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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

**US 64 RELOCATION - HIWASSEE RIVER
FROM US 19 IN MURPHY TO EAST OF NC 141
SECTION 26A APPROVALS AND PERMANENT EASEMENT
AND TRANSMISSION LINE RELOCATION FOR THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

Cherokee County, North Carolina

TENNESSEE VALLEY AUTHORITY

FEBRUARY 2005

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

US 64 RELOCATION - HIWASSEE RIVER SECTION 26A APPROVALS, PERMANENT EASEMENT, AND TRANSMISSION LINE RELOCATIONS NORTH CAROLINA DEPARTMENT OF TRANSPORTATION CHEROKEE COUNTY, NORTH CAROLINA

The Proposed Decision and Need

North Carolina Department of Transportation (NCDOT) proposes to relocate a section of US Highway 64 (US 64) from east of US 19 in Murphy to east of NC 141 near Peachtree in Cherokee, County. The proposed road would be a 4.9-mile two-lane facility constructed on four-lane right-of-way (ROW) and would cross several surface waters, including two crossings of the Hiwassee River and Hampton and Martin Creeks. The entire four-lane ROW would be graded and filled, although only two lanes would actually be completed at this time.

NCDOT has requested that Tennessee Valley Authority (TVA) grant a permanent easement for the construction, use, and maintenance of a ROW for new public roadway construction associated with the construction improvements. The right-of-way permanent easement would affect approximately 55 acres of TVA property on Hiwassee Reservoir, Tract No. XTFBR-32H. NCDOT has also requested Section 26a approval under the TVA Act for a total of 21 stream crossings including, two bridges across the Hiwassee River at about river miles 97.2 (west crossing) and 101.3 (east crossing), and for crossings of Martin and Hampton Creeks (see Table 1). The remaining 17 stream crossings would involve pipe or box culvert installations ranging from a 59-foot long pipe extension at Site 22 on an unnamed tributary to McComb Branch to a 971-foot long, double 8-foot by 9-foot concrete box culvert on Hampton Creek. Rock cross vanes are proposed below the pipe outlets at Sites 12, 14, 16, and 18 to reduce stream velocities. In addition, the project would involve the relocation of portions of TVA's Murphy-Blairsville 161-kilovolt (kV) transmission line, the Murphy-Nottley 69-kV transmission line and the Murphy Chatuge 69-kV transmission line to allow construction of a new route for US 64 (see Attachment 2 and Figure 1). TVA proposes to approve the proposed permanent easement and the river and stream crossings and relocate TVA's transmission lines.

Background

In 1986, the Federal Highway Administration (FHWA) and NCDOT prepared an environmental assessment (EA) for the proposed improvements and issued a Finding of No Significant Impact (FONSI) in September of that year. However, preliminary design studies indicated that improvements to US 64 were not feasible due to geometric restrictions, environmental concerns, and construction costs. One of the environmental concerns was acidification potential of exposed "hot rock." The underlying geologic formation was known to contain hot rock that when exposed to the elements could produce acidic runoff that could cause adverse impacts to aquatic ecology. NCDOT proposed to relocate this portion of US 64 and in 1990, initiated environmental studies and design.

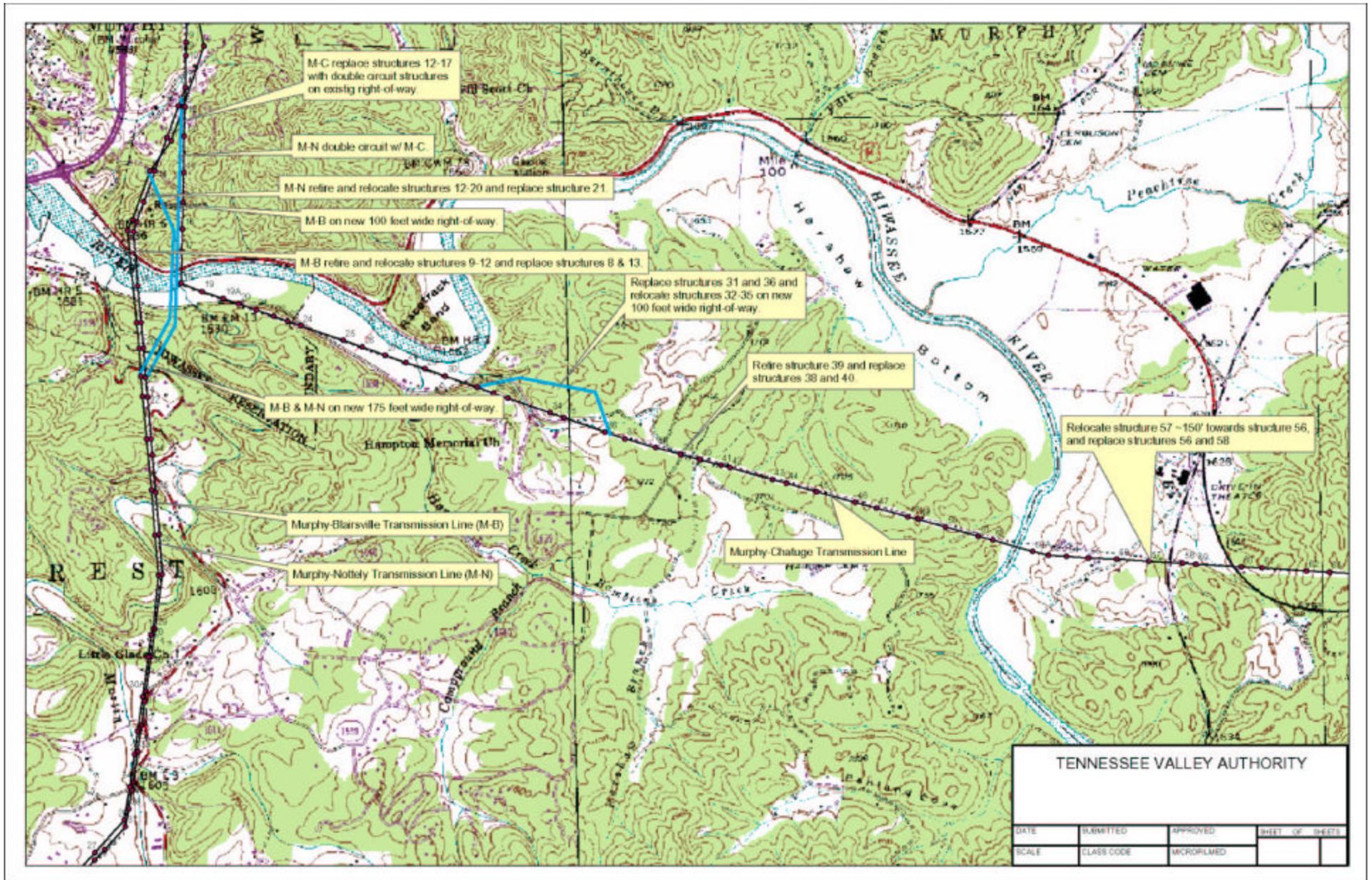


Figure 1 - Site Map

Table 1. Summary of Impacts for Proposed Stream Crossings

Site No.	Stream Name	Linear Feet Impacted
1	Unnamed Tributary to Hiwassee Rv	66
4	Unnamed Tributary to Hiwassee Rv	354
4A	Hiwassee Rv	None (~ 725-foot bridge)
5	Unnamed Tributary to Hiwassee Rv	113
5A	Unnamed Tributary to Hiwassee Rv	518
6	Martin Cr	None (~535-foot bridge)
7	Unnamed Tributary to Martin Cr	22
8	Unnamed Tributary to Hampton Cr	89
9	Hampton Cr	971
10	Unnamed Tributary to Hampton Cr	725
11	Unnamed Tributary to Hiwassee Rv	1,598
12	Unnamed Tributary to Hiwassee Rv	220
14	Unnamed Tributary to Hiwassee Rv	358
15	Unnamed Tributary to Hiwassee Rv	125
16	Unnamed Tributary to Hiwassee Rv	453
16A	Hiwassee Rv	None (~ 682-foot bridge)
18	Unnamed Tributary to McComb Br	381
19	Unnamed Tributary to McComb Br	151
20	Unnamed Tributary to McComb Br	504
21	Unnamed Tributary to McComb Br	105
22	Unnamed Tributary to McComb Br	59

In July 1994, a new EA was prepared for the proposed relocation and a FONSI was issued on February 25, 1995 (Attachment 6). The EA concluded that all impacts, including noise, air quality, water quality, historic buildings, threatened and endangered species, farmland, terrestrial ecology, and aquatic ecology would be insignificant. Since the issuance of the FONSI, NCDOT has completed detailed design and hydraulic analysis for the project, evaluated stream and wetland mitigation, and applied for permits. The U.S. Fish and Wildlife Service (USFWS) has recognized two species, the Tennessee clubshell (*Pleurobema oviforme*) and the sicklefin redhorse (*Moxostoma sp*) as Federal Species of Concern. In 1999, the USFWS identified that these two species may be impacted by the project. NCDOT has also completed an updated cumulative effects analysis. TVA is hereby adopting the 1994 EA but has decided to supplement that assessment to document its consideration of the project information generated since 1995.

Other Environmental Reviews and Documentation

In 1998, NCDOT submitted a Department of the Army Individual Section 404 Permit application and a public notice for the proposal was released in March of 1999. In response to this notice, USFWS indicated that two Federal Species of Concern, the Tennessee clubshell and the sicklefin redhorse may be impacted by the project. The FWS has recognized these two species since the issuance of the FONSI. Further design studies were conducted, to include re-evaluation of three of the alternative alignments that were previously eliminated from further discussion.

In October 2001, the USFWS raised additional concerns regarding potential impacts to mussels and to the sicklefin redhorse. Since potential impacts to species that may become listed prior to project completion may not be avoided, NCDOT completed a biological assessment (BA) on September 20, 2004 (see Attachment 1, Appendix G). Portions of the Hiwassee River within North Carolina contain a diverse aquatic fauna. Two Federal Species of Concern, the Tennessee clubshell and the sicklefin redhorse, have been located in the Hiwassee River within the project area, and will likely be provided federal protection by the time construction of this project is complete. Therefore, NCDOT in agreement with the USFWS has opted to address this project as if these two species were protected under the ESA. The BA addressed project-related concerns and probably direct, secondary, and cumulative impacts regarding these species. Additionally, the BA addressed federally protected species that are not currently known in the project area but for which appropriate habitat exists. New information regarding the relocation of the transmission lines was submitted to USFWS on January 7, 2005 (see Attachment 3). By letter on January 18, 2005, the USFWS concurred with NCDOT's determinations in the BA and concurred with the commitments for the transmission line areas outlined by NCDOT on January 7, 2005 (see attachment 4).

On September 29, 2004, NCDOT submitted a new Individual Section 404 Permit application and a public notice for the proposal was released in November 1, 2004 (see Attachment 1). The permit application included permit drawings, natural stream design and special culvert design drawings, bridge/culvert hydraulic design reports, the Ecosystem Enhancement Program (EEP) acceptance letter, original design drawings, sulfidic rock data and special provisions, indirect and cumulative effects report, including the September 20, 2004, NCDOT Biological Assessment, and half size drawings.

Necessary Federal Permits or Licenses

A permit would be required from the state of North Carolina for construction site storm water discharge for relocating the transmission line. TVA's Contract Projects organization would prepare the required erosion and sedimentation control plans and coordinate them with the appropriate state and local authorities. A permit would also be required for burning trees and other combustible materials removed during transmission line construction.

The NCDOT proposed actions would require an Individual Section 404 Permit from the U.S. Army Corps of Engineers (USACE) and a State Water Quality Certification. The North Carolina Department of Environment and Natural Resources issued the State Water Quality certification (No. 3487) on December 21, 2004 (Attachment 5).

Alternatives

In addition to the “No Build” Alternative, the impacts for eight build alternatives were evaluated in the FHWA EA. Based on the information in the EA, five alternatives were eliminated from further discussion because of extensive rock excavation or floodplain involvement. In addition to a No Action Alternative, two build alternatives (designated C1 and C2) were determined to be the only feasible alternatives and were analyzed in detail. Alternative C1 was designed to avoid the Beaver Ridge Subdivision in Murphy, while C2 would follow the TVA powerline for a greater distance and impact some houses in the subdivision. Alternative C1 was chosen as the preferred alternative. For the purposes of this supplemental EA, TVA considered the action and no action alternatives, along with appropriate mitigation and relocation of portions of TVA’s transmission line. See Attachment 2 for a detailed description of the transmission lines relocation.

Affected Environment and Evaluation of Impacts

TVA independently reviewed the impacts assessed in the FHWA EA. As a cooperating agency, TVA provided scoping comments and commented on the draft EA. Since the completion of the FHWA EA, new information regarding threatened and endangered species has become available, resulting in design changes.

Threatened and Endangered Species

NCDOT has coordinated with USFWS on this project since 1999. A BA was completed in September 2004 (Attachment 1, Appendix G). The relocation of TVA’s transmission lines would require new ROW in three different areas outside of the original scope of the project studied in the FWHA EA (see Figure 2). Area 1, north of the river on the western end of the project, would have an increase in ROW of 25 feet for a length of 2,450 feet. Area 2, located on the south side of the river, would be on a new location that is 162.5 feet wide for 2,000 feet. Area 3 near Harshaw Road would be relocated to the north of the new bypass in a new 100-foot wide ROW for approximately 2,700 feet. On December 15, 2004, NCDOT biologists conducted an onsite investigation on these new areas. The habitat adjacent to the proposed relocation is dominated by white pine and Virginia pine with diameters at breast height ranging from 4 to 16 inches. The hardwoods appear to be stunted by the pine overstory. A few dead Virginia pine snags were observed; however, most of the bark had already scaled off the trunk. The proposed transmission line would traverse dry, upland habitat until it crosses the Hiwassee River. Habitat along the Hiwassee consists of old fields with a narrow riparian area dominated by scattered sycamores.

Terrestrial Animal Species including the Indiana Bat

According to a review of the TVA Natural Heritage Project Database, there are seven known occurrences of state listed terrestrial animals and zero occurrences of federally- listed terrestrial animal records within three miles of the project sites. Hellbender and seepage salamander habitat would not be impacted by the proposed actions. Mountain chorus frogs and northern saw-whet owls may be displaced by the expansion and creation of ROW’s. NCDOT surveyed the area within the highway corridors for the federally- endangered Indiana Bat. Marginal foraging and roosting habitat exists for Indiana bats (*Myotis sodalis*), but none were caught during the NCDOT surveys. During the onsite investigation of the new transmission line areas, NCDOT biologists found potential habitat for the Indiana Bat. The previous mist-netting has covered the transmission line relocation in Area 2, however, surveys have not been conducted within Areas 1 and 3. To minimize potential effects, USFWS has concurred to the following:

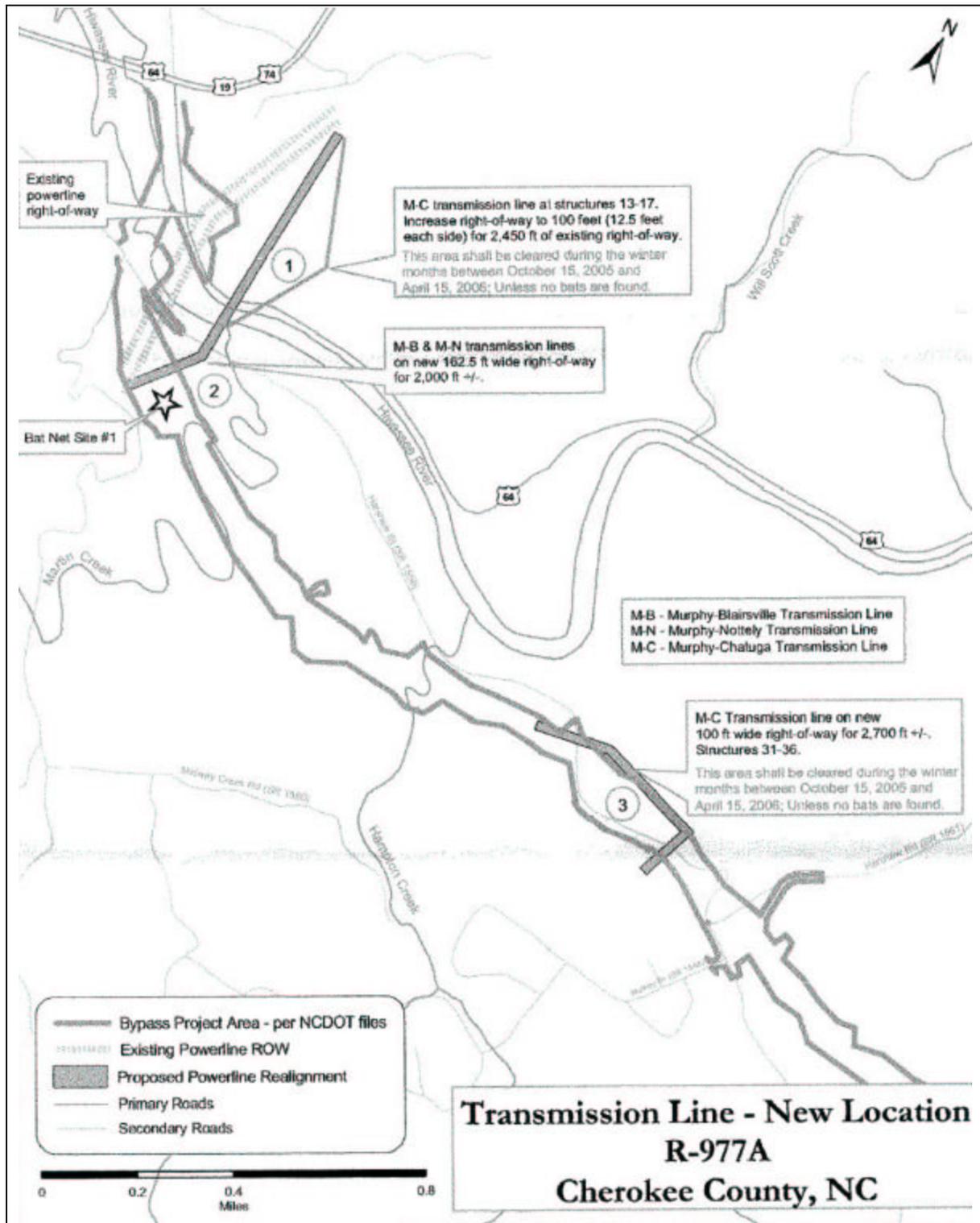


Figure 2 - Areas of New Transmission Line ROW

1. Areas 1 and 3 will be assessed by BHE Engineering (NCDOT contractor) no earlier than June 25, 2005. If suitable corridors for mist-netting are available, they will conduct mist-netting according to the Indiana Bat Recovery Plan.
2. If BHE is unable to effectively mist-net, then they will conduct a thorough habitat assessment in all areas likely to be affected by the transmission line work.
3. If as a result of the survey work, Indiana bats are unlikely to be affected by the transmission line work, then tree clearing may commence as soon as the bat survey work is completed, probably in early July 2005.
4. If Indiana bats are likely to be adversely affected by the transmission line work, then no tree clearing will occur in the transmission line relocation areas between April 15 and October 15 of any given year.

Plant Species including the Small Whorled Pogonia

The TVA Natural Heritage Database indicated that no federally-listed plant species and no state-listed plant species are recorded from within five miles of the proposed project area. The federally endangered Small-whorled Pogonia is recorded as near as 7.8 miles from the proposed project area in Georgia and 18.5 miles from the proposed project area in North Carolina. The Small-whorled Pogonia (*Isotria medeoloides*) is considered one of the rarest orchids in North America. It is estimated that about 3,000 individuals occur in small populations throughout its range (Ontario to North Carolina). This species is found in a variety of open deciduous or mixed pine-deciduous woods, or along stream banks. The plants prefer rich, subacid soils, in dry to moist leaf mold. The Small-whorled Pogonia can be seen vegetatively in late April-May and flowering in late May-June. According to the NatureServ website it is recommended that plants not be transplanted and the best course of action is to avoid disturbance. It has been observed that a few populations in South Carolina were growing well at the edge of a power line ROW and seem to be doing better in open canopy sites, but additional research is needed to verify these observations. According to the NCDOT EA, areas of potentially suitable habitat within the highway corridors were surveyed for the Small-whorled Pogonia, but no plants were found.

During the onsite investigation of the new TL areas, NCDOT biologists found potential habitat for the Small-whorled Pogonia. Due to the subtle nature of the habitat and its extreme rarity, field reviews should be conducted in the late spring. Therefore, USFWS has concurred to the following:

1. NCDOT will survey all three transmission line relocation areas where suitable habitat exists for Small-whorled Pogonia in early May of 2005.
2. If no Small-whorled Pogonia is found in Area 2, then tree clearing may commence immediately.
3. If no Small-whorled Pogonia is found in Areas 1 or 3, then tree clearing may commence as soon as Indiana Bat issues are resolved.
4. If the Small-whorled Pogonia is found in Area 1, 2, or 3, then no tree clearing or any sort of disturbance shall occur in that until impacts to the pogonia habitat are avoided and protected and consultation with USFWS is completed.

Aquatic Animal Species

Review of the TVA Regional Heritage Project Database indicates that several state-listed species and have been reported to occur in the Hiwassee River or its tributary streams in the vicinity of this project (See Table 2).

Table 2 - Listed aquatic animal species in the vicinity, Cherokee County, NC.

Scientific name	Common name	Federal status	State status
Crayfish			
<i>Cambarus hiwasseeensis</i>	Hiwassee crayfish	-	Special Concern
Mussels			
<i>Elliptio dilatata</i>			NOST
<i>Fusconaia barnesiana</i>	Tennessee pigtoe	-	Endangered
<i>Fusconaia subrotunda</i>	Long-solid	-	NOST
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	-	Special Concern
<i>Pleurobema oviforme</i>	Tennessee clubshell	-	NOST
<i>Villosa iris</i>	Rainbow	-	Special Concern
<i>Villosa vanuxemensis</i>	Mountain creekshell	-	Threatened
Snails			
<i>Elimia interrupta</i>	Knotty elimia	-	Endangered
Fish			
<i>Erimystax insignis</i>	Blotched chub	-	NOST
<i>Moxostoma sp 2</i>	Sicklefin redhorse	-	NOST
NOST - considered sensitive, but has no official status			

As with any road construction, there are certain unavoidable impacts to surface water quality. These impacts are due primarily to clearing and road construction (particularly bridge construction) activities. These impacts would be mitigated by the use of Standard Best Management Practices (BMP) to reduce surface run-off and associated siltation and sedimentation effects, and control and containment of vehicle fuels, and other potential pollutants during construction. Provided NCDOT follows the Avoidance and Minimization Measures and Proposed Measures to Offset Impacts identified in the BA, protected aquatic animal species are not likely to be adversely affected as a result of this proposed action. These measures are listed in the mitigation section of this EA.

Large amounts of surface disturbance and subsequent impacts to streams associated with the transmission line relocation are not anticipated to occur, because only three short sections of new ROW are involved. Other activities would involve replacement of structures in the same location. Due to the nature of this action, with strict adherence to the BMP in Muncy (1999), no impacts to protected aquatic animal species are likely to result from this project. All perennial stream crossings should be designated as Streamside Management Zones (SMZ) (Category A). Proper implementation of silt and sediment control structures, and containment and disposal of all wastes generated during construction, will mean that only short-term, insignificant impacts to listed aquatic animals are anticipated to occur as a result of this action.

Terrestrial Ecology and Managed Areas

The proposed project will not contribute to the spread of exotic or invasive species. The proposed actions occur within the Unicoi Mountains which is a migratory pathway for neotropical migratory birds. No impacts are expected due to the small-scale of this project. According to a review of the TVA Natural Heritage Project Database, there are no records of unique or important terrestrial habitats such as caves within a three mile radius of the

proposed project site. The Natural Heritage Database indicated that the proposed project is within 0.4 mile of Cherokee Indian Land Tract No. 7. Indian lands are held in trust by the Bureau of Indian Affairs, U.S. Department of the Interior, for the Eastern Band of Cherokee Indians, which is the local governing authority. The lands are managed to promote the welfare of the Cherokee people. Because the proposed action involves retiring and replacing transmission lines at the same location and in an area not immediately adjacent to the Managed Area, no impacts are anticipated as a result of the proposed work. Additional Managed Areas and/or Ecologically Significant Sites within three miles of the proposed action include, the Nantahala National Forest, Nantahala State Game Land, and Mission (Andrews) Reservoir Reservation. Because the distance from these areas is sufficient (1.2 – 2.2 miles), no impacts are anticipated as a result of the proposed action.

Streams

A total of 6,812 linear feet of stream would be permanently impacted, although 1,150 feet of stream would be restored utilizing natural stream design. The remaining impacts would be offset by compensatory mitigation provided by the EEP. The TVA Aquatic Monitoring Database indicated that recent surveys showed a good/excellent fish community in the Hiwassee River at mile 97.2, a short distance downstream from the proposed activity. Twenty-nine native fish species were found in 2002. Benthic results for this site were rated good during the same year, as 23 different key aquatic invertebrates families (i.e., mayflies, stoneflies, and caddisflies) were found. Martin Creek was sampled by TVA on April 29, 1994. Fifteen native species were found and the overall fish community was rated good. This indicates that smaller streams in the vicinity are also likely to be in relatively good condition. No designated Wild and Scenic Rivers, or streams on the Nationwide Rivers Inventory or their tributaries, or unique or important aquatic habitats occur at or adjacent to the project site. Proper implementation of silt and sediment control structures and the standard TVA BMPs (Muncy, 1999), and containment and disposal of all wastes generated during construction, would result in short-term and insignificant surface water and aquatic ecology impacts. The commitment in the 1994 FHWA EA to relocate the town of Murphy's raw drinking water intake has been completed.

Wetlands

Eight jurisdictional wetlands would be permanently impacted for a total of 0.82 acres, which includes fill and excavation. No temporary fill in wetlands is planned during construction. The applicant proposes to offset the permanent wetland impacts by compensatory mitigation provided by the EEP. No wetlands were identified on or adjacent to the transmission line relocation project area during a ground survey conducted on December 9, 2004. This finding was supported by a review of National Wetland Inventory (NWI) data which indicated an absence of wetlands in the project area. The wetland survey was performed according to USACE standards (Environmental Laboratory, 1987), which require documentation of hydrophytic vegetation (USFWS 1996), hydric soil, and wetland hydrology for a wetland determination. Broader definitions of wetlands, such as the definition provided in Executive Order 11990 (Protection of Wetlands), the USFWS definition (Cowardin et al. 1979), and the TVA Environmental Review Procedures definition (TVA 1983), were also considered in this review.

Geology

The area may contain pyritic rocks that, if disturbed and exposed to weathering, could form acidic runoff. However, the nature of the proposed action to relocate the transmission lines would result in only minor disturbances of pyrite-bearing rocks if encountered along the

ROW. Any formation of acidic runoff would be minor. With the use of BMPs, impacts from the proposed action would be insignificant.

Cultural Resources

TVA has reviewed the NCDOT documentation for the Section 106 review and has determined that adequate Section 106 compliance has been achieved for this project. Construction of this section would not result in adverse impact to any significant historic property. TVA in consultation with the North Carolina State Historic Preservation Officer (SHPO) determined the area of potential effect (APE) for those portions of the relocated transmission line right of way, which did not fall within the APE for the NCDOT undertaking. A historic properties survey was conducted and no historic properties eligible for listing or listed in the National Register of Historic Places (NRHP) would be affected. On January 4, 2005, TVA consulted by letter and submitted a draft report (*Phase I Cultural Resources Survey of the Proposed Transmission Line Relocation Project Associated with Proposed Construction Along Highway 64 in Cherokee County, North Carolina*) to the SHPO seeking their concurrence with our findings and recommendations, specifically that no historic properties would be affected by the proposed project. The SHPO has not commented (to date--2/11/05) regarding TVA's findings and recommendations, this no objection meets the requirements of 36 CFR Part 800.4.(d)(1)(i) and fulfills the agency official's responsibilities under Section 106 of the National Historic Preservation Act.

Floodplains and Navigation

Construction of the new transmission line over the Hiwassee River could involve locating support structures within the 100-year floodplain. Construction in the floodplain should present no problems in Executive Order 11988 compliance provided the TVA subclass review criteria for transmission line location in floodplains are followed. The transmission line relocation between structures 31 and 36, and the modifications between structures 56 and 58 on the Murphy-Chatuge transmission line would not involve work within the 100-year floodplain. Upon review of the bridge plans, the vertical clearances meet TVA minimum requirements and should not interfere with recreational navigation.

Recreation and Visual Resources

Although there is some float fishing and canoeing that occurs on this segment of the Hiwassee River, there should be little to no impact associated with the proposed transmission line work. The proposed relocation of US 64 to the south of the Hiwassee River would not contrast significantly with the existing landscape character. Associated construction activities would generate substantial visual discord as residents and motorists would have foreground views of construction operators, including increases in equipment and personnel. The proposed relocation of transmission lines and associated structures would contrast little with the existing land use and landscape character as most work would occur within existing ROW. The ROW which would be acquired as a result of the project would be located immediately adjacent to existing ROW and its acquisition would not result in a significant contrast with the existing and adjacent land use. Temporary visual discord would be probable during construction phases but would not result in lasting impacts.

Mitigation Measures

Mitigation measures identified by the NCDOT in the 1994 EA.

- The proposed project will cross the Hiwassee River at two locations which are classified as WS-IV critical watersheds. The Department of Transportation will use “Best Management Practices for the Protection of Surface Waters” to ensure that the water quality will not be degraded as a result of the project. The NCDOT will consider including retention basins for containment of potential hazardous materials spills in the vicinity of the proposed bridges crossing the Hiwassee River to help safeguard the water supply for the Murphy area.
- NCDOT will consult with Cherokee County regarding the feasibility of moving the Murphy water system’s intake point upstream of the proposed easement crossing of the Hiwassee River. *(A new intake has been constructed)*
- During the design phase, the feasibility of shifting the Preferred Alternative further north of wetland site W0 will be investigated, to potentially decrease impacts to this wetland. For those wetland impacts which are unavoidable, a detailed wetlands mitigation plan will be developed during the design phase and coordinated with all permit review agencies. *(Completed)*
- Additional archaeological work will be undertaken for all sites which are eligible for inclusion in the NRHP which fall within the proposed limits of construction. Additional archeological work to be developed by the FHWA and NCDOT in consultation with the SHPO, may be undertaken at archaeological sites 31CE41, 31Ce61, 31CE275, 31CE286, 31CE335**, 31CE336, 31CE338**, 31CED338**, 31CE339**, 31CE610**, and 31CE14 if impacted. *(Completed)*
- Mitigation for adverse visual impacts will be considered, during the design phase including the use of curvilinear design, landscaping, and architectural treatments at all bridge end walls. *(Completed)*
- The use of a stone substrate on the inside floor of culverts will be considered during the design phase. *(Completed)*
- The practicability of eliminating or reducing the relocation/modification of a portion of Martin Creek will be investigated during the design phase. If a channel relocation is required, close coordination will be pursued with the USFWS, the NCWRC, and other agencies as required by the USFWS Coordination Act. *(Completed)*
- Due to the proposed skewed bridge crossing over the Hiwassee River near the western end of the project, the bridge piers will be designed and sized to minimize the hydraulic impacts of the bridge crossing. *(Bridge piers were eliminated from the design)*
- During the final design phase, NCDOT will closely coordinate with TVA to allow for the relocation of transmission line structures to accommodate the new roadway. *(Completed)*
- During the construction of the bridges, construction techniques will be used that do not allow wet concrete to contact water in the rivers or streams. *(To be Completed)*

Measures identified in the NCDOT Biological Assessment

The following measures were identified by the NCDOT in their BA and in the corresponding USFWS concurrence letter to greatly reduce the likelihood of adversely affecting species in the project area:

1. Erosion Control Measures: The areas adjacent to the Hiwassee River will be identified as “Environmentally Sensitive Areas” on the Erosion Control plans for this project. Within in these areas the following shall apply.
 - Provide 50-foot buffer zone (both sides of the stream) that allow for clearing by not grubbing until immediately before grading operations.
 - Limit grubbing operations to within 10 days of grading.
 - Erosion and Sediment Control Measures to be installed immediately after clearing.
 - Require “seeding and mulching” to be performed immediately following grade establishment.
 - Require staged seeding - 20 foot fill sections or 2 acres, whichever is less.
 - Erosion and Sediment Control Measures must be cleaned out when 1/2 full.
 - Increase sediment storage capacity by 50 percent above standard BMP guideline.
2. NCDOT will invite representatives from the USFWS and NCWRC to the pre-construction meetings for these projects, along will subsequent field inspections prior to construction, to insure compliance with all special project commitments.
3. Deck drains will be placed at the ends of each planned bridge and run into grassed swales so no direct stormwater discharge will occur over the Hiwassee River or Martin Creek.
4. NCDOT will conduct final surveys (just prior to construction) in the footprint of projects impacting waters known to contain protected mussel species. NCDOT is anticipating that few individuals will be found in surveys of the footprint and is proposing to relocated these mussels to appropriate upstream habitat. The preconstruction survey will be incorporated into the relocation plan that will be developed.
5. Project Specific Measures: The two crossings of the Hiwassee River and the Mark Creek crossing were redesigned to completely span these waterways.

TVA-specific measures

- Including TVA’s General and Standard Conditions, the Section 26a approval will be conditioned with measures 1, 3, and 4 previously identified in the NCDOT BA. Also, NCDOT will coordinate the surveys for the Small-whorled Pogonia with Pat Cox, TVA Botanist, at (865) 632-3609 or pbcox@tva.gov.
- Measures for the additional areas proposed for new transmission line ROWs: No tree cutting or any sort of disturbance shall occur until the following conditions have been met and USFWS has provided concurrence.
 - ⇒ Areas 1 and 3 will be assessed by BHE Environmental (NCDOT contractor) no earlier than June 25, 2005. If suitable corridors for mist-netting are available, they will conduct mist-netting according to the Indiana Bat Recovery Plan.
 - ⇒ If BHE is unable to effectively mist-net, then they will conduct a thorough habitat assessment in all areas likely to be affected by the transmission line work.
 - ⇒ If as a result of the survey work, Indiana bats are unlikely to be affected by the transmission line work, then tree clearing may commence as soon as the bat survey work is completed, probably in early July 2005.

- ⇒ If Indiana Bats are likely to be adversely affected by the transmission line work, then no tree clearing will occur in the transmission line relocation areas between April 15 and October 15 of any given year.
 - ⇒ NCDOT will survey all three transmission line relocation areas where suitable habitat exists for Small-whorled Pogonia in early May of 2005. A TVA botanist will have the opportunity to be present during the survey.
 - ⇒ If no Small-whorled Pogonia is found in Area 2, then tree clearing may commence immediately.
 - ⇒ If no Small-whorled Pogonia is found in Areas 1 or 3, then tree clearing may commence as soon as Indiana Bat issues are resolved.
 - ⇒ If the Small-whorled Pogonia is found in Area 1, 2, or 3, then no tree clearing or any sort of disturbance shall occur in that until impacts to the pogonia habitat are avoided and protected and consultation with USFWS is completed.
- During construction, strict adherence to the BMPs in Muncy (1999) as outlined in Appendices I-V of Attachment 2, Description of Transmission Lines Relocation will be required. Prior to the transmission line construction:
 - ⇒ Sensitive areas will be marked along the transmission line corridors prior to construction.
 - ⇒ All perennial stream crossings shall be designated as Streamside Management Zones.
 - ⇒ Clearing for the transmission line corridors will not occur until USFWS has issued concurrence that their conditions outlined above have been met.

Preferred Alternative

TVA's preferred alternative is to approve the Section 26a application, grant a permanent easement over TVA fee-owned land, and relocate the transmission lines consistent with the described TVA-specific mitigation measures. All other mitigation measures would be enforced through the FHWA decision documents, State Water Quality Certification, and USACE Individual Section 404 Permit.

TVA Preparers

Scott Atkins, Regional Biologist
 John (Bo) T. Baxter, Aquatic Biologist Specialist
 W. Nanette Brodie, Groundwater Specialist
 Patricia B. Cox, Botanist
 Kellie Hammond, Navigation Specialist
 T. Hill Henry, Terrestrial Biologist Specialist
 George Humphrey, Land Use Specialist (Recreation)
 Roger Milstead, Floodplain Specialist
 Jason Mitchell, Natural Areas Specialist
 Danny Olinger, Archeologist
 Jon Riley, Visual Resource Specialist
 Helen G. Rucker, Senior NEPA Specialist

Edwin M. Scott, Aquatic Biologist
Richard Yarnell, Archeologist

Agencies Consulted

North Carolina Department of Environment and Natural Resources
North Carolina Department of Transportation
North Carolina State Historic Preservation Officer
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

Attachments

Attachment 1 - From the Application for Department of the Army Permit
Appendix A - Permit Drawings*
Appendix D - Ecosystem Enhancement Program (EEP) Acceptance Letter*
Appendix F - Sulfidic Rock Data and Special Provisions
Appendix G - Indirect and Cumulative Effects report, September 20, 2004,
NCDOT Biological Assessment*
Appendices B, C, E, and half size drawings are not included

Attachment 2 - Description of Transmission Lines Relocation, Operation, and Maintenance

Attachment 3 - NCDOT January 7, 2005 letter to USFWS

Attachment 4 - USFWS January 18, 2005 Final Concurrence letter

Attachment 5 - State of North Carolina 401 Water Quality Certification, December 21, 2004

Attachment 6 - FHWA July 1994 EA and February 25, 1995 FONSI