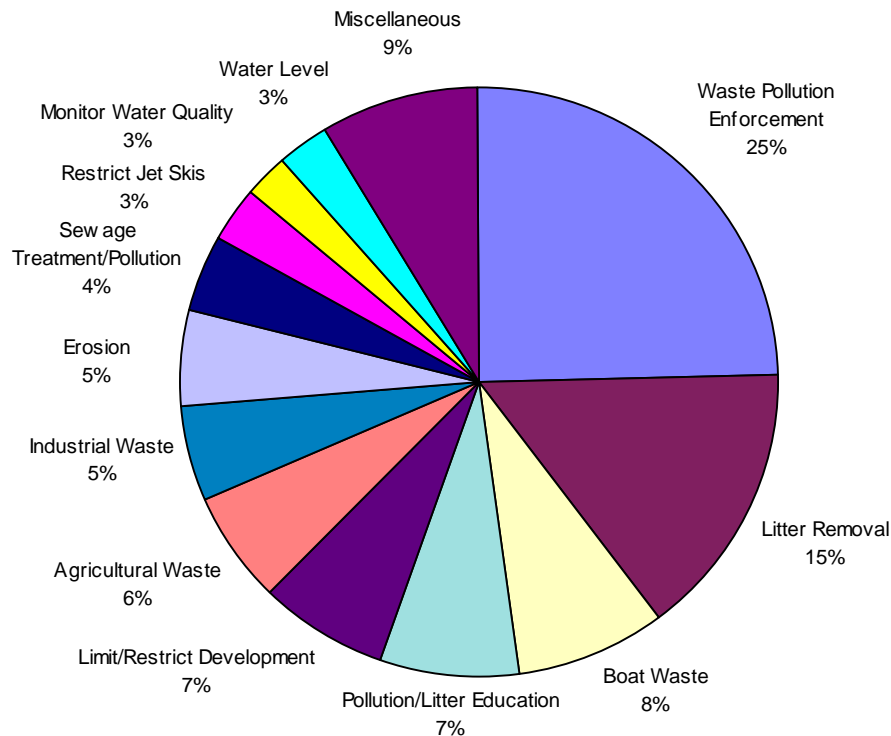


Table 9. Major Themes/Issues.

<i>What projects/activities are needed to provide cleaner water in Norris Reservoir and the streams that flow into it?</i>	
Themes/Issues	Comments
Waste Pollution Enforcement	large fines for illegal dumping of waste and trash; stop the people disposing trash and household items into the watershed; control sewage discharge from boats and homes; strict guidelines and rules on houseboat waste dumping; need measures toward decreasing the amount of trash and human waste that enters the watershed; arrest or heavily fine those who pollute; monitor houseboat and dock waste; enforce existing laws and regulations for waste/litter; control sewage from marinas, houseboats, and houses on the shore; patrol water use areas for litterers
Litter Removal	volunteer shoreline cleaning programs; clean-ups need to be conducted on and around creeks and streams that flow into Norris; the lake banks need to be cleaned; better control of trash being dumped along streams flowing into Norris; more sponsored clean-up activities; more trash collection barrels at access sites; have regular clean-ups every spring and fall on weekend

Table 9 (cont.). Major Themes/Issues.	
What projects/activities are needed to provide cleaner water in Norris Reservoir and the streams that flow into it?	
Themes/Issues	Comments
Boat Waste	concerned about houseboat waste; need holding tanks on all houseboats; need holding tank enforcement; improper water disposal from boats, spilled fuel at marinas, etc.; limit use of 2 cycle marine engines, oil, gasoline, and exhaust; houseboats need to dispose of waste properly
Pollution/Litter Education	educate people on how to keep Norris clean; public education programs; school education against litter; more community involvement and education about dumping garbage/trash into lake; continue to educate land owners solid waste problem; promote awareness of pollution and litter solid waste problem; promote awareness of pollution and litter
Limit/Restrict Development	control residential and commercial growth around Norris Lake; limit development, especially subdivisions and industries; less development along bank; keep development from infringing on water quality and destruction of wooded areas; limit residential, commercial, and industrial development
Agricultural Waste	limit pollution from agricultural runoff; pollution of stream banks from cattle; livestock and other farming operations in the watershed should be closely monitored for compliance with anti pollution laws and regulations; make sure no pasture lands are next to the lake; keep cattle out of rivers and streams that feed into rivers; reduce livestock waste and other agricultural runoff; pesticide runoff
Industrial Waste	increase restrictions on chemical dumping; monitor industrial pollution; more policing of industry and illegal dumping; limit companies from dumping into lake
Erosion	reduce erosion in watershed; trail maintenance to prevent erosion; no wake zones in areas of extreme erosion; concerned about shoreline erosion; off-road vehicles are destroying the banks and the roads causing erosion; size and speed of personal water craft severely impact the shoreline
Sewage Treatment/ Pollution	better sewage treatment; more water treatment plants and sewer systems; control sewage from shoreline homes; need sewer lines; work with communities and state governments to pass more restrictive regulations that result in better sewer systems and septic facilities
Restrict Personal Water Craft	need more rules for jet skis; jet ski operation should be restricted to main channel only; jet skis ruin water quality via stirring up silt; lake is already too congested and they are very noisy and ridden in reckless manner; need age restriction for jet ski use
Monitor Water Quality	streams should be tested for pollution from any source; test in both headwaters and tail water to insure quality control; need frequent water testing and publishing of results; close inspection of all upstream sewer discharges--check farm drainage and run-off; prepare environmental assessment reports on existing developments with analysis on storm water discharge, implementation and adherence to NPDES, frequent monitoring of existing, new, and proposed developments
Water Level	less water fluctuation; the water level should be high throughout the total boating summer season; lake levels are terrible; a higher lake level and longer in the season would keep the boat wakes further from shore and stop some erosion

Part II – Public Meeting & Interagency Comments

Public Meeting & Inter-Agency Comments. Citizens of the Norris Reservoir Watershed were invited to attend public meetings at Anderson Country High School (ACHS) (October 28, 1999) and Lincoln Memorial University (LMU) (November 2, 1999). At each public meeting, all attendees (104) were invited to participate in small discussion groups where they were asked to respond to questions concerning the Norris Reservoir Watershed. Participants were assigned to one of nine discussion groups, with six groups at ACHS and three groups at LMU. Each discussion group included two TVA staff—a group facilitator and a recorder.

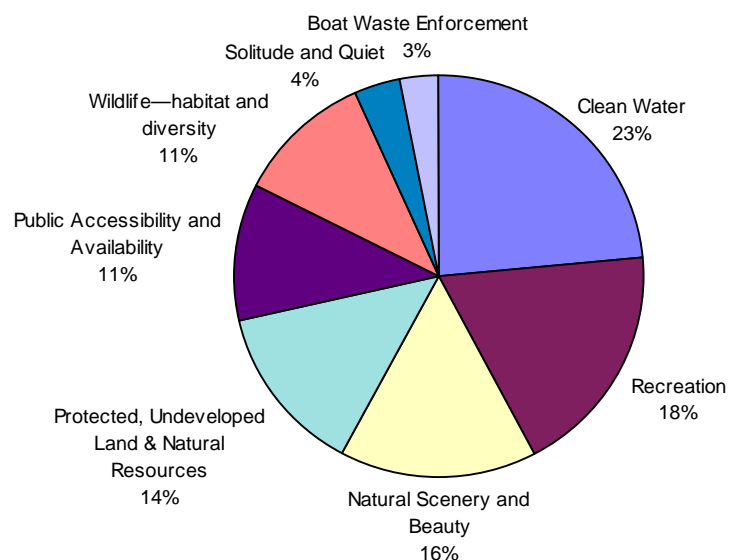
Group participants were asked:

- 1) What do you value most about the public lands and waters around Norris Reservoir?
- 2) How could the management of TVA public lands be improved?
- 3) Over the next ten years, what will be the major land use, water quality or other problems and issues that must be addressed within the watershed drained by the Clinch and Powell Rivers, including the Norris Reservoir Watershed?
- 4) How do you think water quality of the lake, rivers, streams, tributaries will change in the watershed drained by the Clinch and Powell Rivers (including the Norris Reservoir Watershed) over the next five to ten years?

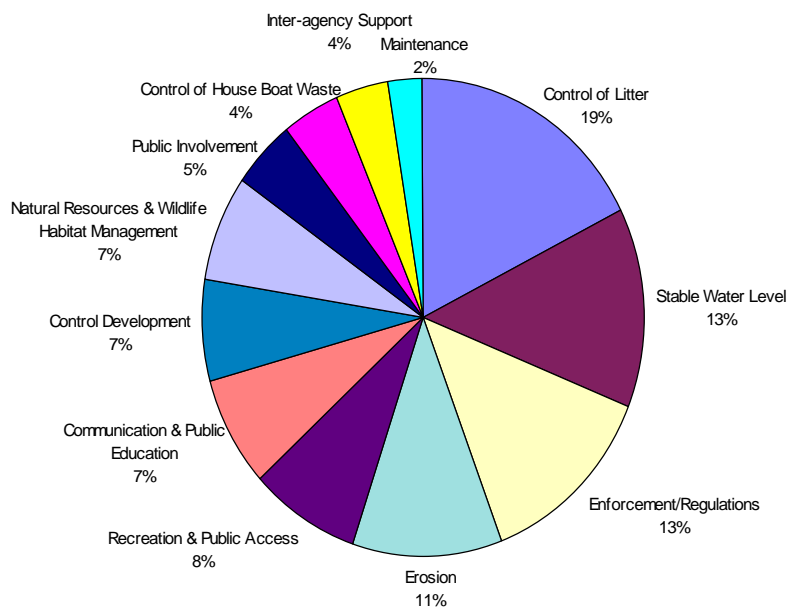
Additionally, TVA compiled comments from inter-agency personnel who have management responsibility or interest in the Norris Reservoir Watershed.

A content analysis was conducted on all responses to each question. This analysis involved categorizing and compiling responses for themes using qualitative data analysis techniques. Figures 8 - 11 display the percentages of total responses by themes for each question. Comments were combined for all discussion groups and listed in Appendix II.

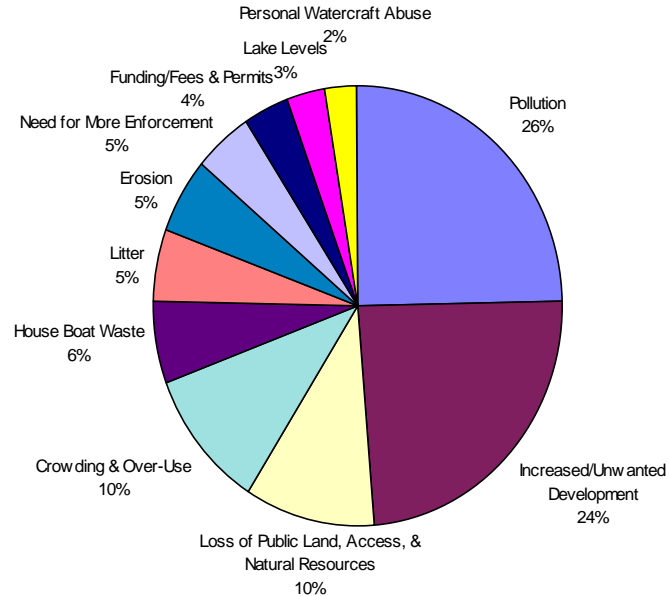
**Figure 8. Percentage of Response Themes/Issues
(What Do You Value Most About the Lands and Water Around Norris Reservoir?)**



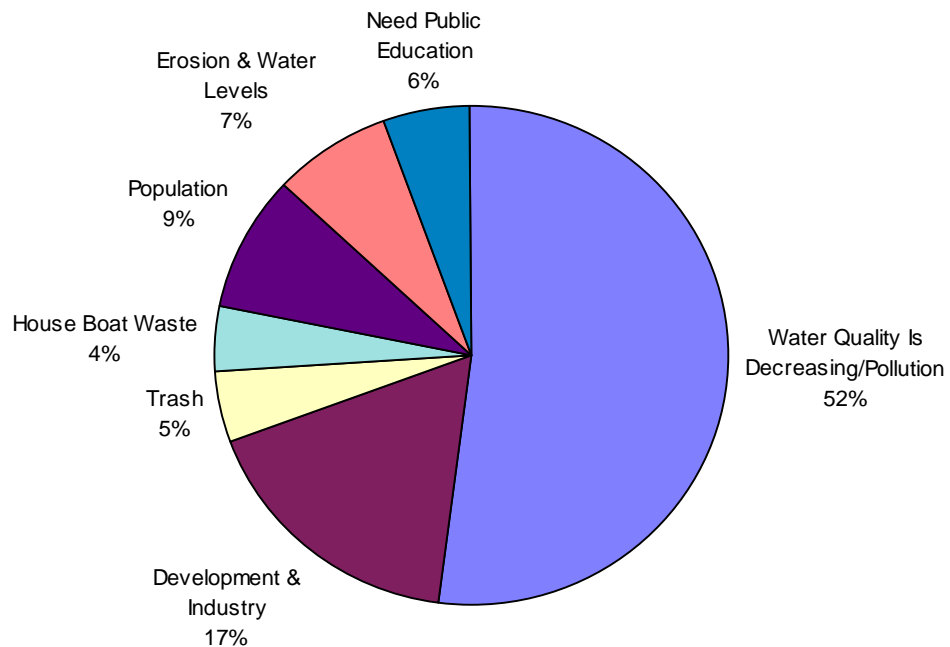
**Figure 9. Percentage of Response Themes/Issues
(How Could the Management of TVA Public Lands be Improved?)**



**Figure 10. Percentage of Response Themes/Issues
(What Will be the Major Problems or Issues During the Next 10 years?)**



**Figure 11. Percentage of Response Themes/Issues
(What are the sources of decreasing water quality?)**



Appendix 1

Table of Comments: Open-Ended Questions

WHAT PROJECTS/ACTIVITIES ARE NEEDED TO PROVIDE CLEANER WATER IN NORRIS LAKE AND THE STREAMS THAT FLOW INTO IT?

COMMENT	NUMBER OF COMMENTS
CONTROL WASTE	
BOAT WASTE	
Tightly monitor and control sewage and contaminant discharge from houseboats, cabin boats, and marinas	50
Inspect houseboats and floating houses. Enact more strict regulation and increase enforcement of laws regarding holding tanks for all boats motored and moored. Penalties for non-compliance should be prompt.	28
Need more police on the lake to enforce laws and control dumping & littering.	7
Increase the number of field agents in order to better monitor and police the shores and waterways and enforce regulations as they apply to boaters, campers, hikers, and homeowners. Penalize offenders.	4
Make marinas responsible for monitoring and controlling from houseboats in their harbor by keeping records of who has holding tanks on houseboats and when they get them pumped. Boats that are not pumped regularly should be removed from TVA waters.	3
Since many boats do not have toilet facilities, discourage boaters from urinating in the lake.	3
Control pollutants (oil) from boats and jet skis.	2
Ensure that pump-out facilities do not dump contents into lake.	2
Need stiffer sanctions for illegal dumping of any pollutants from any source.	2
Control marina fueling spills.	1
Continue TRWA sewage pump-out program.	1
Do not allow grandfathering with regard to houseboat discharge regulations.	1
Require tanks be added if not present.	1
Control the debris which is being thrown in the lake from houseboat construction and remodeling around the marinas.	1
Prevent gas pumps from leaking in the water.	1
Install outhouses at appropriate sites.	1
Limit use of 2 cycle marine engines, oil, gasoline, and exhaust gases.	1
Initiate a houseboat waste management program which might include a drop-off station and/or a patrol boat to assist with pick-up.	1
Make pump-out stations more accessible and less expensive.	1
<i>Subtotal</i>	<i>111</i>
AGRICULTURAL WASTE	
Eliminate agricultural waste in water.	9
Eliminate livestock watering areas, eliminate pollution from cattle on stream banks, and develop methods for keeping cows out of the lake.	8
Restrict pesticides and chemical fertilizer on land bordering streams.	5
Eliminate all agricultural licenses on TVA land.	1
Closely monitor livestock and other farming operations in the watershed and strictly enforce compliance with anti-pollution laws and regulations.	1
Make sure no pasture lands are adjacent to the lake.	1
<i>Subtotal</i>	<i>25</i>

INDUSTRIAL WASTE	
Control industrial pollution/waste, monitor, test, and enforce punishment when needed.	15
Increase policing of industry illegal dumping.	2
Prevent manufacturing firms from locating on rivers that feed Norris Lake.	1
Increase monitoring of the waste treatment plant on Cove Creek.	1
Require communities and businesses to follow state effluent standards	1
Monitor all existing and new industrial and residential land development for pollution run-off into Norris lake watershed.	1
<i>Subtotal</i>	<i>21</i>
RESIDENTIAL WASTE	
Closely inspect and control sewer discharges from homes along the shoreline	6
Need sewage treatment and sewer lines.	2
Collect fines from residents who dump their garbage or pipe their toilets into the creeks.	1
Support efforts to ensure adequate set back between aquatic systems and streams, creeks, lakeshore.	1
Prevent homeowners from excessive use of chemicals on lawns.	1
Regulate burning of trash.	1
Require municipal sewer systems.	1
Reduce/control septic field discharge to lake from lakefront development.	1
<i>Subtotal</i>	<i>14</i>
TOTAL	171
CONTROL LITTER	
TRASH REMOVAL	
Prevent and control littering and enforce litter laws.	36
Plan and organize volunteer litter clean-ups in fall and spring.	18
Increase the number of trash cans and trash pick-up at access sites—easier access to dumpsters.	9
Institute severe penalties (large fines and jail time) for illegal dumping of waste and trash.	7
Use inmate labor to clean up litter.	5
Consider instituting very heavy fine, arrests, and publishing names of those who litter in the newspaper.	4
Control trash dumping and conduct cleanups along streams and creeks flowing into Norris.	3
Reinforce and reward neighborhood and community involvement-- Encourage non-profit groups and volunteers to assist in clean-up of lakeshore	3
Enforce anti-litter campaign (bottle bill).	2
Earmark littering fines collected and use the money for trash removal.	1
Prevent and control littering from by trailer campers from Indian River to Black Fox.	1
Need better trash disposal practices in VA and in TN counties that impact Norris Reservoir. Hancock, Clairborne, & Campbell have deplorable trash dumping.	1
Check parking areas (around Loyston Point) for trash and water pollution.	1
TVA should work to strengthen state laws concerning litter.	1
Close or develop the Murrayville Baptist Church area in La Follette because litter is causing problem and homes are being broken into.	1

Institute an adopt-a-shoreline similar to the adopt-a-highway program.	1
Initiate proactive, rather than reactive, public policy on watershed scales.	1
Increase monitoring around hill area where trash is being dumped.	1
Need zoning in counties surrounding Norris lake to prevent garbage from being dumped in feeder streams.	1
Need to take drastic measures to control litter in certain areas near Tazewell and surrounding communities.	1
Require camping permit which includes name, address, and driver license # and hold offenders accountable for littering.	1
Prevent fisherman from littering.	1
Stop the sale of bait in disposable containers.	1
Encourage land and marina owners to clean up banks when water is low.	1
Monitor side streams with help of conservation groups like TU.	1
Supervise campers more closely when they leave.	1
TOTAL	104
LIMIT DEVELOPMENT	
Limit commercial and residential development around the water.	25
TVA needs to buy more land that is already for sale around the lake to prevent it from being developed.	2
Plan shoreline and control shoreline clearing by developers.	2
Keep development out of drains near water bodies.	1
Preserve undeveloped areas by prohibiting development.	1
Prevent further over-population of the lake.	1
Do not allow additional marinas.	1
Discourage further industrial development in the Norris area.	1
Obtain wildlife area or state park status for a greater area so that it cannot be commercially developed.	1
Do not allow golf courses to build on the lake because they have too much runoff.	1
Frequently monitor the existing developments with added emphasis on new and proposed developments.	1
Any land that is released should be developed by TVA and then sold to the public with zoning and requirements already established to control the lake.	1
TOTAL	38
WATERCRAFT SAFETY/RESTRICTIONS	
Need laws requiring that personal water craft operators be at least 16 years old and complete a safe boating class.	3
Limit jet ski usage to one section of the lake or river	3
Enforce speed limits.	3
Regulate hours for boat usage to prevent overcrowding.	2
Limit the size of boats permitted on the lake.	2
Set up a check point and collect fees from jet skiers	2
Reduce boat speed around developed and residential areas.	1
Offer education on boating use.	1
Reduce the number of houseboats on the lake.	1
Ensure that out-of-state boaters follow TRWA rules rather than simply use and abuse the area and then leave it	1
Prevent overcrowding by large boats (cruises, etc.)	1
Control noise and nuisances caused by jet skis.	1
Ban jet skis.	1

Require permits for jet skiers.	1
Reduce the number of very loud boats.	1
Strictly inspect boats allowed on lake.	1
Reduce the number of floating trailer parks.	1
TOTAL	26
EDUCATION	
Conduct more public awareness campaigns regarding littering.	5
Hold community awareness programs to increase understanding of the watershed as an ecosystem. ("everyone lives downstream")	4
Need much more information from TVA on what we should do to make our lake cleaner and to slow pollution.	4
Institute a "save our rivers and lakes" campaign in schools.	2
Target boaters and campers with an ant-littering campaign.	1
Use schools to educate at an early age against littering.	1
Sponsor TV ads which show the results of highway littering.	1
Teach farmers how to prevent fertilizer runoff and soil erosion.	1
Conduct public "Clean up after yourself" campaign	1
Conduct boat safety and wildlife training for pleasure boaters	1
Increase public awareness of the effect that dumping has on wildlife	1
Conduct waste water workshops for boaters to raise awareness about discharging and acceptable alternatives.	1
Conduct workshops targeting developers to educate them about the destruction of native vegetation and its subsequent effect on water quality.	1
Conduct a public education project to work with Campbell county residents to improve their garbage practices.	1
Use promotional materials at public use areas to encourage people to clean up after themselves.	1
TOTAL	26
NATURAL RESOURCES	
Make better use of standard forestry practices.	3
Expand development of fish and wildlife habitats.	2
Protect natural areas.	2
Manage the existing natural resources.	2
Need more grass to hold soil in ditches and fields and some small dams to let soil settle out before it reaches the lake.	2
Encourage private landowners to plant vegetation strips along spring branches and creeks.	1
Stop strip mining.	1
Patrol and enforce laws against poaching and spot lighting deer and wildlife.	1
Improve management of fish by eliminating exotic species and striped bass.	1
Eliminate rock bass.	1
Protect wildlife.	1
Enhance and protect all of the Norris Lake watershed owned by TVA.	1
Plant more trees on TVA lands.	1
TOTAL	19

EROSION	
Control shoreline and bank erosion.	10
Apply stream/lake buffer zones (e.g. on each side of lake beginning at 1020 elevation and extending outward for 1 mile).	2
Control four wheelers which are destroying the banks and roads.	1
Limit size and speed of boats so they do not severely impact shoreline.	1
Ban jet skis.	1
Control erosion from dirt bikes, motorcycles, and ATVs on Island F.	1
Install rip rap.	1
TOTAL	17
MONITOR WATER	
WATER QUALITY	
Continuous testing of waters (lake, streams, etc.) to ensure water quality.	6
Continuous testing headwaters and tail water to ensure water quality control.	2
Look at influents and removal process to ensure a proper balance to maintain the lake as clear as it is.	1
Frequently monitor area streams and reservoirs. (Benthics, IBIs. Water quality)	1
Control pollution into Clinch River.	1
Check pollution levels around Sneedsville, measuring all effluent sources.	1
Prepare environmental assessment reports on existing developments with analysis on storm water discharge.	1
Implement and adhere to the NPDES (National Pollution Discharge Elimination System).	1
TVA should work to strengthen state laws concerning water quality	1
Scientific management of oxygen levels and other technical factors.	1
<i>Subtotal</i>	<i>16</i>
WATER LEVELS	
Need higher lake levels more often. (e.g., at or above 1000'). Lake levels are reduced too often and we can only use the lake for 2 months out of the year.	5
Prevent boat wakes from occurring so close to shore by keeping water levels higher.	2
<i>Subtotal</i>	<i>7</i>
TOTAL	23
FACILITIES	
Need better accessibility to pump-out stations.	3
Increase the number of full hook-ups at campgrounds to better accommodate campers.	1
Need recycling facilities for the entire Norris Lake watershed area	1
TOTAL	5
FEES	
Assess a tax on out-of-state/non-resident boaters and campers.	2
Implement a lake user fee for recreational users and property owners. Use the fees to improve public facilities, shoreline stabilization, or to help off-set the increase in cost of adding more state inspectors in order to do more frequent field checks.	1
Enforce TVA's SMP and fine those who do not comply.	1
Collect fines for inappropriate use of lake and streams.	1
TOTAL	5

RESTRICTIONS	
Restrict motorized vehicles around water.	1
Limit horses to designated areas.	1
Enforce regulations regarding private docks and building below 1044'.	1
Set limits on how many houseboats can be built and stored at marinas. The marinas are encroaching out into the lake.	1
TOTAL	4
RECREATION	
Transfer some areas to TWRA for public hunting access areas.	1
Need a state park in upper Norris	1
Need more structures for fishing and duck hunting.	1
Consider greater fishing only zones with low speed pass through by non-fishing vessels.	1
TOTAL	4
PERMITS	
Need better enforcement of ARAP permits, TCA 26A permits and VSACE 404.	1
TOTAL	1
PRIVILEGES AND RIGHTS	
Increase privileges given to landowners along the shoreline.	1
TOTAL	1

WHAT ARE YOUR PREFERENCES REGARDING MARINAS AROUND NORRIS LAKE?

COMMENT	NUMBER OF COMMENTS
MARINA MANAGEMENT	
Improve the management of marinas so that they are well-kept and modern and ensure that repairs and upgrades are made on a timely basis	10
Marinas failing to update their buildings, sewage pumping, and clean up parking areas should be fined.	3
Need more accessible pump-out stations	1
Need more competent personnel at marinas	1
Marinas need to be empowered to see that any floating houses and houseboats have holding tanks and that they are pumped out properly.	1
Supervise the management of the docks to ensure that they are clean and not damaging to the environment.	1
Allow unused TVA marina property for bid ("use it or lose it" clause)	1
Existing marinas should not encroach upon neighbors', landowners', and boaters' rights (e.g., blocking channels, cables, wires, etc.)	1
Marinas should be made to conform to some kind of aesthetic standards. They are the junkyards of Norris Lake. Commercial docks in other places are much more neat and clean than many facilities on Norris.	1
More public ramps are needed with access to bait, tackle, and fuel	1
TOTAL	21
BOAT RESTRICTIONS	
Limit large boats and buckeyes.	1
Restrict the number of houseboats and pleasure boats.	1
Boaters should not be allowed to park boats so far out into the main waterway.	1
There are too many boats not cleaning up after themselves.	1
Houseboats at most marinas need repairs.	1
TOTAL	5
LIMIT EXPANSION	
Halt marina expansion for a minimum of 10 years. Most marinas have plenty of open space within their existing boundaries. They should be required to fill in that open area before they are granted permits to expand.	1
Limit marina expansions	1
Limit the size of present and future marinas (present sizes are excellent)	1
TOTAL	3
IMPROVE ROADS	
No new roads but better access to existing roads.	1
TOTAL	1
LOWER FEES	
Lower prices for fuel, boat storage	1
TOTAL	1

WHAT DO YOU VALUE MOST ABOUT THE LANDS AND WATERS AROUND NORRIS LAKE?

COMMENT	NUMBER OF COMMENTS
APPEARANCE	
Scenic beauty of the shoreline and hills around the lake	106
Lack of development along the shoreline	78
Privacy, peacefulness, and remoteness of some of the areas	30
Emphasis on limiting development in order to conserve water quality and wooded areas	2
TOTAL	216
WATER QUALITY/CLEANLINESS	
Cleanliness of water and land	150
High water levels	5
Water levels are good	4
TOTAL	159
RECREATION	
Hunting & Fishing	27
Forests, state parks	22
Public access	15
Not overcrowded	13
Camping and hiking	9
Recreational opportunities and facilities	8
That they are public lands which buffer private development.	5
Boating	4
ATV and off road vehicles	2
Safety	2
Lack of jet and water skiing and tubing during the water months	1
TOTAL	108
NATURAL RESOURCES	
Wildlife	41
Good fish that are edible	3
Vegetation	2
TOTAL	46
UTILITY	
TVA personnel and administrators do a good job and are attentive to problems	2
Products produced	1
Agriculture	1
Erosion control	1
Purpose of the man-made lake and dam	1
Inexpensive power	1
TOTAL	7
NEEDS IMPROVEMENT	
Build a resort state park in Clairborne Little Sycamore Creek	1
Need nutrients for fish growth and need more habitat	1
Take steps to preserve the disappearing wildlife habitat	1
Need to stock more crappie. Help TRWA determine proper stocking levels.	1
Limit and restrict building and industry	1
We need to maintain the forests and natural areas as much as possible	1
ATVs and jeeps need access to bottom lane in winter	1
Let everyone pay to benefit from our historic waterways.	1
TOTAL	8

WHAT WILL BE THE MAJOR PROBLEMS OR ISSUES IN THE NEXT 10 YEARS?

COMMENT	NUMBER OF COMMENTS
WATER QUALITY	
Water quality	91
Water levels lowered too much and too early	29
<i>Subtotal</i>	<i>120</i>
POLLUTION AND WASTE MANAGEMENT	
Pollution	38
Boat waste	21
Agricultural waste	3
Industrial waste	5
<i>Subtotal</i>	<i>67</i>
<i>TOTAL</i>	<i>187</i>
DEVELOPMENT	
Too much commercial and residential expansion	76
Zoning and control of home building by code	1
Keep the dam in great condition	1
Ban multi-unit dwellings.	1
TVA selling too much land - no state park on Clinch River	1
Require any development of more than 3-5 homes be hooked up to a public sewer system.	1
<i>Total</i>	<i>81</i>
WATERCRAFTS	
Too much boat and /or jet ski traffic	30
Watercraft speed and safety	19
Jet-skis (need to be limited, too much noise)	13
Boats are too large for the size of the lake	3
Noise	3
Boat misuse	3
Jet-ski age limit should be increased and enforced	2
Commercial houseboat rentals	1
<i>Total</i>	<i>74</i>
NATURAL RESOURCES	
Loss of wildlife and fish habitats - improve habitat preservation	24
Destruction of vegetation and wooded areas; need better management of resources	8
Poor fish quality and excessive fishing for some species	5
No clear cutting of forests	3
Poaching	1
Hunting and camping	1
Lack of education about environmental issues	1
Water quality effect on zebra mussels	1
Effect of water level fluctuations on fish	1
Deer population	1
People trying to take hunting land away from our children	1
Inability to maintain a sufficient buffer of woods around the shoreline because owners cut down trees and are only assessed with minor fines.	1
<i>Total</i>	<i>48</i>

RECREATION	
Overcrowding	29
Need better management in balancing the needs of various lake users	3
Need more boat launches	2
Hunter safety (people are hunting too close to homes)	1
Unauthorized recreational activities (camping, use of 4 wheelers, etc.)	1
Public access for day users	1
Need more public boating opportunities like public boat rides to marina	1
Total	38
FACILITIES AND MAINTENANCE	
Litter	29
Need usage fee in order to fund preservation and maintenance	1
Growing population will need more facilities while preserving ecology	1
Sewage cleanup	1
Total	32

WHAT PROJECTS/ACTIVITIES ARE NEEDED TO PROVIDE CLEANER WATER IN NORRIS LAKE AND THE STREAMS THAT FLOW INTO IT? PLEASE EXPLAIN

COMMENT	NUMBER OF COMMENTS
WATER QUALITY AND APPEARANCE	
The water appears clean.	47
Water tests clean and free of pollutants most of the time	9
Good potability	7
Water quality has decreased	7
Swimming quality is OK and water seems clean	4
O2 levels are too low	2
Not enough monitoring sites, especially at major streams along the upper reaches of the Clinch and Powell arms of lake near towns and farms. Water quality is very poor.	2
Water is fair	2
Water is muddy and dark	2
Need some kind of aquatic plant life for a healthier water system	1
Water quality deteriorates rapidly in the summer	1
Jet skis cloud the water with silt	1
Decline in visual quality	1
Failed state water quality standards for oxygen, bottom life, and sediment	1
Coal Creek is always dirty and sometimes smelly	1
Need to maintain water level to bring back biological balance	1
The water doesn't appear to have suspended sediments after a hard rain. The lake is clear down to 15' below the surface.	1
Water quality needs improvement evidenced by brown scum on bottom of boat	1
New aquatic plants are growing in shallow areas in the last 2 years that weren't there before	1
Filaments, algae, and other aquatic forms are on the increase and may be due to nutrient enrichment	1
Can't drink water untreated	1
Underwater visibility is poor	1
Poor in the spring when lake is rising and flushing banks.	1
Erosion, sedimentation, and bacterial contamination reduce the water quality	1
TVA and TWRA have not increased monitoring of water quality as needed with the increase of watercrafts	1
On Monday mornings the foam floating on water indicated pollution (e.g., Pt3)	1
TOTAL	99
COMPARISON TO OTHER LAKES	
Norris is one of the cleanest lakes	55
Lack of development helps appearance and water quality	6
Noisy and congested - needs better management	3
Norris is fair relative to other area lakes	3
Not sure how it compares to other lakes	2
Better at times than LBL	1
Not so good Wild Management Areas.	1
Norris is the best in the area for activities	1
It is one of the most scenic	1
Norris is much better than the Ohio Lakes	1
TOTAL	74

POLLUTION/WASTE MANAGEMENT	
Control boat waste - current controls are inadequate	22
Limit agriculture run-off	11
Reduce industrial dumping and pollution from mining.	5
Eliminate public dumping	4
Get cows out of lake	3
Non-point source pollution problems are not being addressed and will dramatically increase with more development	3
Eliminate straight piping of sewage from residential areas	3
Litter control and clean up	2
Concerned about sewer treatment facilities polluting the water	2
Population growth is increasing pollution	2
Prevent fuel spills and dumping at marinas	1
Cove Creek is being harmed by the water treatment plant	1
Gas and oil pollution from boat motors	1
Most significant pollution sources are farms on the upper Clinch and coal mine run off on Powell.	1
Need addition controls on various discharging from factories, steam plants, farming observations, logging, and soil movement (strip mining, development, clean cutting timber, chip mills)	1
TOTAL	60
LITTER REMOVAL	
Littering is excessive and needs to be controlled	23
Surface trash needs to be removed	5
Use prisoners to clean up trash	1
Put fencing across stream to catch trash. It is not safe to navigate Powell River starting at marina 12 upstream due to trash.	1
Clean up in-flowing streams of debris and waste	1
Too much trash and waste is causing too much algae to grow on branches in water in the fall.	1
Establish recycle program and drop-off centers	1
TVA does not monitor 5-10 miles up the branch which is where 90% of the garbage comes from	1
TOTAL	34
VEGETATION/WILDLIFE	
Fishing is good and fish are edible	17
Fish are not edible	2
Poor fishing year round	1
Control contamination problems	1
Fishing for bass is low	1
Good diversity of fishes and few biological warnings regarding consumption	1
The number of endangered species has increased and non-native species are invading	1
Vegetation in watershed is adequate due to the steep terrain	1
The overall habitat seems healthy with no drastic decrease in any population	1
No cutting trees unless dead or diseased	1
Plant more water growing plants	1
TOTAL	28

NEEDS IMPROVEMENT	
Strive to improve water quality	9
Streams and tributaries strongly need emphasis in order to maintain and improve water quality	2
Clean up marinas and old houseboats	2
Limit large boats	1
TVA must buy some of the land that is for sale to prevent development and over-population of the area.	1
TVA is only concerned with generating more electricity to protect jobs	1
Prevent overcrowding	1
TOTAL	17
LIMITED DEVELOPMENT	
The lack of development and industry helps keep the water clean	8
Control residential and industrial development	1
Few industrial/municipal discharges compared to other lakes	1
TOTAL	10
EROSION	
Control erosion	4
Encourage buffer zones of vegetation along the lake fronts	2
Assist landowners in restoring riprap vegetation	1
Riprap shoreline	1
Poor erosion control – need new projects	1
TOTAL	9
EDUCATION	
Educate the public regarding litter control	2
Educate public on the unique biodiversity of the Powell and Clinch rivers and the need to protect this resource from pollution	2
Talk with marina owners and local citizens	1
TOTAL	5
MONITORING AND ENFORCEMENT	
Marinas or TRWA or someone has to monitor the dumping of raw sewage from houseboats and floating houses.	1
Lack of quality control on tributaries which feed into the lake	1
Have not seen much policing of the lake	1
When possible need to ticket those who litter	1
TOTAL	4
WATERCRAFT	
The lake has become overloaded with boaters of all types.	2
TOTAL	2

WILLINGNESS TO PARTICIPATE IN IMPROVING CONDITIONS

COMMENT	NUMBER OF COMMENTS
WILLINGNESS TO PARTICIPATE	
Unable to participate due to age or health	7
Interested but do not live in area	3
Willing to help	2
Willing to participate even though not a full-time resident	1
Unable to commit because it's too far away	1
TOTAL	14
LITTER CLEANUP	
Keep beach cleaned up	1
Clean up and mark hiking trails	1
Report to you the people that need to clean up their act	1
Need small barge or large pontoon in order to clean the lake while on the water	1
Will report boat numbers of those who litter if there is a central phone number to call and a letter could be sent to that boat owner.	1
Do our part to prevent pollution (keep up engines, pick up other boaters' trash	1
Watch for violations of people disposing of garbage in the lake.	1
Will properly dispose of wastes arising from pontoon activity	1
TOTAL	8
MANAGE NATURAL RESOURCES	
Working with TVA Quail Unlimited and the Wild Turkey Federation to improve wildlife habitat on the Norris watershed	1
Form coalitions to prevent mismanagement of resources	1
Installation of fish habitat.	1
Help with improving fish habitat and litter clean up	1
Be involved with habitat projects for wildlife	1
Help in fish stocking program - it is badly needed.	1
TOTAL	6
RESTRICT RECREATION	
Restrict the size and number of boats and jet skis	2
Participate in establishment of trained volunteer patrol of waterway (particularly in the management of jet ski safety)	1
To set up a program to open the dilapidated access roads to the shore because everyone doesn't own an ATV	1
TOTAL	4
LIMIT POLLUTION	
Develop option for farmers with cattle to prevent watering them in creeks and rivers.	1
Stricter pollution laws	1
Limit houseboats and floating houses	1
Closer monitoring for houseboat and dock waste	1
TOTAL	4
LIMIT/PLAN DEVELOPMENT	
Limit further development by private parties.	1
Build hiking or mountain bike trails	1
I would like to work in partnership with CPWT to develop a parcel of land in Sharp's Chapel for camping, biking, nature observation, and an outdoor classroom for schools in Union County.	1
TOTAL	3

RAISE WATER LEVELS	
Work on issues related to leaving the water level up longer.	1
Help convince TVA to raise lake levels in late summer and fall	1
<i>TOTAL</i>	2
EDUCATION	
Boater education	1
Educate old and young regarding litter and its effect on lake waters especially the danger of glass on the banks. Tough anti-litter law pertaining to creeks, rivers, and other waters.	1
<i>TOTAL</i>	2

Appendix II

Table of Comments: Public Meetings

WHAT DO YOU VALUE MOST ABOUT THE PUBLIC LANDS AND WATERS AROUND NORRIS LAKE?

COMMENT/THEME	FREQUENCY
BALANCE OF DEVELOPMENT AND NATURAL RESOURCES	
Wise use of natural/man-made resources	1
Mix between quality development and natural areas	1
<i>SUBTOTAL</i>	2
BOAT WASTE ENFORCEMENT	
Necessary rules for sewage dumping are in place	4
<i>SUBTOTAL</i>	4
CULTURAL PRESERVATION	
Preservation of cultural resources	1
<i>SUBTOTAL</i>	1
DEVELOPMENT	
INCREASED DEVELOPMENT	
Lake and land provide opportunities that would draw development to area	1
<i>SUBTOTAL</i>	1
INDUSTRIAL/COMMERCIAL DEVELOPMENT	
No TVA land used for industrial development	3
Low amount of commercial development	1
<i>SUBTOTAL</i>	4
LIMITED DEVELOPMENT	
Large quantities of protected/undeveloped land (shoreline) on Norris Reservoir—rural isolation	20
Should not encroach on public land	6
No development	3
Minimized development—development is regulated	3
Land and water is not crowded	2
Non-commercial development	1
<i>SUBTOTAL</i>	35
RESIDENTIAL DEVELOPMENT	
Lack of residential shoreline	2
<i>SUBTOTAL</i>	2
DOCKS/RAMPS	
Can have boat docks and direct access	3
Commercial docks	1
Boat ramps	1
<i>SUBTOTAL</i>	5
EROSION	
Uneroded shoreline and control of erosion	2
<i>SUBTOTAL</i>	2
FEES	
Free access	2
<i>SUBTOTAL</i>	2
LITTER CONTROL	
Rules for littering are in place	4
<i>SUBTOTAL</i>	4

LOCATION	
Location—it is convenient with interstate access	1
SUBTOTAL	1
NATURAL RESOURCES/WILDLIFE	
Variety of wildlife and aquatic life—unique biodiversity	14
Wildlife preservation	8
Pristine nature as a habitat for wildlife	5
Beauty of forested areas	4
Vegetative shoreline	2
Wildflowers	2
Planting drawdown zone with annual grasses	2
Freedom to enjoy natural resources	1
SUBTOTAL	38
LACK OF NOISE	
Peaceful and quiet/solitude	4
SUBTOTAL	4
RECREATION	
Variety of activities—not just one predominant activity (e.g., fishing)	11
Fishing	7
Public access	5
Hunting	5
Family recreation	4
Camping	3
Hiking	3
Picnic areas	1
Low density recreation	1
SUBTOTAL	40
SCENIC BEAUTY	
Beautiful, natural look	29
Cleanliness of land	4
Stunning beauty— islands, shoreline, trees	1
SUBTOTAL	34
SEWAGE SYSTEMS	
Sewage capacity	1
SUBTOTAL	1
TVA	
Presence of TVA and permitting role of TVA to control tree-cutting and preservation of natural beauty	2
TVA's managed development—control of shoreline	1
TVA's expertise to help solve problems	1
SUBTOTAL	4
VALUE AND ECONOMY	
Value of living on the lake	1
High property values—good investments	1
Money from tourism boosts the economic base of the region	1
SUBTOTAL	3
WATERCRAFT SAFETY/RESTRICTIONS	
Less large ocean-going boats with big waves	2
SUBTOTAL	2

WATER LEVEL	
Recreational and tourism value of high water levels	1
<i>SUBTOTAL</i>	<i>1</i>
WATER (QUALITY AND SUPPLY)	
Cleanliness of water—high water quality	36
Controlled point-source pollution	1
No fish consumption warnings	1
Water quality for fishing, hunting, scenery, and walking	1
Lake provides water for houses	1
Clean rivers and tributaries	1
<i>SUBTOTAL</i>	<i>41</i>

HOW COULD THE MANAGEMENT OF TVA PUBLIC LANDS BE IMPROVED?

COMMENT	FREQUENCY
AGRICULTURAL USE	
Eliminate agricultural license program to prevent land abuse cheaply	1
<i>SUBTOTAL I</i>	<i>1</i>
BALANCE OF DEVELOPMENT, RESOURCES, AND/OR RECREATION	
Put less emphasis on economic development and more on preserving natural resources	1
Balance economic tradeoffs between power production and recreational profit	1
<i>SUBTOTAL</i>	<i>2</i>
BOAT/RECREATIONAL WASTE ENFORCEMENT	
Better control of houseboat waste	7
Enforce sewage dumping into Norris Lake	2
Control human waste runoff from unregulated informal camping	1
Control oil, etc. emissions from boat motors	1
Enforce holding tanks	1
<i>SUBTOTAL</i>	<i>12</i>
CULTURAL PRESERVATION	
Control arrowhead removal	1
<i>SUBTOTAL</i>	<i>1</i>
DEVELOPMENT	
ALLOCATE LAND	
Allocate land for state park	3
<i>SUBTOTAL</i>	<i>3</i>
INDUSTRIAL DEVELOPMENT	
Limit industry	1
<i>SUBTOTAL</i>	<i>1</i>
LIMIT DEVELOPMENT	
No sale of public lands—leave land alone and protect from development/abuse	6
More monitoring of existing rules to control development	2
No more development	2
Keep Island F public	1
<i>SUBTOTAL</i>	<i>11</i>

DOCKS/MARINAS	
Upgrade current marinas before adding new ones	2
Better enforcement of houseboat docking outside marinas	1
Better inform new dock owners of rules and regulations	1
Restrict harbor limits—some are now too large	1
Need more flexibility working with marinas	1
<i>SUBTOTAL</i>	6
EDUCATION	
Need better communication and education about problems and concerns on public lands and waters (e.g., ad campaigns, radio spots, public service announcements)	10
Need school programs (like Clinch-Powell RC & D)—train children about litter	4
<i>SUBTOTAL</i>	14
EROSION	
Control shoreline erosion	4
Limit size of boats to control erosion	2
Eliminate erosion problems caused by 4-wheelers	2
Need demonstration projects using Best Management Practices—transferring technology on private lands particularly for shoreline erosion timber harvests	2
Need share programs for erosion prevention with bioengineering emphasis	2
TVA/TWRA/State/Federal/USACE provide grants to private landowners to treat site-specific shoreline erosion	1
Use more natural vegetation/planting to control shoreline erosion—increase fish habitat	1
Allow homeowners to take action stabilizing shoreline, preventing erosion (rearranging rocks riprap)—give tax credits to encourage this	1
Use more natural methods to control shoreline erosion	1
No riprap	1
<i>SUBTOTAL</i>	17
FACILITIES	
Land owners need to be allowed water use facilities (with a charge if needed)	2
Limit public road access	1
<i>SUBTOTAL</i>	3
FEES	
Lake user fees for all out-of-state users only	5
Charge for weekend use	1
Use fees for more enforcement	1
No fees are needed	1
Land usage fees will be needed	1
<i>SUBTOTAL</i>	9
LITTER CONTROL/MAINTENANCE	
Control litter—maintain clean shoreline	8
Need organized effort for public to maintain appearance and cleanliness of lake area	7
Issue more citations for littering and dumping (have boat docks hand out bags, camping permits, registration of dock)—increase fines	5
Clean/remove fallen trees in lake to alleviate accidents	2
Need regulations (that TVA regularly monitors) to reduce trash, clean boathouses, maintain boat docks	2

Control informal recreation areas for litter, trash, and waste	2
More designated campgrounds with trash containers would help	2
TVA dredge out areas	1
Remove violations and encroachments (e.g., dilapidated docks)	1
Close abused informal recreation areas	1
Publish citations for littering—need active enforcement	1
<i>SUBTOTAL</i>	<i>32</i>
NATURAL RESOURCES/WILDLIFE	
End logging—leave old growth alone	5
Need more vegetation/nutrients for fish habitat	4
Need wildlife management clearings—manage land for a wide range of wildlife habitat (e.g., native warm season grasses food plots)	4
Need more forestry and wildlife management	3
Don't end logging—some logging for habitat	2
Maintain wild pristine areas	2
Eliminate all man-made fish attractors	1
<i>SUBTOTAL</i>	<i>21</i>
PERMITS	
Need permit system in Big Creek	1
Make it easier for communities to get permission to use TVA land (e.g., fire station, parks)	1
<i>SUBTOTAL</i>	<i>2</i>
POLICE/SAFETY	
Better law enforcement on TVA land—more TVA officers	3
Need enforcement regarding weekend use and abuse	1
TVA should be given citation authority with corrective measures	1
<i>SUBTOTAL</i>	<i>5</i>
PUBLIC INVOLVEMENT	
Public ideas should be implemented (e.g., water levels)	3
Listen to homeowners and lake users	1
Form homeowners/lake user coalition to promote higher water levels	1
Communicate with the public	1
Need more public input on easement transfers	1
<i>SUBTOTAL</i>	<i>7</i>
RECREATION	
No ATVs on shoreline	2
Give all recreation a place—designate specific areas for specific uses	2
Improve land-based access to public lands (e.g., hiking, biking, beach)	2
More designated swimming areas to avoid conflict between swimmers and fishers	1
Need more public camping areas (even with fees)	1
Provide canoeing/kayaking places	1
Do not exceed recreational capacity	1
No hunting or shooting guns near subdivision and on hiking trails	1
More boat camping sites	1
Maintain large tracts of pubic land for nonmotorized vehicle use	1
<i>SUBTOTAL</i>	<i>13</i>

REGULATIONS/RESTRICTIONS	
Need more enforcement of existing regulations (e.g., fines for clear cutting)	3
Better inform public of rules and regulations on use of public land	1
Need good regulations about stripping shoreline and control of lawn— increase the fines	1
Variation in land-rights/land ownership should be better defined. Where is TVA land? How can it be used?	1
No local zoning	1
<i>SUBTOTAL</i>	7
SEWAGE SYSTEMS	
More vigorously enforce laws regarding the treatment of raw sewage (e.g., septic systems)	1
<i>SUBTOTAL</i>	1
SPEED LIMITS	
Establish no-wake zones (small coves) where appropriate for speed safety— need signs, buoys, etc.	2
Control watercraft speed	1
<i>SUBTOTAL</i>	3
TVA	
TVA, TWRA, and TDA need better coordination	3
Tennessee and Virginia need to work together	2
Better management of and interaction with commercial operators	1
Have TVA/TWRA spend more time in field—not doing paper work	1
TVA and TWRA should work together	1
TVA should enforce new SMI policy, especially regarding vegetation and dock sizes	1
Need a social/environmental justice focus by TVA—don't abuse the public trust	1
Have TVA personnel spend different times of the year out on Norris Lake for appreciation	1
Need cooperation between county, state, and TVA on county growth plan	1
<i>SUBTOTAL</i>	12
VALUE AND ECONOMY	
Look at land in plan that could be disposed of to private entities for economic impact to the community	2
Make decisions on public lands that don't devalue private land	1
<i>SUBTOTAL</i>	3
WATERCRAFT SAFETY/RESTRICTIONS	
No more regulations on personal watercraft than on any other boats	2
Limit jet skies—keep them out of some areas	2
Control size and number of watercraft—restrict watercraft	2
Better manage the grandfathered 4B boats	1
Require boat operators license	1
Maintain concern for water safety	1
Keep motorized boats out of some areas to help wildlife, erosion, etc.	1
<i>SUBTOTAL</i>	10

WATER LEVEL	
Maintain a constant water level	13
Maintain higher water levels longer (at least through Labor Day)	9
Accurately predict the water level	1
Water level should not rise to tree level—this contributes to soil erosion and loss of trees	1
Quick drawdown is a navigational hazard	1
Control water [level] to reduce mosquito population	1
<i>SUBTOTAL</i>	26
WATER QUALITY	
Regulate non-point pollution entering lake	3
Keep cattle out of the water	2
Continue monitoring water (and soil) quality	2
Need to know more about water quality before planning the land	1
<i>SUBTOTAL</i>	8

A WATERSHED IS THE LAND, USUALLY DEFINED BY RIDGES, THAT DRAINS RAIN AND SNOWMELT TO A LAKE, RIVER, OR OTHER WATERBODY. OVER THE NEXT TEN YEARS, WHAT WILL BE THE MAJOR LAND USE, WATER QUALITY, OR OTHER PROBLEMS AND ISSUES THAT MUST BE ADDRESSED WITHIN THE WATERSHED DRAINED BY THE CLINCH AND POWELL RIVERS, INCLUDING THE NORRIS LAKE WATERSHED?

COMMENT	FREQUENCY
AGRICULTURAL WASTE	
Livestock in creeks, tributaries, lake, rivers	3
Agricultural chemical runoff	2
<i>SUBTOTAL</i>	5
BOAT WASTE	
Human waste treatment at boat dock facilities—need more dollars for state inspections	2
Nonnavigable housboat issues	1
<i>SUBTOTAL</i>	3
CULTURAL PRESERVATION	
Disturbance of Native American Burial Grounds	1
<i>SUBTOTAL</i>	1
DEVELOPMENT	
INDUSTRIAL DEVELOPMENT	
Increased industrial development because of water availability	4
<i>SUBTOTAL</i>	4
OVER DEVELOPMENT	
Over development	6
Inappropriate development	2
Uncontrolled development in rural counties with no zoning and code enforcement	1
<i>SUBTOTAL</i>	9

RESIDENTIAL DEVELOPMENT	
Water pollution from residential development	3
Increase in residential development results in too many watercrafts	1
Need overall development plan for whole Powell Valley watershed to prevent homes on mountain tops that affect skyline	1
<i>SUBTOTAL</i>	<i>5</i>
EROSION	
Excessive erosion	4
<i>SUBTOTAL</i>	<i>4</i>
FEES	
Increase and fairness of fees	1
Pressure from need for fees decreasing public use areas	1
Lake user fees needed	1
<i>SUBTOTAL</i>	<i>3</i>
LITTER	
Increasing litter on lakes by campers	2
Litter washes into the lake in Spring	1
Disposal of household trash	1
<i>SUBTOTAL</i>	<i>4</i>
MARINAS	
We may build too many marinas that the lake can not support	1
<i>SUBTOTAL</i>	<i>1</i>
NATURAL RESOURCES/WILDLIFE	
Large scale logging—clear cutting impacts (e.g., runoff)	3
An unbelievable amount of land could be cut in Cove Creek and Clear Creek—private landowners are selling to chip mills	1
Keeping the fishery from having a “fish advisory” for eating	1
<i>SUBTOTAL</i>	<i>5</i>
NOISE	
Noise pollution	1
<i>SUBTOTAL</i>	<i>1</i>
OVER USE/POPULATION	
Increase of lake users	4
Inability to enforce responsible usage by weekend recreation users	2
Less natural resources due to population influx	1
Mismanagement of property (destroying land, erosion, pollution) by people leasing land for short-term	1
Determining the optimum density for water quality, safety, recreation, development	1
<i>SUBTOTAL</i>	<i>9</i>
POLICE	
Not enough TWRA/TVA enforcement officers on the lake	3
<i>SUBTOTAL</i>	<i>3</i>
SEWAGE SYSTEMS	
Septic tanks should not be on half-acre lots	1
<i>SUBTOTAL</i>	<i>1</i>
TVA	
TVA funding to maintain and improve lake	1
<i>SUBTOTAL</i>	<i>1</i>

WATERCRAFT USAGE	
Increase in watercraft use on the lake (especially jet skis)	3
Higher use of jet skis, especially be kids—destroys the peace of the lake	2
<i>SUBTOTAL</i>	5
WATER QUALITY	
Pollution—poor water quality (groundwater discharge, surface water runoff, nonpoint discharge)	6
Runoff from abandoned coal miners	2
Water will not be safe to drink	1
Pollution by boat traffic	1
Pollution from sewage	1
Waste from road runners	1
Pollution from industry	1
<i>SUBTOTAL</i>	13

HOW DO YOU THINK WATER QUALITY OF THE LAKE, RIVERS, STREAMS, AND TRIBUTARIES WILL CHANGE IN THE WATERSHED DRAINED BY THE CLINCH AND POWELL RIVERS (INCLUDING THE NORRIS LAKE WATERSHED) OVER THE NEXT FIVE TO TEN YEARS?

COMMENT	FREQUENCY
BOAT WASTE	
Need to monitor houseboat waste	3
It will get worse due to lack of enforcement of waste laws	1
<i>SUBTOTAL</i>	4
DEVELOPMENT	
Control development or water quality will decrease (e.g., decrease in riparian areas)	16
Industry could make it worse	4
Bacterial problems from shoreline use facilities (e.g., Powell Valley Campground)	1
Runoff from road construction	1
Increased suburbanization causes increased erosion, shoreline water temperatures, eutrophication, and general water quality deterioration	1
New development should not encroach on natural sinks or diverting surface runoff to natural drains	1
<i>SUBTOTAL</i>	24
EROSION	
Erosion will increase unless there is a bank stabilization program	2
<i>SUBTOTAL</i>	2
LITTER	
Reduced water quality due to dumping cars, batteries, tires because of laws that make disposal difficult (state laws have caused this problem)	1
Trash is coming down tributaries and headwaters streams	1
<i>SUBTOTAL</i>	2

NATURAL RESOURCES/WILDLIFE	
Impacts from logging (e.g., natural fertilizer will be disrupted)	3
Need to introduce exotic plant/animal species	1
<i>SUBTOTAL</i>	4
REGULATIONS	
Need tough regulations regarding pollution	1
<i>SUBTOTAL</i>	1
OVER USE/POPULATION	
Reduced water quality due to increased population	7
<i>SUBTOTAL</i>	7
SEWAGE SYSTEMS	
Failing septic tanks—need septic tank inspections	3
<i>SUBTOTAL</i>	3
TVA	
The public must get involved	4
You can't predict unless TVA begins acting on suggestions at this meeting—the land and water quality will only get worse	1
<i>SUBTOTAL</i>	5
WATERCRAFT USAGE	
Petroleum contamination from watercraft	4
Boats are too large—control horsepower	2
Increasing jet skis and boat use will result in increasing erosion, overuse, and litter	1
<i>SUBTOTAL</i>	7
WATER LEVELS	
Poor water quality because of extreme drawdown	6
<i>SUBTOTAL</i>	6
WATER QUALITY	
Reduced water quality	19
Without positive changes and enforcement, the water quality will get worse	2
Reduced quality due to drought and global warming	1
Poor water quality if other reservoirs are not cleaned up	1
Citizens need to start taking action or the water quality will get worse	1
Very poor if waste water treatment plants are not built	1
Heavy metals are the biggest concern	1
<i>SUBTOTAL</i>	26

Appendix III Questionnaire

Norris Lake Watershed Survey

1. For each activity that you participate in, please check the appropriate box to show how you use the land and waters around Norris Lake.

- | | |
|--|---|
| <input type="checkbox"/> Bicycle riding | <input type="checkbox"/> Golfing |
| <input type="checkbox"/> Mountain biking | <input type="checkbox"/> Hiking |
| <input type="checkbox"/> Use of public boat ramp | <input type="checkbox"/> Horseback riding |
| <input type="checkbox"/> Use of marina | <input type="checkbox"/> Hunting |
| <input type="checkbox"/> Pleasure boating | <input type="checkbox"/> Nature photography |
| <input type="checkbox"/> Sailing | <input type="checkbox"/> Off-road vehicles (ATV, Jeep, etc.) |
| <input type="checkbox"/> Jet skiing | <input type="checkbox"/> Picnicking |
| <input type="checkbox"/> Water skiing | <input type="checkbox"/> Swimming in designated areas (beach) |
| <input type="checkbox"/> Camping in developed area | <input type="checkbox"/> Swimming in undesignated areas |
| <input type="checkbox"/> Camping in non-developed area | <input type="checkbox"/> Wildlife observation |
| <input type="checkbox"/> Fishing | Other (please specify) _____ |

2. For each activity listed, please check the appropriate box indicating your preference for facilities on or around Norris Lake.

For Example:

Activity	Facility Preference			
	Need Less	Right Amount	Need More	No Opinion
Rafting		✓		
Bird watching				✓

Activity	Facility Preference			
	Need Less	Right Amount	Need More	No Opinion
Bicycle riding				
Mountain biking				
Boat ramp/boating				
Marina				
Pleasure boating				
Sailing				
Jet skiing				
Water skiing				
Camping in developed area				
Camping in non-developed area				
Fishing from the bank				
Fishing from a pier				
Fishing from a boat				
Golfing				
Hiking				
Horseback riding				
Hunting				
Nature photography				
Off-road vehicles (ATV, Jeep, etc.)				
Picnicking				
Swimming in designated areas				
Swimming in undesignated areas				
Wildlife observation				
Other (please specify)				

3. What projects/activities are needed to provide cleaner water in Norris Lake and the streams that flow into it?

[illegible]

4. Please check the box that best describes what you think about the future of marinas over the next 10 years.

- ☐ One additional marina is needed
- ☐ More than one marina is needed
- ☐ No new marinas are needed, but some existing marinas should expand their facilities
- ☐ No new marinas or expansions are needed
- ☐ No opinion
- ☐ Other (please specify)

5. For each land use, please check the box indicating your preference regarding the allocation of public land. For example, if you think the amount of development is about right, check the box indicated below.

Land Uses	Land Use Preference			
	Too Much Land	About Right Amount	Need More Land	No Opinion
State park area		✓		

Land Uses	Land Use Preference			
	Too Much Land	About Right Amount	Need More Land	No Opinion
Commercial recreation areas (commercially operated marinas, resorts, campgrounds, etc.)				
Resource management areas (forests, wildlife areas, etc.)				
Areas for state wildlife management areas				
Areas for state parks				
Sensitive resource areas wetlands, cultural, endangered species, etc.)				
Other purposes (please specify)				

6. Given \$100 to allocate to any or all of the activities listed below, write in the amount that should be spent.

For example: If you think \$55 should be allocated to your top priority activity, put \$55 in the allocation column for that activity. Be sure the dollar amounts total to \$100.

Issues	Allocation (\$0 – \$100)
Your top priority activity	\$55
Your next priority activity	\$45

Note: continue putting dollar amounts in the right column until you have “spent” the entire \$100.

Issues	Allocation (\$0 – \$100)
Improve recreational access and facilities	
Erosion control	
Improve wildlife habitat	
Work with private landowners to clean up/prevent impact to water quality	
Provide industrial/economic development opportunities	
Trash/litter clean-up	
Monitor water quality conditions	
Address houseboat waste issue	
Help farmers minimize agricultural impact to water quality	
Work with private landowners to improve forestry practices	
Other please specify) _____	

\$100 Total

7. What do you value most about the lands and waters around Norris Lake? _____

8. Over the next ten years, what will be the major problems or issues that must be addressed regarding the Norris Lake Watershed? _____

9a. How would you rate the quality of the water in Norris Lake and the streams that flow into it?

☐ Good

☐ Fair

☐ Poor

9b. Please explain why you gave this rating. _____

10. In what ways would you like to participate in improving the conditions of the Norris Watershed?
Check all the boxes that apply.

☐ Help start a watershed coalition

☐ Plant food plots for wildlife

☐ Be involved in a watershed coalition

☐ Participate in erosion control/prevention activities

☐ Help in litter clean-up activities

☐ Make a commitment to properly dispose of houseboat waste

☐ Other (s) (Please specify) _____

Please return your survey to: Tennessee Valley Authority
Clinch/Powell Watershed Team
17 Ridgeway Road
Norris, TN 37828
Phone: (423) 632-1636

Thank you for participating with us. If you would like to be added to the mailing list to receive more information about the Norris Watershed activities, the results of the survey, and other related issues, please fill in your name and complete mailing list. Your name will never be published with any of your answers. We may, however, call on people to help with projects based upon the answer to question 10.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

TELEPHONE _____

APPENDIX A-3 PARCEL INFORMATION MATRIX

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
1	2	6.29	Existing TVA operations.	Forestry Research	1
2	3	10.54	Sensitive plant resources were found on this parcel.	Forestry Research	1
3	4	246.05	Capable and suitable for sustaining natural resource-based activities.	Forestry Research	1
4	6	13.24	This is the location of the Miller Island boat launching ramp and parking area.	Forestry Research	1
5	3	60.04	Capable and suitable for sustaining natural resource-based activities. A TVA Natural Area exists on this parcel to protect a vigorous population of Kentucky rosin-weed. TVA will work with the City of Norris to ensure the protection of this population.	Forestry Research	1
6	2	903.74	Existing TVA operations - Norris Dam Reservation. Three Natural Areas exists on this parcel.	Norris Dam Reservation	1
7	4	456.49	Capable and suitable for sustaining natural resource-based activities. A TVA Natural Area exists on this parcel.	Public Recreation	1
8	6	83.46	This parcel fronts Norris Dam State Park.	No Prior Forecast	1
9	3	5.65	Sensitive cultural, wetlands, and visual resources were found on this parcel.	Reservoir Operations - Islands	1
10	3	73.81	Sensitive cultural and plant resources were found. A TVA Natural Area exists on this parcel. on this parcel.	Public Recreation	1
11	6	2.19	This site is a TVA developed boat launching ramp and parking area.	Public Recreation	1
12	4	99.71	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	1
13	3	120.39	Sensitive visual, cultural, and plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation	1

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
14	7	2.70	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
15	4	97.90	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
16	7	33.54	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
17	3	14.22	Sensitive visual, aquatic, and wetland resources were found on this parcel.	Reservoir Operations - Islands	1
18	6	6.02	This is an undeveloped TWRA access site.	Public Recreation	1
19	4	160.81	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	1
20	7	16.25	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
21	6	3.11	This is the site of Twin Cove Marina.	No Prior Forecast	1
22	4	2.15	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	1
23	7	1.26	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
24	4	51.76	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
25	6	136.48	This parcel fronts Cove Lake State Park.	Public Recreation	1
26	6	4.51	This parcel has constructed ball fields and Caryville community buildings.	Reservoir Operations	1
27	4	17.25	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
28	2	3.83	Existing TVA operations.	Reservoir Operations	1
29	7	9.75	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
30	7	4.81	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
31	6	5.29	This is an undeveloped TWRA access site.	No Prior Forecast	1
32	7	3.51	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
33	3	167.38	Sensitive plant resources were found on this parcel.	Public Recreation	1
34	4	385.46	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
35	6	3.69	This parcel fronts a TWRA access site. A TVA Natural Area exists on this parcel for the protection of population of Kentucky Rosin-weed occurring within an existing TWRA easement. TVA will work with the TDEC and TWRA to ensure protection of this population.	No Prior Forecast	1
36	3	18.96	Sensitive plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation	1
37	6	5.22	This parcel fronts a TWRA access site.	Public Recreation	1
38	7	23.42	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
39	6	1.92	This parcel fronts a TWRA access site.	No Prior Forecast	1
40	4	119.87	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
41	3	97.90	Sensitive visual resources were found on this parcel.	Public Recreation	1
42	7	21.09	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
43	6	2.88	This is an undeveloped TWRA access site.	No Prior Forecast	1

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
44	4	3.25	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
45	7	15.15	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
46	4	114.52	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
47	6	1.82	This is an undeveloped TWRA access site.	Public Recreation	1
48	7	30.34	Private water use facilities and other residential shoreline alteration requests are considered.	Public Recreation	1
49	6	1.46	This is an undeveloped TWRA access site.	Public Recreation	1
50	6	5.66	Indian River Marina is located on this parcel.	Public Recreation	1
51	4	660.63	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations - Islands	1
52	3	89.87	Sensitive plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation	1
53	6	70.11	This parcel is currently being operated as Campbell County Park.	Public Recreation	1
54	7	0.76	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
55	4	12.84	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
56	6	1.01	This parcel fronts a TWRA access site.	No Prior Forecast	1
57	4	6.36	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
58	6	22.18	This parcel has a 30-year easement for ball field construction by the city of LaFollette.	Public Recreation	1

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
59	4	8.42	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
60	4	45.13	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
61	3	0.95	Sensitive wetland resources were found on this parcel.	Public Recreation	1
62	3	9.07	Sensitive visual, cultural, and plant resources were found on this parcel.	Public Recreation	1
63	4	62.06	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
64	3	1.96	Sensitive visual resources were found on this parcel.	Reservoir Operations - Islands	1
65	4	531.52	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
66	6	6.97	Whitman Hollow Dock is located on this parcel.	Public Recreation	1
67	4	177.22	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
68	3	150.57	Sensitive visual resources were found on this parcel.	No Prior Forecast	1
69	7	65.50	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
70	7	36.96	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
71	4	11.24	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	1
72	4	588.39	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
73	3	27.48	Sensitive cultural, plant, and animal resources were found on this parcel.	Public Recreation	1
74	3	83.68	Sensitive cultural and plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation	2

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
75	4	55.40	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
76	4	3.60	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
77	6	14.69	This property fronts land owned by the Blue Ridge Council of the Boy Scouts of America.	No Prior Forecast	2
78	3	154.20	Sensitive visual resources were found on this parcel.	Public Recreation	2
79	7	29.11	Private water use facilities and other residential shoreline alteration requests are considered.	Reservoir Operations	2
80	6	8.23	Rainbow Marina and Resort is located on this parcel.	Reservoir Operations	2
81	3	1.50	Sensitive visual and cultural resources were found on this parcel.	Reservoir Operations - Islands	2
82	3	107.58	Sensitive plant and wetland resources were found on this parcel.	Public Recreation	2
83	4	516.08	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
84	6	5.79	This parcel fronts land sold to the Ministers and Orphanage Camp for recreation purposes.	No Prior Forecast	2
85	7	1.16	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
86	7	31.42	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
87	6	6.88	ShanghaiResort is located on this parcel..	No Prior Forecast	2
88	7	55.21	Private water use facilities and other residential shoreline alteration requests are considered.	Commercial Recreation	2
89	4	97.33	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	2

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
90	4	1.23	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	2
91	6	6.85	This parcel fronts a TWRA access site.	No Prior Forecast	2
92	7	2.82	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
93	4	42.78	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
94	6	14.22	This is an undeveloped TWRA access site.	No Prior Forecast	2
95	4	16.77	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	2
96	4	13.57	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	2
97	6	0.64	This parcel fronts a TWRA access site.	No Prior Forecast	2
98	7	19.47	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
99	6	6.38	This is an undeveloped TWRA access site.	No Prior Forecast	2
100	6	5.89	This parcel fronts a TWRA access site.	No Prior Forecast	2
101	4	1.17	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	2
102	4	4.93	Capable and suitable for sustaining natural resource-based activities.	No Forecast	2
103	4	1551.68	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations, Reservoir Operations - Islands, Wildlife Management	1
104	4	6.53	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	2

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
105	7	72.45	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
106	4	0.59	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
107	6	3.04	This parcel fronts a TWRA access site.	Reservoir Operations	1
108	7	8.75	Private water use facilities and other residential shoreline alteration requests are considered.	Reservoir Operations	1
109	6	19.22	Powell Valley Resort is located at this site.	Reservoir Operations	1
110	4	48.46	Capable and suitable for sustaining natural resource-based activities.	Wildlife Management	1
111	4	0.18	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	1
112	6	5.68	This parcel fronts a TWRA access site.	Public Recreation	1
113	4	3.07	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	1
114	4	8.69	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	1
115	6	2.49	This is an undeveloped TWRA access site.	Public Recreation	1
116	4	5.15	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	1
117	7	9.71	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
118	6	6.59	Flat Hollow Marina is located at this site.	No Prior Forecast	1
119	7	7.50	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	1
120	4	15.76	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	1

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
121	4	2147.02	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
122	3	57.37	A TVA Small Wild Area exists on this parcel.	TVA Small Wild Area	3
123	3	145.11	A TVA Small Wild Area exists on this parcel.	Public Recreation, TVA Small Wild Area	3
124	6	7.40	Blue Springs Boat Dock is located on this parcel.	No Prior Forecast	2
125	7	8.84	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
126	7	4.34	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
127	6	9.43	Union County Boat Dock is located on this parcel.	No Prior Forecast	3
128	3	2.41	Sensitive wetland resources were found on this parcel.	No Prior Forecast	3
129	7	12.59	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
130	4	6.65	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
131	4	491.13	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
132	3	167.95	Sensitive visual resources were found on this parcel.	Public Recreation	3
133	4	11.08	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
134	4	8.54	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
135	4	8.19	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
136	4	6.25	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
137	3	62.46	Sensitive visual resources were found on this parcel.	Power Transmission System	3
138	4	1.09	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
139	7	14.30	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
140	6	0.52	Greasy Hollow Boat Dock is located on this parcel.	No Prior Forecast	3
141	4	109.32	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
142	4	6.29	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
143	4	145.19	Capable and suitable for sustaining natural resource-based activities.	Power Transmission System	3
144	6	4.10	This parcel fronts a developed TWRA access site.	Reservoir Operations	3
145	3	67.71	Sensitive visual, plant, and animal resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation, Reservoir Operations	3
146	3	216.10	Sensitive visual and plant resources were found on this parcel.	Public Recreation	3
147	4	60.70	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
148	4	220.43	Capable and suitable for sustaining natural resource-based activities.	Power Transmission System	3
149	6	19.99	This parcel fronts a TWRA access site.	No Prior Forecast	3
150	4	716.31	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
151	3	104.56	Sensitive visual resources were found on this parcel.	Power Transmission System	3
152	6	7.45	This is an undeveloped TWRA access site.	No Prior Forecast	3

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
153	4	265.57	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
154	3	16.36	Sensitive plant resources were found on this parcel.	No Prior Forecast	3
155	4	8.73	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
156	4	53.45	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
157	3	455.74	Sensitive visual resources were found on this parcel.	Public Recreation	3
158	7	23.30	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
159	6	25.39	A portion of this parcel will be licensed to TWRA for boat launching ramp and parking lot.	Reservoir Operations	3
160	4	5.64	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
161	7	30.99	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
162	4	662.29	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	2
163	4	97.32	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
164	4	2.70	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
165	4	22.81	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
166	3	12.77	Sensitive wetland resources were found on this parcel.	Public Recreation	3
167	4	25.82	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
168	4	43.23	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	3

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
169	4	0.83	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
170	4	43.82	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
171	7	243.46	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
172	4	328.49	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	3
173	3	16.73	Sensitive cultural resources were found on this parcel.	Reservoir Operations	3
174	4	120.74	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	3
175	2	4.02	Existing TVA operations.	Public Recreation	3
176	6	56.27	Union County, Tennessee, has a 30-year recreation easement on this parcel.	Forestry Research, Public Recreation, Reservoir Operations	3
177	6	11.90	Lakeview Boat Dock is located on this parcel.	Reservoir Operations	3
178	6	17.45	This is an undeveloped TWRA access site.	No Prior Forecast	3
179	7	3.45	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
180	3	9.80	Sensitive cultural resources were found on this parcel.	Public Recreation	3
181	3	187.13	Sensitive visual, cultural, and plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Public Recreation, Reservoir Operations - Islands	3
182	3	161.87	Sensitive cultural and plant resources were found on this parcel. A TVA Natural Area exists on this parcel.	Reservoir Operations - Islands	3
183	6	16.92	This parcel fronts a TWRA access site.	No Prior Forecast	3

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
184	7	2.10	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
185	4	351.12	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
186	6	8.38	This parcel fronts a TWRA access site.	Public Recreation	3
187	3	13.74	Sensitive cultural, plant, and wetland resources were found on this parcel.	Public Recreation	3
188	6	81.59	This parcel has been identified as a new developed recreation area.	Public Recreation	3
189	4	218.65	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
190	6	58.56	Cedar Grove Marina and campground is located on this parcel.	Public Recreation, Reservoir Operations	3
191	4	0.77	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
192	2	0.80	Existing TVA operations.	No Prior Forecast	3
193	7	39.38	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
194	4	282.84	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations - Islands	3
195	6	10.20	Straight Creek Boat Dock is located on this parcel.	Public Recreation	4
196	6	10.39	This parcel fronts a TWRA access site.	No Prior Forecast	4
197	4	15.31	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
198	4	5.38	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
199	3	59.45	Sensitive cultural and visual resources were found on this parcel.	Public Recreation	4
200	4	18.12	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
201	6	6.57	This parcel fronts a TWRA access site.	No Prior Forecast	4
202	4	406.69	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	4
203	3	121.97	Sensitive visual resources were found on this parcel.	Public Recreation	4
204	7	183.72	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
205	4	176.49	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	4
206	6	3.99	This parcel fronts a TWRA access site.	No Prior Forecast	4
207	3	13.12	Sensitive visual resources were found on this parcel.	Reservoir Operations - Islands	4
208	4	59.41	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Steam Plant Study	4
209	6	65.38	Claiborne County has a 30-year easement on this parcel for recreation. Part of this parcel is also transferred to TWRA and Lone Mountain Boat Dock is located on this parcel.	Reservoir Operations	4
210	4	1.01	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
211	4	40.26	Capable and suitable for sustaining natural resource-based activities.	Steam Plant Study	4
212	3	345.62	Sensitive plant resources were found on this parcel.	Steam Plant Study	4
213	4	140.01	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
214	3	8.82	Sensitive cultural resources were found on this parcel.	Public Recreation	4
215	4	14.21	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
216	3	194.87	Sensitive cultural, animal, and wetland resources were found on this parcel.	Public Recreation	4

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
217	6	11.65	This parcel fronts a TWRA access site.	Public Recreation	4
218	4	33.92	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	4
219	3	20.87	Sensitive cultural and wetland resources were found on this parcel.	Public Recreation	4
220	6	0.75	This parcel fronts a TWRA access site.	No Prior Forecast	4
221	4	0.71	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	4
222	4	22.59	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	4
223	3	83.85	Sensitive wetland resources were found on this parcel.	Reservoir Operations	4
224	4	6.79	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
225	3	75.34	A TVA Small Wild Area exists on this parcel.	Reservoir Operations, TVA Small Wild Area	4
226	4	735.45	Capable and suitable for sustaining natural resource-based activities.	Forestry Research, Public Recreation, Reservoir Operations, Steam Plant Study	4
227	3	18.34	Sensitive visual resources were found on this parcel.	Steam Plant Study	4
228	4	83.95	Capable and suitable for sustaining natural resource-based activities.	Commercial Landing, Steam Plant Study	4
229	3	45.53	Sensitive visual resources were found on this parcel.	Commercial Landing, Public Recreation, Steam Plant Study	4
230	3	85.34	Sensitive visual and animal resources were found on this parcel.	Public Recreation, Reservoir Operations	4
231	3	63.97	Sensitive visual resources were found on this parcel.	Public Recreation	4
232	4	119.44	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
233	4	15.81	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
234	6	8.94	This parcel fronts a TWRA access site.	Public Recreation, Reservoir Operations	4
235	3	0.88	Sensitive aquatic animal resources were found on the parcel.	No Prior Forecast	4
236	7	5.39	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
237	4	161.60	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
238	4	0.48	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
239	3	45.66	Sensitive wetland resources were found on this parcel.	Reservoir Operations	4
240	7	1.36	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
241	6	7.04	This parcel fronts a TWRA access site.	No Prior Forecast	4
242	4	1.05	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4
243	4	38.27	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
244	4	9.84	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	4
245	3	49.57	Sensitive visual resources were found on this parcel.	Public Recreation	4
246	7	25.68	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
247	4	19.10	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	4
248	7	38.27	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
249	4	4.51	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	4

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
250	4	344.26	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
251	3	91.34	Sensitive visual resources were found on this parcel.	Public Recreation	4
252	7	5.52	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
253	4	264.16	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
254	3	156.30	Sensitive visual, cultural, plant, and wetland resources were found on this parcel.	Public Recreation	4
255	6	1.75	Grainger County, Tennessee, has a license agreement on this parcel for recreation.	Public Recreation	4
256	6	2.70	This parcel fronts a TWRA access site.	Public Recreation	4
257	4	355.98	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
258	3	57.74	Sensitive visual resources were found on this parcel.	Public Recreation, Reservoir Operations - Islands	4
259	6	5.84	This parcel fronts a TWRA access site.	No Prior Forecast	4
260	7	26.48	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	4
261	6	11.94	This parcel fronts a TWRA access site.	No Prior Forecast	4
262	7	72.36	Private water use facilities and other residential shoreline alteration requests are considered.	Reservoir Operations	4
263	4	4.54	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	4
264	3	51.70	Sensitive visual resources were found on this parcel.	Power Transmission System	4

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
265	4	24.06	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	4
266	3	37.91	Sensitive visual resources were found on this parcel.	Public Recreation	4
267	4	264.89	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations - Islands	3
268	7	22.65	Private water use facilities and other residential shoreline alteration requests are considered.	Reservoir Operations	3
269	4	49.27	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	3
270	6	20.55	This parcel fronts a TWRA access site.	No Prior Forecast	3
271	4	0.53	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
272	4	13.47	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations	3
273	7	7.61	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
274	4	125.67	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
275	6	45.62	Pennington's 33 Bridge Marina is located on this parcel.	Public Recreation, Reservoir Operations - Islands	3
276	3	12.57	A TVA Natural Area exists on this parcel.	TVA Small Wild Area	3
277	4	224.22	Capable and suitable for sustaining natural resource-based activities.	Forestry Research, Public Recreation, Reservoir Operations - Islands	3
278	7	27.68	Private water use facilities and other residential shoreline alteration requests are considered.	Reservoir Operations	3
279	3	8.48	Sensitive visual resources were found on this parcel.	Reservoir Operations - Islands	3
280	4	14.34	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
281	7	10.87	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
282	4	1.10	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	3
283	6	6.79	This parcel fronts a TWRA access site.	No Prior Forecast	3
284	7	0.44	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
285	4	191.01	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	3
286	4	61.46	Capable and suitable for sustaining natural resource-based activities.	Public Recreation, Reservoir Operations	3
287	4	518.38	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	3
288	7	23.57	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	3
289	4	75.83	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	3
290	4	1.43	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	3
291	7	8.42	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
292	3	119.68	Sensitive visual resources were found on this parcel.	Reservoir Operations - Islands	2
293	6	10.50	This parcel is the site of Hickory Star Marina.	Reservoir Operations	2
294	6	283.09	This parcel fronts Big Ridge State Park. There is also a TWRA access site located on this parcel.	No Prior Forecast	2
295	4	5.50	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
296	4	56.89	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
297	6	132.62	This parcel fronts Tanasi Council Girl Scout Camp.	No Prior Forecast	2
298	7	6.76	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
299	4	9.02	Capable and suitable for sustaining natural resource-based activities.	No Prior Forecast	2
300	7	26.48	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
301	6	8.73	Andersonville Boat Dock is located on this parcel..	No Prior Forecast	2
302	2	15.82	Existing TVA operations.	Reservoir Operations	2
303	4	186.50	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
304	7	19.65	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
305	6	7.03	This is an undeveloped TWRA access site.	No Prior Forecast	2
306	4	1280.78	Capable and suitable for sustaining natural resource-based activities.	Public Recreation	2
307	6	204.59	This parcel is currently operated as TVA Loyston Point Public Use Area.	Public Recreation	2
308	3	176.73	A TVA Natural Area exists on this parcel.	Public Recreation, TVA Small Wild Area	2
309	4	8.07	Capable and suitable for sustaining natural resource-based activities.	Reservoir Operations - Islands	2
310	6	24.15	Stardust Resort and Marina is located on this parcel.	No Prior Forecast	2
311	6	38.13	Anderson County Park is located on this parcel.	No Prior Forecast	2

Appendix A-3 Parcel Information Matrix					
Parcel No.	Zone Allocation	# Acres	Reason for Allocation	Prior Forecast Designation	Map Panel
312	7	6.25	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
313	7	68.01	Private water use facilities and other residential shoreline alteration requests are considered.	No Prior Forecast	2
314	6	0.59	This parcel fronts a TWRA access site.	No Prior Forecast	2
315	6	5.29	Sequoyah Lodge and Marina, Inc. is located on this parcel.	No Prior Forecast	2

APPENDIX A-4 - TVA RESPONSE TO COMMENTS AND LETTERS

Name/Organization	Comment and TVA Response
Carol Forman	<p>1. Comment - I have read your plan and fully support Alternative B. The amount of time and work put into this report is impressive. The maps and data demonstrate visionary thinking. On page 26, 3.15 Commitments 1 regarding BMP forest management I think a little clarification would be helpful to explain timber harvesting by TVA. Are you talking iselect cut? or iclear cut? I have negative thoughts on clear cutting. I would also be interested in what the timber is used for and who would do the harvest. I received by packet at the Campbell County Chapter of Friends of Norris Lake Watershed.</p> <p>TVA Response - The majority of TVA timber harvesting would be regeneration harvests, commonly referred to as clear-cutting. Best Management Practices (BMPs) include erosion control measures, streamside management zones, and other environmental protection features. Site-specific impacts of harvests would be discussed in individual unit plans. In addition, harvests would be limited to 20 acres in size to minimize environmental impacts. Our goal in forest management is to regenerate a healthy and diverse forest that will create wildlife habitat diversity. The tree species that are generally managed through harvesting are oaks and shade intolerant species which do not regenerate adequately under the sunlight conditions created by selective harvesting. Oaks are an important wildlife food and are declining in the eastern forests, partially because of selective (high-grade) harvesting. Selective systems also require reentering the forest several times over the rotation of the forest, which causes increased erosion from reopening road cuts for each entry. During the 1970s, 39 million board feet of timber was cut on Norris Reservoir by selective harvests. As a result of those harvests, forests on Norris Reservoir are often understocked, with poor quality growing stock. Since the 1970s, timber harvests on Norris Reservoir land have declined greatly: from 1980-1989, 922 acres were cut, while from 1990-1999 only 351 acres were cut. Considering the Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) land total 23,776 acres, the last 10 years harvests (351 acres), would put the rotation age of Norris Reservoir forests at 679 years. Therefore, TVA believes clear-cutting is a necessary management tool for the health of the forest.</p> <p>Most timber harvests are sold through a sealed bid process in which the highest bidder receives the contract. TVA uses an extensive sale contract, administered and supervised by the regional forester, which includes stringent requirements regarding BMPs, safety, property damage, silvicultural guidelines, and liability. Most of the sawtimber harvested from TVA public land is high quality and is used for furniture, cabinets, and flooring. Other products include pallets, crossties, and wood chips for paper and oriented strand board (OSB). OSB is a flake board, a wood composite that comes in 4x8 sheets and is used for roof decking and other construction.</p>
John Young LaFollette, TN	<p>2. Comment - Do not agree with allocation of Parcel 72. School House Point should have maintained road. We need the road fixed to Schoolhouse Point and the primitive boat launch there improved.</p> <p>TVA Response - Roadways are not incompatible with Natural Resource Conservation (Zone 4) designation. Land in Natural Resource Conservation (Zone 4) are managed for the enhancement of natural resources for human use and appreciation. Parcel 72 is heavily used for informal camping and other dispersed activities. The need for road improvement will be determined when unit plans for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4) parcels are developed. Boat ramps are incompatible with Natural Resource Conservation (Zone 4) zone..</p>

Name/Organization	Comment and TVA Response
John Young - continued	<p>3. <u>Comment</u> - Do not agree with Parcel 87 allocation. Change entire shoreline to recreation or wildlife management area.</p> <p><u>TVA Response</u> - Parcel 87 is currently proposed as Developed Recreation (Zone 6) (see definition for Zone 6 in Table 2-4 Planned Land Use Zone Definition, pg. 17). The land fronting (adjacent to) this parcel was originally sold for commercial recreation purposes. Today that private land adjacent to Parcel 87 is serving as Shanghai Resort, which is one of 23 marinas on Norris Reservoir.</p> <p>4. <u>Comment</u> - Do not agree with Parcel 88 allocation. Change to Recreation. The cove behind Shanghai should be for recreation or wildlife.</p> <p><u>TVA Response</u> - Parcel 88 is zoned Residential Access (Zone 7) because backlying property owners have deeded rights of ingress and egress to and from the waters of Norris Reservoir. Based on the shoreline management decision of 1999, these property owners also have the right to apply to TVA for private water use facilities. Although the land behind Shanghai Resort is privately owned, the cove can be used for recreation and wildlife.</p> <p>5. <u>Additional Comments</u> - There is not a launch site from Whitman Hollow to Rainbow Marina. There is a primitive site at School House Point, but you have to have an ATV (which should be outlawed along all shoreline). There is absolutely too much residential areas in the whole area from Rainbow Marina to Shanghai and Deerfield, Cove Pointe, Racetrack, Big Creek 1-2-3-4. Save the lakeshore for the future generations of the public. The lake has become a cluttered up and urban ugliness. Ramshackle boathouses, clear cut lawns, septic tanks on goat cliffs.</p> <p><u>TVA Response</u> - There are two zones where residential development could potentially occur, Non-TVA Shoreland (Zone 1) and Residential Access (Zone 7). Combining these two zones, it is possible that almost 33 percent of the total shoreline (264 miles) around Norris Reservoir could be developed for residential access (see Section 2.2). Approximately half of that shoreline is currently developed. To offset negative impacts associated with such alterations, TVA has categorized the residential (Residential Access, Zone 7) and flowage easement (Non-TVA Shoreland, Zone 1) shoreline. The Norris Plan (Alternative B) does not propose to add any additional land to Residential Access (Zone 7). Residential Access (Zone 7) has 131 miles and Non-TVA Shoreland (Zone 1) has 133 miles of shoreline. In accordance with TVA's Shoreline Management Policy, TVA categorized the shoreline on Norris Reservoir based on resource data collected from field surveys of sensitive species and their potential habitats, archaeological resources, and wetlands along those stretches of shoreland (see Section 2.2). This categorization will help offset negative impacts associated with shoreline alterations in Non-TVA Shoreland (Zone) and Residential Access (Zone 7).</p> <p>6. <u>Additional Comments:</u> We need more habitat improvements (such as food plots). Also, the field in the cove behind Shanghai all of it should be changed to recreation. Quite a few people use that area for camping, fishing, picnicking. There is a good accessible road there and a primitive boat launch for small car top boats. The field is a good game food plot and for ducks).</p>

Name/Organization	Comment and TVA Response
John Young - continued	<p><u>TVA Response</u> - There is no TVA public land behind Shanghai Resort. Natural Resource Conservation (Zone 4) land is available for these uses. A total of 85 percent of the TVA public land around Norris Reservoir is proposed for Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4). These are areas where habitat improvement projects, such as food plots, are and would continue to occur. Currently, TVA cooperates with a host of organizations and agencies to accomplish such projects.</p> <p><u>7. Additional Comments:</u> I can't see why TVA couldn't spend some money to bring a dozer and rework some of the roads to the recreation and game management areas. The county road department gives free gravel for driveways and sometimes charge \$10 a truckload. Maybe there could be an arrangement made between TVA and them to deliver gravel for the roads (P.S. we were promised a boat launch at School House Point by the lady from TVA at a meeting between CORA and TWRA and the public at Jacksboro. She forgot after the storm settled I guess).</p> <p><u>TVA Response</u> - The need for road maintenance and improvements will be addressed when unit plans for Sensitive Resource Management (Zone 3) and Natural Resource Management (Zone 4) parcels are completed. The appropriateness of all-terrain vehicle (ATV) use, and any restrictions are also evaluated in unit plans. TVA is unaware of a promise to improve and/or build a boat launch at School House Point.</p>
Mr. and Mrs. Ronald and Neva Kitts Maynardville, TN	<p><u>8. Comment:</u> Plan is good. Needed to be updated since 1968</p> <p><u>TVA Response</u> - Thank you for your comment.</p>
Mr. Michael Nixon; Knoxville, TN	<p><u>9. Comment:</u> I like the Alternative B plan that would zone TVA reservoir lands into 7 categories. You've really put a lot of work into this and it looks good.</p> <p><u>TVA Response</u> - Comment Noted. Thank you for your comment.</p>
Mr. George McNeely LaFollette, TN	<p><u>10. Comments</u> - I would like for TVA to create a buffer zone, open to the public, on all of the shoreline around Norris Lake. At present, there are some parts of Norris shoreline that are privately owned; some at different levels from 1020 to 1052. This creates a problem anytime that you go to shore or when fishing to create a buffer zone along the entire shoreline.</p> <p><u>TVA Response</u> - The accompanying land use maps should help clarify where citizens can recreate. TVA does not have any plans to buy additional land at this time.</p> <p><u>11. Comments</u> - I would also like for TVA or the different counties to investigate some of the septic systems that exist and that are being installed. I can't imagine how some of these lots can perk when they are largely all rock.</p>

Name/Organization	Comment and TVA Response
Mr. George McNeely continued	<p><u>TVA Response</u> - Septic systems are allowed on private land if permits can be obtained from state and county regulators. Septic systems on TVA flowage easement must meet a 2-foot vertical and 50-foot horizontal separation from normal summer pool (1020-foot msl). The state and local agencies regulate the discharge from these tanks into surface or groundwater.</p>
Mr. David L. Linn Knoxville, TN	<p>12. Comments: TVA has sent letters and given permits to construct water use facilities. Letters tell adjacent property owners where they could place certain items (i.e., fences, etc.). However, TVA never enforces their own rules. There are no penalties for people not following TVA rules. Specifically, concrete block construction (below the 1020) that TVA sold had to be removed. That has never happened. Where the docks come out, TVA required that these people must drop their dock on the shoreline at a certain elevation. The adjacent landowners are not complying with this. TVA has never enforced any of their own regulations. Lindsey Mills area is where I am speaking of. Lack of reinforcement on the part of TVA. I support no allocation of commercial development in Alternative B.</p> <p><u>TVA Response</u> - Comments noted. There is no allocation for commercial development (Industrial/Commercial Development, Zone 5) in the Norris Plan. TVA periodically patrols shoreline to monitor violations and encroachments. Nonpermitted facilities may be removed at the direction of TVA.</p>
Mr. Gary Hickman Maynardville, TN	<p>13. Comments - Do agree with allocation of Parcel 278. Let me know if you ever plan to sell below 1040. You are doing a great service to the users of Norris Reservoir, both lakefront property owners and remote users. Development (residential) has ballooned over the past several years and concerns me as to potential impacts to water quality and visual scapes, in addition to the crowded nature increasing safety concerns.</p> <p><u>TVA Response</u> - TVA does not plan on selling any land. There are two zones where residential development can potentially occur, Non-TVA Shoreland (Zone 1) and Residential Access (Zone 7). By combining these two zones, it is possible that almost 33 percent (264 miles) of the total shoreline around Norris Reservoir can be developed for residential access(see Section 2.2). Approximately half of that shoreline is currently developed. To offset negative impacts associated with such alterations, TVA has categorized the Residential Access (Zone 7) and flowage easementNonTVA Shoreland (Zone 1) shoreline. The Norris Plan (Alternative B) does not propose to add any additional land to Residential Access (Zone 7). Residential Access (Zone 7) has 131 miles and Non-TVA Shoreland (Zone 1) has 133 miles of shoreline. In accordance with TVA's Shoreline Management Policy, TVA categorized the shoreline on Norris Reservoir based on resource data collected from field surveys of sensitive species and their potential habitats, archaeological resources, and wetlands along those stretches of shoreline (see Section 2.2). This categorization will help offset negative impacts associated with shoreline alterations in Non-TVA Shoreland (Zone 1) and Residential Access (Zone 7). Water quality and visual impacts of the allocations are discussed in Section 3.1 and 3.7.</p>
	<p>14. Comments - A maximum number of boats per day limit would be nice.</p> <p><u>TVA Response</u> - Setting a limit on the number of boats allowed on the water at a given time would be the responsibility of the Tennessee Wildlife Resources Agency. Given the number and wide range of geographical locations of marinas and boat launching ramps, recreational watercraft crowding does not appear to be a problem on Norris Reservoir.</p>

Name/Organization	Comment and TVA Response
<p>Mr. James A. Bryson TDOT Nashville, TN</p>	<p>15. Comments - The Norris Reservoir Land Management Plan Maps do not show State Routes. State Routes 61, 170, and 33 are near the study's area and SR 33 actually crosses through Natural Resource Conservation Zone 4 (Parcel 3). State Route 33 and the bridge over Norris Reservoir should be noted on the Plan. In order to properly address transportation concerns, roadways and roadway plans should be noted in the Environmental Assessment.</p> <p>In the future, requests to review land management plans would be more appropriately sent for review to TDOT's Planning Division, TDOT, James K. Polk Building, Suite 900, Nashville, TN 37243.</p> <p>TVA Response - Maps have been revised to show state routes. The EA has been revised to include roadways planned in the state transportation plan. The address change has been noted.</p>
<p>Spencer & May Boardman Knoxville, TN</p>	<p>16. Comments - I would like TVA to consider making a distinction (via definition name or title) between developed Recreation (Zone 6) and informal recreation activities as defined in Zone 4. One type of recreation is the zone title while informal recreation is buried within the text of Natural Resource Conservation. I would like to see the word Developed Recreation placed into the Zone 6 definition.</p> <p>I would like TVA to place a small locator map on each map panel. It would help the user find where in the world they are if they are not familiar with the reservoir.</p> <p>When discussing Alternative A (No Action) I didn't realize that TVA had a published or existing land management plan for Norris Reservoir. I don't think the public understands or can make the linkage between what we call a forecast system map and what we now call a land management plan. Need to make this concept more clear via defining what a forecast system is and what it is not! If people ask to see the no action plan, what are you going to show them?</p> <p>Put me down for one of the citizens who would like for TVA to return to the idea of including full disclosure of why the allocations were made (by parcel) and a brief word picture of the parcel description made available within the plan document. It looks like we want to hide something instead of saving paper and printing costs.</p> <p>Can the planning team provide citizens with a written record of the allocation decisions or with some type of matrix to show the capability and suitability analysis for why the team justified the parcel for a given allocation? Are narrative justification packages available for citizens to read if requested five years from now? Will TVA be able to provide good rationale for their decisions if questioned about its planning process?</p> <p>It would be helpful to older citizens (like me) if TVA would place the actual numbers within parentheses adjacent to the 1-800-TVA-LAND (882-5263).</p> <p>The meeting (open house) was very well done, sorry more didn't show up. The Norris Reservoir Fact Sheet is very informative and is a good communications piece. Great Job!!</p> <p>TVA Response - The final Norris Plan and accompanying EA would call Zone 6 Developed Recreation. Appendix A-3 provides a reason for the allocation for each parcel.</p> <p>TVA appreciates these suggestions and has made suggested changes. The linkage between the Forecast System and the current proposal is in Appendix A-3. Parcel descriptions are also available upon request and allocation reason is also noted in Appendix A-3.</p>

Name/Organization	Comment and TVA Response
Bob Jenkins LaFollette, TN	<p>17. Comments - Alternative B - excellent! Great job David! Shoreline Protection (pg. 7) - some major consideration should be given to prevention of erosion from banks and to prevent silting (may be it is addressed elsewhere).</p> <p><u>TVA Response</u> - Comment noted and appreciated.</p> <p>18. Comments - To gain a better partnership with landowners, consider specified actions which would be tax deductible, e.g., riprap owner's bank. These would be actions which serve a direct environmental benefit to serve the cost of TVA/government and give the taxpayer a small return on investment.</p> <p><u>TVA Response</u> - TVA is actively involved in cooperative stabilization efforts with landowners. TVA is exploring ways to do this more efficiently and save costs to ratepayers.</p> <p>19. Comments - Recreation - consider jet ski zones.</p> <p><u>TVA Response</u> - TVA does not regulate personal watercraft use. This comment will be shared with the Tennessee Wildlife Resources Agency (TWRA). Your request for a copy of the final Norris Plan and EA have been noted.</p>
Barbara A. Walton Oak Ridge, TN	<p>20. Comment - I attended the 7/9/01 Open House and learned that Appendix A-1 should have been dated June 2001 and that the LMP is still proposed not final. It refers to itself as the Norris Plan; the DEA also uses the term proposed plan on page 1, the proposed Norris Plan on page 9 and the draft Norris Plan on page 19. Please use the same name throughout.</p> <p>Please include the panel numbers in the parcel information (Section 5.1 Norris Plan and Appendix A-3) and give an outline on the 4 panels on Fig. 1-1 of the DEA to enable easier use of the material provided.</p> <p>The Norris Dam Reservation Tactical Plan (Appendix B-1) is labeled Draft June 2000; is this correct? Please provide the attached map discussed throughout.</p> <p>Please update the census information provided on page 125. One page 119, a 10-year planning horizon is discussed; please state the time frame of the Norris Plan.</p> <p>I am very much in favor of Alternative B and commend the team's effort.</p> <p><u>TVA Response</u> - TVA appreciates these suggestions and has made the changes. You will be included on the final mailing list.</p> <p>21. Comment - Parcel 6 should be divided between Zones 2 and 3. Three of the 8 significant ecological sites given on pages 59 and 60 are in parcel 6. The other 5 are in parcels designated Zone 3. This should also be highlighted in the parcel information (Section 5.1 Norris Plan and Appendix A-3).</p>

Name/Organization	Comment and TVA Response
Barbara A. Walton - continued	<p><u>TVA Response</u> - I suggest the following changes in parcel zone designation: The best use of the land in Parcel 6 was determined to be in support of TVA operations. Typically, TVA natural areas are allocated to Sensitive Resource Management (Zone 3). However, the planning process allows the flexibility for part of a parcel to have a different level of management. Although Parcel 6 is zoned as Project Operations (Zone 2) the area designated as a TVA natural area would be managed for protection and enhancement of its sensitive resources. Your editorial suggestions will be included in Appendix A-3 - Parcel Information Matrix.</p>
	<p><u>22. Comments</u> - Table 3-3 on page 48 should indicate gray bats as found (see Norris Dam Cave, page 60).</p> <p><u>TVA Response</u> - The Gray Bats are listed in Table 3-3 under the heading iMammals.i</p>
	<p><u>23. Comments</u> - Parcel 222 is the only wetland discussed in Section 3.5.1 not designated as Zone 3. This information should be summarized in the parcel information.</p> <p><u>TVA Response</u> - The matrix information table identifies the reason for allocation. Only the larger, more extensive wetland areas were placed in Sensitive Resource Management (Zone 3) . Many small reservoir fringe wetland areas are located in Natural Resource Conservation (Zone 4) parcels, but would be managed to protect their function and value.</p>
	<p><u>24. Comments</u> - Parcel 327 discussed on the top of page 64 is either a wrong number or should be included in parcel information.</p> <p><u>TVA Response</u> - This numbering error has been noted and has been corrected with Parcel 286 in the final document.</p>
Tom Slanker	<p><u>25. Comments</u> - I am a property owner in the Norris Pointe development on Davis Creek, Powell River . I have a few comments after reading the draft.</p> <p>3.12 iOther Issues,i has any reviewed the effects of light pollution on the habitat? One of the splendors of the lake is looking at the stars at night. If residential, commercial, and public properties use more light than is required, it will be like living in a large city. Is it to late to discuss this issue? If so, can we put together a suggestive guideline for residential, commercial, and government to follow?</p> <p><u>TVA Response</u> - A certain amount of residential or suburban development would occur regardless of the plan alternative selected. These developments often have some street lights. The Shoreline Management Zone required by TVA would buffer this light from the reservoir to some degree. The allocations would not make this worse, since TVA is primarily allocating land to Sensitive Resource Management (Zone 3) and Natural Resource Conservation (Zone 4).</p>
	<p><u>26. Comments</u> - 3.15. 5. Commitments - you discuss Davis Creek. What are they. Map of Alternative iB.i I can review most CAD files. Can you e-mail (zip) me only the Davis Creek and Upper Powell River section? Or mail a copy to Tom Slanker, 1336 Grace Avenue, Cincinnati, OH 45208. TomSlanker@earthlink.net.</p>

Name/Organization	Comment and TVA Response
Tom Slanker - continued	<p><u>TVA Response</u> - The Davis Creek Unit Plan was completed as an EA in 2000 with the following commitments:</p> <ol style="list-style-type: none"> 1. BMPs, including those prescribed for forestry (TVA, 1994, Best Management Practices for Silvicultural Activities on TVA Lands) will be implemented for any soil-disturbing activities to prevent or minimize soil erosion. 2. Cultural resources protection. Surveys will be conducted prior to initiation of any soil disturbing activity, including installation of additional wildlife openings, timber harvest, road construction, and parking areas. A report on the survey findings will be submitted to the Tennessee State Historic Preservation Officer for review and comment. 3. Endangered Species Protection. Trees and vegetation in riparian zones and shoreline buffers will be preserved to protect gray bat food sources. Timber harvests or forest clearing will be restricted to the period of November 15 to March 1, when Indiana bats are hibernating elsewhere. If it is necessary to perform these activities at any other time, surveys will be conducted to determine the presence or absence of Indiana bats at these sites. 4. Visual buffers. A buffer between 50 and 100 feet wide will be provided to screen timber harvest areas from public thoroughfares and shorelines. Harvests will be less than 20 acres in size. 5. Controlled burns. Controlled burns will be conducted in accordance with Tennessee open burning regulations. 6. Agricultural Licenses. Best Management Practices for agriculture (Special Provisions of TVA Form 1872B, reproduced in Appendix G of the EA) will be included in agricultural licenses. <p>The maps are too large to send through the email. Hard copies have been mailed.</p>
Gordon Early Friends of Norris Lake Watershed, Campbell County Chapter	<p><u>27. Comments</u> - David, I have looked over your draft and I personally think your Alternative B is a big improvement over what we have now. I have a question concerning 3.15.1 on Page 26. Why is the maximum permitted timber harvest 20 acres? This sounds rather large to me for property in proximity to Norris Lake.</p> <p><u>TVA Response</u> - Timber harvests are normally conducted on larger tracts of land where a 20-acre area comprises a small percentage of the total area. Timber harvests are conducted on TVA land to maintain forest health and vigor, sustain or increase present levels of ecological diversity, and provide habitat benefits for a variety of game and nongame wildlife. A maximum harvest size of 20 acres was proposed to lessen aesthetic impacts. Harvest areas are laid out in an irregular shape to increase the edge effect, which is beneficial to wildlife, and also reduces aesthetic effects.</p> <p><u>28. Comments</u> - We will be having a chapter board meeting this evening, and I plan to solicit comments on the plan from the other board members. We may have some additional questions for you.</p> <p><u>TVA Response</u> - Comments noted and questions welcomed.</p>

Name/Organization	Comment and TVA Response
Gordon Early - continued	<p>29. Comments - Overall, I personally like your draft very much. The main thing I like is the large increases you recommend in Sensitive Resource Management and Natural Resource Conservation zones while keeping recreation about where it is now and prohibiting industrial use.</p> <p><u>TVA Response</u> - Comment noted.</p>
Russell H. Pickard Caryville, TN	<p>30. Comments - 3.12 Other Issues--iPotential community noise effects will be evaluated for this EAioptaining to land useo however, there doesn't seem to be any stated concern or reference that addresses iLAKE RELATED noise such as boats with unmuffled engines that produce unnecessarily high levels of exhaust noise. There appears to be a proliferation of larger and more powerful boats with substantial increase noise levels. These increasing noise levels are not compatible with lake side residents or shore line habitat.</p> <p>3.12.2 Noise--Lakeside noise effects need to be included with any shore noise concerns.</p> <p><u>TVA Response</u> - Noise, recreational and transportation activities, is discussed in Section 3.12.2. The proposed allocations, which emphasized natural resource management, would minimize the introduction of significant additional noise to Norris Reservoir surroundings at this time.</p>
	<p>31 Comments - Shore line management and stabilization is an ongoing challenge and shore line erosion is very difficult to control. A large portion of Norris Lake consists of relatively narrow waterways and inlets which are vulnerable to the effects of large wakes created by some large boats. I am concerned about the effect of the increasing size and number of large boats that are operating on Norris Lake. If this trend continues without concern for the effects on shore line erosion it will become a major force in contributing to the destruction of the erosion sensitive shore line.</p> <p>I would like a copy of the Final Public Summary and The Final EA.</p> <p><u>TVA Response</u> - TVA acknowledges that boats contribute to erosion of shorelines. Historically, the role of establishing and enforcing regulations that might reduce the impact of boating on erosion has been the responsibility of the states. As indicated above, the proposed land allocations with an emphasis on natural resource management would not promote larger boat usage and would not make this problem worse. TVA shares your concern for shoreline erosion and is actively involved in cooperative shoreline stabilization efforts. Your request for a copy of the final Public Summary and EA has been noted.</p>

Name/Organization	Comment and TVA Response
H. Joe Cathey, C.F.P. Corps of Engineers Nashville, TN	<p>32. Comments - 7/11/01, Letter to Jon Loney, Manger, TVA Environmental Policy and Planning. Subject: Draft Environmental Assessment (EA) Norris Reservoir Land Management Plan, June 2001</p> <p>This is in response to your July 2, 2001, letter concerning the subject EA.</p> <p>We have reviewed your draft EA and offer the following comments:</p> <ul style="list-style-type: none"> Σ On Page 5, last par, the EIS process in inadvertently described as being used for the Norris Land Management Plan. Obviously, the NEPA process relating to EAs and FONSI's will be used by TVA in its decision making process. Σ On page 10, Land Use Zone Definitions, section 2, Project Operations, the navigation operations are presented. It is recommended that references to locks and their operations be eliminated from the EA. Same with references to commercial tows. One page 23, par 3.10. Navigation, TVA states there is no commercial navigation on Norris. Σ One page 26, par 3.15. Commitments, Item 2, this sentence is ambiguous. Σ As expected, we prefer Alternative B for TVA implementation. <p>We appreciate the opportunity to review this EA. If you have any questions, please contact me at the above address, or telephone (615) 369-7520.</p> <p><u>TVA Response</u> - The definitions are standard for all reservoirs in the TVA system. Suggested edits were made in the final EA.</p>
Charles and Nancy Terwoord Fairborn, Ohio	<p>33. Comments - We have just been made aware of this potential plan on Norris Reservoir. We own land on 188 Dillon Lane, Caryville. Subdivision Lakemont, SD, Lot 36. We have built a vacation home there over the past 5 years. The current resale value is over \$150,000. It is with great concern that we are emailing you as to the exact effect this Alternative plan B will have on our land and our ability to maintain our property. It is our understanding that Plan B designates our land as parcel 19, Natural Resource Conservation. Does this mean that our lake front property can be open for public camping?? How do we prevent campers from accessing through our property? How do we protect our property as well as our privacy?? According to a map we were sent, property just to the left of ours (facing Lake front) is marked as Parcel 20. Residential access. From what we have read this affords more owner rights as to any public access. How did you determine what is 19 vs. 20? For the personal homeowner is one better than the other? Can you please clarify this plan B for us?</p> <p>Please note: WE ARE STRONGLY AGAINST ANY PLAN THAT WILL ALLOW THE PUBLIC TO HAVE ACCESS TO THE LAKE FRONT IN FRONT OF OUR PROPERTY. WE DO NOT BELIEVE YOU HAVE THE LEGAL ABILITY TO ALLOW THE PUBLIC TO CAMP BENEATH OUR HOME. Please respond to our concern as soon as possible. Thank you</p> <p><u>TVA Response</u> - TVA public land is generally available for informal public recreation use. TVA's land allocations do not affect private property rights; neither do they give the public a right to trespass on private property. The differences between Parcel 19 (Sensitive Resource Management, Zone 4) and Parcel 20 (Residential Access, Zone 7) is the existence of deeded rights.</p>

Name/Organization	Comment and TVA Response
Dennis Shipley Claiborne County Chamber of Commerce Tazewell, TN	<p>34. Comments - On behalf of the representatives from Woodlake, City of Tazewell County Executive and the Claiborne County Chamber of Commerce, I wish to extend our gratitude for each of you taking the time to meet with us on Wednesday, July 18. We certainly enjoyed this opportunity.</p> <p>As we discussed, the above organizations are requesting that your organization consider our proposals concerning the planned use of parcels #209 and 211.</p> <p>Parcel #209 consists of 65.38 acres and has a zone allocation of 6. This represents recreational use, which Claiborne County obtained a 30 year easement for, many years ago. We are requesting that you continue to leave it a zone 6 and allow us time to further research plans to develop this parcel into a possible 9 hole Junior Pro Golf Course or public park that could include walking trails, picnic areas and other public usage.</p> <p>Lastly, we are requesting that parcel #211 be changed from a zone 4 to a zone 6. This would enable us to further consider the plans of a Junior Pro Golf Course on this site. We feel that this parcel would be more suited because of the boundary being with Woodlake Golf Course.</p> <p>In summary we will be looking into funding, maintenance and all other possibilities that could benefit our county</p> <p><u>TVA Response</u> - <i>TVA has allocated Parcel 209 to recreation, and would prefer that the county fully explore the potential for recreational development for this tract before considering the other tract for recreational development. If Parcel 211 is needed for recreational use in order to enhance the Claiborne County Park, a parcel allocation change could be entertained at a later date.</i></p>
Michael A. Butler Tennessee Conservation League (TCL) Nashville, Tennessee	<p>35.. Comments - This letter contains the comments of the Tennessee Conservation League (TCL) in response to the Tennessee Valley Authority's (TVA) draft environmental assessment (EA) for the Norris Reservoir Land Management Plan (NRLMP). We thank you for this opportunity to share our views on this matter.</p> <p>Overall the EA is thorough and we strongly agree with Alternative B. Specifically, we are pleased to see TVA choose an alternative that does not add additional public lands for use as residential, commercial, or industrial properties. We offer only a few questions regarding eight public land parcels described within the EA. The following are our specific comments.</p> <p><u>TVA Response</u> - <i>Thank you for your comments.</i></p>
	<p>36. Comments - Parcel 188 - We strongly believe that his parcel's designation should be changed to natural resource conservation to (1) better protect the sensitive resource area it surrounds, (2) better offer informal recreation opportunities, and (3) buffer the private lands from the reservoir. Further, by establishing this area for recreation, access to the sensitive resource area would increase, potentially placing it at greater risk to negative impacts.</p> <p><u>TVA Response</u> - <i>Parcel 188 is zoned as Developed Recreation (Zone 6) because it was determined to be an opportune site for some potential day use activities, such as picnicking. For example the parcel is in close proximity to Route 33. The impact on cultural resources on the adjacent Sensitive Resource Management (Zone 3) area will be assessed through the Section 106 process. Also a buffer would be maintained to separate any use activity that could impair the adjoining site. Parcel 188 would continue to serve as a Natural Resource Conservation (Zone 4) area for dispersed recreational activities as an interim use until definite site plans are approved.</i></p>

Name/Organization	Comment and TVA Response
TCL - continued	<p>37. Comments - Parcels 4, 37, 109, and 190 - After looking at these parcels, the League would like to assure that only the acres needed to operate boat ramps, parking areas, and marinas. These parcels are located near good clusters of natural resource conservation and sensitive resource management lands. We ask that the recreation designation for parcels 4, 37, 109, and 190 be reviewed and if a portion of each parcel is not being utilized, placing that portion in an adjacent parcel and changing its designation to natural resource conservation.</p> <p>TVA Response - All of these areas are currently being used for their intended developed recreational use. These parcels are being fully utilized for recreation and no additional land is proposed to be allocated. Parcel 4 is Miller Island Access Boat Ramp and is one of the most heavily used public access areas to the Clinch River tailwaters, it is also one of the few public access areas along this stretch of river. Parcel 37 was a specific requested partnership with the Tennessee Wildlife Resources Agency to provide a public boat launching ramp and access to this portion of Norris Reservoir. Landrights for the use of Parcel 109 have been granted to Powell Valley Marina. Parcel 190 is a combination lease and license for Cedar Grove Marina and Campground. By placing these parcels in Developed Recreation (Zone 6), reflects only what those parcels are being used for prior to this planning effort.</p> <p>38. Comments - Parcel 53 and 176 - We would like to know when the lease for these parcels run out and what happens to them when the lease does expire or is not renewed.</p> <p>TVA Response - Campbell County Park and Sharps Chapel Community are currently operating on a letter of agreement. Land now in Parcels 52 and 53 was Campbell County Park. However, the planning process revealed unique habitat on 90 acres of this park. The 90 acres are now Parcel 52. When the Norris Plan is approved, TVA will review another 30 year easement for Campbell County Park on the remaining acreage now located in Parcel 53. The Sharps Chapel Community has expressed interest, for several years, in the land now allocated to Parcel 176 for day use recreation. In response, TVA proposed this area to be allocated as Developed Recreation (Zone 6). If no community park is developed in the next 10 years, this parcel may be reallocated as Natural Resource Conservation (Zone 4).</p> <p>39. Comments - Parcel 77 - We understand the common sense approach of having this parcel listed as recreation, due to its close proximity to the Boy Scout camp. However, knowing scouting, we would like for TVA to reconsider this parcel designation in the following light. We would ask that TVA contact the Boy Scouts of America chapter that operates the camp, and a plan of use be developed for the TVA public land. Once it is established how this land will be used, it may then be more appropriate to designate the area. Until this time, we would recommend that the area be designated natural resource conservation. Such a designation should not interfere with typical scouting activities, and it offers the opportunity for a better-protected shoreline.</p> <p>Again, thank you for this opportunity to comment on this draft EA. We look forward to your response regarding our specific suggestions.</p> <hr/> <p>TVA Response - Parcel 77 is a shoreland strip fronting land sold as a group camp with recreational water access rights to the Boy Scouts of America. Because of this, TVA allocated this land to Developed Recreation (Zone 6). Any further alterations or development of this parcel requires TVA approval. There are no known plans for any such activities at this time. It is expected that this shoreland would remain unchanged over the life of the Norris Plan. All parcels referred to above, except Parcel 176, is committed land.</p>

Name/Organization	Comment and TVA Response
<p>Joyce H. Hoyle, CLP TDEC Nashville, Tennessee</p>	<p>40. Comments - Thank you for the opportunity to review the Norris Reservoir Land Management Plan and Draft and Environmental Assessment (DEA) for potential impacts on recreation resources. If Alternative B is implemented, our division anticipates that this project will have a tremendous quality of life benefit to the residents of the Norris Reservoir region and the many visitors to the area. It is felt that a small decrease of 100 acres in Alternative B would have very little impact on recreation opportunities region. In addition, the project would provide substantial improvements to ensure the future informal and dispersed recreation opportunities of the area for fishing, boating, hunting, wildlife viewing, camping, picnicking, trials, and varied water related recreation activities.</p> <p>Tennessee's <i>1995-1999 State Recreation Plan</i> clearly shows that habitat protection and river and lake access and related lake activities are a high priority for the East Tennessee Planning Region as well as the neighboring Upper East Tennessee Planning Region. The proposal to improve the long-term use of the Norris Reservoir Land Management will help meet the objectives of this state policy plan. Areas of special consideration that this project could improve include: quality boat access, fishing, wildlife observation, camping and lake recreation activities and hunting. Furthermore, the proposed alternative B would provide an important resource for the State of Tennessee to ensure the long-term viability of the Norris Reservoir Land Management Plan and economic/tourism opportunities that are directly tied to the use of this area. Alternative B would provide a positive impact for recreation.</p> <p>The popularity of natural resource-base recreations areas is growing in Tennessee. I strongly support efforts to meet these growing demands and conserve our state's natural resources for our next generations to enjoy. For any additional questions contact: Kay Vance, Environmental Reviewer, 615-532-0755.</p> <p><u>TVA Response</u> - <i>Thank you for your comments</i></p>
<p>Robert E. Freeman Executive Director East Tennessee Development District Knoxville, Tennessee</p>	<p>41. Comments - The East Tennessee Development District has completed its review of the above mentioned proposal, in its role as a regional clearinghouse to review state and federally-assisted projects.</p> <p>ETDD review of the draft environmental assessment has found no conflicts with the plans or programs of the District or other agencies in the region. However, ETDD or other reviewing agencies may wish to comment further at a later time.</p> <p>We appreciate the opportunity to work with you in coordinating project in the region.</p> <p><u>TVA Response</u> - <i>Thank you for your comment</i></p>

Name/Organization	Comment and TVA Response
Cynthia K. Dohner USFWS Atlanta, GA 30345	<p>43. Comment - Thank you for your letter of July 2, 2001, requesting that the Fish and Wildlife Services (Service) review the Tennessee Valley Authority's (TVA) Draft Environmental Assessment for the Norris Reservoir Land Management Plan in Anderson, Campbell, Claiborne, Grainger, and Union counties, Tennessee. We believe the document adequately describes the resources within the project area and the proposed actions impacts on these resources. The Service supports Alternative B (Preferred Alternative) for TVA's involvement in the management plan, and believes it would benefit fish and wildlife resources of the area and provide adequate recreational opportunities.</p> <p>We appreciate the opportunity to comment on this project. We look forward to working with you in the future. If you have any questions please contact Mr. Wally Brines, of our Cookeville Tennessee office at (913) 528-6481 ext. 222.</p> <p><u>TVA Response</u> - <i>Thank you for your comment.</i></p>
Herbert L. Harper SHPO Knoxville, Tennessee	<p>44. Comment - At your request, our office has reviewed the above referenced Draft Environmental Assessment in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, and as stated in our previous correspondences, we concur that the project area contains archaeological resources potentially eligible for listing in the national register of Historic Places and should be subjected to Phase 11 archaeological testing prior to commencement of ground-disturbing activities, that have as yet not been surveyed, must be subjected to systematic archaeological survey prior to construction.</p> <p>Until such time this office has rendered a final comment on all phases of this project, your Section 106 obligation under federal law has not been met. Please inform this office if this project is canceled or not funded by the federal agency. Questions and comments may be directed to Jennifer M. Bartlett (615) 741-1588 ext.17</p> <p><u>TVA Response</u> - <i>Thank you for your comment. TVA's Senior Archaeologist, J. Bennett Graham discussed the Norris Plan with Jennifer Bartlett on Wednesday, July 25. Ms. Bartlett, Federal Compliance Review Archaeologist, agrees that we have met our Section 106 compliance obligations for the Norris Plan.</i></p>

APPENDIX A-4 - LETTERS

The following page contain copies of the original comments in the order received:

1. Carol Forman - recorded in Appendix A-4 table as comment 1.
2. John Young - recorded in Appendix A-4 table as comments 2 through 7.
3. Mr. And Mrs. Ronald and Neva Kitts- recorded in Appendix A-4 table as comment 8.
4. Mr. Michael Nixon - recorded in Appendix A-4 table as comment 9.
5. Mr. George McNeely - recorded in Appendix A-4 table as comment 10.
6. Mr. Davis L. Linn - recorded in Appendix A-4 table as comment 12.
7. Mr. Gary Hickman - recorded in Appendix A-4 table as comment 13 and 14.
8. Tennessee Department of Transportation - recorded in Appendix A-4 table as comment 15.
9. Mr. And Mrs. Specner & May Boardman - recorded in Appendix A-4 table as comment 16 through 19.
10. Mr. Bob Jenkins - recorded in Appendix A-4 table as comment 17 and 18.
11. Barbara A. Walton - recorded in Appendix A-4 table as comment 20 through 24.
12. Mr. Tom Slaker - recorded in Appendix A-4 table as comment 25 and 26
13. Mr. Gordon Early - recorded in Appendix A-4 table as comment 27 through 29
14. Mr. Russell H. Pickard - recorded in Appendix A-4 table as comment 30 and 31.
15. Department of the Army, Nashville district, Corps of engineers - recorded in Appendix A-4 table as comment 32.
16. Charles and Nancy Twonsend - recorded in Appendix A-4 table as comment 33.
17. Claiborne County Chamber of Commerce - recorded in Appendix A-4 table as comment 34.
18. Tennessee Conservation League - recorded in Appendix A-4 table as comment 37 through 39.
19. Tennessee Department of Environment and Conservation - recorded in Appendix A-4 table as comment 40.
20. East Tennessee Development District - recorded in Appendix A-4 table as comment 41.
21. Fish and Wildlife Services - recorded in Appendix A-4 table as comment 43.
22. Tennessee Historical Commission - recorded in Appendix A-4 table as comment 49

1. Carol Forman - recorded in Appendix A-4 table as Comment-1.

Sent: Sunday, July 01, 2001 2:18 PM

To: dbharrell@tva.gov

Subject: NORRIS RESERVOIR LAND MANAGEMENT PLAN

I have read your plan and fully support Alternative B. The amount of time and work put into this report is impressive. The maps and data demonstrate visionary thinking.

On page 26, 3.15. Commitments 1 regarding BMP forest management I think a little clarification would be helpful to explain timber harvesting by TVA. Are you talking "select cut" or "clear cut"? I have negative thoughts on clear cutting. I would also be interested in what the timber is used for and who would do the harvest.

I received my packet at the Campbell County Chapter of Friends of Norris Lake Watershed.

Carol Forman

2. John Young - recorded in Appendix A-4 table as comments 2 through 7.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

Parcel Number	Do you agree with the draft allocation?	What allocation do you prefer for this parcel?	Comments
72	NO	SCHOOL HOUSE PT SHOULD HAVE MAINTAINED RD	WE NEED THE ROAD FIXED TO SCHOOL HOUSE POINT AND THE PRIMITIVE BOAT LAUNCH THERE IMPROVED
88	NO	CHANGE INTO RECREATION OR WILDLIFE SHORE LINE TO	MANAGEMENT AREA
87	NO	RECREATION	THE COVE BEHIND SHANGHAI SHOULD BE FOR RECREATION OR WILDLIFE

Other comments:

THERE IS NOT A LAUNCH SITE FROM WHITMAN HOLLOW TO RAINBOW MARINA - THERE IS A PRIMITIVE SITE AT SCHOOL HOUSE PT - BUT YOU HAVE TO HAVE AN ATV. (WHICH SHOULD BE OUTLAWED ALONG ALL SHORELINE)

THERE IS ABSOLUTELY TOO MUCH RESIDENTIAL AREAS IN THE WHOLE AREA FROM RAINBOW MARINA TO SHANGHAI - AND DEER FIELD - COVE POINT - RACE TRACK BIG CREEK 1-2-3-4 - SAVE THE LAKE SHORE FOR THE FUTURE GENERATIONS & THE PUBLIC. THE LAKE HAS BECOME A CLUTTERED UP AND URBAN UGLINESS - RAMSHACKLE BOAT HOUSES - CLEAR CUT LAWNS - SEPTIC TANKS ON GOAT CLIFFS - WE NEED MORE GAME HABITAT IMPROVEMENTS (SUCH AS FOOD PLANTS - ALSO THE FIELD IN THE COVE BEHIND SHANGHAI - ALL OF IT SHOULD BE CHANGED TO -

Please check appropriate box if you would like copy of:

- ☒ The Final Public Summary
☒ The FINAL Environmental Assessment (FEA) and Land Management Plan

CONT

COMMENTS continued:

Please attach additional pages as needed.

TO RECREATION - QUITE A FEW PEOPLE USE THAT
 AREA - FOR CAMPING - FISHING - PICNICING - THERE IS A
 GOOD ACCESSABLE RD THERE - AND AN PRIMITIVE BOAT
 LAUNCH FOR SMALL CARTOP BOATS - THE FIELD IS A
 GOOD GAME FOOD PLOT - AND FOR DUCKS
 I CANT SEE WHY TVA COULDN'T SPEND SOME MONEY
 TO BRING A DOZEN AND REWORK SOME OF THE ROADS
 TO THE RECREATION & GAME MANAGEMENT AREAS
 THE COUNTY ROAD DEPT GIVES FREE GRAVEL FOR
 DRIVEWAYS AND SOMETIMES CHARGE \$1000 A TRUCK LOAD
 MAYBE THERE COULD BE AN ARRANGEMENT MADE
 BETWEEN TVA - AND THEM TO DELIVER GRAVEL FOR
 THE ROADS (PS WE WERE PROMISED A BOAT LAUNCH AT
 SCHOOL HOUSE POINT - BY THE LADY FROM TVA - AT A MEETING
 BETWEEN CORA AND TWA AND THE PUBLIC AT JACKSBORO
 (SHE FORGOT AFTER THE STORM SETTLED I GUESS)

fold page along dotted line before mailing

3. Mr. And Mrs. Ronald and Neva Kitts- recorded in Appendix A-4 table as comment 8.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

<i>Parcel Number</i>	<i>Do you agree with the draft allocation?</i>	<i>What allocation do you prefer for this parcel?</i>	<i>Comments</i>

Other comments:

*Concerned regarding enforcement of
rules. Plan is good - needed to
be updated since 1968.*

845-992-0512

604-0376 Cell

515-0360 pager

Please check appropriate box if you would like copy of:

☐

The Final Public Summary

☐

The FINAL Environmental Assessment (FEA) and Land Management Plan

4. Mr. Michael Nixon - recorded in Appendix A-4 table as comment 9.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

<i>Parcel Number</i>	<i>Do you agree with the draft allocation?</i>	<i>What allocation do you prefer for this parcel?</i>	<i>Comments</i>

Other comments:

*I like the Alternative B plan that
would zone TVA reservoir lands into 7 categories.*

*You've really put a lot of work into this & it
looks good.*

[Signature]

Please check appropriate box if you would like copy of:

☐

The Final Public Summary

☒

The FINAL Environmental Assessment (FEA) and Land Management Plan

5. Mr. George McNeely - recorded in Appendix A-4 table as comment 10.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

<i>Parcel Number</i>	<i>Do you agree with the draft allocation?</i>	<i>What allocation do you prefer for this parcel?</i>	<i>Comments</i>

Other comments:

I would like for TVA to create a buffer zone, open to the public, on all of the shoreline around Norris Lake. At present, there are some parts of Norris shoreline that are privately owned; some at different levels from 1020 to 1052. This creates a problem anytime that you go to shore or when fishing.

I would also like for TVA or the different counties to investigate some of the septic systems that exist and that are being installed. I can't imagine how some of these lots can perk when they are largely all rock.

Please check appropriate box if you would like copy of:



The Final Public Summary



The FINAL Environmental Assessment (FEA) and Land Management Plan

6. Mr. Davis L. Linn - recorded in Appendix A-4 table as comment 12.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

Parcel Number	Do you agree with the draft allocation?	What allocation do you prefer for this parcel?	Comments

Other comments:

TVA has sent letters and given permits to construct water-use facilities. Letters tell adjacent property owners where they could place certain items (i.e., fences, etc.). However, TVA never enforces their own rules. There are no penalties for people not following TVA rules.

Specifically, concrete block construction (below the 1020) that TVA said had to be removed. That has never happened. When the docks come out, TVA required that these people must drop their dock on the shoreland at a certain elevation. The adjacent landowners are not complying with this. TVA has never enforced any of their own regulations. Liney mills area is where I am speaking of.

Lack of reinforcement on the part of TVA

Please check appropriate box if you would like copy of:

- ☐ The Final Public Summary
- ☐ The FINAL Environmental Assessment (FEA) and Land Management Plan

COMMENTS continued:

Please attach additional pages as needed.

I support no allocation of commercial development
IN ALTERNATIVE B.

7. Mr. Gary Hickman - recorded in Appendix A-4 table as comment 13 and 14.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

Parcel Number	Do you agree with the draft allocation?	What allocation do you prefer for this parcel?	Comments
278	yes	—	Let me know if you ever plan to sell below 1040
279	yes	—	Restrict camping as impacting sensitive resource

Other comments:

You are doing a great service to the users of Norris Reservoir, both lakefront property owners and remote users. Development (residential) has ballooned over the past several years and concerns me as to potential impacts to water quality and visual scenery, in addition to the crowded nature increasing safety concerns. A maximum number of boats per day ^{limit} would be nice.

Please check appropriate box if you would like copy of:

- ☒ The Final Public Summary
☐ The FINAL Environmental Assessment (FEA) and Land Management Plan

8. Tennessee Department of Transportation - recorded in Appendix A-4 table as comment 15.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL PLANNING AND PERMITS DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-0334

July 12, 2001

Mr. David Harrell, Planner
Clinch-Powell Watershed Team
P.O. Box 1589
Norris, Tennessee 37828-1589

SUBJECT: Draft Environmental Assessment - Norris Reservoir Land Management Plan

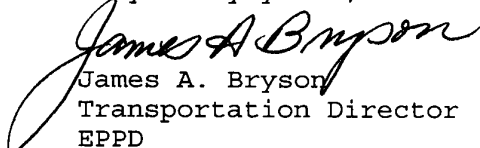
Dear Mr. Harrell:

After reviewing the Draft Environmental Assessment we have two comments to make:

1. The Norris Reservoir Land Management Plan Maps do not show State Routes. State Routes 61, 170, and 33 are near the study's area and SR 33 actually crosses through Natural Resource Conservation Zone 4 (Panel 3). State Route 33 and the bridge over Norris Reservoir should be noted on the Plan. In order to properly address transportation concerns, roadways and roadway plans should be noted in the Environmental Assessment.
2. In the future, requests to review Land Management Plans would be more appropriately sent for review to TDOT's Planning Division. The request should be sent to Jerry Morehead, Manager, Planning Division, Tennessee Department of Transportation, James K. Polk Building, Suite 900, Nashville, 37243.

If you have any questions, please give me a call at (615) 741-2612.

Very truly yours,


James A. Bryson
Transportation Director
EPPD

RECEIVED
JUL 16 2001

9. Spencer & May Boardman - recorded in Appendix A-4 table as comment 16 through 19.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

Parcel Number	Do you agree with the draft allocation?	What allocation do you prefer for this parcel?	Comments

Other comments:

I would like TVA to consider making a distinction (via definition name or title) between "developed Recreation" (zone 6) and "informal Recreation" activities as defined in zone 4. One type of recreation is the zone title while informal recreation is buried within the text of Natural Resource Conservation. I would like to see the word "Developed" ^{RECREATION} placed into the zone 6 definition.

I would like TVA to place a small locator map on each map panel. It would help the user find where in the world they are if they are not familiar with the reservoir.

[See Abstract:] when discussing Alt. A (No Action) I didn't
and page 7

Please check appropriate box if you would like copy of:

- ☐ The Final Public Summary
- ☐ The FINAL Environmental Assessment (FEA) and Land Management Plan

realize that TVA had a published or existing land management plan for Norris Reservoir. I don't think the public understands or can make the linkage between what we call a "forecast system" map and what we now call a land management plan. Need to make this concept more clear via defining what a forecast system is and what it's not! If people ask to see the no action plan, what are you going to show them?

Put me down for one of the citizens who would like for TVA to return to the idea of including full disclosure of why the allocations were made (by parcel) and a brief word picture of the parcel description made available within the plan document. It looks like we want to include something instead of having paper and printing costs.

Can the planning team provide citizens with a ^{written} record of the allocation decisions or with some type of matrix to show the capability and suitability analysis for why the team justified the parcel for a given allocation? Are narrative justification packages available for citizens ^{to read} if requested five years from now? Will TVA be able to provide good rationale for their decisions if questioned about its planning process?

COMMENTS continued:

Please attach additional pages as needed.

please see attached sheet and copy of the
summary for additional comments.

Thanks,

Spencer and May

Additional Note: It would be helpful to older
citizens (like me) if TVA would place the actual
numbers within parentheses adjacent to the
1-800-TVA-LAND (882-5263)

The meeting (open house) was very well done - sorry more
didn't show up. The Norris Reservoir Fact Sheet is very
informative and is a great communications piece.

GREAT JOB!!

10. Mr. Bob Jenkins - recorded in Appendix A-4 table as comment 17 and 18.

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

Parcel Number	Do you agree with the draft allocation?	What allocation do you prefer for this parcel?	Comments

Other comments:

Alternative B - excellent! Great job David!
Shoreline Protection (Pg. 7) - some major consideration should be given to prevention of erosion from banks & prevent silting, (maybe is addressed elsewhere)
To gain a better partnership with land owners, consider specific actions which ~~are~~ would be tax deductible, e.g. rip rap along bank. These would be actions which serve a direct environmental benefit - save the cost to TVA/govt. & ^{give} ~~the~~ tax payer a small return on investment.

Recreation - consider get ski zones

Please check appropriate box if you would like copy of:

- ☒ The Final Public Summary
☒ The FINAL Environmental Assessment (FEA) and Land Management Plan

11. Barbara A. Walton - recorded in Appendix A-4 table as comment 20 through 24.

85 N. Claymore Lane
Oak Ridge, TN 37830
July 18, 2001

David B. Harrell
Clinch/Powell Watershed Team
Post Office Box 1589
Norris, TN 37828

Subject: Draft Environmental Assessment (DEA) Norris Reservoir Land Management Plan (LMP)

Dear Mr. Harrell:

I attended the 7/9/01 Open House and learned that Appendix A-1 should have been dated June 2001 and that the LMP is still proposed not final. It refers to itself as the Norris Plan; the DEA also uses the term "proposed plan" on page 1, the "proposed Norris Plan" on page 9 and the "draft Norris Plan" on page 19. Please use the same name throughout.

Please include the panel numbers in the parcel information (Section 5.1 Norris Plan and Appendix A-3) and give an outline of the 4 panels on Fig. 1-1 of the DEA to enable easier use of the material provided.

The Norris Dam Reservation Tactical Plan (Appendix B-1) is labeled "Draft June 2000"; is this correct? Please provide the "attached map" discussed throughout.

Please update the census information provided on page 125. On page 119, a 10-year planning horizon is discussed; please state the time frame of the Norris Plan.

I am very much in favor of Alternative B and commend the teams' effort. I suggest the following changes in parcel zone designation:

1. Parcel 6 should be divided between zones 2 and 3. Three of the 8 significant ecological sites given on pages 59 and 60 are in parcel 6. The other 5 are in parcels designated zone 3. This should also be highlighted in the parcel information (Section 5.1 Norris Plan and Appendix A-3).
2. Table 3-3 on page 48 should indicate gray bats as found (see Norris Dam Cave, page 60).
3. Parcel 222 is the only wetland discussed in section 3.5.1 not designated as zone 3. This information should be summarized in the parcel information.
4. Parcel 327 discussed on the top of page 64 is either a wrong number or should be included in parcel information.

Please include me in your distribution of the final EA and LMP.

Sincerely,



Barbara A. Walton
bwalton@kornet.org
(865) 482-5652

**Draft Environmental Assessment and
Proposed Norris Reservoir Land Management Plan
COMMENT CARD**

<i>Parcel Number</i>	<i>Do you agree with the draft allocation?</i>	<i>What allocation do you prefer for this parcel?</i>	<i>Comments</i>
6	No	2 and 3	drive
222	No	3	

Other comments:

see letter

Please check appropriate box if you would like copy of:

☐

The Final Public Summary

☒

The FINAL Environmental Assessment (FEA) and Land Management Plan

12. Mr. Tom Slaker - recorded in Appendix A-4 table as comment 25 and 26

From: Tom Slanker [mailto:t.slanker@reps-resource.com]

Sent: Wednesday, July 18, 2001 2:27 PM

To: dbharrell@tva.gov

Cc: Tom Slanker

Subject: Attn. David B. Harrell, Norris Land Mgmt Plan

I am a property owner in the Norris Pointe development on Davis Creek, Powell River. I have a few comments after reading the draft.

- 1) 3.12 "Other Issues", has any reviewed the effects of light pollution on the habitat? One of the splendors of the lake is looking at the stars at night. If residential, commercial, and public properties use more light than is required, it will be like living in a large city. Is it too late to discuss this issue? If so, can we put together a suggestive guideline for residential, commercial and government to follow?
- 2) 3.15.5 Commitments - you discuss Davis Creek. What are they?
- 3) Map of Alternate "B". I can review most CAD files. Can you E-mail (zip) me only the Davis Creek and upper Powell river section? Or mail a copy to Tom Slanker, 1336 Grace Ave., Cincinnati, OH. 45208. TomSlanker@earthlink.net

13. Mr. Gordon Early - recorded in Appendix A-4 table as comment 27 through 29

From: Ganddearly@aol.com [mailto:Ganddearly@aol.com]

Sent: Tuesday, July 17, 2001 9:29 AM

To: dbharrell@tva.gov

Subject: Norris Reservoir Land Management Plan

David,

I have looked over your draft and I personally think your Alternative B is a big improvement over what we have now. I have a question concerning 3.15.1 on Page 26. Why is the maximum permitted timber harvest 20 acres? This sounds rather large to me for property in proximity to Norris Lake.

We will be having a chapter board meeting this evening, and I plan to solicit comments on the plan from the other board members. We may have some additional questions for you.

Overall, I personally like your draft very much. The main thing I like is the large increases you recommend in Sensitive Resource Management and Natural Resource Conservation zones while keeping recreation about where it is now and prohibiting industrial use.

Gordon Early
FNLW-Campbell Co. Chapter

14. Mr. Russell H. Pickard - recorded in Appendix A-4 table as comment 30 and 31.

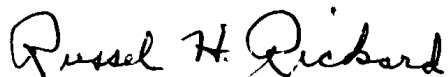
Comments to Draft Environmental Assessment
Norris Reservoir
Land Management Plan June 2001

3.12 Other Issues
312.2 Noise

“Potential community noise effects will be evaluated for this EA”----pertaining to land use---however, there doesn’t seem to be any stated concern or reference that addresses “LAKE RELATED” noise such as boats with unmuffled engines that produce unnecessarily high levels of exhaust noise. There appears to be a proliferation of larger and more powerful boats with substantially increased noise levels. These increasing noise levels are not compatible with lake side residents or shore line habitat.

Lakeside noise effects need to be included with any shore noise concerns.

Shore line management and stabilization is an ongoing challenge and shore line erosion is very difficult to control. A large portion of Norris Lake consists of relatively narrow waterways and inlets which are vulnerable to the effects of large wakes created by some large boats. I am concerned about the effect of the increasing size and number of large boats that are operating on Norris Lake. If this trend continues without concern for the effects on shore line erosion, it will become a major force in contributing to the destruction of the erosion sensitive shore line.



Russel H. Rickard
968 Fox Ridge Lane
Caryville, Tn. 37714
(865) 426-2247

15. Department of the Army, Nashville district, Corps of Engineers - recorded in Appendix A-4 table as comment 32.



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
3701 Bell Road
NASHVILLE, TENNESSEE 37214

July 11, 2001

Regulatory Branch

SUBJECT: Draft Environmental Assessment (EA) Norris Reservoir
Land Management Plan, June 2001

Mr. Jon Loney, Manager
Environmental Policy & Planning
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Dear Mr. Loney:

This is in response to your July 2, 2001, letter concerning the subject EA.

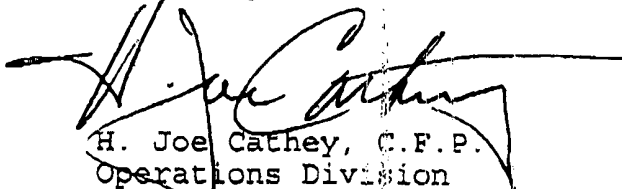
We have reviewed your draft EA and offer the following comments:

- On page 5, last par, the EIS process is inadvertently described as being used for the Norris Land Management Plan. Obviously, the NEPA process relating to EAs and FONSIs will be used by TVA in its decision making process.
- On page 10, Land Use Zone Definitions, section 2, Project Operations, the navigation operations are presented. It is recommended that references to locks and their operations be eliminated from the EA. Same with references to commercial tows. On page 23, par 3.10. Navigation, TVA states there is no commercial navigation on Norris.
- On page 26, par 3.15. Commitments, item 2., this sentence is ambiguous.
- As expected, we prefer Alternative B for TVA implementation.

-2-

We appreciate the opportunity to review this EA. If you have any questions, please contact me at the above address, or telephone (615) 369-7520.

Sincerely,



H. Joe Cathey, C.F.P.
Operations Division

16. Charles and Nancy Twonsend - recorded in Appendix A-4 table as comment 33.

From: NanFBN@aol.com [mailto:NanFBN@aol.com]
Sent: Sunday, July 22, 2001 9:10 PM
To: Harrell, David B.
Subject: Norris Lake Land Management Plan

We have just been made aware of this potential plan on Norris Reservoir. We own land on 188 Dillon Lane, Caryville. Subdivision Lakemont, SD, Lot 36. We have built a vacation home there over the past 5 years. The current resale value is over \$150,000.

It is with great concern that we are emailing you as to the exact effect this Alternative plan B will have on our land and our ability to maintain our property. It is our understanding that Plan B designates our land as parcel 19, Natural Resource Conservation. Does this mean that our lake front property can be open for public camping?? How do we prevent campers from accessing through our property? How do we protect our property as well as our privacy??

According to a map we were sent, property just to the left of ours (facing Lake front) is marked as Parcel 20. Residential access. From what we have read this affords more owner rights as to any public access. How did you determine what is 19 vs. 20? For the personal homeowner is one better than the other?

Can you please clarify this plan B for us?

Please note: WE ARE STRONGLY AGAINST ANY PLAN THAT WILL ALLOW THE PUBLIC TO

HAVE ACCESS TO THE LAKE FRONT IN FRONT OF OUR PROPERTY. WE DO NOT BELIEVE YOU

HAVE THE LEGAL ABILITY TO ALLOW THE PUBLIC TO CAMP BENEATH OUR HOME.

Please respond to our concern as soon as possible. Thank you

Charles & Nancy Terwoord

366 Cherrywood Dr.

Fairborn, OH 45324

937-878-9566

17. Claiborne County Chamber of Commerce - recorded in Appendix A-4 table as comment 34.

Promoting Claiborne County

Claiborne County Chamber of Commerce

3222 HIGHWAY 25E, SUITE 1 • TAZEWell, TENNESSEE 37879

PHONE (423) 626-4149 FAX (423) 626-1611



July 19, 2001

David Harrell, Planner
Clinch-Powell Watershed Team
P.O. Box 1589
Norris, TN 37828-1589

Dear Mr. Harrell:

On behalf of the representatives from Woodlake, City of Tazewell County Executive and the Claiborne County Chamber of Commerce, I wish to extend our gratitude for each of you taking the time to meet with us on Wednesday, July 18. We certainly enjoyed this opportunity.

As we discussed, the above organizations are requesting that your organization consider our proposals concerning the planned use of parcels # 209 and 211.

Parcel # 209 consists of 65.38 acres and has a zone allocation of 6. This represents recreational use, which Claiborne County obtained a 30 year easement for, many years ago. We are requesting that you continue to leave it a zone 6 and allow us time to further research plans to develop this parcel into a possible 9 hole Junior Pro Golf Course or public park that could include walking trails, picnic areas and other public usage.

Lastly, we are requesting that parcel # 211 be changed from a zone 4 to a zone 6. This would enable us to further consider the plans of a Junior Pro Golf Course on this site. We feel that this parcel would be more suited because of the boundary being with Woodlake Golf Course.

In summary we will be looking into funding, maintenance and all other possibilities that could benefit our county.

Sincerely,

Dennis Shipley
Executive Vice-President/Director

18. Tennessee Conservation League - recorded in Appendix A-4 table as comment 37 through 39.



28 July 2001

Mr. David B. Harrell
Project Leader
Tennessee Valley Authority
Post Office Box 1589
Norris, Tennessee 37828-1589

BY ELECTRONIC MAIL AND U.S. MAIL

Dear Mr. Harrell,

This letter contains the comments of the Tennessee Conservation League (TCL) in response to the Tennessee Valley Authority's (TVA) draft environmental assessment (EA) for the Norris Reservoir Land Management Plan (NRLMP). We thank you for this opportunity to share our views on this matter.

Overall the EA is thorough and we strongly agree with Alternative B. Specifically, we are pleased to see TVA choose an alternative that does not add additional public lands for use as residential, commercial, or industrial properties. We offer only a few questions regarding eight public land parcels described within the EA. The following are our specific comments.

Parcel 188 – We strongly believe that this parcel's designation should be changed to natural resource conservation to (1) better protect the sensitive resource area it surrounds, (2) better offer informal recreational opportunities, and (3) buffer the private lands from the reservoir. Further, by establishing this area for recreation, access to the sensitive resource area would increase, potentially placing it at greater risk to negative impacts.

Parcels 4, 37, 109, and 190 – After looking at these parcels, the League would like to assure that only the acres needed to operate boat ramps, parking areas, and marinas. These parcels are located near good clusters of natural resource conservation and sensitive resource management lands. We ask that the recreation designation for parcels 4, 37, 109, and 190 be reviewed and if a portion of each parcel is not being utilized, placing that portion in an adjacent parcel and changing its designation to natural resource conservation.

Parcel 53 and 176 – We would like to know when the lease for these parcels run out and what happens to them when the lease does expire or is not renewed.

Parcel 77 – We understand the common sense approach of having this parcel listed as recreation, due to its close proximity to the Boy Scout camp. However, knowing scouting, we would like for TVA to reconsider this parcel designation in the following light. We would ask that TVA contact the Boy Scouts of America chapter that operates the camp, and a plan of use be developed for the TVA public land. Once it is established how this land will be used, it may then be more appropriate to designate the area. Until this time, we would recommend that the area be designated natural resource conservation. Such a designation should not interfere with typical scouting activities, and it offers the opportunity for a better-protected shoreline.

Again, thank you for this opportunity to comment on this draft EA. We look forward to your response regarding our specific suggestions.

Respectfully yours,

Michael A. Butler
Director of Conservation

19. Tennessee Department of Environment and Conservation - recorded in Appendix A-4 table as comment 40.



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

401 Church Street
Nashville, Tennessee 37243

July 30, 2001

Mr. David Harrell, Planner
Clinch-Powell Watershed Team
Tennessee Valley Authority
P. O. Box 1589
Norris, TN 37828-1589

Dear Mr. Harrell:

Thank you for the opportunity to review the Norris Reservoir Land Management Plan and Draft and Environmental Assessment (DEA) for potential impacts on recreation resources. If Alternative B is implemented, our division anticipates that this project will have a tremendous quality of life benefit to the residents of the Norris Reservoir region and the many visitors to the area. It is felt that a small decrease of 100 acres in Alternative B would have very little impact on recreation opportunities region. In addition, the project could provide substantial improvements to ensure the future informal and dispersed recreation opportunities of the area for fishing, boating, hunting, wildlife viewing, camping, picnicking, trails, and varied water related recreation activities.

Tennessee's 1995-1999 *State Recreation Plan* clearly shows that habitat protection and river and lake access and related lake activities are a high priority for the East Tennessee Planning Region as well as the neighboring Upper East Tennessee Planning Region. The proposal to improve the long-term use of Norris Reservoir Land Management Plan will help meet the objectives of this state policy plan. Areas of special consideration that this project could improve include: quality boat access, fishing, wildlife observation, camping and lake recreation activities and hunting. Furthermore, the proposed alternative B would provide an important resource for the State of Tennessee to ensure the long-term viability of the Norris Reservoir Land Management Plan and economic/tourism opportunities that are directly tied to the use of this area. Alternative B would provide a positive impact for recreation.

The popularity of natural resource-based recreation areas is growing in Tennessee. I strongly support efforts to meet these growing demands and conserve our state's natural resources for our next generations to enjoy. For any additional questions contact: Kay Vance, Environmental Reviewer, 615-532-0755.

Sincerely,

A handwritten signature in black ink, appearing to read "Joyce H. Hoyle".

Joyce H. Hoyle, CLP
Director

20. East Tennessee Development District - recorded in Appendix A-4 table as comment 41.



August 1, 2001

Mr. Jon M. Loney, Manager
NEPA Administration
Environmental Policy & Planning
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902-1499

Dear Mr. Loney:

SUBJECT: Result of Regional Review
Tennessee Valley Authority - Draft Environmental Assessment, Norris Reservoir
Management Plan, Campbell, Claiborne, Grainger and Union Counties

The East Tennessee Development District has completed its review of the above mentioned proposal, in its role as a regional clearinghouse to review state and federally-assisted projects.

ETDD review of the draft environmental assessment has found no conflicts with the plans or programs of the District or other agencies in the region. However, ETDD or other reviewing agencies may wish to comment further at a later time.

We appreciate the opportunity to work with you in coordinating projects in the region.

Sincerely,

Robert E. Freeman
Executive Director

REF/tc

cc Mr. David Harrell, Clinch-Powell Watershed Team, Norris

RECEIVED

AUG 02 2001

5616 Kingston Pike P.O. Box 19806 Knoxville, TN 37939-2806
PHONE: (865)584-8553 FAX: (865)584-5159
E-MAIL: easttndevd@aol.com

21. U.S. Fish and Wildlife Services - recorded in Appendix A-4 table as comment 43.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/ES

JUL 26 2001

JUL 31 2001

Mr. Jon M. Loney, NEPA Administration
Environmental Policy and Planning
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Dear Mr. Loney:

Thank you for your letter of July 2, 2001, requesting that the Fish and Wildlife Service (Service) review the Tennessee Valley Authority's (TVA) Draft Environmental Assessment for the Norris Reservoir Land Management Plan in Anderson, Campbell, Claiborne, Grainger, and Union counties, Tennessee. We believe the document adequately describes the resources within the project area and the proposed action's impact on these resources. The Service supports Alternative B (Preferred Alternative) for TVA's involvement in the land management plan, and believes it would benefit fish and wildlife resources of the area and provide adequate recreational opportunities.

We appreciate the opportunity to comment on this project. We look forward to working with you in the future. If you have any questions please contact Mr. Wally Brines, of our Cookeville, Tennessee office at (913) 528-6481 ext. 222.

Sincerely yours,

Cynthia K. Dohner
Assistant Regional Director

22. Tennessee Historical Commission - recorded in Appendix A-4 table as comment 49



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

July 18, 2001

Mr. Jon Loney
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

RE: TVA, DRAFT ENVIRONMENTAL ASSESSMENT, NORRIS RESERVOIR LAND MGMT
PLAN, UNINCORPORATED, MULTI COUNTY,

Dear Mr. Loney:

At your request, our office has reviewed the above-referenced Draft Environmental Assessment in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, and as stated in our previous correspondence, we concur that the project area contains archaeological resources potentially eligible for listing in the National Register of Historic Places and should be subjected to Phase II archaeological testing prior to commencement of ground-disturbing activities. In addition portions of the project that will be subjected to ground-disturbing activities, that have as yet not been surveyed, must be subjected to systematic archaeological survey prior to construction.

Until such time as this office has rendered a final comment on all phases of this project, your Section 106 obligation under federal law has not been met. Please inform this office if this project is canceled or not funded by the federal agency. Questions and comments may be directed to Jennifer M. Bartlett (615) 741-1588, ext. 17.

Your cooperation is appreciated.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jmb

APPENDIX B-1 PARCEL 6 - NORRIS DAM RESERVATION TACTICAL PLAN

PARCEL 6

**NORRIS DAM RESERVATION
TACTICAL PLAN**

September 2001

CONTENTS

I. INTRODUCTION.....287

II. CUSTOMER SCOPING287

III. RECREATION FACILITIES.....288

IV. EXOTIC PLANT MANAGEMENT.....290

V. WILDLIFE MANAGEMENT AND FORESTRY291

VI. VISITOR SAFETY291

VII. SHORELINE MANAGEMENT ZONES292

VIII. MAINTENANCE.....292

LIST OF TABLES

TABLE 1 RECREATION FACILITIES289

TABLE 2 PARCEL 6 - NORRIS DAM RESERVATION TACTICAL PLAN SCHEDULE AND BUDGET
FROM FISCAL YEAR 2002.....293

FIGURE

FIGURE 1 PARCEL 6 - NORRIS DAM RESERVATION TACTICAL PLAN MAP.....295

I. INTRODUCTION

The Norris Dam Reservation (Reservation), like most dam reservations in TVA, serves many purposes. It is the location of hydropower production, hydropower distribution, resource stewardship activities, recreation opportunities, office space, etc. Historically, the staff responsible for the various activities and maintenance of the facilities and grounds have planned their activities with little or no attention to the outcomes provided by the dam reservation as a whole.

The main purpose of this Norris Dam Reservation Tactical Plan (Plan) is to bring the stakeholders and all TVA interests together to develop a common vision of the outcomes produced from the Reservation for the next 5 to 10 years.

Hydropower production at Norris Dam is provided by two turbines. Each turbine is rated at 60 megawatts. Norris Dam and the switchyard are permanently fixed structures beyond the scope of this Plan. However, the grounds outside those structures and potential activities proposed on those grounds will be evaluated concerning any potential impacts to the structure.

The Reservation historically has been utilized for natural resource projects. After the dam construction was finished, the reservation was used as a fish-rearing area to restock the native sport fish populations in Norris Reservoir. It was a test orchard for trees that could be used for reclaiming strip mines and provide valuable wildlife food. It was a nursery for seedling trees for reforestation activities. It currently is being used as a superior tree seed source for the Tennessee State Forestry Tree Seedling Program.

It is also a place where natural resource-oriented recreation occurs. TVA has developed several trails on the Reservation used by hikers and bird watchers. Over time, with changing recreation needs, the trails are also being used by exercise walkers, horseback riders, and mountain bikers gaining access to the extensive trail system of the city of Norris watershed and the Norris Dam State Park. In addition, as TVA improved the oxygen levels released from the turbines and constructed the weir dam providing minimum flows downstream, the Clinch has become a regionally significant trout water fishery.

II. CUSTOMER SCOPING

During the summer (June-August) TVA staff asked customers visiting the Reservation to complete a questionnaire about their recreation activities and facility and maintenance preferences (see Appendix A-2). The majority of the interviews were fisherman (60 percent), but picnicking, sightseeing, and wildlife viewing were mentioned by 45 percent of those interviewed. In addition, exercise walking, hiking, and visiting the Grist Mill and Lenoir Museum were mentioned by approximately 25 percent of those questioned. It is clear that a diverse number of recreation activities occur on the Reservation.

Eighty-eight percent of customers interviewed felt the Reservation is safe; 73 percent felt that it is usually not crowded; and 76 percent felt that the recreation activities of others did not interfere with their recreation activity. In addition, 90 percent believe that the litter on the Reservation is taken care of and 65 percent believe that restroom facilities are clean. All in all, the responses to these particular questions indicate that the people who use the Reservation believe that the existing facilities and grounds are well maintained, and the overall experience is satisfactory.

When asked about certain facility needs and preferences, 66 percent of those customers interviewed felt that more permanent restroom facilities were somewhat or very important. In addition, 41 percent were in favor of additional portable toilets. Both responses indicate a need for additional waste management systems.

When asked about a trail for exercise walking and the looping of the Song Bird Trail, 55 and 47 percent, respectively, said these were important additions.

III. RECREATION FACILITIES

Existing

The customer facilities currently provided at the top of Norris Dam by TVA consist of a toilet building, 15 picnic tables, and parking for 130 vehicles. Customer facilities below the dam consist of a parking lot for 60 vehicles, canoe/small boat launching area with parking for 25 vehicles, and the trail head for Song Bird Trail (1-mile long). There are three additional public parking lots along the left bank downstream of the area (see map on page 295)—(1) in front of the Aquatic Biology Lab, (2) at Clear Creek, and (3) at the weir dam with parking for a total 55 vehicles. The parking lot at Clear Creek and the Aquatic Biology Lab are used by fishermen, but they are also used by mountain bike and horseback riders who are gaining access to the trail system of the city of Norris watershed and Norris Dam State Park.

Downstream of the weir and technically off the Reservation is a boat launching area (Miller Island) which includes a parking lot for 30 vehicles. This area is used for bank fishing, wading, and boat access to fish and hunt on the Clinch River.

The right bank of the Reservation includes the visitor overlook area with parking for 25 vehicles, River Bluff Trail (3-mile loop) with parking for five vehicles, the TVA Police firing range, small picnic area with four tables, and a set of steps that provide access to the river for bank fisherman. TVA provides three portable toilets from May through mid-October, one at the first small boat launch, one at Clear Creek, and one at Miller Island Boat Launch.

TABLE 1 RECREATION FACILITIES					
AREA	PARKING	# PICNIC	RESTROOM	TRAIL	RAMP
West Overlook	25	None	None		
Riverbluff	10	4	None	3 miles	
East Overlook	130	15	Permanent		
Powerhouse	60	None	Inside Dam		
Canoe Access	25	None	Portable	Song Bird	Yes
Aquatic Biology Lab	15	None	None	Song Bird	
Clear Creek	15	None	Portable	None	
Weir Dam	25	None	None	None	Canoe Only
Miller Island	30	None	Portable	None	Yes

Proposed Action

As previously stated, most of the recreation activities occurring on the Reservation are natural resource-oriented, and none of the comments received during the survey indicated a need for any intensive type of development that would move the recreation use to a more structured format. However, there were some facility needs identified.

The number one priority need is a restroom. It is proposed that a restroom will be constructed in the open space between Clear Creek and the weir dam in fiscal year (FY) 2002. A lower priority is the need to get exercise walkers off of the road shoulders and extend hiking opportunities. This could be accomplished in FY2003 by making Song Bird Trail a loop trail, crossing Clear Creek, and tying the canoe launch parking lots with Clear Creek parking lot and the new restroom facilities (see map on page 295). It is also recommended that a picnic shelter be constructed at the east side overlook in FY 2004. The access to existing picnic tables does not meet American Disability Act standards, but this could be accomplished with properly siting a picnic shelter.

The handrail and sidewalk for the powerhouse parking lot is in poor condition and should be replaced. This could be phased in over a 2- to 4-year period and budgeted through the Clinch-Powell Watershed Team budget instead of the Valley-wide capital budget where it would not rank very high because of the Valley-wide needs that are not being met.

IV. EXOTIC PLANT MANAGEMENT

There are numerous invasive exotic plants found on the Reservation but the most noticeable and fastest spreading are: autumn olive (*Elaeagnus umbellata*), oriental bittersweet (*Celastrus orbiculata*), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), and kudza (*Pueraria montana*). TVA contributed to the problem by planting autumn olive for songbird food in the mid-1970s. As TVA has continued to reduce its acreage of mowed areas to be more cost-effective, these species have invaded into those disturbed open areas and become a nuisance species. Most of the exotic plants are on the left bank of the Clinch River; however, the seed base has now become large enough that birds are depositing them in the River Bluff Small Wild Area.

Executive Order 13112 (Invasive Species) of February 3, 1999, Section 2, Item 2 directs federal agencies to: . . . (ii) detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded

Proposed Action

Control invasive exotic species where possible by mowing. This will require limbing and removal of some smaller tree species to allow access to mowers. Some vine species will need to be cut or sprayed by hand. It is not the intention of this effort to seed grass or mow on a weekly or biweekly basis. The exotic plants will be controlled by mowing on an annual basis (TVA standard for Level IV mowing). Mowing will minimize soil disturbance activities. It is the intention of this Plan to mow, spray, or cut exotic plants in 90-100 percent of the areas identified on the map on page 295.

Native plant restoration will occur in the same areas as the control areas; however, it is not anticipated that the understory will be as dense as it currently is with exotic species. Planting native plants over the entire area where exotic plant control is taking place would defeat the objective of managing exotic plant control cost effectively by mowing. Some of the native species used would be:

Serviceberry	<i>Amelanchier arborea</i>
Red mulberry	<i>Morus rubra</i>
Farkleberry	<i>Vaccinium arboreum</i>
Hazelnut	<i>Corylus americana</i>
Spicebush	<i>Lindera benzoin</i>

V. WILDLIFE MANAGEMENT AND FORESTRY

The survey indicated that viewing deer and other wildlife was one of three recreation activities mentioned most often after fishing. First time visitors stated that sight-seeing was their most popular activity (87 percent) and it could be assumed that seeing some form of wildlife could enhance their sight-seeing. The Reservation is a very popular area for viewing deer. In the late evenings, the area is similar on a smaller scale to Cades Cove. Some evenings 20-30 vehicles may be lined up to view the deer in open areas below the dam and the picnic area at the top of the dam. A disproportionately small number of surveys were conducted after 7 p.m. during the survey period; therefore, it is possible that viewing deer and other wildlife is the most popular recreation activity occurring on the Reservation.

Proposed Action

As part of the exotic plant control efforts, additional space will be available to plant native warm season grasses as the understory edge is pushed further back. In addition, several areas sewn in fescue will be converted to native warm season grasses and some areas will be converted from fescue to wildlife habitat areas (see map on page 295). Activities in these areas include spraying, disking, seeding, and some tree removal in the proposed wildlife habitat area northwest of Clear Creek. In addition, the area in front of the Clinch-Powell Watershed Office (CPWO) would be converted to hardwoods after the Clinch-Powell Watershed Team has moved to the Aquatic Biology Lab and the CPWO building has been removed.

VI. VISITOR SAFETY

Current Situation

As previously stated, 88 percent of visitors feel safe using the Reservation. However, when given the chance to comment on a safety issue, 58 percent supported reducing the speed limit below the current 55-mile-per-hour speed limit. Only 14 percent had a negative response to this question.

There are many deer on the Reservation. The deer are one of the major natural features that attract visitors to the Reservation. Unfortunately, they are also on the major safety hazards as numerous deer are struck each year by passing vehicles..

Proposed Action

TVA will contact the Tennessee Department of Transportation (TDOT) and petition TDOT to lower the speed limit on the Reservation. In addition, the woody vegetation on the west side of Highway 441 between the Aquatic Biology Lab and Clear Creek will be pushed back an additional 20 feet to provide a safer visual cushion for spotting deer.

VII. SHORELINE MANAGEMENT ZONES

There are several areas on the Reservation where our mow lines have gotten too close to the Clinch River and Clear Creek. Although these are not reservoir shoreline areas it seems appropriate that wherever applicable the Reservations' shoreline should meet TVA's Shoreline Management Policy described for shoreline management zones.

Proposed Action

The shoreline around Clear Creek, between Highway 441 and the Clinch River, and the shoreline of the Clinch River on the left bank from Clear Creek to the weir are prime areas to be planted and converted to shoreline management zones. These areas would be planted with native trees; mowing would be limited or stopped; and 20-foot access/view corridors would be developed.

VIII. MAINTENANCE

Current Situation

Presently about half of the Reservation grounds are mowed at a Level IV (approximately one to two times per year). The grounds around the upper picnic area, the grass area between the large parking lot below the dam and the small boat launch, the grass area between Clear Creek and the weir, the grass area in front of the CPWO, Miller Island access, and the road shoulders are maintained at a Level II. Level II areas are mowed when grass reaches a height of 3 inches which is about every 10 days during the growing season. The visitor overlooks on both sides of the dam are Level I areas.

Proposed Action

The proposed actions would add some additional maintenance costs to the operation of the Reservation. For example, adding restroom facilities would increase costs by approximately \$11,000 per year to the cost of operations. Turning Song Bird Trail into a loop trail would add approximately \$1000 in costs to the operation of the Reservation.

TABLE 2 PARCEL 6 - NORRIS DAM RESERVATION TACTICAL PLAN SCHEDULE AND BUDGET FROM FISCAL YEAR 2002		
Fiscal Year	Task Description	Costs
2002	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2002	Restroom facility	\$85,000
2003	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2003	Begin native plant restoration	\$8,000
2003	Construct bridge over Clear Creek	\$30,000
2003	Plant SMZ Clear Creek	\$2,000
2003	Widen visual zone on 441	\$5,000
2004	Develop loop trail - bridge to Song Bird Trail	\$40,000
2004	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2004	Begin conversion of island from fescue to native warm season grasses	\$2,000
2004	Begin wildlife habitat area work Clear Creek	\$3,000
2004	Continue native plant restoration	\$8,000
2004	Begin handrail/sidewalk replacement	\$22,000
2004	Shoreline stabilization work at Clear Creek	\$40,000
2004	Plant SMZ between Clear Creek and weir	\$2,000
2005	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2005	Complete conversion from fescue to native warm season grasses	\$2,000
2005	Complete wildlife habitat area work Clear Creek	\$3,000
2005	Continue native plant restoration	\$8,000
2005	Construct picnic shelter - East Side Overlook	\$35,000
2006	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2006	Continue native plant restoration	\$8,000
2006	Begin wildlife habitat area work below weir dam	\$3,000
2007	Invasive exotic species - 1,000-foot Song Bird Trail	\$3,000
2007	Continue native plant restoration	\$8,000
2007	Complete wildlife habitat area work below weir dam	\$3,000
2008	Handrail/sidewalk replacement below dam	\$32,000

APPENDIX C-1 TERRESTRIAL ECOLOGY – WILDLIFE SPECIES BY COMMUNITY

Appendix C-1 Wildlife Species by Community Types That are Known to Occur in the Vicinity of Norris Reservoir				
Species By Common Name	Scientific Name	Forestland	Managed Open Land (Old Fields and Agriculture Fields)	Wetland & Riparian Communities
<i>Amphibians</i>				
American Toad	<i>Bufo americanus</i>	X	X	X
Bullfrog	<i>Rana catesbeiana</i>			X
Eastern Narrowmouth Toad	<i>Gastrophryne carolinensis</i>			X
Green Frog	<i>Rana clamitans</i>			X
Wood Frog	<i>Rana sylvatica</i>	X		X
Spring Peeper	<i>Pseudacris crucifer</i>			X
Woodhouse's Toad	<i>Bufo woodhousei</i>	X	X	
Spotted Salamander	<i>Ambystoma maculatum</i>	X	X	
Dusky Salamander	<i>Desmognathus fuscus</i>	X		X
Mountain Dusky Salamander	<i>Desmognathus ochrophaeus</i>	X		X
Longtail Salamander	<i>Eurycea longicauda</i>	X		
Spring Salamander	<i>Gyrinophilus porphyriticus</i>			X
Northern Slimy Salamander	<i>Plethodon glutinosus</i>	X		
Ravine Salamander	<i>Plethodon richmondi</i>	X		
Red Salamander	<i>Pseudotriton ruber</i>			X
<i>Reptiles</i>				
Black Rat Snake	<i>Elaphe obsoleta obsoleta</i>	X		
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	X	X	X
Northern Ringneck Snake	<i>Diadophis punctatus edwardsii</i>	X		
Northern Water Snake	<i>Nerodia sipedon sipedon</i>			X

Appendix C-1 Wildlife Species by Community Types That are Known to Occur in the Vicinity of Norris Reservoir				
Species By Common Name	Scientific Name	Forestland	Managed Open Land (Old Fields and Agriculture Fields)	Wetland & Riparian Communities
<i>Reptiles continued</i>				
Northern Fence Lizard	<i>Sceloporus undulatus hyacinthinus</i>	X		
Five-lined Skink	<i>Eumeces fasciatus</i>	X	X	
Broadhead Skink	<i>Eumeces laticeps</i>	X		
Common Snapping Turtle	<i>Chelydra serpentina serpentina</i>			X
Painted Turtles	<i>Chrysemys picta spp.</i>			X
Red-eared Slider	<i>Trachemys scripta elegans</i>			X
Eastern Box Turtle	<i>Terrapene carolina carolina</i>	X	X	
<i>Birds</i>				
Red-shouldered Hawk	<i>Buteo lineatus</i>	X		X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X	X	
American Kestrel	<i>Falco sparverius</i>		X	
Great Horned Owl	<i>Bubo virginianus</i>	X	X	X
Barred Owl	<i>Strix varia</i>	X		X
Common Screech Owl	<i>Otus asio</i>	X	X	
Turkey Vulture	<i>Cathartes aura</i>	X		
Black Vulture	<i>Coragyps atratus</i>	X		
American Crow	<i>Corvus brachyrhynchos</i>	X	X	
Hairy Woodpecker	<i>Picoides villosus</i>	X		X
Pileated Woodpecker	<i>Dryocopus pileatus</i>	X		X
Yellow-shafted Flicker	<i>Colaptes auratus</i>	X	X	
Downy Woodpecker	<i>Picoides pubescens</i>	X		X
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	X	X	
Belted Kingfisher	<i>Megaceryle alcyon</i>			X

Appendix C-1 Wildlife Species by Community Types That are Known to Occur in the Vicinity of Norris Reservoir				
Species By Common Name	Scientific Name	Forestland	Managed Open Land (Old Fields and Agriculture Fields)	Wetland & Riparian Communities
<i>Birds continued</i>				
Great Blue Heron	<i>Ardea herodias</i>			X
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>			X
Green Heron	<i>Butorides striatus</i>			X
Spotted Sandpiper	<i>Actitis macularia</i>			X
Killdeer	<i>Charadrius vociferus</i>		X	X
Wild Turkey	<i>Meleagris gallopavo</i>	X	X	
Bobwhite Quail	<i>Colinus virginianus</i>		X	
Ruffed Grouse	<i>Bonasa umbellus</i>	X		
Mourning Dove	<i>Zenaida macroura</i>		X	
Canada Goose	<i>Branta canadensis</i>		X	X
Wood Duck	<i>Aix sponsa</i>			X
Mallard	<i>Anas platyrhynchos</i>			X
Blue-winged Teal	<i>Anas discors</i>			X
American Black Duck	<i>Anus rubripes</i>			X
Pied-bill Grebe	<i>Podilymbus podiceps</i>			X
Northern Cardinal	<i>Cardinalis cardinalis</i>	X	X	
Eastern Bluebird	<i>Sialia sialis</i>		X	
American Goldfinch	<i>Carduelis tristis</i>	X	X	
Blue Jay	<i>Cyanocitta cristata</i>	X		
Carolina Chickadee	<i>Parus carolinensis</i>	X	X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		X	X
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	X	X	
American Robin	<i>Turdus migratorius</i>	X	X	
Northern Mockingbird	<i>Mimus polyglottos</i>		X	
Carolina Wren	<i>Thryothorus ludovicianus</i>	X	X	
Indigo Bunting	<i>Passerina cyanea</i>		X	
Tufted Titmouse	<i>Parus bicolor</i>	X		

Appendix C-1 Wildlife Species by Community Types That are Known to Occur in the Vicinity of Norris Reservoir				
Species By Common Name	Scientific Name	Forestland	Managed Open Land (Old Fields and Agriculture Fields)	Wetland & Riparian Communities
<i>Birds continued</i>				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X		X
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	X	X	
Black-and-white Warbler	<i>Mniotilta varia</i>	X		
Wood Thrush	<i>Hylocichla mustelina</i>	X		
Eastern Wood Pewee	<i>Contopus virens</i>	X		
Red-eyed Vireo	<i>Vireo olivaceus</i>	X		
Pine Warbler	<i>Dendroica pinus</i>	X		
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	X		
<i>Mammals</i>				
Whitetail Deer	<i>Odocoileus virginianus</i>	X	X	X
Gray Squirrel	<i>Sciurus carolinensis</i>	X		
Southern Flying Squirrel	<i>Glaucomys volans</i>	X		
Eastern Chipmunk	<i>Tamias striatus</i>	X	X	
Raccoon	<i>Procyon lotor</i>	X		X
Eastern Cottontail Rabbit	<i>Sylvilagus floridanus</i>		X	
Bobcat	<i>Lynx rufus</i>	X		X
Red Fox	<i>Vulpes vulpes</i>		X	
Gray Fox	<i>Urocyon cinereoargenteus</i>	X	X	
Coyote	<i>Canis latrans</i>		X	
Mink	<i>Mustela vison</i>			X
Muskrat	<i>Ondatra zibethicus</i>			X
Opossum	<i>Didelphis virginiana</i>	X	X	
Striped Skunk	<i>Mephitis mephitis</i>	X	X	
Groundhog	<i>Marmota monax</i>	X	X	
White-footed Mouse	<i>Peromyscus leucopus</i>	X	X	
Deer Mouse	<i>Peromyscus maniculatus</i>	X	X	
Eastern Mole	<i>Scalopus aquaticus</i>	X	X	
Least Shrew	<i>Cryptotis parva</i>		X	X
Short-tailed Shrew	<i>Blarina brevicauda</i>	X		X

APPENDIX C-2 SENSITIVE BAT SPECIES KNOWN TO OCCUR IN VICINITY

Appendix C-2 Sensitive Bat Species Known to Occur in the Vicinity (Anderson, Campbell, Claiborne, Grainger, Hancock, and Union Counties, Tennessee) of Norris Reservoir, 1999			
Common Name	Scientific Name	Status	Distance from Occurrence to Reservoir (Miles)
Gray bat	<i>Myotis grisescens</i>	Federal-endangered	0.25
Gray bat	<i>Myotis grisescens</i>	Federal-endangered	0.05
Gray bat	<i>Myotis grisescens</i>	Federal-endangered	0.7
Indiana bat	<i>Myotis sodalis</i>	Federal-endangered	0.05
Eastern big-eared bat	<i>Corynorhinus rafinesquii</i>	In Need of Management	Adjacent
Gray bat	<i>Myotis grisescens</i>	Federal-endangered	7.0
Indiana bat	<i>Myotis sodalis</i>	Federal-endangered	6.0
Gray bat	<i>Myotis grisescens</i>	Federal-endangered	8.0
Gray bat, Indiana bat	<i>Myotis grisescens, Myotis sodalis</i>	Federal-endangered	Adjacent
Eastern small-footed bat	<i>Myotis leibii</i>	In Need of Management	Adjacent
Gray bat, Indiana bat	<i>Myotis grisescens, Myotis sodalis</i>	Federal-endangered	0.25
Gray bat, Indiana bat	<i>Myotis grisescens, Myotis sodalis</i>	Federal-endangered	10.0

INDEX

26a Review, 67, 109, 147

A

Air quality, 5, 94, 95, 97, 108, 131

Allocation Alternative, i, iii, iv, vii, 11, 15

Alternative A, i, iii, iv, v, vii, 5, 11, 13, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 38, 39, 42, 45, 56, 57, 62, 63, 64, 66, 67, 70, 71, 75, 81, 86, 87, 90, 92, 93, 94, 95, 98, 241

Alternative B, i, iii, iv, v, vii, ix, 5, 8, 11, 15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 39, 42, 43, 45, 56, 57, 63, 64, 65, 67, 68, 70, 71, 75, 76, 81, 87, 90, 92, 94, 95, 96, 97, 98, 135, 237, 238, 239, 240, 242, 244, 246, 247, 249, 250, 253, 270

Area of Potential Effect (APE), 25, 40, 42, 43, 45, 111

Aquatic animals, vii, ix, 27, 54, 57

Aquatic ecology, viii, 4, 5, 8, 30, 76, 81

Aquatic habitats, 27, 30, 53, 57, 72, 80, 81

Archaeology, 40, 112, 126

Archaeological, iv, v, 11, 12, 17, 20, 23, 24, 40, 41, 42, 43, 96, 98, 128, 139, 141, 143, 144, 238, 240, 250

Archaeological Resources Preservation Act (ARPA), 24, 40, 42, 111

B

Beech Island, 52, 61, 137

Benthic, ix, 73, 77, 80, 107

Best management practices (BMP), vi, 4, 99, 111, 114, 124, 149, 237, 244, 253

Big Creek, 64, 69, 72, 74, 238

Buffer, 27, 57, 60, 75, 89, 109, 136, 147, 239, 243, 244, 247

C

Cedar Grove, 65, 227, 248

Climatology, 72

Clinch River, 1, 2, 36, 44, 51, 61, 62, 64, 70, 71, 72, 73, 74, 77, 78, 79, 88, 90, 97, 111, 128, 129, 248, 288, 290, 292

Clinch River Bluffs, 64

Comby Ridge, 61

Commercial recreation, iv, 1, 7, 15, 19, 20, 22, 29, 33, 39, 70, 71, 87, 90, 91, 92, 93, 94, 95, 125, 133, 138, 143, 144, 220, 238

Commitments, v, vi, viii, 23, 24, 43, 59, 70, 97, 98, 99, 126, 139, 140, 237, 243, 244, 246, 253

Committed land, ix, 20, 21, 33, 70, 94, 126, 248

Comparison of Alternatives, vii, 22

Cove Creek, 1, 23, 64, 69, 72, 128, 138

Cultural resources, vi, vii, 4, 5, 8, 11, 12, 24, 29, 40, 41, 42, 59, 96, 99, 101, 102, 103, 107, 113, 124, 137, 138, 220, 226, 228, 244, 247

Cumulative Impacts, viii, 26, 28, 57, 63, 95, 107

D

Dam reservation, 13, 16, 20, 42, 98, 136, 140, 287

Davis Creek, 4, 5, 69, 72, 74, 110, 114, 243, 244, 269

Developed recreation, 20, 28, 29, 30, 62, 70, 71, 75, 94, 96, 138, 227, 248

E

Easement land, 16, 126, 130, 140

Employment, ix, 31, 83, 84, 86, 87

Endangered species, vii, 4, 8, 11, 12, 20, 29, 46, 49, 61, 65, 96, 97, 107, 126, 133, 137, 138, 143, 144, 147, 244

Environmental justice, 85, 87, 88

Erosion, vi, 7, 36, 38, 47, 60, 67, 75, 80, 98, 99, 107, 109, 124, 131, 133, 237, 242, 244, 245

F

Farmland, viii, ix, 8, 32, 59, 89, 90, 97, 109, 111

Finding of No Significant Impact (FONSI), 5, 6, 111, 119, 121

Fish, ix, 7, 54, 55, 73, 76, 77, 78, 79, 80, 81, 104, 112, 113, 115, 128, 133, 250, 251, 280, 287, 288

Floodplain, viii, 32, 90, 91, 92, 107, 112, 147

Flowage easement, 2, 4, 11, 16, 108, 126, 130, 138, 139, 140, 238, 240

Forecast System, i, iii, iv, v, ix, 1, 8, 11, 13, 15, 22, 23, 24, 25, 26, 27, 28, 29, 31, 33, 38, 42, 56, 57, 64, 66, 70, 71, 75, 86, 93, 95, 108, 109, 147, 241

Forestry research, 25

G

Gap Creek Bluffs, 65

H

Habitat protection area, 23, 61, 62, 64, 65

Hemlock Bluff, 61, 62

Historic structures, vii, 25, 43, 45

Hydrologic units (HUC), ix, 72

I

Industrial development, 38, 39

Industrial/commercial development, v, 15, 21, 33, 41, 45, 76, 95, 126, 137, 240

L

Little Barren Creek, 65
Lone Mountain Shores, 5, 114
Loyston Point Recreation Area (Loyston), 68, 70, 74, 111, 138, 234

M

Managed residential, iii, 11, 12, 20, 139, 143, 144
Maximum shoreline contour (msc), 2, 13, 111
Mean sea level (msl), 2, 90, 91, 111, 240
Minor commercial landing, iv, 14, 15, 22, 33, 93
Monks Corner, v, 23, 61, 62, 65, 137
Murrayville Flats, 64

N

National Environmental Policy Act (NEPA), 13, 29, 67, 101, 103, 108, 111, 113, 246
National Historic Preservation Act (NRHP), 24, 25, 40, 41, 43, 44, 111
Natural features, 19, 35, 36, 61, 96, 143, 291
Natural resource conservation, iv, v, 7, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 39, 42, 43, 45, 56, 57, 63, 67, 68, 69, 70, 71, 75, 81, 87, 89, 90, 92, 95, 96, 97, 98, 110, 126, 130, 135, 136, 137, 142, 237, 239, 241, 243, 245, 246, 247, 248, 270, 274
Navigation, viii, 1, 2, 8, 11, 12, 16, 31, 88, 89, 101, 107, 125, 129, 130, 135, 136, 139, 140, 141, 147, 246
No Action Alternative, i, iii, vii, 4, 11, 13, 45, 75
Noise, viii, 33, 45, 92, 93, 94, 115, 245
Norris Dam, viii, 1, 2, 23, 24, 40, 43, 44, 59, 61, 62, 69, 71, 73, 88, 90, 91, 98, 112, 126, 129, 130, 136, 149, 215, 242, 243, 283, 285, 287, 288, 293, 295
Norris Dam Cave, 61, 62, 243
Norris Plan, i, iii, iv, v, 6, 7, 8, 11, 20, 21, 22, 23, 25, 39, 41, 46, 54, 56, 63, 68, 70, 71, 75, 81, 89, 95, 97, 111, 125, 126, 127, 135, 136, 137, 138, 139, 140, 143, 144, 149, 238, 240, 241, 242, 248, 250
Norris Reservoir Land Management Plan, i, iii, viii, ix, 6, 54, 111, 116, 125, 149, 241, 246, 247, 249, 250, 270

O

Oak Grove River Bluffs, 64

P

Parcel information, viii, 22, 125, 140, 215, 242, 243
Plant species, vii, ix, 25, 28, 46, 47, 56, 60, 64
Population, ix, 48, 68, 69, 70, 78, 80, 82, 85, 86, 87, 97, 98, 128, 130, 131, 133, 215, 217
Powell River, 2, 27, 37, 40, 54, 55, 57, 70, 71, 72, 73, 74, 77, 78, 79, 88, 91, 92, 111, 113, 128, 129, 130, 243, 269
Power transmission, iii, 14, 15, 22, 224, 231
Preferred alternative, v, vii, 23, 28, 65, 95, 135, 250
Prime farmland, viii, 32, 89, 90, 109

Project operations, iv, 15, 16, 21, 23, 31, 42, 45, 63, 75, 87, 126, 130, 135, 136, 139, 140, 243, 246

Public recreation, iii, 2, 13, 15, 19, 22, 24, 25, 28, 39, 42, 56, 62, 70, 86, 143, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 246

R

Recreation, i, iii, iv, v, vii, 1, 2, 5, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 39, 42, 45, 56, 59, 62, 63, 68, 69, 70, 71, 72, 75, 76, 81, 86, 87, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 102, 105, 107, 109, 111, 112, 125, 126, 130, 131, 133, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 147, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 238, 239, 241, 242, 245, 246, 247, 248, 249, 270, 285, 287, 288, 289, 291

Reservoir operations, iii, 2, 13, 15, 22, 24, 33, 42, 70, 87, 90, 92, 93, 108, 109, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234

Residential Access, v, 4, 11, 13, 15, 16, 20, 21, 23, 29, 32, 42, 45, 60, 63, 67, 68, 75, 86, 88, 89, 90, 92, 93, 98, 119, 126, 130, 135, 137, 138, 139, 140, 143, 144, 238, 240, 246

Residential Development, 16, 33, 44, 59, 64, 76, 86, 88, 93, 94, 97, 98, 140, 238, 240

Residential mitigation, iii, 11, 12, 67

Retained rights, 11, 16, 140

Riparian ecology, vii, 29, 65, 67

Riparian zone, 65, 66, 76, 80, 81, 131, 244

River Bluff, 49, 61, 62, 64, 137, 288, 290

S

Sensitive ecological areas, vii, 17, 18, 26, 49, 57, 141, 142

Sensitive resource management, iv, v, 17, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30, 32, 39, 42, 43, 45, 48, 56, 57, 63, 64, 65, 67, 68, 69, 70, 71, 75, 81, 87, 90, 92, 95, 96, 98, 110, 126, 130, 135, 136, 137, 138, 141, 142, 237, 239, 243, 245, 246, 247, 248, 270

Shoreline Aquatic Habitat Index (SAHI), 76, 111

Shoreline buffer, 244

Shoreline categorization, ix, 4, 11, 12, 67, 81, 96, 138, 139

Shoreline Management Initiative (SMI), 4, 6, 60, 112, 114, 126, 138, 149

Shoreline Management Policy (SMP), i, iii, v, 11, 12, 13, 16, 38, 60, 63, 67, 75, 88, 89, 112, 135, 140, 149, 238, 240, 292

Shoreline Management Zone (SMZ), 67, 109, 112, 147, 243, 292, 293

Shoreline protection, iii, 11, 12, 20, 76, 139, 143, 144, 242

Significant Natural Areas, vii, 28, 58, 61, 64, 65

Small Wild Area, iv, v, 14, 15, 20, 23, 25, 28, 52, 56, 61, 62, 64, 65, 125, 137, 223, 229, 232, 234, 290

Socioeconomics, 8

Soils, ix, 32, 47, 48, 67, 80, 89, 90

State Historic Preservation Officer (SHPO), 41, 45, 112, 244, 250

State Park, 2, 7, 23, 37, 40, 59, 68, 70, 74, 104, 105, 129, 130, 133, 138, 215, 216, 233, 287, 288

Stiners Woods, 44, 61, 62

T

Terrestrial ecology, vii, viii, 28, 58, 60, 62, 63, 64, 297
Threatened and endangered species, vii, 4, 8, 11, 25, 29, 46, 61, 65, 96, 126, 137
Transferred land, 23
TVA Act, 1, 108, 109, 125, 130, 147
TVA Board of Directors, 1, 111, 125, 149
TVA Natural Area, v, 215, 217, 218, 219, 224, 226, 232, 234

V

Vegetation, 4, 6, 12, 16, 18, 20, 25, 28, 36, 56, 60, 62, 63, 67, 75, 80, 88, 108, 109, 110, 139, 140, 142, 143, 144, 147, 148, 244, 291
Visual resources, v, vii, 5, 8, 23, 24, 35, 39, 86, 137, 215, 217, 219, 220, 223, 224, 225, 227, 228, 229, 230, 231, 232, 233

W

Water quality, vi, viii, ix, 2, 4, 5, 7, 8, 18, 27, 30, 38, 57, 59, 60, 65, 67, 72, 73, 74, 75, 76, 77, 96, 99, 109, 113, 114, 124, 125, 131, 133, 135, 136, 137, 142, 147, 240
Watershed, i, iii, viii, ix, 2, 6, 7, 8, 16, 46, 59, 69, 71, 72, 73, 96, 97, 101, 102, 103, 111, 114, 115, 116, 119, 125, 126, 130, 133, 135, 136, 140, 237, 244, 253, 287, 288, 289, 291
Wetlands, iv, v, vii, ix, 4, 8, 11, 12, 17, 20, 23, 27, 29, 35, 38, 39, 49, 52, 53, 57, 60, 65, 66, 67, 68, 96, 97, 107, 110, 112, 126, 133, 137, 138, 139, 141, 143, 144, 147, 148, 215, 238, 240
Wildlife, iv, v, vi, viii, 5, 7, 14, 15, 17, 18, 22, 23, 26, 28, 37, 49, 57, 59, 60, 61, 62, 63, 64, 65, 68, 69, 71, 74, 96, 98, 99, 101, 103, 104, 105, 110, 112, 113, 115, 124, 125, 130, 133, 135, 137, 138, 141, 142, 149, 221, 222, 237, 238, 240, 242, 244, 248, 249, 250, 251, 280, 287, 291, 293, 297
Wildlife management area, 23, 37, 59, 62, 133, 238

Z

Zone, iv, v, ix, 11, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 37, 39, 42, 43, 45, 48, 56, 57, 63, 64, 65, 66, 67, 68, 69, 70, 71, 75, 76, 80, 81, 87, 90, 92, 93, 94, 95, 96, 97, 98, 107, 109, 110, 112, 119, 125, 126, 130, 131, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 147, 215, 237, 238, 239, 240, 241, 242, 243, 245, 246, 247, 248, 270, 292, 293
Zone 1, iv, 12, 15, 126, 130, 139, 238, 240
Zone 2, iv, 15, 21, 22, 23, 31, 42, 63, 75, 87, 126, 130, 139, 243
Zone 3, iv, v, 17, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30, 32, 39, 42, 43, 45, 48, 56, 57, 63, 65, 67, 68, 69, 70, 71, 75, 81, 90, 92, 95, 96, 97, 126, 130, 135, 136, 137, 138, 141, 142, 237, 239, 242, 243, 247
Zone 4, v, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 39, 42, 43, 45, 56, 57, 63, 67, 68, 69, 70, 71, 75, 81, 87, 90, 92, 95, 96, 97, 98, 126, 130, 135, 136, 137, 142, 237, 239, 241, 243, 246, 247, 248
Zone 5, v, 15, 22, 33, 45, 75, 76, 95, 126, 137, 240
Zone 6, v, 20, 21, 22, 23, 29, 31, 32, 42, 45, 56, 63, 70, 71, 75, 81, 87, 92, 94, 126, 130, 139, 144, 238, 241, 247, 248
Zone 7, v, 11, 15, 16, 21, 22, 29, 32, 42, 45, 63, 67, 68, 75, 90, 92, 126, 130, 137, 138, 139, 140, 238, 240, 246