

**Environmental Assessment for the
Proposed North Burton 115 kV Transmission Line and
North Burton Substation
Rabun County, Georgia**

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**Prepared for:
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And

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EXECUTIVE SUMMARY

Georgia Transmission Corporation (GTC) is requesting special use authorization from the U.S. Forest Service (USFS) to construct a substation and an associated, approximately seven-mile, 115 kilovolt (kV) transmission line (Proposed Action Alternative) on portions of the Tallulah Ranger District of the Chattahoochee National Forest and on private property in Rabun County, Georgia. The Special Use Permit would grant GTC the authority to construct, operate, and maintain the substation and the associated transmission line.

This Environmental Assessment (EA) is prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321-4370c) and its implementing regulations published by the Council on Environmental Quality (40 CFR 1500-1508). This EA will result in a decision by the USFS regarding whether to issue a Special Use Permit to GTC for the construction, operation, and maintenance of the substation, wholly located on National Forest System land, and the transmission line, partially located on National Forest System land. In making this decision, the options will be either to approve the Proposed Action Alternative (i.e., issuing the Special Use Permit), modify the Proposed Action Alternative (i.e. issue a Special Use Permit with additional conditions or stipulations) or to select the No-Action Alternative (i.e., not issuing the Permit). Following a request from Habersham Electric Membership Corporation (EMC) to address increased power supply and reliability issues, GTC analyzed several electrical alternatives, including a No-Action Alternative. Then, GTC, along with Habersham EMC, determined that an overhead 115 kV electrical solution was needed to address the communities' current and future electrical needs.

GTC proposed three alternative transmission line corridors, referred to as Alternative Corridors A, B, and C. These alternatives would use existing public road rights-of-way, predominantly private lands, and some National Forest System land to construct the project. Each of these alternatives would require a Special Use Permit from the USFS. After analysis, it was concluded that the constraints associated with Alternative Corridors A, B, and C were too restrictive. There were overwhelming public concerns about the impacts of the transmission line on the communities of Tiger and Clayton. There also were concerns about the large number of properties crossed and the proximity of the transmission line to homes. Subsequently, GTC proposed three additional alternative corridors, referred to as Alternative Corridors D, E, and F. Each of these alternative corridors would use some private lands, but would rely more heavily on National Forest System land for rights-of-way. Each of these alternatives would require a Special Use Permit from the USFS. The same data analyses and screening criteria that were applied to Alternative Corridors A, B, and C were applied to Alternative Corridors D, E, and F. It was concluded that Alternative Corridors E and F were physically, geographically, and economically infeasible for the construction, operation, and maintenance of the transmission line. Consequently, Alternative Corridor D was selected as the Proposed Action Alternative, being the most practicable, economical, and least overall impacting to the community and the environment.

In addition to alternative corridors for the transmission line, GTC considered alternative sites for the proposed substation. The first alternative considered was an approximately 16-acre site on private property near Charlie Mountain Road. The topography of the site was appropriate for building a substation; however, GTC's contractors conducted a botanical survey of Alternative Transmission Line Corridor D that documented rare or unique forest resources and sensitive botanical communities along the centerline near where it would join the Charlie Mountain Road substation site. The location's proximity to rare or unique forest resources and sensitive habitat caused GTC to consider another alternative substation site. Subsequently, GTC identified a second alternative substation site on a narrow strip of National Forest System land adjacent to U.S. Highway 76. The property was surveyed and it was concluded that this alternative substation site is feasible. Impacts on the rare or unique forest resources and sensitive botanical communities on the National Forest System land could be mitigated by avoidance. Therefore, GTC decided to recommend this site as the preferred location for the proposed substation.

GTC anticipates that the Rural Utilities Service (RUS) would provide financial assistance to GTC to construct the project. This action must be in compliance with 7 CFR Part 1794, RUS' Environmental Policies and Procedures, and 40 CFR Parts 1500-1508, the regulations promulgated by the Council on Environmental Quality for implementing NEPA. This document is submitted in compliance with the EA requirement.

Environmental surveys were conducted on the project area, including: surveys for Proposed, Endangered, Threatened, and Regional Forester Sensitive (PETS) species; locally rare species surveys; fish surveys; stream assessments; benthic macroinvertebrate sampling; and an old-growth forest assessment. Impacts were assessed for the following resources: *physical resources*, including the topography and geomorphology of the area, soils, water resources, and the visual quality of the area; *biological resources*, including PETS, locally rare species, Management Indicator Species, raptors and other large avian species, and old-growth forests; *cultural resources*; and *socioeconomic resources*, including demographics of Rabun County, land use patterns, and recreational resources. Measures are described that would be taken under the Proposed Action Alternative to minimize and mitigate impacts to these resources.

This EA was prepared to assess and measure the environmental impacts of the proposed project. The document contains ten sections, 24 figures, and eight detailed technical appendices. Section 1 introduces the subject, describes the purpose and need for the project and outlines the contemplated scope of decisions by the USFS. Section 2 addresses the public and governmental participation processes that have been utilized to scope and assess the impacts on National Forest System lands, the local community and the region. Section 3 describes the alternatives that have been considered and reviewed. Section 4 describes the details of the Proposed Action Alternative. Section 5 describes the affected environment in the study area. Section 6 describes the environmental consequences of the Proposed Action Alternative and the No Action Alternative. Section 7 describes the mitigation measures identified during the preparation of the EA to reduce the impacts of the Proposed Action Alternative to insignificance. Section 8 describes private property in Rabun County that is

within the proposed right-of-way, but outside of National Forest System lands. Section 9 describes the personnel responsible for preparing the document. And, Section 10 contains a complete listing of the literature cited to prepare this document.

In accordance with NEPA, this EA was produced in draft form and was made available for a 30-day public review period from August 9 to September 9, 2002. Comments on the Draft EA were received by the USFS during the 30-day period. Some comments were addressed by making revisions to the EA. Other comments were addressed by the USFS in a document titled “Responses to Public Comments for the Draft Environmental Assessment for the Proposed North Burton 115 kV Transmission Line and North Burton Substation, Rabun County, Georgia.” This document is located in Appendix L of this report.

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LIST OF ACRONYMS

ACOE	U.S. Army Corps of Engineers
APE	Area of Potential Effect
ATV	All-Terrain Vehicles
BE	Biological Evaluation
BMPs	Best Management Practices
CFR	Code of Federal Regulations
DBH	diameter-at-breast-height
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMC	Electric Membership Corporation
EMFs	Electric and Magnetic Fields
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESPCP	Erosion, Sedimentation, and Pollution Control Plan
GDNR	Georgia Department of Natural Resources
GDOT	Georgia Department of Transportation
GIS	Geographic Information System
GNHP	Georgia Natural Heritage Program
GTC	Georgia Transmission Corporation
IDT	Interdisciplinary Team
kV	kilovolt
kW	kilowatts
MIS	Management Indicator Species
MVA	megavolt-amperes
MW	megawatt
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OCGA	Official Code of Georgia Annotated
PETS	Proposed, Endangered, Threatened, and Regional Forester Sensitive
RUS	Rural Utilities Service
TSS	Total Suspended Solids
USC	United States Code
USFS	U.S. Forest Service

1.0 INTRODUCTION

1.1 Proposed Action

Georgia Transmission Corporation (GTC) is requesting special use authorization from the U.S. Forest Service (USFS) to construct a substation and an associated, approximately seven-mile, 115 kilovolt (kV) transmission line on portions of the Tallulah Ranger District of the Chattahoochee National Forest and on private property in Rabun County, Georgia. The special use permit would grant GTC the authority to construct, operate, and maintain the substation and the associated transmission line.

1.2 Background

GTC is a not-for-profit cooperative owned by 39 Electric Membership Corporations (EMCs) in Georgia, one of which is Habersham EMC. GTC is responsible for providing the transmission of electrical power to those 39 EMCs. GTC is authorized and empowered pursuant to OCGA 46-3-201 to construct electric transmission facilities. Habersham EMC serves the area of southwest Rabun County. The area presently is being served from the Burton 46/12 kV and the Tiger 115/12 kV Substations (Figure 1). (Figures are located at the end of the document.) A 3.4-mile, single-circuit, 46 kV transmission line between the Burton Hydro Plant and the Nacoochee Hydro Plant feeds the Burton Substation. A 32-mile looped, 115 kV transmission line that runs from the Terrora Hydro Plant north to Dillard, Georgia, and back to Terrora feeds the Tiger Substation. The Nacoochee Hydro Plant is connected to the Terrora Hydro Plant by a 5.3-mile, double-circuit, 46 kV transmission line that was built in 1926. The next closest transmission line to the present system is a 115 kV line that runs from Tallulah Falls west to Helen, Georgia.

1.3 Purpose and Need for the Action

Southwest Rabun County is experiencing both residential and commercial growth, including new subdivisions and campgrounds in the Lake Burton and Germany areas (Figure 2), a new Super Wal-Mart, the Rabun County Middle School and High School, a golf course, a community center, and retirement communities. For the past three years, Habersham EMC has experienced 10 percent load growth per year on the Burton Substation and 13.2 percent growth per year in energy usage. The average consumer usage increased from 4.8 kilowatts (kW) per consumer in 1995 to 7.8 kW per consumer in 1999. Habersham EMC projects a sustained load growth of 5.6 percent per year for the next ten years.

The electrical demands on the present system have created several problems. First, in 1998, Habersham EMC began experiencing distribution circuit overloading, voltage drop problems, and the inability to sectionalize on circuits at the Burton Substation. Second, the transformer

at the Burton Substation reached 100 percent of its megavolt-amperes (MVA) nameplate rating in 1998 and 116 percent in 1999. To alleviate the load problems through 2003, Habersham EMC installed a 1.0 megawatt (MW) diesel generator in 1999 and another in 2000. Despite these measures, the 46 kV transmission line from the Burton Hydro Plant to the Terrora Hydro Plant is projected to be overloaded in 2007.

In early 1999, Habersham EMC met with GTC to discuss the problems associated with providing electrical service to the southwest Rabun County area. GTC and Habersham EMC studied numerous electrical alternatives to resolve these problems, including a No-Action Alternative. GTC and Habersham EMC selected the alternative of building a new 115 kV substation and an associated 115 kV transmission line. GTC believes it is the best overall solution for providing the most reliable electrical service to the southwest Rabun County area at the lowest reasonable cost.

Six alternative corridors were considered for the location of the proposed transmission line. (These alternatives will be discussed later in this document.) Based upon the analysis of the transmission line corridors, GTC concluded that Alternative Corridor D is the preferred location to construct, operate, and maintain the transmission line. For each of the other five alternative corridors, there are significant physical, legal, geographic, engineering, technological, economic, and/or practical constraints that render each alternative corridor infeasible.

Two alternative locations were considered for the proposed substation, including a site on private property near Charlie Mountain Road and a site on National Forest System land south of U.S. Highway 76. Initially, the site near Charlie Mountain Road was selected as the preferred alternative because it would not incur some of the permitting constraints presented by the Georgia Department of Transportation. Later, however, when botanical surveys were completed on the transmission line corridor leading to the Charlie Mountain Road site, it was concluded that this substation site potentially presented significant impacts to rare or unique forest resources and sensitive botanical communities. After subsequent studies on the U.S. Highway 76 site, it was determined that to avoid these impacts, the preferred alternative would be the U.S. Highway 76 site.

1.4 Decision to be Made

This Environmental Assessment (EA) is prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321-4370c) and its implementing regulations published by the Council on Environmental Quality (40 CFR 1500-1508). This EA will result in a decision by the USFS regarding whether to issue a Special Use Permit to GTC for the construction, operation, and maintenance of an approximately 8-acre substation, wholly located on National Forest System land, and an approximately seven-mile, 115 kV transmission line, partially located on National Forest System land. In making this decision, the choices will be either to approve the Proposed Action Alternative (i.e., issuing the Special Use Permit), modify the proposed Action Alternative (i.e., issue Special Use Permit with

additional conditions or stipulations) or to select the No-Action Alternative (i.e., not issuing the Permit).

GTC anticipates that the Rural Utilities Service (RUS) would provide financial assistance to GTC to construct the project. This action must be in compliance with 7 CFR Part 1794, RUS' Environmental Policies and Procedures, and 40 CFR Parts 1500-1508, the regulations promulgated by the Council on Environmental Quality for implementing NEPA.

2.0 CONSULTATION WITH THE PUBLIC AND GOVERNMENT AGENCIES

2.1 Public Participation and Scoping Process

Several public meetings were held at which GTC and USFS personnel were present to answer questions from interested parties. First, on February 10, 2000, there was an elected officials briefing held at the Dillard House, near Clayton, Georgia, at which local authorities were notified that GTC was considering several alternative locations for the construction of a substation and several alternative routes for the construction of a transmission line in Rabun County. Second, on March 21, 2000, there was an Open House Meeting held at the Clayton Elementary School to which the public was invited to receive information on the proposed action. Third, on August 31, 2000, a Public Hearing was held at the Rabun County Civic Center to address concerns of the public regarding the proposed action. An Open House was held on October 2, 2001 at the USFS Tallulah Ranger District office. On May 14, 2002, another Open House was held at the USFS Tallulah Ranger District.

In addition to the public meetings, on November 2, 2001, the Tallulah Ranger District of the USFS issued a Scoping Letter to interested government agencies, local and absentee landowners, and other interested individuals and organizations. The letter informed interested parties of GTC's application for a Special Use Permit, briefly described the proposed project, and allowed for a 30-day period to solicit comments from all interested parties.

The comments that were received from the public meetings and the 30-day public comment period were used to develop a list of issues that would be addressed by the EA. The list was developed by an Interdisciplinary Team (IDT) that consists of USFS personnel from the various disciplines that would be affected by the proposed action. These disciplines include wildlife and ecology, fisheries, recreation, visual quality, soil management, water quality management, and cultural resources. The issues that were developed by the IDT are discussed in Section 2.2 below.

2.2 Issues Developed from Public and Agency Consultation

2.2.1 Significant Issues

Once issues were expressed, the next step was for the IDT to determine which issues are considered significant. **Significant issues** are those that have a bearing on the decision to be made. Some significant issues are addressed by developing alternatives to the proposed action and by analyzing the environmental effects of the alternatives. Others may be addressed by requiring mitigating measures for specific actions and by monitoring the results of these measures. The IDT identified the following significant issues during the scoping process:

- Visual Quality – This issue was derived from concerns about whether the proposed transmission line would be seen from area roads and highways, private lands, or nearby residential communities. This issue would be addressed by employing several techniques designed to minimize the visual impact of the project. First, the pole configuration throughout the corridor would consist of either a three-pole design or a one-pole design. The three-pole design would allow for shorter poles, but would require a slightly wider management area, which is the right-of-way area within the transmission line corridor. The one-pole design would allow for a narrower management area, but would require taller poles. Because of concerns over the visual quality in certain areas and because of technical considerations during construction of the transmission line, some areas, such as the north side of Glassy Mountain, call for shorter poles and a wider management area rather than having a narrower management area and taller poles. Second, poles are proposed to be constructed of weathering steel, which turns to a deep brown color after a period of being exposed to weather and would blend with the natural background of trees. Third, subcanopy vegetative cover throughout the corridor would be left standing where possible, except at pole locations. Tree removal within the corridor would be done in a manner where most of the subcanopy shrubs directly under the transmission line would be left standing (Figure 3). Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents. All vegetation would be removed at pole locations and at the new access roads sites. Fourth, approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing two three-pole structures near the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would minimize tree removal on this section of the transmission line, thereby minimizing the impact on the visual quality of the area.

(This issue was identified by Neal, Ransam, Walsh, Holton, Jackson, Covington, Watts, Colborn, Nelson, Crunkleton, Kronsoble, Otis, Daniels, the Rabun County Coalition to Save the Forests, Henry, Seabolt, Scovil, Dockery, Georgia Sierra Club, Reif, Jones, Coogle, Ferland, Bentley, Derrick, Skeen, Timberlake, D. Govus, J. Patton, Wages, Gatins, Chattooga Conservancy, Caime, Queen, Bobo, and Friends of Georgia.)

- Water Quality – This issue reflects concerns about the protection of streams, wetlands, floodplains, springs, and the entire watershed of the project area. This issue would be addressed by several techniques designed to minimize the impact of the project on water quality. First, an Erosion, Sedimentation, and Pollution Control Plan (ESPCP) would be developed by GTC, in compliance with the Georgia Erosion and Sedimentation Control Act and the National Pollutant Discharge Elimination System (NPDES). The ESPCP would be followed by GTC during construction and maintenance of the transmission line and the access roads. The USFS and the Rabun County Erosion Control Officer would have the opportunity to inspect construction and maintenance activities to ensure compliance with the ESPCP. Best Management

Practices (BMPs) of erosion control (Georgia Forestry Commission 1999, Georgia Soil and Water Conservation Commission 2002) would be employed, including the use of silt fences, hay bales, placement of broad-based dips in access roads to divert storm water runoff to the downhill side of the roads, and planting vegetation in areas susceptible to erosion. These measures would be taken to minimize erosion and sedimentation into streams, wetlands, floodplains, and springs. Second, to the extent possible, placement of pole structures near streams, in wetlands, or in floodplains would be avoided. Instead, the transmission line would span these areas. Third, in areas where access roads would cross streams, the stream either would be piped under the road, or the streambed would be filled with large rip-rap stones to allow vehicles to cross the stream with minimal soil disturbance. Fourth, a 50-foot buffer from the top of stream banks would be established around streams and a 30-foot buffer would be established around wetlands. Within these wetlands and buffers, trees would be hand-cleared and would be left lying where they fall if they fall outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. Also, in order to minimize erosion into the streams, double rows of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at the edge of the buffers. Fifth, approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing two three-pole structures near the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek with limited tree clearing required. No access roads will be built in this span. This would minimize sedimentation and erosion into Timpson Creek from the slope of Glassy Mountain. Sixth, on access roads, existing stone stream crossings would be reinforced and failing culverts would be replaced or enhanced to restore the stream to a normal flow. Finally, an NPDES Permit would be obtained for the construction of the Proposed Action Alternative and the conditions of the permit would be followed. The NPDES Permit regulates the discharge of storm water from land-disturbance activities of five acres or more, and smaller parcels within developments of five acres or more (Georgia Soil and Water Conservation Commission 2002). Typically, this permit requires the preparation of the ESPCP, daily rainfall measurements on the construction site, weekly inspections of established BMPs, and turbidity measurements of the sediment that potentially is introduced into streams from construction activities after certain levels of rainfall. Turbidity is the amount of light that is blocked from traveling through water because of the sediment material in the water. The sediment that is introduced into streams from construction activities is measured by taking water samples from representative streams, upstream and downstream from the where land disturbance would occur, and measuring the difference in the turbidity of each. In addition, turbidity would be measured at representative storm water outfalls. If any of these inspections reveal inadequate BMPs or excessive change in turbidity, measures must be taken to correct the problems. Inspections would be conducted by GTC and would be subject to review by the Georgia Environmental Protection Division and the USFS.

(This issue was identified by Jones, Westervelt, Colborn, Gatins, Kerby, Georgia Sierra Club, T. Govus, Bentley, Skeen, Timberlake, J. Patton, Ponder, Rogers, Geiger, and Jenkins.)

- Soils – This issue comes from concerns about soil erosion during construction and maintenance of the transmission line and the access roads. This issue would be addressed by employing the erosion control methods described above. In addition, where feasible, access would be accomplished by upgrading existing USFS roads, with only one new road being constructed. This would minimize the potential for erosion concerns.

(This issue was identified by Jones, Westervelt, Jackson, Colborn, Gatins, Georgia Sierra Club, T. Govus, and Rogers.)

- Vegetation – This issue was derived from concerns about the protection of botanical communities, including: proposed, threatened, endangered, sensitive, or locally rare species; native plant communities; old growth forests; rare communities, such as communities of species that grow only near rocky outcrops or waterfalls; and trees that are located within the transmission line corridor or near access roads. This issue would be addressed by several techniques designed to minimize the impact of the project on vegetation. First, the location of the proposed substation was moved to the east to prevent the transmission line from crossing communities of sensitive species and a northern hardwood community. The new substation site would be located on an old road bead, previously disturbed and abandoned. Second, a portion of the Proposed Action Alternative Corridor D was shifted to avoid a location of ground pine (*Lycopodium obscurum*), which is listed by the Chattahoochee National Forest as a locally rare plant species. Third, the upgrading and use of existing USFS roads would minimize additional vegetation clearing. Fourth, the removal of trees in the transmission line corridor in a manner that would leave most of the subcanopy and shrub species intact would avoid disturbance to the shrub, subcanopy, and herbaceous layers. Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents. Fifth, GTC would design and locate poles in order to span the north side of Glassy Mountain, which would minimize vegetation clearing and would allow the existing canopy to remain largely intact.

(This issue was identified by Jones, Neal, Westervelt, Jackson, Colborn, Williams, Giles, Jenkins, Daniels, Darrich, Myers, Henry, Georgia Sierra Club, T. Govus, The Nature Conservancy, Bentley, McHugh, Barnett, Skeen, Timberlake, J. Patton, Ponder, Rogers, Nelson, Wages, Woodward, Chattooga Conservancy, Geiger, and Gatins.)

- Wildlife and Fisheries – This issue reflects concerns over the protection of wildlife and fish species. To address this issue with respect to terrestrial wildlife, GTC would implement tree-cutting procedures where most downed trees would remain where they fall, thereby providing brooding habitat for several species of birds and small

mammals. Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents. Fish habitat would be protected by employing Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs, including the use of silt fences, and hay bales, and planting vegetation on areas susceptible to erosion. There would be a 50-foot buffer from the top of stream banks and a 30-foot buffer around wetlands. Within these wetlands and buffers, trees would be hand-cleared and would be left lying where they fall if they fall outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. Also, double rows of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at the edge of the buffers. This would protect fish habitat by minimizing erosion into the streams.

Nesting and brooding habitat for birds and small mammals would be preserved by clearing and pruning trees where possible in a manner where most of the subcanopy and shrub species directly under the transmission line would be left standing. The farther away from the transmission line, the taller the trees are that would be left. Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents. The shrub and herbaceous layer would not be cleared except in staging areas necessary to erect poles and in areas cleared for access roads.

Raptors and other large bird species would be protected from electrocution on the transmission line by designed adequate spaces between wires and by long insulators between wires and poles. On the north side of Glassy Mountain, the transmission line design would incorporate spacing of 18 feet rather than the typical 10 feet between energized and non-energized wires and a distance of 12 to 18 feet between energized wires. Also on the north side of Glassy Mountain, insulators between wires and poles would be eight feet rather than the typical four-foot insulators used on 115 kV transmission lines. Birds also would be protected from flying hazards on this portion of the line by using a three-pole design. This design places each of the three energized wires on a separate pole, side-by-side in one horizontal plane, and two non-energized wires placed over the energized wires in a similar manner (Figure 12A). This would differ from the typical one-pole design, which places all four wires, one over the other, on the same pole, each in a separate horizontal plane (Figure 12B). The three-pole design on the north side of Glassy Mountain would limit the potential flying hazards to two, rather than four flying hazards.

(This issue was identified by Jones, Neal, Westervelt, Colborn, Gatins, Jenkins, Kronsoble, Otis, Daniels, Darrich, the Rabun County Coalition to Save the Forests, Henry, Georgia Sierra Club, T. Govus, The Nature Conservancy, Martinson, Bentley, McHugh, Barnett, Skeen, Timberlake, J. Patton, Rogers, White, Nelson, Wages, Woodward, Geiger, and Chattooga Conservancy.)

- Human Health and Safety – The community voiced concerns regarding the human health risks that some believe are caused by the electric and magnetic fields (EMFs) that are emitted by transmission lines. This issue would be addressed by GTC’s commitment to providing electricity in a reliable and safe manner that protects the health and safety of energy consumers, GTC employees, and the general public. GTC’s design is based on established safety codes and government requirements. Should regulations or safety codes change or scientific evidence dictate a need, GTC would commit the necessary resources to protect the public safety. The Proposed Action Alternative would be constructed according to all national, state and local codes and regulations.

EMFs are a natural byproduct of the use of electricity and are encountered by people every day from a variety of sources. Lights, motors, television sets, power lines, coffee makers, hair dryers, and all other devices that use electricity produce these fields. Over the past 25 years, numerous studies and more than 20 scientific review panels have concluded that no cause-and-effect relationship has been established between EMFs and any harmful health effects.

(This issue was identified by Watts, Colborn, Williams, Kerby, Daniels, the Rabun County Coalition to Save the Forests, Dockery, Friends of Georgia, Kennedy, Timberlake, Wagner, Eden, Gatins, Daniels, and Howell.)

- Recreational Resources – This issue was derived from concerns over the impact of the Proposed Action Alternative on recreational resources, such as existing biking and hiking trails. This issue would be addressed by minimizing impacts to existing biking and hiking trails and by rerouting some biking trails that may be impacted. Also, the visual quality of areas that are used for recreation would be preserved using the shortest pole structures possible, clearing as little vegetation as possible, and using pole structures that blend with the natural background.

(This issue was identified by Otis, Caime, Gatins, and Eifrid.)

- Illegal Use of All-Terrain Vehicles on National Forest Property – There is a concern that the development of the access roads would increase the illegal use of All-Terrain Vehicles (ATVs) on National Forest property. This issue would be addressed by installing gates to control access to the roads that would be associated with the transmission line.

(This issue was identified by Jenkins, Gatins, and Wagner.)

2.2.2 Non-significant Issues

Issues that were raised during the scoping process but do not have a bearing on the decision to be made are considered to be **non-significant issues**. They are considered non-significant because they may have been decided by laws and regulations not to be valid concerns, or they may be clearly outside the scope of the decision to be made. This does not mean that they are not important, but only that they are not relevant to reaching a decision about the specific proposed action. The IDT identified the following non-significant issues during the scoping process:

- Environmental Assessment versus Environmental Impact Statement – This concern is in regard to the decision of the USFS to produce an EA rather than a more detailed Environmental Impact Statement (EIS). Both types of documents may be produced to satisfy the requirements of NEPA, which requires major federal government actions to be preceded by an analysis of the effects of the action on the natural and human environments. An EA may be prepared to determine if significant impacts would result from the action. If no significant impacts are identified, a Finding of No Significant Impact (FONSI) is produced. If, however, significant impacts are identified, an EIS must be prepared. It was determined through preliminary analysis that the level of impacts, as a result of the proposed action, are such that an EA was warranted rather than an EIS.

(This issue was identified by Gatins, Jones, Walsh, Westervelt, Georgia Forest Watch, Friends of Georgia, Lewis, Coogle, Grecco, Cooley/Martin, P. Patton, J. Patton, Rogers, Gober, Nelson, Wages, Georgia Sierra Club, Ziegler, Skeen, Woodward, and Chattooga Conservancy.)

- Historical and Archaeological Sites – This issue relates to concerns regarding the impacts to historical and archaeological sites on the proposed substation site and within the proposed transmission line corridor. This issue has been addressed by conducting multiple Phase I intensive archaeological surveys on private property and National Forest System land within the project area. The surveys revealed no sites that are eligible for inclusion in the National Register of Historic Places (National Register). If sites are identified in the future, the sites would be avoided or impacts otherwise mitigated.

(This issue was identified by Jones, Ransom, Walsh, Jackson, Watts, the Rabun County Coalition to Save the Forests, Friends of Georgia, Georgia Sierra Club, Ferland, Cooley/Martin, P. Patton, J. Patton, Gatins, and Wages.)

- Private Property Concerns – This issue was derived from concerns about the impacts of the proposed action on private property. Specifically, the concerns relate to: the proximity of the proposed substation and transmission line to private property that is

not directly impacted by the management area, the impacts on property values, the rights of private landowners, and the decision to place portions of the transmission line on private property rather than locating it wholly on public land. This issue would be addressed by limiting the visual impacts to the surrounding area by hand-clearing vegetation in environmentally sensitive areas and by using pole structures that blend with the natural background. Although the USFS considers private property concerns extremely important, this environmental assessment focuses on the effects of the proposed action on National Forest System lands. (See Section 8 for information regarding private property within the management area of the proposed Action Alternative but located outside of National Forest System lands.)

(This issue was identified by Covington, Watts, Colborn, Eder, Kronsoble, Daniels, Otis, Kerby, Scogin, Buckler, Darrich, Queen, Morgan, Bobo, Jones, Derrick, Timberlake, Reeves, Planes, Edwards, Gatins, Prater, and Ponder.)

- Violation of Rabun County's Ordinance Prohibiting Powerlines – This issue comes from the fact that the Rabun County Commission passed an ordinance prohibiting the installation of powerlines in the County for a period of three years. However, a Georgia Superior Court judge ruled the ordinance to be unconstitutional. An appeal of this decision is pending before the Georgia Supreme Court, with oral arguments scheduled for September 17, 2002. Therefore, at present, this issue is not relevant to the decision to be made.

(This issue was identified by Jones, Neal, Ransam, Jackson, the Rabun County Coalition to Save the Forests, Queen, Friends of Georgia, Georgia Sierra Club, Bentley, Wagner, Woodward, Kennedy, Daniels, Howell, Gatins, and Chattooga Conservancy.)

- USFS Should Determine the Need for the Project – It was suggested that USFS should hire an independent consultant to determine the need for the project. However, the USFS's role in this process is to examine only the application for a Special Use Permit, and the environmental impacts that could result from selecting the Proposed Action Alternative. It is not the role of the USFS to determine if the power needs of Rabun County warrant the construction of the substation and related transmission line.

(This issue was identified by Queen, Gatins, Covington, Colborn, Williams, Crunkleton, Bundrick, Tucker, Georgia Forest Watch, Allerdice, Kennedy, Pagenkopf, Lewis, Coogle, Grecco, Otis, Bentley, Buffington, Woodard, Cooley/Martin, Skeen, Timberlake, White, Busch, Howell, Aiken, Caime, Alexander, Henry, McHugh, Daniels, Seabolt, and Wylie.)

- USFS Should do an In-house Environmental Assessment, or Have One Conducted by an Independent Contractor – It was suggested that the USFS should conduct an in-house EA rather than rely on an EA prepared by outside contractors that were retained

by GTC. However, 40 CFR 1506.5 states that if a federal agency permits an applicant to prepare an EA, the agency, in addition to assisting the applicant by outlining the types of information required, shall make its own evaluation of the environmental issues and take responsibility for the scope and content of the EA. The USFS is fulfilling its responsibilities for this project by having the IDT actively involved in the development of issues to be addressed, in the collection of data related to impacts to the natural and human environments, and in the preparation of the EA document.

(This issue was identified by Gatins, Colborn, Georgia Forest Watch, Seabolt, Coogle, and The Nature Conservancy.)

- Project is Inconsistent with the Purpose and Charter of the USFS – There was a concern that the project is not consistent with the purpose of the USFS. This issue also involves concerns from those generally opposed to using National Forest System lands for projects such as transmission lines. However, the Special Use Permit application is an established method for dealing with requests for activities on National Forest System land. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by Henry, Caime, Heckel, Scovil, Friends of Georgia, Georgia Sierra Club, Jenkins, Martinson, Otis, Buffington, White, Busch, Nelson, and Wylie.)

- GTC has Unseen Motives for Developing the Substation and Transmission Line – This issue relates to concerns that GTC may have motives other than providing energy for developing the substation and transmission line. However, the USFS's role in this process is to examine only the application for a Special Use Permit, and the environmental impacts that could result from selecting the Proposed Action Alternative. It is not the role of the USFS to determine the reasons behind GTC's request for the Special Use Permit.

(This issue was identified by Covington, Crunkleton, Otis, Daniels, Caime, Henry, Barnett, Seabolt, Skeen, and Timberlake.)

- GTC has Chosen the Least Expensive Route – This issue is derived from concerns that GTC has chosen the least expensive route for the transmission line without regard to other issues, such as environmental and human health issues. However, the purpose of the EA is to give the USFS documentation of the impacts to the natural and human environments. The USFS will use the EA to determine impacts on National Forest System land in deciding whether to issue the Special Use Permit. The USFS criteria do not consider the costs of the alternatives presented.

(This issue was identified by Kerby, Caime, T. Govus, Georgia Forest Watch, and Heckel.)

- The Proposed Action Alternative Could Result in Higher Electric Rates – This issue is derived from the concern that the Proposed Action Alternative would result in higher electric rates for consumers in Rabun County. However, this issue is beyond the scope of the decision to be made by the USFS. It is the role of the USFS to examine only the application for a Special Use Permit, and the environmental impacts that could result from selecting the Proposed Action Alternative. It is not the role of the USFS to consider the effects of the Proposed Action Alternative on future electric rates. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by Moss.)

- Effect of Forest Management Plan Revision on Special Use Permit Approval – This issue relates to concerns that the revision of the Forest Management Plan (U.S. Forest Service 1985) for the Chattahoochee National Forest would not be consistent with approving the Special Use Permit. However, the IDT agreed that the revision of the Forest Management Plan would have no impact on the decision of whether to grant the Special Use Permit.

(This issue was identified by Gatins.)

- Use of Herbicides for Transmission Line Maintenance – This issue was derived from concerns regarding the use of herbicides in the management area. However, GTC would commit to using only manual and mechanical vegetation removal during the construction, operation, and maintenance of the Proposed Action Alternative Substation Site and Transmission Line Corridor. No herbicides would be used. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by Colborn, Jenkins, Otis, Daniels, Bentley, Eifrid, Timberlake, Ponder, Rogers, Gatins, Patton, Wagner, Nelson, and Woodward.)

- Effects of the Transmission Line on the Worley Ridge Georgia Mountain Treasure – This issue relates to concerns regarding the protection of the Worley Ridge Georgia Mountain Treasure. However, the *Georgia's Mountain Treasures* booklet, produced by the Wilderness Society in 1995, was intended primarily to help identify and describe areas on the Chattahoochee National Forest with wildland, or undisturbed, characteristics. The criteria used by the USFS for assessing potential National Forest System lands for potential wilderness or roadless area designation is different than that used by the Wilderness Society. Therefore, the USFS does not officially recognize the Georgia Mountain Treasures designation. Regardless, the Worley Ridge area identified as a Georgia Mountain Treasure does not include any of the area through which the proposed transmission line would traverse and would not be affected by the Proposed Action Alternative.

(This issue was identified by Bundrick, Pagenkopf, Lewis, Coogle, Fox, Grecco, Woodard, White, Georgia Forest Watch, Buffington, and Busch.)

- Access to the Transmission Line for Administrative and Emergency Purposes – This issue was derived from concerns regarding how the substation and transmission line would be accessed by GTC for administrative and emergency purposes. However, if the proposed action is approved, it would be the responsibility of GTC to administer plans for accessing the transmission line for administrative and emergency purposes. The USFS would be concerned with access issues as they relate to the development of access roads on National Forest System land. For example, the USFS would be concerned with environmental impacts from the construction, operation, and maintenance of access roads on National Forest System land. As such, the plans for developing access roads are addressed in this EA.

(This issue was identified by Aiken.)

- Repair and Maintenance of the Transmission Line – This issue relates to concerns regarding the ability of GTC to repair and maintain the transmission line. However, this issue is beyond the scope of the decision to be made by the USFS. The repair and maintenance of the transmission line would be the responsibility of GTC. If the Proposed Actions Alternative is approved, the USFS would dictate in the Special Use Permit the terms and provisions for accessing National Forest System property for the purposes of repair and maintenance of the transmission line.

(This issue was identified by Reif and Aiken.)

- Alternative Methods or Routes of Power Transmission Should be Used – This issue was derived from the concern that other methods of power transmission should be used, rather than the Proposed Action Alternative. Methods that were suggested include underground transmission lines, alternative routes for the transmission line, upgrading the existing system, the use of fuel cells, and energy conservation. The EA addresses several alternatives, including upgrades to the present energy-supply system and alternative locations for building a substation and associated transmission line. It is the role of the USFS in this process to examine how the various alternatives will impact National Forest resources. It is not the role of the USFS to determine what the best methods are for meeting the energy needs of Rabun County. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by the League of Women Voters, Queen, Neal, Ransam, Holton, Covington, Watts, Nelson, Crunkleton, Eder, Kronsoble, Buckler, Williams, Snyder, Grice, Tucker, Bergman, Gatins, Daniels, the Rabun County Coalition to Save the Forests, Henry, Allerdice, Heckel, Friends of Georgia, Kennedy, Georgia Sierra Club, T. Govus, Otis, Bentley, DeGrazia, Eifrid, Woodard, Cooley/Martin, Skeen, Timberlake, D. Govus, P. Patton, Ponder, Wagner, Rogers, Gober, Howell, Woodward, Chattooga Conservancy, Wylie, Pagenkopf, Jenkins, Jones, Reif, Fox, Dockery, and Zeigler.)

- Ability of GTC to Upgrade the Substation and Transmission Line for Future Needs – This issue relates to concerns regarding whether GTC would be able to upgrade the substation and transmission line for future needs. However, the USFS's role in this process is to examine only the application for a Special Use Permit, and the environmental impacts that could result from selecting the Proposed Action Alternative. It is not the role of the USFS to determine how to address future energy needs of Rabun County. Therefore, this issue is beyond the scope of the decision to be made by the USFS.

(This issue was identified by Gatins.)

- Impacts to the Community – This issue was derived from concerns over the impacts of the transmission line on areas of the surrounding community, including churches, cemeteries and burial grounds, schools, playgrounds, retirement facilities, and farms. This issue also includes concerns over impacts to tourism and the local economy, and effects on the social, cultural, and rural character of the area. In this process, the USFS must make a decision on whether to grant the Special Use Permit based on how the action on National Forest System land would impact the natural and human environments. However, it is not the responsibility of the USFS to determine the route of the transmission line on private property. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by Queen, Williams, Patton, Ferland, Bentley, Georgia Sierra Club, Friends of Georgia, Caime, Daniels, Rabun County Coalition to Save the Forests, Martin, Planes, Chattooga Conservancy, Gatins, and Kerby.)

- Increased Population Growth – This issue relates to the possibility that the Proposed Action Alternative would cause an unwanted increase in population growth in Rabun County. However, this issue is beyond the scope of the decision to be made by the USFS. The role of the USFS is to examine only the application for a Special Use Permit, and the environmental impacts that could result from selecting the Proposed Action Alternative. It is not the role of the USFS to assess potential increases in population growth in the County. Therefore, this issue does not have a bearing on the decision to be made.

(This issue was identified by Jenkins.)

3.0 ALTERNATIVES

3.1 Description of the Proposed Action Alternative

The proposed transmission line alternative is referred to as Proposed Action Alternative Corridor D (Figure 4). The management area would be 75 feet wide, except for the north side of Glassy Mountain, where it would be approximately 120 to 150 feet wide. According to Geographic Information System calculations, the total acreage of the management area would be approximately 60 acres. The average span, or distance, between poles would be 650 feet, with the minimum span being 400 feet and the maximum span being 900 feet. Again, the north side of Glassy Mountain would be an exception, where the span would be approximately 1,500 feet. The height above ground for the poles would range from 60 feet to 120 feet, depending upon existing ground elevation. The pole material would be a rust-colored weathering steel that would blend in with the natural background.

The Federal Aviation Administration has established standards for marking and lighting structures, such as transmission lines and poles, for aviation safety (Air Traffic Airspace Management 2000). The standards require that temporary or permanent structures that exceed 200 feet above ground level be marked and lighted. The proposed transmission line would not be considered an obstruction because the maximum pole heights above ground level would be 120 feet, and the maximum wire height above ground level (on the north side of Glassy Mountain) would be 195 feet.

The management area would be cleared of its trees in a manner that would cut canopy trees directly under the transmission line, and would leave progressively higher canopy trees moving from the center of the management area to the edge. Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents. The shrub and herbaceous layer would not be cleared except in staging areas necessary to erect poles and on areas for new access road construction. In stream valleys, the downed trees would remain where they fall. This minimization of disturbance would further the reduction of stream impacts during tree cutting.

On the north side of Glassy Mountain, where the span between poles would be approximately 1,500 feet, there would be a pole near the north side of the top of the mountain and a pole on the north side of Timpson Creek (Figure 5). The line would span the creek. To facilitate this distance, the management area would be approximately 120 to 150 feet wide. This long span would enable a line height such that much of the canopy layer on the north side of Glassy Mountain would remain undisturbed. Some trees may need to be selectively hand-cleared or trimmed, but the vast majority of the canopy would remain undisturbed. The clearance of the lowest wire to ground level on this portion of the line would extend from approximately 40 feet at the pole on top of Glassy Mountain to approximately 130 feet along the north-facing slope of Glassy Mountain. Also, since there would be no additional poles, there would be no need to construct access points on the north side of Glassy Mountain.

3.2 The No-Action Alternative

Under the No-Action Alternative, the substation would not be constructed at the preferred U.S. Highway 76 location, and the transmission line would not be constructed along the Proposed Action Alternative Corridor D. Without the selection of another alternative, the load pressures on the present electric energy supply system and the associated problems with energy distribution would continue. In addition, the projected increase in demand for electric energy in Rabun County through 2009 would not be met with the present distribution system.

Habersham EMC has the obligation to serve all customers within its service area. Without the addition of generators in 1999, 2000, 2001 and 2002, Habersham EMC would not be able to deliver sufficient electrical capacity at an appropriate voltage level to this area in Southwest Rabun County. Based on the projected load growth shown above, if nothing is done, Habersham EMC would have to resort to rolling blackouts or risk equipment damage that would result in even longer power outages.

3.3 Alternatives Considered but Eliminated

Following a request from Habersham EMC to address increased power supply and reliability issues, GTC analyzed several electrical alternatives, including a No-Action Alternative. Then, GTC, along with Habersham EMC, determined that an overhead 115 kV electrical solution was merited to address the communities' electrical needs. The following sections describe the electrical alternatives that initially were considered and the alternative substation sites and transmission line corridors that were considered later.

3.3.1 Electrical Alternatives

This section describes the electrical alternatives that initially were considered to satisfy Habersham EMC's request to address increased power supply and reliability issues.

3.3.1.1 Initially, Upgrade Existing Distribution and Transmission System

This alternative would require converting 106 miles of distribution line coming out of the existing Burton Substation to 25 kV. This would include converting 20.3 miles of three-phase and 69 miles of single-phase. The conversion would require replacing 760 pole-mounted transformers, 130 pad-mounted transformers, and seven miles of underground conductor. It also would require the installation of six voltage regulators on their circuits and three 5,000 kVA autotransformers and the replacement of the existing 46/12 kV, seven MVA bank with a 46/12 kV, 10 MVA bank at the Burton Substation.

Approximately one year after this upgrade, there would be a need to convert an additional 63 miles of distribution line coming out of the existing Burton Substation, and replace 440 pole-mount and 75 pad-mount transformers. There also would be a need to convert 15 miles of distribution line to 25 kV and replace an additional 320 transformers on a distribution line coming out of the existing Tiger Substation.

Approximately one year after the second upgrade, a third upgrade would be required to provide additional capacity. Because of facility limitations and the location of the Burton Substation, GTC would be required to construct a new substation approximately 3.5 miles away in the vicinity of Mary's Cove. This would require a new 46 kV transmission line and a new 46/25 kV, 20 MVA substation to be built. Also, there would be a need to build a low-side structure with two circuits.

Approximately two years after the third upgrade, the existing Terrora Hydro–Burton Hydro 46 kV Transmission Line would need to have larger wires installed to carry more electricity. The present transmission line is a 1926 construction and has experienced long outages. The new wire installation would require rebuilding approximately nine miles of new 46 kV line, approximately six miles of which is double circuit. In addition, at the same time, the existing Tiger Substation would require a capacity increase.

Based on current growth projections and power demand, this alternative would postpone construction of new transmission lines for approximately two years. To avoid power outages, periodic upgrades would be required during the four years following the initial upgrade. Thereafter, the 115 kV solution would again be required.

3.3.1.2 Modify Existing Distribution and Transmission System by Converting from 46 kV to 115 kV

This alternative would require converting the existing transmission line from the Terrora Hydro Plant to the Nacoochee Hydro Plant from the present 46 kV double circuit line to a double circuit transmission line with one side operating at 115 kV and the other side continuing to operate at 46 kV. Additionally, it would require converting three miles of single circuit 46 kV line to 115 kV line from Nacoochee Hydro Plant to the Burton Hydro Plant, then building an additional 3.5 miles of 115 kV transmission line from the Burton Hydro Plant to a new substation in the vicinity of Mary's Cove.

At the same time of this upgrade, there would be a need to convert one distribution line (Circuit 2-2), and 3.5 miles of the other distribution line (Circuit 2-1), coming from the Burton Hydro Plant to 25 kV. Also, there would be a need to build a low-side structure that would feed two circuits. Approximately four years after the initial upgrade, there would be a need to convert the remainder of Circuit 2-1 to 25 kV and increase capacity at the Tiger Substation.

This alternative would postpone construction of new transmission lines. However, the solution is only temporary. To avoid power outages, periodic upgrades would be required during the four years following the initial upgrade.

3.3.1.3 Use Underground Transmission Line

This alternative would require constructing the new North Burton 115/12 kV, 7 MVA Substation and build a seven-mile underground 115 kV transmission line from the new substation to the existing 115 kV transmission line that extends from the Terrora Hydro Plant to Dillard, Georgia. It also would require building a low-side structure that would feed three circuits.

Although the technology to bury a 115 kV transmission line is available, GTC has determined that the performance is unreliable and the cost of design and construction is extreme. Should a problem occur, it could take up to two weeks to restore service, compared to one day or less to restore service to an overhead line. An underground transmission line requires a cleared easement and the installation of large, aboveground structures at every line termination point. In addition, there is an excessive amount of soil disturbance with trenching operations during construction of an underground line. As such, trenching for an underground line has a greater effect on the natural environment than overhead construction. Steep slopes require extensive benching for equipment, and streams and wetlands require excavation and re-depositing of soils to bury the conductors. As a result of these facts, GTC has determined that an underground transmission line is not a viable option.

3.3.1.4 Construct North Burton 115/12 kV Substation and Tap the Tallulah Falls–South Cleveland Transmission Line

This alternative would require constructing a new North Burton 115/12 kV, seven MVA substation and building a 15.9-mile, 115 kV transmission line that would tap into the 115 kV transmission line that runs from the Tallulah Falls-South Cleveland 115 kV transmission line, following Highway 197. This alternative also would require building a low-side structure that would feed three circuits.

This alternative was eliminated for two reasons. First, the length of the line would expose the system to increased weather-related outages. Second, the estimated cost of construction would be approximately twice that of the Proposed Action Alternative.

3.3.1.5 Construct a 115/46 kV Source at the Existing Tiger Substation

This alternative would require constructing a 115/46 kV, 30 MVA bank with a 46 kV breaker at the existing Tiger Substation. It also would require constructing a new North Burton 46/12

kV, seven MVA substation and building a 6.5-mile, 46 kV transmission line from the new substation to the existing Tiger Substation. Also, it would require building a low-side structure that would feed three circuits.

This alternative was rejected for two reasons. First, the adequacy of the system would not be reliable. Adequacy is defined as the ability of the electric system to supply the aggregate electrical demand and energy requirements of the customer at all times, taking into account scheduled and reasonably expected, unscheduled outages of system elements. The adequacy of a 46 kV transmission line is less than that of a 115 kV line and, therefore, is not as reliable. One reason for this is that 46 kV lines use less insulation than a 115 kV line, making it more susceptible to outages resulting from lightning or other electrical faults. Second, the estimated cost of construction would be 28 percent higher than the Proposed Action Alternative.

3.3.1.6 Construct North Burton 115/12 kV Substation and Connect to Duke Power

This alternative would require constructing a new North Burton 115/12 kV, seven MVA substation and building a 27-mile, 115 kV transmission line that would connect to Duke Power Company facilities in the Tennessee Valley Authority territory in North Carolina. This alternative also would require building a low-side structure that will feed three circuits.

This alternative was rejected for three reasons. First, the excessive length of the line would expose the system to increased weather-related outages. Second, the transmission line would cross considerably more private property and National Forest System land. Third, the estimated cost of construction would be 263 percent higher than the Proposed Action Alternative.

3.3.2 Alternative Substation Sites and Transmission Line Corridors

Once GTC, along with Habersham EMC, determined that an overhead 115 kV electrical solution was merited to address the communities' electrical needs, alternative substation sites and transmission line corridors were proposed. This section describes each of the alternatives that were identified.

3.3.2.1 Alternative Corridor A

GTC first proposed three alternative transmission line corridors that would use existing public road rights-of-way, predominantly private lands, and some National Forest System land to construct the project. The first of these corridors is referred to as Alternative Corridor A (Figure 6). This is an approximately 7.25-mile corridor that extends from a tap point at an existing transmission line approximately two miles south of the community of Tiger to a terminus near the intersection of Charlie Mountain Road and U.S. Highway 76. This

alternative is located on private property and within the Georgia Department of Transportation (GDOT) right-of-way for U.S. Highway 76. This alternative would have required a Special Use Permit from the USFS.

In evaluating this alternative corridor, GTC relied both upon its own studies and upon public comments. In addition, the USFS assessed the alternative as part of GTC's application for a Special Use Permit for the Proposed Action Alternative. This assessment was based upon a comprehensive set of criteria, including impacts to people, impacts to land, engineering constraints, land acquisition constraints, public input, and project management constraints. The assessment weighed the impacts of Alternative Corridor A on people, including land use characteristics and population density; the number of land parcels affected and the buffering requirements around the parcels; the proximity of the corridor to subdivisions, cemeteries, churches, daycare centers, recreation sites, schools, historic districts and the required buffers; the location of archaeological sites and the buffering requirements around the sites; and buffering requirements for all types of occupied and heavily used structures. Similar data and screening criteria were developed in reviewing the alternative's engineering constraints, land acquisition constraints, permitting constraints, public input, impacts on land, and cost.

Taking all of these considerations into account, it was concluded that the constraints associated with Alternative Corridor A were too restrictive. There were overwhelming public concerns about the impacts of the transmission line on the communities of Tiger and Clayton. Specifically, the concerns related to potential impacts to property values, historic properties and places, cultural and environmental resources, tourism, and the scenic values of U.S. Highway 76. There also were concerns about the large number of properties crossed and the proximity of the transmission line to homes. In addition, consultation with GDOT resulted in the conclusion by GTC that obtaining the necessary permits for constructing a transmission line along U.S. Highway 76 would be improbable because of the scenic qualities of this highway. The scenic qualities of this highway would trigger GDOT Permit requirements for a new use of the road right-of-way. This permitting constraint, coupled with the public opposition to the alternative, led GTC to conclude that Alternative Corridor A would be an impractical selection.

3.3.2.2 Alternative Corridor B

The next transmission line corridor that would use existing public road rights-of-way, predominantly private lands, and some National Forest System land is referred to as Alternative Corridor B (Figure 6). This is an approximately 5.5-mile corridor that extends from a tap point at an existing transmission line approximately two miles south of the community of Tiger to a terminus near the intersection of Charlie Mountain Road and U.S. Highway 76. This alternative is located on private property and within the GDOT right-of-way for U.S. Highway 76. This alternative would have required a Special Use Permit from the USFS.

The same data assessment and screening criteria that were applied to the Alternative Corridor A were applied to Alternative Corridor B. Taking all of these considerations into account, it was concluded that the constraints associated with Alternative Corridors B were too restrictive. There were overwhelming public concerns about the impacts of the transmission line on the communities of Tiger and Clayton. Specifically, the concerns related to potential impacts on the local agricultural economy, property values, historic properties and places, cultural and environmental resources, tourism, the rural and visual character of the communities, and the scenic value of U.S. Highway 76. There also were concerns about the large number of properties crossed and the proximity of the transmission line to homes. In addition, consultation with GDOT resulted in the conclusion by GTC that obtaining the necessary permits for constructing a transmission line along U.S. Highway 76 would be improbable because of the scenic qualities of this highway. The scenic qualities of this highway would trigger GDOT Permit requirements for a new use of the road right-of-way. This permitting constraint, coupled with the public opposition to the alternative, led GTC to conclude that Alternative Corridor B would be an impractical selection.

3.3.2.3 Alternative Corridor C

The next transmission line corridor that would use existing public road rights-of-way, predominantly private lands, and some National Forest System land is referred to as Alternative Corridor C (Figure 6). This is an approximately 6.33-mile corridor that extends from a tap point at an existing transmission line approximately two miles south of the community of Tiger to a terminus near the intersection of Charlie Mountain Road and U.S. Highway 76. This alternative is located on private property and within the GDOT right-of-way for U.S. Highway 76. This alternative would have required a Special Use Permit from the USFS.

The same data assessment and screening criteria that were applied to the previous corridors were applied to Alternative Corridor C. Taking all of these considerations into account, it was concluded that the constraints associated with Alternative Corridors C were too restrictive. There were overwhelming public concerns about the impacts of the transmission line on the communities of Tiger and Clayton. Specifically, the concerns related to potential impacts on the local agricultural economy, property values, historic properties and places, cultural and environmental resources, tourism, the rural and visual character of the communities, and the scenic value of U.S. Highway 76. There also were concerns about the large number of properties crossed and the proximity of the transmission line to homes. In addition, consultation with GDOT resulted in the conclusion by GTC that obtaining the necessary permits for constructing a transmission line along U.S. Highway 76 would be improbable because of the scenic qualities of this highway. The scenic qualities of this highway would trigger GDOT Permit requirements for a new use of the road right-of-way. This permitting constraint, coupled with the public opposition to the alternative, led GTC to conclude that Alternative Corridor C would be an impractical selection.

3.3.2.4 *Alternative Corridor E*

The next alternative that was identified that would use primarily National Forest System land is referred to as Alternative Corridor E (Figure 7). This is an approximately 6.33-mile corridor that extends from a tap point at an existing transmission line approximately two miles south of the community of Tiger to a terminus near the intersection of Charlie Mountain Road and U.S. Highway 76. A portion of this corridor (approximately 2.0 miles) near the terminus follows the same route as Alternative Corridor F, which will be discussed in the following section of this report. The corridor is wholly located on National Forest Service, except for a short section at the tap point.

A protected plant survey was conducted on this corridor between April and June, 2001. Because the exact route of Alternative Corridor E had not been selected at that time, a corridor of approximately 500 feet wide was surveyed to allow for shifts in the exact route. The survey revealed locations of several protected species, including Blue Ridge bindweed (*Calystegia catesbiana* var. *sericata*), Manhart sedge (*Carex manhartii*), spotted mandarin (*Prosartes maculatum*), naked-fruit rush (*Juncus gymnocarpus*), and Biltmore sedge (*Carex biltmoreana*). All of these locations are on the portion of the corridor that follows the same route as Alternative Corridor F.

An intensive archaeological survey was conducted on Alternative Corridor E in January 2001. The survey revealed five archaeological sites, all of which are prehistoric lithic scatters. Four of the sites were recommended to be ineligible for inclusion in the National Register, and the fifth site was recommended to be potentially eligible for inclusion.

The same data assessment and screening criteria that were applied to the previous corridors were applied to Alternative Corridor E. Because of potential impacts to protected plant species, it was concluded that this corridor would be an impractical selection.

3.3.2.5 *Alternative Corridor F*

The next alternative that was identified that would use primarily National Forest System land is referred to as Alternative Corridor F (Figure 7). This is an approximately 6.5-mile corridor that extends from a tap point at an existing transmission line approximately two miles south of the community of Tiger to a terminus near the intersection of Charlie Mountain Road and U.S. Highway 76. A portion of this corridor (approximately 2.0 miles) near the terminus follows the same route as Alternative Corridor E, which was discussed in the previous section of this report. The corridor is wholly located on National Forest Service, except for a short section at the tap point.

A protected plant survey was conducted on this corridor between April and June, 2001. Because the exact route of Alternative Corridor E had not been selected at that time, a corridor of approximately 500 feet wide was surveyed to allow for shifts in the exact route. The survey revealed locations of several protected species, including Blue Ridge bindweed,

Manhart sedge, spotted mandarin, naked-fruit rush, and Biltmore sedge. All of these locations are on the portion of the corridor that follows the same route as Alternative Corridor E.

An intensive archaeological survey was conducted on Alternative Corridor F in January 2001. The survey revealed six archaeological sites. Four of the sites are prehistoric lithic scatters that were recommended to be ineligible for inclusion in the National Register. Two of the sites are late 19th/early 20th century house sites. One of the house sites was recommended to be ineligible for inclusion in the National Register, and the other was recommended to be potentially eligible. In addition to these sites, a late 19th century railroad grade was found outside of Alternative Corridor F but near the corridor. This railroad grade was recommended to be potentially eligible for the National Register.

The same data assessment and screening criteria that were applied to the previous corridors were applied to Alternative Corridor F. Because of potential impacts to protected plant species and historical sites, it was concluded that this corridor would be an impractical selection.

3.3.2.6 Charlie Mountain Substation Site

In addition to alternative corridors for the transmission line, GTC considered alternative sites for the proposed substation. The first alternative considered was an approximately 16-acre site on private property near Charlie Mountain Road (Figure 8). This site was selected, in part, as an alternative to sites along U.S. Highway 76 that would fall under GDOT permitting constraints. In addition, the topography of the site was suited for building a substation.

An option was obtained by GTC to purchase private land near Charlie Mountain Road. Subsequently, however, GTC and its contractors completed a botanical survey of Alternative Transmission Line Corridor D that documented rare or unique forest resources and sensitive botanical communities along the centerline near where it would join the Charlie Mountain Road substation site. It was concluded that the site would present potentially significant impacts to rare or unique forest resources and sensitive habitat that could complicate the successful development or implementation of an Environmental Protection and Mitigation Plan.

As a result of this conclusion, GTC identified a second alternative substation site on a narrow strip of National Forest System land adjacent to U.S. Highway 76 (Figure 9). The property was surveyed and it was concluded that this alternative substation site would be feasible. Any impacts on the rare or unique forest resources and sensitive botanical communities on National Forest System land could be mitigated adequately. In addition, since this site is located outside of the GDOT right-of-way for U.S. Highway 76, it would not require scenic highway road right-of-way permits from the GDOT. Therefore, GTC decided to recommend this site as its preferred location for the proposed substation.

4.0 DETAILS OF THE PROPOSED ACTION ALTERNATIVE

4.1 Clearing and Construction

Tree removal within the management area would be done in a manner where most of the subcanopy and shrub species directly under the transmission line would be left standing. The farther away from the transmission line, the taller the trees are that would be left. Some felled trees in locations with easy access would be removed for salvage purposes, including firewood for local residents.

There would be a 50-foot buffer from the top of stream banks and a 30-foot buffer around wetlands. Within these wetlands and buffers, trees would be hand-cleared. If the trees fall outside of a stream channel, they would be left lying where they fall or would be moved to the edge of the management area, so as to avoid additional soil and vegetative disturbance. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. In addition, approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing one three-pole structure at the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would reduce the need for disturbing vegetation on the north side of Glassy Mountain.

Construction of the substation site would involve some grading and soil disturbance (Figure 10). Access to the substation would be provided by constructing one driveway on an existing old roadbed. Most of the vegetation on the site would be cleared, with the exception of some existing trees and shrubs along U.S. Highway 76, which would be maintained as a visual barrier between the highway and the substation, and some trees along the driveway. An approximately four-foot high retaining wall would be installed to stabilize the steep slope from the highway to the substation.

Because of the existing topography of the substation site, GTC has determined that it would be necessary to use off-site fill material to construct the site. The fill material would come either from an existing pit, from on-site soil-moving activities, or from new road construction activities associated with the transmission line. Appropriate BMPs would be implemented around the perimeter of the substation site to minimize erosion and sedimentation during construction.

Between the highway and the substation, an approximately eight-foot high, wooden privacy fence would be installed as a visual barrier. Existing trees between the fence and the highway would be preserved and shrub and vine species, including mountain laurel (*Kalmia latifolia*), possumhaw (*Ilex decidua*), and Virginia creeper (*Parthenocissus quinquefolia*), would be planted among the existing trees. Several tree species also would be planted, including white pine (*Pinus strobus*), eastern red cedar (*Juniperus virginiana*), scarlet oak (*Quercus coccinea*), chestnut oak (*Q. prinus*), red maple (*Acer rubrum*), and cherry laurel (*Prunus caroliniana*).

Species for planting on the substation site were selected with USFS consultation. Native species were selected to blend with the natural surroundings. Species also were chosen for their suitability to the growing conditions of the site, screening value, and aesthetic appeal. White pine was chosen as the primary planted tree because it grows quickly, reaches tall heights, and is resistant to southern pine beetle (*Dendroctonus frontalis*) infestations. Most white pines would be planted as seedlings, but 20 eight- to ten-foot specimens would be planted for an immediate visual barrier.

White pines commonly lose their lower branches over time. This is a normal occurrence brought about when the canopy becomes closed and sunlight is prevented from reaching the lower branches. As a visual barrier, however, it would be beneficial for the lower branches to remain on the trees as long as possible. By planting deciduous trees, such as oaks and red maples, among the pines, sunlight would be allowed to reach the lower pine branches in winter when deciduous trees lose their leaves. This would delay the loss of lower pine branches. Cherry laurel, a broadleaf evergreen, would be planted for a lower visual barrier when the white pines eventually lose their lower branches.

4.2 Erosion and Sedimentation Control

GTC would develop an ESPCP and would follow the plan during construction, operation, and maintenance of the substation, transmission line, and access roads, and in the improvement and maintenance of existing USFS roads. The USFS and the Rabun County Erosion Control Officer would have the opportunity to inspect construction sites to ensure that the ESPCP is being followed properly. BMPs of erosion control would be employed, including the use of silt fences, hay bales, placement of broad-based dips in access roads to direct storm water runoff, and planting vegetation in areas susceptible to erosion. In areas where access roads would cross streams, the stream either would be piped under the road, or the streambed would be filled with large rip-rap stones to allow vehicles to cross the stream with minimal soil disturbance. Existing stone stream crossings would be reinforced and failing culverts would be replaced or enhanced. These actions would be taken in conformance with the conditions of Section 404 of the Clean Water Act.

There would be a 50-foot buffer from the top of stream banks and a 30-foot buffer around wetlands. Within these wetlands and buffers, trees would be hand-cleared and would be left lying where they fall if they fall outside a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. Also, double rows of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at the edge of the buffers. This would minimize erosion into the streams.

The transmission line management area would be developed in a manner that would minimize erosion. There would be minimal grading and no grubbing of tree stumps except at pole

locations. Canopy trees would be downed with basal cuts, leaving the soil mostly undisturbed.

Approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing two three-pole structures at the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would minimize sedimentation and erosion into Timpson Creek from the slope of Glassy Mountain.

An NPDES Permit would be obtained by GTC for the construction of the Proposed Action Alternative and all conditions of the permit would be followed. The NPDES Permit regulates the discharge of storm water from land-disturbance activities of five acres or more, and smaller parcels within developments of five acres or more (Georgia Soil and Water Conservation Commission 2002). Regulations for this permit require the preparation of an ESPCP, daily measurements of rainfall on the construction site, weekly inspections of established BMPs, and turbidity measurements of the sediment that potentially is introduced into streams from construction activities after certain levels of rainfall. If any of these inspections reveal inadequate BMPs or excessive turbidity in adjacent streams, prompt measures would be taken to correct the problems. Inspections, monitoring, and maintenance would be conducted by GTC and would be subject to review by the Georgia Environmental Protection Division and the USFS.

4.3 Pole Design and Configuration

The average span, or distance, between poles would be 650 feet. The minimum span would be 400 feet and the maximum span would be 900 feet, except on the north side of Glassy Mountain, where the span would be approximately 1,500 feet. The height above ground for the poles would be from 60 feet to 120 feet, depending upon existing ground elevation. The poles would be permanently installed in an upright position. The pole material would be a rust-colored weathering steel that would blend in with the natural background (Figure 11). Weathering steel is initially a black color when fabricated, but forms a brown, rust color when moisture comes in contact with the surface and the steel goes through wetting and drying cycles. This process, called oxidation, forms a patina barrier over a five- to ten-year period. However, after approximately one month from installation, the brown color is attained.

Two types of pole configurations would be used throughout the corridor. First, some locations would have a three-pole design (Figure 12A), which places each of the three energized wires on a separate pole, side-by-side in one horizontal plane, and places two non-energized wires over the energized wires in a similar manner. The three-pole design would allow for shorter poles, but would require a slightly wider management area. Second, some locations would have a one-pole design (Figure 12B), which places all four wires, one over the other, on the same pole, each in a separate horizontal plane. The configuration of the wires on the poles would be a *delta* configuration that would consist of two energized wires on one side of the pole, one energized wire on the opposing side of the pole, and a non-energized wire on the top of the pole. The one-pole design would allow for a narrower

management area, but would require taller poles. In addition, pole structures on the north side of Glassy Mountain would be modified to protect wildlife species from accidental electrocution.

All steel poles would be fabricated and shipped to the project in sectional lengths not to exceed 60 feet. This would result in reduction of soil disturbance and fewer modifications of road alignment of existing access roads. Shorter pole sections require less heavy equipment to haul and install the poles.

Exact pole locations presently are not known. Where possible, pole structures would not be placed near streams, in wetlands, in stream and wetland buffers, in floodplains, or near springs. Rather, the transmission line would span these areas.

4.4 Wire Configuration

Two sizes of wire would be used on the Proposed Action Alternative transmission line. First, a 336.4MCM ACSR 26/7 Strand Conductor would be used on all portions of the line except on the north side of Glassy Mountain. This wire is composed of 26 strands of aluminum alloy wire surrounding a core of seven steel strands. The outside diameter of the wire is 0.72 inch. Second, a 636MCM ACSR 26/7 Strand Conductor would be used on the north side of Glassy Mountain. This wire also is composed of 26 strands of aluminum alloy wire surrounding a core of seven steel strands, but has a larger diameter of 0.99 inch. The larger diameter would be required on the north side of Glassy Mountain to reduce the sway of the wire over the approximately 1,500-foot span.

4.5 Road Enhancement, Construction, and Maintenance

Grading, gravelling, and installing improvement measures that are specified in Forest-wide erosion protection Standards and Guidelines would improve selected existing roads within or near the Proposed Action Alternative (Figure 13). These activities would provide access routes for construction and maintenance purposes to all of the transmission structures. Also, they would provide secure routes of access for USFS personnel to areas of the Chattahoochee Forest that presently do not have easy access. The roads also could be used for hiking and biking trails. Several gates would be installed to control access, and parking areas would be provided near some of the gates. Temporary gates would be installed in several locations during construction to keep the construction site secure.

All roads would be graded and, where necessary, would be stabilized by covering the surface with a three- to four-inch layer of gravel. In addition, the most commonly used improvement method would be the placement of broad-based dips in the roads. These dips would route water runoff to the downhill side of the roads in sloped sections of the road, thereby reducing erosion. In areas where access roads would cross streams, the stream either would be piped under the road, or would be filled with large rip-rap stones to allow vehicles to cross the

stream with minimal soil disturbance. Existing stone stream crossings would be reinforced and failing culverts would be replaced or enhanced. Improvements also would be made on existing culverts that are not failing but are in need of repair. If temporary crossings would be needed during construction, at-grade stone crossings would be used, if possible.

There are some areas where existing roads cut through a bank or low area, exhibiting an upslope on both sides of the road. In these areas, both sides of the road would be graded evenly and the soil from the grading would be used to raise the elevation of the roadbed. Forest-wide erosion protection Standards and Guidelines and Georgia State BMPs would be implemented to maintain water quality and to minimize erosion and sedimentation. These measures would include installing a double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, at each buffer boundary and installing silt fences and hay bales in areas that are susceptible to erosion. Where possible, stream crossings on the existing roads would be accomplished by placing stone-reinforced crossings at the present grade. Stone crossings eliminate sedimentation that would occur during culvert and stone installation and they minimize barriers to migrating aquatic species. Where stone-reinforced crossings are not practical, such as in areas where a culvert presently exists, water would be piped under the road via a culvert. If existing culverts are failing, new culverts would be installed.

Roads would be improved to a width of 16 feet. Many of the roads are already 16 feet wide, and simply would require that trees and other vegetation be removed. Vegetation would be cleared from the roadbed, from the cut slope on the uphill side of the road, and from a horizontal distance of five feet from the edge of the downhill side of the road.

In areas where the existing roads are not already 16 feet wide, the uphill side of the slope would be cut to achieve the 16-foot width. The soil taken from the cut either would be hauled away or used to improve the roadbed.

There are several areas where the existing roads have been cut through a bank or a low, depressional area. These areas exhibit an upslope on both sides of the road. In these areas, the slopes would be cut evenly on both sides. The soil that is removed from the slopes would be used to raise the height of the road, and to outslope the road for better drainage, as needed.

Most of the roads would follow the cleared area for the transmission line and would branch off of the existing roads to access specific structure locations. However, three new access roads, totaling approximately 4,680 feet long (3,700 feet of which would be located on National Forest System property), would be constructed because the contour of the ground in these areas would not allow the new roads to follow the transmission line (Figure 14). In these cases, the new roads would be constructed outside of the transmission line management area. The new roads would be cleared by cutting into the uphill side of slopes to achieve a width of approximately 16 feet. The soil that would be removed from the newly cleared areas either would be used to improve the existing roads or would be hauled away from the management area. The same specifications as described for road improvements would be used in the construction of the new road.

4.6 Management Area Maintenance

The USFS understands that GTC would commit to using only hand-clearing and mechanical vegetation removal during the construction, operation, and maintenance of the Proposed Action Alternative Substation Site and Transmission Line Corridor. No herbicides would be used on the maintenance area.

5.0 AFFECTED ENVIRONMENT

5.1 Physical Resources

5.1.1 Topography and Geomorphology

The proposed substation and associated transmission line are located within the Blue Ridge Physiographic Region, which occupies the northeastern portion of Georgia (Georgia Museum of Natural History and Georgia Department of Natural Resources 2000) (Section 3 of Appendix A). (Appendices are located at the end of this document.) This area consists of an irregular sequence of mountains, ridges, and basins. Elevations range from 1,600 to 4,700 feet above mean sea level. The Blue Ridge Mountains and the Cohutta Mountains form most of this region, with the McCaysville Basin separating them. Portions of the Piedmont Geomorphic Province extend into the Blue Ridge Region at approximately 1,700 feet in elevation. Above this elevation, there is a distinct increase in the diversity of the vegetative communities.

The proposed site is also located within the Blue Ridge Geomorphic Province which is located within the Blue Ridge Physiographic Region. The Blue Ridge Geomorphic Province was formed from tectonic faulting and uplift of resistant, crystalline bedrock into a relatively narrow band of highly metamorphosed, somewhat parallel mountain ranges (U.S. Forest Service 1994). The bedrock of this region is overlain by a veneer of residuum on the ridges and mountaintops, colluvium on the slopes, and alluvium materials in the valleys. The bedrock is composed primarily of Proterozoic metasediments (quartzite, gneiss, and schist) and meta-igneous rocks (granite, rhyolite, basalt, and gabbro). Steep, forest-covered slopes cut by numerous stream valleys characterize this province. The valleys of the major rivers include broad, gently rolling areas, as well as narrow gorges.

5.1.2 Soils

The dominant soil type for the proposed substation site is the Bradson Fine Sandy Loam (U.S. Department of Agriculture and University of Georgia 1981) (Section 3 of Appendix A). This soil has a high potential for erosion. Bradson soils are found on toe slopes of mountains and in coves or saddles of mountain ranges. The Bradson Fine Sandy Loam is a deep, well-drained soil that has a brown surface layer of approximately six inches. The subsoil is predominantly red clay to a clay loam and extends to a depth of approximately 67 inches. Below the subsoil depth there is soft weathered bedrock known as saprolite. This material extends to a depth of 90 inches or more below the surface.

The dominant soil types for the proposed transmission line area are the Hayesville Fine Sandy Loam and the Saluda Association (U.S. Department of Agriculture and University of Georgia

1981). Both of these soil types are associated with steep slopes and have a high potential for erosion. Hayesville soils are found on broad ridge tops and on hillsides of intermountain plateaus. The Hayesville Fine Sandy Loam is a deep, well-drained soil that has a dark brown surface layer of approximately two inches. The subsurface layer is yellowish brown and extends to a depth of approximately eight inches below surface. The subsoil is predominantly red and extends to a depth of 55 inches. This soil is fine sandy loam to a sandy loam with the subsoil predominantly clay to a clay loam. Similar to Bradson soils, saprolite lies below the subsoil layer. Saluda Association soils are found on narrow ridge tops and sides of mountains. The Saluda Association typically has a brown fine sandy loam surface layer approximately five inches thick. The subsoil is yellowish red sandy clay loam to a depth of approximately 11 inches. The subsoil layer is underlain by highly weathered bedrock materials of granite, gneiss, or schist that extends to a depth of five feet or more.

5.1.3 Water Resources

5.1.3.1 Surface Water

A survey was conducted to determine if, within the Proposed Action Alternative Corridor, streams and wetlands exist that are under the jurisdiction of the U.S. Army Corps of Engineers (ACOE) (Section 4 of Appendix A). Impacts to these potentially jurisdictional areas would require a permit from the ACOE. The surveys were conducted in accordance with the *1987 Army Corps of Engineers Wetlands Delineation Manual* (Federal Manual) (U.S. Army Corps of Engineers 1987), taking into account the multiple parameters of wetland determination, including vegetation, soils, and hydrology. To be classified as a jurisdictional wetland, an area must contain all three parameters.

The method used for identifying potentially jurisdictional areas was the Routine Determination. This method is outlined in the Federal Manual and involves a qualitative collection of data, which includes evaluating remote-sensing data, such as U.S. Geological Survey topographical maps, aerial photography, and county soil survey maps to identify potential jurisdictional wetlands. Later, field surveys are conducted to determine the actual presence and extent of potentially jurisdictional areas.

There were 14 potentially jurisdictional streams and four potentially jurisdictional wetlands within the Proposed Action Alternative Corridor. In addition, the proposed improved and/or new access roads cross 22 potentially jurisdictional streams and four potentially jurisdictional wetlands. (Two of these potentially jurisdictional wetlands are the same ones that are crossed by the Proposed Action Alternative Corridor.) The potentially jurisdictional streams are classified as riverine systems that either are lower perennial, upper perennial or intermittent. They range in size from two to 15 feet wide, except for Timpson Creek, which is approximately 30 feet wide. The potentially jurisdictional wetlands are classified as forested systems and range in size from 0.030 to 0.090 acres.

5.1.3.2 Watershed Analysis

The Proposed Action Alternative Transmission Line Corridor would cross three watersheds within the Chattahoochee National Forest (Section 5 of Appendix A). The Timpson Creek Watershed (6,925 acres) and the Stonewall Creek Watershed (4,478 acres) are the larger of the three. The Upper Tiger Creek Watershed (861 acres) is significantly smaller and has very few streams on National Forest System land. Stream habitat assessments, fish sampling, and benthic macroinvertebrate sampling were conducted on the two larger watersheds. Watershed impact assessments were conducted for all three watersheds (Section 5 of Appendix A).

The methods used in conducting the watershed analysis (Section 5 of Appendix A) are based on professional experience and judgment. No modeling or numerical analyses were performed, nor are any anticipated during the course of the project. Rather, the emphasis is on understanding the general impacts to the watershed.

5.1.4 Visual Quality

The Chattahoochee National Forest landscapes have value as scenery. To quantify this value, the USFS developed a classification of visual resources. This classification system is called the *Scenery Management System* (SMS), and can be found in “Landscape Aesthetics, a Handbook for Scenery Management”, U.S. Department of Agriculture Handbook #701 (U.S. Forest Service 1995). This system was used for the inventory and analysis of the Chattahoochee National Forest, completed in 1998. Scenic Classes were the outcome of this inventory and are used to compare the value and importance of scenery on national forests with the value of other resources, such as timber, wildlife, old-growth forests, and minerals.

The components of Scenic Classes are Scenic Attractiveness and Landscape Visibility (U.S. Forest Service 1995). Scenic Attractiveness determines the relative scenic value of lands within a particular Landscape Character (e.g., the Blue Ridge Mountain Landscape Character). Scenic Attractiveness is the primary indicator of the intrinsic scenic beauty of the landscape and the positive responses it evokes in people. It helps to determine what landscapes are important for scenic beauty based on commonly held perceptions of the beauty of landform, vegetation pattern and composition, surface water characteristics, land use patterns, and cultural features.

Scenic Attractiveness is divided into three classes: Class A, Distinctive; Class B, Typical; and Class C, Indistinctive. These classes are mapped with regard to the existing Scenic Integrity, or the degree of intactness and wholeness of the Landscape Character. Human alterations may raise or maintain the Scenic Integrity of an area, but more often lower it, depending on the degree of deviation from the character valued for its aesthetic appeal. A landscape with very minimal visual disruption is considered to have high Scenic Integrity. The range may go from Very High to Unacceptably Low.

Landscape Visibility is composed of two components (U.S. Forest Service 1995). First is the *Human Value*, or the relative importance to the public of various areas of scenery. This is an objective determination given by an observer viewing an area of scenery from a given location. Second is the *Relative Sensitivity* of various areas of scenery, which is based on the distance of the observer from the scenery.

For the SMS, a constituent analysis was completed for the *Human Value* and the *Relative Sensitivity* of scenery. This analysis was used to determine the relative importance of sites, travel ways (i.e., linear concentrations of public viewing, including highways, roads, trails, rivers, and railroads), special places, and other areas. The relative importance is expressed as a Concern Level. A Concern Level is assigned as values of 1 (High), 2 (Medium), or 3 (Low). Scenery Areas and Distance Zones then are mapped from the Concern Levels to determine the relative sensitivity of scenes based on their distance from an observer. These zones are identified as Foreground (up to 0.5 mile from the observer), Middleground (between 0.5 and four miles from the observer), and Background (extending from between four miles from the observer to the horizon).

Using the data gathered and mapped for Scenic Attractiveness and Landscape Visibility, a numerical Scenic Class rating is assigned to all lands (U.S. Forest Service 1995). These ratings range from 1 to 7 and indicate the relative scenic importance, or value, of discrete landscape areas. Mapped Scenic Classes are used during forest planning to compare the value of scenery with other resources, such as timber, wildlife, or minerals. Generally, Scenic Classes 1 and 2 have high public value; Classes 3, 4, and 5 have moderate value; and Classes 6 and 7 have low value.

The Chattahoochee National Forest has determined the Scenic Classes for the landscapes within its boundaries. The Proposed Action Alternatives for the substation site and the transmission line corridor are located in areas that are classified as Scenic Classes 1, 2, and 3 (Figure 15).

The visual quality of the Proposed Action Alternatives for the substation site and the transmission line corridor may best be understood by reviewing three documents produced by the staff of the Chattahoochee National Forest. First, the document *Ecological Unit Description of the Blue Ridge Mountain Section* (Appendix B) describes the Landscape Character of the area. Second, the document *Cultural Ecology: Southern Blue Ridge Mountains Subsection* (Appendix C) describes the existing land uses of the area. Third, the document *Existing Landscape Character: Southern Blue Ridge Mountains Subsection* (Appendix D) describes the more immediate landscape character of the area.

The Chattahoochee National Forest, in general, is typical of most National Forest System land that is located in mountainous areas (Appendix D). These areas are characterized by a pattern of landownership where the private land is located in the valleys and the National Forest is located on the ridges and mountains above the valleys. The land on the National Forest typically is forested and natural-appearing, with some modified landscapes. The

modifications to the landscapes along major roads typically are kept to a minimum, leaving the areas as a naturally evolving and natural-appearing landscape.

Distance Zones along the Proposed Action Alternative corridor would be measured primarily from travel ways, such as primary highways and secondary roads. The majority of the Distance Zones found along the corridor would be in the Foreground category. Approximately one mile of the corridor would fall into the Middleground category. The 1,500-foot span on the north side of Glassy Mountain would be in the Foreground of U.S. Highway 76, which is a primary travel way of regional importance for tourists to Rabun County. In addition, U.S. Highway 441, near the intersection of Stonewall Creek Road and Forest Road 20, would have a Foreground view of the southeastern portion of the proposed corridor. The remainder of the corridor would be in the Foreground or Middleground of secondary travel ways with less vehicular traffic than the primary travel ways. These secondary travel ways are locally important for travel associated with recreation and tourism.

Scenic Attractiveness along the Proposed Action Alternative Corridor has been inventoried as Class B, Typical. Scenic Integrity in the area is considered to be Moderate. These classifications refer to the fact that the valued Landscape Character of the area has been slightly altered by human activity. Noticeable deviations must remain visually subordinate to the Landscape Character being viewed.

One area of distinctive visual quality is a waterfall that is located in the general vicinity of the Proposed Action Alternative Corridor. The base of the waterfall is located approximately 375 feet west of the centerline of the corridor. This area is considered of distinctive visual quality for its plant communities that are associated with the area, as well as for the general aesthetic appeal of waterfalls.

5.2 Biological Resources

5.2.1 PETS Species

The Chattahoochee National Forest maintains a list of Proposed, Endangered, Threatened, and Regional Forester Sensitive (PETS) species. When actions are taken on National Forest System land, a biological evaluation (BE) is conducted to document potential effects of the actions on PETS species.

A Biological Evaluation (BE) was conducted to determine the potential effects of the proposed substation and transmission line on PETS (Appendix E). This BE also was conducted to ensure that the USFS does not support actions that would contribute to loss of viability of any native or desired non-native plant or animal species. The BE contributes to meeting viability objectives by focusing analysis on those species most at risk of losing viability, namely PETS species, and on ensuring that their habitat needs are met.

Species evaluated in the BE were selected because they have known occurrences within Rabun County and/or their suitable habitat is present in or near the project corridor. The species list was developed by the following steps: (1) consulting Georgia Natural Heritage Program (GNHP) records, (2) consulting the USFS plant inventory data, (3) consulting University of Georgia, USFS, and Georgia Department of Natural Resources aquatic inventory records, (4) reviewing U.S. Fish and Wildlife Service lists for potential species in Rabun County, (5) conducting rare species inventories, and (6) reviewing literature for known species occurrences.

There are 107 PETS species (26 federally-listed and 81 sensitive species) on the Chattahoochee National Forest PETS list. All PETS species were initially considered for the purposes of this evaluation. Of the initial 107 PETS species considered, 83 were eliminated from further consideration because either the ranges of the species do not extend into the project area or there was a lack of suitable habitat for the species in the project area.

Surveys for PETS plants were conducted between May 2000 and October 2001. No PETS plants were identified in the project corridor. One area of suitable habitat for rare plants was located on the northern slope of Glassy Mountain. To avoid this rich area, the proposed substation site was relocated and the project corridor was shifted accordingly to the east.

In addition to botanical surveys, benthic macroinvertebrates and fish surveys were conducted in watersheds transected by the proposed transmission line (Section 2 of Appendix A). These surveys began during April and May 2002. There were no aquatic PETS species identified in these surveys.

There were no known locations of PETS species identified in USFS records or in GNHP databases for the project corridor. The following species have the potential to occur in this portion of the Chattahoochee National Forest based on habitat requirements, distribution, and known occurrence records: Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Diana fritillary butterfly (*Speyeria diana*), Georgia beloneurian stonefly (*Beloneuria georgiana*), Margarita river skimmer (*Macromia margarita*), Edmund's snaketail (*Ophiogomphus edmundo*), Appalachian snaketail (*Ophiogomphus incurvatus*), Oconee stream crayfish (*Cambarus chaugaensis*), highscale shiner (*Notropis hypsilepis*), and Biltmore sedge (*Carex biltmoreana*).

5.2.2 Locally Rare Species

The Chattahoochee National Forest also maintains a list of locally rare species (Appendix E). Species that are considered locally rare may not be listed on state or federal protected species lists or on PETS lists, but are considered rare within the Chattahoochee National Forest. Species were selected for review if they have known occurrences within Rabun County and/or their suitable habitat is present in or near the project corridor. The species list was developed by the following steps: (1) consulting the National Plants Database records, (2) consulting the

USFS plant inventory data, (3) consulting University of Georgia, USFS, and Georgia Department of Natural Resources aquatic inventory records, (4) conducting rare species inventories, and (5) reviewing literature for known species occurrences.

There are 133 species (50 faunal and 83 floral species) listed on the Chattahoochee-Oconee National Forest 2002 Locally Rare Species List. All locally rare species were initially considered for the purposes of this evaluation. Of the initial 133 locally rare species considered, 66 were eliminated from further consideration because either the ranges of the species do not extend into the project area or there is a lack of suitable habitat for the species in the project area.

During project-level inventories, five locally rare plant species were identified within the Proposed Action Alternative corridor. Most of these plants were located on the northern slopes of Glassy Mountain. To avoid this rich habitat and associated rare plants, the proposed substation site was relocated and the transmission line corridor was shifted accordingly to the east. The benthic macroinvertebrates and fish surveys revealed no locally rare aquatic species within the proposed project area.

5.2.3 Management Indicator Species

The National Forest Management Act requires National Forests to preserve and enhance the diversity of plants and animals consistent with overall multiple-use objectives. To achieve this goal, the Chattahoochee National Forest, in cooperation with the GDNR, chose Management Indicator Species (MIS) (U.S. Forest Service 2000) to represent other species preferring similar habitat conditions. An MIS is a plant or animal that, by its presence in a certain situation, indicates the habitat conditions for many other species. They and/or their habitats are used to monitor the implementation of forest management activities and the related effects on population viability of all native and desirable nonnative plants and animals. Each MIS is monitored by tracking both population and habitat data. Population trends are monitored over time to provide a measure of MIS population status. Habitat data is monitored by classifying habitat types based on individual habitat components (e.g., grasses and forbs, shrubs and seedlings, mature hardwood). Each habitat type may have a wide range of plant and animal species. Many of the MIS are associated with more than one of these forest wildlife habitat communities.

The Chattahoochee-Oconee National Forests list of MIS includes game terrestrial species; game fishes; endangered, threatened, or sensitive species; fauna and flora with limited distributions; and fauna whose numbers reflect major vegetative conditions.

5.2.4 Raptors and Other Large Avian Species

Raptors are birds of prey, such as hawks, falcons, owls, and vultures (Anderson 1991). Because they are large, highly visible, and at the top of the food chain, they often require special management.

One area of management concern is in the prevention of raptor electrocution by utility systems. All North American utility structures have at least one wire that carries electricity and one neutral wire that does not carry electricity (Raptor Protection Video Group 2000). Raptors and other large birds often use utility structures for perches. When these birds come in contact with the wires in certain ways, they can be electrocuted.

There are three ways for large birds to be electrocuted by transmission lines (Raptor Protection Video Group 2000). First, a bird can simultaneously touch an energized wire and a neutral wire. Second, it can simultaneously touch two energized wires. Third, it can simultaneously touch an energized wire and any other piece of hardware or equipment on a pole that is bonded to the earth through a ground wire. Because of their large size, raptors and other large bird species are more at risk of coming in contact with transmission lines in these ways. Section 7.8 of this report addresses the site-specific mitigation measures for the protection of raptors and other large avian species.

In addition to raptors, a common raven (*Corvus corvax*) has been observed in the area of the Proposed Action Alternative on several occasions. This is another large bird species that is at risk of coming in contact with transmission lines.

5.2.5 Old-Growth Forests Analysis

There is a possibility that the portion of the forest within the Proposed Action Alternative corridor qualifies as “old-growth forest,” as defined by the USFS “*Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Regions: Report of the Region 8 Old-Growth Team*” (USFS Old-Growth Publication) (U.S. Forest Service 1997). To be defined as such, the area must meet all of the following criteria:

- The minimum average age of the oldest existing age class within the area must be at least 140 years;
- There must be greater than, or equal to, 40 square feet per acre (ft²/acre) of basal area within the stand;
- There must be six to ten trees per acre that are greater than, or equal to, 30 inches in diameter-at-breast-height (DBH) (approximately four feet high); and
- Human-caused disturbances must not have altered the area’s vegetative structure.

Initially, DBH measurements of selected dominant trees were taken and stand structures were evaluated throughout the Proposed Action Alternative corridor to determine if potential old-growth forests exist within the management area (Section 6 of Appendix A). This preliminary review revealed only one study area, approximately four acres in size, that warranted additional study (Figure 16). Within this defined area, several parameters were

measured. First, the DBH was measured for all dominant trees, all standing dead trees, and all fallen trees. Dominant trees and standing dead trees were measured by using a special DBH measuring tape and recording the DBH rounded to the nearest inch. The DBH of fallen trees was measured by visual estimates. Second, tree age was determined for approximately one-third of the dominant trees by taking approximately eight-inch increment cores from sample trees; counting the annual growth increments for each tree; rounding the actual length of each core to the nearest one-tenth of an inch; and dividing the number of annual growth increments for each tree by the actual length of the core. The approximate age then was determined by multiplying the product of this calculation by the radius of the tree (one-half of the DBH) to determine the approximate age. Third, the basal area of the study area was determined by using a 10-factor prism at four selected points within the area. Fourth, general notes were taken about the vegetative structure of the area to determine the forest community type, as defined by the USFS Old-Growth Publication.

The tree cover in the study area consists of several species, including sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), eastern hemlock (*Tsuga canadensis*), yellow poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), yellow birch (*Betula lenta*), yellow buckeye (*Aesculus flava*), red maple (*Acer rubrum*), and basswood (*Tilia americana*). According to the USFS Old-Growth Publication, yellow buckeye and basswood are considered indicator species for a mixed mesophytic forest type. The study area is a highly productive, mesic cove with a northwest-facing slope. In addition, the area is defined as “all-aged,” meaning that it contains trees of many different ages. There are at least three distinct canopy layers throughout the area.

Two of the four old-growth criteria are met for the study area. First, the basal area is 98 ft²/acre. Second, human disturbance, which includes stumps from logging activities in the 1950s, a skid trail cut into the side of a hill, and the remnants of a still near Timpson Creek, were determined not to have altered the vegetative structure of the study area. Two old-growth criteria, however, are not met. First, the dominant trees of the study area average only 117 years in age. Second, the area contains only 1.2 trees per acre with a DBH greater than, or equal to, 30 inches. Therefore, it was determined that the study area is not an existing old-growth forest.

The USFS Old-Growth Publication defines “Possible Old-Growth Forests” as those that meet one to three of the old-growth criteria. These areas have the potential to become old-growth forests if they are managed so as to meet all four old-growth criteria in the future. By this definition, the study area qualifies as a Possible Old-Growth Forest. Section 7.9 of this report addresses the site-specific management objectives for this Possible Old-Growth Forest.

5.3 Cultural Resources

In late 2000 and early 2001, a Phase I intensive archaeological survey was conducted on National Forest System land within the Proposed Action Alternative corridor (Appendix G). The survey was limited to National Forest System land because access was not available at

that time on private property within the Proposed Action Alternative corridor. Also, since the exact route for the Proposed Action Alternative had not been established, a wide corridor (approximately 500 feet) was surveyed.

The survey consisted of a literature review of archival cultural resources information for the area, a field survey consisting of shovel-tests, and a site evaluation to determine the eligibility for inclusion in the National Register. The survey identified one potentially eligible site within the 500-foot-wide corridor. The site is a prehistoric lithic scatter that lies in an area of mature, mixed hardwoods adjoining the border to the National Forest System land. It was recommended at the time of the survey to design the Proposed Action Alternative to avoid the site.

In July 2001, an archaeological consultant conducted an intensive archaeological resources survey on the Proposed Action Alternative substation site adjacent to the south side of U.S. Highway 76 (Appendix F). The survey consisted of background research of the State Site Files database, maintained by the Department of Anthropology, University of Georgia, followed by a field survey.

One site was encountered during fieldwork. The site is a historic remnant of the Hiawassee and Clayton Road. It was recommended that the site is ineligible for the National Register.

By April 2002, the precise route had been selected for the Proposed Action Alternative. Most of the route is within the 500-foot wide corridor surveyed in the initial survey, but portions fall outside of the corridor. Also, by this time, access was available for the private property within the Proposed Action Alternative corridor. Therefore, an additional survey was conducted of the private property and of the portions of the proposed route that fall outside of the initial survey area (Appendix H). In addition, the corridors for all existing and proposed new access roads were surveyed.

The April 2002 survey identified no eligible or potentially eligible archaeological sites within the Proposed Action Alternative corridor. The final route of the Proposed Action Alternative avoids the potentially eligible site identified in the previous survey, so no Phase II archaeological survey was required. In addition, the latter survey revealed one archaeological site, but it has been recommended to be ineligible for listing in the National Register.

In addition to the survey of the Proposed Action Alternative corridor, Historic Preservation Consulting conducted a historic resources evaluation of the Area of Potential Effect (APE) of the Proposed Action Alternative (Appendix I) to determine the National Register eligibility of resources within the APE. The APE for the Proposed Action Alternative is defined as the maximum distance from where the proposed substation and transmission line would be visible (approximately 1,500 feet). The survey concluded that no National Register-eligible resources are present within the APE. Therefore, the Proposed Action Alternative would have no effect on historic resources within the APE.

5.4 Socioeconomic Environment

5.4.1 Demographics

Approximately 1,885,000 people live within a 50-mile radius of the City of Clayton (Personal communication, Ms. Rhonda Lunsford, President, Rabun County Chamber of Commerce). According to 1990 Census data, approximately 20 percent of the population of Clayton and 4 percent of the population of Tiger are minority.

Many of the homes in Rabun County are second homes, meaning that they are not lived in year-round but are used as vacation homes (Personal communication, Ms. Rhonda Lunsford). Many of these homes are around Lakes Burton, Rabun, Seed, Tallulah, and Tugaloo.

5.4.2 Land Use

Approximately 63 percent of the land in Rabun County is owned by the National Forest System (Personal communication, Ms. Rhonda Lunsford). Approximately 7 percent is owned by Georgia Power Company and approximately 4 percent is owned by the State of Georgia. Private individuals own the remaining 26 percent.

Property values in portions of Rabun County have increased in recent years (Personal communication, Ms. Rhonda Lunsford). Properties around Lakes Burton, Rabun, Seed, Tallulah, and Tugaloo have experienced a more rapid increase in value than those in other parts of the County. For example, lots around the Clayton and Tiger areas range in price between \$25,000 to \$175,000, while lake lots range in price between \$600,000 to \$1.5 million (Personal communication, Mr. David Suttles, Real Estate Appraiser, Suttles and Associates Real Estate Appraisers). Total real estate sales in the County in 2000 were approximately \$104 million (Personal communication, Ms. Rhonda Lunsford).

Much of the private property in Rabun County is used for agriculture (Personal communication, Ms. Rhonda Lunsford). Primary crops include cabbage, apples, and vineyard grapes.

5.4.3 Recreational Resources

In 2001, over \$100 million in gross taxable sales in Rabun County came from tourism (Personal communication, Ms. Rhonda Lunsford). A large portion of these sales was related to the use of the recreational resources in the County, including horseback riding, kayaking, mountain biking, hiking, and camping.

Biking and hiking trails are important recreational resources on the Chattahoochee National Forest. Only one of these trails, referred to as the Stonewall Falls Mountain Bike Trail

(Figure 17), is located within the Proposed Action Alternative transmission line corridor. This trail is approximately 10 miles long and is crossed at several locations by the corridor.

6.0 ENVIRONMENTAL CONSEQUENCES

6.1 Physical Resources

6.1.1 Topography and Geomorphology

6.1.1.1 Proposed Action Alternative

There would be limited grading during construction at the Proposed Action Alternative Substation Site and during improvements of the existing USFS roads. This would result in only minor changes to the topography of those areas. In addition, the installation of poles along the Proposed Action Alternative corridor may require boring into the underlying bedrock. However, the poles would be permanently installed in an upright position, thereby resulting in only short-term effects on the geomorphology. Overall, the effects of the Proposed Action Alternative on the topography and geomorphology would be limited to the management area and would be minimal.

6.1.1.2 No-Action Alternative

The No-Action Alternative would not be expected to result in any geomorphological changes in the project area.

6.1.2 Soils

6.1.2.1 Proposed Action Alternative

The Proposed Action Alternative would require very little grading or road construction. The proposed substation would require some grading and soil disturbance; however, BMPs would be implemented, thereby minimizing erosion.

Because there would be minimal grading and no grubbing of tree stumps except at pole locations, erosion within the management area would be minimized. Canopy trees would be downed with basal cuts, leaving the soil mostly undisturbed. Relocating cut trees to the edge of the management area to create a natural sediment barrier would minimize potential erosion. Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed in steep areas along the down gradient side of

the management area. Additional silt fence and stone check dams would be installed within areas that may naturally convey storm water.

Installation of poles and guy wires within the management area would result in minimal effects to the soil resource, as these activities involve drilling of holes in specific locations with a negligible amount of soil movement or displacement. Installation of the three-pole structures, as compared to the effects of the single-pole structure installation, would result in additional impacts at the specific locations where this configuration is proposed, but the overall effects would still be minimal. The majority of the transmission line would use the single-pole design, resulting in less overall soil effects along the management area.

Within the project area, a 50-foot buffer from the top of stream banks would be established on each side of streams and a 30-foot buffer would be established around the entire perimeter of wetland areas. No soil-disturbing activities would take place within these buffers. A double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be placed outside the buffers. As an additional erosion and sediment barrier, vegetation within the buffers would be cut by hand and would remain where it falls if it falls outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank.

The existing USFS roads would be improved and used for construction and maintenance access on the proposed transmission line, thereby limiting the number of new roads to be constructed and minimizing additional soil disturbance. Improvements would be made by grading the existing roadbeds and, where necessary, placing a three- to four-inch layer of gravel on the newly graded areas. Also, broad-based dips would be installed in the roads to route storm water runoff to the downhill side of the roads. In addition, there would be approximately 2,200 feet of new road constructed. The new road would be cleared by cutting into the uphill side of slopes to achieve a width of approximately 16 feet. The soil that would be removed from the newly cleared areas either would be used to improve the existing roads or would be hauled away from the project area.

There are some areas where existing roads cut through a bank or low area, exhibiting an upslope on both sides of the road. In these areas, both sides of the road would be graded evenly and the soil from the grading would be used to raise the elevation of the roadbed. In steeply sloped areas, Type C or Type A silt fence, hay bales, and/or brush barriers would be placed on the downslope side of the graded area. Where possible, stream crossings on the existing roads would be accomplished by placing stone-reinforced crossings at the present grade. Stone crossings eliminate sedimentation that would occur during culvert and stone installation and they minimize barriers to migrating aquatic species. Where stone-reinforced crossings are not practical, such as in areas where a culvert presently exists, water would be piped under the road via a culvert. If existing culverts are failing, new culverts would be installed.

Construction at the substation site would involve some grading and soil disturbance. Most vegetation on the site would be cleared, with the exception of some existing trees and shrubs

along U.S. Highway 76, which would be used as a visual barrier between the highway and the substation, and some trees along the driveway. An approximately four-foot high retaining wall would be installed to stabilize the steep slope from the highway to the substation.

Because of the topography of the substation site, there would be more areas requiring soil to be added as fill material than areas requiring soil to be graded away. The fill material would come either from an existing pit, from on-site soil-moving activities, or from new road construction activities associated with the transmission line. Appropriate BMPs would be implemented around the perimeter of the substation site to minimize erosion and sedimentation during construction.

The stringent use of BMPs for the installation of the transmission line and improvements and construction of the access roads would result in only minimal changes to existing soil conditions. The substation site would be the only area to experience long-term changes to the soil characteristics. However, the use of BMPs would ensure that these changes would be confined to the site and would not affect Timpson Creek or the surrounding areas.

6.1.2.2 No-Action Alternative

The No-Action Alternative would not result in new changes to the existing soil characteristics throughout the management area. However, several factors presently are contributing to erosion along existing access roads. These factors include the steep slopes on the roads; the conveyance of storm water along some portions of roads; the absence of BMPs, such as sediment barriers, check dams, and culverts; and intensive use of these roads by the public. Under the No-Action Alternative, this erosion would continue until funding became available to address these problems.

Natural erosion occurs within the vegetated areas of the forest. Winds, precipitation, and steep topography are the primary contributing factors to this natural process. Weathering of bedrock below the existing soil also may cause natural erosion. These processes would continue to occur under both the Proposed Action Alternative and the No-Action Alternative.

6.1.3 Water Resources

6.1.3.1 Proposed Action Alternative

The Proposed Action Alternative corridor crosses 14 streams and four wetland areas that may be under the jurisdiction of the U.S. Army Corps of Engineers (Section 4 of Appendix A). Only two of the streams and two of the wetlands would be impacted as a result of construction or access. In addition, the proposed improved and/or new access roads cross 22 potentially jurisdictional streams and four potentially jurisdictional wetlands. (Two of these potentially jurisdictional wetlands are the same ones that are crossed by the Proposed Action

Alternative Corridor.) Implementation of Forest-wide erosion protection Standards and Guidelines and Georgia State BMPs would maintain existing water quality and minimize erosion and sedimentation.

The remaining 12 streams and two wetlands that are crossed by the Proposed Action Alternative Corridor would be spanned, resulting in no impacts to the potentially jurisdictional areas. Fifty-foot buffers for streams and 30-foot buffers for wetlands would be established in which no ground-disturbing activities would take place. Vegetation within the buffers would be cut by hand and would remain where it falls if it falls outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. If temporary crossings are needed during construction, at-grade stone crossings would be used, if possible. A double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at each buffer boundary. These measures would result in minimal impacts to water quality.

The Proposed Action Alternative also would lead to improvement of existing culverts and stream crossings on existing USFS roads that would be used as access to the proposed transmission line. Improvements would include the replacement of failing culverts and the improvements of existing culverts that are not failing but are in need of repair. Where possible, existing at-grade stone crossings would be maintained and enhanced with additional stone. Forest-wide erosion protection Standards and Guidelines and Georgia State BMPs would be implemented to maintain water quality and to minimize erosion and sedimentation. These measures would include installing a double row of Type C silt fence, or one row of Type C silt fence with woven wire reinforcement, at each buffer boundary and installing silt fences and hay bales in areas that are susceptible to erosion.

Several aspects of the Proposed Action Alternative and related control measures are significant to the project's overall impacts on the three watersheds that are crossed by the Proposed Action Alternative corridor. These aspects include the stabilization of access roads, the locations of pole structures in proximity to streams and wetlands, the cutting of canopy trees within the management area, and the channeling of storm water runoff from existing and proposed new access roads. These aspects of the Proposed Action Alternative and the mitigative measures that would be taken to reduce their impacts to the watersheds are discussed in Section 7.3 of this report, and in Section 5 of Appendix A.

6.1.3.2 No-Action Alternative

The No-Action Alternative would result in the continued integrity of the existing streams and wetlands along the Proposed Action Alternative corridor, as well as the overall integrity of the three watersheds that are crossed by the corridor. However, failing or degraded culverts and stream crossings along this corridor presently are compromising the water quality in these potentially jurisdictional areas. Without the selection of another alternative, the No-Action Alternative would not allow improvements to these failing or degraded structures and would

result in continued sedimentation and erosion. Therefore, the No-Action Alternative would result in the status quo and possible further degradation of water quality within the Chattahoochee National Forest.

6.1.4 Visual Quality

6.1.4.1 Proposed Action Alternative

The potential impacts of the Proposed Action Alternative on the visual quality of the Chattahoochee National Forest were analyzed. Graphic depictions were developed to show the estimated number of pole locations that would be visible from different areas of National Forest System land, specifically from the Scenic Classes that surround the Proposed Action Alternative substation site and the Proposed Action Alternative transmission line corridor. The graphics depict the viewsheds along the corridor during summer, when deciduous trees are fully leaved (Figure 18), and during winter, when deciduous trees have lost their leaves (Figure 19). In addition, the graphics depict the viewshed of the north side of Glassy Mountain, a Scenic Class 1 area, during summer (Figure 20) and winter (Figure 21).

It is expected that very few pole locations would be visible during the summer from the important Scenic Classes. With the exception of the areas directly adjacent to the management area, no portions of the Scenic Class 1 area on the north side of Glassy Mountain would be expected to have views of poles. Most of the areas that would be expected to have poles visible from them are near cleared roadways. During winter, it is expected that more pole locations would be visible because deciduous trees will have lost their leaves. The Scenic Classes 2 and 3 areas on the south side of Glassy Mountain would be expected to have an increase in the number of visible poles during winter. However, only the portions of the Scenic Class 1 area on the north side of Glassy Mountain that are directly adjacent to the management area would be expected to have views of poles during winter.

The Proposed Action Alternative would have some impacts on the visual quality of the Chattahoochee National Forest. However, none of the present Scenic Class designations would be expected to change. Several methods would be employed to minimize these impacts. First, in some areas, such as the north side of Glassy Mountain, the Proposed Action Alternative calls for shorter poles and a wider management area rather than having a narrower management area and taller poles. The height above ground for the poles would be from 60 feet to 120 feet, depending upon existing ground elevation. Second, poles would be made of weathering steel, which turns to a deep brown color after a period of being exposed to weather. Third, tree canopy cover throughout the corridor would be left standing where possible. For example, tree removal within the corridor would be done in a manner where most of the shrub species directly under the transmission line would be left standing. The farther away from the transmission line, the taller the trees are that would be left.

Although none of the present Scenic Class designations would be expected to change, the existing Scenic Integrity levels would be downgraded, making the area incompatible with the future proposed Scenic Integrity Objectives. The Scenic Integrity levels would be changed from Moderate, or appearing slightly altered, to Very Low, or heavily altered. Although deviations may strongly dominate the valued Landscape Character, they may not borrow from valued attributes, such as size, shape, edge effect and pattern of natural openings, vegetative type, or architectural styles within or outside the landscape being viewed. However, deviations must be shaped and blended with the natural terrain so that elements, such as unnatural edges, roads, landings, and structures do not dominate the composition.

The Proposed Action Alternative would present some deviations that are in direct opposition to the dominance elements of valued Landscape Character being viewed. For example, the proposed transmission line corridor presents a horizontal line in an otherwise vertical landscape above the tree line. However, these deviations would be minimized by locating the transmission line in areas so that it is not evident or is subdued to be visually subordinate to the landscape. In addition, the pole material would be a rust-colored weathering steel that would blend with the natural setting and be compatible with the architectural styles of a cultural landscape.

The Proposed Action Alternative corridor would have minimal impacts to the visual quality of the waterfall located near the corridor. Although it is located 375 feet from the centerline of the corridor, it is not located near any existing or proposed new access roads. Therefore, the area would not experience increased vehicular or hiking traffic that could lead to the degradation of the area and the loss of aesthetic quality.

6.1.4.2 No-Action Alternative

The No-Action Alternative would not impact the visual quality of the Chattahoochee National Forest. The Scenic Classes on National Forest System land would not change.

6.2 Biological Resources

6.2.1 PETS Species

6.2.1.1 Proposed Action Alternative

Construction of the Proposed Action Alternative would have no direct effects on PETS species within the Forest. Indirect effects to PETS species would be minimized by implementation of alternative construction techniques and stringent BMPs during construction and maintenance of the proposed transmission line. As a prelude to the implementation of BMPs, inventories have been completed to identify suitable habitat and

individual occurrences of PETS species. The inventories have included multiple field surveys, consultation with USFS biologists, and review of the GNHP records.

No known locations of PETS species were identified within the corridor during the inventories. One location of Biltmore sedge was found in the Chattahoochee National Forest, but is not within the management area and would not be affected by implementation of the project.

Indirect impacts would also be minimized by the retention of the subcanopy and shrub layer and the use of effective BMPs. However, construction of the Proposed Action Alternative would contribute to forest fragmentation. This indirect impact occurs when a once contiguous forest is divided. In the case of the Proposed Action Alternative, forested areas would be divided by the clearing of canopy trees in the management area. The primary concerns with forest fragmentation include bird brood parasitism, increased predation, and a reduction in contiguous habitat.

There is a possibility of increased brood parasitism and predation as a result of forest fragmentation. However, cutting only canopy trees and leaving the herbaceous subcanopy and shrub layers intact would minimize the effects of fragmentation. In addition, the cut trees would be left at the edge of the management area. This clearing method should minimize the potential increase in brood parasitism and predation by maintaining suitable groundcover.

6.2.1.2 No-Action Alternative

The No-Action Alternative would have no direct impact to PETS species in the Chattahoochee National Forest. All PETS would be expected to maintain their present listed status and to continue expected population trends.

6.2.2 Locally Rare Species

6.2.2.1 Proposed Action Alternative

Clearing of only canopy trees, the spanning of sensitive areas, and the implementation of BMPs would maintain suitable habitat for most locally rare terrestrial and aquatic faunal species throughout the corridor. In addition, locally rare faunal species have the ability to avoid construction activities of the Proposed Action Alternative, thereby avoiding direct impacts. Locally unique habitats have been identified by field reviews and would be avoided. Botanically rich areas, such as the north slope of Glassy Mountain, would be spanned, thereby avoiding impacts to sensitive habitat areas.

Construction of the Proposed Action Alternative may benefit some locally rare faunal species. The Proposed Action Alternative would create early-successional habitat, which would

indirectly lead to the enhancement of foraging and breeding habitat for several locally rare species.

Several species of locally rare birds require minimum forest stand sizes for breeding habitat. For example, the Canada warbler (*Wilsonia canadensis*) requires approximately 2,471 acres per bird (Hamel 1992). By leaving the subcanopy shrub and herbaceous layer intact, clearing for the line would minimize the fragmentation of any contiguous forests.

6.2.2.2 No-Action Alternative

The No-Action Alternative would result in the continued population trends of locally rare species in the project management area. Since the project area is in the extreme southern range for many locally rare species, population numbers of these species would not be expected to rise significantly. However, an indirect effect of the No-Action Alternative would be that the early-successional habitat related to the Proposed Action Alternative would not be created.

6.2.3 Management Indicator Species

6.2.3.1 Proposed Action Alternative

The Proposed Action Alternative corridor transects several habitat types, including mixed pine-hardwood, upland hardwood, cove hardwood, and planted pine forests (Section 2 of Appendix A). These habitats maintain the diversity of plants and animals found throughout the Chattahoochee National Forest. Many of the MIS are associated with more than one of these habitat types. Trends in the population status of MIS provide indices for all species and for the overall health of the forest.

Several techniques would be employed to minimize impacts to MIS during construction of the proposed substation and transmission line. In upland forested areas within the management area, canopy trees would be left standing where possible. For example, tree removal within the management area would be done in a manner where most of the subcanopy and shrub species directly under the transmission line would be left standing. The farther away from the transmission line, the taller the trees are that would be left. The understory would be left undisturbed. Opening the canopy would create early successional habitat that would allow soft mast-bearing shrubs to become established. This would be beneficial for MIS such as the black bear (*Ursus americanus*) and the eastern wild turkey (*Meleagris gallopavo*). It also would increase brooding habitat for species such as the ruffed grouse (*Bonasa umbellus*) and northern bobwhite (*Colinus virginianus*).

There would be some adverse impacts on some MIS from the construction of the Proposed Action Alternative. For example, cutting hard mast tree species would affect species such as

the gray squirrel (*Sciurus carolinensis*) and the white-tailed deer (*Odocoileus virginianus*). However, removing only the trees directly under the transmission line, at pole locations, and at new access road sites would leave some mast-producing species in the management area. This would minimize the impacts to MIS.

Impacts to aquatic MIS, such as the rainbow trout (*Onchorynchus mykiss*) and brook trout (*Salvelinus fontinalis*), would be minimized by employing BMPs to control erosion during construction, operation, and maintenance of the substation and transmission line. BMPs would include the use of silt fences and hay bales in areas susceptible to erosion. There would be a 50-foot buffer from the top of stream banks and a 30-foot buffer around wetlands. Within these buffers, trees would be hand-cleared and would be left lying where they fall if they fall outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. Also, double rows of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at the edge of the buffers.

6.2.3.2 No-Action Alternative

At the present, most MIS are listed as stable or increasing in the Chattahoochee National Forest. The No-Action Alternative would result in the continued stability of most MIS. A reduction in forest management may result in reduced soft mast production in the future (U.S. Forest Service 2000). This reduction could potentially affect the black bear and eastern wild turkey populations. Reduced availability of early successional habitat is attributed to the decline of such species as the ruffed grouse and northern bobwhite. This trend would continue with the No-Action Alternative; however, this alternative would have no adverse effects on MIS.

6.2.4 Raptors and Other Large Avian Species

6.2.4.1 Proposed Action Alternative

The Proposed Action Alternative would not be expected to cause impacts to local raptors or other large avian species. There are features of the Proposed Action Alternative that would minimize the likelihood that the line would electrocute these avian species. First is the fact that high voltage lines, such as the proposed 115 kV line, have large spaces between wires (eight feet or greater) and long insulators between wires and poles (approximately four to five feet). These features minimize the possibility of a large bird coming in contact simultaneously with more than one wire, or with a wire and a pole.

In addition to the inherent features of high voltage lines that would protect large birds, there are features specific to the Proposed Action Alternative that would give additional protection. First, the long span on the north side of Glassy Mountain has technical requirements that call

for a distance of 18 feet, rather than the typical 10 feet, between the energized wires and the non-energized wire. Second, insulators between wires and poles would be eight feet rather than the typical four-foot insulators used on 115 kV transmission lines. Third, also for technical reasons, the spacing between the energized wires on this portion of the line would be between 12 and 18 feet. These features would reduce the risk of electrocution.

An additional protection for birds flying on the north side of Glassy Mountain, not related to electrocution risks, is the reduction of flying hazards. Because of the long span in this area, technical requirements call for the three energized wires to be placed side-by-side in one horizontal plane, and the non-energized wire to be placed over the energized wires. This differs from the typical configuration of having all four wires placed one over the other, each in a separate horizontal plane. The configuration on the north side of Glassy Mountain would produce only two flying hazards, rather than four flying hazards that would be produced by the typical configuration.

6.2.4.2 No-Action Alternative

The No-Action Alternative would have no direct impacts on raptors or other large avian species in the Forest. All avian species would be expected to continue their present population trends. Selection of this alternative indirectly may limit the creation of early successional habitat. Many prey species of raptors, such as small mammals, favor this type of habitat.

6.2.5 Old-Growth Forests

6.2.5.1 Proposed Action Alternative

A preliminary field review of the Proposed Action Alternative corridor revealed only one study area, approximately four acres in size, with the potential of being classified as an Old-Growth Forest. A subsequent field study, however, determined that the area meets only two of the four criteria for this classification, which include a basal area of greater than, or equal to, 40 ft²/acre, and the absence of human activity that has altered the vegetative structure of the area. The two criteria that are not met include having a minimum average age of at least 140 years for the oldest existing age class of trees, and having six to ten trees per acre that are greater than, or equal to, 30 inches DBH. Therefore, the area is classified as a Possible Old-Growth Forest. For the area to become an old-growth forest in the future, the USFS must make a decision to manage the area to meet all four old-growth criteria. At present, no such decision for the area has been made.

The Proposed Action Alternative could impact the Possible Old-Growth Forest classification of the area. Tree-cutting activities could reduce the basal area of the study area, and could prevent the area from reaching the designated age for classification as an Old-Growth Forest.

Also, maintenance activities within the management area could alter the vegetative structure of the area.

6.2.5.2 No-Action Alternative

The No-Action Alternative would result in no impact to Old-Growth or Possible Old-Growth Forests. The Possible Old-Growth Forest within the Proposed Action Alternative corridor would continue to meet two of the four criteria for classification as an Old-Growth Forest.

6.3 Cultural Resources

6.3.1 Proposed Action Alternative

The Proposed Action Alternative would not have adverse impacts on cultural resources within the management area. A Phase I archaeological survey in late 2000 and early 2001, and a subsequent survey in April 2002, identified no archaeological sites within the final route of the Proposed Action Alternative that are eligible or potentially eligible for listing in the National Register.

6.3.2 No-Action Alternative

The No-Action Alternative would not have adverse impacts on the cultural resources on the Forest.

6.4 Socioeconomic Environment

6.2.1 Demographics

6.2.1.1 Proposed Action Alternative

The Proposed Action Alternative would not have effects on the demographics of Rabun County. Because the Proposed Action Alternative site for the substation and the Proposed Action Alternative Corridor D would primarily affect National Forest System land, the impacts to the local demographics would be minimal. In addition, the Proposed Action Alternative would benefit Rabun County by providing electric power to meet the demands of increased residential and commercial growth.

6.4.1.2 No-Action Alternative

The No-Action Alternative would not have direct effects on the demographics of Rabun County. However, the selection of this alternative could have adverse indirect effects on Rabun County by not allowing the present increases in residential and commercial energy needs to be met.

6.4.2 Land Use

6.4.2.1 Proposed Action Alternative

The Proposed Action Alternative would not have impacts on land use patterns in Rabun County. Since the majority of the Proposed Action Alternative transmission line corridor is on National Forest System land, land use on private property would only be minimally impacted. Because of mitigative actions that would be taken during and after construction, current land management in the Chattahoochee National Forest would not change.

6.4.2.2 No-Action Alternative

The No-Action Alternative would not directly affect land use patterns in Rabun County. However, the County could experience indirect effects if this alternative is selected. Without the development of the Proposed Action Alternative, the County could suffer from an unreliable electric energy supply. This could lead to power outages in the future, which could lead to a decrease in development capabilities in certain areas of the County.

6.4.3 Recreational Resources

6.4.3.1 Proposed Action Alternative

If the Proposed Action Alternative is selected, a portion of the 10-mile Stonewall Falls Mountain Bike Trail would be relocated to avoid impacts (Figure 22). The USFS staff has proposed relocation of the route, which would cross the Proposed Action Alternative corridor in fewer locations than the existing route. However, a final proposed reroute has not been selected. The USFS, with GTC support, would select any change, design, or development of routes for the location of a relocated trail.

The Proposed Action Alternative could affect recreational resources in the following ways: by altering or physically changing recreation areas, by conflicting with recreation area management policies or goals, by limiting accessibility to established areas, by increasing

accessibility to remote or sensitive areas, and by degrading the quality of the recreational experience. In some cases, the potential effects of the proposed project would result from visual effects on the scenic quality and natural appearance of the landscape as viewed from the recreational use area.

The proposed transmission line could impact the scenic quality of landscapes viewed by travelers along U.S. Highway 76. However, since the impact is dependent on the duration of the view, the impacts on U.S. Highway 76 would be less than the impacts to roadways that are paralleled by the proposed transmission line. One such area is located in the vicinity of Liberty Church. It is unclear how much this area would be impacted by the proposed transmission line as it would cross the Crunkelton Ridge area.

6.4.3.2 No-Action Alternative

The No-Action Alternative would not result in impacts to recreational resources in the Chattahoochee National Forest.

6.5 Secondary and Cumulative Impacts

6.5.1 Proposed Action Alternative

In order to minimize the effects of transmission line construction and operation on PETS species, alternative construction techniques and stringent BMPs would be implemented during construction of the Proposed Action Alternative. As a prelude to the implementation of BMPs, identification of suitable habitat and individual occurrences of PETS species has been completed for the entire project area (Section 2 of Appendix A). Multiple surveys for PETS aquatic species have been completed for the project area. USFS biologists have been consulted for possible locations of PETS species and their habitats within the Proposed Action Alternative corridor. The GNHP records also have been checked for possible known locations of PETS species.

No known locations of PETS aquatic species were identified. However, surveys revealed potential PETS aquatic species habitat. Where necessary, mitigation measures would be implemented to protect and maintain habitat for PETS and other desired species. These measures include leaving fallen trees at the edge of the management area where possible, sampling for aquatic PETS species within the affected watershed, replacing and/or enhancing existing stream crossings and culverts on USFS roads, and spanning the canopy of sensitive areas. These strategies would work together to minimize or avoid cumulative effects to PETS species and their habitats.

Benthic macroinvertebrate and fish sampling were conducted in the streams of two of the three potentially affected watersheds (Section 5 of Appendix A). One watershed could not be

sampled because of lack of access for the USFS to streams on private property. Also, an assessment of stream habitat on 5.2 miles of additional streams in the project area watersheds was conducted to determine baseline characteristics of the potentially affected watersheds.

The results of these surveys provide a baseline for measuring the viability of aquatic habitats and possible PETS species in those habitats. Forest-wide erosion protection Standards and Guidelines and State of Georgia BMPs would ensure the continued viability of these habitats. The BMPs that would be employed include using existing USFS access roads for construction; clearing only canopy trees in most areas; spanning sensitive areas; leaving downed trees where they fall; hand-clearing trees in the 30-foot wetland and 50-foot stream buffers; installation of double row Type C silt fencing, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, within buffer areas; and replacing or reinforcing existing USFS stream crossings and culverts where applicable. These measures would minimize impacts to aquatic PETS species and would assure that no cumulative effects to aquatic PETS species would result from the proposed project.

Several surveys were conducted in order to identify PETS plants and their suitable habitats (Section 2 of Appendix A). One PETS listed species, the Biltmore sedge, was identified at one location outside of the Proposed Action Alternative corridor, on a vertical cliff on the south side of Glassy Mountain. In addition, a second potential location was identified within 500 linear feet of the Proposed Action Alternative corridor. The inaccessibility of the latter location prevented verification of the presence of Biltmore sedge. However, as there would be no disturbance-causing activities conducted at either of these locations, the Biltmore sedge would not be impacted by implementation of the Proposed Action Alternative.

Clearing of only canopy trees and spanning sensitive areas would assist in maintaining suitable habitat for PETS plants throughout the Proposed Action Alternative corridor. Leaving most downed trees where they fall, allowing the understory to continue to develop, and hand-clearing trees within the 30-foot wetland buffer would minimize erosion and sedimentation. The Proposed Action Alternative would not result in adverse cumulative effects to any federally listed plant species or Chattahoochee National Forest-listed sensitive plant species.

Suitable habitat was identified within the Proposed Action Alternative corridor for two PETS terrestrial species (Section 2 of Appendix A). First, larval host plants for the Diana fritillary butterfly were identified. Because the understory would be left intact, the plants would not be impacted in most areas during and following construction. In addition, construction of the line likely would increase the recruitment of nectar-producing plants, a food source for the butterfly. Few of these plants were identified during botanical surveys. This increase would provide additional habitat for the butterfly.

Second, hollow trees, which are a preferred roosting habitat for the Rafinesque's big-eared bat, were identified in the Proposed Action Alternative corridor. Some of these trees would be cut but would be left lying in the management area. However, since there are many of these roosting trees present throughout the Chattahoochee National Forest, there would be no

cumulative effects to the Rafinesque's big-eared bat as a result of the Proposed Action Alternative. Mitigating measures would be implemented where necessary to ensure viability of these habitats, as well as habitats for all other federally listed and Chattahoochee National Forest sensitive terrestrial species.

6.5.2 No-Action Alternative

The No-Action Alternative would have no direct secondary or cumulative effects on environmental resources of the Chattahoochee National Forest. However, some species that would benefit from the creation of early successional habitat would not benefit from this alternative. For example, the Diana fritillary butterfly, which is a PETS species; and the black bear, eastern wild turkey, ruffed grouse, and northern bobwhite, all of which are MIS species, would not receive the benefits of the creation of early successional habitat under the No-Action Alternative that they would receive from the Proposed Action Alternative.

6.6 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order (EO) 12898 (Clinton 1994), *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The EO is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts to these target populations from proposed federal actions and to identify alternatives that might mitigate these impacts (Appendix J).

6.6.1 Proposed Action Alternative

The environmental justice survey for the proposed substation and associated transmission line was conducted in accordance with GTC's *Environmental Justice Guidelines and Methodology for Analyzing Potential Environmental Justice Areas of Concern* (Nichols 2001). These documents, which are based on methodology developed by the U.S. Environmental Protection Agency (EPA) Region IV, explain the fundamental details of this analysis. However, the EPA methodology is based on Census 1990 population numbers, and the Georgia minority population percentage increased from approximately 30 percent in 1990 to 37.3 percent in 2000. The EPA has not yet developed new thresholds from the latest Census figures, but the new thresholds will be somewhat higher than the 1990 thresholds. At this time, GTC is continuing to use the 1990 EPA thresholds for environmental justice evaluations; therefore, this analysis is more inclusive than will be required by future EPA thresholds. The results of the survey are detailed below.

Minority populations were analyzed at the Census 2000 block level. The blocks selected for use in this analysis were those intersected by the Proposed Action Alternative corridor. A

total of three Census blocks fit into this category (Figure 23). The minority population of each block was defined by grouping together all non-white races, Hispanics, and those whose race is described as the combination of two or more races. Of the relevant Census blocks, none have minority population percentages that exceed the EPA threshold of 35.72 percent. The minority populations of these three blocks are 2.29 percent, 4.01 percent, and 18.18 percent, all of which are well below the EPA threshold.

Low-income populations were analyzed at the 1990 Census block group level. The block groups selected for use in this analysis were those intersected by the Proposed Action Alternative corridor. A total of two Census block groups fit into this category (Figure 24). The low-income population is defined as those families living below the U.S. poverty levels. None of the relevant Census block groups contain low-income populations above the EPA threshold of 17.58 percent. The two block groups contain low-income populations of 5.85 percent and 8.91 percent of the total number of families, both of which are well below the EPA threshold.

The review of the North Burton Transmission Line and Substation study area yielded no areas of potential impact with respect to environmental justice issues as described by the EPA guidelines. Thus, it appears that the Proposed Action Alternative would not produce any disproportionately high or adverse environmental or human health effects to minority and/or low-income communities.

6.6.2 No-Action Alternative

The No-Action Alternative would have no new impacts with respect to environmental justice issues. However, since the Proposed Action Alternative corridor contains no areas of potential environmental justice impacts, the No-Action Alternative would not provide any environmental justice benefits.

7.0 SUMMARY OF PROPOSED MITIGATION PLAN

This section summarizes the mitigation efforts that would be taken during the implementation of the Proposed Action Alternative to minimize impacts on the affected environment.

7.1 Topography and Geomorphology

- There would be limited grading during construction at the Proposed Action Alternative Substation Site and during improvements of the existing USFS roads. This would result in only minor changes to the topography of those areas.
- The installation of poles along the Proposed Action Alternative corridor may require boring into the underlying bedrock. However, the poles would be permanently installed in an upright position, thereby resulting in only short-term effects on the geomorphology. These measures would minimize the effects of the Proposed Action Alternative on the topography and geomorphology.
- All steel poles will be fabricated and shipped to the project in sectional lengths not to exceed 60 feet. This will result in reduction of soil disturbance and fewer modifications of road alignment of existing access roads. Shorter pole sections require less heavy equipment to haul and install the poles.
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7.2 Soils

- The transmission line management area would be developed in a manner that would minimize erosion. There would be minimal grading and no grubbing of tree stumps except at pole locations .
- Canopy trees would be hand-cleared with basal cuts, leaving the soil mostly undisturbed. The clearing of only canopy trees in much of the management area would minimize erosion.
- Relocating cut trees to the edge of the management area would create a natural sediment barrier that would further minimize potential erosion.
- Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed in steep areas along the down gradient side of the management area. Additional silt fence and stone check dams would be installed within areas that may naturally convey storm water.

- Approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing one three-pole structure near the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would minimize sedimentation and erosion into Timpson Creek from the slope of Glassy Mountain.
- Within the project area, a 50-foot buffer from the top of stream banks would be established on each side of streams and a 30-foot buffer would be established around the entire perimeter of wetland areas. No soil-disturbing activities would take place within these buffers. A double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be placed outside the buffers. As an additional erosion and sediment barrier, vegetation within the buffers would be cut by hand and would remain where it falls if it falls outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. These measures would minimize erosion and sedimentation into streams and wetlands within the management area.
- The existing USFS roads would be improved and used for construction and maintenance access on the proposed transmission line. This would minimize sedimentation and erosion, minimize vegetation clearing, minimize stream crossings, and avoid additional disturbance and road clearings. In addition, the upgraded roads could be used for USFS and managed public access.
- Improvements would be made by grading the existing roadbeds and, where necessary, placing a three- to four-inch layer of gravel on the newly graded areas.
- Broad-based dips would be installed in the roads to route storm water runoff to the downhill side of the roads.
- There would be approximately 2,200 feet of new road constructed. The new road would be cleared by cutting into the uphill side of slopes to achieve a width of approximately 16 feet. The soil that would be removed from the newly cleared areas either would be used to improve the existing roads or would be hauled away from the project area.
- There are some areas where existing roads cut through a bank or low area, exhibiting an upslope on both sides of the road. In these areas, both sides of the road would be graded evenly and the soil from the grading would be used to raise the elevation of the roadbed.
- In steeply sloped areas of road improvement or construction, Type C or Type A silt fence, hay bales, or brush barriers would be placed on the downslope side of the graded area.

- Where possible, stream crossings on the existing roads would be accomplished by placing stone-reinforced crossings at the present grade. Stone crossings eliminate sedimentation that would occur during culvert and stone installation and they minimize barriers to migrating aquatic species. Where stone-reinforced crossings are not practical, such as in areas where a culvert presently exists, water would be piped under the road via a culvert. If existing culverts are failing, new culverts would be installed.
- Construction at the substation site would involve some grading and soil disturbance. Most vegetation on the site would be cleared, with the exception of some existing trees and shrubs along U.S. Highway 76, which would be used as a visual barrier between the highway and the substation, and some trees along the driveway. An approximately four-foot high retaining wall would be installed to stabilize the steep slope from the highway to the substation.
- Because of the topography of the substation site, there would be more areas requiring soil to be added as fill material than areas requiring soil to be graded away. The fill material would come either from an existing pit, from on-site soil-moving activities, or from new road construction activities associated with the transmission line. Appropriate BMPs would be implemented around the perimeter of the substation site to minimize erosion and sedimentation during construction.
- The stringent use of BMPs for the installation of the transmission line and improvements and construction of the access roads would result in only minimal changes to existing soil conditions. The substation site would be the only area to experience long-term changes to the soil characteristics. However, the use of BMPs would ensure that these changes would be confined to the site and would not affect Timpson Creek or the surrounding areas.

7.3 Water Resources

- The Proposed Action Alternative corridor crosses 14 streams and four wetland areas that may be under the jurisdiction of the U.S. Army Corps of Engineers (Section 4 of Appendix A). Only two of the streams and two of the wetlands would be impacted as a result of construction or access. In addition, the proposed improved and/or new access roads cross 22 potentially jurisdictional streams and four potentially jurisdictional wetlands. (Two of these potentially jurisdictional wetlands are the same ones that are crossed by the Proposed Action Alternative Corridor.) During these disturbances, Forest-wide erosion protection Standards and Guidelines and Georgia State BMPs would be implemented to maintain water quality and to minimize erosion and sedimentation. The remaining 12 streams and two wetlands that are crossed by the Proposed Action Alternative corridor would be spanned, resulting in no impacts to the potentially jurisdictional areas.

- Fifty-foot buffers for streams and 30-foot buffers for wetlands would be established in which no ground-disturbing activities would take place. Vegetation within the buffers would be cut by hand and would remain where it falls if it falls outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank.
- A double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at each stream or wetland buffer boundary. These measures would result in minimal impacts to water quality.
- The Proposed Action Alternative also would lead to improvement of existing culverts and stream crossings on existing USFS roads that would be used as access to the proposed transmission line. Improvements would include the replacement of failing culverts and the improvements of existing culverts that are not failing but are in need of repair. Where possible, existing at-grade stone crossings would be maintained and enhanced with additional stone. Forest-wide erosion protection Standards and Guidelines and Georgia State BMPs would be implemented to maintain water quality and to minimize erosion and sedimentation. These measures would include installing a double row of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, and installing silt fences and hay bales in areas that are susceptible to erosion.
- Assessments were conducted of the three watersheds and of 5.2 miles of stream habitat that are intersected by the Proposed Action Alternative corridor (Section 5 of Appendix A). These assessments contribute to the overall watershed assessment of the Chattahoochee National Forest. The methods used in conducting the watershed analysis (Section 5 of Appendix A) are based on professional experience and judgment. No modeling or numerical analyses were performed, nor are any anticipated during the course of the project. Rather, the emphasis is on understanding the general impacts to the watershed.
- Several aspects of the Proposed Action Alternative and related control measures are significant to the project's overall impacts on the three watersheds that are crossed by the Proposed Action Alternative corridor. These aspects include the stabilization of access roads, the locations of pole structures in proximity to streams and wetlands, the cutting of canopy trees within the management area, and the channeling of storm water runoff from existing and proposed new access roads. These aspects of the Proposed Action Alternative and the mitigative measures that would be taken to reduce their impacts to the watersheds are discussed in Section 5 of Appendix A.

7.4 Visual Quality

- The potential impacts of the Proposed Action Alternative on the visual quality of the Chattahoochee National Forest were analyzed. Graphic depictions were developed to show the estimated number of pole locations that would be visible from different areas of National Forest System land, specifically from the Scenic Classes that surround the Proposed Action Alternative substation site and the Proposed Action Alternative transmission line corridor.
- It is expected that very few pole locations would be visible during the summer from the important Scenic Classes. With the exception of the areas directly adjacent to the management area, no portions of the Scenic Class 1 area on the north side of Glassy Mountain would be expected to have views of poles. Most of the areas that would be expected to have poles visible from them are near cleared roadways. During winter, it is expected that more pole locations would be visible because deciduous trees will have lost their leaves. The Scenic Classes 2 and 3 areas on the south side of Glassy Mountain would be expected to have an increase in the number of visible poles during winter. However, only the portions of the Scenic Class 1 area on the north side of Glassy Mountain that are directly adjacent to the management area would be expected to have views of poles during winter.
- The Proposed Action Alternative would have some impacts on the visual quality of the Chattahoochee National Forest. However, none of the present Scenic Class designations would be expected to change.
- Approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing two three-pole structures near the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would minimize tree removal on this section of the transmission line, thereby minimizing the impact on the visual quality of the area.
- In some areas, such as the north side of Glassy Mountain, the Proposed Action Alternative calls for shorter poles and a wider management area rather than having a narrower management area and taller poles. The height above ground for the poles would be from 60 feet to 120 feet, depending upon existing ground elevation.
- Poles would be made of weathering steel, which turns to a deep brown color after a period of being exposed to weather and would blend with the natural background of trees.
- All steel poles will be fabricated and shipped to the project in sectional lengths not to exceed 60 feet. This will result in reduction of tree clearing and fewer modifications of road alignment of existing access roads.
- Tree canopy cover throughout the corridor would be left standing where possible. For example, vegetation removal within the corridor would be done in a manner where

most of the subcanopy and shrub species directly under the transmission line would be left standing.

- The Proposed Action Alternative corridor would have minimal impacts to the visual quality of the waterfall located near the corridor. Although it is located 375 feet from the centerline of the corridor, it is not located near any existing or proposed new access roads. Therefore, the area would not experience increased vehicular or hiking traffic that could lead to the degradation of the area and the loss of aesthetic quality.

7.5 PETS Species

- Construction of the Proposed Action Alternative would have no direct or indirect effects on PETS species within the Forest. Potential effects to PETS species would be eliminated by implementation of alternative construction techniques and stringent BMPs during construction and maintenance of the proposed transmission line.
- It was concluded that the original Charlie Mountain Road substation site would present potential impacts to rare or unique forest resources and sensitive habitat that could complicate the successful development or implementation of an Environmental Protection and Mitigation Plan. As a result of this conclusion, GTC relocated the proposed substation site to the U.S. Highway 76 location.
- Approximately 1,500 feet of the north side of Glassy Mountain would be spanned by placing two three-pole structures near the top of the mountain and one three-pole structure at the bottom of the mountain, on the north side of Timpson Creek. This would minimize tree removal on this section of the transmission line, thereby protecting the rich plant communities in the area.
- Benthic macroinvertebrate and fish sampling were conducted in the streams of two of the three potentially affected watersheds (Section 5 of Appendix A). One watershed outside the Proposed Action Alternative Corridor could not be sampled because of lack of access for the USFS to streams on private property. Also, an assessment of stream habitat on 5.2 miles of additional streams in the project area watersheds was conducted to determine baseline characteristics of the potentially affected watersheds. The results of these surveys provide a baseline for measuring the viability of aquatic habitats and possible PETS species in those habitats. Forest-wide erosion protection Standards and Guidelines and State of Georgia BMPs would ensure the continued viability of these habitats.
- Inventories have been completed to identify suitable habitat and individual occurrences of PETS species. The inventories have included multiple field surveys, consultation with USFS biologists, and review of the GNHP records. No known locations of PETS species were identified within the corridor during the inventories. One location of Biltmore sedge was found in the Chattahoochee National Forest, but

is not within the management area and would not be affected by implementation of the project.

- Where necessary, mitigation measures would be implemented to protect and maintain habitat for PETS species. These measures include hand-clearing trees and leaving fallen trees at the edge of the management area where possible, thereby providing brooding habitat for some species. The measures also would include replacing or enhancing existing stream crossings and culverts on USFS roads, thereby minimizing barriers to species migration.
- Spanning the canopy of areas that have suitable habitat for PETS and clearing only overstory trees in much of the management area would protect suitable PETS habitat.
- As a result of clearing only canopy trees, early successional habitat would be created. This change would provide edge-zone habitat for the Diana fritillary butterfly.
- The existing USFS roads would be improved and used for construction and maintenance access on the proposed transmission line. This would minimize vegetation clearing throughout the corridor.

7.6 Locally Rare Species

- Clearing of only canopy trees, the spanning of sensitive areas, and the implementation of BMPs would maintain suitable habitat for most locally rare terrestrial and aquatic faunal species throughout the corridor.
- Locally rare faunal species have the ability to avoid construction activities of the Proposed Action Alternative, thereby avoiding direct impacts.
- Locally unique habitats have been identified by field reviews and would be avoided. Botanically rich areas, such as the north slope of Glassy Mountain, would be spanned, thereby avoiding impacts to sensitive habitat areas.
- Construction of the Proposed Action Alternative may benefit some locally rare faunal species. The Proposed Action Alternative would create early-successional habitat, which would indirectly lead to the enhancement of foraging and breeding habitat for several locally rare species.
- Several species of locally rare birds require minimum forest stand sizes for breeding habitat. For example, the Canada warbler (*Wilsonia canadensis*) requires approximately 2,471 acres per bird (Hamel 1992). By leaving the shrub and herbaceous layer intact, clearing for the line would minimize the fragmentation of any contiguous forests.

- The existing USFS roads would be improved and used for construction and maintenance access on the proposed transmission line. This would minimize the need for additional clearing of vegetation throughout the corridor.

7.7 Management Indicator Species

- In upland forested areas within the management area, canopy trees would be left standing where possible. For example, tree removal within the corridor would be done in a manner where most of the shrub species directly under the transmission line would be left standing. The herbaceous subcanopy and shrub layers would be left undisturbed except at pole structures and access areas.
- Opening the canopy would create early successional habitat that would allow soft mast-bearing shrubs to become established. This would be beneficial for MIS such as the black bear (*Ursus americanus*) and the eastern wild turkey (*Meleagris gallopavo*). It also would increase brooding habitat for species such as the ruffed grouse (*Bonasa umbellus*) and northern bobwhite (*Colinus virginianus*).
- Indirect impacts would also be minimized by the retention of the shrub layer and the use of effective BMPs. However, construction of the Proposed Action Alternative would contribute to forest fragmentation, which occurs when a once contiguous forest is divided. In the case of the Proposed Action Alternative, forested areas would be divided by the clearing of canopy trees in the management area. The primary concerns with forest fragmentation include bird brood parasitism, increased predation, and a reduction in contiguous habitat. To minimize the effects of fragmentation, only canopy trees would be cut, leaving the subcanopy herbaceous and shrub layers intact. The trees would be left at the edge of the management area. This clearing method should minimize the potential increase in brood parasitism and predation by maintaining suitable groundcover.
- There would be some adverse impacts on some MIS from the construction of the Proposed Action Alternative. For example, cutting hard mast tree species would affect species such as the gray squirrel (*Sciurus carolinensis*) and the white-tailed deer (*Odocoileus virginianus*). However, removing only the trees directly under the transmission line, at pole locations, and at new access road sites would leave some mast-producing species in the management area. This would minimize the impacts to MIS.
- Impacts to aquatic MIS, such as the rainbow trout (*Onchorynchus mykiss*) and brook trout (*Salvelinus fontinalis*), would be minimized by employing BMPs to control erosion during construction, operation, and maintenance of the substation and transmission line. BMPs would include the use of silt fences and hay bales in areas susceptible to erosion. There would be a 50-foot buffer from the top of stream banks

and a 30-foot buffer around wetlands. Within these buffers, trees would be hand-cleared and would be left lying where they fall if they fall outside of a stream channel. If cut vegetation falls in a stream channel, it would be removed and placed at the top of the stream bank. Also, double rows of Type C silt fence, 36-inches tall with woven wire reinforcement, or one row of Type C silt fence backed with hay bales, would be installed at the edge of the buffers.

7.8 Raptors and Other Large Avian Species

- High voltage lines, such as the proposed 115 kV line, would be designed with large spaces between wires (eight feet or greater) and long insulators between wires and poles (approximately four to five feet). These features minimize the possibility of a large bird coming in contact with more than one wire simultaneously or with a wire and a pole.
- The long span on the north side of Glassy Mountain has technical requirements that call for a distance of 18 feet, rather than the typical 10 feet, between the energized wires and the non-energized wire.
- Insulators between wires and poles would be eight feet rather than the typical four-foot insulators used on 115 kV transmission lines.
- The spacing between the energized wires on this portion of the line would be between 12 and 18 feet. This feature would reduce the risk of electrocution.
- Because of the long span on the north side of Glassy Mountain, technical requirements call for the three energized wires to be placed side-by-side in one horizontal plane, and the non-energized wire to be placed over the energized wires. This differs from the typical configuration of having all four wires placed one over the other, each in a separate horizontal plane. The configuration on the north side of Glassy Mountain would produce only two flying hazards, rather than four flying hazards that would be produced by the typical configuration.

7.9 Old-Growth Forests

- The Proposed Action Alternative could impact the Possible Old-Growth Forest classification of the area. Tree-cutting activities could reduce the basal area of the study area, and could prevent the area from reaching the designated age for classification as an Old-Growth Forest. Also, maintenance activities within the management area could alter the vegetative structure of the area. However, since there has been no decision made to manage the area for becoming an Old-Growth

Forest, the Proposed Action Alternative would result in no change by the USFS to the present management of the area.

7.10 Cultural Resources

- The Proposed Action Alternative would not have adverse impacts on cultural resources within the management area. A Phase I archaeological survey in late 2000 and early 2001, and a subsequent survey in April 2002, identified no archaeological sites within the final route of the Proposed Action Alternative that are eligible or potentially eligible for listing in the National Register.

7.11 Recreational Resources

- Under the Proposed Action Alternative, a portion of the 10-mile Stonewall Falls Mountain Bike Trail would be relocated to avoid impacts. The USFS staff has proposed as a mitigation measure the relocation route, which crosses the Proposed Action Alternative corridor in fewer locations than the existing bike trail. However, a final proposed reroute has not been selected. The USFS would make final decisions regarding selection of routes for the relocation and the design for the relocated trail. The relocation of the trail would mitigate the impacts of the Proposed Action Alternative on the current bike trail.

8.0 PRIVATE PROPERTY INFORMATION

Portions of the Proposed Action Alternative would cross private property. As part of the development process, GTC's contractors performed ecological studies within the proposed substation and transmission corridor areas. Field studies for areas of the proposed line located on private property included delineation of potential Section 404 jurisdictional boundaries, including streams and wetlands, following the accepted methodology of the Department of the Army Corps of Engineers. In addition, office and field reviews were conducted for faunal and floral species listed under the protection of the Endangered Species Act. Also, State of Georgia and USFS listed species were included in the office and field reviews.

There are four different sections of the Proposed Action Alternative Transmission Line Corridor that traverse private property. These four sections of private property comprise approximately 11% of the total corridor. The remaining 89% is located on National Forest System land. Beginning at the proposed substation, approximately the first one-third of the proposed transmission line transects National Forest System land. The proposed line then enters the first section of private property and extends across private property for approximately 950 feet west of Liberty Church Road. There are three streams on this section of private property. The corridor then extends across approximately 1,200 feet of private property east of Liberty Church Road. There is one stream on this section of private property. The proposed line reenters National Forest System land and extends 3,500 feet before returning to private property. The third section of private property is located immediately east of Crunkleton Ridge and is approximately 2000 feet in length. There are two streams located on this section of private property. The corridor then reenters National Forest System land and extends to Old U.S. Highway 441. This long segment on National Forest System land comprises the southern half of the proposed line. The final section of private property is the last 500 feet of the corridor at the southeastern terminus. No potentially jurisdictional streams or wetlands are located within this section.

Review of existing literature and available databases revealed that 30 protected species are known from Rabun County. Nineteen of these are federally protected species (including species of management concern) and eleven are state protected species. Field studies were conducted to determine the presence of suitable protected species habitat and potential occurrence of these species. No protected species or suitable habitats were observed on the sections of the corridor that traverse private property.

In addition to reviewing existing information, a request for any additional protected species information for the proposed project area was sent to the GNHP. The GNHP reports six known occurrences of five listed species within a three-mile radius of the Proposed Action Alternative Corridor. Two of these five species are not listed or have been removed from the USFS list. None of these species are federally listed. However, these species are tracked by GNHP because of their status within the State of Georgia. No species listed by GNHP were identified on the sections of private property during field studies.

Jurisdictional studies identified the presence of six potentially jurisdictional waters located on private property within the Proposed Action Alternative Corridor. The streams were classified as riverine, upper perennial, or intermittent systems. The locations of the waters are shown in Section 4 of Appendix A.

The first potentially jurisdictional area, referred to as Water 31, is classified as a riverine, intermittent stream with a substrate of rubble and organic matter (R4SB26). The stream is approximately three- to four-feet wide at the top-of-bank. This stream is located approximately 300 feet southeast of Crunkleton Ridge along the corridor. Water 31 is located within the Upper Tiger Creek Watershed and is a tributary of Tiger Creek. The stream would be spanned by the proposed transmission line. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

The second potentially jurisdictional area, referred to as Water 32, is classified as a riverine, intermittent stream with a substrate of rubble, sand, and organic matter (R4SB246). The stream is approximately two- to three-feet wide at the top-of-bank. This stream is located approximately 30 feet southeast of Crunkleton Ridge along the proposed transmission line. The stream would be spanned by the proposed line. Water 32 is located within the Upper Tiger Creek Watershed and is a tributary of Tiger Creek. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

The third potentially jurisdictional area, referred to as Water 33, is classified as a riverine, intermittent stream with a substrate of cobble-gravel and sand (R4SB34). The stream is approximately three- to four-feet wide at the top-of-bank. This stream is located on the eastern boundary of the first section of private property, near Liberty Church Road. The stream will be spanned by the proposed transmission line. Water 33 is located within the Stonewall Creek Watershed and is a tributary of Stonewall Creek. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

The fourth potentially jurisdictional area, referred to as Water 34, is classified as a riverine, upper perennial stream with a substrate of sand and cobble-gravel (R3UB12). The stream is approximately two- to four-feet wide at the top-of-bank. This stream is located approximately 50 feet west of Liberty Church Road along the proposed transmission line. The stream will be spanned by the proposed transmission line. Water 34 is located within the Upper Tiger Creek Watershed and is a tributary of Tiger Creek. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

The fifth potentially jurisdictional area, referred to as Water 35, is classified as a riverine, upper perennial stream with a substrate of mud and organic matter (R3UB34). The stream is approximately one- to two-feet wide at the top-of-bank. This stream is located approximately 50 feet west of Water 34 along the proposed transmission line and flows into Water 36. The stream would be spanned by the proposed transmission line. Water 35 is located within the Upper Tiger Creek Watershed and is a tributary of Tiger Creek. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

The sixth potentially jurisdictional area, referred to as Water 36, is classified as a riverine, upper perennial stream with a substrate of sand and cobble-gravel (R3UB12). The stream is approximately six- to eight-feet wide at the top-of-bank. This stream is located approximately 60 feet west of Water 34 along the proposed transmission line. Water 35 flows into Water 36 immediately north of the proposed transmission line. The stream would be spanned by the proposed transmission line. Water 36 is located within the Upper Tiger Creek Watershed and is a tributary of Tiger Creek. Forest-wide erosion protection Standards and Guidelines, as well as State of Georgia BMPs would be implemented to maintain water quality and minimize erosion and sedimentation during construction and maintenance of the Proposed Action Alternative.

In April 2002, an archaeological survey was conducted on the portions of the Proposed Action Alternative Corridor that extend on private property (Appendix K). The corridor begins on the steeply sloping, eastern face of Crunkleton Ridge and runs south-southeast for roughly 1,116 feet before turning east-southeasterly for approximately 394 feet, for a total distance of about 1,510 feet.

Most of this segment is too steeply sloping to warrant shovel testing. However, the entire length of the segment was walked and shovel tests were conducted in the few locations where the slope was more gradual, such as on ridge tops. A total of seven shovel tests were conducted on this segment, all of which contained no archaeological artifacts.

9.0 PREPARERS AND U.S. FOREST SERVICE PERSONNEL PROVIDING SPECIALIZED INPUT

9.1 Preparers Outside the U.S. Forest Service

Kendall W. Cochran, MBA, MS

Mr. Cochran is a Project Manager and Wildlife Biologist with Dial Cordy and Associates Inc. For this project, he was responsible for compiling data from Georgia Transmission Corporation, the U.S. Forest Service, and other contractors, and for writing the report. He has extensive experience conducting faunal and floral surveys throughout the southeast United States and the Caribbean. Mr. Cochran has experience with mark-and-recapture surveys for birds, mammals, and herpetofauna (reptiles and amphibians); fixed-radius point counts for birds; wildlife habitat analyses; population analyses; and foraging habitat studies. He holds a Master Bird Banding Permit from the Patuxent Wildlife Research Center Bird Banding Laboratory. In addition, he has extensive experience with wetland permitting issues through the U.S. Army Corps of Engineers and with the Georgia Department of Natural Resources. He also has extensive experience with performing Environmental Assessments in accordance with NEPA.

J. Mark Ballard, MS

Mr. Ballard is an Ecologist with Jordan, Jones & Goulding. He has expertise in the fields of Section 404 permitting, wetland and stream mitigation, threatened and endangered species, environmental documentation, vegetation identification, vegetation sampling, wetlands delineation, Section 404 regulations, wetlands permitting, and taxonomic investigations. He has conducted numerous ecological studies throughout the southeast. These studies included wetland delineations and protected species surveys. In conjunction with these projects, coordination was conducted with the U.S. Army Corp of engineers and the U.S. Fish and Wildlife Service. Many of the projects included obtaining Section 404 wetland permits and developing wetland mitigation plans. Other skills include fish surveys, ornithological studies, and report preparation.

Christian W. Crow, MS

Mr. Crow is a Consultant and CEO of CCR Environmental. He has over 15 years experience in aquatic ecology, fisheries biology, and limnology. His recent project experiences have included protected mussel surveys; surveys for critical spawning habitat for rare fishes; protected fish surveys; red-cockaded woodpecker (*Picoides borealis*) surveys; preparation of life history reports for gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (*Drymarchon corais*), and bald eagle (*Haliaeetus leucocephalus*); and ecological studies to assess potential impacts of roadway expansions.

Benjamin B. Fox, BS

Mr. Fox is an Environmental Scientist with Jordan, Jones & Goulding as an Environmental Scientist, where he recently joined the Ecology team. He has experience in the fields of Erosion and Sedimentation Control, Water Quality Analysis, Environmental Phase I Site Assessments, Global Positioning Systems / Surveying, and Wetland Delineations.

Thomas E. Govus, MS

Mr. Govus is an independent Consulting Botanist. His recent project experiences have included assisting in the development of a species viability database related to special concern plants in U.S. Forest Service Region 8; conducting interviews and compiled reports on the ecology and restoration of shortleaf pine ecosystems in the southeastern U.S.; collecting vegetation data to be used in classifying plant communities; and assisting with the planning and conducting of ecological inventories of forest communities for the Chattahoochee, Oconee, and Talladega National Forests for refinement of the National Vegetation Classification System.

Brian T. Grasman, MS

Mr. Grasman, an Ecologist with Jordan, Jones & Goulding, has experience in the fields of threatened and endangered species, environmental assessments, wetland delineation and mitigation, water quality assessment, toxicity in fish and wildlife, environmental and ecological surveys, radiation dosimetry, quality control and quality assurance using U.S. Environmental Protection Agency Protocol, NEPA investigations, Phase I Environmental Site Assessments, GPS mapping and processing, and report preparation.

Thomas H. Gresham, MA

Mr. Gresham is a Senior Archaeologist with Southern Archaeological Services. He has authored or coauthored over 120 technical reports on survey, testing, and data-recovery projects in Alabama, Florida, Georgia, North Carolina, and South Carolina. His project experiences include archaeological surveys for proposed highway improvements, wetland mitigation sites, bridge replacements, biking and hiking trails, substation and transmission line sites, and relocations of grave sites.

Donald L. Ham, PhD

Dr. Ham is the Principle and Senior Consultant for the Laurus Group. He has experience forest management and timber appraisal, forest pest management, and assessments of old-growth forests. He has authored or coauthored numerous publication on tree health issues and forest management practices.

R. Michael Morgan, ASLA

Mr. Morgan is a Landscape Architect with Jordan, Jones & Goulding. He has been responsible for planning and design efforts for several of the premier landscapes in the United States over the past two decades. He brings to each individual undertaking a depth of knowledge based on experience with projects of the highest caliber. He has been responsible for all phases of the design and construction process up to and including construction contract administration.

Kevin A. Mullinax, BS

Mr. Mullinax, an ecologist with Jordan, Jones & Goulding, has experience in wetland delineation, stream assessment, in-stream benthic sampling, wetland mitigation, protected species studies, vegetation sampling and identification, hydrologic monitoring, erosion and sediment control, restoration science, GPS data collection, and preparation of environmental documentation.

C. Jordan Myers, MS

Mr. Myers, an ecologist with Jordan, Jones & Goulding, has experience in wetland delineation, stream assessment, in-stream benthic sampling, wetland mitigation, protected species studies, vegetation sampling and identification, hydrologic monitoring, erosion and sediment control, restoration science, and preparation of environmental documentation.

Alison Nichols, MCP

Ms. Nichols is an Environmental Planner and Geographic Information System (GIS) specialist with Jordan, Jones & Goulding. Her responsibilities include the collection and analysis of data for the development of planning and environmental studies and assisting in authoring NEPA documents (Environmental Impact Statements, Environmental Assessments and Categorical Exclusions) as well as Environmental Effects Reports under the Georgia Environmental Policy Act.

Karl J. Pokorny, BS

Mr. Pokorny is Principle and Senior Consultant for the Laurus Group. His responsibilities include providing urban forestry and traditional forestry consulting services, including timber valuation in trespass cases, amenity tree valuation, tree protection specifications during construction activities, forest and feature tree inventories, expert testimony, street tree management, and hazardous tree evaluation.

Dan M. Rice, MS

Mr. Rice is Senior Ecologist with Jordan, Jones & Goulding. He has expertise in the fields of wetlands delineation and mitigation, Section 404 regulations, wetlands permitting, vegetation assessments, threatened and endangered species, environmental documentation, vegetation identification, and vegetation sampling. He has conducted numerous ecological studies in Georgia, South Carolina, Maryland, Virginia, and New Jersey. Other skills include stream ecology, stream restoration, invasive species studies, GIS applications, and report preparation.

Maurie van Buren, MA

Ms. van Buren is President and Principle Consultant with Historic Preservation Consulting. Her experiences are in the areas of environmental review, cultural resource assessments, real estate seminars, architectural heritage education, historic site interpretation, video production, workshops, slide presentations, and National Register nominations preservation planning.

Thomas G. Whitley, PhD Dr. Whitley is Vice President and Program Manager for Brockington and Associates, Inc. He has more than 15 years of experience in both prehistoric and historic-sites archaeology in the Southeast, Northwestern Plains, Southwest, Northeast, and Northwest United States. He specializes in computer and statistical applications, GIS applications of mathematical predictive modeling and settlement pattern analysis, as well as prehistoric and historic period perishables analysis. Dr. Whitley's doctoral dissertation, on the application of complex dynamical structures to the analysis of site selection processes in the Greater Yellowstone Region, was defended in early 2000. He maintains an active research agenda, focusing on GIS applications. He has acted as principal investigator, project manager or analytical specialist on more than 100 projects in the United States.

9.2 U.S. Forest Service Personnel Providing Specialized Input

Blaine Boydston, Zone Lands Specialist, Chattooga/Tallulah Ranger Districts, Chattahoochee National Forests.

Rebecca E. Bruce, Forest Archaeologist, Toccoa Ranger District, Chattahoochee-Oconee National Forests.

Mitzi Cole, Forest Fisheries Biologist, Chattahoochee-Oconee National Forests.

Andy Gaston, Zone Wildlife Biologist, Chattooga/Tallulah Ranger Districts, Chattahoochee National Forest.

Carolyn Hoffman, Forest Landscape Architect, Chattahoochee-Oconee National Forests.

Charlene Neihardt, Forest Hydrologist, Chattahoochee-Oconee National Forests.

John Petrick, Forest Planner, Chattahoochee-Oconee National Forests.

Dick Rightmyer, Forest Soil Scientist, Chattahoochee-Oconee National Forests.

Allen Smith, Other Resources Assistant, Tallulah Ranger District, Chattahoochee National Forest.

Cindy Wentworth, Forest Ecologist/Botanist, Chattahoochee-Oconee National Forests.

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FIGURES

APPENDICES

APPENDIX A

Biological Field Survey Report, North Burton Transmission Line and Substation, Rabun County, Georgia

APPENDIX B

Ecological Unit Description of the Blue Ridge Mountain Section

APPENDIX C

Cultural Ecology: Southern Blue Ridge Mountains Subsection

APPENDIX D

Existing Landscape Character: Southern Blue Ridge Mountains Subsection

APPENDIX E

Biological Evaluation of the Proposed North Burton Substation and Associated Transmission Line, Tallulah Ranger District, Chattahoochee National Forest

APPENDIX F

Archaeological Resources Survey for the Proposed North Burton U.S. Highway 76 Substation, Rabun County, Georgia

APPENDIX G

An Archaeological Survey of Portions of Four Alternatives for the Proposed North Burton 115 kV Transmission Line, Rabun County, Georgia

APPENDIX H

**Archaeological Survey of Realigned Portions of the Proposed
North Burton 115 kV Transmission Line and Access Roads in the
Tallulah Ranger District of the Chattahoochee National Forest,
Rabun County, Georgia**

APPENDIX I

Report of No Effect on Historic Resources, North Burton 115 kV Transmission Line and Substation

APPENDIX J

Results of the Environmental Justice Survey, North Burton Transmission Line and Substation

APPENDIX K

Archaeological Survey of the Private Property Portion of the Proposed North Burton 115 kV Transmission Line, Rabun County, Georgia

APPENDIX L

Responses to Public Comments for the Draft Environmental Assessment for the Proposed North Burton 115 kV Transmission Line and North Burton Substation, Rabun County, Georgia