

**Document Type:** EA-Administrative Record  
**Index Field:** Final Environmental Document  
**Project Name:** SeverCorr 161-kV Transmission  
Line  
**Project Number:** 2006-11

## FINAL ENVIRONMENTAL ASSESSMENT

# **WEST POINT-SEVERCORR 161-KV TRANSMISSION LINE Lowndes and Clay Counties, Mississippi**

TENNESSEE VALLEY AUTHORITY

MARCH 2006

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## ACRONYMS, ABBREVIATIONS, AND SYMBOLS

~	Approximately
°F	Degree Fahrenheit
<b>APE</b>	Area of Potential Effect
<b>BMP</b>	Best Management Practice
<b>CFR</b>	Code of Federal Regulations
<b>EA</b>	Environmental Assessment
<b>e.g.</b>	Latin term, <i>exempli gratia</i> , meaning “for example”
<b>EIS</b>	Environmental Impact Statements
<b>EMF</b>	Electric and Magnetic Fields
<b>EO</b>	Executive Order
<b>GIS</b>	Geographic Information System
<b>HU</b>	Hydrologic Unit
<b>i.e.</b>	Latin term, <i>id est</i> , meaning “that is”
<b>Inc.</b>	Incorporated
<b>kV</b>	Kilovolt
<b>MDEQ</b>	Mississippi Department of Environmental Quality
<b>MW</b>	Megawatt
<b>NRHP</b>	National Register of Historic Places
<b>NWI</b>	National Wetlands Inventory
<b>OSHA</b>	Occupational Safety and Health Administration
<b>RDA</b>	Rural Development Administration
<b>SMZ</b>	Streamside Management Zone
<b>spp.</b>	Species
<b>SR</b>	State Route
<b>TVA</b>	Tennessee Valley Authority
<b>TVARAM</b>	Tennessee Valley Authority Rapid Assessment Method
<b>US</b>	U.S. Highway
<b>U.S.</b>	United States
<b>USACE</b>	U.S. Army Corps of Engineers
<b>USDA</b>	U.S. Department of Agriculture
<b>USEPA</b>	U.S. Environmental Protection Agency
<b>USFS</b>	U.S. Forest Service
<b>USFWS</b>	U.S. Fish and Wildlife Service
<b>USGS</b>	U.S. Geological Survey

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## CHAPTER 1

### 1. PURPOSE OF AND NEED FOR ACTION

#### 1.1. Proposed Action: Provide Power Supply to SeverCorr Steel Mill

Tennessee Valley Authority's (TVA) proposed action is to supply power to the new SeverCorr 161-kilovolt (kV) Substation that will serve the planned SeverCorr Inc. steel mill in Lowndes County, Mississippi. This would be accomplished by constructing and operating approximately 20.5 miles of 161-kV double-circuit transmission line in Lowndes and Clay Counties, Mississippi (Figure 1-1). Of this, approximately 14.7 miles of new transmission line would be constructed on an existing transmission line right-of-way occupying approximately 312 acres. An additional 12.5 feet of new right-of-way occupying 22.3 acres would need to be added to the width of this existing right-of-way. In addition to this, 5.8 miles of new transmission line on 100-foot right-of-way occupying 70.3 acres would be constructed between the tap in the existing transmission line to the new SeverCorr 161-kV Substation, within the Lowndes County-Golden Triangle Megasite. The first phase of the proposed project, a general purpose feed transmission line, would be in service by October 2006, and the second phase, a direct feed transmission line, by July 2007.

An additional proposed TVA action is to assist SeverCorr financially with its purchase of weight scales, radiation-detection equipment, office furniture, computers, printers, and mobile equipment. The amount of this assistance would be about one-tenth of 1 percent of the entire cost of the project and would not materially affect SeverCorr's project plans. This action would have no physical environmental impacts beyond those due to the construction and operation of the plant. Moreover, the equipment to be purchased would not be central to the manufacturing process and thus would have minimal impact in itself. For the Lowndes County Industrial Development Authority to acquire a proposed loan guarantee by the U.S. Department of Agriculture Rural Development Administration (USDA RDA), an Environmental Report was prepared to evaluate the impacts of the development of a "megasite" – a large industrial property that has been certified as suitable for major automotive manufacturing and other industries in the region (Lowndes County Industrial Development Authority and Calvert-Spradling Engineers, Inc., 2004). This loan was to be used by the Lowndes County Industrial Development Authority to enable the purchase of the megasite property. The RDA's Environmental Assessment (EA) concluded that there would be economic benefits and a loss of prime farmland. No other adverse impacts to natural or cultural features would occur because no sensitive resources were determined to be present. Additionally, adherence to state and local regulations would prevent other potential adverse impacts. A Finding of No Significant Impact was issued for the loan guarantee on February 11, 2005. TVA has considered the RDA EA and its conclusions as part of this review. In light of the above, this TVA EA will not further address the impacts of TVA's financial assistance.

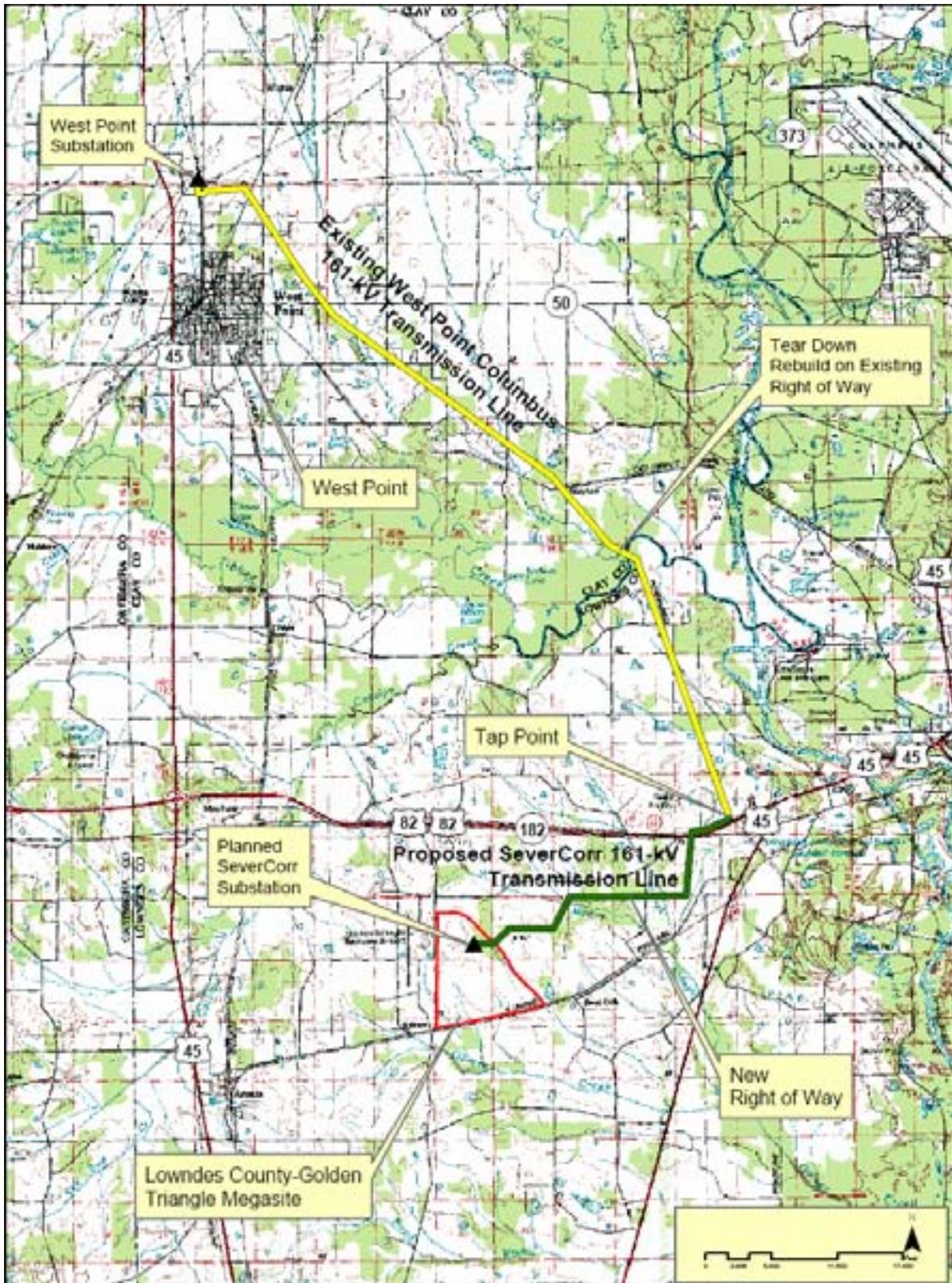


Figure 1-1. The Preferred Route of the Proposed SeverCorr 161-kV Transmission Line

## 1.2. Need

The recent positioning of a number of foreign automotive manufacturing companies in the southern U.S. has created the need for a steel sheet mill capable of producing doors, hoods, fenders, and panels. SteelCorr Inc. was formed in 2003 to develop, engineer, construct, and operate a technologically advanced steel sheet mini-mill capable of producing critical steel applications for the automotive and appliance industries. The steel mill is projected to produce 1.5 million tons of flat rolled steel products annually.

Severstal, a Russian leader in the steelmaking industry, emerged as the leading investor for the steel mill in the spring of 2005. Subsequently, the name of the new mill was changed from SteelCorr to SeverCorr. When constructed, the SeverCorr mill will bring an estimated 2,000 construction-related jobs into the region. In addition, it will eventually employ about 450 regular employees with an average salary of \$70,000. TVA has been asked to extend its transmission system in order to serve the SeverCorr 161-kV Substation that is being constructed as part of the SeverCorr project.

During SteelCorr Inc. project's development, 55 sites in the southeastern U.S. were evaluated, and their choices narrowed to either Osceola, Arkansas, or Columbus, Mississippi. Ultimately, the availability of affordable, reliable electric power provided by TVA was critical in their decision to locate the new steel mill in northeastern Mississippi. The site chosen for the planned \$800-million-plus mill is a TVA-sponsored megasite. To date, five megasites have been certified in the Tennessee Valley region by McCallum Sweeney Consulting, a site-selection consultant for the automotive industry. Two of these megasites are located in Mississippi, two in Tennessee, and one in Kentucky.

The SeverCorr mill site, Lowndes County-Golden Triangle Megasite, is located west of Columbus, Mississippi (Lowndes County Industrial Development Authority and Calvert-Spradling Engineers, Inc., 2004). This site, consisting of about 1,400 acres, is near the Golden Triangle Regional Airport and is in the heart of an area surrounded by the cities of Columbus, Starkville, and West Point. The megasite features include the following: easy access to air, water, rail, and highways; reliable, reasonably priced utilities; a skilled labor force; training facilities; three major universities; and a desirable quality of life. The SeverCorr mill represents 250 megawatts (MW) of load and will include a 130-MW direct current arc furnace. To meet this load, SeverCorr is constructing a new 161-kV substation on the megasite adjacent to its new mill.

The SeverCorr mill's 130-MW arc furnace load cannot be served from TVA's existing facilities because the harmonics (sudden and large voltage fluctuations) on the transmission line caused by the arc furnace process would significantly reduce the power quality to any other existing transmission line source connection. Therefore, to stabilize the voltage or load impact on the transmission grid, a strong power source that would not be shared with other loads is required to serve this individual load. The construction of a new 161-kV transmission line from the West Point 500-kV Substation (the closest adequate power source in the area) to the new SeverCorr 161-kV Substation would meet these requirements. Furthermore, it would be possible to take the West Point-Columbus #2 Transmission Line out of service for an extended period of time to allow TVA to rebuild this existing transmission line to double circuit.

One side of the proposed double-circuit transmission line would be used as a direct feed that would serve the arc furnace for the SeverCorr mill. Considered a “dirty feed” due to the harmonics, the magnitude of the arc furnace load would require that the load be served from a 161-kV breaker bay of the West Point 500-kV Substation. The other side of the double-circuit transmission line would serve the additional mill processes that do not produce harmonics, as well as any future industries that would locate within the industrial park. This side is considered a general purpose or “clean” feed. The clean feed cannot be served from the existing West Point-Columbus #2 Transmission Line because several TVA transmission tap lines carrying heavy industrial loads are already connected to this transmission line. The higher the load and number of taps on a transmission line, the less reliable the transmission line becomes. Therefore, a tap from the West Point-Columbus #1 161-kV Transmission Line would be used to serve as the clean feed to the SeverCorr 161-kV Substation. No additional industries have proposed locating at the megasite at this time; potential impacts of further development of the site have been generally addressed by the RDA EA.

SeverCorr has requested the clean feed by October 2006. The in-service date for the dirty feed is July 2007.

### **1.3. Decisions That Must Be Made**

As described above in Section 1.2, TVA has been requested to provide electrical service to the proposed steel mill and megasite. The primary decision before TVA is determining the best alternative transmission line route to supply the new load at the Lowndes County-Golden Triangle Megasite. A detailed description of the alternatives is provided in Section 2.2.

If the transmission system is to be improved, other, secondary decisions are involved. These include the following considerations:

- The timing of improvements
- The best route for a transmission line
- Determining any necessary mitigation and/or monitoring measures to implement to meet TVA standards and minimize potential damages to resources

In addition, TVA must decide whether to assist SeverCorr financially with its purchase of weight scales, radiation-detection equipment, office furniture, computers, printers, and mobile equipment.

### **1.4. Public Involvement**

The following federal, state, and local agencies have been contacted to date by TVA concerning this project.

- Mississippi Department of Archives and History
- Mississippi Department of Environmental Quality
- Mississippi Department of Transportation
- Mississippi Development Authority
- Mississippi Natural Heritage Program

- Mississippi Public Service Commission
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture
- U.S. Fish and Wildlife Service

This proposal was reviewed in accordance with Executive Order (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), National Historic Preservation Act, Endangered Species Act, Section 404 of the Clean Water Act, and EO 12372 (Intergovernmental Review). Correspondence received related to this coordination is contained in Appendix I.

TVA held a public meeting in the project area on January 20, 2005. Three potential transmission line route options were presented to the public for comment. These are described in Section 2.4.5 of this document as Routes A through C (Figure 1-2).

Twenty-two public officials and 500 potentially affected property owners within these corridor routes were specifically invited to the meeting. TVA also invited other interested members of the public through newspaper advertisements and local news outlets. Total attendance at the meeting was 75.

During a 30-day public comment period following the open house, TVA accepted public comments on potential transmission line routes and other issues. A toll-free phone number and fax number were made available to facilitate comments. Comments were primarily related to the location of the transmission line relative to current or planned land uses. Several owners raised issues that were utilized immediately, such as commercial development and environmental concerns. Many commenters provided information and land use updates that enhanced TVA's understanding of route issues and usage constraints. Of the potential transmission line route options presented at the public meeting, there was no clear preference of the majority of those expressing an opinion.

### **1.5. Necessary Permits or Licenses**

A Section 404 Nationwide Permit #12 - Utility Line Crossing has been approved and issued by the U.S. Army Corps of Engineers (USACE) for the proposed project. In addition, a permit would be required from the state of Mississippi for construction site storm water discharge for the transmission line construction. TVA's Transmission Construction organization would prepare the required erosion and sedimentation control plans and coordinate them with the appropriate state and local authorities. A permit would also be required for burning trees and other combustible materials removed during substation and transmission line construction.

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See File Entitled **Figure 1-2: Route Alternatives**

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## CHAPTER 2

### 2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

#### 2.1. Introduction

Chapter 2: Alternatives Including the Proposed Action is the *heart* of this Environmental Assessment. This chapter has the following four major sections:

- Description of Alternatives
- Description of Construction, Operation, and Maintenance of the Existing and Proposed 161-kV Transmission Line
- Project and Siting Alternatives
- Identification of the Preferred Alternative

This chapter describes all of the alternatives explored and provides a detailed description of the necessary steps in constructing a transmission line.

#### 2.2. Description of Alternatives

##### 2.2.1. **Alternative 1 – Do Not Construct 161-kV Transmission Line (No Action)**

Under the No Action Alternative, TVA would not rebuild 14.7 miles of existing 161-kV transmission line and construct 5.8 miles of new 161-kV transmission line to serve the new SeverCorr 161-kV Substation and Lowndes County-Golden Triangle Megasite. With implementation of this alternative, the megasite would not be able to support the new SeverCorr steel mill. It is possible that some industrial customers would be able to locate to the industrial park; however, this alternative would limit the industries that would choose to locate to the megasite. Any such additional industrial customers on the TVA transmission system could cause overloading or stability problems to existing customers and still require some upgrading of transmission system capabilities.

Additionally, a major factor in SeverCorr's decision to locate in northeast Mississippi was the source of affordable, reliable TVA electric power. With the implementation of this alternative, TVA would not be able to meet the power demands through generation from other sources, because without the upgrades, the transmission system would not be able to sustain the additional power loads. Reliability and stability of power generation would be affected for both TVA's current customers and for any new customers at the Lowndes County-Golden Triangle Megasite, including the SeverCorr mill.

Under this alternative, TVA would not provide SeverCorr financial assistance, but in not doing so, this is not expected to change SeverCorr's plans materially.

##### 2.2.2. **Alternative 2 – Construct 161-kV Transmission Line (Action)**

Under the Action Alternative, TVA would provide a connection from its West Point 500-kV Substation to the new SeverCorr 161-kV Substation located in the Lowndes County-Golden Triangle Megasite Industrial Park. This would be accomplished by constructing approximately 20.5 miles of 161-kV double-circuit transmission line in Lowndes and Clay Counties, Mississippi. Of this, beginning at TVA's West Point 500-kV Substation,

approximately 14.7 miles of new transmission line would be constructed on an existing transmission line right-of-way. An additional 12.5 feet of new right-of-way would need to be added to the width of this existing right-of-way. In addition to this, new 100-foot right-of-way would be required for the construction of the remaining 5.8 miles of new transmission line that would end at the new SeverCorr 161-kV Substation within the Lowndes County-Golden Triangle Megasite. Most of the new right-of-way would be located on private land; approximately 0.5 mile would be located on the Lowndes County-Golden Triangle Megasite. This alternative would meet the power demands of the new industrial customer.

In addition, TVA would also construct a new 161-kV breaker bay at the 161-kV switchyard of the West Point 500-kV Substation, retire existing relays, and reterminate the existing West Point-Midway 161-kV Transmission Line into the new breaker bay. This would allow the proposed West Point-SeverCorr 161-kV Transmission Line to be connected to the existing Midway 161-kV breaker bay. TVA would also provide metering at the SeverCorr 161-kV Substation and provide connections, which would transmit process data and equipment status from the substation to the TVA transmission and generation dispatchers.

## **2.3. Description of Construction, Operation, and Maintenance of the Existing and Proposed 161-kV Transmission Line**

### **2.3.1. *Transmission Line Construction***

#### **2.3.1.1. Right-of-Way Acquisition and Clearing**

Approximately 14.7 miles of new right-of-way 12.5 feet wide would be needed along TVA's existing West Point-Columbus #1 and #2 Transmission Line rights-of-way. In addition, approximately 5.8 miles of new right-of-way 100 feet wide would be needed for the proposed West Point-SeverCorr 161-kV Transmission Line that would be located between TVA's existing transmission line right-of-way and the new SeverCorr 161-kV Substation.

TVA would purchase easements from landowners for the new right-of-way on private land. These easements would give TVA the right to construct, operate, and maintain the transmission line, as well as remove danger trees off the right-of-way. Danger trees are those trees that are located away from the cleared right-of-way, but are tall enough to pass within 5 feet of a conductor or strike a structure should it fall toward the transmission line. Fee title, i.e., ownership, for the land within the right-of-way remains with the landowner, and a number of activities may be continued on the property by the landowner. However, the easement agreement prohibits certain activities such as the construction of buildings and any other activities within the right-of-way that could interfere with the transmission line or create a hazardous situation.

Because of the need to maintain adequate clearance between tall vegetation and transmission line conductors, as well as to provide access for construction equipment, most trees and shrubs would be initially removed from the entire width of the right-of-way. Equipment used during this right-of-way clearing would include chain saws, skidders, bulldozers, tractors, and/or low ground-pressure feller-bunchers. Marketable timber would be salvaged where feasible; otherwise, woody debris and other vegetation would be piled and burned, chipped, or taken off site. In some instances, vegetation may be windrowed along the edge of the right-of-way to serve as sediment barriers.

Streamside management zones (SMZs) would be established along intermittent and perennial streams; their width would be based on stream characteristics, slope, soil types,

and other factors (see Muncy, 1999). Vegetation removal in SMZs and wetlands would be restricted to trees tall enough, or with the potential soon to grow tall enough, to interfere with conductors. Clearing in SMZs would be accomplished using hand-held equipment or remote-handling equipment, such as a feller-buncher, in order to limit ground disturbance. TVA Right-of-Way Clearing Specifications, Environmental Quality Protection Specifications for Transmission Line Construction, and Transmission Construction Guidelines Near Streams (Appendices II, III, and IV) would be followed in clearing and construction activities.

Subsequent to clearing and construction, the right-of-way would be restored as much as is possible to its state prior to construction. Pasture areas would be reseeded with suitable grasses. Wooded areas would be restored using native grass and other low-growing species. Erosion controls would remain in place until the plant communities were fully established. Streamside areas would be revegetated as described in Appendices II through IV.

#### **2.3.1.2. Access Roads**

Permanent access roads would be needed to allow vehicle access to each structure and other points along the new and existing rights-of-way. No new access roads would be constructed. For the rebuild activity along the existing transmission lines, established access roads would be used for vehicle access. These roads include privately built, farm and field roads, some of which may need upgrading. Typically, the access roads are located on the right-of-way wherever possible and designed to avoid severe slope conditions and to minimize stream crossings. The roads are typically about 20 feet wide and surfaced with dirt or gravel. Along the new transmission line, TVA would obtain the necessary rights for these access roads from landowners. The access roads were identified and included in the environmental field review.

Culverts and other drainage devices, fences, and gates would be installed as necessary. Culverts installed in any permanent streams would be removed following construction. However, in wet-weather conveyances, they would be left or removed, depending on the wishes of the landowner or any permit conditions that might apply. Additional applicable right-of-way clearing and environmental quality protection specifications are listed in Appendices II and III.

#### **2.3.1.3. Construction Assembly Areas**

A construction assembly area (laydown area) would be required for worker assembly, vehicle parking, and material storage. The site identified for this project is located at 3068 State Route (SR) 50 East in West Point, Mississippi (Figure 2-1). The site, approximately 10 acres in size, would be leased for the duration of the construction period. It consists of a relatively flat and previously cleared location adjacent to an existing paved road near the proposed transmission line. Site conditions could warrant some minor grading and the installation of drainage structures. In addition, the site would be graveled and fenced so that trailers used during the construction process for material storage and office space could be parked at this location. Following the completion of construction activities, all trailers, unused materials, and construction debris would be removed from the site. Removal of the fence and restoration would be at the discretion of the landowner. No environmental impacts were identified with this site as a construction assembly area, and no other location was identified that would have lesser impacts.



**Figure 2-1. Location of SeverCorr 161-kV Transmission Line Construction Laydown Yard**

### 2.3.1.4. Structures and Conductors

The proposed double-circuit 161-kV transmission line would utilize mostly double-pole DHS-1G steel structure (Figure 2-2). Structure heights would vary according to the terrain and would range between 90 and 100 feet. Single-pole S-1G structures would be used in the immediate vicinity of the West Point 500-kV Substation (Figure 2-2).



**Figure 2-2. DHS-1G (a) and S-1G (b) 161-kV Transmission Structures**

Three conductors (the cables that carry the electrical current) are required to make up a circuit in alternating current transmission lines. For 161-kV transmission lines, each conductor is made up of a single cable. The conductors are attached to fiberglass or ceramic insulators suspended from the structure cross arms. A smaller overhead ground wire is attached to the top of the structures. This ground wire may contain fiber optic communication cables.

Poles at angles in the transmission line may require supporting guy wires. Most poles would be imbedded directly in holes augured into the ground to a depth equal to 10 percent of the pole's length plus an additional 2 feet. The holes would normally be backfilled with the excavated material. In some cases, gravel or a cement and gravel mixture might be necessary. Some structures may be self-supporting (non-guyed) poles fastened to a concrete foundation that is formed and poured into an excavated hole. Switches would be required at the tap point of the West Point-Columbus #1 Transmission Line. A 3-pole tap structure (Figure 2-3) would be installed in between two S-1G structures in the West Point-Columbus 161-kV Transmission Line.



**Figure 2-3. 3-Pole Tap 161-kV Transmission Structure**

Equipment used during the construction phase would include trucks, truck-mounted augers and drills, as well as tracked cranes and bulldozers. Low ground-pressure-type equipment would be used in specified locations (e.g., areas with soft ground) to reduce the potential for environmental impacts.

#### **2.3.1.5. Conductor and Ground Wire Installation**

Reels of conductor and ground wire would be delivered to various staging areas along the right-of-way, and temporary clearance poles would be installed at road and railroad crossings to reduce interference with traffic. Installation of conductors would begin with a small rope being pulled from structure to structure. This rope would then be connected to the conductor and ground wire and used to pull them down the line through pulleys suspended from the insulators mounted on the structures. A bulldozer and specialized tensioning equipment would be used to pull conductors and ground wires to the proper tension. Finally, the wires would be clamped to the insulators and the pulleys removed.

### **2.3.2. Operation and Maintenance**

#### **2.3.2.1. Inspection**

Periodic inspections of TVA's transmission lines are performed from the ground and by aerial surveillance using a helicopter. These inspections, which occur on approximately

two- to three-year cycles after operation begins, are conducted to locate damaged conductors, insulators, or structures, and to report any abnormal conditions that might hamper the normal operation of the line or adversely impact the surrounding area. During these inspections, the condition of vegetation within the right-of-way, as well as immediately adjoining the right-of-way, is noted. These observations are then used to plan corrective maintenance or routine vegetation management.

### **2.3.2.2. Vegetation Management**

Management of vegetation along the right-of-way would be necessary to ensure access to structures and to maintain an adequate distance between transmission line conductors and vegetation. The transmission line would be designed to meet a 25-foot minimum clearance for a 161-kV transmission line.

Management of vegetation along the right-of-way would consist of two different activities: namely, the felling of danger trees adjacent to the cleared right-of-way, as described in Section 2.3.1.1, and the control of vegetation within the cleared right-of-way.

Management of vegetation within the cleared right-of-way would use an integrated vegetation management approach designed to encourage the low-growing plant species and discourage tall-growing plant species. A vegetation-reclearing plan would be developed for each transmission line segment based on the results of the periodic inspections described above. The two principal management techniques are mechanical mowing, using tractor-mounted rotary mowers, and herbicide application. Herbicides are normally applied in areas where heavy growth of woody vegetation is occurring on the right-of-way and mechanical mowing is not practical. Herbicides would be selectively applied by helicopter or from the ground with backpack sprayers or vehicle-mounted sprayers.

Any herbicides used would be applied in accordance with applicable state and federal laws and regulations and the commitments listed in this document. Only herbicides registered with the U.S. Environmental Protection Agency (USEPA) would be used. A list of the herbicides currently used by TVA in right-of-way management is presented in Appendix V. This list may change over time as new herbicides are developed or new information on presently approved herbicides becomes available.

Other than vegetation management, little other maintenance work would normally be required. The transmission line structures and other components typically last several decades. In the event that a structure must be replaced, the structure would normally be lifted out of the ground by crane-like equipment and the replacement structure inserted into the same hole or an immediately adjacent hole. Access to the structures would be on existing roads where possible. Replacement of structures may require leveling the area surrounding the replaced structures, but there would be little, if any, additional area disturbance when compared to the initial installation of the structure.

## **2.4. Project and Siting Alternatives**

The process of siting the transmission line adhered to the following basic steps used by TVA:

- Determine potential existing power sources to supply the new SeverCorr 161-kV Substation and SeverCorr steel mill.
- Define the study area.

- Collect data to minimize potential impacts to cultural and natural features.
- Develop general route options and potential routes.
- Gather public input.
- Incorporate public input into the final identification of the transmission line route.

#### **2.4.1. Definition of Study Area**

The first task in defining the study area was to identify a power source that could supply the Lowndes County-Golden Triangle Megasite Industrial Park. The most practical power source was the West Point 500-kV Substation for the dirty feed to serve the arc furnace because, as described in Section 1.2, this substation has the capacity to provide for a 161-kV “direct feed” to supply the 130-MW load. The West Point-Lowndes #1 161-kV Transmission Line was the most practical source for the clean feed to provide a power supply for the other mill processes because this line has no other lines connected to it (the West Point-Columbus #2 Transmission Line has many other lines connected to it) and, therefore, the West Point-Columbus #1 Transmission Line would provide a stronger power source. Based on the location of this power source, the study area was defined as an area that encompasses approximately 209 square miles or 134,000 acres and is located within Clay and Lowndes Counties on the Muldon, Strong, West Point, Waverly, Artesia, Bent Oak, Columbus North, and Columbus South 7.5-minute quadrangle maps. The study area boundary is limited to West Point 500-kV Substation to the north, the Lowndes County-Golden Triangle Megasite to the south, the existing West Point-Columbus #1 and #2 161-kV Transmission Lines to the east and U.S. Highway (US) 45A and the city of West Point to the west.

A geographic information system (GIS) based routing map and color orthophotography were developed. The GIS data generated a “constraint” model that served to guide the siting process by identifying obvious routing conflicts or sensitive areas including, but not limited to, houses, rivers, historical sites, and wetlands. Following is a brief description of other aspects of the study area.

- *Natural and Cultural Features:* The study area is primarily a flat to rolling lowland area used for agriculture, forestry, and gravel mining. Some of the study area lies within the floodplains of the Tombigbee Waterway and Tibbee Creek and contains several wetland areas. Tibbee Creek is located near the center of the study area.
- *Land Use:* The majority of the land within the study area is used for agriculture and forestry. The study area currently consists of a combination of agricultural fields, pasturelands, old fields, and forests of various ages. There are several tracts of forested bottomland in the study area, mostly along Tibbee Creek.
- *Transportation:* Major transportation routes in the study area include US 45 and 45A, US 82, SR 50, Melton Bottom Road, and Industrial Park Road.

#### **2.4.2. Collect Data**

Geographic data, such as topography, land use, transportation, environmental features, cultural resources, near-term future development, and land conservation information were collected for the entire study area. Analysis of the data was aided by using GIS. This system allowed the multitude of factors of the study area to be examined simultaneously to develop and evaluate numerous options and scenarios to determine the route or routes that

would best meet project needs, including avoiding or reducing potential environmental impacts.

Maps were created to show regional opportunities and constraints clearly. Sources included 1 inch = 500 feet aerial photography, county tax maps/property boundaries, U.S. Geological Survey (USGS) digital line graphs, digital elevation models, National Wetlands Inventory (NWI), and cultural resource data, among others. Aerial photography was interpreted to obtain land use and land cover data, such as forests, agriculture, wetlands, houses, barns, commercial and industrial buildings, churches, and cemeteries. Data were analyzed both manually and with GIS. Manual calculations from aerial photographs, tax maps, and other sources included the number of road crossings, stream crossings, and property parcels.

### **2.4.3. Develop General Route Options and Potential Transmission Line Routes**

From the information gathered during the system's studies and data development phases, two transmission line route corridors were identified leading from TVA's West Point 500-kV Substation to the new SeverCorr 161-kV Substation located at the Lowndes County-Golden Triangle Megasite. Within these two corridors, three potential transmission line routes and several alternate segments were evaluated to determine the preferred tap point and transmission line route (Figure 1-2).

TVA presented these three potential transmission line routes at the open house: a Western Alternative (Route A), a Western Subalternative (Route B), and an Eastern Alternative (Route C). All of the proposed routes would begin at the 161-kV switchyard of the West Point 500-kV Substation. Route A would go south along the property of the West Point 500-kV Substation for 0.5 mile. The route would continue south for approximately 2.9 miles to the south side of the city of West Point. This section of the transmission line would follow along city streets and the edge of the abandoned Columbus and Greenville Railroad right-of-way; transmission line right-of-way would be limited or unavailable in this area. Because this section would have very limited guy wire opportunities, the spans would have to be reduced to minimize wire blowout (movement of the conductor due to wind). An existing old, unused warehouse would need to be removed. TVA construction would overbuild the existing telephone lines along the street, and about 0.5 mile of distribution line would need to be relocated in the southern part of this section, ending just west of the public works garage. The south section, starting just west of the garage, would parallel the east side of an existing 46-kV transmission line and would require the removal of five mobile homes, four small brick houses in good condition and two lumber sheds in good condition. The lumber sheds are part of a commercial property that is closed and for sale.

Route A would then continue south for approximately 10.6 miles along an old 100-foot-wide right-of-way that predates TVA. Parts of this transmission line are standing, but unused. Some of the structures have been removed, and 4-County Electric Power Association has released the right-of-way on 2.5 miles of this section. From a point just north of Artesia, Route A would turn east, leaving the existing right-of-way onto new 100-foot-wide right-of-way for 5.5 miles. The majority of this section of transmission line would parallel the south side of Artesia Road and the G&M Railroad. At a point just east of the airport glide path, the transmission line would turn north to the new SeverCorr 161-kV Substation.

Route B would begin at the 161-kV switchyard of the West Point 500-kV Substation and would follow TVA's Midway Transmission Line southwest to a point where the route could pass south of the West Point Airport. This would be necessary to avoid expensive and

impactive downtown construction through the city of West Point. The route would travel southwest on substation property for 0.3 mile, then cross US 45A where additional right-of-way would not be available and special construction could be required for about 0.5 mile. The parallel transmission line section would be 3.7 miles long and is open except for the point at US 45A and some encroachment on the Mary Holmes College campus.

About 4 miles southwest of the West Point 500-kV Substation, Route B would turn south, then back southeast passing through the glide path of the West Point Airport (McCharen Field). It then would cross back over US 45A until it reached the old right-of-way section of Route A. This 2.6-mile section of transmission line would be on new 100-foot right-of-way. At this point, Route B would intersect Route A and continue as the same route on to the new SeverCorr 161-kV Substation.

Route C would go south and east about 0.3 mile on existing West Point 500-kV Substation property. The route would continue east crossing the Kansas City Southern Railroad for 0.2 mile on new 100-foot-wide right-of-way to a point on existing right-of-way of the West Point-Columbus 161-kV Transmission Lines. From here, the route would continue along existing right-of-way for 7.2 miles to a point east of Melton Bottom Road, where the route would turn south onto new 100-foot right-of-way. Route C would continue south on the new right-of-way, crossing Spring Creek, Kansas City Southern Railroad, Tibbee Creek and US 82 east of the Airport Road interchange through open forestland, pasture, and cultivation for 9.4 miles to the new SeverCorr 161-kV Substation.

About 1.1 miles of the 9.4 miles of new right-of-way would be on Lowndes County-Golden Triangle Megasite property. This route option would require tearing down and rebuilding one of the two West Point-Columbus 161-kV Transmission Lines onto double-circuit towers for 7.2 miles to provide space for the new 161-kV transmission line on one side of the towers. An additional 12.5 feet of new right-of-way would be required along the southwest side of the existing right-of-way.

#### **2.4.4. Establish and Apply Siting Criteria**

TVA has long employed a set of evaluation criteria that represent opportunities and constraints for development of transmission line routes. The criteria are oriented toward factors such as existing land use, ownership patterns, environmental features, cultural resources, and visual quality. Cost is also an important factor, with engineering considerations, property, and right-of-way acquisition cost being the most important elements. Information gathered and comments made at the public meeting and subsequent comment period were taken into account, while refining criteria to be specific to the study area.

Each of the transmission line alternative routes was evaluated according to these criteria relating to engineering, environmental, land use, and cultural concerns. Specific criteria are described below. For each category described, a higher score means a bigger constraint. For example, a greater number of streams crossed or impacted, a longer transmission line route length, or a greater number of historic resources affected would give an alternative transmission line route a worse score.

- *Engineering Criteria:* Total length of the transmission route, length of new right-of-way and rebuilt right-of-way, primary and secondary road crossings, pipeline and transmission line crossings, and total line cost

- *Environmental Criteria:* Slopes greater than 30 percent (steeper slopes mean more potential for erosion and potential water quality impacts), slopes between 20 and 30 percent, visual aesthetics, forested acres, open water, sensitive stream (those supporting endangered or threatened species), perennial and intermittent streams, wetlands, rare species habitat, natural area, and wildlife management areas
- *Land Use Criteria:* The number of fragmented property parcels, schools, houses, commercial or industrial buildings, barns, and parkland crossings
- *Cultural Criteria:* Archaeological and historic sites, churches, and cemeteries

Scores for each of the alternatives were calculated by adding individual criterion values for each potential transmission line route. The resulting sum values were evaluated using standard statistical techniques and were assigned a ranking from 1 to 4 for each route in each subcategory (engineering, environmental, land use, and cultural).

A weighted score was produced for each transmission line route in each subcategory. This made it possible to understand which routes would have the lowest and highest impacts on engineering, environmental, land use, and cultural resources. Finally, to determine total impacts, the scores from each category were combined for an overall score.

#### **2.4.5. Site Evaluation and Identification**

Following the public open house and subsequent comment period, each route alternative was evaluated using the constraint model and preliminary environmental field review information, along with the modified routing criteria obtained during the public involvement.

Of those who attended the public meeting or submitted comments, land use and environmental issues were the two most important concerns of the majority of those expressing an opinion. Additional information that TVA received during the public meeting concerned the Young Family Farm, located near the center of the study area. This land, purchased in 1919, has been expanded to its current size of just over 1,000 acres. A natural area was established in 1971 for Mississippi State University to preserve the old growth cypress slough for research and educational purposes. This natural area encompasses approximately 30 acres around Fortson Lake that comprises land from Tibbee Creek, wetlands adjacent to Tibbee Creek, Fortson Lake, old growth and Conservation Reserve Program hardwood forests, and wildlife food plots.

Route A was rejected for three primary reasons. First, although most of the route would follow existing roads and other infrastructure (gas lines, sewer lines, etc.), construction through the city of West Point would have been very difficult. Secondly, many homes are presently located within the proposed right-of-way through West Point, and TVA would have had to purchase at least 30 of these houses or trailers for relocation. This option, which would have cost in excess of \$20 million, would not be economically feasible when comparing this alternative to the other routes. SeverCorr Inc. would reimburse TVA for this transmission line; however, their budget would not exceed \$16 million. Finally, Route A would also require over 5 miles more new right-of-way than the initially preferred Route C.

Route B was also rejected for several reasons. First, this alternative would be in close proximity to the glide path of the West Point Airport (McCharen Field), which would have required lower structures through a large wetland area. Both Routes A and B would cross the southern portion of the glide path of the Golden Triangle Regional Airport. Additionally,

Route B would encroach on a college and impact the commercial and residential development along US 45A. Finally, as with Route A, Route B would require over 5 miles more of new right-of-way than the preferred route.

Initially, Route C was selected as TVA's preferred route because it utilized the most existing right-of-way, overall was a shorter transmission line route than either Routes A or B, impacted fewer homes, and followed existing land features along most of the proposed route. Route C was easily the most economically feasible route.

However, shortly after Route C was selected and presented as the preferred alternative, TVA discovered a bald eagle nest within 0.25 mile to the proposed Route C transmission line. Because TVA's proposed action could adversely affect this eagle nest, formal consultation with the U.S. Fish and Wildlife Service (USFWS) could be required; this consultation could take a few months. TVA could not risk delaying the construction start due to the accelerated schedule for the completion of the transmission line requested by SeverCorr. As a result, the preferred route was modified resulting in an Alternative Route D as described below (see Figures 1-1 and 1-2). While informal consultation with the USFWS would still be required, the time commitment would not jeopardize TVA's chances of meeting the SeverCorr steel mill's in-service dates.

Route D would follow the same path as Route C for the first 7.2 miles to Melton Bottom Road; however, this route would then utilize approximately 7.5 additional miles of existing transmission line right-of-way. Beginning at the 161-kV switchyard of the West Point 500-kV Substation, the route would go south and east about 0.3 mile on existing substation property. The route would continue east crossing the abandoned Columbus and Greenville Railroad for 0.2 mile on new 100-foot-wide right-of-way to a point on existing right-of-way of the West Point-Columbus 161-kV #2 Transmission Line. From here, the route would continue southeast on existing right-of-way for another 14.2 miles to the existing angle structure 174 just north of US 82. Adjacent to the southwest side of the existing right-of-way, 12.5 feet of new right-of-way would be required for danger tree rights and wire blowout clearance. The existing wood poles and associated equipment on this section of the transmission line would be handled according to TVA's Environmental Protection Procedures (Appendix III). The rebuild portion of the project would be approximately 14.7 miles and would end at a point near the frontage road north of US 82. The south side of this portion of the transmission line would be part of the dirty feed to serve the arc furnace. The north side would connect to the existing West Point-Columbus #2 Transmission Line.

From this point, the north side of the double-circuit transmission line would continue the dirty feed to serve the arc furnace for the SeverCorr mill, and the south side of the transmission line would be the clean feed tapped off the West Point-Columbus #1 Transmission Line. New 100-foot-wide right-of-way would be required for this section of the transmission line. Two switches would be installed near structure 148 (between structures 148 and 149) on the existing West Point-Columbus #1 Transmission Line. Beginning near the switch locations, the transmission line route would follow the north side of the US 82 frontage road for approximately 3,500 feet and then turn south and cross US 82 through mostly open pasture and cultivation for about 1.1 miles. Then the route would turn due west for approximately 1.95 miles through open pasture and forest. About 600 feet before crossing Allison-Hardy Road, the route would cross a patch of Ohio buckeye trees extending several hundred feet north and south of the route. Alternatives to avoid the buckeye trees were discussed with adjacent landowners. Each of the landowners strongly opposed the relocation. In addition, while the relocation would reduce the impacts to the trees, they would not be completely avoided. Once the transmission line crosses Allison-

Hardy Road, it would turn southwest just before crossing Ranson Road. The route would continue in a southwest direction for approximately 3,100 feet and then again turn due west for approximately 4,000 feet. The route again would turn southwest for approximately 1,900 feet within Lowndes County-Golden Triangle Megasite Industrial Park property until reaching the north side of Industrial Park Road. At this point, the transmission line would turn due west, cross Industrial Park Road, and continue for approximately 1,600 feet into the new SeverCorr 161-kV Substation. This section of the transmission line would be approximately 5.8 miles long.

In summary, the overall scoring and feasibility of the four potential transmission line options indicated that Route D was the best alternative for minimizing impacts.

## **2.5. Identification of the Preferred Alternative**

Alternative 2 – Construct 161-kV Transmission Line (Action) is TVA's preferred alternative. TVA would construct approximately 20.5 miles of 161-kV double-circuit transmission line along Alternative Route D (Figure 1-1). The proposed project would affect approximately 92.6 acres of new rights-of-way and 311.8 acres of existing right-of-way.

In addition, TVA would assist SeverCorr financially with its purchase of weight scales, radiation-detection equipment, office furniture, computers, printers, and mobile equipment.

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## CHAPTER 3

### 3. AFFECTED ENVIRONMENT

#### 3.1. Introduction

Chapter 3: Affected Environment succinctly describes the existing condition of the environmental resources and factors of the Clay and Lowndes Counties, Mississippi project area that would affect or that would be affected by implementing either Alternative 1 or Alternative 2.

This description of the existing environment in Chapter 3, the description of the activities of Alternative 1 – Do Not Construct 161-kV Transmission Line (No Action) in Chapter 2 and the predicted effects of Alternative 1 in Chapter 4 combine to establish the baseline conditions against which the decision maker and the public can compare the potential effects of Alternative 2 – Construct 161-kV Transmission Line (Action).

#### 3.2. Alternative 1 – Do Not Construct 161-kV Transmission Line (No Action)

With the implementation of this alternative, TVA would not rebuild 14.7 miles of existing 161-kV transmission line or construct 5.8 miles of new 161-kV transmission line on new right-of-way. Routine transmission line maintenance practices would continue along the existing West Point–Columbus 161-kV Transmission Line right-of-way. The TVA transmission system could experience overloading or stability problems as new industries locate to the Lowndes County–Golden Triangle Megasite.

#### 3.3. Alternative 2 – Construct 161-kV Transmission Line (Action)

##### 3.3.1. *Terrestrial Ecology*

##### 3.3.1.1. Terrestrial Plants

The project area lies within the Mississippi Blackland Prairie region (Peacock and Schauwecker, 2003) of the Southeastern Mixed Forest Province (Bailey, 1995). Small areas of native forests within this region are characterized by mixtures of pines, oaks, and hickories.

The composition of plant communities along the proposed project route can be grouped into five vegetative classes (Table 3-1).

**Table 3-1. Vegetation Classes and Percent Coverage Along the Proposed Project Route**

Vegetation Classes	Percent Coverage
Herbaceous vegetation	65.5
Mixed evergreen-deciduous forest	23.0
Deciduous forest <sup>a</sup>	6.5
Deciduous woodland <sup>b</sup>	4.5
Evergreen forest	0.5

<sup>a</sup> Forest (trees with their crowns overlapping, generally forming 60-100 percent cover)

<sup>b</sup> Woodland (open stands of trees with crowns not usually touching, generally forming 25-60 percent cover)

Herbaceous vegetation along the proposed transmission line route is mostly composed of existing rights-of-way and managed pastures with a few old-field habitats present. In addition, approximately 2.5 percent of the herbaceous vegetation is comprised of row crops.

Existing rights-of-way comprise about half of the project area. Sapling species in these areas are similar to those found in surrounding forests. Common grass species include broom sedge, little bluestem, tall fescue, and vasey grass. Other representative species include black-eyed susan, bush aster, Canada goldenrod, Chinese bush clover, eastern false willow, late-flowering thoroughwort, peppervine, serrate-leaf blackberry, southern dewberry, and trumpet creeper.

A small portion of the herbaceous vegetation within the project area has been clear-cut within the past five years. The vegetation within these areas was similar to the vegetation in the existing rights-of-way. Vegetative succession in the areas that were clear-cut 5 to 15 years ago included coverage by forests of young pine or hardwoods. Older clear-cut areas are similar to, and included in, the analysis of forested communities in the project area.

Managed pastures in the project area are heavily dominated by Bermuda grass, southern carpet grass, and tall fescue. Additional grass species present include broom sedge, Johnson grass, and vasey grass. Other plant species within this vegetation type include Brazilian vervain, small dog fennel, thoroughwort, and woolly croton.

Based upon crop residue present during the field survey, row crops of soybean are grown in the project area. Crop weeds found were primarily annuals such as beaked cornsalad, common dwarf dandelion, corn speedwell, curly dock, cutleaf geranium, field garlic, great ragweed, little barley, and prickly sowthistle.

Mixed evergreen-deciduous forests were found on slopes and hilltops in the project area. Canopy species in these forests include eastern red cedar, loblolly pine, post oak, water oak, white oak, and winged elm. Characteristic understory trees and shrubs include American beautyberry, Chinese privet, deerberry, eastern redbud, flowering dogwood, and sparkleberry. Typical understory vines in these forests include common greenbriar,

Japanese honeysuckle, saw greenbriar, and Virginia creeper. Herbaceous vegetation is limited in this community, but includes Cherokee sedge, slender spikegrass, variable witchgrass, and Virginia wild rye.

Deciduous forests found in the project area can be divided into two major community types, Osage orange dominated and bottomland hardwoods. Approximately 4 percent of the proposed project route is comprised of Osage orange dominated forests in areas typically defined as low and poorly drained. Common forest canopy species included box elder, eastern red cedar, green ash, and sugarberry. Characteristic understory trees and shrubs included Ohio buckeye and rough-leaf dogwood. Typical understory vines include Alabama supplejack, Japanese honeysuckle, poison ivy, and southern dewberry. Herbaceous vegetation is limited, but includes Cherokee sedge, Indian seaots, and lyre-leaf sage.

Approximately 2.5 percent of the proposed project route is comprised of bottomland hardwood forests, which are typically limited to areas along streams and associated wetlands. Common forest canopy species include American elm, black gum, box elder, cherrybark oak, green ash, pecan, red maple, southern shagbark hickory, sugarberry, sweet gum, sweet pignut hickory, water oak, and willow oak. Characteristic understory trees and shrubs include American hornbeam, Chinese privet, deciduous holly, Elliott blueberry, giant cane, and rough-leaf dogwood. Typical understory vines include common greenbriar, crossvine, muscadine grape, peppervine, poison ivy, and trumpetcreeper. Herbaceous vegetation is limited, but includes bulbous bitter cress, Cherokee sedge, and Indian seaots.

Deciduous woodlands in the project area occur within palustrine areas along streams and associated wetlands and can intergrade into bottomland hardwood forest. Plant species typical of these areas include bald cypress, black willow, blunt spikerush, climbing hempweed, common buttonbush, giant cane, marshpepper smartweed, shallow sedge, small-spike false nettle, soft rush, sugar cane plumegrass, and woolgrass.

Evergreen forests observed along the proposed project transmission line route were mostly pine plantations, which were heavily dominated by loblolly pine (over 90 percent). However, some areas included natural stands. Hardwood and herbaceous species in pine-dominated forests in the project area were similar to those found in mixed evergreen-deciduous forest and bottomland hardwood forest communities.

The plant communities observed along the proposed project route are common and representative of the region. No uncommon plant communities were observed on the proposed project route.

Cogongrass [*Imperata cylindrica* (L.) Beauv.], a federally listed noxious weed, was found adjacent to structure 26 along the existing transmission line north of SR 50, east of West Point, Mississippi. This invasive population is at the edge of the 12.5-foot clearing, west of the existing transmission line in a pine plantation. Cogongrass is considered to one of the “world’s worse weeds” (Holm et al., 1977) and has the ability to out-compete native vegetation. It is considered the number one, worst weed in Mississippi, where it is illegal to transport this plant to other areas.

Other invasive exotic plant species encountered along the proposed transmission line route include Johnson grass, Chinese privet, Chinese bushclover, and Japanese honeysuckle.

These species have the potential to impact native plant communities adversely because of their ability to spread rapidly and displace native vegetation. Approximately 70 percent of the proposed project would occur on land in which the native vegetation has been altered as a result of previous land use history (e.g., rights-of-way, clear-cuts, managed pine-plantation, and pasture).

### **3.3.1.2. Terrestrial Animals**

Habitats utilized by terrestrial animals in the proposed SeverCorr project area have been heavily impacted by previous development and agricultural practices. Much of the project area (65.5 percent) consists of early successional habitats dominated by herbaceous vegetation. Surrounding fragments of forested habitats (mixed forest, deciduous forest, deciduous woodland, and evergreen forest) make up the remainder of the habitat classifications within the project area (See Section 3.3.1).

Early successional habitats occur in the existing transmission line right-of-way, and within old fields, managed pastures, and row crops (soybeans) along new portions of the proposed corridor. Animal species observed in these areas include blue jay, brown thrasher, Carolina wren, common yellowthroat, eastern bluebird, eastern meadowlark, eastern towhee, field and chipping sparrows, mourning dove, northern bobwhite, northern mockingbird, red-headed woodpecker, red-winged blackbird, cattle egret, American goldfinch, swamp sparrow, and white-throated sparrow. Additional species include eastern cottontail, coyote, and white-tailed deer. Northern cricket frogs were also found in shallow, wet areas within the existing right-of-way.

Mixed hardwood-pine habitats (evergreen-deciduous forest) were the most prominent forested habitat found within the project area. Bird species observed in this habitat were American crow, barred owl, blue-headed vireo, Carolina chickadee, downy woodpecker, northern cardinal, northern flicker, pileated woodpecker, red-bellied woodpecker, red-tailed and red-shouldered hawks, and tufted titmouse. Reptiles observed included ground skink, eastern and three-toed box turtles. Fox and gray squirrels and nine-banded armadillos were also found in mixed forest habitats. Species such as eastern mole, big brown and red bats, eastern gray squirrel, and gray fox are other mammals expected in this habitat type.

Various ponds, streams, wetlands, and reservoir habitat exists along portions of the transmission line corridor. Species found in these and associated riparian habitats included red-eared sliders, cottonmouths, southern two-line salamanders, Fowler's toad, northern cricket frogs, green frog, bullfrog, green tree frog, gray tree frog, and southern leopard frog. Bird species included belted kingfisher, Canada goose, double-crested cormorant, great blue heron, great egret, marsh wren, and wood duck. Evidence of beaver, Virginia opossum, and raccoon were also found in these areas. Evidence of foraging wild pigs was observed in forested areas near Tibbee Creek.

A small evergreen forest component consists of a few patches of pine plantations, mostly loblolly pine. This relatively dense, monotypic habitat offers only low-quality habitats to terrestrial animal species.

Other unique and important terrestrial habitats, such as heronries and caves, were also searched for during field investigations, but none were found. The TVA Natural Heritage database indicated six heronries have been recorded in Lowndes and Clay Counties, all

more than 1.5 miles from the proposed project. No caves or other unique terrestrial resources have been recorded in either county.

### 3.3.2. Threatened and Endangered Terrestrial Species

#### 3.3.2.1. Terrestrial Plants

The Mississippi Natural Heritage database and the TVA Natural Heritage database indicated that the federally threatened Price's potato bean and 64 state-listed plant species are known from Clay and Lowndes Counties, Mississippi (Appendix VI). Field surveys for rare plant species were conducted during April and August 2005. No Price's potato bean was observed along the proposed transmission line route and no designated critical habitat for this plant occurs within the project area. In addition, no other federally listed plant species were observed within the area to be impacted by the proposed project. Five state-listed species were found along the proposed transmission line project route (Table 3-2).

**Table 3-2. State-Listed Terrestrial Plant Species Located Along the Proposed Transmission Line Route**

Common name	Scientific name	State Status <sup>a</sup>
Ohio buckeye	<i>Aesculus glabra</i>	NOST (S2)
Prairie parsley	<i>Polytaenia nuttallii</i>	NOST (S2)
Smoother sweet-cicely	<i>Osmorhiza longistylis</i>	NOST (S3)
Turk's-cap lily	<i>Lilium superbum</i>	NOST (S3S4)
Wild hyacinth	<i>Camassia scilloides</i>	NOST (S2S3)

<sup>a</sup> Status code: **NOST** - Mississippi Natural Heritage Program does not assign status codes to state-listed species; this designation indicates the species is tracked by the Mississippi Natural Heritage Program due to its rarity in the state; **S2** - imperiled with 6 to 20 occurrences; **S3** - rare or uncommon with 21 to 100 occurrences; **S4** - widespread, abundant and apparently secure with more than 101 occurrences

Plant species listed as rare in the state of Mississippi are not assigned an official state status, such as endangered or threatened. Instead, the Mississippi Natural Heritage Program has used the heritage ranking system developed by The Nature Conservancy to indicate the relative rarity of state-listed species. Although the five state-listed plants found within the proposed project area are rare in Mississippi, they are not rare on a global scale. The global rankings for these species ranged from G5 (demonstrably secure globally, though it might be quite rare in parts of its range, especially at the periphery) to a combination of G4 (apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery) and G5.

During field surveys, large numbers of Ohio buckeye (global ranked G5) were located within and adjacent to three separate sections of the proposed transmission line route. Prior to discovery of these three populations, 10 populations of this species were known in Mississippi, with approximately 250 individual specimens (Mississippi Natural Heritage Program personnel, personal communication). None of these occurred in Clay County, Mississippi. Individual specimens were counted from two of the newly discovered populations and from subsets of the third and largest population. These findings bring the known number of individuals to over 2,600 plants.

One stand of Ohio buckeye occurs within the section that would be cleared for the proposed 12.5-foot right-of-way just south of Old West Point Road. Clearing would impact approximately 20 plants ranging from seedlings to mature trees. Approximately 0.5 mile from this population, another population was found within the proposed 12.5-foot right-of-way. Clearing at this location would impact approximately 10 plants also ranging from seedlings to mature trees. Both populations may have been part of one larger population to the west and east along Oak Slush Creek.

Ohio buckeye was also located south of US 82 just west of Mayo Slough. This population is considered the largest known in Mississippi and likely exceeds 2,400 individual specimens. Two large forested areas further north and south of the proposed transmission line right-of-way also contained Ohio buckeyes that were not counted. In addition, two young Ohio buckeye trees were found between Motley Road and Motley Slough, south of US 82. Many Ohio buckeye trees occur from this point south of the proposed transmission line route toward Motley Slough. Within this section of transmission line route proposed for clearing, approximately 1,182 plants were counted ranging from seedlings to mature trees.

North of SR 50 near Westpoint, Mississippi, five specimens of prairie parsley (global ranked G5) were found adjacent to pole 28 at the gas pipeline crossing within the existing transmission line route.

Approximately halfway between Old West Point Road and US 82, five smoother sweet-cicely plants (global ranked G5) were found within the section that would be cleared for the proposed 12.5-foot right-of-way. In addition, approximately 100 additional plants were located in the forested area outside of the area proposed for the 12.5-foot right-of-way expansion.

Adjacent to existing transmission line pole 110 and occurring within the proposed 12.5-foot right-of-way that would be cleared, approximately 33 turk's-cap lily plants (global ranked G5) were found. This area is north of Tibbee Creek, adjacent to Columbus Reservoir, and has been cleared within the last five years.

Within a forested area at the edge of the proposed 12.5-foot right-of-way just south of SR 50, a population of 71 wild hyacinths (global ranked G4G5) was found. This population is a short distance south of the turk's-cap lily population and is also adjacent to existing transmission line pole 110 and Columbus Reservoir. Another separate group of six wild hyacinth plants was found nearby.

### **3.3.2.2. Terrestrial Animals**

In addition to the USFWS database of federally listed species, the Natural Heritage databases from TVA and Mississippi were reviewed for occurrences of federally and state-listed terrestrial animal species known from Lowndes and Clay Counties, Mississippi. These databases indicated two federally listed and four Mississippi state-listed terrestrial animal species are known from the proposed project area. In addition, the Natural Heritage databases indicated that three additional species that are tracked by Mississippi Natural Heritage Program have been reported from these counties (Table 3-3). These three species are not protected at the state level, but are considered uncommon. Although none of the state-listed animals were observed during field investigations of the project area conducted in February, March, April, and December 2005, suitable habitat for some of these species, as described below, is present.

**Table 3-3. Federally and State-Listed Terrestrial Animal Species Reported From Lowndes and Clay Counties, Mississippi**

Common name	Scientific name	Status <sup>a</sup>	
		Federal	State
<b>Amphibian</b>			
Red salamander	<i>Pseudotriton ruber</i>	-	NOST (S3)
<b>Mammals</b>			
Oldfield mouse	<i>Peromyscus polionotus</i>	-	NOST (S2S3)
Louisiana black bear	<i>Ursus americanus luteolus</i>	THR	END (S1)
<b>Bird</b>			
Bald eagle	<i>Haliaeetus leucocephalus</i>	END	END (S1S2)
Bachman's sparrow	<i>Aimophila aestivalis</i>	-	NOST (S3)
<b>Reptiles</b>			
Black-knobbed map turtle	<i>Graptemys nigrinoda</i>	-	END (S2)
<b>Invertebrate</b>			
Cobblestone tiger beetle	<i>Cicindela marginipennis</i>	-	Extirpated (SX)

<sup>a</sup> Status code: **END** = Endangered; **THR** = Threatened; **NOST** - Mississippi Natural Heritage Program does not assign status codes to state-listed species; this designation indicates the species is tracked by the Mississippi Natural Heritage Program due to its rarity in the state; **S1** - critically imperiled in Mississippi with 5 or fewer occurrences; **S2** - imperiled with 6 to 20 occurrences; **S3** - rare or uncommon with 21 to 100 occurrences; **SX** - Extirpated from site

Red salamanders are found year-round in or near small streams, seepages, and bogs. Aquatic habitat consists of leaf litter within streams, and terrestrial habitat includes bark, logs, and other woody debris near aquatic sites (Petranka, 1998). Several small streams within the project area provide suitable habitat for this species.

Oldfield mice occur in dry, sandy habitats with herbaceous vegetation, such as old fields and ditches (Choate et al., 1994). A historical record of this mouse occurs in Lowndes County. The existing West Point-Columbus Transmission Line right-of-way and fields on the proposed new transmission line route all provide suitable habitat for this mouse.

Louisiana black bears inhabit secluded forests and swamps (Choate et al., 1994). Some habitat for the black bear exists in the project area, especially near the Tibbee Creek junction and along the existing transmission line corridor. However, this habitat is highly fragmented and of poor quality.

Bald eagles feed primarily on fish and often nest in tall trees or cliffs near bodies of water offering foraging habitat. Two groups of eagle nests occur near the proposed project area. One active nest (spring 2005) and several old nests dating back to 1996 are present around Officer's Lake, approximately 3 miles east of the existing West Point-Columbus Transmission Line (Hartley, 2005). A second active nest near Catalpa Creek and a nearby inactive nest on Fortson Lake were observed in February 2005. These nests are approximately 1.3 and 1.4 miles west, respectively, of the existing transmission line.

USFWS informed TVA that additional suitable bald eagle nesting habitat exists within the project area at the junction of the existing transmission line and Tibbee Creek. However, neither bald eagle individuals nor nests were found in this area during field investigations in

April 2005. Annual bald eagle surveys have been conducted between 2000 and 2005 by USACE in the proposed project area. Although they have been occasionally sighted in this area, no bald eagles have been observed nesting in the vicinity of the existing transmission line corridor (USACE personnel, personal communication).

Bachman's sparrows are usually dependent upon savannahs or mature forests (usually pine) with grassy openings and an open understory. This species will also occasionally use early successional habitat. A few historical records of this sparrow exist in Clay County. No savannah habitat was found within the project area, but an abundance of early successional habitat exists within the existing transmission line corridor. This habitat type is poorly suited for Bachman's sparrows.

Black-knobbed map turtles are found in moderate-flowing streams with sand or clay bottoms, and abundant basking structure (Ernst et al., 1994). Numerous records of this species have been reported from the nearby Tombigbee River. Within the project area, Tibbee Creek and Motley Slough provide moderately suitable habitat for this species.

Cobblestone tiger beetles are narrowly restricted to river cobblestone habitat (NatureServe, 2005). No habitat suitable for this species was found within the proposed project area, and the species is considered extirpated from the state of Mississippi.

### **3.3.2.3. Aquatic Animals**

The SeverCorr 161-kV Transmission Line project potentially could affect listed aquatic animals that occur in the Tombigbee River and Columbus Reservoir drainages within 10 miles of the proposed project area. The area of potential impact extends through four watersheds that occupy parts of Clay, Lowndes, and Oktibbeha Counties, Mississippi.

The Mississippi and TVA Natural Heritage databases indicated that 31 sensitive aquatic animal species are known to occur within the boundaries of Clay, Lowndes, and Oktibbeha Counties (Appendix VII). Of these 31 species, 8 are known to occur in the Tombigbee River and Columbus Reservoir drainages within 10 miles of the proposed project (Table 3-4). Three federally listed aquatic animal species, one Mississippi state-listed aquatic animal species, and four additional species that are tracked by Mississippi Natural Heritage Program have been reported from these counties.

The Tombigbee riverlet crayfish is endemic to the upper Tombigbee River basin in Itawamba, Monroe, Oktibbeha, and Lee Counties, and is only found in small, shallow, undisturbed headwater streams with silty bottoms and emergent vegetation. Construction of the Tennessee-Tombigbee Waterway likely had a negative impact on this species, but little is known of its historic density and distribution. This species' preference for undisturbed headwaters makes it especially vulnerable to deforestation and stream channelization (NatureServe, 2005).

The Alabama shiner occurs only in the Tombigbee River drainage. During fall and winter, Alabama shiners inhabit deep pools near undercut banks or exposed root wads. In spring, the mature fish move into riffles with bedrock or cobble substrate. Once common, populations have declined since the construction of the Tennessee-Tombigbee (Ross et al., 2001).

**Table 3-4. Federally and State-Listed Aquatic Animal Species Reported in Watersheds Within the Proposed Project Area of Lowndes, Clay, and Oktibbeha Counties, Mississippi**

Common name	Scientific name	Status <sup>a</sup>	
		Federal	State
<b>Crayfish</b>			
Tombigbee riverlet crayfish	<i>Hobbseus petilus</i>	-	NOST (S2)
<b>Fish</b>			
Alabama shiner	<i>Cyprinella callistia</i>	-	NOST (S2)
Fluvial shiner	<i>Notropis edwardraneyi</i>	-	NOST (S1)
Frecklebelly madtom	<i>Noturus munitus</i>	-	END (S2)
Freckled darter	<i>Percina lenticula</i>	-	NOST (S2)
<b>Mussels</b>			
Orange-nacre mucket	<i>Lampsilis perovalis</i>	THR	END (S1)
Southern clubshell	<i>Pleurobema decisum</i>	END	END (S1S2)
Ovate clubshell	<i>Pleurobema perovatum</i>	END	END (S1)

<sup>a</sup> Status code: **END** = Endangered; **THR** = Threatened; **NOST** - Mississippi Natural Heritage Program does not assign status codes to state-listed species; this designation indicates the species is tracked by the Mississippi Natural Heritage Program due to its rarity in the state; **S1** - critically imperiled in Mississippi with 5 or fewer occurrences; **S2** - imperiled with 6 to 20 occurrences

In Mississippi, the fluvial shiner is only known to occur in the Tombigbee River drainage. The fluvial shiner is most often found in the main channels of large rivers with moderate current over sand or gravel substrates. Construction of the Tennessee-Tombigbee Waterway eliminated most of the main channel habitat of the fluvial shiner, and recent collection efforts have yielded no specimens of this fish in the Tombigbee River drainage (Ross et al., 2001).

The frecklebelly madtom has a disjunct distribution in Mississippi. It occurs in the lower Pearl River drainage as well as the Tombigbee River drainage. This madtom prefers riffles with swift current to clean gravel or cobble substrates. Populations of the frecklebelly madtom in the Tombigbee River drainage were decimated by the construction of the Tennessee-Tombigbee Waterway (Ross et al., 2001).

Historically, the freckled darter occurred throughout the Gulf of Mexico basin in the lower Pearl and Tombigbee River drainages. It is most often found in deeper channels of large streams with swift current over gravel, cobble, and bedrock substrates, and it is frequently associated with large woody debris. The freckled darter has most likely been eliminated from the main channel of the Tombigbee River due to the construction of the Tennessee-Tombigbee Waterway; however, scattered populations still survive in larger tributaries (Ross et al., 2001). Current threats to this species include siltation associated with extensive clear-cutting, impoundments, and stream channelization (NatureServe, 2005).

Scattered occurrences of the orange-nacre mucket are known from the upper Tombigbee River drainage in riffle areas of medium to large streams with mixed gravel/cobble substrate (NatureServe, 2005).

The southern clubshell is known to occur in the upper Tombigbee River drainage in widely scattered localities. This mussel inhabits highly oxygenated streams in sand and gravel substrate (NatureServe, 2005).

The ovate clubshell is known to occur in the upper and middle Tombigbee River drainages (NatureServe, 2005) inhabiting areas of moderate current over sand and fine gravel substrates (Parmalee and Bogan, 1998). Fish hosts for this species have yet to be identified.

All three of these federally listed mussels are known to occur in the Tombigbee drainage. Current threats to the species include habitat modification, sedimentation, and water quality degradation (NatureServe, 2005). No suitable habitat within the proposed project area was observed for these species during field surveys.

### **3.3.3. Wetlands**

Wetlands are areas inundated by surface water or groundwater often enough to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds.

Activities in wetlands are regulated under Section 404 of the Clean Water Act. Under Section 404, the USACE established a permit system to regulate activities in Waters of the United States, including wetlands. In order to conduct specific activities in wetlands, authorization under either a Nationwide General Permit or an Individual Permit from the USACE is required. Section 401 water quality certification issued by the Mississippi Department of Environmental Quality (MDEQ) is also required. In addition, EO 11990 requires that all federal agencies minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. A federal "no-net-loss" policy for wetlands states an interim goal of no overall net loss of the nation's remaining wetlands and the long-term goal of increasing the quality and quantity of the nation's wetlands resource base (White House Office on Environmental Policy, 1993).

Early in the planning of this project, USFWS NWI data were reviewed to identify potential locations of wetlands within the project area. According to NWI data, the majority of the larger wetlands within the project area (greater than 10 acres) are concentrated in the floodplains and riparian areas of Town Creek, McGee Creek, Spring Creek, Tibbee Creek, Oak Slush Creek, Mayo Slough, Motley Slough, Gilmer Creek, and their tributaries. Individual wetlands of various sizes also occur in scattered locations in the floodplains of first-order, second-order, and third-order streams, and as relatively narrow, linear landscape features in stream riparian zones. Wetlands are also found in association with excavated ponds on farmland. Apart from specific floodplain areas identified during ground surveys, wetlands are generally scattered across the landscape and thus potentially avoidable during the planning of the proposed transmission line routes. Ground-truthing of the NWI data was conducted in several areas visible from public roads. The wetlands identified through this process are briefly described below.

A land use/land cover analysis was conducted for an approximately 200 square mile (128,000 acre) region surrounding the project area utilizing existing aerial photography. The purpose of this analysis was to determine the type and extent of wetlands present within the region. This regional analysis is summarized in Table 3-5.

**Table 3-5. Regional Analysis of Wetlands**

Wetland Classification <sup>a</sup>	Total Acreage	Proportion of Region
PEM	1478	~1 %
PSS	4057	3 %
PFO	24998	19 %

<sup>a</sup> Classification codes: PSS = Palustrine scrub/shrub; PFO = Palustrine forested; PEM = Palustrine emergent

<sup>b</sup> The land use/land cover analysis was conducted for an ~200 square mile area surrounding the project area

Wetland determinations along the proposed transmission line rights-of-way and associated areas, including access roads and construction material laydown areas, were conducted according to USACE standards (Environmental Laboratory, 1987) for federal jurisdictional wetlands, which require documentation of hydrophytic vegetation (Reed, 1997), hydric soil, and wetland hydrology. Broader classification definitions of wetlands, such as the one used by the USFWS (Cowardin et al., 1979), and the TVA Environmental Review Procedures definition (TVA, 1983), were also considered in this review. Using a TVA-developed modification of the Ohio Rapid Assessment Method (Mack, 2001) specific to the TVA region (TVARAM), wetlands were categorized by their functions, sensitivity to disturbance, rarity, and irreplaceability. The categorization was used to evaluate impacts and to determine the appropriate levels of mitigation for wetland impacts.

For wetlands crossed more than once by a proposed transmission line route or access road, a separate USACE wetland determination form was completed for each crossing. However, for the entire wetland, a single TVARAM form was completed. The TVARAM is designed to distinguish between three categories of wetlands.

Category 1 wetlands are described as “limited quality waters.” They are considered to be a resource that has been degraded, has limited potential for restoration, or is of such low functionality, that lower standards for avoidance, minimization, and mitigation can be applied. Category 2 includes wetlands of moderate quality and also wetlands that are degraded but could be restored. Category 3 generally includes wetlands of very high quality and wetlands of concern regionally and/or statewide, such as wetlands that provide habitat for threatened or endangered species.

Wetlands within the proposed project area provide a number of important functions. These functions include provision of fish and wildlife habitat; support of plant species and landscape diversity; stream and shoreline stabilization; flood flow alterations; retention of sediments; removal or transformation of contaminants; and nutrient cycling. A brief description of wetland functions is as follows:

*Provision of fish and wildlife habitat* – Wetlands provide essential habitat for many mammal, amphibian, reptile, fish, invertebrate, migratory and nesting waterfowl, and shorebirds and songbird species. Many are wetland-dependent for part or all of their life cycle. Other

species may not use the wetlands directly, but are dependent on wetlands as a source of food, such as aquatic invertebrates that use the organic material exported from wetlands.

*Support of plant species and landscape diversity* – Wetland plant communities consist primarily of species that can grow under low-oxygen, saturated soil conditions. Although some wetland plant species can also grow outside of wetlands, most cannot grow in dry situations. Landscape diversity may be simply defined as the number and interspersion of different habitat types in a given area. Species diversity is a measure of the total number of plant and/or animal species in a given area. Landscape and species diversity can be substantially reduced when specific habitat types are altered, removed, or fragmented. The loss of wetlands can result in local extirpation of plant and animal species, and thus, over time, can lead to a reduction in biological diversity in the local area and region.

*Stream and shoreline stabilization* – The roots of shrubs and herbaceous vegetation help to stabilize stream banks and shorelines against erosion.

*Flood flow alterations* – Some wetlands, especially those in riparian zones and floodplains, intercept storm runoff and temporarily store storm waters. This action moderates the sharp runoff peaks and high volumes that can cause downstream flooding.

*Retention of sediments* – Acting as filters, vegetation and litter layers in wetlands aid in the removal and retention of eroded soil and particulates that wash toward streams, rivers, and lakes from adjacent upland areas and tributary streams. This function is particularly important to preserve in areas in which surrounding land uses, such as agricultural operations and land development, could result in increased erosion and runoff.

*Retention and transformation of contaminants and nutrients* – Contaminants and nutrients in dissolved and particulate forms can be carried into wetlands in storm runoff and groundwater. Potential contaminants include fertilizers and pesticides, excess nutrients and pathogenic bacteria from animal waste and septic system leachate, as well as heavy metals, oil, and grease from impervious surfaces. Through various chemical, biological, and physical means, these contaminants and nutrients can be sequestered in wetland soils and transformed into less toxic forms that can be assimilated by plants. Nutrient export supports downstream aquatic and riparian communities.

### **3.3.3.1. Existing West Point-Columbus Transmission Line Right-of-Way**

The existing West Point-Columbus Transmission Line right-of-way corridor extends approximately 14.7 miles from West Point, Mississippi, to US 82 between Starkville and Columbus. NWI data indicated wetlands in the corridor occur primarily in the riparian zones of Town Creek, McGee Creek, Spring Creek, Tibbee Creek, Oak Slush Creek, and their tributaries. The largest forested wetland area is indicated as occurring in the Tibbee Creek floodplain.

Field surveys were conducted during April and December 2005 within the existing right-of-way, the proposed 12.5-foot right-of-way expansion, and the proposed associated project areas (access roads and laydown areas). Thirty-nine wetlands comprising approximately 43.65 acres were identified in and adjacent to the existing transmission line right-of-way (Table 3-6). No wetlands were located in or adjacent to the proposed access roads or construction laydown area.

**Table 3-6. Summary of Wetlands Identified On and Along the Existing 14.7-Mile West Point-Columbus Transmission Line Corridor**

Wetland ID	Wetland Classification <sup>a</sup>	Wetland Acreage		Total Estimated Wetland Acreage <sup>b</sup>	TVARAM <sup>c</sup>	
		Existing Right-of-Way <sup>b</sup>	Proposed 12.5-foot New Right-of-Way Section <sup>b</sup>		Score	Category
W01	PEM1	0	0.65	0.65		
W02	PEM1	0	1.54	1.54		
W03	PEM1	1.73	0.74	2.47		
W04	PEM1	1.26	0.54	1.80		
W05	PEM1	1.13	0.48	1.61		
W06	PEM1	0.26	0.11	0.37		
W07	PEM1	1.60	0.69	2.29		
W08	PEM1	0.94	0.40	1.34		
W09	PSS1	0.13	0.06	0.19		
W10	PEM1/PFO1	0.98	0.42	1.40	57.0	2
W11	PEM1	0.94	0.40	1.34		
W12	PEM1	0.21	0.09	0.30		
W13	PEM1	2.60	1.11	3.71		
W14	PEM1/PFO1	1.40	0.60	2.00	43.0	2
W15	PEM1	0.13	0.06	0.19		
W16	PEM1	0.32	0.14	0.46		
W17	PEM1/PFO1	0.63	0.27	0.90	54.5	2
W18	PEM1/PFO1	0.31	0.13	0.44	57.5	2
W19	PEM1	0.27	0.12	0.39		
W20	PEM1	0.26	0.11	0.37		
W21	PEM1	1.16	0.50	1.66		
W22	PEM1	0.39	0.17	0.56		
W23	PEM1/PSS1	0.81	0.35	1.16		
W24	PEM1/PFO1	1.26	0.54	1.80	59.5	2
W25	PEM1	0.62	0.27	0.89		
W26	PEM1	0.95	0.41	1.36		
W27	PEM1	1.12	0.48	1.60		
W28	PEM1	0.14	0.06	0.20		
W29	PEM1	0.24	0.10	0.34		
W30	PEM1	0.93	0.40	1.33		
W31	PEM1	0.64	0.27	0.91		
W32	PEM1	0.32	0.14	0.46		
W33	PEM1	0.87	0.37	1.24		
W34 <sup>d</sup>	PEM1/PUB/PFO1	0.49	0.21	0.70	61.5	3
W35 <sup>d</sup>	PEM1/PFO1	0.50	0.21	0.71	61.5	3
W36 <sup>d</sup>	PEM1/PUB/PFO1	1.08	0.46	1.54	61.5	3
W37	PEM1/PSS1	1.65	0.71	2.36		
W38	PEM1/PFO1	0.23	0.10	0.33	41.0	2
W39	PEM1/PFO1	0.52	0.22	0.74	43.0	2
<b>Total Acreage</b>		<b>29.02</b>	<b>14.63</b>	<b>43.65</b>		

<sup>a</sup> Classification codes as defined in Cowardin et al., 1979: **PSS** = Palustrine scrub/shrub; **PFO** = Palustrine forested; **PEM** = Palustrine emergent; **PUB** = Pond

<sup>b</sup> Based on field survey data

<sup>c</sup> TVARAM was applied to entire wetlands that also included a forested component

<sup>d</sup> W34, W35, and W36 are in the same wetland system and were assessed as a single wetland unit using TVARAM

Wetlands within the currently maintained right-of-way account for 29.02 acres and 14.63 acres within the proposed 12.5-foot right-of-way expansion (Table 3-7). Of this, the forested component occurs within the proposed right-of-way expansion and occupies approximately 3.16 acres (Table 3-7).

Only forested wetlands occurring within the proposed 12.5-foot right-of-way expansion were assigned TVARAM scores (Table 3-8). Because the existing right-of-way undergoes regular maintenance, no forested wetlands occur in this area. Any wetlands that may have historically included a forested component within the existing right-of-way were cleared long ago.

**Table 3-7. Summary of Total Acreage by Classification On and Along the Existing 14.7-Mile West Point-Columbus Transmission Line Corridor**

Wetland Classification	Wetland Acreage		Total Estimated Wetland Acreage
	Existing Right-of-Way	Proposed 12.5-foot New Right-of-Way Section	
PEM1	19.03	10.35	29.38
PEM1/PSS1	2.46	1.06	3.52
PSS1	0.13	0.06	0.19
PEM1/PFO1	7.40	3.16	10.56
<b>Total Acreage<sup>a</sup></b>	<b>29.02</b>	<b>14.63</b>	<b>43.65</b>
PFO1/forested portion only <sup>b</sup>	0.00	3.16	3.16

<sup>a</sup> PEM1, PEM1/PSS1, PSS1, PEM1/PFO1 combined totals for all wetland types

<sup>b</sup> Summary of the actual forested wetland component of the wetland, exclusive of any other wetland types

**Table 3-8. Summary of Total Forested Wetland Acreage and TVARAM Category On and Along the Existing 14.7-Mile West Point-Columbus Transmission Line Corridor**

Wetland Classification	TVARAM Category <sup>a</sup>		
	1	2	3
PEM1/PFO1	0 acre	7.61 acres	2.95 acres
Forested wetland portion only <sup>b</sup>	0 acre	2.28 acres	0.88 acre
PEM1, PSS1, and PUB (combined acreages)	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>

<sup>a</sup> TVARAM was only applied to entire wetlands with a forested component that would be affected by the proposed project; NA = Not applicable

<sup>b</sup> Actual estimate of forested wetland acreage in all wetland types

### 3.3.3.2. Proposed SeverCorr 161-kV Transmission Line Right-of-Way

Beginning at a tap in the West Point-Columbus Transmission Line just north of US 82, the proposed SeverCorr 161-kV Transmission Line corridor would extend west-southwest approximately 5.8 miles to the new SeverCorr Substation. NWI indicated forested wetlands occur in the riparian zone of Mayo Slough and Motley Slough and their tributaries. A small portion of the proposed transmission line also crosses through the Gilmer Creek watershed. In April and December 2005, field surveys were conducted along the proposed transmission line route and associated areas. Seven wetlands occupying about 12.76 acres were identified in the proposed transmission line route corridor (Table 3-9). One wetland was located adjacent to the access road SSAR2, an unimproved farm road. However, the access road would not be expanded, and no vehicles and equipment would need to enter the adjacent wetlands.

Of the 12.76 acres, approximately 5.84 acres are forested wetlands (Table 3-10). In all cases, the extent of forested and other types of wetlands identified continued far beyond the edges of the proposed right-of-way.

All wetlands within the proposed SeverCorr 161-kV Transmission Line corridor, regardless of classification, were assigned TVARAM scores (Table 3-11). Wetlands that contained forested wetland habitat (PEM1/PSS1/PFO1, PSS1/PFO1, and PFO1) comprised 3.00 and 5.51 acres of Category 2 and Category 3 wetlands, respectively (Table 3-11). Of the total 5.84 acres of forested wetlands, approximately 1.84 acres were Category 2 and 4.00 acres were Category 3.

**Table 3-9. Summary of Wetlands Identified within the Proposed 5.8-Mile SeverCorr 161-kV Transmission Line Corridor**

Wetland ID	Wetland Classification <sup>a</sup>	Estimated Wetland Acreage <sup>b</sup>	TVARAM <sup>c</sup>	
			Score	Category
W40	PEM1/PSS1	1.05	35	2
W41	PFO1	2.10	76.5	3
W42	PSS1/PFO1	2.02	66	3
W43	PFO1	1.39	63.5	3
W44	PSS1	3.20	36.5	2
W45	PFO1	0.68	46	2
W46	PEM1/PSS1/PFO1	2.32	47	2
<b>Total Acreage</b>		<b>12.76</b>		

<sup>a</sup> Classification codes, as defined by Cowardin et al., 1979: **PSS** = Palustrine scrub/shrub; **PFO** = Palustrine forested; **PEM** = Palustrine emergent

<sup>b</sup> Based on field survey data

<sup>c</sup> TVARAM was applied to entire wetlands with or without a forested component

**Table 3-10. Summary of Total Acreage by Classification Within the Proposed SeverCorr 161-kV Transmission Line Corridor**

Wetland Classification	Wetland Acreage within Proposed Right-of-Way <sup>a</sup>	Total Estimated Forested Wetland Acreage <sup>b</sup>
PEM1/PSS1	1.05	0.00
PSS1	3.20	0.00
PEM1/PSS1/PFO1	2.32	1.16
PSS1/PFO1	2.02	0.51
PFO1	4.17	4.17
<b>Total Acreage</b>	<b>12.76</b>	<b>5.84</b>

<sup>a</sup> Combined wetland acreage

<sup>b</sup> Actual portion of the wetland that contains a forested wetland component only exclusive of all other wetland types

**Table 3-11. Summary of Total Forested Wetland Acreage and TVARAM Category Within the Proposed SeverCorr 161-kV Transmission Line Corridor**

Wetland Classification	TVA Rapid Assessment Method Category <sup>a</sup>		
	1	2	3
PEM1/PSS1	0 acre	1.05 acres	0 acre
PSS1	0 acre	3.20 acres	0 acre
PEM1/PSS1/PFO1	0 acre	2.32 acres	0 acre
PSS1/PFO1	0 acre	0 acre	2.02 acres
PFO1	0 acre	0.68 acres	3.49 acres
<b>Total Acreage by Category</b>	<b>0 acre</b>	<b>7.25 acres</b>	<b>5.51 acres</b>

<sup>a</sup> TVARAM was only applied to all wetlands that would be affected by the proposed project regardless of composition

### 3.3.4. Aquatic Ecology

Beginning at the West Point 500-kV Substation north of West Point, Mississippi, and ending at the Lowndes County-Golden Triangle Megasite near Artesia, Mississippi, the proposed transmission line would cross portions of four watersheds and parts of Columbus Reservoir within Clay and Lowndes Counties, Mississippi. These watersheds are all included in the Tombigbee River drainage, which was connected in 1985 to the Tennessee River via the Tennessee-Tombigbee Waterway. Streams crossed by the proposed project include Tibbee Creek (including Town Creek and McGee Creek), Spring Creek, Oak Slush Creek, and Gilmer Creek (including Mayo Slough and Motley Slough). Streams located within the proposed project area display relatively low-gradient, meandering streams with sandy bottoms that are sourced from predominantly agricultural landscapes. Due to

channelization, many of the streams in this region no longer display these meandering patterns.

The Tombigbee watershed has a total of 112 native fish species (Ross and Brenneman, 1991; Ross et al., 2001) with 33 species known from Clay County and 108 species known from Lowndes County. The surrounding land use in the project area is primarily agriculture. Due to periodic and chronic perturbations, fishery communities in agricultural areas tend to be composed of lower diversities than what may exist in an undisturbed system. Additionally, the construction of the Tennessee-Tombigbee Waterway and Columbus Reservoir has modified most of the aquatic habitats within the project area from their natural and historic forms.

Field surveys documented a total of 70 watercourses, 6 ponds, and 2 crossings of Columbus Reservoir within the proposed transmission line right-of-way area and the associated access roads (Appendix VIII). No aquatic resources were identified within the proposed project laydown area. The 70 watercourses consisted of 18 perennial streams, 18 intermittent streams, and 34 wet-weather conveyances. Habitats in all of the streams within the project area were found to exhibit signs of extensive siltation that has altered the substrate composition and impaired the existing water quality. Siltation can have a detrimental effect on many aquatic animals adapted to riverine environments.

### **3.3.5. *Managed Areas***

The TVA Natural Heritage database indicated that the proposed project is within 3 miles of six managed areas or ecologically significant sites and no Nationwide Rivers Inventory streams. Managed areas and ecologically significant sites are as follows:

A portion of the proposed project would cross the Tennessee-Tombigbee Columbus Reservoir Reservation. The reservoir is located in Lowndes County, Mississippi, and is managed by the USACE. This reservoir provides recreational opportunities for the public. The project would cross the impounded waters of Columbus Dam near the mouth of Tibbee Creek and the water's edge along the western boundary of Columbus Reservoir.

Located in Clay and Lowndes County, the Tennessee-Tombigbee Waterway is approximately 1.8 miles east from the proposed project. This 234-mile-long waterway with 1,000 miles of shoreline has over 40,000 acres of water and over 150,000 acres of land managed by the USACE. Recreational areas located along the waterway provide the public with camping, picnicking, swimming, boating, hunting and fishing, as well as other outdoor and water sport opportunities.

Plymouth Bluff Nature and Cultural Study Center is located in a secluded scenic area along the Tombigbee River in Lowndes County, Mississippi. This approximately 190-acre area is located 0.5 mile east of the proposed project. The center is an educational and recreational facility that includes 4 miles of hiking trails winding through the forested woodlands and along the scenic bluffs. This center is managed by the Mississippi University for Women.

Stennis West and East Bank Columbus Recreation Area is located in Lowndes County, Mississippi, approximately .75 mile east of the proposed transmission line project. This large recreation area on the Tennessee-Tombigbee Waterway offers a public boat ramp, boat dock, fishing dock, restroom facilities, picnic shelters, trails, and a scenic overlook. This area is managed by the USACE.

Waverly Ferry Recreation Area is located in Clay County, Mississippi, on the west bank of the Tennessee-Tombigbee Waterway, approximately 2.2 miles east of the proposed project. Facilities include restrooms, boat ramp, play area, picnic area, and two large covered shelters. This area is managed by the USACE.

Tenn-Tom Mitigation Protection Planning Site is located in Lowndes County, Mississippi on the Tennessee-Tombigbee Waterway approximately 2.0 miles east of the proposed project. This area is managed by USACE in cooperation with Mississippi Department of Wildlife, Fisheries, and Parks; Alabama Department of Conservation and Natural Resources; and USFWS.

### **3.3.6. Recreation**

Developed recreational facilities in the vicinity of the proposed project include ball fields associated with public schools, including West Lowndes Middle School and West Lowndes High School, as well as schools in the West Point area. Additional public facilities are located along the Tennessee-Tombigbee Waterway in the general vicinity of the proposed project. These include:

- John C. Stennis Lock & Dam – west bank – waterway management center, walking trails, overlook, and bank fishing facilities
- Plymouth Bluff Nature & Cultural Center – conference facilities, lodging, nature and fitness trails, picnic area, amphitheater, and tennis courts
- Waverly Ferry Recreation Area – lake access, picnic facilities and trail

Additional recreation activities are informal and dispersed and include hunting, fishing, off-road vehicle use, nature viewing, and water-related activities on the Tennessee-Tombigbee Waterway.

### **3.3.7. Floodplains**

The proposed transmission line would cross the identified floodplains of Town Creek, McGee Creek, Spring Creek, and Tibbee Creek in Clay County, Mississippi, and the identified floodplains of Oak Slush Creek, Mayo Slough, and Motley Slough in Lowndes County, Mississippi, along with several minor floodplain areas in these counties.

### **3.3.8. Groundwater**

The project area is located in the Coastal Plain Physiographic Province and is underlain by the Black Warrior River aquifer and a confining unit. The Black Warrior River aquifer consists of an interbedded mix of fluvial sand and gravel, deltaic sand, silt and clay, and marginal marine sand, silt, and clay. This aquifer includes unnamed water-yielding rocks of Early Cretaceous age and the Tuscaloosa Group, the Eutaw-McShan Formations, and the Coffee Sand of Late Cretaceous age. In addition, it is confined by a thick sequence of clay and marl of the Selma Group, which effectively separates it from overlying rocks of the Mississippi embayment aquifer system (Renken, 1998).

Most of the proposed project area is directly underlain by a confining unit, the Selma Group. The Eutaw-McShan aquifer lies beneath the Selma Group and consists of interbedded glauconitic sands, silts, and clays. The Tuscaloosa aquifer system lies below the Eutaw-

McShan aquifer and is comprised of four hydraulically connected regional aquifers; i.e., the Gordo, Coker, Massive Sand, and undifferentiated Lower Cretaceous sediments. These aquifers generally consist of interbedded sands, gravels, silts, and clays. The Eutaw-McShan, the Gordo, and the Coker aquifers are sources for large pumping stations used for municipal, industrial, and domestic water supplies in the project area (MDEQ, 2004a).

Groundwater is abundant throughout Mississippi. In the proposed project area, public and private wells pump water from several different aquifers. Deep wells are used to supply public water systems from deeper aquifers, while private wells are usually cased in shallow aquifers. Contamination of groundwater occurs when contaminants such as pesticides and fertilizers from agriculture runoff seep into the aquifer. Most public water sources are protected from contamination due to the depth of the wells, which are naturally protected by overlying clay (confining) layers. Groundwater is the primary source for public water supply for Clay and Lowndes Counties (USEPA, 2005).

Within the project area, there are many public water supply wells and USGS monitoring wells. The existing and proposed right-of-way intersects five state designated source water protection areas for those wells; the existing right-of-way intersects three of those and the proposed right-of-way intersects two. Additionally, the existing West Point Substation falls just outside of a state designated source water protection area.

### **3.3.9. Surface Water**

Precipitation in the proposed project area averages about 59 inches per year with the wettest month in March at 6.4 inches and the driest month in October at 3.3 inches. The average annual air temperature is 63°F, ranging from a monthly average of 43°F in January to 81°F in July. Stream flow varies with rainfall and averages about 21 inches of runoff per year or approximately 1.5 cubic feet per second per square mile of drainage area.

The proposed project area drains to tributaries of Catalpa Creek and Gilmer Creek in the Tombigbee River basin (Tennessee-Tombigbee Waterway). Streams that are crossed in the Catalpa Creek watershed include Town Creek and McGee Creek (of Tibbee Creek), Spring Creek, and the Catalpa Creek embayment of Columbus Reservoir. Streams that are crossed in the Gilmer Creek watershed include Motley Slough and Mayo Slough. Columbus Reservoir (from mile 332.9 to mile 355.5) is classified by the state (MDEQ, 2003) for recreation. The remaining streams are classified for fish and wildlife.

Town Creek is on the state 303 (d) list for aquatic life support due to biological impairment (MDEQ 2004b). Tibbee Creek is listed due to aquatic life support and secondary contact from nutrients, organic enrichment/low dissolved oxygen, pesticides, sediment/siltation, and pathogens. Gilmer Creek is listed due to aquatic life support from unknown causes.

### **3.3.10. Visual Resources**

Visual resources are evaluated based on existing landscape character, distances of available views, sensitivity of viewing points, human perceptions of landscape beauty/sense of place (scenic attractiveness), and the degree of visual unity and wholeness of the natural landscape in the course of human alteration (scenic integrity).

The proposed transmission line route lies along pastoral, rural, and suburban areas of Clay and Lowndes Counties. Visual resources along the proposed route have been evaluated from the point of connection at TVA's West Point 500-kV Substation to the terminus at the

new SeverCorr 161-kV Substation, located in the Lowndes County-Golden Triangle Megasite. Scenic attractiveness is common and the scenic integrity is moderate to low along the proposed transmission line route.

The proposed project route would begin just north of the town of West Point, Mississippi, traveling south and east alongside the existing West Point-Columbus 161-kV Transmission Line right-of-way for approximately 14.7 miles. The existing landscape character within this section is predominated with sparsely scattered private residences and small farmsteads. Agricultural fields and few primary roadways lie beneath the existing 161-kV transmission line. Residents and motorists have views of the existing transmission line and associated structures from within the foreground- (up to 0.5 mile from the observer) and the middleground-viewing distances (0.5 mile to 4 miles from the observer). Foreground views occur where roadways provide brief views of the existing line route as it crosses primarily east-west travel ways such as SR 50. Although vegetation and topography restrict some views of the existing transmission line that would otherwise be available to residents within the middleground-viewing distance, there are locations where the 161-kV structures are visible across expanses of crop and forage land. Those existing visible structures consist both of wood and steel, single and H-frame structures.

As the existing transmission line route nears the Columbus Reservoir close to the convergence of Catalpa and Tibbee Creeks, vegetation becomes much denser, and views are restricted to the foreground-viewing distance. It parallels and eventually crosses the tortuous water body and passes once again over primarily agricultural lands as it nears US 82, a primary four-lane east-west controlled access roadway. From this point, the proposed transmission line route would occupy new right-of-way to the west and south.

As the proposed route reaches US 82 and leaves the existing right-of-way, the existing landscape character remains largely rural and pastoral, with the topography remaining gently sloping to flat. Vegetation within this section thickens around the lower areas surrounding the Mayo and Motley Sloughs, and views are limited primarily to the foreground-viewing distance. As the proposed transmission line route approaches the SeverCorr 161-kV Substation, the vegetation moderates, and views open to several light industrial facilities currently in operation. After crossing Industrial Park Road, the proposed transmission line route would terminate.

### **3.3.11. Cultural Resources**

Central Mississippi has been the location of human occupation for over 12,000 years. The prehistory and history of the area is generally divided into six broad periods: Paleo-Indian (10,000-8000 B.C.); Archaic (8,000-1000 B.C.); Gulf Formational Period (1000-100 B.C.); Woodland (100 B.C.-1050 A.D.); Mississippian (1050-1540 A.D.); and Historic (1540 A.D.-present). Prehistoric land use and settlement varies during each period, but generally, short- and long-term habitation sites are located on floodplains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands.

The Historic Period is represented by settlement in the region by Europeans, European Americans, and African Americans and the subsequent removal of Native American tribes. The dominant tribes in the area in this period were the Chickasaw, Choctaw, and the Natchez. It is generally believed that Hernandez de Soto's expedition entered the area and stayed with the Chickasaw in the winter of 1540-41. Later excursions into the area by

French, Spanish, and English traders and explorers occurred during the 17th and 18th centuries. Clashes between the native Choctaw and Chickasaw and Europeans continued through the 18th century. The Mississippi territory was created in 1798 and was admitted into statehood in 1817. In 1830, Lowndes County was created from the southern part of Monroe County. Clay County was formed in 1871 from part of Lowndes County and other surrounding counties.

The Area of Potential Effect (APE) for archaeological resources was identified as the 20.5 miles of proposed and existing transmission line corridor, approximately 6 miles of associated access roads, and four parcels of approximately 26 acres of land that were proposed for use as laydown areas. The APE for historic architectural resources was identified as the proposed and existing transmission line corridor plus an approximate 0.5-mile radius in which the proposed construction may lie within view of historic resources. Viewsheds to and from the proposed project area were terminated where topography and vegetation obstructed lines of sight. The viewsheds of proposed access roads and laydown areas were not surveyed for historic architectural resources, as use of these facilities would be temporary.

Prior to the archaeological survey, a records' search identified six previously recorded archaeological sites located within 1 mile of the proposed project corridor. None of these were located within or adjacent to the proposed corridor. In addition to these sites, the archaeological survey identified five new sites (22LO993–22LO997) that are considered ineligible for listing on the National Register of Historic Places (NRHP).

Prior to the historic architectural survey, a records search identified 18 previously surveyed historic resources (025-WPT-5044-5046, 5051-5054, 5056, 5057, 5060, 5073-5078, 5095, and 5096) located within the project's APE. None of these historic resources are listed or eligible for listing on the NRHP. In addition to these resources, the historic architectural survey identified 10 previously unrecorded historic resources (HS-1 – HS-10) and reevaluated eight previously recorded properties (025-WPT-5044, 5053, 5073, 5074, 5076, 5077, 5095, and 5096) within the proposed APE. These historic resources are considered ineligible for the NRHP due to the loss of integrity caused by alterations and/or damage. The survey also determined that the remaining eight previously recorded properties (025-WPT-5045, 5046, 5051, 5052, 5054, 5056, 5057, and 5075) have been destroyed since their initial recordation. Two previously surveyed properties located within the 0.5-mile APE (025-WPT-5060 and 5078) are situated at the base of low-lying hills and surrounded by mature tree growth, which completely obstructs views to the transmission line corridor.

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## CHAPTER 4

### 4. ENVIRONMENTAL CONSEQUENCES

#### 4.1. Introduction

Chapter 4: Environmental Consequences and Chapter 3: Affected Environment form the detailed scientific and analytic basis for the summary comparisons presented in Chapter 2, Section 2.2 Description of Alternatives.

Section 2.2 contains by option the predicted attainment and nonattainment of the purpose and need defined in Chapter 1. This chapter presents the detailed predicted effects of implementing Alternative 1 – Do Not Construct the 161-kV Transmission Line (No Action) and Alternative 2 – Construct 161-kV Transmission Line (Action).

#### 4.2. Effects of Alternative 1 – Do Not Construct the 161-kV Transmission Line (No Action)

In general, factors outside of TVA's control are expected to continue to influence the landscape of the region. These include reasonable foreseeable private and public activities associated with industrial and residential development and associated infrastructure.

Should TVA decided not to rebuild 14.7 miles of existing 161-kV transmission line and construct 5.8 miles of new 161-kV transmission line, the Lowndes County-Golden Triangle Megasite would not be able to support the new SeverCorr steel mill. It is possible that some industrial customers would be able to locate to the industrial park; however, this alternative would limit the industries that would choose to locate to the megasite. Moreover, additional industrial customers on the TVA transmission system could cause overloading or stability problems to existing customers and as a result, upgrades to the transmission line could be warranted at a later date. Additional environmental effects of the implementation of the No Action Alternative are discussed in the individual resource sections below.

#### 4.3. Effects of Alternative 2 – Construct 161-kV Transmission Line (Action)

##### 4.3.1. *Terrestrial Ecology*

##### 4.3.1.1. Terrestrial Plants

###### **No Action Alternative**

Adoption of the No Action Alternative would not affect terrestrial plant ecology in the proposed project area. In addition, no effects related to the introduction or spread of invasive terrestrial plants are anticipated.

###### **Action Alternative**

Under the Action Alternative, approximately 20 acres of forest would be converted to, and maintained as, early successional habitat within the proposed transmission line right-of-way. However, since no uncommon plant communities were encountered along the proposed

route, project-related impacts to the terrestrial plant ecology are expected to be minor and regionally insignificant.

Within approximately 70 percent of the proposed project area, past land use practices have drastically altered the native vegetation. An area containing the invasive species cogongrass was located along the TVA's existing transmission line right-of-way north of SR 50 and east of West Point, Mississippi. Under Mississippi law, transportation of this plant to other areas is not allowed. With the exception of this plant population, no potential changes to the terrestrial plant ecology would be expected with the implementation of the proposed project.

Clearing within the area of the cogongrass could cause this invasive species to spread; therefore, this population would be chemically treated prior to any construction activities to preclude any expansion of the colonized area or the accidental introduction of the species into other areas. If possible, the population would be eliminated before the reproductive structures appear in early spring to early summer to prevent spread of seeds by construction vehicles. Currently, Arsenal and glyphosate are the most effective herbicides for cogongrass control. Typically, applications made in early summer would need retreatment before frost (Byrd, 2006) In addition to chemical treatment, should any digging be required within the infestation area, TVA would ensure that any excess fill dirt would remain in the project area and not transported off site.

#### **4.3.1.2. Terrestrial Animals**

##### **No Action Alternative**

With the implementation of the No Action Alternative, the existing transmission line and right-of-way would continue to be maintained, but not rebuilt, and the new transmission line would not be built. In addition, the laydown area and access routes would not be used for construction purposes. Therefore, the project area would likely remain in its current condition and would not result in significant direct, indirect, or cumulative adverse impacts on wildlife or wildlife habitat.

##### **Action Alternative**

Under the Action Alternative, the 14.7 miles of transmission line would be rebuilt on existing right-of-way and a new transmission line would be constructed to connect the existing transmission line to the SeverCorr 161-kV Substation. A temporary construction laydown area and access routes to the proposed corridors would also be needed. Wildlife observed in the proposed project area is considered to be common, both locally and regionally. Although widening the existing transmission line corridor by 12.5 feet would cause temporary disturbances to wildlife and habitats along this transmission line, overall habitat changes would be minimal because of the prevalence of early successional habitats distributed along the corridor. Changes to the 18 existing access routes and the laydown area from construction activities would also be considered minimal since all of the proposed access corridors are routed along existing paths, and the laydown area is currently a grass lawn with scattered trees.

Forest fragmentation resulting from the construction of the new portions of transmission line corridor may decrease habitat and nesting success for forest-dwelling migratory birds. However, these impacts are considered minimal, as existing habitats along the proposed transmission line route are already largely fragmented and heavily impacted by agricultural practices.

Evidence of an exotic mammal species, the wild pig, was noted within the proposed project area. The foraging behavior of this species can be destructive to ground cover and habitat within forested areas. The implementation of the Action Alternative would not be expected to affect or result in increases in the spread of this exotic species.

Six heronries are known to exist in Clay and Lowndes Counties. All of these are located at adequate distances from the proposed project area and would not be affected. No other unique or important terrestrial animal habitats are known from these counties, nor were they found during field surveys. The implementation of the Action Alternative would not result in significant direct, indirect, or cumulative adverse impacts on wildlife or their habitats.

#### **4.3.2. *Threatened and Endangered Species***

##### **4.3.2.1. Terrestrial Plants**

###### **No Action Alternative**

No project-related impacts to rare plant species would result from the adoption of the No Action Alternative.

###### **Action Alternative**

No federally listed plant species would be affected by the proposed action. However, five state-listed plant species could possibly be impacted by the proposed action.

Previously, 10 populations of the state-tracked Ohio buckeye with approximately 250 specimens were known to occur in Mississippi. During field surveys within the proposed project area, three additional populations consisting of more than 2,400 plants were discovered within the project area. Construction of the proposed transmission line would result in the loss of about half (1,212) of the Ohio buckeye trees counted in the project area. The actual number of Ohio buckeye trees in the area is likely considerably larger, as trees were not counted in several areas of suitable habitat off the proposed transmission line right-of-way. While the number of trees lost would be large, the viability of the species in the project area and in the state would likely not be adversely affected.

One population of prairie parsley occurs approximately 30 feet from an existing transmission line pole near West Point, Mississippi. This population would be avoided and, therefore, no impacts are anticipated.

One population each of smoother sweet-cicely and turk's-cap lily was found within the proposed transmission line route right-of-way. Only 5 of the 105 plants within the smoother sweet-cicely population and all 33 of the turk's-cap lily population would be impacted during project activities. The loss of individuals from either of these two populations would not be significant in Mississippi.

Two populations of wild hyacinth were found. One population at the edge of the proposed right-of-way could be avoided and therefore not impacted. However, since no suitable reroute could be identified for the second population, it would be necessary to hand clear the right-of-way in the area around this population. If normal Best Management Practices (BMPs) as outlined in Muncy, 1999, are followed to use low ground-pressure equipment, no significant impacts to the second population are anticipated.

#### **4.3.2.2. Terrestrial Animals**

##### **No Action Alternative**

Under the No Action Alternative, the existing transmission line would continue to be maintained, but not rebuilt. New portions of the proposed transmission line would not be built, and the laydown area and access routes would not be used. Adoption of the No Action Alternative is not expected to result in adverse impacts to protected terrestrial animals species known from the vicinity or to their habitats.

##### **Action Alternative**

The cobblestone tiger beetle is considered extirpated from the state of Mississippi, and would not be affected by the proposed project. Only marginal habitat exists for Louisiana black bears and black-knobbed map turtles within the proposed project area, making these species unlikely occurrences. Higher-quality habitats occur in the surrounding landscape for both species, and no adverse impacts from the implementation of the proposed Action Alternative are expected for either species. Red salamanders may occur along streams within the proposed project area, but because BMPs would be used along these streams, no adverse impacts are anticipated for this species.

Early successional habitat is used by oldfield mice, occasionally by Bachman's sparrow, and is abundant throughout the project area. Project-related construction may temporarily disturb individuals of either species within the project area. However, adverse impacts are not expected due to species' mobility and abundance of similar habitat in the surrounding landscape. Maintenance along the transmission line right-of-way may benefit these species by providing continuous, early successional habitat.

During the public comment period, TVA was notified of bald eagles nesting along one of the original proposed transmission line corridors. During subsequent field investigations, two bald eagle nests were observed. Informal consultation with the Jackson, Mississippi, office of the USFWS during February 2005 resulted in a decision by TVA to move the proposed transmission line route east to an existing transmission line corridor, over a mile from these two nests. This existing transmission line corridor is also approximately 3 miles from a second group of bald eagle nests. Both groups of nests are at adequate distances from the proposed project area. The proposed project would not result in adverse impacts to this species.

Suitable nesting habitat for bald eagles exists around the junction of the existing transmission line and Tibbee Creek. No bald eagle individuals or nests were found in this area during field investigations in March and April 2005. Results of surveys performed by the USACE in January 2006 indicated that bald eagles are currently not nesting along the transmission line crossing. Eagles observed in the vicinity are thought to be associated with the nest at Catalpa Creek, approximately a mile away from the transmission line crossing site. Because these eagles were observed near the crossing and in order to address concerns expressed by the USFWS, TVA performed a final survey of the suitable habitat in February 2006. No eagles were found nesting in close proximity of the proposed transmission line, and TVA concluded that the proposed action would not affect the bald eagle or other federally listed species. The USFWS, in a letter dated January 26, 2006 (Appendix I), concurred with TVA's determination.

#### 4.3.2.3. Aquatic Animals

##### **No Action Alternative**

Under the No Action Alternative, the existing West Point-Lowndes 161-kV Transmission Line right-of-way would not be widened, and current maintenance practices would continue following TVA BMPs as outlined in Muncy (1999). In addition, no new clearing and construction would be required for a new laydown area, access roads, or rights-of-ways and, therefore, it is anticipated that the aquatic resources within these areas would maintain status quo. Under the No Action Alternative, no potential impacts would occur to sensitive aquatic resources in the project area.

##### **Action Alternative**

Streams within the project area exhibited signs of extensive siltation that has altered the substrate composition and impaired water quality. As a result of these conditions and the construction of the Tennessee-Tombigbee Waterway and its associated impoundments, habitats that historically were occupied by the Alabama shiner, fluvial shiner, and frecklebelly madtom (including those in the proposed project area) have been significantly reduced. In addition, modification of stream habitats and existing quantities of siltation have significantly reduced habitat for the freckled darter within the project area. Consequently, it is unlikely that any of these species occur in the proposed project area. It is therefore anticipated that potential direct impacts to these state-listed fish species would be insignificant as a result of implementation of the proposed project.

The federally listed orange-nacre mucket, ovate clubshell, and southern clubshell (Table 3-4) are intolerant of siltation, water quality degradation, impoundments, and habitat modification. These conditions are all prevalent throughout the project area. Since no suitable habitat for these species was identified within the proposed project area, no impacts are anticipated to these mussel species as a result of the implementation of the proposed project.

Habitat within or adjacent to the project area that could support populations of the Tombigbee riverlet crayfish has been mostly eliminated by agricultural practices, changes in land use (clearing forest), and stream modification. Consequently, it is unlikely that these species occur in the proposed project area. It is therefore anticipated that potential direct impacts on this state-listed crayfish species would be insignificant as a result of implementation of the proposed project.

Increased erosion along vehicle tracks and degraded stream banks during construction and maintenance activities could increase siltation in streams within the project area. These activities could directly, indirectly, and cumulatively affect the sensitive aquatic animal species listed in Table 3-4. To minimize the possibility of direct, indirect, and cumulative effects to sensitive aquatic animal species in the Tombigbee River drainage, ground disturbances would be minimized, and all work would be conducted according to TVA BMPs as outlined in Muncy (1999) and to the appropriate stream protection requirements identified in Appendix IV. With proper implementation of these practices, all potential impacts to these species and their habitats as a result of the construction and maintenance of the proposed project would be insignificant.

### **4.3.3. Wetlands**

#### **No Action Alternative**

Adoption of the No Action Alternative would not result in any project-related impacts to wetlands. All wetlands in the existing transmission line rights-of-way would continue to be periodically cleared by mowing and other methods to keep the rights-of-way free from tall, woody vegetation that could interfere with the transmission lines.

#### **Action Alternative**

General assumptions taken into account during transmission line route planning are that proposed transmission line corridors are likely to cross narrow riparian zones that include wetlands. It is also assumed that due to the nature of the action, impacts to wetlands in these corridor areas as a result of transmission line construction and maintenance would likely be minimal and insignificant if none of the following wetland sensitivity criteria apply:

- The wetland is forested
- The wetland supports uncommon plant communities or rare plant or animal species
- The wetland is associated with a spring, seep, or sinkhole connected to the groundwater system
- The wetland is greater than an acre in size and is ecologically connected to other relatively undisturbed habitats

Potential wetland impacts resulting from proposed transmission line construction include the conversion and fragmentation of forested wetlands, erosion, and sedimentation in wetlands, soil compaction, hydrologic alteration, and reduction of certain functions such as providing wildlife habitat. Specifically, the conversion of forested wetlands as a result of clearing could cause the loss of vegetation types and other habitat features such as stumps, downed trees, and snags. For the proposed transmission line, the majority of these potential impacts would be avoided or minimized through wetland avoidance and implementation of BMPs (Muncy, 1999), and measures outlined in Appendices II and III.

Impacts to forested wetlands are of concern due to the historic high rate of loss, and continuing losses, of this type of wetland. Mature forested wetlands are one of the most difficult categories to restore or replace functionally. The timetable for creating or regenerating mature forested wetlands and their associated functions can take 80–100 years. Unavoidable clearing of forested wetlands could justify mitigation, the level of which would be determined by specific state or USACE permit requirements. In cases where the USACE district regulatory agency does not require mitigation (i.e., no mitigation required for forested wetland conversion because there is no discharge of fill associated with hand clearing), TVA would base mitigation for projects on the wetland's TVARAM categorization. No mitigation would typically be recommended for clearing low-quality Category 1 or moderate-quality Category 2 wetlands. Clearing high-quality Category 3 wetlands could require mitigation at a 1:1 or higher ratio to compensate for the loss of wetland functions associated with conversion. No mitigation is recommended for impacts to scrub-shrub or emergent wetlands, as these areas would be spanned and not be filled or converted to other wetland types.

When scrub-shrub and emergent wetlands are interspersed with forested wetlands that would require clearing, there would be an increased potential for direct and indirect impacts to these wetlands. These potential impacts would be minimized through implementation of appropriate BMPs, including the avoidance of unnecessary vegetation damage or entry of vehicles and heavy equipment.

Construction clearing through forested wetland tracts would be avoided, to the extent possible, in order to limit forest fragmentation and the permanent conversion of forested wetlands to other types of wetlands (emergent and scrub-shrub). However, forested wetlands that occur within the proposed rights-of-way would be cleared and converted to emergent and scrub-shrub wetlands. Clearing would be done by nonmechanical means, and/or by the use of a feller-buncher located outside of the wetland. Appropriate BMPs would be implemented to avoid or minimize any potential wetland impacts.

Future TVA right-of-way maintenance activities would follow guidelines described in Section 2.3.2.2 and Appendix V to avoid or minimize impacts to wetlands. These guidelines include the avoidance of entry by mechanized equipment during vegetation management when the ground is saturated and aerial application of herbicides on scrub-shrub wetlands, as this practice unnecessarily kills low-growing shrubs, vines, and herbaceous species.

The proposed action would cross a total of 56.41 acres of wetlands including 43.65 acres within the existing and proposed new right-of-way section of West Point-Columbus Transmission Line and 12.76 acres in the proposed SeverCorr 161-kV Transmission Line right-of-way (Table 4-1). Along the existing West Point-Columbus Transmission Line route, this includes 3.16 acres of forested wetlands that would be cleared and 40.49 acres of other wetland types (emergent and/or scrub-shrub wetlands) (Table 3-7). It is important to note that 29.02 acres of emergent and scrub-shrub wetlands occur within the existing West Point-Columbus Transmission Line corridor and are currently subject to routine maintenance activities (e.g., mowing). Emergent, scrub-shrub, and/or forest wetlands totaling 14.63 acres would be affected that are not currently located within the existing TVA right-of way. In addition to these wetlands, the SeverCorr 161-kV Transmission Line construction would affect 5.84 acres of forested wetlands and 6.92 acres of other wetland types (Table 3-10).

Due to the local topography in the proposed project area, it would not be possible to avoid forested wetlands by spanning them; therefore, the 9.0 acres of forested wetlands located within the proposed transmission line rights-of-way would be cleared and converted to other wetland types (Table 4-1). Based on TVARAM scoring and categorization of these wetlands, compensatory mitigation (1:1 ratio) is recommended for 4.88 acres to reduce the project impacts to an insignificant level. This would include 0.88 acres of affected Category 3 forested wetlands along the West Point-Columbus Transmission Line section, and 4.0 acres of affected Category 3 forested wetlands along the proposed SeverCorr Transmission Line section (Table 4-1).

Construction related impacts to the nonforested emergent, scrub-shrub, and unconsolidated bottom wetlands are expected to be minimal even in wetlands that would have transmission line structures. Many of the wetlands along the existing West Point-Columbus Transmission Line right-of-way are subjected to recurring routine maintenance activities. Furthermore, potential indirect impacts to these wetlands would be avoided through the implementation of BMPs as described in Muncy (1999). Low-growing vegetation in these wetlands would not be removed. Any tree removal that is necessary in emergent or scrub-shrub wetlands would be done in a manner that would not disturb the substrate or remaining vegetation (e.g., feller-buncher or by hand). During future right-of-way maintenance, these wetland areas would be avoided or potential impacts minimized through the implementation of appropriate BMPs. Therefore, compensatory mitigation for impacts to these wetlands was determined to be unnecessary.

**Table 4-1. Summary of Wetland Crossings, Acreage, Category, and Amount of Forested Wetlands Impacted on the Proposed Transmission Line Corridor**

Proposed Transmission Line Corridor Alignment	Number of Wetland Crossings	Wetland Acreage – All Types	Total Acreage of Forested Wetlands by Category and Impact					Total Acreage of Categories 2 and 3 Forested Wetlands to be cleared	Total Acreage of Other Wetland Types
			Category 1	Category 2	Category 3	Category 2 Amount to be cleared	Category 3 Amount to be cleared		
West Point-Columbus 161-kV Transmission Line	39	43.65	0.00	2.28	0.88	2.28	0.88	3.16	40.49
Proposed SeverCorr 161-kV Transmission Line	7	12.76	0.00	1.84	4.00	1.84	4.00	5.84	6.92
Totals	46	56.41	0.00	4.12	4.88	4.12	4.88	9.00	47.41

The upgrade or use of access road SSAR2, an unimproved farm road, could have the potential to adversely impact wetlands located on either side of the access road. However, the wetlands immediately adjacent to access road SSAR2 are not expected to be impacted because the road would not be expanded and no vehicles and equipment would enter the wetlands. In addition to wetland avoidance, standard BMPs, such as erosion controls, would be used to avoid and minimize indirect impacts.

### **Cumulative Impacts**

Forested wetlands have experienced the greatest decline of any single category of wetlands, both in the southeastern U.S. (Hefner et al., 1994) and the U.S. as a whole (USFWS, 2001). Although the annual rate of loss has declined since the mid-1970s to mid-1980s, due in part to federal government agriculture programs such as Swampbuster and Conservation Reserve Program, forested wetland acreage continues to decline, with an estimated 4 million acres of forested wetland lost or converted between 1986 and 1997 (Dahl, 2000). Part of the decline in forested wetland acreage was due to the conversion of forested wetlands to other vegetation types, such as ponds and emergent and scrub-shrub wetlands. The largest contributor to forested wetland loss and conversion has been agriculture (Mississippi Museum of Natural Science, 2005); other impacts include silviculture (including conversion to pine plantations) and urban and rural development. Bottomland hardwood forests have been identified as a habitat of concern by Mississippi's Comprehensive Wildlife Conservation Strategy (Mississippi Museum of Natural Science, 2005) due to historic patterns of loss and conversion and also due to their importance as habitat for a large number of wildlife species in greatest need of conservation.

Since not all forested wetlands perform all functions at the same level, many factors taken together (i.e., hydrologic regime, watershed location, habitat quality) are important in determining the functional level and relative ecological and social value of a forested wetland. Functional losses in individual areas may not be significant when viewed as a separate and single event. However, consideration of the cumulative loss of functions that occur on a regional basis as a result of many separate and single events and the continuing net loss of forested wetland acreage in the southeastern U.S. could result in significant impacts from seemingly small individual areas of loss or conversion.

Over the decades since its inception, TVA has contributed to the cumulative impacts of forested wetland loss, conversion, and fragmentation through impoundment of the reservoir system and reservoir operations, other TVA-related projects, and the construction of thousands of miles of transmission lines. The loss or conversion of these forested wetlands would contribute to the cumulative impacts resulting from the loss of forested wetland habitat and functions in the southeastern U.S. and would add to the cumulative losses resulting from TVA activities in the TVA Power Service Area. While TVA complies with federal and state wetland protection regulations, implements BMPs, and has been successful in avoiding and minimizing wetland impacts, some clearing and conversion of forested wetlands is unavoidable, especially for the expansion of the transmission system.

In preparation for the construction of the new SeverCorr mill and SeverCorr 161-kV Substation located in the Lowndes County-Golden Triangle Megasite, a large forested wetland (~40 acres) was cleared. In the area of the substation property where TVA's SeverCorr 161-kV Transmission Line would connect to the substation, approximately 4.67 acres of forested wetlands were cleared that rated as Category 3 by TVARAM. Because

development of this site is a related action to the construction of the transmission line, the cumulative impacts to forested wetlands were considered as part of this action.

Scrub-shrub and emergent wetlands have also experienced cumulative levels of loss; however, these losses have slowed dramatically as new wetlands of this type have been created as a result of the conversion of forested wetlands. In general, transmission line projects such as the proposed SeverCorr project typically span existing emergent and scrub-shrub wetlands resulting in minimal impacts to these types of wetlands.

Consistent with the federal policy of no net loss of wetlands and with EO 11990, compensatory mitigation at a minimum 1:1 ratio for Category 3 forested wetlands is recommended for 4.88 acres that would be converted to scrub-shrub and emergent wetlands as a result of the proposed transmission line construction.

Mitigation options include, but are not limited to, the following:

- The purchase of credits in an existing mitigation bank (which includes forested wetlands) within the USGS Hydrologic Unit (HU) for the proposed project area or an adjacent Tennessee-Tombigbee HU.
- Forested wetland restoration in or adjacent to the proposed project area HU, either implemented by TVA or through an in-lieu-fee agreement with a state agency or private conservation organization.

Impacts to nonforested wetlands as a result of the implementation of Alternative 2 would be insignificant with avoidance and the use of BMPs. With the mitigation for the cumulative impacts to the high-quality (Category 3) forested wetlands, as described above, impacts to forested wetlands as a result of the construction of the proposed transmission line would be insignificant.

#### **4.3.4. Aquatic Ecology**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be constructed, and the project area would likely remain in its current state. Therefore, aquatic ecology would not be affected.

##### **Action Alternative**

Whether as a result of direct or indirect impacts, siltation within streams can have a detrimental effect on many types of aquatic animals including insects, fish, mussels, and salamanders that are adapted to riverine environments. In addition, turbidity caused by suspended sediment can negatively impact spawning and feeding success of many fish species (Sutherland et al., 2002). All construction and maintenance work, especially near streams, would be conducted following the requirements and recommendations presented in TVA's guidelines for environmental protection during transmission line construction and maintenance (Muncy, 1999).

Watercourses in the proposed project area that were identified as wet-weather conveyances would be protected by standard BMPs, as identified in Muncy, 1999, and in

Appendix IV. These BMPs are designed in part to minimize erosion and subsequent sedimentation in streams.

All perennial and intermittent streams along the proposed transmission line would be protected by Standard Stream Protection (Category A), as defined in Muncy, 1999, and in Appendix IV. This category of protection is based on the variety of species and habitats that exist in perennial and intermittent streams and state and federal requirements to avoid harming these aquatic ecosystems. The SMZ width for these streams was determined by the category of protection and the slope of the stream banks as stipulated in Muncy (1999).

With the use of standard BMPs as outlined in Muncy (1999) and adherence to the appropriate stream protection requirements identified in Appendix IV, all potential direct and indirect impacts to aquatic resources as a result of the construction and maintenance of the proposed transmission line would be insignificant.

#### Cumulative Effects

During a field survey conducted for the proposed project, it was found that eight wet-weather conveyances and the four intermittent streams previously identified at the Lowndes County-Golden Triangle Megasite have been filled during construction of the new SeverCorr mill and SeverCorr 161-kV Substation. Because development of this site is a related action to the construction of the transmission line, these impacts were considered as part of this action.

Despite the fill of these watercourses, the proposed project would not result in significant cumulative impacts to the aquatic communities of any of the streams potentially impacted by this action.

#### **4.3.5. Managed Areas**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project construction of 20.5 miles of new 161-kV transmission line from TVA's existing West Point 500-kV Substation to the new SeverCorr 161-kV Substation would not occur. As a result of the No Action Alternative, no direct, indirect, or cumulative effects are anticipated to natural areas.

##### **Action Alternative**

Under the Action Alternative, construction of the proposed transmission line would occur. One natural area would be affected by the proposed project. A portion of the existing transmission line in the proposed project crosses the western edge of the Tennessee-Tombigbee Columbus Reservoir Reservation. Effects anticipated to this natural area as a result of the construction of the transmission line would include tree removal associated with additional footage needed for right-of-way clearance. Approximately 1.5 acres of forest along the existing transmission line right-of-way within and adjacent to this natural area would be removed. Due to vegetation that obscures the view of the transmission line, minimal visual effects are anticipated. Therefore, overall changes to this area are expected to be minimal and insignificant.

Best Management and Best Construction Practices would be implemented to stabilize and contain sediment and/or debris in order to minimize the off-site transport of soil and debris.

With these measures, the proposed action is not anticipated to impact natural areas significantly.

#### **4.3.6. Recreation**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be constructed, and the project area would likely remain in its current state. Therefore, recreation would not be affected.

##### **Action Alternative**

None of the developed facilities would be directly impacted by the proposed project activity. Any indirect impacts to public recreation resources, facilities, and activities are anticipated to be temporary and insignificant. Cumulative effects of the proposed action would also be insignificant.

#### **4.3.7. Floodplains**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be constructed. Therefore, no floodplains would be affected.

##### **Action Alternative**

The proposed transmission line would cross several floodplain areas in Clay and Lowndes Counties, Mississippi. For compliance with EO 11988, an overhead transmission line and related support structures are considered a repetitive action in the 100-year floodplain. The construction of the support structures for the transmission line would not be expected to result in any increase in flood hazard either due to increased flood elevations or to changes in flow-carrying capacity of the streams being crossed. To minimize adverse impacts on natural and beneficial floodplain values, the rights-of-way would be revegetated where natural vegetation is removed and the removal of unique vegetation would be avoided. BMPs would be used during construction activities.

Some of the roads would cross streams or involve construction in the 100-year floodplain. Any necessary improvements to the roads would be done in such a manner that upstream flood elevations would not be increased. The existing West Point 500-kV Substation is not located within the 100-year floodplain. The new SeverCorr 161-kV Substation and the construction laydown area would be located outside of the 100-year floodplain.

#### **4.3.8. Groundwater**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be implemented, and the project area would likely remain in its current state. Therefore, groundwater would not be affected.

##### **Action Alternative**

Parts of the existing and proposed right-of-way are located within state designated source water protection areas for public water supply. However, the entire proposed project area

is underlain by the Selma Group, which acts as a confining unit by separating the surface area from the aquifers below. This confining unit should provide adequate protection from potential groundwater contamination. To minimize potential sediment infiltration, BMPs would be used during construction (Muncy, 1999). During revegetation and maintenance activities, use of fertilizers and herbicides would be considered with caution before application and applied according to the manufacturers' labels. Herbicides with groundwater contamination warnings would not be used. With these precautions and the use of BMPs, impacts to groundwater from the proposed action would be insignificant.

#### **4.3.9. Surface Water**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be constructed. Therefore, no surface waters would be affected.

##### **Action Alternative**

Soil disturbances associated with access roads or other construction activities can potentially result in adverse water quality impacts. Soil erosion and sedimentation can clog small streams and threaten aquatic life. Removal of the tree canopy along stream crossings can increase water temperatures, algal growth, dissolved oxygen depletion, and adverse impacts to aquatic biota. Improper use of herbicides to control vegetation could result in runoff to streams and subsequent aquatic impacts.

However, TVA routinely includes precautions in the design, construction, and maintenance of its transmission line projects to minimize these potential impacts. Permanent stream crossings would be designed not to impede runoff patterns and the natural movement of aquatic fauna. Temporary stream crossings and other construction and maintenance activities would comply with appropriate state permit requirements and TVA requirements as described in Muncy (1999). Canopies in all SMZs would be left undisturbed unless there were no practicable alternative. Right-of-way maintenance would employ manual and low-impact methods wherever possible. In areas requiring chemical treatment, only USEPA-registered herbicides would be used in accordance with label directions designed in part to restrict applications in the vicinity of receiving waters and to prevent unacceptable aquatic impacts.

#### **4.3.10. Visual Resources**

Consequences of the impacts to visual resources are examined based on changes between the existing landscape and the landscape character after alteration, identifying changes in the landscape character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. The impacts to visual resources are described in the same manner as the existing visual resources, from west to east along the proposed route.

##### **No Action Alternative**

Under the No Action Alternative, the new transmission line rights-of-way would not be acquired, and the project would not be constructed. The existing scenic attractiveness would remain common to the area, and the scenic integrity would remain moderate to low.

##### **Action Alternative**

Under the Action Alternative, TVA would construct approximately 20.5 miles of transmission line through Clay and Lowndes Counties. Primary viewer groups include residents who live within the foreground-viewing distance of the proposed route, motorists who travel the roadways that cross or come within 0.5 mile of the proposed route, recreational lake users on the Columbus Reservoir, and employees and visitors to the businesses, industries, and schools within the foreground of the proposed transmission line project.

As the existing transmission line route leaves the existing West Point 500-kV Substation, motorists traveling Industrial Park Access Road and Eshman Avenue would have foreground views of the proposed transmission line and associated structures in context with existing transmission structures. These roadways are frequently traveled by employees and visitors to businesses and light industrial operations in the vicinity. From this area where the number of viewers would generally be high and duration of view would be short, the proposed transmission line would continue south where, conversely, the number of viewers would be considerably lower and the duration of view would increase as the proposed transmission line moves farther from the city center of West Point and into the more rural and pastoral portions of Clay County. Residents in the foreground would have views of the proposed transmission line and associated structures in context with the structures that are currently in place. Motorists traveling SR 50 as well as other county roadways that cross the existing transmission line route would have brief views of the proposed new transmission line between structures and in context with existing structures that cross the roadway.

As the proposed route nears the Columbus Reservoir, the number and duration of views would increase, depending on seasonal changes and the amount of use within this section of the reservoir. Views from the reservoir would vary in duration, but would remain in context with the existing transmission line and structures that parallel and cross the reservoir as they continue southward.

Nearing US 82, the proposed transmission line route would leave the existing right-of-way and occupy newly acquired right-of-way over the next 5.8 miles. Motorists traveling the primary east-west roadway connecting the Lowndes County-Golden Triangle Megasite with Tuscaloosa, Alabama, would have brief views of the proposed transmission line and associated structures in context with the existing transmission line and distribution lines that parallel the roadway in the near vicinity of West Lowndes High School, which lies to the south of the four-lane roadway. Views of the proposed transmission line would additionally be available from positions along McIntyre Road, which is sparsely lined with single-family residences. Residents and motorists within this section would have foreground views of the 161-kV structures against mature vegetation. Similar views would be available along portions of Artesia Road where motorists would view the proposed transmission line at length and parallel to the roadway against the backdrop of mature vegetation. At some positions along the roadway nearing the Allison-Hardy Road intersection, the proposed transmission line would be obscured from view as the roadway continues to the southwest and vegetation thickens along the Motley Slough where the proposed route crosses Allison-Hardy and Ransom Roads. These rural residential service roads would provide motorists with brief views of the proposed transmission line from between structures. Residents who live along these roadways would have views of a prolonged duration, which would vary based on location relative to the proposed transmission line route and seasonal changes in vegetation that may obscure views. From this point, and continuing westward, the number of residences and residential service roads decrease surrounding the industrial area and the Golden Triangle Regional Airport. As the proposed route crosses Industrial Park Road,

motorists would have foreground views of the transmission line and structures only briefly and in context with the light industrial setting and the existing distribution lines that parallel the roadway.

The proposed 20.5 miles of transmission line would cover land that is largely pastoral, rural, or suburban in character. The proposed transmission line route would infrequently cross major roadways. During the demolition and construction phases of the proposed project, temporary visual discord would be probable as equipment and personnel operate within the existing and proposed rights-of-way. Material and equipment staging areas that would be constructed and maintained temporarily would additionally be visible to motorists and residents within the foreground-viewing distance. These impacts to the existing landscape character that are associated with the construction period of the proposed project would remain temporary in nature and would not result in long-term negligible impacts to existing scenic resources. The proposed Action Alternative would result in an incremental increase in the number of contrasting vertical elements in the landscape and the addition of approximately 5.8 miles of new transmission line right-of-way. However, the changes that would be discernable from the vantage points previously discussed upon completion of the proposed project would not contribute to the loss of established landscape character. Impacts to visual resources associated with the implementation of the Action Alternative, as proposed, would be insignificant.

#### **4.3.11. Cultural Resources**

##### **No Action Alternative**

Under the No Action Alternative, the proposed project would not be constructed. Therefore, no impacts to cultural resources would occur.

##### **Action Alternative**

The proposed undertaking would not adversely affect any historic properties that are listed or are eligible for listing on the NRHP. The Mississippi State Historic Preservation Officer, in a letter dated January 27, 2006 (Appendix I), concurred with these findings and recommendations.

#### **4.4. Post Construction Impacts**

##### **4.4.1. Electric and Magnetic Fields**

TVA recognizes there is public concern about whether any adverse health effects are caused by electric and magnetic fields (EMF) that result from generation, transmission, distribution, and use of electricity. Many scientific research efforts and other studies examining the potential health and other effects of EMF have been and are being done. TVA is aware of, and ensures that it stays aware of, published research and study results and directly supports some of the research and study efforts.

Studies, interpretations, and research to date are far from conclusive about potential associations between EMF and possible health impacts. A few studies have been interpreted as suggesting a weak statistical relationship between EMF and some rare forms of cancer. During the summer of 2001, the International Association for Research on Cancer reviewed available epidemiological studies and concluded that childhood leukemia appears to be associated with magnetic fields but that there was not a cause and effect

relationship. It was concluded that the risk is small but may in some circumstances of higher exposure result in one type of childhood leukemia. The association also concluded that electric fields do not have a connection with cancer.

However, equal or greater numbers of similar studies show no association or cannot reproduce data interpreted as demonstrating an association. No laboratory research has found cause and effect health impacts from EMF and certainly none that are adverse. Neither has any concept of how these fields could cause health effects achieved scientific consensus.

There is also no agreement in the scientific or EMF research community as to what if any electric or magnetic field parameters might be associated with potential health effects. There are no scientifically or medically defined safe or unsafe field strengths, although state regulatory bodies in Florida and New York have established edge of right-of-way magnetic field strength limits for 230-kV and larger power transmission lines.

TVA has analyzed and continues to analyze the fields associated with its typical line designs using the best available models and has measured actual fields for a large number of locations along its transmission line easements. Both model data and measurements show that the field strengths for TVA transmission lines are well within Florida and New York limits. Based on such models, expected field strengths for the proposed lines discussed in this document would also be within those existing state guidelines.

TVA's standard location practice has the effect of minimizing continuous public exposures to transmission line EMF. The transmission line route selection team uses a constraint model that place a 300-foot-radius buffer around occupied buildings, except schools, for which a 1,200-foot buffer is used. The purpose of these buffers is to reduce potential land use conflicts with yard trees, outbuildings, and ancillary facilities and potential visual impacts as well as exposures to EMF. Although not absolute location constraints, these buffers weigh heavily in location decisions, influencing selection of route options and alignments. Because EMF diminishes quickly with distance from the conductors, the routing of transmission lines using constraint buffers effectively reduces potential continuous public exposure to EMF. Crossing under lines or otherwise being near them for short periods may increase overall EMF exposure, but only minutely.

#### **4.4.2. Other Impacts**

No significant impacts are expected to result from the relatively short-term activities of construction, such as noise, solid waste, etc. Appendices II and III contain procedures for dealing with these issues.

#### **4.5. Irreversible and Irretrievable Commitment of Resources**

The materials used for construction of the proposed facilities would be committed for the life of the facilities. Some materials, such as ceramic insulators and concrete foundations, may be irrevocably committed, but the metals used in equipment, conductors, and supporting steel structures could be recycled. The useful life of steel-pole transmission structures is expected to be at least 60 years.

The rights-of-way used for the transmission lines would not be irreversibly committed and could be returned to other uses upon retirement of the line. In the interim, compatible uses of the right-of-way could continue.

Forest products and related wildlife that might have grown on the presently forested portions of the right-of-way would be lost for the life of the project. No locally or regionally significant lost forest or agricultural production would be expected.

#### **4.6. Unavoidable Adverse Effects**

After completion of the transmission line:

- Trees would not be permitted to grow within the right-of-way or to a determined height adjacent to the right-of-way that would endanger the transmission line.
- Clearing and construction would result in the disruption of some wildlife, but no permanent habitat changes would occur except in the wooded areas previously described.
- Any burning of cleared material would result in some short-term air pollution.
- Clearing, tree removal, and excavation for pole erection would result in a small amount of localized siltation.
- Transmission line visibility would be minimized through the location; however, there would be some degree of visual effect on the landscape in the project area.

#### **4.7. Relationship Between Local Short-Term Uses of the Environment and Long-Term Productivity**

The construction and operation of the proposed transmission line would supply electricity to meet the present and foreseeable expected loads at the new SeverCorr 161-kV Substation and other industries located within the Lowndes County-Golden Triangle Megasite. This would be accomplished by a localized shift of a small amount of land to use for electric power transmission. If, during the useful life of the transmission line, it is no longer needed or technology renders it obsolete, it can be removed with relatively little difficulty. The land encumbered by the right-of-way could be returned to its previous use or used for other purposes.

The principal change in short-term use of the right-of-way would be the exclusion of trees and permanent structures. The amount of forest being lost is approximately 20 acres within the right-of-way area, and areas removed from production are dispersed along the length of the transmission line. The right-of-way cannot support building construction for the life of the project, but the social and economic benefits of the project should outweigh this small loss.

#### **4.8. Summary of TVA Commitments and Proposed Mitigation Measures**

To support the preceding conclusions, TVA would commit to the following additional actions to avoid or mitigate possible environmental impacts:

##### Protection of Terrestrial Plant Resources

- To avoid impacts to the population of 77 wild hyacinths, during construction and clearing of the right-of-way, appropriate BMPs including hand clearing or the use of low ground-pressure equipment would be implemented. Additionally, during future maintenance operations in the vicinity of both wild hyacinth populations, no herbicides would be sprayed during the reproductive cycle (April or May).

##### Invasive Plant Species

- The cogongrass population at the edge of TVA's existing transmission line right-of-way would be chemically treated with a herbicide mixture of Arsenal and glyphosate prior to any construction activities to preclude any expansion of the colonized area or the accidental introduction of the species into other areas. Treatment would be completed before early spring or early summer to ensure that reproductive structures do not form; therefore, seeds cannot be transported by construction vehicles. Any excess fill dirt exhumed from the site of the cogongrass infestation would remain on site and not be transported outside the project area.

##### Protection of Aquatic Resources

- All intermittent and perennial watercourse crossings would be designated as Category A, Standard Stream Protection as outlined in Muncy (1999). Protection levels for each watercourse crossing are identified in Appendix VIII.
- Watercourses that convey only surface water during storm events (i.e., wet-weather conveyances or ephemeral streams) and that could be affected by the proposed transmission line route would be protected by standard BMPs as identified in Muncy (1999). These BMPs are designed to minimize erosion and subsequent sedimentation in streams.

##### Wetland Mitigation

- To minimize impact to wetlands, BMPs would be implemented during construction and maintenance.
- Compensatory mitigation would be implemented for the 4.88 acres of Category 3 high-quality forested wetlands that would be converted to scrub-shrub and emergent wetlands. Mitigation options include, but are not limited to the following:
  - The purchase of credits in an existing mitigation bank (which includes forested wetlands) within the USGS Hydrologic Unit (HU) for the proposed project area or an adjacent Tennessee-Tombigbee HU.
  - Forested wetland restoration in or adjacent to the proposed project area HU, either implemented by TVA or through an in-lieu-fee agreement with a state agency or private conservation organization.

General Best Management Practices for Clearing, Construction, and Maintenance

- TVA practices detailed in Appendices II, III, IV, and V would be used during clearing, construction, and maintenance. EO 13112 directs all federal agencies to prevent and control the introduction and spread of invasive species resulting from their activities. TVA would use reseeding mixes that are certified free of invasive, exotic plant seeds when replanting disturbed areas.

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## CHAPTER 5

### 5. SUPPORTING INFORMATION

#### 5.1. List of Preparers

**John T. Baxter**

Position: Biologist - Aquatic  
Involvement: Threatened and Endangered Species - Aquatic Animals

**W. Nannette Brodie**

Position: Environmental Specialist, Professional Geologist  
Involvement: Groundwater

**Patricia B. Cox**

Position: Botanist  
Involvement: Terrestrial Ecology - Terrestrial Plants; Threatened and Endangered Species - Terrestrial Plants

**Jenny K. Fiedler**

Position: Contract Zoologist  
Involvement: Terrestrial Ecology - Terrestrial Animals; Threatened and Endangered Species - Animals

**Heather Hart**

Position: Contract Natural Areas Specialist  
Involvement: Managed Areas

**John M. Higgins**

Position: Water Quality Specialist  
Involvement: Surface Water

**Marianne M. Jacobs**

Position: Archaeologist Technician  
Involvement: Cultural Resources

**Clint Jones**

Position: Biologist – Aquatic Ecologist  
Involvement: Aquatic Ecology

**Todd C. Liskey**

Position: Environmental Engineer - Siting and Environmental Design  
Involvement: Purpose of and Need for Action; Alternatives Including Proposed Action

**Victor Maddox**

Position: Contract Botanist  
Involvement: Terrestrial Ecology - Terrestrial Plants; Threatened and Endangered Species - Terrestrial Plants

**Anita E. Masters**

Position: Senior NEPA Specialist  
Involvement: NEPA Compliance and Document Preparation

**Roger A. Milstead**

Position: Floodplain Specialist  
Involvement: Floodplains

**Jason M. Mitchell**

Position: Contract Natural Areas Specialist  
Involvement: Managed Areas

**Richard L. Pflueger**

Position: Land Use and Recreation Specialist  
Involvement: Recreation

**Kim Pilarski**

Position: Senior Wetlands Biologist  
Involvement: Wetlands

**Jon C. Riley**

Position: Landscape Architect  
Involvement: Visual

**E. Fowler Tucker**

Position: Civil Engineer - Siting and Environmental Design  
Involvement: Project and Siting Alternatives

**5.2. List of Agencies and Persons Consulted**

**Federal Agencies**

U.S. Army Corps of Engineers  
U.S. Department of Agriculture  
U.S. Fish and Wildlife Service

**State Agencies**

Mississippi Department of Archives and History  
Mississippi Department of Environmental Quality  
Mississippi Department of Transportation  
Mississippi Development Authority  
Mississippi Natural Heritage Program  
Mississippi Public Service Commission

**5.3. Literature Cited**

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## **APPENDIX I – CORRESPONDENCE**

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HISTORIC PRESERVATION  
PO Box 571, Jackson, MS 39205-0571  
601-576-6940 • Fax 601-576-6955  
mdah.state.ms.us

January 27, 2006

Mr. J. Bennett Graham  
Tennessee Valley Authority  
West Tower 11D  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902

Dear Mr. Graham:

RE: Cultural Resource Survey of Proposed Severtorr Industrial Park Transmission Line, Access Roads, and Laydown Areas, Clay and Lowdnes Counties, Mississippi

We have reviewed the December 28, 2005 cultural resources survey report of TRC for the above referenced undertaking pursuant to our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. We concur that no sites listed in or eligible for listing in the National Register of Historic Places will be affected. We have no reservations with the project.

There remains the remote possibility that unrecorded cultural resources may be encountered during construction. If this occurs, we would appreciate your contacting this office immediately in order that we may offer appropriate comments under 36 CFR 800.13 within forty-eight hours. If you need further information, please let us know.

Sincerely,

H. T. Holmes  
State Historic Preservation Officer

BY: Thomas H. Waggener  
Review and Compliance Officer

cc: Clearinghouse for Federal Programs



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Mississippi Field Office  
6578 Dogwood View Parkway, Suite A  
Jackson, Mississippi 39213  
January 26, 2006

RECEIVED  
Environmental Policy and Planning

FEB 1 2006

Doc. Type: EA-Administrative Record  
Index Field: Conservation/Integrative Re.  
Project Name: SeverCorr 161-kV Trans. Line  
Project No.: 2006-11

Mr. Jon M. Loney  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, Tennessee 37902-1401

Dear Mr. Loney:

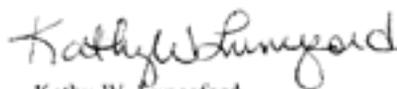
The U.S. Fish and Wildlife Service (Service) received your letter dated January 13, 2006, regarding the construction of the SeverCorr steel mill transmission line from West Point to the Golden Triangle Airport in Lowndes County, Mississippi. In previous correspondence to your agency, the Service recommended that a field survey for the federally listed threatened bald eagle (*Haliaeetus leucocephalus*) be conducted on the project site. Per that survey, two bald eagle nests were found along one of the proposed project alignments near Catalpa and Tibbee Creeks.

To avoid impacts to the bald eagle, you proposed a new alignment further to the east and a minimum of one mile from either of the identified eagle nesting areas. Much of the new route would be along existing transmission line right-of-way and would require removal of only a narrow strip of forested habitat. Consequently, based on the new project plan, your agency determined that the new route alignment would not likely adversely impact this species.

The Service concurs with your findings. However, if during construction of the project any additional evidence of bald eagle nesting sites is found, all work activities should cease until this office is notified.

This will conclude informal consultation as provided for in the Endangered Species Act (16 U.S.C. 1531 et seq.). However, the Service may provide additional comments regarding potential impacts to wetland resources during any U.S. Army Corps of Engineers public notice comment period. If you have any additional questions, please contact this office, telephone: (601) 321-1132.

Sincerely,

  
Kathy W. Luceford  
Fish and Wildlife Biologist



DEPARTMENT OF THE ARMY  
MOBILE DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 2288  
MOBILE, ALABAMA 36628-0001

REPLY TO  
ATTENTION OF:

February 16, 2006

Regulatory Division

SUBJECT: Nationwide Permit Authorization to Construct  
Electric Transmission Line - Jurisdictional Number  
MSNW06-00370-S

Mr. Todd C. Liskey  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Mr. Liskey:

Reference is made to your request to construct a 20.5-mile long 161-kV overhead transmission line to serve the SeverCorr steel mill located near the Golden Triangle Airport in Lowndes County, Mississippi. According to the work plan you submitted with your request, there will be no permanent loss of wetland habitat resulting from transmission line construction due to fill discharges or mechanized landclearing.

This letter verifies that your proposed activity is authorized by Nationwide Permits 12 and 25 in accordance with 33 CFR Part 330 of our regulations. A copy is enclosed with the appropriate sections marked for your reference. Further authorization from this office is not required provided the scope of work is in accordance with your submitted plans and the Nationwide Permit conditions.

By letter dated March 15, 2002, the Mississippi Department of Environmental Quality, Office of Pollution Control, has certified that work authorized by this Nationwide Permit will be in compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act (33 USC 1341) and Section 49-17-29 of the Mississippi Code of 1972, subject to the attached conditions (enclosure 1), which must be adhered to by the permittee.

The statements contained herein do not convey any property rights, or any exclusive privileges, and do not authorize any injury to property or obviate the requirements to obtain other local, State or Federal assent required by law.

-2-

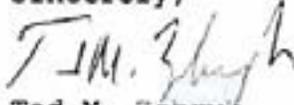
The District Engineer shall be notified promptly in writing at the commencement and completion of the work. The enclosed cards may be used for that purpose.

The enclosed Notice of Authorization must be posted at the site during construction of the permitted activity. If the scope of work or project location changes, you are urged to contact this office for a verification of this determination.

Please be advised that this jurisdictional determination reflects current policy and regulations. This Nationwide Permit authorization will expire March 19, 2007.

If you have any questions or require further information concerning this matter, please contact Mr. Tad M. Zebryk of the Inland Branch at (251) 694-3779.

Sincerely,



Tad M. Zebryk  
Project Manager  
Regulatory Division

UNITED STATES DEPARTMENT OF AGRICULTURE  
LOWNDES COUNTY FARM SERVICE AGENCY  
2282 MARTIN LUTHER KING DRIVE SUITE 3  
COLUMBUS, MISS. 39705

3/28/05

Dear Mr. Liskey:

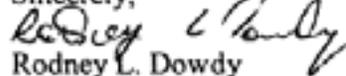
In review of the map you provided regarding the transmission line for the Industrial Megasite, I find the line possibly crosses three farms that have acreage enrolled in the Conservation Reserve Program. Without exact location identified on an aerial map I can not say for sure if all three farms would be affected. I think I am safe in saying these three are the only possible problems. Two of these farms CRP acreage is grassland so it can be continued in CRP during and after the construction of the power line. There are certain things all parties must agree to but the program can continue on the affected acreage. The third farm owned by Henry Warden is in trees and this acreage would have to be terminated if the line or the ROW crosses the CRP acreage.

The three farms are owned by the people listed below:

- #1 Henry Warden
- #2 Marjorie Craddock, Eileen Craddock, and Beverly Yates
- #3 Lowndes County Industrial Development Authority

If you need additional information please feel free to call this office at 662-328-5921, X 104.

Sincerely,



Rodney L. Dowdy  
County Executive Director  
Lowndes County FSA

cc:Mildred Tharpe

William R. "Bill" Minor  
Northern District Commissioner

Dick Hall  
Central District Commissioner

Wayne H. Brown  
Southern District Commissioner



Larry L. "Bunch" Brown  
Executive Director

Harry Lee James  
Deputy Executive Director/  
Chief Engineer

Brenda Znachko  
Deputy Executive Director/  
Administration

---

P. O. Box 1850 / Jackson, Mississippi 39215-1850 / Telephone (601) 359-7001 / FAX (601) 359-7110 / www.msMDOT.com

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April 6, 2005

Mr. Todd C. Liskey  
Siting and Environmental  
Design Department]  
Tennessee Valley Authority (TVA)  
1101 Market Street  
Chattanooga, TN 37402-2801

Golden Triangle Industrial Megasite Transmission Line Project

Dear Mr. Liskey:

This is in reply to your correspondence of March 24, 2005, concerning the proposed Golden Triangle Industrial Megasite Transmission Line Project. The information that was submitted with your correspondence has been reviewed as requested. We do not foresee any conflicts with the project.

As the proposed project will cross US 82, MS 50 and MS 789 (Industrial Park Road), permits are required to cross these facilities. These permits can be obtained through the District Office, P. O. Box 2060, Tupelo, MS 38803-2060, and any questions concerning them should be directed to Mr. Paul Swindoll, District Engineer, (662) 842-1122, at that location.

If I can be of further assistance to you in this matter, please do not hesitate to give me a call.

Sincerely,

Harry Lee James, P.E., PS  
Deputy Executive Director

HLJ:clp

Mr. W. Paul Swindoll, District Engineer

UNITED STATES DEPARTMENT OF AGRICULTURE  
LOWNDES COUNTY FARM SERVICE AGENCY  
2282 MARTIN LUTHER KING DRIVE, SUITE 3  
COLUMBUS, MS 39705-2609

April 8, 2005

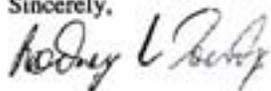
Todd C. Liskey  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, TN 37402-2801

Dear Mr. Liskey:

The acreage that is disturbed during construction of the power line on the land owned by Lowndes County Industrial Development Authority can be continued under the Conservation Reserve Program. The Lowndes County Industrial Development Authority will need to make a request to allow Tennessee Valley Authority the authority to construct a power line across land that is enrolled under the Conservation Reserve Program. They will need to provide the width of the right away and proposed construction dates. The Lowndes County Industrial Development Authority is required to re-establish the area disturbed in grass cover with no cost share from this office.

If you have any questions concerning this matter, please feel free to call this office at 662-328-5921, Ext. 2.

Sincerely,



Rodney L. Dowdy  
County Executive Director

UNITED STATES DEPARTMENT OF AGRICULTURE  
LOWNDES COUNTY FARM SERVICE AGENCY  
2282 MARTIN LUTHER KING DRIVE, SUITE 3  
COLUMBUS, MS 39705-2609

April 8, 2005

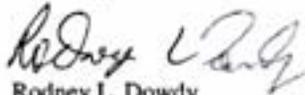
Todd C. Liskey  
Tennessee Valley Authority  
1101 Market Street  
Chattanooga, TN 37402-2801

Dear Mr. Liskey:

The acreage that is disturbed during construction of the power line on the land owned by Warden Farms, Inc., must be terminated from the Conservation Reserve Program. Refunds, interests and penalties may apply on the terminated acreage. Warden Farms, Inc. will need to request measurement service after the area is staked or surveyed to determine the acres that will be terminated from the Conservation Reserve Program.

If you have any questions concerning this matter, please feel free to call this office at 662-328-5921, Ext. 2.

Sincerely,



Rodney L. Dowdy  
County Executive Director

## APPENDIX II – 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 Practice (BMP) 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 Electric 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 the TVA's Transmission, Operations, and Maintenance 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 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 III – 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 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 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 IV – 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 TVA Construction and Maintenance Activities.”

### **Three Levels of Protection**

During the preconstruction review of a proposed transmission line, TVA Resource Stewardship 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 TVA 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 TVA 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 Resource Stewardship 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 Electric 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 TVA 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 Resource Stewardship 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 Resource Stewardship 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 Resource Stewardship 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
<p><b>1.</b> <b>Reference</b></p>	<ul style="list-style-type: none"> <li>All TVA 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 TVA Construction and Maintenance Activities,” 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 “A Guide for Environmental Protection and Best Management Practices for TVA Construction and Maintenance Activities,” 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 “A Guide for Environmental Protection and Best Management Practices for TVA Construction and Maintenance Activities,” especially Chapter 6, BMP Standards and Specifications.</li> </ul>
<p><b>2.</b> <b>Equipment Crossings</b></p>	<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 Resource Stewardship 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 Resource Stewardship 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 Electric 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 Resource Stewardship 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 one 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 Resource Stewardship staff</li> </ul>

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## **APPENDIX V – TENNESSEE VALLEY AUTHORITY RIGHT-OF-WAY VEGETATION MANAGEMENT**

Tennessee Valley Authority (TVA) must manage 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 ensure National Electrical Safety Code electrical clearances between tall-growing vegetation and any other structures. Trees located off right-of-way trees that could fall or be cut into a transmission line are also very important.

These requirements are imperative to the maintenance of the transmission system and, in some cases, underbuilt distribution lines. It is seldom understood by customers or the general public that electricity must continuously be produced and transmitted on an instant-to-instant basis to serve the demand placed on the system by continuously changing electrical load. When a switch is turned on, electricity must flow instantaneously. With increasingly complex and diverse electronic equipment controlled by computers, microchips, and other systems that respond to microsecond interruptions, any disturbance on transmission or distribution lines instantaneously affects the overall reliability of critical devices, especially production devices; security systems; process controls; medical devices; water purification and sewage treatment systems; fire and safety protection systems; communication and control systems; etc. These systems have little tolerance of even a few microseconds of interruption.

Each year, TVA must assess the conditions of the vegetation on and along its rights-of-way. This is accomplished by aerial inspections of each line, periodic walking inspections, information from aerial photographs, information from TVA field personnel, property owners, and the general public. Information is developed regarding vegetation species present, the mix of 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 that may be adjacent to the right-of-way and that may be a danger to the line or structures. TVA right-of-way program administrators develop a vegetation-reclearing plan that is specific to each line segment; it is based on terrain conditions, species mix, growth, and density. They evaluate accessibility, right-of-way, and adjacent sensitive areas, land use and development, and a series of additional parameters. To the maximum extent possible, line segments from substation busbar to substation busbar should be recleared in the same year so a line can be made as reliable as reasonably possible.

Complicating factors are the rich diversity of tall-growing and climbing vegetation species in the power service area. The long growing season with abundant rain greatly accelerates growth in the moderate to rich soils of the TVA power service area. In addition, many rapid growing species are accelerated growers when competing vegetation is removed or reduced. Diverse geographic features, slopes, and conditions along line easements create many sensitive environmental and public interest areas on or adjacent to rights-of-way.

For the above reasons, TVA uses an integrated vegetation management approach. In farming areas of right-of-way crops and pasture, TVA encourages property owner management of the right-of-way using low-growing crops year after year. In dissected terrain with rolling hills and interspersed woodlands traversed by the rights-of-way, TVA uses mechanical mowing to a large extent.

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 segments of tall-growing vegetation are present but accessibility along the right-of-way is difficult or the path to such segments is very long compared to the amount present, herbicides may be used.

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 Health and Safety Administration. For that reason, TVA is actively looking at better control methods including use of low-volume herbicide applications, occasional singletree injections, and tree-growth regulators.

TVA does not encourage individual property owner tree reclearing activity 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.

TVA's experience initially was completely with hand clearing. World War II manpower shortages forced TVA to look toward developments in herbicide research. An era of near exclusive use of herbicides existed. Then, because of the discovery of residue accumulations with many pesticides and price increases of herbicides, high-volume applications lost favor, and TVA sought other modes of vegetation control. Farm equipment of greater power and efficiency allowed use of tractor-mounted rotary mowers. These mowers not only cut the tall saplings and seedlings on the right-of-way, they 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 produce a multistem dense stand in the immediate area. Repeated use of the mowers on short-cycle reclearing with many original stumps regrowing in the above manner creates a single-species thicket or monoculture. With the original large root system and multiple stems, the resistant species can and usually do 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 created, dense, monoculture stands can become nearly impenetrable for even large tractors. Such stands have low diversity, little wildlife food or nesting potential, and become a property owner concern. They tend to spread off the right-of-way into more desirable species areas. Increasingly, TVA is receiving complaints about the shatter sapling debris density. The potential exists for insect invasion or fungus infection resulting from the easy invasion of damaged specimens or debris. Once started, such infestations or invasions can spread into valuable timber of the same or related species off the right-of-way.

Therefore, TVA has been working with universities (such as Mississippi State University, University of Tennessee, Purdue University, and others), chemical companies, other utilities, and personnel of the U.S. Department of Transportation, U.S. Fish and Wildlife Service, and U.S. Forest Service to explore other means of dealing with problem vegetation. 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.

The above-named universities strongly recommend low-volume herbicide applications since their research demonstrates much wider plant diversity after such applications. They report better ground erosion protection and the development of more wildlife food plants and cover plants. 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.

Wildlife managers are specifically requesting the use of herbicides in place of rotary mowing in order to avoid damage to nesting and tunneling wildlife. This method retains groundcover 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).

Property owners interested in tree production are requesting 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 rights-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.

Some property owners have special interests. In those cases, TVA attempts to work with them to either have them sign agreements in which they maintain the right-of-way in right-of-way crops or pasture or they do the actual right-of-way maintenance. Some may choose to use low-growing trees or fruit trees, sod, vegetable crops, or other low vegetation types.

TVA discusses with property owners the potential to sign an agreement to manage their land for wildlife under the auspices of "Project Habitat," a joint TVA/American Cyanamid wildlife organization. The property owner maintains the right-of-way in wildlife food and cover with emphasis on quail, turkey, deer, or related forms. 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.

TVA places strong emphasis on developing 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 and vegetation effective and efficient manner possible.

#### Approved Herbicides for Usage 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
Diuron	Diuron/Flowable powder	Caution
Spike 40P	Tebuthiuron/Pellet	Caution
Spike 80W	Tebuthiuron/Wettable powder	Caution
Transline	Clopyralid/Liquid	Caution
Pathfinder II	Triclopyr/RTU	Caution
Krenite UT	Fosamine Ammonium	Warning
Vanquish	Diglycolamine	Caution

Approved Herbicides for Bare Ground Areas

<u>Trade Name</u>	<u>Active Ingredients</u>	<u>Label Signal Word</u>
Chopper	Imazapyr/RTU	Caution
Topsite	Diuron/Imazapyr	Caution
Roundup	Glyphosate/Liquid	Caution
SpraKil SK-26	Tebuthiuron and Diuron	Caution
Sahara	Diuron/Imazapyr	Caution
Roundup Pro	Glyphosate	Caution
Endurance	Prodiamine	Caution
Predict	Norflurazon	Caution

Tree growth regulators (TGRs) are being considered for use on tall trees that have special circumstances where they must be trimmed on a regular cycle.

Approved TGRs for Use on TVA Property

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

The herbicide Pathway is being considered for use following initial clearing. Test plots have been established to determine the effectiveness of Pathway. Pathway is a mix of Picloram and 2,4-D and carries a "Warning" signal word.

These herbicides have been evaluated in extensive studies at universities in support of registration applications and label requirements. Most have been reviewed in the U.S. Forest Service (USFS) Vegetation Management Environmental Impact Statements (EISs), and those evaluations are incorporated here by reference. 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 to resources (including buffer zones for listed threatened or endangered species) when applied by trained applicators following the label and registration procedures.

Those not addressed in the USFS EISs or their supporting research have been peer reviewed in university research, addressed in U.S. Environmental Protection Agency (USEPA) literature reviews, or are discussed in documents on file at USEPA and U.S. Fish and Wildlife Service libraries. On the basis of this literature and TVA's reviews, the approved list above has been compiled and is reviewed again each year as new information is published.

The rates of application utilized are those listed on the USEPA-approved label and consistent with the revised application rates of the USFS Vegetation Management EIS Record of Decision. These typical application rates, in pounds/acre of active ingredient, are as follows:

Herbicide	Application Method					
	Aerial Liquid	Aerial Granule	Mechanical Liquid	Mechanical Granule	Manual Hand	Manual Foliar
2,4-D amine	2.0		2.5			2.0
2,4-D ester	2.5		4.0			2.0
2,4-DP	3.0		4.0			1.0
Dicamba			2.0			2.0
Krenite	6.0		7.8			
Glyphosate	1.5		1.5			1.0
Hexazinone	4.0	4.0	4.0	4.0	4.0	4.0
Imazapyr	0.75		0.75			0.75
Fuel oil	0.5		2.0			1.5
Limonene	0.9		0.9			0.9
Picloram	0.5		0.7			0.4
Sulfomet	0.13		0.17			0.06
Tebuthiuron	1.0	1.0	1.0	1.0		4.0
Triclopyr amine	4.0		4.0			4.0
Triclopyr ester	4.0		4.0			4.0

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.

Accord, labeled for vegetation management in forestry and utility rights-of-way applications, has a full aquatics label and can be applied to emergent weeds in all bodies of fresh and brackish water. There is no 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 that are unique to plants and are building blocks of plant proteins. The plant, unable to make proteins, stops growing and dies.

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.

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.

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.

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.

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.

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.

Revision July 2003

**APPENDIX VI – FEDERALLY AND STATE-LISTED PLANT  
SPECIES REPORTED FROM CLAY AND LOWNDES COUNTIES IN  
MISSISSIPPI**

Common name	Scientific name	Status <sup>a</sup>	
		Federal	State
Alabama grape-fern	<i>Botrychium jenmanii</i>	--	NOST (S1?)
Allegheny-spurge	<i>Pachysandra procumbens</i>	--	NOST (S3)
American bladdernut	<i>Staphylea trifolia</i>	--	NOST (S3)
American colombo	<i>Swertia caroliniensis</i>	--	NOST (S2S3)
American ginseng	<i>Panax quinquefolius</i>	--	NOST (S3)
Ashe hawthorn	<i>Crataegus ashei</i>	--	NOST (S1)
Balsam ragweed	<i>Senecio pauperculus</i>	--	NOST (SR)
Barbed rattlesnake-root	<i>Prenanthes barbata</i>	--	NOST (S1)
Big shellbark hickory	<i>Carya laciniosa</i>	--	NOST (S2S3)
Blue ash	<i>Fraxinus quadrangulata</i>	--	NOST (S2)
Burning bush	<i>Euonymus atropurpureus</i>	--	NOST (S2S3)
Bur oak	<i>Quercus macrocarpa</i>	--	NOST (S2)
Canada moonseed	<i>Menispermum canadense</i>	--	NOST (S3S4)
Canada wild-ginger	<i>Asarum canadense</i>	--	NOST (S2S3)
Carolina anglepod	<i>Matalea carolinensis</i>	--	NOST (S3)
Clustered poppy-mallow	<i>Callirhoe triangulata</i>	--	NOST (S1S2)
Crested coralroot	<i>Hexalectris spicata</i>	--	NOST (S2)
Crested fringed orchid	<i>Platanthera cristata</i>	--	NOST (S3)
Earleaf false-foxglove	<i>Tomanthera auriculata</i>	--	NOST (S1)
Eastern eulophus	<i>Perideridia americana</i>	--	NOST (S1S2)
Eastern purple coneflower	<i>Echinacea purpurea</i>	--	NOST (S3S4)
Giant chickweed	<i>Stellaria pubera</i>	--	NOST (S2S3)
Great Plains ladies'-tresses	<i>Spiranthes magnicamporum</i>	--	NOST (S2S3)
Green violet	<i>Hybanthus concolor</i>	--	NOST (S2)
Hairy woodrush	<i>Luzula acuminata</i>	--	NOST (S3)
Lance-leaved buckthorn	<i>Rhamnus lanceolata</i>	--	NOST (S2)
Large-flowered evening-primrose	<i>Oenothera grandiflora</i>	--	NOST (S1)
Limestone adder's-tongue	<i>Ophioglossum engelmannii</i>	--	NOST (S1)
Lobed tickseed	<i>Coreopsis auriculata</i>	--	NOST (S2S3)
Mead's sedge	<i>Carex meadii</i>	--	NOST (S3S4)
Mountain holly	<i>Ilex montana</i>	--	NOST (S3?)
Narrow flowered beard tongue	<i>Penstemon tenuiflorus</i>	--	NOST (S3S4)
Nebraska sedge	<i>Carex jamesii</i>	--	NOST (S1S2)
Nettle-leaf sage	<i>Salvia urticifolia</i>	--	NOST (S2S3)
Ohio buckeye	<i>Aesculus glabra</i>	--	NOST (S2)
Ovate catchfly	<i>Silene ovata</i>	--	NOST (S1S2)
Painted sedge	<i>Carex picta</i>	--	NOST (S2S3)
Prairie-iris	<i>Nemastylis geminiflora</i>	--	NOST (S2)
Prairie parsley	<i>Polytaenia nuttallii</i>	--	NOST (S2)
Prairie scorpion-weed	<i>Phacelia strictiflora</i>	--	NOST (SR)
Price's potato bean	<i>Apios priceana</i>	LT	NOST (S1)

Common name	Scientific name	Status <sup>a</sup>	
		Federal	State
Pumpkin ash	<i>Fraxinus profunda</i>	--	NOST (S3)
Rattle-vetch	<i>Astragalus canadensis</i>	--	NOST (S2)
Rough rattlesnake-root	<i>Prenanthes aspera</i>	--	NOST (S2)
Scarlet indian-paintbrush	<i>Castilleja coccinea</i>	--	NOST (S1)
Shinners' false-foxglove	<i>Agalinis pseudaphylla</i>	--	NOST (S2)
Shootingstar	<i>Dodecatheon meadia</i>	--	NOST (S2)
Slender sedge	<i>Carex gracilescens</i>	--	NOST (S2S3)
Slender toothwort	<i>Dentaria heterophylla</i>	--	NOST (S2S3)
Small palafoxia	<i>Palafoxia callosa</i>	--	NOST (S1)
Small-toothed sedge	<i>Carex microdonta</i>	--	NOST (S2?)
Smoother sweet-cicely	<i>Osmorhiza longistylis</i>	--	NOST (S3)
Southern lady's-slipper	<i>Cypripedium kentuckiense</i>	--	NOST (SU)
Southern meadow-rue	<i>Thalictrum debile</i>	--	NOST (S1S2)
Spreading bladder-pod	<i>Lesquerilla gracilis</i>	--	NOST (S2)
Stiff greenthreads	<i>Thelesperma filifolium</i>	--	NOST (S1)
Three birds orchid	<i>Triphora trianthophora</i>	--	NOST (S2S3)
Three-flowered hawthorn	<i>Crataegus triflora</i>	--	NOST (S1)
Turk's-cap lily	<i>Lilium superbum</i>	--	NOST (S3S4)
Vase-vine leather-flower	<i>Clematis beadlei</i>	--	NOST (S1)
White dog's tooth violet	<i>Erythronium albidum</i>	--	NOST (S2)
White heath aster	<i>Aster ericoides</i>	--	NOST (S2)
White turtlehead	<i>Chelone glabra</i>	--	NOST (S3)
Wild hyacinth	<i>Camassia scilloides</i>	--	NOST (S2S3)
Wire sedge	<i>Carex tenax</i>	--	NOST (S3S4)
Yellow lady's-slipper	<i>Cypripedium pubescens</i>	--	NOST (S2S3)

<sup>a</sup> Status code: **NOST** - Mississippi Natural Heritage Program does not assign status codes to state-listed species; this designation indicates the species is tracked by the Mississippi Natural Heritage Program due to its rarity in the state; **S1** - critically imperiled in Mississippi with 5 or fewer occurrences; **S2** - imperiled with 6 to 20 occurrences; **S3** - rare or uncommon with 21 to 100 occurrences; **S4** - widespread, abundant, and apparently secure with more than 101 occurrences; **SR** - species is reported from the state, but without persuasive documentation that would provide a basis for either accepting or rejecting the report; **SU** - that species is possibly in peril in Mississippi but status is uncertain; **LT**=federally listed as threatened.

**APPENDIX VII – FEDERALLY AND STATE-LISTED AQUATIC ANIMAL SPECIES REPORTED FROM CLAY, LOWNDES, AND OKTIBBEHA COUNTIES, MISSISSIPPI<sup>a</sup>**

Common Name	Scientific Name	Status	
		Federal	State
<b>Crayfish</b>			
Pearl riverlet crayfish	<i>Hobbseus attenuatus</i>	--	NOST (S2)
Oktibbeha rivulet crayfish	<i>Hobbseus orconectoides</i>	--	NOST (S1)
Tombigbee riverlet crayfish <sup>b</sup>	<i>Hobbseus petilus</i>	--	NOST (S2)
Mississippi flatwoods crayfish	<i>Procambarus cometes</i>	--	NOST (S1)
<b>Fish</b>			
Crystal darter	<i>Crystallaria asprella</i>	--	END (S1)
Alabama shiner <sup>b</sup>	<i>Cyprinella callistia</i>	--	NOST (S2)
Backwater darter	<i>Etheostoma zonifer</i>	--	NOST (S1)
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	--	NOST (S3)
Fluvial shiner <sup>b</sup>	<i>Notropis edwardraneyi</i>	--	NOST (S1)
Frecklebelly madtom <sup>b</sup>	<i>Noturus munitus</i>	--	END (S2)
Freckled darter <sup>b</sup>	<i>Percina lenticula</i>	--	NOST (S2)
Alabama sturgeon	<i>Scaphirhynchus suttkusi</i>	END	END (S1)
<b>Mussels</b>			
Rock pocketbook	<i>Arcidens confragosus</i>	--	NOST (S2)
Alabama spike	<i>Elliptio arca</i>	--	NOST (S3)
Delicate spike	<i>Elliptio arctata</i>	--	END (S1)
Southern combshell	<i>Epioblasma penita</i>	END	END (S1)
Orange-nacre mucket <sup>b</sup>	<i>Lampsilis perovalis</i>	THR	END (S1)
Black sandshell	<i>Ligumia recta</i>	--	NOST (S2)
Alabama moccasinshell	<i>Medionidus acutissimus</i>	THR	END (S1)
Southern hickorynut	<i>Obovaria jacksoniana</i>	--	NOST (S2)
Alabama hickorynut	<i>Obovaria unicolor</i>	--	NOST (S3)
Rough fatmucket	<i>Lampsilis straminea straminea</i>	--	NOST (S3)
Southern clubshell <sup>b</sup>	<i>Pleurobema decisum</i>	END	END (S1S2)
Ovate clubshell <sup>b</sup>	<i>Pleurobema perovatum</i>	END	END (S1)
Ridged mapleleaf	<i>Quadrula rumphiana</i>	--	NOST (S2)
Alabama creekmussel	<i>Strophitus connasaugaensis</i>	--	NOST (S1)
Southern creekmussel	<i>Strophitus subvexus</i>	--	NOST (S2)
Squawfoot	<i>Strophitus undulatus</i>	--	NOST (S1)
Deertoe	<i>Truncilla truncata</i>	--	NOST (S3)
Tapered pondhorn	<i>Unioemeris declivis</i>	--	NOST (S2)
<b>Snail</b>			
Cylinder elimia	<i>Elimia cylindracea</i>	--	NOST (SNR)

<sup>a</sup> The proposed project is located in Clay and Lowndes Counties; however, parts of Oktibbeha County were located within the 10-mile search radius for the proposed project. Since USFWS requests that data be presented by the entire county for projects that could potentially affect federally listed species, all sensitive aquatic species for the three counties have been listed.

<sup>b</sup> Species occurs within 10 miles of the proposed project area.

Status abbreviations: **END** = Endangered; **THR** = Threatened; **NOST** = No assigned status by state of Mississippi; **SNR** = Not rated; **S1** - critically imperiled in Mississippi with 5 or fewer occurrences; **S2** - imperiled with 6 to 20 occurrences; **S3** - rare or uncommon with 21 to 100 occurrences

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## APPENDIX VIII – SUMMARY OF STREAM CROSSING LOCATIONS ON THE PROPOSED TRANSMISSION LINE AND ASSOCIATED ACCESS ROADS

Stream Name	Location	Watercourse Type <sup>a</sup>	Commitments
unnamed tributary of Town Creek	new right-of-way	Intermittent	Category A <sup>b</sup>
unnamed conveyance to Town Creek	new right-of-way	WWC	Standard BMPs
unnamed tributary of Town Creek	rebuild right-of-way	Intermittent	Category A
unnamed tributary of Town Creek	rebuild right-of-way	Intermittent	Category A
unnamed tributary of Town Creek	rebuild right-of-way	Intermittent	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Intermittent	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Intermittent	Category A
McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed conveyance to McGee Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Intermittent	Category A
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of McGee Creek	rebuild right-of-way	Perennial	Category A
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
unnamed tributary of Spring Creek	rebuild right-of-way	Intermittent	Category A
unnamed conveyance to Spring Creek	rebuild right-of-way	WWC	Standard BMPs
Spring Creek	rebuild right-of-way	Perennial	Category A
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
unnamed tributary of Spring Creek	rebuild right-of-way	Perennial	Category A
unnamed tributary of Spring Creek	rebuild right-of-way	Intermittent	Category A
unnamed tributary of the Spring Creek embayment of Columbus Reservoir	rebuild right-of-way	Perennial /Pond	Category A
unnamed conveyance to the Spring Creek embayment of Columbus Reservoir	rebuild right-of-way	WWC	Standard BMPs
Spring Creek embayment of Columbus Reservoir	rebuild right-of-way	Columbus Lake Crossing	Standard BMPs
Tibbee Creek embayment of Columbus Reservoir	rebuild right-of-way	Columbus Lake Crossing	Standard BMPs
unnamed cove of Columbus Reservoir	rebuild right-of-way	Perennial	Category A
unnamed tributary of Columbus Reservoir	rebuild right-of-way	Intermittent	Category A
unnamed conveyance to Columbus Reservoir	rebuild right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
unnamed tributary of Oak Slush Creek	rebuild right-of-way	Perennial	Category A
unnamed pond	rebuild right-of-way	Pond	Standard BMPs
Oak Slush Creek	rebuild right-of-way	Perennial	Category A
unnamed conveyances to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs

West Point-SeverCorr 161-kV Transmission Line

<b>Stream Name</b>	<b>Location</b>	<b>Watercourse Type<sup>a</sup></b>	<b>Commitments</b>
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed tributary of Oak Slush Creek	rebuild right-of-way	Intermittent	Category A
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed tributary of Oak Slush Creek	rebuild right-of-way	Perennial	Category A
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	rebuild right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Oak Slush Creek	new right-of-way	WWC	Standard BMPs
Mayo Slough	new right-of-way	Perennial	Category A
unnamed conveyance to Mayo Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Mayo Slough	new right-of-way	WWC	Standard BMPs
unnamed tributary of Mayo Slough	new right-of-way	Perennial	Category A
unnamed conveyance to Mayo Slough	new right-of-way	WWC	Standard BMPs
unnamed tributary of Motley Slough	new right-of-way	Intermittent	Category A
unnamed tributary of Motley Slough	new right-of-way	Intermittent	Category A
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed tributary of Motley Slough	new right-of-way	Perennial	Category A
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed conveyance to Motley Slough	new right-of-way	WWC	Standard BMPs
unnamed tributary of Motley Slough	new right-of-way	Perennial	Category A
unnamed tributary of Motley Slough	new right-of-way	Intermittent	Category A
unnamed tributary of Motley Slough	new right-of-way	WWC	Standard BMPs

<sup>a</sup> WWC = wet-weather conveyance; perennial or intermittent stream type determined by level of flow and evidence of aquatic life at time of site visit

<sup>b</sup> All Category A SMZ widths are 50 feet

<sup>c</sup> Lowndes County-Golden Triangle Megasite

<sup>d</sup> N/A = not applicable