

## **Appendix A – Correspondence**

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**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

October 26, 2007

Dr. Thomas O. Maher  
Tennessee Valley Authority  
400 West Summit Hill Dr.  
Knoxville, Tennessee, 37902-1499

RE: TVA, CULTURAL RESOURCES SURVEY REPORT, 69 KV ALGOOD LINE/EXISTING & PROPOSED, UNINCORPORATED, PUTNAM COUNTY

Dr. Maher:

Pursuant to your request, received on Wednesday, October 17, 2007, this office has reviewed documentation concerning the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739)

Considering the information provided, we find that the area of potential effects for this undertaking contains no historic properties eligible for listing in the National Register of Historic Places. You should notify interested persons and make the documentation associated with this finding available to the public.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

This office appreciates your cooperation.

E. Patrick McIntyre  
Executive Director and  
State Historic Preservation Officer

EPM/jyg



Tennessee Department of Agriculture  
Ellington Agricultural Center, Box 40627, Nashville, Tennessee 37204  
615-837-5100 / FAX: 615-837-5333

Ken Givens  
Commissioner

Phil Bredesen  
Governor

November 7, 2007

Ms. Kimberly D. Choate, P.E.  
Siting and Environmental Design Department  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, TN 37402-8914

Re: Proposed 161kV Transmission Line  
Upper Cumberland Electric Membership Corporation  
Putnam County

Dear Ms. Choate:

Thank you for the opportunity to comment on the above-referenced project. This proposal will have no effect on the planning of our department, but we would offer one comment relative to transmission line right-of-way maintenance.

The department's Water Resources Program is currently funding the planning and subsequent restoration of the Post Oak Creek watershed along the Putnam and White County boundary. It has been brought to our attention the concerns from some individual landowners in this watershed regarding the erosion occurring along portions of the TVA transmission line right-of-way. Consequently, we would request that TVA take proper steps regarding this new transmission line to maintain the right-of-way in such a way as to prevent soil erosion. TVA should also take particular care to maintain appropriate vegetation within the portions of the right-of-way that are adjacent to or cross waters of the state, in order to maintain good water quality and streambank stability.

Thank you again for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Oliver".

Terry Oliver  
Deputy Commissioner



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas  
14th Floor L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-0447  
Phone 615/532-0431 Fax 615/532-0231

December 4, 2007

Kimberly Choate  
Siting and Environmental Design  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, TN 37402-2881

Subject: Algood Transmission Line Delivery Point, Putnam County, TN

Dear Ms. Choate:

Thank you for your recent letter requesting Division of Natural Areas comments for the Putnam County 161kV Algood transmission line project in Putnam County, Tennessee. We have reviewed the letter and accompanying maps with respect to rare species observations and offer the following comments.

In the immediate vicinity of the project (one-mile radius), our database contains observations of two rare animals, the state deemed-in-need-of-management meadow jumping mouse and the state-rare green salamander. The meadow jumping mouse has been observed very close (within 100 yards) to the transmission line corridor, approximately 1/3 mile east of the Algood 69 kV substation.

Within four miles of the proposed transmission line corridor, the following rare species have been observed:

Type	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Amphibian	<i>Aneides aeneus</i>	Green Salamander	G3G4	S3S4	**	**
Bird	<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S2	**	E
Fern and Fern Ally	<i>Botrychium jenmanii</i>	Alabama Grapefern	G3G4	S1	**	T
Flowering Plant	<i>Hydrastis canadensis</i>	Goldenseal	G4	S3	**	S-CE
Flowering Plant	<i>Lilium canadense</i>	Canada Lily	G5	S3	**	T
Flowering Plant	<i>Trillium pusillum</i>	Least Trillium	G3	S2	**	E
Mammal	<i>Myotis grisescens</i>	Gray Bat	G3	S2	LE	E
Mammal	<i>Neotoma magister</i>	Eastern Woodrat	G3G4	S3	**	D
Mammal	<i>Sorex cinereus</i>	Common Shrew	G5	S4	**	D
Mammal	<i>Sorex longirostris</i>	Southeastern Shrew	G5	S4	**	D
Mammal	<i>Zapus hudsonius</i>	Meadow Jumping Mouse	G5	S4	No Status	D

The Division asks that TVA perform a survey for rare species along the proposed transmission line route. Should suitable habitat exist in areas proposed for disturbance, the Division asks that TVA provide protective consideration for rare species. Based on the US Geological Survey topographic map, the proposed transmission line appears to cross sinkholes. Because of this and because caves with the federally endangered gray bat and state deemed-in-need-of-management eastern woodrat populations have been observed within four miles, the Division asks that TVA pay particular attention to potential impacts to karst habitats.

For the fauna listed above, the Division asks that this project be coordinated with the Tennessee Wildlife Resources Agency (Rob Todd, TWRA, [rob.todd@state.tn.us](mailto:rob.todd@state.tn.us)). For the gray bat, TVA should coordinate protective planning efforts with the US Fish and Wildlife Service.

Also, for additional information regarding Tennessee's rare and endangered species or interpretation of Status or Ranks, please visit our website at <http://state.tn.us/environment/na/>. Thank you for considering Tennessee's rare species during the planning for this project. Should you have any questions, please do not hesitate to contact me at (615) 532-0440.

Sincerely,



Silas Mathes  
Data Manager

GARY A. DAVIS & ASSOCIATES  
ATTORNEYS AT LAW  
61 NORTH ANDREWS AVENUE  
HOT SPRINGS, NORTH CAROLINA 28743

GARY A. DAVIS  
LICENSED IN NC, TN, CA (INACTIVE)  
GADAVIS@ENVIROATTORNEY.COM

MAILING ADDRESS:  
P.O. Box 649  
HOT SPRINGS, NC 28743

REBECCA C. KAMAN  
LICENSED IN TN  
BKAMAN@ENVIROATTORNEY.COM

TELEPHONE: 828-622-0044  
FACSIMILE: 828-622-7610

December 11, 2007

Mr. James F. Williamson, Jr.  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902  
jfwilliamson@tva.gov  
Fax: 865-632-3451  
Via fax, email, and U.S. Mail

Re: Extension of Time for Comments on Draft EA: Proposed Algood 161-kV Transmission Line, Putnam County, Tennessee

Dear Mr. Williamson:

I am writing on behalf of the Buck Mountain Community Organization to request an additional 60 days to submit comments concerning the above-referenced Draft Environmental Assessment. We have been attempting to review documents that Upper Cumberland Membership Corporation and TVA are relying upon for the claimed need for the new transmission line and substation, but TVA and UCMC have both denied access to these documents.

We have appealed TVA's denial of access to the documents under the Freedom of Information Act, but have not yet received a decision. Full review of this information is necessary for Buck Mountain Community Organization to be able to provide expert input into this proposed decision. Under the National Environmental Policy Act, it is unacceptable for a federal agency to base its decision concerning the need for a project on documents and information that are not available for public review and comment.

TVA is proposing to condemn easements and cut trees on over 30 acres of private property in order to build the transmission line, negatively impacting property owners and the sensitive mountain environment of the area. The most significant question about the Draft EA is whether the line is needed at all. It would seem that TVA would want to fully explore this issue with public input if it would be even remotely possible to avoid the impacts to the property owners and the expense to TVA and the ratepayers.

Please let me know by email, fax, or telephone as quickly as possible whether an extension of time will be afforded for public comments.

Sincerely,



Gary A. Davis

cc: Tom Kilgore  
Maureen Dunn  
Chairman William B. Sansom



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

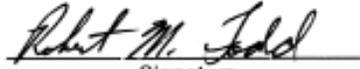
Kimberly D. Choate, P.E.  
Tennessee Valley Authority  
Transmission Line Projects  
Siting and Environmental Design Department  
1101 Market Street (MR 4G)  
Chattanooga, Tennessee 37402-2801

Algood, TN - Provide 161-kV Transmission Line Delivery Point

Dear Ms. Choate:

This is in reference to Tennessee Valley Authority's project that was mailed to me on November 02, 2007

The project as described by the project summary creates no incompatibility in our area of planning at this time.

  
Signature

FISH AND WILDLIFE ENVIRONMENTALIST  
Title

TENNESSEE WILDLIFE RESOURCES AGENCY  
Agency

ELLINGTON AGRICULTURAL CENTER

P.O. Box 40747

Address

NASHVILLE, TN 37204

12/12/07



## United States Department of the Interior

173108

### FISH AND WILDLIFE SERVICE

446 Neal Street  
Cookeville, TN 38501

December 27, 2007

Ms. Peggy Shute  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902-1499

Subject: Draft Environmental Assessment (EA), Power Supply Upgrade – Algood 161-KV Transmission Line, Putnam County, Tennessee.

Dear Ms. Shute:

Fish and Wildlife Service biologists have reviewed the subject Draft EA and supporting bat survey reports, which you provided with a letter dated November 20, 2007. A preferred transmission line route was delineated in the Draft EA, and you requested concurrence with the Tennessee Valley Authority (TVA) finding that the project is not likely to adversely affect threatened or endangered species. The Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) were specifically named in this finding. Please consider the following comments during further development of the project plans.

We believe that TVA has conducted an adequate evaluation of the potential for impacts to threatened and endangered species, including the Indiana bat and gray bat. Further, it appears that the measures proposed for protection of bat habitat during installation and maintenance of the transmission line adequately address the needs of these species. Therefore, we concur with your finding of “not likely to adversely affect” for the Indiana bat and gray bat.

As you indicated in your letter regarding the Draft EA, forested habitat in the project area could provide summer habitat for the Indiana bat. The Romme model was used to evaluate potential Indiana bat habitat, and the majority of the overall habitat was rated as low quality for the project area. However, the Romme model is not particularly appropriate for evaluating middle Tennessee habitats, and an analysis of separate habitat variables would likely demonstrate a higher value of some areas as potential feeding sites and roosting habitats for the Indiana bat within the project area. The steep, forested slopes of Buck Mountain also provide habitat for bats and other wildlife that are somewhat unique relative to the habitats exhibited by the potential alignment routes considered for this project that were not designated as preferred. It appears that large portions of the routes associated with Tap 1, Tap 2, and Tap 3 would traverse habitats that are much more disturbed than the preferred route. Because of the degree of habitat conversion

that would occur as a result of installing the transmission line along the preferred route, we believe that a route located west of the preferred one (for example, the Highway 111 corridor) would be less environmentally damaging.

In conclusion, we believe the Draft EA adequately addresses threatened and endangered species concerns. However, we request that the TVA carefully reconsider alternatives to the route identified as the preferred transmission line route.

Thank you for the opportunity to review the Draft Environmental Assessment. Please contact David Pelren of my staff at 931/528-6481 (ext. 204) if you have questions about these comments.

Sincerely,

  
Lee A. Barclay, Ph.D.  
Field Supervisor

**From:** Lisa Stopp [mailto:lstopp@unitedkeetoowahband.org]  
**Sent:** Friday, January 11, 2008 4:56 PM  
**To:** Ezzell, Patricia Bernard  
**Subject:** RE: TVA CR SURVEY OF THE EXISTING 69-KV ALGOOD TRANSMISSION LINE (TL) AND THE PROPOSED 161-KV ALGOOD TL, PUTNAM CO., TN

I've reviewed the report, regarding the findings, and do not have any objection to further work on this project. As always, should any human remains be inadvertently discovered, please cease work and contact us at one of the numbers below.

Thank you,

**Lisa C. Stopp**  
Interim Director, Language, History and Culture  
Acting Tribal Historic Preservation Officer  
United Keetoowah Band of Cherokee Indians in Oklahoma  
PO Box 746  
Tahlequah, OK 74465

918.431.9998 office  
918.822.1952 cell

<http://www.ukb-nsn.gov>

*This communication does not represent a consultation with the United Keetoowah Band of Cherokee Indians in Oklahoma under the stipulations of Section 106, NAGPRA or any other Historic Preservation law or procedure.*

**UPPER CUMBERLAND DEVELOPMENT DISTRICT**



1225 South Willow Avenue  
Cookeville, TN 38506  
Phone: (931) 432-4111  
Fax: (931) 432-6010

Chairman:  
Stephen Bilbey  
Vice Chairman:  
John E. Mullinix  
Secretary:  
Kenneth Copeland  
Treasurer:  
Billy Robbins  
Executive Director:  
Wendy Askins

11 January 2007

Mr. James F. Williamson, Jr.  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, TN 37902

Dear Mr. Williamson:

I am writing this letter at the request of the Buck Mountain Community Organization. As historic preservation planner for the Upper Cumberland Development District in Cookeville, it is my professional opinion, that the old Horse and Carriage Route, or Mail Route, on Brotherton Mountain in Putnam County is eligible for listing in the National Register of Historic Places due to its historical and cultural significance to the early settlement of the Upper Cumberland region. The route also has significance as an Indian trail leading to habitation areas in the vicinity of the Falling Water River. A considerable amount of artifactual material has been found in the immediate area.

This route falls within the footprint of the proposed TVA transmission line project for the Algood substation. Based on current data, this project would have a detrimental effect on the cultural resources of the area in question.

Respectfully,

A handwritten signature in black ink, appearing to read "R.D. Williams". The signature is written in a cursive style and is positioned above the typed name.

Randal D. Williams  
Historic Preservation Planner  
Upper Cumberland Development District

RW/rdw



STATE OF TENNESSEE  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
WATER SUPPLY**

9th Floor, 401 Church Street  
Nashville, Tennessee 37243-1549  
Phone: (615) 532-0191; Fax: (615) 532-0503

January 14, 2008

James F. Williamson, Jr.  
Tennessee Valley Authority  
400 West Summit Hill Drive WT 11D  
Knoxville, Tennessee 37901

RE: Draft Environmental Assessment Proposed power Supply Upgrade Algood 161-KV  
Transmission Line, Putnam County Tennessee

Mr. Forbes:

The Division of Water Supply has received and reviewed the request for a Draft Environmental Assessment Proposed power Supply Upgrade Algood 161-KV Transmission Line, Putnam County Tennessee and would like to thank TVA for the opportunity to comment on this plan.

Safe Dams Program:

A file review was conducted of all registered sites in the Safe dam program. There are no registered dams located within the proposed project area. The contact for information in the Safe Dams Program can be obtained from Mr. Lyle Bentley Manger of the Safe Dams Section in the Division of Water Supply. Mr. Bentley may be reached by e-mail [lyle.bentley@state.tn.us](mailto:lyle.bentley@state.tn.us) reached at (615) 532-0154.

Source Water Protection Program:

A review of the community and non-community water supplies in the area shows the proposed project not located within any community water supplies. A Noncommunity water system Hidden Hollow Camp is located close to the proposed project area (see attached map). Any information on the Source Water/Wellhead Protection areas can be directed to Mr. Scotty D. Sorrells Manager Groundwater Management Section. Mr. Sorrells may be reached by e-mail [scotty.sorrells@state.tn.us](mailto:scotty.sorrells@state.tn.us) or by telephone at (615) 532-9224.

Mr. Williamson

Draft Environmental Assessment Proposed power Supply Upgrade Algood 161-KV Transmission Line, Putnam County Tennessee January 14, 2008

Page 2

Water Well Program:

A file review was conducted of all the registered private water wells within this proposed route. Please contact Mr. Luke Ewing with the names of the topographic quads. There are private water supplies in the proposed area. Please be advised that not all the water wells that are in existence are on this database and that there may be older wells that we have no record of as well as hand dug wells whose existence we would not have recorded. All water wells that are encountered should be plugged and abandoned by a licensed well contractor. Any information related to the Water Well Program can be directed to Mr. Luke Ewing Manager Water Well Program. Mr. Ewing can be reached by e-mail [luke.ewing@state.tn.us](mailto:luke.ewing@state.tn.us) or by telephone at (615) 532-0176. All of the wells drilled for testing and or production will need to be registered with the water well program and appropriately tagged and recorded.

Underground Injection Control:

A file review was conducted of all the registered Underground injection Control (UIC) points within the area of review. No registered UIC sites are within the proposed routs. Please be advised that not all old large capacity septic systems or stormwater injection points that are in existence are on this database. All UIC wells that are encountered should be plugged and abandoned according to approval from the UIC program. Also please be advised that the area has the potential for karst activity. Any sinkhole that is encountered should be registered with the UIC program and shall be permitted before any disturbance to the area. Any information on the UIC programs can be directed to Ms. Carolyn Sullivan UIC program Groundwater Management Section. Ms. Sullivan may be reached by e-mail [carolyn.sullivan@state.tn.us](mailto:carolyn.sullivan@state.tn.us) or by telephone at (615) 532-0180.

This letter represents a brief review off best available data sources and not a comprehensive field evaluation. Please verify all information contained within this letter in the field.

Mr. Williamson

Draft Environmental Assessment Proposed power Supply Upgrade Algood 161-KV Transmission  
Line, Putnam County Tennessee January 14, 2008

January 14, 2008

Page3

The issuance of this letter does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, State, or local laws or regulations.

If you have any questions, feel free to call me at (615) 532-9224 or email at [scotty.sorrells@state.tn.us](mailto:scotty.sorrells@state.tn.us).

Sincerely,



Scotty D. Sorrells  
Manager Ground Water Management Section  
Source Water Protection Coordinator  
Division of Water Supply

c: Thomas A. Moss Deputy Director DWS  
Lyle Bentley Chief SDP  
Luke Ewing Manager WWP  
Carolyn Sullivan UIC



Power Supply Upgrade Algod 161-KV Transmission Line Area of Interest Putnam County





**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

January 22, 2008

Dr. Thomas O. Maher  
Tennessee Valley Authority  
400 West Summit Hill Dr.  
Knoxville, Tennessee, 37902-1499

RE: TVA, 69 KV ALGOOD LINE/EXISTING & PROPOSED, UNINCORPORATED, PUTNAM COUNTY

Dear Dr. Maher:

In response to the request of Ms. Ada Haynes, received on Friday, January 11, 2008, we have reason to believe that there is a cultural resource (the mail road) located within the referenced undertaking's Area of Potential Effects (APE) that may be eligible for listing in the National Register of Historic Places. To complete our review of this undertaking, this office is requesting you to have the APE resurveyed to determine whether this resource lies within the APE and whether it is in fact National Register eligible. The location of this resource is indicated on the enclosed topographic map.

Upon receipt of the additional information, we will complete our review of this undertaking as expeditiously as possible. Until this office has rendered a final comment on this project, your Section 106 obligation under federal law has not been met. Please inform this office if this project is not funded or canceled by the federal agency. Your cooperation is appreciated. You may find additional information concerning the Section 106 process and the Tennessee SHPO's documentation requirements at [www.state.tn.us/environment/hist/sect106.htm](http://www.state.tn.us/environment/hist/sect106.htm). Questions and comments may be directed to Joe Garrison (615) 532-1550-103.

This office appreciates your cooperation.

Sincerely,

A handwritten signature in black ink that reads "E. Patrick McIntyre, Jr." with a stylized flourish at the end.

E. Patrick McIntyre, Jr.  
Executive Director and  
State Historic Preservation Officer

EPM/jyg

attachment



**From:** Rhianna Rogers [mailto:[RhiannaRogers@semtribe.com](mailto:RhiannaRogers@semtribe.com)]  
**Sent:** Friday, February 01, 2008 1:45 PM  
**To:** Ezzell, Patricia Bernard  
**Subject:** RE: TVA CR SURVEY OF THE EXISTING 69-KV ALGOOD TRANSMISSION LINE (TL) AND THE PROPOSED 161-KV ALGOOD TL, PUTNAM CO., TN

Hello Pat,

I have reviewed the information in this report. The STOF-THPO concurs with your recommendations but would like to encourage the monitoring of the area during the potential construction process. Also, if any archaeological or historical sites are uncovered during any ground disturbing activities please inform this office.

Thank you for your time.

Rhianna C. Rogers  
Reviewing Archaeologist  
Tribal Historic Preservation Office  
Seminole Tribe of Florida  
Ah-Tah-Thi-Ki Museum  
HC 61, Box 21-A  
Clewiston, FL 33440  
Work Phone: 863-902-1113x12249  
Email: [RhiannaRogers@semtribe.com](mailto:RhiannaRogers@semtribe.com)





**DEPARTMENT OF THE ARMY**  
NASHVILLE DISTRICT, CORPS OF ENGINEERS  
3701 Bell Road  
NASHVILLE, TENNESSEE 37214-2660

February 26, 2008

REPLY TO  
ATTENTION OF:

Regulatory Branch

SUBJECT: File No. 200800292; Proposed Construction of Overhead  
Transmission Line near Algood, Putnam County, Tennessee

Tennessee Valley Authority  
Attention: Ms. Kim Choate  
MR 4G-C  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Ms. Choate:

This is in regard to your application for a Department of the Army (DA) permit for the proposed aerial transmission line. Your project has been assigned File No. 200800292.

Based upon the information submitted to this office and follow-up conversations with you, we have determined that a DA permit is not required for this activity as proposed. Current construction plans do not involve placement of fill material within the forested wetland identified as W001B. We understand clearing of vegetation will occur, but stumps would be left in place and there would be no ground-disturbing activities. In addition, matting would be used for vehicular access if needed during construction and maintenance of the transmission line.

We appreciate your awareness of our regulatory program. If you have any questions regarding this matter, or if plans change and a DA permit may be required, please contact me at the above address or telephone (615) 369-7511.

Sincerely,

A handwritten signature in cursive script that reads "Kim Franklin".

Kim Franklin  
Project Manager  
Regulatory Branch  
Operations Division



**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

March 11, 2008

Dr. Thomas O. Maher  
Tennessee Valley Authority  
400 West Summit Hill Dr.  
Knoxville, Tennessee 37902-1499

**RE: TVA, 69KV ALGOOD LINE/RURAL ROAD, UNINCORPORATED, PUTNAM COUNTY**

Dear Dr. Maher:

Pursuant to your request, this office has reviewed a cultural resources survey report relative to the above-referenced undertaking received on Tuesday, February 12, 2008. Based on available information plus a THC site visit, we find that the rural road discussed in the survey report appears eligible for listing in the National Register of Historic Places under Criterion "A" because of its association with significant historical events. We further find that the project as currently proposed may adversely affect this historic property.

You should now inform the Advisory Council on Historic Preservation of this adverse effect determination and begin immediate consultation with our office. Please enclose a copy of this determination in your notification to the Council as delineated at 36 CFR Part 800. Until you have received a final comment on this project from this office and the Council, you have not completed the Section 106 review process. Please direct questions and comments to Joe Garrison (615) 532-1550-103. We appreciate your cooperation.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre  
Executive Director and  
State Historic Preservation Officer

EPM/jyg



**TENNESSEE HISTORICAL COMMISSION**  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
2941 LEBANON ROAD  
NASHVILLE, TN 37243-0442  
(615) 532-1550

April 30, 2008

Dr. Thomas O. Maher  
Tennessee Valley Authority  
400 West Summit Hill Dr.  
Knoxville, Tennessee, 37902-1499

RE: TVA, CULTURAL RESOURCES SURVEY, REVISED ROUTE, 69KV ALGOOD LINE,  
WESTERN ROUTE, UNINCORPORATED, PUTNAM COUNTY

Dear Dr. Maher:

In response to your request, received on Monday, April 28, 2008, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering available information, we find that the project as currently proposed will NOT ADVERSELY AFFECT ANY PROPERTY THAT IS ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. Therefore, this office has no objection to the implementation of this project. Please direct questions and comments to Joe Garrison (615) 532-1550-103. You may find additional information concerning the Section 106 process and the Tennessee SHPO's documentation requirements at <http://www.tennessee.gov/environment/hist/federal/sect106.shtml>

We appreciate your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.  
Executive Director and  
State Historic Preservation Officer

EPM/jyg



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
446 Neal Street  
Cookeville, TN 38501

RECEIVED  
5/1/08

April 30, 2008

Ms. Peggy Shute  
Manager, Regional Natural Heritage Resources  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902-1499

Re: FWS #2008-I-0384

Dear Ms. Shute:

Thank you for your email of April 29, 2008, transmitting additional information and an assessment of effects concerning the proposed Algood transmission project in Putnam County, Tennessee. Fish and Wildlife Service biologists have reviewed the information submitted and we offer the following comments.

The proposed transmission line had to be rerouted due to potential effects of the originally approved alignment on an historic feature. Alternative alignments to the east and west of the original contain areas of suitable roosting and foraging habitat for the federally endangered Indiana bat (*Myotis sodalis*). Consequently, you have committed to conducting additional mist net surveys in those areas. If Indiana bats are captured, you will place transmitters on the captured individuals and attempt to locate roosts. You have also agreed to limit the number of suitable/potential roost trees and to delay cutting trees within the right-of-way until after October 15.

We are concerned about placement of radio transmitters on pregnant Indiana bats. Pregnant females are already stressed as a result of energy expenditure during migration from the hibernaculum. We believe that transmitters would place additional undue stress on those individuals and would make them more susceptible to predation. We therefore recommend that transmitters not be placed on pregnant female Indiana bats if any are captured during mist netting.

Because of your commitment to conduct additional surveys and implement protective measures if Indiana bats are found in the project area, and if our recommendation is implemented, we concur that the proposed Algood transmission project is not likely to adversely affect the Indiana bat. In view of this, we believe that the requirements of section 7 of the Endangered Species Act have been fulfilled. Obligations under section 7 must be reconsidered, however, if: (1) new

## Algood Power Supply Upgrade

information reveals that the proposed project may affect listed species in a manner or to an extent not previously considered, (2) the proposed project is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed project. Please advise us if the recommendation concerning transmitters is acceptable.

Thank you for the opportunity to comment on this action. If you have any questions, please contact Jim Widlak of my staff at 931/528-6481, ext. 202.

Sincerely,

A handwritten signature in black ink, appearing to read "Lee A. Barclay". The signature is written in a cursive, flowing style.

Lee A. Barclay, Ph.D.  
Field Supervisor

## Appendix B – TVA/Power Distributor Energy Efficiency Initiatives

TVA has a strong track record in promoting and demonstrating the wise use of energy. TVA and power distributors have aggressively pursued such programs as part of its role as a leader in public power. We are continuing to explore opportunities to expand energy efficiency as part of TVA's Strategic Plan approved by the TVA Board of Directors on May 31, 2007. Through the implementation of a combination of programs offered to residential, commercial, and industrial customers, TVA has achieved over 520 megawatts (MW) of demand reduction Valley-wide and impacted nearly 400,000 residences over the past 10 years.

Among the most successful ways in which TVA leads the industry in the wise use of electricity is the *energy right*® Residential Program that was launched in 1996. These initiatives promote high-efficiency new homes, heating, ventilating, and air conditioning (HVAC) systems, better thermal envelopes and other measures that save energy and reduce peak demand for Valley residents. The impacts from these programs are expected to grow steadily with continued annual participation.

In addition, the Direct Load Control (DLC) Program currently provides approximately 40 MW of peak load reduction yearly through the cycling of residential water heaters and air conditioners by radio signal. This program offers homeowners incentives in return for allowing their appliances to be switched off remotely for short periods during peak loads. Such programs offer significant potential for energy management.

### **TVA Programs Currently Offered Through Local Power Distributors**

#### ***energy right*® - Programs for Residential and Small Commercial Customers**

- ***energy right* Residential Heat Pump Retrofit Program** - promotes quality installations of higher efficiency heat pumps by members of the Quality Contractor Network.
- ***energy right* Residential New Homes Program** - promotes higher efficiency thermal envelope standards and quality construction in new homes and the installation of energy efficient heat pumps. This program provides training for home builders and trade allies to ensure proper installation of energy efficiency measures.
- ***energy right* Residential Manufactured Homes Program** - focuses on achieving improvements in the HVAC and thermal envelope components of manufactured housing. Program requires that the home be equipped with an energy efficient heat pump.
- ***energy right* Home Audit** - allows consumers through the use of online and paper do-it-yourself audits to understand their home's overall energy use and cost, as well as how to identify specific actions they can take to reduce energy bills. After performing an energy audit, participants will receive a Personal Energy Profile report.
- ***energy right* Student Audit** - allows students the opportunity to fill out and conduct home audits through packages presented at school. Students return the audit

through the school for analysis, and recommendations are made for energy efficiency implementation measures.

Additional information on *energy right* Programs may be accessed at the following Web site [www.energyright.com](http://www.energyright.com).

**Programs for Business Customers** - Many different programs are offered to commercial and industrial customers throughout the Valley. These include on-site energy evaluations, turnkey energy efficiency retrofits, geothermal heat pump expertise, pricing programs, and other assistance programs.

One popular TVA/power distributor program offers energy services to businesses and industries through our Energy Services Company (ESCO). These services lower the customer's energy use, making the businesses more competitive and helping TVA reduce peak loads on its power system. This initiative provides technical expertise, project management support, and third-party financing to assist commercial and industrial customers with energy efficiency upgrades and operational improvements.

TVA and power distributors also offer a variety of pricing options that give large energy users incentives to manage their electricity use. Through a combination of programs, energy consumption has been reduced for hundreds of businesses and schools throughout the region.

**TVA's Green Power Switch Generation Partners Program** - TVA purchases 100 percent of the renewable energy generated by consumer-installed solar (photovoltaic) and wind systems. As of January 24, 2008, there are 41 active installations with a combined generating capacity of 229.45 kilowatts (kW).

**Demand Side Management (DSM) Potential** - In fiscal year 2002 Pacific Energy Associates (PEA) was contracted by TVA to assess a number of DSM options that could achieve up to 250 MW of peak demand reduction over a two-year period. The assumptions and findings of this study were applied to the UCCEMC service area in order to determine load reduction potential in the Algood area. The following table includes the findings of the original study, as well as a percentage applied to the UCCEMC service area based on the original assumptions of the study.

<b>Customer</b>	<b>Assumptions, PEA Study, TVA System-Wide</b>	<b>Actual, UCEMC Service Area</b>	<b>% TVA Total in UCEMC Area</b>
Residential Customers	3,547,242	39,937	1.1
C&I <50 kW	558,749	6,438	1.2
C&I >50 kW	62,796	362	0.6
C&I >5,000 kW	476	1	.2
<b>Megawatt</b>	<b>Findings, PEA Study, TVA System-Wide</b>	<b>Findings Applied to UCEMC Area</b>	
Average MW	92	0.9	
Peak MW	187	1.9	

C&I = Commercial and Industrial

< = Less than

> = Greater than

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## Appendix C – Tennessee Valley Authority Right-of-Way Clearing Specifications

1. General - The clearing contractor shall review the environmental evaluation documents (categorical exclusion checklist, environmental assessment, or environmental impact statement) for the project or proposed activity, along with all clearing and construction appendices, conditions in applicable general and/or site-specific permits, the storm water pollution prevention plan, and any Tennessee Valley Authority (TVA) commitments to property owners. The contractor shall then plan and carry out operations using techniques consistent with good engineering and management practices as outlined in TVA's best management practices (BMPs) manual (Muncy 1992, and revisions thereto). The contractor will protect areas that are to be left unaffected by access or clearing work at and adjacent to all work sites. In sensitive areas and their buffers, the contractor will retain as much native ground cover and other vegetation as possible.

If the contractor fails to use BMPs or to follow environmental expectations discussed in the prebid or prework meeting or present in contract specifications, TVA will order corrective changes and additional work as deemed necessary in TVA's judgment to meet the intent of environmental laws and regulations or other guidelines. Major violations or continued minor violations will result in work suspension until correction of the situation is achieved or other remedial action is taken at the contractor's expense. Penalty clauses may be invoked as appropriate.

2. Regulations - The clearing contractor shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances including without limitation all air, water, solid and hazardous waste, noise, and nuisance laws, regulations, and ordinances. The contractor shall secure or ensure that TVA has secured all necessary permits or authorizations to conduct work on the acres shown on the drawings and plan and profile for the contract. The contractor's designated project manager will actively seek to prevent, control, monitor, and safely abate all commonly recognized forms of workplace and environmental pollution. Permits or authorizations and any necessary certifications of trained or licensed employees shall be documented with copies submitted to TVA's right-of-way inspector or construction environmental engineer before work begins. The contractor will be responsible for meeting all conditions specified in permits. Permit conditions shall be reviewed in prework discussions.
3. Land and Landscape Preservation - The clearing contractor shall exercise care to preserve the condition of cleared soils by avoiding as much compacting and deep scarring as possible. As soon as possible after initial disturbance of the soil and in accordance with any permit(s) or other state or local environmental regulatory requirements, cover material shall be placed to prevent erosion and sedimentation of water bodies or conveyances to surface water or groundwater. In areas outside the clearing, use, and access areas, the natural vegetation shall be protected from damage. The contractor and his employees must not deviate from delineated access routes or use areas and must enter the site at designated areas that will be marked. Clearing operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the remaining natural vegetation and adjacent surroundings in the vicinity of the work. In sensitive public or environmental areas, appropriate buffer

zones shall be observed and the methods of clearing or reclearing modified to protect the buffer and sensitive area. Some areas may require planting native plants or grasses to meet the criteria of regulatory agencies or commitments to special program interests.

4. Streamside Management Zones - The clearing contractor must leave as many rooted ground cover plants as possible in buffer zones along streams and other bodies of water or wet-weather conveyances thereto. In such streamside management zones (SMZ), tall-growing tree species (trees that would interfere with TVA's National Electrical Safety Code clearances) shall be cut, and the stumps may be treated to prevent resprouting. Low-growing trees identified by TVA as marginal electrical clearance problems may be cut, and then stump treated with growth regulators to allow low, slow-growing canopy development and active root growth. Only approved herbicides shall be used, and herbicide application shall be conducted by certified applicators from TVA's Transmission, Operations, and Maintenance (TOM) organization after initial clearing and construction. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment, such as a feller-buncher. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Disturbed soils in SMZs must be stabilized by appropriate methods immediately after the right-of-way is cleared. Stabilization must occur within the time frame specified in applicable storm water permits or regulations. Stumps within SMZs may be cut close to the ground but must not be removed or uprooted. Trees, limbs, and debris shall be immediately removed from streams, ditches, and wet areas using methods that will minimize dragging or scarring the banks or stream bottom. No debris will be left in the water or watercourse. Equipment will cross streams, ditches, or wet areas only at locations designated by TVA after the application of appropriate erosion control BMPs consistent with permit conditions or regulatory requirements.
5. Wetlands - In forested wetlands, tall trees will be cut near the ground, leaving stumps and roots in place. The cambium may be treated with herbicides applied by certified applicators from the TOM organization to prevent regrowth. Understory trees that must be initially cut and removed may be allowed to grow back or may be treated with tree growth regulators selectively to slow growth and increase the reclearing cycle. The decision will be situationally made based on existing ground cover, wetland type, and tree species since tall tree removal may "release" understory species and allow them to grow quickly to "electrical clearance problem" heights. In many circumstances, herbicides labeled for water and wetland use may be used in reclearing.
6. Sensitive Area Preservation - If prehistoric or historic artifacts or features that might be of archaeological significance are discovered during clearing or reclearing operations, the activity shall immediately cease within a 100-foot radius, and a TVA right-of-way inspector or construction environmental engineer and the Cultural Resources Program manager shall be notified. The site shall be protected and left as found until a determination about the resources, their significance, and site treatment is made by TVA's Cultural Resources Program. Work may continue beyond the finding zone and the 100-foot radius beyond its perimeter.
7. Water Quality Control - The contractor's clearing and disposal activities shall be performed using BMPs that will prevent erosion and entrance of spillage,

contaminants, debris, and other pollutants or objectionable materials into drainage ways, surface water, or groundwater. Special care shall be exercised in refueling equipment to prevent spills. Fueling areas shall be remote from any sinkhole, crevice, stream, or other water body. Open burning debris will be kept away from streams and ditches and shall be incorporated into the soil.

The clearing contractor will erect and (when TVA or contract construction personnel are unable) maintain BMPs such as silt fences on steep slopes and adjacent to any stream, wetland, or other water body. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor personnel routinely and during periods of high runoff, and any necessary repairs will be made as soon as practicable. BMP inspections will be conducted in accordance with permit requirements. Records of all inspections will be maintained on site, and copies of inspection forms will be forwarded to the TVA construction environmental engineer.

8. Turbidity and Blocking of Streams - If temporary clearing activities must interrupt natural drainage, appropriate drainage facilities and erosion/sediment controls shall be provided to avoid erosion and siltation of streams and other water bodies or water conveyances. Turbidity levels in receiving waters or at storm water discharge points shall be monitored, documented, and reported if required by the applicable permit. Erosion and sediment control measures such as silt fences, water bars, and sediment traps shall be installed as soon as practicable after initial access, site, or right-of-way disturbance in accordance with applicable permit or regulatory requirements.

Mechanized equipment shall not be operated in flowing water except when approved and, then, only to construct necessary stream crossings under direct guidance of TVA. Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA construction access road standards. Material shall not be deposited in watercourses or within stream bank areas where it could be washed away by high stream flows. Any clearing debris that enters streams or other water bodies shall be removed as soon as possible. Appropriate U.S. Army Corps of Engineers and state permits shall be obtained for stream crossings.

9. Air Quality Control - The clearing or reclearing contractor shall take appropriate actions to limit the amount of air emissions created by clearing and disposal operations to well within the limits of clearing or burning permits and/or forestry or local fire department requirements. All operations must be conducted in a manner that prevents nuisance conditions or damage to adjacent land crops, dwellings, highways, or people.
10. Dust and Mud Control - Clearing activities shall be conducted in a manner that minimizes the creation of fugitive dust. This may require limitations as to type of equipment, allowable speeds, and routes utilized. Control measures such as water, gravel, etc., or similar measures may be used subject to TVA approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.
11. Burning - The contractor shall obtain applicable permits and approvals to conduct controlled burning. The contractor will comply with all provisions of the permit, notification, or authorization including burning site locations, controlled draft, burning hours, and such other conditions as stipulated. If weather conditions such as wind

speed or wind direction change rapidly, the contractor's burning operation may be temporarily stopped by TVA's field engineer. The debris to be burned shall be kept as clean and dry as possible and stacked and burned in a manner that produces the minimum amount of smoke. Residue from burning will be disposed of according to permit stipulations. No fuel starters or enhancements other than kerosene will be allowed.

12. Smoke and Odors - The contractor will properly store and handle combustible and volatile materials that could create objectionable smoke, odor, or fumes. The contractor shall not burn oil or refuse that includes trash, rags, tires, plastics, or other manufactured debris.
13. Vehicle Exhaust Emissions - The contractor shall maintain and operate equipment in a manner that limits vehicle exhaust emissions. Equipment and vehicles will be kept within the manufacturers' recommended limits and tolerances. Excessive exhaust gases will be eliminated, and inefficient operating procedures will be revised or halted until corrective repairs or adjustments are made.
14. Vehicle Servicing - Routine maintenance of personal vehicles will not be performed on the right-of-way. However, if emergency or "have to" situations arise, minimal/temporary maintenance to personal vehicles will occur in order to mobilize the vehicle to an off-site maintenance shop. Heavy equipment will be serviced on the right-of-way, except in designated sensitive areas. The clearing or reclearing contractor will properly maintain these vehicles with approved spill protection controls and countermeasures. If emergency maintenance in a sensitive or questionable area arises, the area environmental coordinator or construction environmental engineer will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Equipment shall not be temporarily stored in stream floodplains, whether overnight or on weekends or holidays.
15. Noise Control - The contractor shall take steps to avoid the creation of excessive sound levels for employees, the public, or the site and adjacent property owners. Concentration of individual noisy pieces as well as the hours and locations of operation should be considered.
16. Noise Suppression - All internal combustion engines shall be properly equipped with mufflers. The equipment and mufflers shall be maintained at peak operating efficiency.
17. Sanitation - A designated representative of TVA or the clearing contractor shall contact a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.
18. Refuse Disposal - The clearing or reclearing contractor shall be responsible for daily cleanup and proper labeling, storage, and disposal of all refuse and debris on the site produced by his operations and employees. Facilities that meet applicable regulations

and guidelines for refuse collection will be required. Only approved transport, storage, and disposal areas shall be used.

19. Brush and Timber Disposal (Reclearing) - The reclearing contractor shall place felled tree boles in neat stacks at the edge of the right-of-way, with crossing breaks at least every 100 feet. Property owner requests shall be reviewed with the project manager or right-of-way specialist before accepting them. Lop and drop activities must be specified in the contract and on plan and profile drawings with verification with the right-of-way specialist before conducting such work. When tree trimming and chipping is necessary, disposal of the chips on the easement or other locations on the property must be with the consent of the property owner and the approval of the right-of-way specialist. No trees, branches, or chips shall remain in a surface water body or be placed at a location where washing into a surface water or groundwater source might occur.
20. Brush and Timber Disposal (Initial Clearing) - For initial clearing, trees are commonly part of the contractor's contract to remove as they wish. Trees may be removed from the site for lumber or pulpwood or they may be chipped or stacked and burned. All such activities must be coordinated with the TVA field engineer, and the open burning permits, notifications, and regulatory requirements must be met. Trees may be cut and left in place only in areas specified by TVA and approved by appropriate regulatory agencies. These areas may include sensitive wetlands or SMZs where tree removal would cause excessive ground disturbance or in very rugged terrain where windrowed trees are used as sediment barriers along the edge of the right-of-way.
21. Restoration of Site - All disturbed areas, with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications, shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:
  - A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.
  - B. If needed, appropriate soil amendments will be added.
  - C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities*. Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor.
  - D. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.

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## Appendix D – Tennessee Valley Authority Environmental Quality Protection Specifications for Transmission Line Construction

1. General – Tennessee Valley Authority (TVA) and/or the assigned contractor shall plan, coordinate, and conduct operations in a manner that protects the quality of the environment and complies with TVA's environmental expectations discussed in the preconstruction meeting. This specification contains provisions that shall be considered in all TVA and contract construction operations. If the contractor fails to operate within the intent of these requirements, TVA will direct changes to operating procedures. Continued violation will result in a work suspension until correction or remedial action is taken by the contractor. Penalties and contract termination will be used as appropriate. The costs of complying with the Environmental Quality Protection Specifications are incidental to the contract work, and no additional compensation will be allowed. At all structure and conductor pulling sites, protective measures to prevent erosion will be taken immediately upon the end of each step in a construction sequence, and those protective measures will be inspected and maintained throughout the construction and right-of-way rehabilitation period.
2. Regulations - TVA and/or the assigned contractor shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances related to environmental protection and prevention, control, and abatement of all forms of pollution.
3. Use Areas - TVA and/or the assigned contractor's use areas include but are not limited to site office, shop, maintenance, parking, storage, staging, assembly areas, utility services, and access roads to the use areas. The construction contractor shall submit plans and drawings for their location and development to the TVA engineer and project manager for approval. Secondary containment will be provided for fuel and petroleum product storage pursuant to 29CFR1910.106(D)(6)(iii)(OSHA).
4. Equipment - All major equipment and proposed methods of operation shall be subject to the approval of TVA. The use or operation of heavy equipment in areas outside the right-of-way, access routes, or structure, pole, or tower sites will not be permitted without permission of the TVA inspector or field engineer. Heavy equipment use on steep slopes (greater than 20 percent) and in wet areas will be held to the minimum necessary to construct the transmission line. Steps will be taken to limit ground disturbance caused by heavy equipment usage, and erosion and sediment controls will be instituted on disturbed areas in accordance with state requirements.

No subsurface ground-disturbing equipment or stump-removal equipment will be used by construction forces except on access roads or at the actual structure, pole, or tower sites, where only footing locations and controlled runoff diversions shall be created that disturb the soil. All other areas of ground cover or in-place stumps and roots shall remain in place. (Note: Tracked vehicles disturb surface layer of the ground due to size and function.) Some disking of the right-of-way may occur for proper seedbed preparation.

Unless ponding previously occurred (i.e., existing low-lying areas), water should not be allowed to pond on the structure sites except around foundation holes; the water must be directed away from the site in as dispersed a manner as possible. At tower or

structure sites, some means of upslope interruption of potential overland flow and diversion around the footings should be provided as the first step in construction-site preparation. If leveling is necessary, it must be implemented by means that provide for continuous gentle, controlled, overland flow or percolation. A good grass cover, straw, gravel, or other protection of the surface must be maintained. Steps taken to prevent increases in the moisture content of the in-situ soils will be beneficial both during construction and over the service life of any structure.

5. Sanitation - A designated TVA or contractor representative shall contact a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.
6. Refuse Disposal - Designated TVA and/or contractor personnel shall be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced by his operations and by his employees. Suitable refuse collecting facilities will be required. Only state-approved disposal areas shall be used. Disposal containers such as dumpsters or roll-off containers shall be obtained from a proper waste disposal contractor. Solid, special, construction/demolition, and hazardous wastes as well as scrap are part of the potential refuse generated and must be properly managed with emphasis on reuse, recycle, or possible give away, as appropriate, before they are handled as waste. Contractors must meet similar provisions on any project contracted by TVA.
7. Landscape Preservation - TVA and its contractors shall exercise care to preserve the natural landscape in the entire construction area as well as use areas, in or outside the right-of-way, and on or adjacent to access roads. Construction operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural vegetation and surroundings in the vicinity of the work.
8. Sensitive Areas Preservation - Certain areas on site and along the right-of-way may be designated by the specifications or the TVA engineer as environmentally sensitive. These areas include but are not limited to areas classified as erodible, geologically sensitive, scenic, historical and archaeological, fish and wildlife refuges, water supply watersheds, and public recreational areas such as parks and monuments. Contractors and TVA construction crews shall take all necessary actions to avoid adverse impacts to these sensitive areas and their adjacent buffer zones. These actions may include suspension of work or change of operations during periods of rain or heavy public use; hours may be restricted or concentrations of noisy equipment may have to be dispersed. If prehistoric or historic artifacts or features are encountered during clearing or construction operations, the operations shall immediately cease for at least 100 feet in each direction, and TVA's right-of-way inspector or construction superintendent and Cultural Resources Program shall be notified. The site shall be left as found until a significance determination is made. Work may continue elsewhere beyond the 100-foot perimeter.
9. Water Quality Control - TVA and contractor construction activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter, contaminants,

debris, and other objectionable pollutants and wastes into flowing caves, sinkholes, streams, dry watercourses, lakes, ponds, and underground water sources.

The clearing contractor will erect and (when TVA or contract construction personnel are unable) maintain best management practices (BMPs) such as silt fences on steep slopes and adjacent to any stream, wetland, or other water body. Additional BMPs may be required for areas of disturbance created by construction activities. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor personnel routinely and during periods of high runoff, and any necessary repairs will be made as soon as practicable. BMP inspections will be conducted in accordance with permit requirements. Records of all inspections will be maintained on site, and copies of inspection forms will be forwarded to the TVA construction environmental engineer.

Acceptable measures for disposal of waste oil from vehicles and equipment shall be followed. No waste oil shall be disposed of within the right-of-way, on a construction site, or on access roads.

10. Turbidity and Blocking of Streams - Construction activities in or near SMZs or other bodies of water shall be controlled to prevent the water turbidity from exceeding state or local water quality standards for that stream. All conditions of a general storm water permit, aquatic resource alteration permit, or a site-specific permit shall be met including monitoring of turbidity in receiving streams and/or storm water discharges and implementation of appropriate erosion and sediment control measures.

Appropriate drainage facilities for temporary construction activities interrupting natural site drainage shall be provided to avoid erosion. Watercourses shall not be blocked or diverted unless required by the specifications or the TVA engineer. Diversions shall be made in accordance with TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities*.

Mechanized equipment shall not be operated in flowing water except when approved and, then, only to construct crossings or to perform required construction under direct guidance of TVA. Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA construction access road standards. Material shall not be deposited in watercourses or within stream bank areas where it could be washed away by high stream flows. Appropriate U.S. Army Corps of Engineers and state permits shall be obtained.

Wastewater from construction or dewatering operations shall be controlled to prevent excessive erosion or turbidity in a stream, wetland, lake, or pond. Any work or placing of equipment within a flowing or dry watercourse requires the prior approval of TVA.

11. Clearing - No construction activities may clear additional site or right-of-way vegetation or disturb remaining retained vegetation, stumps, or regrowth at locations other than the structure sites and conductor setup areas. TVA and the construction contractor(s) must provide appropriate erosion or sediment controls for areas they have disturbed that have previously been restabilized after clearing operations. Control measures shall be implemented as soon as practicable after disturbance in accordance with applicable federal, state, and/or local storm water regulations.

12. Restoration of Site - All construction disturbed areas, with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications, shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:
  - A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.
  - B. If needed, appropriate soil amendments will be added.
  - C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities*. Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor.
  - D. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.
13. Air Quality Control - Construction crews shall take appropriate actions to minimize the amount of air pollution created by their construction operations. All operations must be conducted in a manner that avoids creating a nuisance and prevents damage to lands, crops, dwellings, or persons.
14. Burning - Before conducting any open burning operations, the contractor shall obtain permits or provide notifications as required to state forestry offices and/or local fire departments. Burning operations must comply with the requirements of state and local air pollution control and fire authorities and will only be allowed in approved locations and during appropriate hours and weather conditions. If weather conditions such as wind direction or speed change rapidly, the contractor's burning operations may be temporarily stopped by the TVA field engineer. The debris for burning shall be piled and shall be kept as clean and as dry as possible, then burned in such a manner as to reduce smoke. No materials other than dry wood shall be open burned. The ash and debris shall be buried away from streams or other water sources and shall be in areas coordinated with the property owner.
15. Dust and Mud Control - Construction activities shall be conducted to minimize the creation of dust. This may require limitations as to types of equipment, allowable speeds, and routes utilized. Water, straw, wood chips, dust palliative, gravel, combinations of these, or similar control measures may be used subject to TVA's approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.
16. Vehicle Exhaust Emissions - TVA and/or the contractors shall maintain and operate equipment to limit vehicle exhaust emissions. Equipment and vehicles that show

excessive emissions of exhaust gasses and particulates due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective repairs or adjustments are made.

17. Vehicle Servicing - Routine maintenance of personal vehicles will not be performed on the right-of-way. However, if emergency or "have to" situations arise, minimal/temporary maintenance to personal vehicles will occur in order to mobilize the vehicle to an off-site maintenance shop. Heavy equipment will be serviced on the right-of-way except in designated sensitive areas. The Heavy Equipment Department within TVA or the construction contractor will properly maintain these vehicles with approved spill prevention controls and countermeasures. If emergency maintenance in a sensitive or questionable area arises, the area environmental coordinator or construction environmental engineer will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Equipment shall not be temporarily stored in stream floodplains, whether overnight or on weekends or holidays.
18. Smoke and Odors - TVA and/or the contractors shall properly store and handle combustible material that could create objectionable smoke, odors, or fumes. The contractor shall not burn refuse such as trash, rags, tires, plastics, or other debris.
19. Noise Control - TVA and/or the contractor shall take measures to avoid the creation of noise levels that are considered nuisances, safety, or health hazards. Critical areas including but not limited to residential areas, parks, public use areas, and some ranching operations will require special considerations. TVA's criteria for determining corrective measures shall be determined by comparing the noise level of the construction operation to the background noise levels. In addition, especially noisy equipment such as helicopters, pile drivers, air hammers, chippers, chain saws, or areas for machine shops, staging, assembly, or blasting may require corrective actions when required by TVA.
20. Noise Suppression - All internal combustion engines shall be properly equipped with mufflers as required by the Department of Labor's *Safety and Health Regulations for Construction*. TVA may require spark arresters in addition to mufflers on some engines. Air compressors and other noisy equipment may require sound-reducing enclosures in some circumstances.
21. Damages - The movement of construction crews and equipment shall be conducted in a manner that causes as little intrusion and damage as possible to crops, orchards, woods, wetlands, and other property features and vegetation. The contractor will be responsible for erosion damage caused by his actions and especially for creating conditions that would threaten the stability of the right-of-way or site soil, the structures, or access to either. When property owners prefer the correction of ground cover condition or soil and subsoil problems themselves, the section of the contract dealing with damages will apply.

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## **Appendix E – Tennessee Valley Authority Transmission Construction Guidelines Near Streams**

Even the most carefully designed transmission line project eventually will affect one or more creeks, rivers, or other type of water body. These streams and other water areas are protected by state and federal law, generally support some amount of fishing and recreation, and, occasionally, are homes for important and/or endangered species. These habitats occur in the stream and on strips of land along both sides (the streamside management zone [SMZ]) where disturbance of the water, land, or vegetation could have an adverse effect on the water or stream life. The following guidelines have been prepared to help Tennessee Valley Authority (TVA) Transmission Construction staff and their contractors avoid impacts to streams and stream life as they work in and near SMZs. These guidelines expand on information presented in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*.

### **Three Levels of Protection**

During the preconstruction review of a proposed transmission line, TVA Environmental Stewardship and Policy staff will have studied each possible stream impact site and will have identified it as falling into one of three categories: (A) standard stream protection, (B) protection of important permanent streams, or (C) protection of unique habitats. These category designations are based on the variety of species and habitats that exist in the stream as well as state and federal requirements to avoid harming certain species. The category designation for each site will be marked on the plan and profile sheets. Construction crews are required to protect streams and other identified water habitats using the following pertinent set(s) of guidelines:

#### **(A) Standard Stream Protection**

This is the standard (basic) level of protection for streams and the habitats around them. The purpose of the following guidelines is to minimize the amount and length of disturbance to the water bodies without causing adverse impacts on the construction work.

#### **Guidelines:**

1. All construction work around streams will be done using pertinent best management practices (BMPs) such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*, especially Chapter 6, "Standards and Specifications."
2. All equipment crossings of streams must comply with appropriate state permitting requirements. Crossings of all drainage channels, intermittent streams, and permanent streams must be done in ways that avoid erosion problems and long-term changes in water flow. Crossings of any permanent streams must allow for natural movement of fish and other aquatic life.
3. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The

method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Stumps can be cut close to ground level but must not be removed or uprooted.

4. Other vegetation near streams must be disturbed as little as possible during construction. Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will not be allowed in SMZs; however, a minimal amount of soil disturbance may occur as a result of clearing operations. Shorelines that have to be disturbed must be stabilized as soon as feasible.

## **(B) Protection of Important Permanent Streams**

This category will be used when there is one or more specific reason(s) why a permanent (always-flowing) stream requires protection beyond that provided by standard BMPs. Reasons for requiring this additional protection include the presence of important sports fish (trout, for example) and habitats for federal endangered species. The purpose of the following guidelines is to minimize the disturbance of the banks and water in the flowing stream(s) where this level of protection is required.

### **Guidelines:**

1. Except as modified by guidelines 2-4 below, all construction work around streams will be done using pertinent BMPs such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*, especially Chapter 6, "Standards and Specifications."
2. All equipment crossings of streams must comply with appropriate state (and, at times, federal) permitting requirements. Crossings of drainage channels and intermittent streams must be done in ways that avoid erosion problems and long-term changes in water flow. Proposed crossings of permanent streams must be discussed in advance with Environmental Stewardship and Policy staff and may require an on-site planning session before any work begins. The purpose of these discussions will be to minimize the number of crossings and their impact on the important resources in the streams.
3. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Cutting of trees near permanent streams must be limited to those required to meet National Electrical Safety Code and danger tree requirements. Stumps can be cut close to ground level but must not be removed or uprooted.
4. Other vegetation near streams must be disturbed as little as possible during construction. Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will not be allowed in SMZs; however, a minimal amount of soil disturbance may occur as a result of clearing operations. Shorelines that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible.

**(C) Protection of Unique Habitats**

This category will be used when, for one or more specific reasons, a temporary or permanent aquatic habitat requires special protection. This relatively uncommon level of protection will be appropriate and required when a unique habitat (for example, a particular spring run) or protected species (for example, one that breeds in a wet-weather ditch) is known to occur on or adjacent to the construction corridor. The purpose of the following guidelines is to avoid or minimize any disturbance of the unique aquatic habitat.

**Guidelines:**

1. Except as modified by Guidelines 2-4 below, all construction work around the unique habitat will be done using pertinent BMPs such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*, especially Chapter 6, "Standards and Specifications."
2. All construction activity in and within 30 meters (100 feet) of the unique habitat must be approved in advance by Environmental Stewardship and Policy staff, preferably as a result of an on-site planning session. The purpose of this review and approval will be to minimize impacts on the unique habitat. All crossings of streams also must comply with appropriate state (and, at times, federal) permitting requirements.
3. Cutting of trees within 30 meters (100 feet) of the unique habitat must be discussed in advance with Environmental Stewardship and Policy staff, preferably during the on-site planning session. Cutting of trees near the unique habitat must be kept to an absolute minimum. Stumps must not be removed, uprooted, or cut shorter than 0.30 meter (1 foot) above the ground line.
4. Other vegetation near the unique habitat must be disturbed as little as possible during construction. The soil must not be disturbed by plowing, disking, blading, or grading. Areas that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible, in some cases with specific kinds of native plants. These and other vegetative requirements will be coordinated with Environmental Stewardship and Policy staff.

**Additional Help**

If you have questions about the purpose or application of these guidelines, please contact your supervisor or the environmental coordinator in the local Transmission Service Center.

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### Comparison of Guidelines Under the Three Stream and Water Body Protection Categories (page 1)

Guidelines	A: Standard	B: Important Permanent Streams	C: Unique Water Habitats
1. <b>Reference</b>	<ul style="list-style-type: none"> <li>All TVA construction work around streams will be done using pertinent BMPs such as those described in <i>A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities</i>, especially Chapter 6, BMP “Standards and Specifications.”</li> </ul>	<p>Except as modified by guidelines 2-4 below, all construction work around streams will be done using pertinent BMPs such as those described in <i>A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities</i>, especially Chapter 6, BMP “Standards and Specifications.”</p>	<ul style="list-style-type: none"> <li>Except as modified by guidelines 2-4 below, all construction work around the unique habitat will be done using pertinent BMPs such as those described in <i>A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities</i>, especially Chapter 6, BMP “Standards and Specifications.”</li> </ul>
2. <b>Equipment Crossings</b>	<ul style="list-style-type: none"> <li>All crossings of streams must comply with appropriate state and federal permitting requirements.</li> <li>Crossings of all drainage channels, intermittent streams, and permanent streams must be done in ways that avoid erosion problems and long-term changes in water flow.</li> <li>Crossings of any permanent streams must allow for natural movement of fish and other aquatic life.</li> </ul>	<ul style="list-style-type: none"> <li>All crossings of streams must comply with appropriate state and federal permitting requirements.</li> <li>Crossings of drainage channels and intermittent streams must be done in ways that avoid erosion problems and long-term changes in water flow.</li> <li>Proposed crossings of permanent streams must be discussed in advance with Environmental Stewardship and Policy staff and may require an on-site planning session before any work begins. The purpose of these discussions will be to minimize the number of crossings and their impact on the important resources in the streams.</li> </ul>	<ul style="list-style-type: none"> <li>All crossings of streams also must comply with appropriate state and federal permitting requirements.</li> <li>All construction activity in and within 30 meters (100 feet) of the unique habitat must be approved in advance by Environmental Stewardship and Policy staff, preferably as a result of an on-site planning session. The purpose of this review and approval will be to minimize impacts on the unique habitat.</li> </ul>

**Comparison of Guidelines Under the Three Stream and Water Body Protection Categories (page 2)**

Guidelines	A: Standard	B: Important Permanent Streams	C: Unique Water Habitats
<p align="center"><b>3.</b></p> <p align="center"><b>Cutting Trees</b></p>	<ul style="list-style-type: none"> <li>• Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area.</li> <li>• Stumps can be cut close to ground level but must not be removed or uprooted.</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting of trees with SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area.</li> <li>• Cutting of trees near permanent streams must be limited to those meeting National Electrical Safety Code and danger tree requirements.</li> <li>• Stumps can be cut close to ground level but must not be removed or uprooted.</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting of trees within 30 meters (100 feet) of the unique habitat must be discussed in advance with Environmental Stewardship and Policy staff, preferably during the on-site planning session. Cutting of trees near the unique habitat must be kept to an absolute minimum.</li> <li>• Stumps must not be removed, uprooted, or cut shorter than 1 foot above the ground line.</li> </ul>
<p align="center"><b>4.</b></p> <p align="center"><b>Other Vegetation</b></p>	<ul style="list-style-type: none"> <li>• Other vegetation near streams must be disturbed as little as possible during construction.</li> <li>• Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will not be allowed in SMZs; however, a minimal amount of soil disturbance may occur as a result of clearing operations.</li> <li>• Shorelines that have to be disturbed must be stabilized as soon as feasible.</li> </ul>	<ul style="list-style-type: none"> <li>• Other vegetation near streams must be disturbed as little as possible during construction.</li> <li>• Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will not be allowed in SMZs; however, a minimal amount of soil disturbance may occur as a result of clearing operations.</li> <li>• Shorelines that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible.</li> </ul>	<ul style="list-style-type: none"> <li>• Other vegetation near the unique habitat must be disturbed as little as possible during construction.</li> <li>• The soil must not be disturbed by plowing, disking, blading, or grading.</li> <li>• Areas that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible, in some cases with specific kinds of native plants. These and other vegetative requirements will be coordinated with Environmental Stewardship and Policy staff.</li> </ul>

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## **Appendix F – Tennessee Valley Authority Environmental Protection Procedures Right-of-Way Vegetation Management Guidelines**

### **1.0 Overview**

- A. The Tennessee Valley Authority (TVA) must manage the vegetation on its rights-of-way and easements to ensure emergency maintenance access and routine access to structures, switches, conductors, and communications equipment. In addition, TVA must maintain adequate clearance, as specified by the National Electrical Safety Code, between conductors and tall-growing vegetation and other objects. This requirement applies to vegetation within the right-of-way as well as to trees located off the right-of-way.
- B. Each year TVA assesses the conditions of the vegetation on and along its rights-of-way. This is accomplished by aerial inspections, periodic field inspections, aerial photography, and information from TVA personnel, property owners, and the general public. Important information gathered during these assessments includes the coverage by various vegetation types, the mix of plant species, the observed growth, the seasonal growing conditions, and the density of the tall vegetation. TVA also evaluates the proximity, height, and growth rate of trees adjacent to the right-of-way that may be a danger to the line or structures.
- C. TVA right-of-way specialists develop a vegetation reclearing plan that is specific to each line segment and is based on terrain conditions, species mix, growth, and density.

### **2.0 Right-of-Way Management Options**

- A. TVA uses an integrated vegetation management approach. In farming areas, TVA encourages property owner management of the right-of-way using low-growing crops. In dissected terrain with rolling hills and interspersed woodlands, TVA uses mechanical mowing to a large extent.
- B. When slopes become hazardous to farm tractors and rotary mowers, TVA may use a variety of herbicides specific to the species present with a variety of possible application techniques. When scattered small stands of tall-growing vegetation are present and access along the right-of-way is difficult or the path to such stands is very long, herbicides may be used.
- C. In very steep terrain, in sensitive environmental areas, in extensive wetlands, at stream banks, and in sensitive property owner land use areas, hand clearing may be utilized. Hand clearing is recognized as one of the most hazardous occupations documented by the Occupational Safety and Health Administration. For that reason, TVA is actively looking at better control methods, including use of low-volume herbicide applications, occasional single tree injections, and tree growth regulators.

- D. TVA does not encourage tree reclearing by individual property owners because of the high hazard potential of hand clearing, possible interruptions of the line, and electrical safety considerations for untrained personnel that might do the work. Private property owners may reclear the right-of-way with trained reclearing professionals.
- E. Mechanical mowers not only cut the tall saplings and seedlings on the right-of-way, they also shatter the stump and the supporting near-surface root crown. The tendency of resistant species is to resprout from the root crown, and shattered stumps can produce a multistem dense stand in the immediate area. Repeated use of mowers on short cycle reclearing with many original stumps regrowing in the above manner can create a single species thicket or monoculture. With the original large root system and multiple stems, the resistant species can produce regrowth at the rate of 5-10 feet in a year. In years with high rainfall, the growth can reach 12-15 feet in a single year. These dense, monoculture stands can become nearly impenetrable for even large tractors. Such stands have low diversity and little wildlife food or nesting potential and become a property owner's concern. Selective herbicide application may be used to control monoculture stands.
- F. TVA encourages property owners to sign an agreement to manage rights-of-way on their land for wildlife under the auspices of "Project Habitat," a joint project by TVA, BASF, and wildlife organizations, e.g., National Wild Turkey Federation, Quail Unlimited, and Buckmasters. The property owner maintains the right-of-way in wildlife food and cover with emphasis on quail, turkey, deer, or other wildlife. A variation used in or adjacent to developing suburban areas is to sign agreements with the developer and residents to plant and maintain wildflowers on the right-of-way.
- G. TVA places strong emphasis on managing rights-of-way in the above manner. When the property owners do not agree to these opportunities, TVA must maintain the right-of-way in the most environmentally acceptable, cost-effective, and efficient manner possible.

### **3.0 Herbicide Program**

- A. TVA has worked with universities (such as Mississippi State University, University of Tennessee, Purdue University, and others), chemical manufacturers, other utilities, U.S. Department of Transportation, U.S. Fish and Wildlife Service (USFWS), and U.S. Forest Service (USFS) personnel to explore options for vegetation control. The results have been strong recommendations to use species-specific, low-volume herbicide applications in more situations. Research, demonstrations, and other right-of-way programs show a definite improvement of rights-of-way treated with selective low-volume applications of new herbicides using a variety of application techniques and timing.
- B. Low-volume herbicide applications are recommended since research demonstrates much wider plant diversity after such applications. There is better ground erosion protection, and more wildlife food plants and cover plants develop. In most situations, there is increased development of wild flowering plants and shrubs. In conjunction with herbicides, the diversity and density of low-growing plants provide control of tall-growing species through competition.

- C. Wildlife managers often request the use of herbicides in place of rotary mowing in order to avoid damage to nesting and tunneling wildlife. This method retains ground cover year-round with a better mix of food species and associated high-protein insect populations for birds in the right seasons. Most also report less damage to soils (even when compared with rubber-tired equipment).
- D. Property owners interested in tree production often request the use of low-volume applications rather than hand- or mechanical clearing because of the insect and fungus problems in damaged vegetation and debris left on the right-of-way. The insect and fungus invasions, such as pine tip moth, oak leaf blight, sycamore and dogwood blight, etc., are becoming widespread across the nation.
- E. Best management practices (BMPs) governing application of herbicides are contained within *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities*, which is incorporated by reference. Herbicides can be liquid, granular, or powder and can be applied aerially or by ground equipment and may be selectively applied or broadcast, depending on the site requirements, species present, and condition of the vegetation. Water quality considerations include measures taken to keep herbicides from reaching streams whether by direct application or through runoff of or flooding by surface water. “Applicators” must be trained, licensed, and follow manufacturers’ label instructions, U.S. Environmental Protection Agency (USEPA) guidelines, and respective state regulations and laws.
- F. When herbicides are used, their potential adverse impacts are considered in selecting the compound, formulation, and application method. Herbicides that are designated “Restricted Use” by USEPA require application by or under the supervision of applicators certified by the respective state control board. Aerial and ground applications are either done by TVA or by contractors in accordance with the following guidelines identified in TVA’s BMPs manual:
  - 1. The sites to be treated are selected and application directed by the appropriate TVA official.
  - 2. A preflight walking or flying inspection is made within 72 hours prior to applying herbicides aerially. This inspection ensures that no land use changes have occurred, that sensitive areas are clearly identified to the pilot, and that buffer zones are maintained.
  - 3. Aerial application of liquid herbicides will normally not be made when surface wind speeds exceed 5 miles per hour, in areas of fog, or during periods of temperature inversion.
  - 4. Pellet application will normally not be made when the surface wind speeds exceed 10 miles per hour or on frozen or water-saturated soils.
  - 5. Liquid application is not performed when the temperature reaches 95 degrees Fahrenheit or above.
  - 6. Application during unstable, unpredictable, or changing weather patterns is avoided.

7. Equipment and techniques are used that are designed to ensure maximum control of the spray swath with minimum drift.
8. Herbicides are not applied to surface water or wetlands unless specifically labeled for aquatic use. Filter and buffer strips will conform at least to federal and state regulations and any label requirements. The use of aerial or broadcast application of herbicides is not allowed within a streamside management zone (SMZs) (200 feet minimum width) adjacent to perennial streams, ponds, and other water sources. Hand application of certain herbicides labeled for use within SMZs is used only selectively.
9. Buffers and filter strips (200 feet minimum width) are maintained next to agricultural crops, gardens, farm animals, orchards, apiaries, horticultural crops, and other valuable vegetation.
10. Herbicides are not applied in the following areas or times: (a) in city, state, and national parks or forests or other special areas without written permission and/or required permits, (b) off the right-of-way, and (c) during rainy periods or during the 48-hour interval prior to rainfall predicted with a 20 percent or greater probability by local forecasters, when soil active herbicides are used.

G. Table 1 - Herbicides Currently Used on TVA Rights-of-Way

<u>Trade Name</u>	<u>Active Ingredients</u>	<u>Label Signal Word</u>
Accord	Glyphosate/Liquid	Caution
Arsenal	Imazapyr/Liquid/Granule	Caution
Escort	Metsulfuron Methyl/Dry Flowable	Caution
Garlon	Triclopyr/Liquid	Caution
Garlon 3A	Triclopyr/Liquid	Danger
Transline	Clopyralid/Liquid	Caution
Pathfinder II	Triclopyr/RTU	Caution
Krenite S	Fosamine Ammonium	Caution
Spike 20P	Tebuthiuron	Caution
Chopper	Imazapyr/RTU	Caution
Roundup	Glyphosate/Liquid	Caution
Roundup Pro	Glyphosate	Caution

H. Table 2 - Preemergent Herbicides Currently Used for Bare Ground Areas on TVA Rights-of-Way and Substations

<u>Trade Name</u>	<u>Active Ingredients</u>	<u>Label Signal Word</u>
Topsite	Diuron/Imazapyr	Caution
SpraKil SK-26	Tebuthiuron and Diuron	Caution
Sahara	Diuron/Imazapyr	Caution

## I. Table 3 - Tree Growth Regulators (TGRs) Currently Used on TVA Rights-of-Way

<u>Trade Name</u>	<u>Active Ingredients</u>	<u>Label Signal Word</u>
TGR	Flurprimidol	Caution
Profile 2SC	TGR-paclobutrazol	Caution

TGRs may be used on tall trees that have special circumstances where they must be trimmed on a regular cycle.

- J. TVA currently utilizes Activate Plus, manufactured by Terra, as an adjuvant to herbicides to improve the performance of the spray mixture. Application rates are consistent with the USEPA-approved label. The USFWS has expressed some concern on toxicity effects of surfactants on aquatic species. TVA is working in coordination with Mississippi State University and chemical companies to evaluate efficacy of additional low-toxicity surfactants, including LI700 as manufactured by Loveland Industries, through side-by-side test plots in the SMZs of area transmission lines.
- K. The herbicides and TGRs listed above have been evaluated in extensive studies in support of registration applications and label requirements. Many have been reviewed in the USFS vegetation management environmental impact statements (EISs), and those evaluations are incorporated here by reference (USFS 1989a, 1989b, 2002a, and 2002b). To access electronic copies of these USFS EISs, see <http://www.fs.fed.us/r8/planning/documents/vegmgmt/>. The result of these reviews has been a consistent finding of limited environmental impact beyond that of control of the target vegetation. All the listed herbicides have been found to be of low environmental toxicity when applied by trained applicators following the label and registration procedures, including prescribed measures, such as buffer zones, to protect threatened and endangered species.
- L. The rates of application utilized are those listed on the USEPA-approved label and consistent with utility standard practice throughout the Southeast. TVA currently uses primarily low-volume applications of foliar and basal applications of Accord (glyphosate) and Accord- (glyphosate) Arsenal (imazapyr) tank mixes. Glyphosate is one of the most widely used herbicidal active ingredients in the world and has been continuously the subject of numerous exhaustive studies and scrutiny to determine its potential impacts on humans, animals, and the environment.

#### 4.0 Accord

- A. Accord is labeled for vegetation management in forestry and utility right-of-way applications. It has a full aquatics label, and can be applied to emergent weeds in all bodies of fresh and brackish water. There is limited restriction on the use of treated water for irrigation, recreation, or domestic purposes. Accord is applied to the foliage of actively growing plants. The active ingredient is absorbed through the leaves and rapidly moves throughout the plant. Glyphosate prevents the plant from producing amino acids, which are unique to plants and which are building blocks of plant proteins. The plant, unable to make proteins, stops growing and dies.
- B. The favorable environmental fate characteristic of Accord herbicide and its major metabolite (breakdown product) aminomethylphosphonic acid (AMPA) is well known. Continuing research is underway with more than 400 studies conducted to

date in the laboratory and under field use conditions. These studies show rapid breakdown, little soil or plant debris retention, and little vertical movement into soil below the surface.

- C. Glyphosate is naturally degraded by microbes in soil and water under both aerobic (with oxygen) and anaerobic (without oxygen) conditions. AMPA is further degraded in soil and sediments to phosphorus, nitrogen, hydrogen, and carbon dioxide. Glyphosate binds rapidly and completely to a wide range of soils and sediment when introduced into the environment. This essentially eliminates movement in the soil. The average half-life of glyphosate in soils is less than 45 days. Half-life for the dissipation of glyphosate in environmental waters ranges from 1.5 to 14 days.
- D. Glyphosate is nontoxic to birds, mammals, and bees and has been shown not to bioaccumulate, since it acts in plants through an enzyme system that does not exist in animals or humans.

## 5.0 Arsenal

- A. Arsenal (imazapyr) has been similarly tested, and it is found to have low leaching potential in soils. When available on or in the soil, it is broken down rapidly by soil microbes to naturally occurring compounds. When not available, imazapyr is bound tightly to soil colloids and is unavailable for movement. The half-life in soil is 25 to 65 days.
- B. Extensive chronic and acute toxicity studies have made Arsenal a USEPA-classified herbicide as practically nontoxic to humans, mammals, birds, fish, aquatic invertebrates, and insects. The chronic studies demonstrate that Imazapyr is non-teratogenic, non-mutagenic, and not a carcinogen.
- C. The mode of action suppresses amino acids of the plant via an enzyme system containing acetohydroxy acid synthase. This enzyme system does not exist in other forms of life, including humans and animals.

## 6.0 References

- U.S. Forest Service. 1989a. *Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement*, Volumes I and II. Southern Region Management Bulletin R8-MB-23, January 1989. Atlanta, Ga.: USDA Forest Service.
- . 1989b. *Vegetation Management in the Appalachian Mountains Final Environmental Impact Statement*, Volumes I and II. Southern Region Management Bulletin R8-MB-38, July 1989. Atlanta, Ga.: USDA Forest Service.
- . 2002a. *Vegetation Management in the Appalachian Mountains Final Environmental Impact Statement Supplement*. Southern Region Management Bulletin R8-MB-97A, October 2002. Atlanta, Ga.: USDA Forest Service.
- . 2002b. *Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement Supplement*. Southern Region Management Bulletin R8-MB-98A, October 2002. Atlanta, Ga.: USDA Forest Service.

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## **Appendix G – Stream Crossings Within the Algood Project Area**

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**Appendix Table G-1. Stream Crossings on the Proposed Algood 161-kV Transmission Line Within the Falling Water River Drainage, Putnam County, Tennessee**

Sequence Identifier	Stream Type	Shoreline Management Zone (SMZ) Category	Stream Name	Comments
001	Intermittent	Category A (50 feet)	Tributary to Burtons Branch	3-foot x 1-foot channel; forested; eventually enters a sinkhole
002	Intermittent	Category A (50 feet)	Tributary to Burtons Branch	12-foot x 7-foot channel; recent ground fire has burned off vegetation on right bank, making it highly erodible; no water present at time of survey
003	Intermittent	Category B (250 feet)	Tributary to Burtons Branch	Spring, currently dry (during drought year); cave located north of spring (Johnston property); steep slopes located on either side; Category B assigned due to presence of spring
004	Intermittent	Category B (250 feet)	Tributary to Burtons Branch	Springhead; small 1-foot x 6-inch channel straight down side of steep (65%) slope; feeds SMZ005.
005	Intermittent	Category B (250 feet)	Tributary to Burtons Branch	3 to 8-foot-wide by 1-foot-deep channel with slabrock/rubble substrate; steep slopes and presence of spring is reason for Category B SMZ; fed by another spring northeast of spring (SMZ004)
006W	Intermittent	Category B (250 feet)	Unnamed tributary to creek in Rockwell Hollow – small spring seep	Category B SMZ due to presence of spring
007	Intermittent	Category A (50 feet)	Tributary to unnamed creek in Rockwell Hollow	8-foot x 3-foot channel heavily impacted by previous logging; forested; ford through stream channel
008	Other	Category A (50 feet)	Tributary to unnamed creek in Rockwell Hollow	Pond with small WWC <sup>1</sup> feeding it; area around pond is cleared and heavily impacted by cattle; WWC is cleared but still heavily impacted
009	Intermittent	Category B (100 feet)	Tributary to unnamed creek in Rockwell Hollow	3-foot x 2-foot channel; no water present at time of survey; drains into two sinkholes approximately 30 yards from springhead
010	Intermittent	Category A (50 feet)	Unnamed creek in Rockwell Hollow	14-foot x 8-foot channel; ROW extends into riparian zone; no water present at time of survey
011	Intermittent	Category A (50 feet)	Unnamed creek in Rockwell Hollow	14-foot x 8-foot channel; ROW extends into riparian zone; no water present at time of survey
012	Perennial	Category A (60 feet)	Falling Water River	50-foot x 8-foot-deep channel with gravel/silt/bedrock substrate; forested; fish/snails/macroinvertebrates observed; impoundment begins approximately 100 yards downstream

<sup>1</sup> WWC = wet weather conveyance, i.e., a stream that has water in it only after a rainfall or other precipitation event.

**Appendix Table G-2. Stream Crossings on the Existing Right-of-Way Within the Falling Water River Drainage, Putnam County, Tennessee**

Sequence Identifier	Stream Type	Streamside Management Zone Category	Stream Name	Comments
001	Intermittent	Category A (50 feet)	Tributary to Burton Branch	Stream flowing out of wetland through culvert and then through cow pasture; stream has been channelized through pasture
002	Intermittent	Category A (50 feet)	Tributary to Burton Branch	Channelized stream running through wetland; no water present at time of survey